



EUROPEAN EDUCATION AND CULTURE EXECUTIVE AGENCY (EACEA)

EACEA.A – Erasmus+, EU Solidarity Corps
A.1 – European Higher Education

GRANT AGREEMENT

Project 101124386 — NeurotechEU

PREAMBLE

This **Agreement** ('the Agreement') is **between** the following parties:

on the one part,

the **European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and

on the other part,

1. 'the coordinator':

STICHTING RADBOUD UNIVERSITEIT (RU), PIC 999992110, established in HOUTLAAN 4, NIJMEGEN 6525 XZ, Netherlands,

and the following other beneficiaries, if they sign their 'accession form' (see Annex 3 and Article 40):

2. **UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE (UMH)**, PIC 999851363, established in AVENIDA DE LA UNIVERSIDAD S-N, ELCHE 03202, Spain,

3. **KAROLINSKA INSTITUTET (KI)**, PIC 999978530, established in Nobels Vag 5, STOCKHOLM 17177, Sweden,

4. **RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITÄT BONN (UBO)**, PIC 999980276, established in REGINA PACIS WEG 3, BONN 53113, Germany,

5. **BOGAZICI UNIVERSITESI (BON)**, PIC 999882500, established in BEBEK, ISTANBUL 34342, Türkiye,

6. **UNIVERSITATEA DE MEDICINA SI FARMACIE IULIU HATIEGANU CLUJ-NAPOCA (UMF)**, PIC 999842439, established in VICTOR BABES STREET 8, Cluj-Napoca 400012, Romania,

7. **UNIVERSITE DE LILLE (ULille)**, PIC 888146648, established in 42 RUE PAUL DUEZ, LILLE 59000, France,

8. **HASKOLINN I REYKJAVIK EHF (HR)**, PIC 966834406, established in MENNTAVEGUR 1, REYKJAVIK 102, Iceland,

Unless otherwise specified, references to ‘beneficiary’ or ‘beneficiaries’ include the coordinator and affiliated entities (if any).

If only one beneficiary signs the grant agreement (‘mono-beneficiary grant’), all provisions referring to the ‘coordinator’ or the ‘beneficiaries’ will be considered — mutatis mutandis — as referring to the beneficiary.

The parties referred to above have agreed to enter into the Agreement.

By signing the Agreement and the accession forms, the beneficiaries accept the grant and agree to implement the action under their own responsibility and in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

The Agreement is composed of:

Preamble

Terms and Conditions (including Data Sheet)

Annex 1 Description of the action¹

Annex 2 Estimated budget for the action

Annex 3 Accession forms (if applicable)²

Annex 3a Declaration on joint and several liability of affiliated entities (if applicable)³

Annex 4 Model for the financial statements

Annex 5 Specific rules (if applicable)

¹ Template published on [Portal Reference Documents](#).

² Template published on [Portal Reference Documents](#).

³ Template published on [Portal Reference Documents](#).

TERMS AND CONDITIONS

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DATA SHEET

1. General data

Project summary:

Project summary
<p>The European University Alliance of Brain and Technology, NeurotechEU, envisions Neurotechnology as the next step in the deep tech revolution, or technology from the brain, for the brain, and with the brain. Our program's thematic focus is arranged along 8 dimensions providing strategic bridges between various disciplines, including neuroscience, medicine, engineering, artificial intelligence, cognitive science, robotics, social sciences, and the humanities. NeurotechEU constitutes the backbone of this vision by bringing together 8 leading universities across Europe and a significant amount of relevant associated partners, including partner research institutions, (SME) companies, societal stakeholders, and (non) governmental organisations, to create a unique educational environment where the next generation of European researchers and citizens can cooperate and work across different European and global cultures. Collectively we will enable deep institutional transformation by focusing on trans-European innovative learning processes grounded in the emergent field of Neurotechnology with its synergistic coupling of science, technology and application. We will create inclusive, wholistic, and comprehensive training programme in all eight NeurotechEU dimensions based on the NeurotechEU epistemic cycle and the knowledge square. This content-driven transformation will foster the next generation of multidisciplinary scientists and engineers by training them as integrators through the unique NeurotechEU pedagogical model, the complementarity of the partners and access to cutting-edge avant-garde infrastructure and training platforms. We will further advance and validate the initiative's sustainability and governance models. NeurotechEU is built on the common values and general principles of the European Union as laid down in the Bologna process, the Paris Communiqué, and the Magna Charta Universitatum, which are propagated through all activities.</p>

Keywords:

- Neurotechnology, knowledge square, European Education Area, European Research Area, European identity & values, Multidisciplinary & personalized curriculum; nurturing creativity & critical thinking;

Project number: 101124386

Project name: European University of Brain and Technology

Project acronym: NeurotechEU

Call: ERASMUS-EDU-2023-EUR-UNIV

Topic: ERASMUS-EDU-2023-EUR-UNIV-1

Type of action: ERASMUS Lump Sum Grants

Granting authority: European Education and Culture Executive Agency

Grant managed through EU Funding & Tenders Portal: Yes (eGrants)

Project starting date: fixed date: 1 November 2023

Project end date: 31 October 2027

Project duration: 48 months

Consortium agreement: Yes

2. Participants

List of participants:

N°	Role	Short name	Legal name	Ctry	PIC	Max grant amount
1	COO	RU	STICHTING RADBOUD UNIVERSITEIT	NL	999992110	3 172 644.00
2	BEN	UMH	UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE	ES	999851363	1 349 274.00
3	BEN	KI	KAROLINSKA INSTITUTET	SE	999978530	2 309 815.00
4	BEN	UBO	RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAT BONN	DE	999980276	2 074 299.00



N°	Role	Short name	Legal name	Ctry	PIC	Max grant amount
5	BEN	BOUN	BOGAZICI UNIVERSITESI	TR	999882500	878 491.00
6	BEN	UMF	UNIVERSITATEA DE MEDICINA SI FARMACIE IULIU HATIEGANU CLUJ-NAPOCA	RO	999842439	935 001.00
7	BEN	ULille	UNIVERSITE DE LILLE	FR	888146648	2 157 412.00
8	BEN	HR	HASKOLINN I REYKJAVIK EHF	IS	966834406	1 404 283.00
9	AP	UD	DEBRECENI EGYETEM	HU	999881239	0.00
10	AP	UKB	UNIVERSITÄTSKLINIKUM BONN	DE	999867465	0.00
11	AP	LUH	LANDSPITALI UNIVERSITY HOSPITAL	IS	999821390	0.00
12	AP	SABANCI	SABANCI UNIVERSITESI	TR	999856892	0.00
13	AP	BBK	BILKENT UNIVERSITESI VAKIF	TR	999923628	0.00
14	AP	IU	ISTANBUL UNIVERSITESI	TR	998391222	0.00
15	AP	CLU	CENTRALE LILLE INSTITUT	FR	999878038	0.00
16	AP	CHULille	CENTRE HOSPITALIER REGIONAL ET UNIVERSITAIRE DE LILLE	FR	999587232	0.00
17	AP	UNIKENT	UNIVERSITY OF KENT	UK	999841275	0.00
18	AP	IMTNE	Institut Mines-Télécom Nord Europe	FR	894022132	0.00
19	AP	STU	STOCKHOLMS UNIVERSITET	SE	999885022	0.00
20	AP	KTH	KUNGLIGA TEKNISKA HOEGSKOLAN	SE	999990946	0.00
21	AP	DZNE	DEUTSCHES ZENTRUM FÜR NEURODEGENERATIVE ERKRANKUNGEN EV	DE	974626416	0.00
22	AP	LBGMBH	LIFE AND BRAIN GMBH	DE	994637807	0.00
23	AP	MPINB	Max Planck Institute for Neurobiology of Behavior - caesar	DE	887070142	0.00
24	AP	HNP	HOSPITAL NACIONAL DE PARAPLEJICOS	ES	917979095	0.00
25	AP	CSIC	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	ES	999991722	0.00
26	AP	IPL	INSTITUT PASTEUR DE LILLE FONDATION	FR	999498089	0.00
27	AP	NOXM	NOX MEDICAL EHF	IS	934034147	0.00
28	AP	Össur	Össur hf	IS	993147790	0.00
29	AP	KAREL	KAREL ELEKTRONIK SANAYI VE TICARET ANONIM SİRKETİ	TR	919499861	0.00
30	AP	InTech	Interact Medikal Teknolojileri A. S.	TR	910269826	0.00
31	AP	BBTECH	BIT & BRAIN TECHNOLOGIES SL	ES	983150291	0.00
32	AP	SATT NORD	SATT NORD	FR	885657628	0.00
33	AP (IO)	ISHEALTH	ISTANBUL HEALTH INDUSTRY CLUSTER ASSOCIATION	TR	884148987	0.00
34	AP	BfArM	BUNDESINSTITUT FÜR ARZNEIMITTEL UND MEDIZINPRODUKTE	DE	998293931	0.00
35	AP	MUNI	MINISTERIO DE UNIVERSIDADES	ES	894297612	0.00
36	AP	CROUS	CROUS DE LILLE	FR	904883901	0.00
37	AP	MEL	Métropole européenne de Lille	FR	928651617	0.00
38	AP	RHF	REGION HAUTS-DE-FRANCE	FR	921692546	0.00
39	AP	RAL	RECTORAT DE L ACADEMIE DE LILLE	FR	887192653	0.00
40	AP	EURASANTE	EURASANTE	FR	939183489	0.00
41	AP	DPA	DIPUTACION PROVINCIAL DE ALICANTE	ES	984700448	0.00
42	AP	ASJA	Ayuntamiento de Sant Joan d'Alacant	ES	939775092	0.00
43	AP	EUIPO	OFICINA DE PROPIEDAD INTELECTUAL DE LA UNION EUROPEA	ES	884213977	0.00
44	AP	AYE	AYUNTAMIENTO DE ELCHE	ES	951341566	0.00
45	AP	BUTTO	Bogazici Universitesi Teknoloji Transfer Ofisi Anonim Sirketi	TR	886377950	0.00

N°	Role	Short name	Legal name	Ctry	PIC	Max grant amount
46	AP	EAEC	European Association of Erasmus Coordinators	CY	949132488	0.00
47	AP	TITC	ASOCIATIA TRANSILVANIA IT	RO	900017508	0.00
48	AP	SCJU CJ	SPITALUL CLINIC JUDETEAN DE URGENTA CLUJ	RO	998139895	0.00
49	AP	RoNeuro	Fundatia pentru Studiul Nanoneurostiintelor si Neuroregenerarii	RO	905749238	0.00
50	AP	MINSAN	MINISTERUL SANATATII	RO	999831478	0.00
51	AP	IMM	Istanbul Metropolitan Municipality	TR	998498795	0.00
52	AP	SKH	SIDEKICKHEALTH EHF	IS	916535347	0.00
53	AP	INRIA	INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET AUTOMATIQUE	FR	999547074	0.00
54	AP	CNRS	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	999997930	0.00
55	AP	INSERM	INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE	FR	999997833	0.00
Total						14 281 219.00

Coordinator:

- STICHTING RADBOUD UNIVERSITEIT (RU)

3. Grant**Maximum grant amount, total estimated eligible costs and contributions and funding rate:**

Maximum grant amount (Annex 2)	Maximum grant amount (award decision)
14 281 219.00	14 281 219.00

Grant form: Lump Sum**Grant mode:** Action grant**Budget categories/activity types:** Lump sum contributions**Cost eligibility options:** n/a**Budget flexibility:** No**4. Reporting, payments and recoveries****4.1 Continuous reporting** (art 21)**Deliverables:** see Funding & Tenders Portal Continuous Reporting tool**4.2 Periodic reporting and payments**

Reporting and payment schedule (art 21, 22):

Reporting					Payments	
Reporting periods			Type	Deadline	Type	Deadline (time to pay)
RP No	Month from	Month to				
					Initial prefinancing	30 days from entry into force/ financial guarantee (if required) – whichever is the latest
					Additional prefinancing	60 days from receiving additional prefinancing report/ financial guarantee (if required) – whichever is the latest
					Final payment	90 days from receiving periodic report

Prefinancing payments and guarantees:

Prefinancing payment		Prefinancing guarantee		
Type	Amount	Guarantee amount	Division per participant	
Prefinancing 1 (initial)	5 712 487.60	n/a	1 - RU	n/a
			2 - UMH	n/a
			3 - KI	n/a
			4 - UBO	n/a
			5 - BOUN	n/a
			6 - UMF	n/a
			7 - ULille	n/a
			8 - HR	n/a
Prefinancing 2 (additional)	5 712 487.60	n/a	1 - RU	n/a
			2 - UMH	n/a
			3 - KI	n/a
			4 - UBO	n/a
			5 - BOUN	n/a
			6 - UMF	n/a
			7 - ULille	n/a
			8 - HR	n/a

Reporting and payment modalities (art 21, 22):

Mutual Insurance Mechanism (MIM): No

Restrictions on distribution of initial prefinancing: The prefinancing may be distributed only if the minimum number of beneficiaries set out in the call conditions (if any) have acceded to the Agreement and only to beneficiaries that have acceded.

Interim payment ceiling (if any): 100% of the maximum grant amount

No-profit rule: n/a

Late payment interest: ECB + 3.5%

Bank account for payments:

NL08ABNA0231247834

Conversion into euros: n/a

Reporting language: Language of the Agreement

4.3 Certificates (art 24): n/a

4.4 Recoveries (art 22)

First-line liability for recoveries:

Beneficiary termination: Beneficiary concerned

Final payment: Coordinator

After final payment: Beneficiary concerned

Joint and several liability for enforced recoveries (in case of non-payment):

Limited joint and several liability of other beneficiaries — up to the maximum grant amount of the beneficiary

Joint and several liability of affiliated entities — n/a

5. Consequences of non-compliance, applicable law & dispute settlement forum

Applicable law (art 43):

Standard applicable law regime: EU law + law of Belgium

Dispute settlement forum (art 43):

Standard dispute settlement forum:

EU beneficiaries: EU General Court + EU Court of Justice (on appeal)

Non-EU beneficiaries: Courts of Brussels, Belgium (unless an international agreement provides for the enforceability of EU court judgements)

6. Other

Specific rules (Annex 5): Yes

Standard time-limits after project end:

Confidentiality (for X years after final payment): 5

Record-keeping (for X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Reviews (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Audits (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)



Extension of findings from other grants to this grant (no later than X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Impact evaluation (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

CHAPTER 1 GENERAL

ARTICLE 1 — SUBJECT OF THE AGREEMENT

This Agreement sets out the rights and obligations and terms and conditions applicable to the grant awarded for the implementation of the action set out in Chapter 2.

ARTICLE 2 — DEFINITIONS

For the purpose of this Agreement, the following definitions apply:

Actions — The project which is being funded in the context of this Agreement.

Grant — The grant awarded in the context of this Agreement.

EU grants — Grants awarded by EU institutions, bodies, offices or agencies (including EU executive agencies, EU regulatory agencies, EDA, joint undertakings, etc.).

Participants — Entities participating in the action as beneficiaries, affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties.

Beneficiaries (BEN) — The signatories of this Agreement (either directly or through an accession form).

Affiliated entities (AE) — Entities affiliated to a beneficiary within the meaning of Article 187 of EU Financial Regulation 2018/1046⁴ which participate in the action with similar rights and obligations as the beneficiaries (obligation to implement action tasks and right to charge costs and claim contributions).

Associated partners (AP) — Entities which participate in the action, but without the right to charge costs or claim contributions.

Purchases — Contracts for goods, works or services needed to carry out the action (e.g. equipment, consumables and supplies) but which are not part of the action tasks (see Annex 1).

Subcontracting — Contracts for goods, works or services that are part of the action tasks (see Annex 1).

In-kind contributions — In-kind contributions within the meaning of Article 2(36) of EU Financial

⁴ For the definition, see Article 187 Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 ('EU Financial Regulation') (OJ L 193, 30.7.2018, p. 1): "**affiliated entities** [are]:

- (a) entities that form a sole beneficiary [(i.e. where an entity is formed of several entities that satisfy the criteria for being awarded a grant, including where the entity is specifically established for the purpose of implementing an action to be financed by a grant)];
- (b) entities that satisfy the eligibility criteria and that do not fall within one of the situations referred to in Article 136(1) and 141(1) and that have a link with the beneficiary, in particular a legal or capital link, which is neither limited to the action nor established for the sole purpose of its implementation".

Regulation 2018/1046, i.e. non-financial resources made available free of charge by third parties.

Fraud — Fraud within the meaning of Article 3 of EU Directive 2017/1371⁵ and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995⁶, as well as any other wrongful or criminal deception intended to result in financial or personal gain.

Irregularities — Any type of breach (regulatory or contractual) which could impact the EU financial interests, including irregularities within the meaning of Article 1(2) of EU Regulation 2988/95⁷.

Grave professional misconduct — Any type of unacceptable or improper behaviour in exercising one's profession, especially by employees, including grave professional misconduct within the meaning of Article 136(1)(c) of EU Financial Regulation 2018/1046.

Applicable EU, international and national law — Any legal acts or other (binding or non-binding) rules and guidance in the area concerned.

Portal — EU Funding & Tenders Portal; electronic portal and exchange system managed by the European Commission and used by itself and other EU institutions, bodies, offices or agencies for the management of their funding programmes (grants, procurements, prizes, etc.).

CHAPTER 2 ACTION

ARTICLE 3 — ACTION

The grant is awarded for the action **101124386 — NeurotechEU** ('action'), as described in Annex 1.

ARTICLE 4 — DURATION AND STARTING DATE

The duration and the starting date of the action are set out in the Data Sheet (see Point 1).

CHAPTER 3 GRANT

ARTICLE 5 — GRANT

5.1 Form of grant

⁵ Directive (EU) 2017/1371 of the European Parliament and of the Council of 5 July 2017 on the fight against fraud to the Union's financial interests by means of criminal law (OJ L 198, 28.7.2017, p. 29).

⁶ OJ C 316, 27.11.1995, p. 48.

⁷ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

The grant is an action grant⁸ which takes the form of a lump sum grant for the completion of work packages.

5.2 Maximum grant amount

The maximum grant amount is set out in the Data Sheet (see Point 3) and in the estimated budget (Annex 2).

5.3 Funding rate

Not applicable

5.4 Estimated budget, budget categories and forms of funding

The estimated budget for the action (lump sum breakdown) is set out in Annex 2.

It contains the estimated eligible contributions for the action (lump sum contributions), broken down by participant and work package.

Annex 2 also shows the types of contributions (forms of funding)⁹ to be used for each work package.

5.5 Budget flexibility

Budget flexibility does not apply; changes to the estimated budget (lump sum breakdown) always require an amendment (see Article 39).

Amendments for transfers between *work packages* are moreover possible only if:

- the work packages concerned are not already completed (and declared in a financial statement) and
- the transfers are justified by the technical implementation of the action.

ARTICLE 6 — ELIGIBLE AND INELIGIBLE CONTRIBUTIONS

6.1 and 6.2 General and specific eligibility conditions

Lump sum contributions are eligible ('eligible contributions'), if:

- (a) they are set out in Annex 2 and
- (b) the work packages are completed and the work is properly implemented by the beneficiaries and/or the results are achieved, in accordance with Annex 1 and during in the period set out in Article 4 (with the exception of work/results relating to the submission of the final periodic report, which may be achieved afterwards; see Article 21)

They will be calculated on the basis of the amounts set out in Annex 2.

⁸ For the definition, see Article 180(2)(a) EU Financial Regulation 2018/1046: '**action grant**' means an EU grant to finance "an action intended to help achieve a Union policy objective".

⁹ See Article 125 EU Financial Regulation 2018/1046.



6.3 Ineligible contributions

‘Ineligible contributions’ are:

- (a) lump sum contributions that do not comply with the conditions set out above (see Article 6.1 and 6.2)
- (b) lump sum contributions for activities already funded under other EU grants (or grants awarded by an EU Member State, non-EU country or other body implementing the EU budget), except for the following case:
 - (i) Synergy actions: not applicable
- (c) other:
 - (i) country restrictions for eligible costs: not applicable.

6.4 Consequences of non-compliance

If a beneficiary declares lump sum contributions that are ineligible, they will be rejected (see Article 27).

This may also lead to other measures described in Chapter 5.

CHAPTER 4 GRANT IMPLEMENTATION

SECTION 1 CONSORTIUM: BENEFICIARIES, AFFILIATED ENTITIES AND OTHER PARTICIPANTS

ARTICLE 7 — BENEFICIARIES

The beneficiaries, as signatories of the Agreement, are fully responsible towards the granting authority for implementing it and for complying with all its obligations.

They must implement the Agreement to their best abilities, in good faith and in accordance with all the obligations and terms and conditions it sets out.

They must have the appropriate resources to implement the action and implement the action under their own responsibility and in accordance with Article 11. If they rely on affiliated entities or other participants (see Articles 8 and 9), they retain sole responsibility towards the granting authority and the other beneficiaries.

They are jointly responsible for the *technical* implementation of the action. If one of the beneficiaries fails to implement their part of the action, the other beneficiaries must ensure that this part is implemented by someone else (without being entitled to an increase of the maximum grant amount and subject to an amendment; see Article 39). The *financial* responsibility of each beneficiary in case of recoveries is governed by Article 22.

The beneficiaries (and their action) must remain eligible under the EU programme funding the grant

for the entire duration of the action. Lump sum contributions will be eligible only as long as the beneficiary and the action are eligible.

The **internal roles and responsibilities** of the beneficiaries are divided as follows:

(a) Each beneficiary must:

- (i) keep information stored in the Portal Participant Register up to date (see Article 19)
- (ii) inform the granting authority (and the other beneficiaries) immediately of any events or circumstances likely to affect significantly or delay the implementation of the action (see Article 19)
- (iii) submit to the coordinator in good time:
 - the prefinancing guarantees (if required; see Article 23)
 - the financial statements and certificates on the financial statements (CFS): not applicable
 - the contribution to the deliverables and technical reports (see Article 21)
 - any other documents or information required by the granting authority under the Agreement
- (iv) submit via the Portal data and information related to the participation of their affiliated entities.

(b) The coordinator must:

- (i) monitor that the action is implemented properly (see Article 11)
- (ii) act as the intermediary for all communications between the consortium and the granting authority, unless the Agreement or granting authority specifies otherwise, and in particular:
 - submit the prefinancing guarantees to the granting authority (if any)
 - request and review any documents or information required and verify their quality and completeness before passing them on to the granting authority
 - submit the deliverables and reports to the granting authority
 - inform the granting authority about the payments made to the other beneficiaries (report on the distribution of payments; if required, see Articles 22 and 32)
- (iii) distribute the payments received from the granting authority to the other beneficiaries without unjustified delay (see Article 22).

The coordinator may not delegate or subcontract the above-mentioned tasks to any other beneficiary or third party (including affiliated entities).

However, coordinators which are public bodies may delegate the tasks set out in Point (b)(ii) last



indent and (iii) above to entities with ‘authorisation to administer’ which they have created or which are controlled by or affiliated to them. In this case, the coordinator retains sole responsibility for the payments and for compliance with the obligations under the Agreement.

Moreover, coordinators which are ‘sole beneficiaries’¹⁰ (or similar, such as European research infrastructure consortia (ERICs)) may delegate the tasks set out in Point (b)(i) to (iii) above to one of their members. The coordinator retains sole responsibility for compliance with the obligations under the Agreement.

The beneficiaries must have **internal arrangements** regarding their operation and co-ordination, to ensure that the action is implemented properly.

If required by the granting authority (see Data Sheet, Point 1), these arrangements must be set out in a written **consortium agreement** between the beneficiaries, covering for instance:

- the internal organisation of the consortium
- the management of access to the Portal
- different distribution keys for the payments and financial responsibilities in case of recoveries (if any)
- additional rules on rights and obligations related to background and results (see Article 16)
- settlement of internal disputes
- liability, indemnification and confidentiality arrangements between the beneficiaries.

The internal arrangements must not contain any provision contrary to this Agreement.

ARTICLE 8 — AFFILIATED ENTITIES

Not applicable

ARTICLE 9 — OTHER PARTICIPANTS INVOLVED IN THE ACTION

9.1 Associated partners

The following entities which cooperate with a beneficiary will participate in the action as ‘associated partners’:

- **DEBRECENI EGYETEM (UD)**, PIC 999881239
- **UNIVERSITATSKLINIKUM BONN (UKB)**, PIC 999867465
- **LANDSPITALI UNIVERSITY HOSPITAL (LUH)**, PIC 999821390
- **SABANCI UNIVERSITESI (SABANCI)**, PIC 999856892

¹⁰ For the definition, see Article 187(2) EU Financial Regulation 2018/1046: “Where several entities satisfy the criteria for being awarded a grant and together form one entity, that entity may be treated as the **sole beneficiary**, including where it is specifically established for the purpose of implementing the action financed by the grant.”

- **BILKENT UNIVERSITESI VAKIF (BBK)**, PIC 999923628
- **ISTANBUL UNIVERSITESI (IU)**, PIC 998391222
- **CENTRALE LILLE INSTITUT (CLU)**, PIC 999878038
- **CENTRE HOSPITALIER REGIONAL ET UNIVERSITAIRE DE LILLE (CHULille)**, PIC 999587232
- **UNIVERSITY OF KENT (UNIKENT)**, PIC 999841275
- **Institut Mines-Télécom Nord Europe (IMTNE)**, PIC 894022132
- **STOCKHOLMS UNIVERSITET (STU)**, PIC 999885022
- **KUNGLIGA TEKNISKA HOEGSKOLAN (KTH)**, PIC 999990946
- **DEUTSCHES ZENTRUM FUR NEURODEGENERATIVE ERKRANKUNGEN EV (DZNE)**, PIC 974626416
- **LIFE AND BRAIN GMBH (LBGMBH)**, PIC 994637807
- **Max Planck Institute for Neurobiology of Behavior - caesar (MPINB)**, PIC 887070142
- **HOSPITAL NACIONAL DE PARAPLEJICOS (HNP)**, PIC 917979095
- **AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC)**, PIC 999991722
- **INSTITUT PASTEUR DE LILLE FONDATION (IPL)**, PIC 999498089
- **NOX MEDICAL EHF (NOXM)**, PIC 934034147
- **Össur hf (Össur)**, PIC 993147790
- **KAREL ELEKTRONIK SANAYI VE TICARET ANONIM SIRKETI (KAREL)**, PIC 919499861
- **Interact Medikal Teknolojileri A. S. (InTech)**, PIC 910269826
- **BIT & BRAIN TECHNOLOGIES SL (BBTECH)**, PIC 983150291
- **SATT NORD (SATT NORD)**, PIC 885657628
- **ISTANBUL HEALTH INDUSTRY CLUSTER ASSOCIATION (ISHEALTH)**, PIC 884148987
- **BUNDESINSTITUT FUR ARZNEIMITTEL UND MEDIZINPRODUKTE (BfArM)**, PIC 998293931
- **MINISTERIO DE UNIVERSIDADES (MUNI)**, PIC 894297612
- **CROUS DE LILLE (CROUS)**, PIC 904883901

- **Métropole européenne de Lille (MEL)**, PIC 928651617
- **REGION HAUTS-DE-FRANCE (RHF)**, PIC 921692546
- **RECTORAT DE L ACADEMIE DE LILLE (RAL)**, PIC 887192653
- **EURASANTE (EURASANTE)**, PIC 939183489
- **DIPUTACION PROVINCIAL DE ALICANTE (DPA)**, PIC 984700448
- **Ayuntamiento de Sant Joan d'Alacant (ASJA)**, PIC 939775092
- **OFICINA DE PROPIEDAD INTELECTUAL DE LA UNION EUROPEA (EUIPO)**, PIC 884213977
- **AYUNTAMIENTO DE ELCHE (AYE)**, PIC 951341566
- **Bogazici Universitesi Teknoloji Transfer Ofisi Anonim Sirketi (BUTTO)**, PIC 886377950
- **European Association of Erasmus Coordinators (EAEC)**, PIC 949132488
- **ASOCIATIA TRANSILVANIA IT (TITC)**, PIC 900017508
- **SPITALUL CLINIC JUDETEAN DE URGENTA CLUJ (SCJU CJ)**, PIC 998139895
- **Fundatia pentru Studiul Nanoneurostiintelor si Neuroregenerarii (RoNeuro)**, PIC 905749238
- **MINISTERUL SANATATII (MINSAN)**, PIC 999831478
- **Istanbul Metropolitan Municipality (IMM)**, PIC 998498795
- **SIDEKICKHEALTH EHF (SKH)**, PIC 916535347
- **INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET AUTOMATIQUE (INRIA)**, PIC 999547074
- **CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS (CNRS)**, PIC 999997930
- **INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE (INSERM)**, PIC 999997833

Associated partners must implement the action tasks attributed to them in Annex 1 in accordance with Article 11. They may not charge contributions to the action (no lump sum contributions) and the costs for their tasks are not eligible (may not be included in the estimated budget in Annex 2).

The tasks must be set out in Annex 1.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interests), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the associated partners.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the associated partners.

9.2 Third parties giving in-kind contributions to the action

Other third parties may give in-kind contributions to the action (i.e. personnel, equipment, other goods, works and services, etc. which are free-of-charge), if necessary for the implementation.

Third parties giving in-kind contributions do not implement any action tasks. They may not charge contributions to the action (no lump sum contributions) and the costs for the in-kind contributions are not eligible (may not be included in the estimated budget in Annex 2).

The third parties and their in-kind contributions should be set out in Annex 1.

9.3 Subcontractors

Subcontractors may participate in the action, if necessary for the implementation.

Subcontractors must implement their action tasks in accordance with Article 11. The beneficiaries' costs for subcontracting are considered entirely covered by the lump sum contributions for implementing the work packages (irrespective of the actual subcontracting costs incurred, if any).

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the subcontractors.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the subcontractors.

9.4 Recipients of financial support to third parties

If the action includes providing financial support to third parties (e.g. grants, prizes or similar forms of support), the beneficiaries must ensure that their contractual obligations under Articles 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the third parties receiving the support (recipients).

The beneficiaries must also ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the recipients.

ARTICLE 10 — PARTICIPANTS WITH SPECIAL STATUS

10.1 Non-EU participants

Participants which are established in a non-EU country (if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)

- for the submission of certificates under Article 24: use qualified external auditors which are independent and comply with comparable standards as those set out in EU Directive 2006/43/EC¹¹
- for the controls under Article 25: allow for checks, reviews, audits and investigations (including on-the-spot checks, visits and inspections) by the bodies mentioned in that Article (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.).

Special rules on dispute settlement apply (see Data Sheet, Point 5).

10.2 Participants which are international organisations

Participants which are international organisations (IOs; if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use either independent public officers or external auditors which comply with comparable standards as those set out in EU Directive 2006/43/EC
- for the controls under Article 25: to allow for the checks, reviews, audits and investigations by the bodies mentioned in that Article, taking into account the specific agreements concluded by them and the EU (if any).

For such participants, nothing in the Agreement will be interpreted as a waiver of their privileges or immunities, as accorded by their constituent documents or international law.

Special rules on applicable law and dispute settlement apply (see Article 43 and Data Sheet, Point 5).

10.3 Pillar-assessed participants

Pillar-assessed participants (if any) may rely on their own systems, rules and procedures, in so far as they have been positively assessed and do not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries.

‘Pillar-assessment’ means a review by the European Commission on the systems, rules and procedures which participants use for managing EU grants (in particular internal control system, accounting system, external audits, financing of third parties, rules on recovery and exclusion, information on recipients and protection of personal data; see Article 154 EU Financial Regulation 2018/1046).

Participants with a positive pillar assessment may rely on their own systems, rules and procedures, in particular for:

- record-keeping (Article 20): may be done in accordance with internal standards, rules and procedures

¹¹ Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts or similar national regulations (OJ L 157, 9.6.2006, p. 87).

- currency conversion for financial statements (Article 21): may be done in accordance with usual accounting practices
- guarantees (Article 23): for public law bodies, prefinancing guarantees are not needed
- certificates (Article 24):
 - certificates on the financial statements (CFS): may be provided by their regular internal or external auditors and in accordance with their internal financial regulations and procedures
 - certificates on usual accounting practices (CoMUC): are not needed if those practices are covered by an ex-ante assessment

and use the following specific rules, for:

- recoveries (Article 22): in case of financial support to third parties, there will be no recovery if the participant has done everything possible to retrieve the undue amounts from the third party receiving the support (including legal proceedings) and non-recovery is not due to an error or negligence on its part
- checks, reviews, audits and investigations by the EU (Article 25): will be conducted taking into account the rules and procedures specifically agreed between them and the framework agreement (if any)
- impact evaluation (Article 26): will be conducted in accordance with the participant's internal rules and procedures and the framework agreement (if any)
- grant agreement suspension (Article 31): certain costs incurred during grant suspension are eligible (notably, minimum costs necessary for a possible resumption of the action and costs relating to contracts which were entered into before the pre-information letter was received and which could not reasonably be suspended, reallocated or terminated on legal grounds)
- grant agreement termination (Article 32): the final grant amount and final payment will be calculated taking into account also costs relating to contracts due for execution only after termination takes effect, if the contract was entered into before the pre-information letter was received and could not reasonably be terminated on legal grounds
- liability for damages (Article 33.2): the granting authority must be compensated for damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement only if the damage is due to an infringement of the participant's internal rules and procedures or due to a violation of third parties' rights by the participant or one of its employees or individual for whom the employees are responsible.

Participants whose pillar assessment covers procurement and granting procedures may also do purchases, subcontracting and financial support to third parties (Article 6.2) in accordance with their internal rules and procedures for purchases, subcontracting and financial support.

Participants whose pillar assessment covers data protection rules may rely on their internal standards, rules and procedures for data protection (Article 15).



The participants may however not rely on provisions which would breach the principle of equal treatment of applicants or beneficiaries or call into question the decision awarding the grant, such as in particular:

- eligibility (Article 6)
- consortium roles and set-up (Articles 7-9)
- security and ethics (Articles 13, 14)
- IPR (including background and results, access rights and rights of use), communication, dissemination and visibility (Articles 16 and 17)
- information obligation (Article 19)
- payment, reporting and amendments (Articles 21, 22 and 39)
- rejections, reductions, suspensions and terminations (Articles 27, 28, 29-32)

If the pillar assessment was subject to remedial measures, reliance on the internal systems, rules and procedures is subject to compliance with those remedial measures.

Participants whose assessment has not yet been updated to cover (the new rules on) data protection may rely on their internal systems, rules and procedures, provided that they ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subject
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the personal data.

Participants must inform the coordinator without delay of any changes to the systems, rules and procedures that were part of the pillar assessment. The coordinator must immediately inform the granting authority.

Pillar-assessed participants that have also concluded a framework agreement with the EU, may moreover — under the same conditions as those above (i.e. not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries) — rely on provisions set out in that framework agreement.

SECTION 2 RULES FOR CARRYING OUT THE ACTION

ARTICLE 11 — PROPER IMPLEMENTATION OF THE ACTION



11.1 Obligation to properly implement the action

The beneficiaries must implement the action as described in Annex 1 and in compliance with the provisions of the Agreement, the call conditions and all legal obligations under applicable EU, international and national law.

11.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 12 — CONFLICT OF INTERESTS

12.1 Conflict of interests

The beneficiaries must take all measures to prevent any situation where the impartial and objective implementation of the Agreement could be compromised for reasons involving family, emotional life, political or national affinity, economic interest or any other direct or indirect interest ('conflict of interests').

They must formally notify the granting authority without delay of any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

The granting authority may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.

12.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the beneficiary may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 13 — CONFIDENTIALITY AND SECURITY

13.1 Sensitive information

The parties must keep confidential any data, documents or other material (in any form) that is identified as sensitive in writing ('sensitive information') — during the implementation of the action and for at least until the time-limit set out in the Data Sheet (see Point 6).

If a beneficiary requests, the granting authority may agree to keep such information confidential for a longer period.

Unless otherwise agreed between the parties, they may use sensitive information only to implement the Agreement.

The beneficiaries may disclose sensitive information to their personnel or other participants involved in the action only if they:



- (a) need to know it in order to implement the Agreement and
- (b) are bound by an obligation of confidentiality.

The granting authority may disclose sensitive information to its staff and to other EU institutions and bodies.

It may moreover disclose sensitive information to third parties, if:

- (a) this is necessary to implement the Agreement or safeguard the EU financial interests and
- (b) the recipients of the information are bound by an obligation of confidentiality.

The confidentiality obligations no longer apply if:

- (a) the disclosing party agrees to release the other party
- (b) the information becomes publicly available, without breaching any confidentiality obligation
- (c) the disclosure of the sensitive information is required by EU, international or national law.

Specific confidentiality rules (if any) are set out in Annex 5.

13.2 Classified information

The parties must handle classified information in accordance with the applicable EU, international or national law on classified information (in particular, Decision 2015/444¹² and its implementing rules).

Deliverables which contain classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving classified information may be subcontracted only after explicit approval (in writing) from the granting authority.

Classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

Specific security rules (if any) are set out in Annex 5.

13.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 14 — ETHICS AND VALUES

14.1 Ethics

¹² Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles.

Specific ethics rules (if any) are set out in Annex 5.

14.2 Values

The beneficiaries must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities).

Specific rules on values (if any) are set out in Annex 5.

14.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 15 — DATA PROTECTION

15.1 Data processing by the granting authority

Any personal data under the Agreement will be processed under the responsibility of the data controller of the granting authority in accordance with and for the purposes set out in the Portal Privacy Statement.

For grants where the granting authority is the European Commission, an EU regulatory or executive agency, joint undertaking or other EU body, the processing will be subject to Regulation 2018/1725¹³.

15.2 Data processing by the beneficiaries

The beneficiaries must process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679¹⁴).

They must ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subjects
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes

¹³ Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

¹⁴ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC ('GDPR') (OJ L 119, 4.5.2016, p. 1).



- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the data.

The beneficiaries may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement. The beneficiaries must ensure that the personnel is under a confidentiality obligation.

The beneficiaries must inform the persons whose data are transferred to the granting authority and provide them with the Portal Privacy Statement.

15.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 16 — INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE

16.1 Background and access rights to background

The beneficiaries must give each other and the other participants access to the background identified as needed for implementing the action, subject to any specific rules in Annex 5.

‘Background’ means any data, know-how or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that is:

- (a) held by the beneficiaries before they acceded to the Agreement and
- (b) needed to implement the action or exploit the results.

If background is subject to rights of a third party, the beneficiary concerned must ensure that it is able to comply with its obligations under the Agreement.

16.2 Ownership of results

The granting authority does not obtain ownership of the results produced under the action.

‘Results’ means any tangible or intangible effect of the action, such as data, know-how or information, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights.

16.3 Rights of use of the granting authority on materials, documents and information received for policy, information, communication, dissemination and publicity purposes

The granting authority has the right to use non-sensitive information relating to the action and materials and documents received from the beneficiaries (notably summaries for publication, deliverables, as well as any other material, such as pictures or audio-visual material, in paper or electronic form) for policy information, communication, dissemination and publicity purposes — during the action or afterwards.

The right to use the beneficiaries' materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence, which includes the following rights:

- (a) **use for its own purposes** (in particular, making them available to persons working for the granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services)
- (b) **distribution to the public** (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes)
- (c) **editing or redrafting** (including shortening, summarising, inserting other elements (e.g. meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation)
- (d) **translation**
- (e) **storage** in paper, electronic or other form
- (f) **archiving**, in line with applicable document-management rules
- (g) the right to authorise **third parties** to act on its behalf or sub-license to third parties the modes of use set out in Points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority and
- (h) **processing**, analysing, aggregating the materials, documents and information received and **producing derivative works**.

The rights of use are granted for the whole duration of the industrial or intellectual property rights concerned.

If materials or documents are subject to moral rights or third party rights (including intellectual property rights or rights of natural persons on their image and voice), the beneficiaries must ensure that they comply with their obligations under this Agreement (in particular, by obtaining the necessary licences and authorisations from the rights holders concerned).

Where applicable, the granting authority will insert the following information:

“© – [year] – [name of the copyright owner]. All rights reserved. Licensed to the [name of granting authority] under conditions.”

16.4 Specific rules on IPR, results and background

Specific rules regarding intellectual property rights, results and background (if any) are set out in Annex 5.

16.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

ARTICLE 17 — COMMUNICATION, DISSEMINATION AND VISIBILITY

17.1 Communication — Dissemination — Promoting the action

Unless otherwise agreed with the granting authority, the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner.

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

17.2 Visibility — European flag and funding statement

Unless otherwise agreed with the granting authority, communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge the EU support and display the European flag (emblem) and funding statement (translated into local languages, where appropriate):



Funded by the
European Union



Co-funded by the
European Union



Funded by the
European Union



Co-funded by the
European Union

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.



Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.

For the purposes of their obligations under this Article, the beneficiaries may use the emblem without first obtaining approval from the granting authority. This does not, however, give them the right to exclusive use. Moreover, they may not appropriate the emblem or any similar trademark or logo, either by registration or by any other means.

17.3 Quality of information — Disclaimer

Any communication or dissemination activity related to the action must use factually accurate information.

Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”

17.4 Specific communication, dissemination and visibility rules

Specific communication, dissemination and visibility rules (if any) are set out in Annex 5.

17.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 18 — SPECIFIC RULES FOR CARRYING OUT THE ACTION

18.1 Specific rules for carrying out the action

Specific rules for implementing the action (if any) are set out in Annex 5.

18.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

SECTION 3 GRANT ADMINISTRATION

ARTICLE 19 — GENERAL INFORMATION OBLIGATIONS

19.1 Information requests



The beneficiaries must provide — during the action or afterwards and in accordance with Article 7 — any information requested in order to verify eligibility of the lump sum contributions declared, proper implementation of the action and compliance with the other obligations under the Agreement.

The information provided must be accurate, precise and complete and in the format requested, including electronic format.

19.2 Participant Register data updates

The beneficiaries must keep — at all times, during the action or afterwards — their information stored in the Portal Participant Register up to date, in particular, their name, address, legal representatives, legal form and organisation type.

19.3 Information about events and circumstances which impact the action

The beneficiaries must immediately inform the granting authority (and the other beneficiaries) of any of the following:

- (a) **events** which are likely to affect or delay the implementation of the action or affect the EU's financial interests, in particular:
 - (i) changes in their legal, financial, technical, organisational or ownership situation (including changes linked to one of the exclusion grounds listed in the declaration of honour signed before grant signature)
 - (ii) linked action information: not applicable
- (b) **circumstances** affecting:
 - (i) the decision to award the grant or
 - (ii) compliance with requirements under the Agreement.

19.4 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 20 — RECORD-KEEPING

20.1 Keeping records and supporting documents

The beneficiaries must — at least until the time-limit set out in the Data Sheet (see Point 6) — keep records and other supporting documents to prove the proper implementation of the action (proper implementation of the work and/or achievement of the results as described in Annex 1) in line with the accepted standards in the respective field (if any); beneficiaries do not need to keep specific records on the actual costs incurred.

The records and supporting documents must be made available upon request (see Article 19) or in the context of checks, reviews, audits or investigations (see Article 25).

If there are on-going checks, reviews, audits, investigations, litigation or other pursuits of claims under the Agreement (including the extension of findings; see Article 25), the beneficiaries must keep these records and other supporting documentation until the end of these procedures.

The beneficiaries must keep the original documents. Digital and digitalised documents are considered originals if they are authorised by the applicable national law. The granting authority may accept non-original documents if they offer a comparable level of assurance.

20.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, lump sum contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 21 — REPORTING

21.1 Continuous reporting

The beneficiaries must continuously report on the progress of the action (e.g. **deliverables, milestones, outputs/outcomes, critical risks, indicators**, etc; if any), in the Portal Continuous Reporting tool and in accordance with the timing and conditions it sets out (as agreed with the granting authority).

Standardised deliverables (e.g. progress reports not linked to payments, reports on cumulative expenditure, special reports, etc; if any) must be submitted using the templates published on the Portal.

21.2 Periodic reporting: Technical reports and financial statements

In addition, the beneficiaries must provide reports to request payments, in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2):

- for additional prefinancings (if any): **an additional prefinancing report**
- for interim payments (if any) and the final payment: a **periodic report**

The prefinancing and periodic reports include a technical and financial part.

The technical part includes an overview of the action implementation. It must be prepared using the template available in the Portal Periodic Reporting tool.

The financial part of the additional prefinancing report includes a statement on the use of the previous prefinancing payment.

The financial part of the periodic report includes:

- the financial statement (consolidated statement for the consortium)
- the explanation on the use of resources (or detailed cost reporting table): not applicable
- the certificates on the financial statements (CFS): not applicable.



The **financial statement** must contain the lump sum contributions indicated in Annex 2, for the work packages that were completed during the reporting period.

For the last reporting period, the beneficiaries may exceptionally also declare partial lump sum contributions for work packages that were not completed (e.g. due to force majeure or technical impossibility).

Lump sum contributions which are not declared in a financial statement will not be taken into account by the granting authority.

By signing the financial statement (directly in the Portal Periodic Reporting tool), the coordinator confirms (on behalf of the consortium) that:

- the information provided is complete, reliable and true
- the lump sum contributions declared are eligible (in particular, the work packages have been completed, that the work has been properly implemented and/or the results were achieved in accordance with Annex 1; see Article 6)
- the proper implementation and/or achievement can be substantiated by adequate records and supporting documents (see Article 20) that will be produced upon request (see Article 19) or in the context of checks, reviews, audits and investigations (see Article 25).

In case of recoveries (see Article 22), beneficiaries will be held responsible also for the lump sum contributions declared for their affiliated entities (if any).

21.3 Currency for financial statements and conversion into euros

The financial statements must be drafted in euro.

21.4 Reporting language

The reporting must be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

21.5 Consequences of non-compliance

If a report submitted does not comply with this Article, the granting authority may suspend the payment deadline (see Article 29) and apply other measures described in Chapter 5.

If the coordinator breaches its reporting obligations, the granting authority may terminate the grant or the coordinator's participation (see Article 32) or apply other measures described in Chapter 5.

ARTICLE 22 — PAYMENTS AND RECOVERIES — CALCULATION OF AMOUNTS DUE

22.1 Payments and payment arrangements

Payments will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

They will be made in euro to the bank account indicated by the coordinator (see Data Sheet, Point 4.2)



and must be distributed without unjustified delay (restrictions may apply to distribution of the initial prefinancing payment; see Data Sheet, Point 4.2).

Payments to this bank account will discharge the granting authority from its payment obligation.

The cost of payment transfers will be borne as follows:

- the granting authority bears the cost of transfers charged by its bank
- the beneficiary bears the cost of transfers charged by its bank
- the party causing a repetition of a transfer bears all costs of the repeated transfer.

Payments by the granting authority will be considered to have been carried out on the date when they are debited to its account.

22.2 Recoveries

Recoveries will be made, if — at beneficiary termination, final payment or afterwards — it turns out that the granting authority has paid too much and needs to recover the amounts undue.

The general liability regime for recoveries (first-line liability) is as follows: At final payment, the coordinator will be fully liable for recoveries, even if it has not been the final recipient of the undue amounts. At beneficiary termination or after final payment, recoveries will be made directly against the beneficiaries concerned.

Beneficiaries will be fully liable for repaying the debts of their affiliated entities.

In case of enforced recoveries (see Article 22.4):

- the beneficiaries will be jointly and severally liable for repaying debts of another beneficiary under the Agreement (including late-payment interest), if required by the granting authority (see Data Sheet, Point 4.4)
- affiliated entities will be held liable for repaying debts of their beneficiaries under the Agreement (including late-payment interest), if required by the granting authority (see Data Sheet, Point 4.4).

22.3 Amounts due

22.3.1 Prefinancing payments

The aim of the prefinancing is to provide the beneficiaries with a float.

It remains the property of the EU until the final payment.

For **initial prefinancings** (if any), the amount due, schedule and modalities are set out in the Data Sheet (see Point 4.2).

For **additional prefinancings** (if any), the amount due, schedule and modalities are also set out in the Data Sheet (see Point 4.2). However, if the statement on the use of the previous prefinancing payment shows that less than 70% was used, the amount set out in the Data Sheet will be reduced by the difference between the 70% threshold and the amount used.



Prefinancing payments (or parts of them) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.2 Amount due at beneficiary termination — Recovery

In case of beneficiary termination, the granting authority will determine the provisional amount due for the beneficiary concerned.

This will be done on the basis of work packages already completed in previous interim payments. Payments for ongoing/not yet completed work packages which the beneficiary was working on before termination (if any) will therefore be made only later on, with the next interim or final payments when those work packages have been completed.

The **amount due** will be calculated in the following step:

Step 1 — Calculation of the total accepted EU contribution

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the 'accepted EU contribution' for the beneficiary, on the basis of the beneficiary's lump sum contributions for the work packages which were approved in previous interim payments.

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the 'total accepted EU contribution' for the beneficiary.

The **balance** is then calculated by deducting the payments received (if any; see report on the distribution of payments in Article 32), from the total accepted EU contribution:

$$\begin{aligned} &\{\text{total accepted EU contribution for the beneficiary} \\ &\text{minus} \\ &\{\text{prefinancing and interim payments received (if any)}\}\}. \end{aligned}$$

If the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount due, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered and ask this amount to be paid to the coordinator (**confirmation letter**).

22.3.3 Interim payments

Interim payments reimburse the eligible lump sum contributions claimed for work packages implemented during the reporting periods (if any).

Interim payments (if any) will be made in accordance with the schedule and modalities set out the Data Sheet (see Point 4.2).

Payment is subject to the approval of the periodic report and the work packages declared. Their approval does not imply recognition of compliance, authenticity, completeness or correctness of their content.

Incomplete work packages and work packages that have not been delivered or cannot be approved will be rejected (see Article 27).

The **interim payment** will be calculated by the granting authority in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the interim payment ceiling

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the action for the reporting period, by calculating the lump sum contributions for the approved work packages.

After that, the granting authority will take into account grant reductions from beneficiary termination (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the interim payment ceiling

The resulting amount is then capped to ensure that the total amount of prefinancing and interim payments (if any) does not exceed the interim payment ceiling set out in the Data Sheet (see Point 4.2).

Interim payments (or parts of them) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.4 Final payment — Final grant amount — Revenues and Profit — Recovery

The final payment (payment of the balance) reimburses the remaining eligible lump sum contributions claimed for the implemented work packages (if any).

The final payment will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

Payment is subject to the approval of the final periodic report and the work packages declared. Their

approval does not imply recognition of compliance, authenticity, completeness or correctness of their content.

Work packages (or parts of them) that have not been delivered or cannot be approved will be rejected (see Article 27).

The **final grant amount for the action** will be calculated in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the maximum grant amount

Step 3 — Reduction due to the no-profit rule

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the action for all reporting periods, by calculating the lump sum contributions for the approved work packages.

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the maximum grant amount

Not applicable

Step 3 — Reduction due to the no-profit rule

Not applicable

The **balance** (final payment) is then calculated by deducting the total amount of prefinancing and interim payments already made (if any), from the final grant amount:

$$\begin{aligned} &\{\text{final grant amount} \\ &\text{minus} \\ &\{\text{prefinancing and interim payments made (if any)}\}\}. \end{aligned}$$

If the balance is **positive**, it will be **paid** to the coordinator.

The final payment (or part of it) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

If the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the coordinator:



- formally notifying the intention to recover, the final grant amount, the amount to be recovered and the reasons why
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered (**confirmation letter**), together with a **debit note** with the terms and date for payment.

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.3.5 Audit implementation after final payment — Revised final grant amount — Recovery

If — after the final payment (in particular, after checks, reviews, audits or investigations; see Article 25) — the granting authority rejects lump sum contributions (see Article 27) or reduces the grant (see Article 28), it will calculate the **revised final grant amount** for the beneficiary concerned.

The **beneficiary revised final grant amount** will be calculated in the following step:

Step 1 — Calculation of the revised total accepted EU contribution

Step 1 — Calculation of the revised total accepted EU contribution

The granting authority will first calculate the ‘revised accepted EU contribution’ for the beneficiary, by calculating the ‘revised accepted contributions’.

After that, it will take into account grant reductions (if any). The resulting ‘revised total accepted EU contribution’ is the beneficiary revised final grant amount.

If the revised final grant amount is lower than the beneficiary’s final grant amount (i.e. its share in the final grant amount for the action), it will be **recovered** in accordance with the following procedure:

The **beneficiary final grant amount** (i.e. share in the final grant amount for the action) is calculated as follows:

$$\left\{ \begin{array}{l} \text{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action} \end{array} \right\} \times \text{final grant amount for the action}.$$

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered (**confirmation letter**), together with a **debit note** with the terms and the date for payment.

Recoveries against affiliated entities (if any) will be handled through their beneficiaries.

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.4 Enforced recovery

If payment is not made by the date specified in the debit note, the amount due will be recovered:

- (a) by offsetting the amount — without the coordinator or beneficiary's consent — against any amounts owed to the coordinator or beneficiary by the granting authority.

In exceptional circumstances, to safeguard the EU financial interests, the amount may be offset before the payment date specified in the debit note.

For grants where the granting authority is the European Commission or an EU executive agency, debts may also be offset against amounts owed by other Commission services or executive agencies.

- (b) by drawing on the financial guarantee(s) (if any)
- (c) by holding other beneficiaries jointly and severally liable (if any; see Data Sheet, Point 4.4)
- (d) by holding affiliated entities jointly and severally liable (if any, see Data Sheet, Point 4.4)
- (e) by taking legal action (see Article 43) or, provided that the granting authority is the European Commission or an EU executive agency, by adopting an enforceable decision under Article 299 of the Treaty on the Functioning of the EU (TFEU) and Article 100(2) of EU Financial Regulation 2018/1046.

The amount to be recovered will be increased by **late-payment interest** at the rate set out in Article 23.5, from the day following the payment date in the debit note, up to and including the date the full payment is received.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2015/2366¹⁵ applies.

For grants where the granting authority is an EU executive agency, enforced recovery by offsetting or enforceable decision will be done by the services of the European Commission (see also Article 43).

22.5 Consequences of non-compliance

22.5.1 If the granting authority does not pay within the payment deadlines (see above), the beneficiaries are entitled to **late-payment interest** at the reference rate applied by the European Central Bank (ECB) for its main refinancing operations in euros, plus the percentage specified in the

¹⁵ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (OJ L 337, 23.12.2015, p. 35).



Data Sheet (Point 4.2). The ECB reference rate to be used is the rate in force on the first day of the month in which the payment deadline expires, as published in the C series of the *Official Journal of the European Union*.

If the late-payment interest is lower than or equal to EUR 200, it will be paid to the coordinator only on request submitted within two months of receiving the late payment.

Late-payment interest is not due if all beneficiaries are EU Member States (including regional and local government authorities or other public bodies acting on behalf of a Member State for the purpose of this Agreement).

If payments or the payment deadline are suspended (see Articles 29 and 30), payment will not be considered as late.

Late-payment interest covers the period running from the day following the due date for payment (see above), up to and including the date of payment.

Late-payment interest is not considered for the purposes of calculating the final grant amount.

22.5.2 If the coordinator breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the coordinator may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 23 — GUARANTEES

23.1 Prefinancing guarantee

If required by the granting authority (see Data Sheet, Point 4.2), the beneficiaries must provide (one or more) prefinancing guarantee(s) in accordance with the timing and the amounts set out in the Data Sheet.

The coordinator must submit them to the granting authority in due time before the prefinancing they are linked to.

The guarantees must be drawn up using the template published on the Portal and fulfil the following conditions:

- (a) be provided by a bank or approved financial institution established in the EU or — if requested by the coordinator and accepted by the granting authority — by a third party or a bank or financial institution established outside the EU offering equivalent security
- (b) the guarantor stands as first-call guarantor and does not require the granting authority to first have recourse against the principal debtor (i.e. the beneficiary concerned) and
- (c) remain explicitly in force until the final payment and, if the final payment takes the form of a recovery, until five months after the debit note is notified to a beneficiary.

They will be released within the following month.

23.2 Consequences of non-compliance

If the beneficiaries breach their obligation to provide the prefinancing guarantee, the prefinancing will not be paid.

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 24 — CERTIFICATES

Not applicable

ARTICLE 25 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS

25.1 Granting authority checks, reviews and audits

25.1.1 Internal checks

The granting authority may — during the action or afterwards — check the proper implementation of the action and compliance with the obligations under the Agreement, including assessing lump sum contributions, deliverables and reports.

25.1.2 Project reviews

The granting authority may carry out reviews on the proper implementation of the action and compliance with the obligations under the Agreement (general project reviews or specific issues reviews).

Such project reviews may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiary concerned and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent, outside experts. If it uses outside experts, the coordinator or beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The coordinator or beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information and data in addition to deliverables and reports already submitted. The granting authority may request beneficiaries to provide such information to it directly. Sensitive information and documents will be treated in accordance with Article 13.

The coordinator or beneficiary concerned may be requested to participate in meetings, including with the outside experts.

For **on-the-spot visits**, the beneficiary concerned must allow access to sites and premises (including to the outside experts) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the review findings, a **project review report** will be drawn up.

The granting authority will formally notify the project review report to the coordinator or beneficiary concerned, which has 30 days from receiving notification to make observations.



Project reviews (including project review reports) will be in the language of the Agreement.

25.1.3 Audits

The granting authority may carry out audits on the proper implementation of the action and compliance with the obligations under the Agreement.

Such audits may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the beneficiary concerned and will be considered to start on the date of the notification.

The granting authority may use its own audit service, delegate audits to a centralised service or use external audit firms. If it uses an external firm, the beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information (including complete accounts, individual salary statements or other personal data) to verify compliance with the Agreement. Sensitive information and documents will be treated in accordance with Article 13.

For **on-the-spot** visits, the beneficiary concerned must allow access to sites and premises (including for the external audit firm) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the audit findings, a **draft audit report** will be drawn up.

The auditors will formally notify the draft audit report to the beneficiary concerned, which has 30 days from receiving notification to make observations (contradictory audit procedure).

The **final audit report** will take into account observations by the beneficiary concerned and will be formally notified to them.

Audits (including audit reports) will be in the language of the Agreement.

25.2 European Commission checks, reviews and audits in grants of other granting authorities

Where the granting authority is not the European Commission, the latter has the same rights of checks, reviews and audits as the granting authority.

25.3 Access to records for assessing simplified forms of funding

The beneficiaries must give the European Commission access to their statutory records for the periodic assessment of simplified forms of funding which are used in EU programmes.

25.4 OLAF, EPPO and ECA audits and investigations

The following bodies may also carry out checks, reviews, audits and investigations — during the action or afterwards:

- the European Anti-Fraud Office (OLAF) under Regulations No 883/2013¹⁶ and No 2185/96¹⁷
- the European Public Prosecutor's Office (EPPO) under Regulation 2017/1939
- the European Court of Auditors (ECA) under Article 287 of the Treaty on the Functioning of the EU (TFEU) and Article 257 of EU Financial Regulation 2018/1046.

If requested by these bodies, the beneficiary concerned must provide full, accurate and complete information in the format requested (including complete accounts, individual salary statements or other personal data, including in electronic format) and allow access to sites and premises for on-the-spot visits or inspections — as provided for under these Regulations.

To this end, the beneficiary concerned must keep all relevant information relating to the action, at least until the time-limit set out in the Data Sheet (Point 6) and, in any case, until any ongoing checks, reviews, audits, investigations, litigation or other pursuits of claims have been concluded.

25.5 Consequences of checks, reviews, audits and investigations — Extension of findings

25.5.1 Consequences of checks, reviews, audits and investigations in this grant

Findings in checks, reviews, audits or investigations carried out in the context of this grant may lead to rejections (see Article 27), grant reduction (see Article 28) or other measures described in Chapter 5.

Rejections or grant reductions after the final payment will lead to a revised final grant amount (see Article 22).

Findings in checks, reviews, audits or investigations during the action implementation may lead to a request for amendment (see Article 39), to change the description of the action set out in Annex 1.

Checks, reviews, audits or investigations that find systemic or recurrent errors, irregularities, fraud or breach of obligations in any EU grant may also lead to consequences in other EU grants awarded under similar conditions ('extension to other grants').

Moreover, findings arising from an OLAF or EPPO investigation may lead to criminal prosecution under national law.

25.5.2 Extension from other grants

Findings of checks, reviews, audits or investigations in other grants may be extended to this grant, if:

- (a) the beneficiary concerned is found, in other EU grants awarded under similar conditions, to have committed systemic or recurrent errors, irregularities, fraud or breach of obligations that have a material impact on this grant and
- (b) those findings are formally notified to the beneficiary concerned — together with the list of

¹⁶ Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and repealing Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18/09/2013, p. 1).

¹⁷ Council Regulation (Euratom, EC) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15/11/1996, p. 2).

grants affected by the findings — within the time-limit for audits set out in the Data Sheet (see Point 6).

The granting authority will formally notify the beneficiary concerned of the intention to extend the findings and the list of grants affected.

If the extension concerns **rejections of lump sum contributions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings
- (b) the request to submit revised financial statements for all grants affected
- (c) the correction rate for extrapolation, established on the basis of the systemic or recurrent errors, to calculate the amounts to be rejected, if the beneficiary concerned:
 - (i) considers that the submission of revised financial statements is not possible or practicable or
 - (ii) does not submit revised financial statements.

If the extension concerns **grant reductions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings and
- (b) the **correction rate for extrapolation**, established on the basis of the systemic or recurrent errors and the principle of proportionality.

The beneficiary concerned has **60 days** from receiving notification to submit observations, revised financial statements or to propose a duly substantiated **alternative correction method/rate**.

On the basis of this, the granting authority will analyse the impact and decide on the implementation (i.e. start rejection or grant reduction procedures, either on the basis of the revised financial statements or the announced/alternative method/rate or a mix of those; see Articles 27 and 28).

25.6 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, lump sum contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 26 — IMPACT EVALUATIONS

26.1 Impact evaluation

The granting authority may carry out impact evaluations of the action, measured against the objectives and indicators of the EU programme funding the grant.

Such evaluations may be started during implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiaries and will be considered to start on the date of the notification.



If needed, the granting authority may be assisted by independent outside experts.

The coordinator or beneficiaries must provide any information relevant to evaluate the impact of the action, including information in electronic format.

26.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the granting authority may apply the measures described in Chapter 5.

CHAPTER 5 CONSEQUENCES OF NON-COMPLIANCE

SECTION 1 REJECTIONS AND GRANT REDUCTION

ARTICLE 27 — REJECTION OF CONTRIBUTIONS

27.1 Conditions

The granting authority will — at interim payment, final payment or afterwards — reject any lump sum contributions which are ineligible (see Article 6), in particular following checks, reviews, audits or investigations (see Article 25).

The rejection may also be based on the extension of findings from other grants to this grant (see Article 25).

Ineligible lump sum contributions will be rejected.

27.2 Procedure

If the rejection does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the rejection, the amounts and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the rejection (payment review procedure).

If the rejection leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

27.3 Effects

If the granting authority rejects lump sum contributions, it will deduct them from the lump sum contributions declared and then calculate the amount due (and, if needed, make a recovery; see Article 22).

ARTICLE 28 — GRANT REDUCTION

28.1 Conditions

The granting authority may — at beneficiary termination, final payment or afterwards — reduce the grant for a beneficiary, if:



- (a) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings; see Article 25.5).

The amount of the reduction will be calculated for each beneficiary concerned and proportionate to the seriousness and the duration of the errors, irregularities or fraud or breach of obligations, by applying an individual reduction rate to their accepted EU contribution.

28.2 Procedure

If the grant reduction does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the reduction, the amount to be reduced and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the reduction (payment review procedure).

If the grant reduction leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

28.3 Effects

If the granting authority reduces the grant, it will deduct the reduction and then calculate the amount due (and, if needed, make a recovery; see Article 22).

SECTION 2 SUSPENSION AND TERMINATION

ARTICLE 29 — PAYMENT DEADLINE SUSPENSION

29.1 Conditions

The granting authority may — at any moment — suspend the payment deadline if a payment cannot be processed because:

- (a) the required report (see Article 21) has not been submitted or is not complete or additional information is needed
- (b) there are doubts about the amount to be paid (e.g. ongoing extension procedure, queries about eligibility, need for a grant reduction, etc.) and additional checks, reviews, audits or investigations are necessary, or



- (c) there are other issues affecting the EU financial interests.

29.2 Procedure

The granting authority will formally notify the coordinator of the suspension and the reasons why.

The suspension will **take effect** the day the notification is sent.

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining time to pay (see Data Sheet, Point 4.2) will resume.

If the suspension exceeds two months, the coordinator may request the granting authority to confirm if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the report and the revised report is not submitted (or was submitted but is also rejected), the granting authority may also terminate the grant or the participation of the coordinator (see Article 32).

ARTICLE 30 — PAYMENT SUSPENSION

30.1 Conditions

The granting authority may — at any moment — suspend payments, in whole or in part for one or more beneficiaries, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings; see Article 25.5).

If payments are suspended for one or more beneficiaries, the granting authority will make partial payment(s) for the part(s) not suspended. If suspension concerns the final payment, the payment (or recovery) of the remaining amount after suspension is lifted will be considered to be the payment that closes the action.

30.2 Procedure

Before suspending payments, the granting authority will send a **pre-information letter** to the beneficiary concerned:



- formally notifying the intention to suspend payments and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

At the end of the suspension procedure, the granting authority will also inform the coordinator.

The suspension will **take effect** the day after the confirmation notification is sent.

If the conditions for resuming payments are met, the suspension will be **lifted**. The granting authority will formally notify the beneficiary concerned (and the coordinator) and set the suspension end date.

During the suspension, no prefinancing will be paid to the beneficiaries concerned. For interim payments, the periodic reports for all reporting periods except the last one (see Article 21) must not contain any financial statements from the beneficiary concerned (or its affiliated entities). The coordinator must include them in the next periodic report after the suspension is lifted or — if suspension is not lifted before the end of the action — in the last periodic report.

ARTICLE 31 — GRANT AGREEMENT SUSPENSION

31.1 Consortium-requested GA suspension

31.1.1 Conditions and procedure

The beneficiaries may request the suspension of the grant or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 35) — make implementation impossible or excessively difficult.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the suspension takes effect; this date may be before the date of the submission of the amendment request and
- the expected date of resumption.

The suspension will **take effect** on the day specified in the amendment.

Once circumstances allow for implementation to resume, the coordinator must immediately request another **amendment** of the Agreement to set the suspension end date, the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the amendment. This date may be before the date of the submission of the amendment request.

During the suspension, no prefinancing will be paid. Moreover, no work may be done. Ongoing work packages must be interrupted and no new work packages may be started.

31.2 EU-initiated GA suspension

31.2.1 Conditions

The granting authority may suspend the grant or any part of it, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings; see Article 25.5)
- (c) other:
 - (i) linked action issues: not applicable
 - (ii) additional GA suspension grounds: not applicable.

31.2.2 Procedure

Before suspending the grant, the granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to suspend the grant and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

The suspension will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification).

Once the conditions for resuming implementation of the action are met, the granting authority will formally notify the coordinator a **lifting of suspension letter**, in which it will set the suspension end date and invite the coordinator to request an amendment of the Agreement to set the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the lifting of suspension letter. This date may be before the date on which the letter is sent.

During the suspension, no prefinancing will be paid. Moreover, no work may be done. Ongoing work packages must be interrupted and no new work packages may be started.

The beneficiaries may not claim damages due to suspension by the granting authority (see Article 33).

Grant suspension does not affect the granting authority's right to terminate the grant or a beneficiary (see Article 32) or reduce the grant (see Article 28).

ARTICLE 32 — GRANT AGREEMENT OR BENEFICIARY TERMINATION

32.1 Consortium-requested GA termination

32.1.1 Conditions and procedure

The beneficiaries may request the termination of the grant.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the consortium ends work on the action ('end of work date') and
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

The termination will **take effect** on the termination date specified in the amendment.

If no reasons are given or if the granting authority considers the reasons do not justify termination, it may consider the grant terminated improperly.

32.1.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the lump sum contributions for activities implemented before the end of work date (see Article 22). Partial lump sum contributions for work packages that were not completed (e.g. due to technical reasons) may exceptionally be taken into account.

If the granting authority does not receive the report within the deadline, only lump sum contributions which are included in an approved periodic report will be taken into account (no contributions if no periodic report was ever approved).

Improper termination may lead to a grant reduction (see Article 28).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.2 Consortium-requested beneficiary termination

32.2.1 Conditions and procedure

The coordinator may request the termination of the participation of one or more beneficiaries, on request of the beneficiary concerned or on behalf of the other beneficiaries.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing)
- the date the beneficiary ends work on the action ('end of work date')
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

If the termination concerns the coordinator and is done without its agreement, the amendment request must be submitted by another beneficiary (acting on behalf of the consortium).

The termination will **take effect** on the termination date specified in the amendment.

If no information is given or if the granting authority considers that the reasons do not justify termination, it may consider the beneficiary to have been terminated improperly.

32.2.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work
- (iii) a second **request for amendment** (see Article 39) with other amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the reports submitted in previous interim payments (i.e. beneficiary's lump sum contributions for completed and approved work packages).

Lump sum contributions for ongoing/not yet completed work packages will have to be included in the periodic report for the next reporting periods when those work packages have been completed.

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the second request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the second request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

Improper termination may lead to a reduction of the grant (see Article 31) or grant termination (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.3 EU-initiated GA or beneficiary termination

32.3.1 Conditions

The granting authority may terminate the grant or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 40)
- (b) a change to the action or the legal, financial, technical, organisational or ownership situation of a beneficiary is likely to substantially affect the implementation of the action or calls into question the decision to award the grant (including changes linked to one of the exclusion grounds listed in the declaration of honour)
- (c) following termination of one or more beneficiaries, the necessary changes to the Agreement (and their impact on the action) would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (d) implementation of the action has become impossible or the changes necessary for its continuation would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (e) a beneficiary (or person with unlimited liability for its debts) is subject to bankruptcy proceedings or similar (including insolvency, winding-up, administration by a liquidator or court, arrangement with creditors, suspension of business activities, etc.)
- (f) a beneficiary (or person with unlimited liability for its debts) is in breach of social security or tax obligations
- (g) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has been found guilty of grave professional misconduct
- (h) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed fraud, corruption, or is involved in a criminal organisation, money laundering, terrorism-related crimes (including terrorism financing), child labour or human trafficking

- (i) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) was created under a different jurisdiction with the intent to circumvent fiscal, social or other legal obligations in the country of origin (or created another entity with this purpose)
- (j) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.)
- (k) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings; see Article 25.5)
- (l) despite a specific request by the granting authority, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its affiliated entities or associated partners that is in one of the situations under points (d), (f), (e), (g), (h), (i) or (j) and to reallocate its tasks, or
- (m) other:
 - (i) linked action issues: not applicable
 - (ii) additional GA termination grounds: not applicable.

32.3.2 Procedure

Before terminating the grant or participation of one or more beneficiaries, the granting authority will send a **pre-information letter** to the coordinator or beneficiary concerned:

- formally notifying the intention to terminate and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the termination and the date it will take effect (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

For beneficiary terminations, the granting authority will — at the end of the procedure — also inform the coordinator.

The termination will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification; ‘termination date’).

32.3.3 Effects

(a) for GA termination:

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the last open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the lump sum contributions for activities implemented before termination takes effect (see Article 22). Partial lump sum contributions for work packages that were not completed (e.g. due to technical reasons) may exceptionally be taken into account.

If the grant is terminated for breach of the obligation to submit reports, the coordinator may not submit any report after termination.

If the granting authority does not receive the report within the deadline, only lump sum contributions which are included in an approved periodic report will be taken into account (no contributions if no periodic report was ever approved).

Termination does not affect the granting authority's right to reduce the grant (see Article 28) or to impose administrative sanctions (see Article 34).

The beneficiaries may not claim damages due to termination by the granting authority (see Article 33).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

(b) for beneficiary termination:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work
- (iii) a **request for amendment** (see Article 39) with any amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the reports submitted in previous interim payments (i.e. beneficiary's lump sum contributions for completed and approved work packages).

Lump sum contributions for ongoing/not yet completed work packages will have to be included in the periodic report for the next reporting periods when those work packages have been completed.

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

SECTION 3 OTHER CONSEQUENCES: DAMAGES AND ADMINISTRATIVE SANCTIONS

ARTICLE 33 — DAMAGES

33.1 Liability of the granting authority

The granting authority cannot be held liable for any damage caused to the beneficiaries or to third parties as a consequence of the implementation of the Agreement, including for gross negligence.

The granting authority cannot be held liable for any damage caused by any of the beneficiaries or other participants involved in the action, as a consequence of the implementation of the Agreement.

33.2 Liability of the beneficiaries

The beneficiaries must compensate the granting authority for any damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement, provided that it was caused by gross negligence or wilful act.

The liability does not extend to indirect or consequential losses or similar damage (such as loss of profit, loss of revenue or loss of contracts), provided such damage was not caused by wilful act or by a breach of confidentiality.

ARTICLE 34 — ADMINISTRATIVE SANCTIONS AND OTHER MEASURES

Nothing in this Agreement may be construed as preventing the adoption of administrative sanctions (i.e. exclusion from EU award procedures and/or financial penalties) or other public law measures, in addition or as an alternative to the contractual measures provided under this Agreement (see,



for instance, Articles 135 to 145 EU Financial Regulation 2018/1046 and Articles 4 and 7 of Regulation 2988/95¹⁸).

SECTION 4 FORCE MAJEURE

ARTICLE 35 — FORCE MAJEURE

A party prevented by force majeure from fulfilling its obligations under the Agreement cannot be considered in breach of them.

‘Force majeure’ means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,
- was unforeseeable, exceptional situation and beyond the parties’ control,
- was not due to error or negligence on their part (or on the part of other participants involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects.

The parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible.

CHAPTER 6 FINAL PROVISIONS

ARTICLE 36 — COMMUNICATION BETWEEN THE PARTIES

36.1 Forms and means of communication — Electronic management

EU grants are managed fully electronically through the EU Funding & Tenders Portal (‘Portal’).

All communications must be made electronically through the Portal in accordance with the Portal Terms and Conditions and using the forms and templates provided there (except if explicitly instructed otherwise by the granting authority).

Communications must be made in writing and clearly identify the grant agreement (project number and acronym).

Communications must be made by persons authorised according to the Portal Terms and Conditions. For naming the authorised persons, each beneficiary must have designated — before the signature of this Agreement — a ‘legal entity appointed representative (LEAR)’. The role and tasks of the LEAR are stipulated in their appointment letter (see Portal Terms and Conditions).

¹⁸ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

If the electronic exchange system is temporarily unavailable, instructions will be given on the Portal.

36.2 Date of communication

The sending date for communications made through the Portal will be the date and time of sending, as indicated by the time logs.

The receiving date for communications made through the Portal will be the date and time the communication is accessed, as indicated by the time logs. Formal notifications that have not been accessed within 10 days after sending, will be considered to have been accessed (see Portal Terms and Conditions).

If a communication is exceptionally made on paper (by e-mail or postal service), general principles apply (i.e. date of sending/receipt). Formal notifications by registered post with proof of delivery will be considered to have been received either on the delivery date registered by the postal service or the deadline for collection at the post office.

If the electronic exchange system is temporarily unavailable, the sending party cannot be considered in breach of its obligation to send a communication within a specified deadline.

36.3 Addresses for communication

The Portal can be accessed via the Europa website.

The address for paper communications to the granting authority (if exceptionally allowed) is the official mailing address indicated on its website.

For beneficiaries, it is the legal address specified in the Portal Participant Register.

ARTICLE 37 — INTERPRETATION OF THE AGREEMENT

The provisions in the Data Sheet take precedence over the rest of the Terms and Conditions of the Agreement.

Annex 5 takes precedence over the Terms and Conditions.

The Terms and Conditions take precedence over the Annexes other than Annex 5.

Annex 2 takes precedence over Annex 1.

ARTICLE 38 — CALCULATION OF PERIODS AND DEADLINES

In accordance with Regulation No 1182/71¹⁹, periods expressed in days, months or years are calculated from the moment the triggering event occurs.

The day during which that event occurs is not considered as falling within the period.

‘Days’ means calendar days, not working days.

¹⁹ Regulation (EEC, Euratom) No 1182/71 of the Council of 3 June 1971 determining the rules applicable to periods, dates and time-limits (OJ L 124, 8/6/1971, p. 1).



ARTICLE 39 — AMENDMENTS

39.1 Conditions

The Agreement may be amended, unless the amendment entails changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

Amendments may be requested by any of the parties.

39.2 Procedure

The party requesting an amendment must submit a request for amendment signed directly in the Portal Amendment tool.

The coordinator submits and receives requests for amendment on behalf of the beneficiaries (see Annex 3). If a change of coordinator is requested without its agreement, the submission must be done by another beneficiary (acting on behalf of the other beneficiaries).

The request for amendment must include:

- the reasons why
- the appropriate supporting documents and
- for a change of coordinator without its agreement: the opinion of the coordinator (or proof that this opinion has been requested in writing).

The granting authority may request additional information.

If the party receiving the request agrees, it must sign the amendment in the tool within 45 days of receiving notification (or any additional information the granting authority has requested). If it does not agree, it must formally notify its disagreement within the same deadline. The deadline may be extended, if necessary for the assessment of the request. If no notification is received within the deadline, the request is considered to have been rejected.

An amendment **enters into force** on the day of the signature of the receiving party.

An amendment **takes effect** on the date of entry into force or other date specified in the amendment.

ARTICLE 40 — ACCESSION AND ADDITION OF NEW BENEFICIARIES

40.1 Accession of the beneficiaries mentioned in the Preamble

The beneficiaries which are not coordinator must accede to the grant by signing the accession form (see Annex 3) directly in the Portal Grant Preparation tool, within 30 days after the entry into force of the Agreement (see Article 44).

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 44).

If a beneficiary does not accede to the grant within the above deadline, the coordinator must — within

30 days — request an amendment (see Article 39) to terminate the beneficiary and make any changes necessary to ensure proper implementation of the action. This does not affect the granting authority's right to terminate the grant (see Article 32).

40.2 Addition of new beneficiaries

In justified cases, the beneficiaries may request the addition of a new beneficiary.

For this purpose, the coordinator must submit a request for amendment in accordance with Article 39. It must include an accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool.

New beneficiaries will assume the rights and obligations under the Agreement with effect from the date of their accession specified in the accession form (see Annex 3).

Additions are also possible in mono-beneficiary grants.

ARTICLE 41 — TRANSFER OF THE AGREEMENT

In justified cases, the beneficiary of a mono-beneficiary grant may request the transfer of the grant to a new beneficiary, provided that this would not call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiary must submit a request for **amendment** (see Article 39), with

- the reasons why
- the accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool and
- additional supporting documents (if required by the granting authority).

The new beneficiary will assume the rights and obligations under the Agreement with effect from the date of accession specified in the accession form (see Annex 3).

ARTICLE 42 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE GRANTING AUTHORITY

The beneficiaries may not assign any of their claims for payment against the granting authority to any third party, except if expressly approved in writing by the granting authority on the basis of a reasoned, written request by the coordinator (on behalf of the beneficiary concerned).

If the granting authority has not accepted the assignment or if the terms of it are not observed, the assignment will have no effect on it.

In no circumstances will an assignment release the beneficiaries from their obligations towards the granting authority.

ARTICLE 43 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES

43.1 Applicable law

The Agreement is governed by the applicable EU law, supplemented if necessary by the law of Belgium.

Special rules may apply for beneficiaries which are international organisations (if any; see Data Sheet, Point 5).

43.2 Dispute settlement

If a dispute concerns the interpretation, application or validity of the Agreement, the parties must bring action before the EU General Court — or, on appeal, the EU Court of Justice — under Article 272 of the Treaty on the Functioning of the EU (TFEU).

For non-EU beneficiaries (if any), such disputes must be brought before the courts of Brussels, Belgium — unless an international agreement provides for the enforceability of EU court judgements.

For beneficiaries with arbitration as special dispute settlement forum (if any; see Data Sheet, Point 5), the dispute will — in the absence of an amicable settlement — be settled in accordance with the Rules for Arbitration published on the Portal.

If a dispute concerns administrative sanctions, offsetting or an enforceable decision under Article 299 TFEU (see Articles 22 and 34), the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice — under Article 263 TFEU.

For grants where the granting authority is an EU executive agency (see Preamble), actions against offsetting and enforceable decisions must be brought against the European Commission (not against the granting authority; see also Article 22).

ARTICLE 44 — ENTRY INTO FORCE

The Agreement will enter into force on the day of signature by the granting authority or the coordinator, depending on which is later.

SIGNATURES

For the coordinator

For the granting authority



ANNEX 1



Erasmus+ (ERASMUS+)

Description of the action (DoA)

Part A

Part B

DESCRIPTION OF THE ACTION (PART A)

COVER PAGE

Part A of the Description of the Action (DoA) must be completed directly on the Portal Grant Preparation screens.

PROJECT	
Grant Preparation (General Information screen) — Enter the info.	
Project number:	101124386
Project name:	European University of Brain and Technology
Project acronym:	NeurotechEU
Call:	ERASMUS-EDU-2023-EUR-UNIV
Topic:	ERASMUS-EDU-2023-EUR-UNIV-1
Type of action:	ERASMUS-LS
Service:	EACEA/A/01
Project starting date:	fixed date: 1 November 2023
Project duration:	48 months

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PROJECT SUMMARY

Project summary

Grant Preparation (General Information screen) — Provide an overall description of your project (including context and overall objectives, planned activities and main achievements, and expected results and impacts (on target groups, change procedures, capacities, innovation etc)). This summary should give readers a clear idea of what your project is about.

Use the project summary from your proposal.

The European University Alliance of Brain and Technology, NeurotechEU, envisions Neurotechnology as the next step in the deep tech revolution, or technology from the brain, for the brain, and with the brain. Our program's thematic focus is arranged along 8 dimensions providing strategic bridges between various disciplines, including neuroscience, medicine, engineering, artificial intelligence, cognitive science, robotics, social sciences, and the humanities. NeurotechEU constitutes the backbone of this vision by bringing together 8 leading universities across Europe and a significant amount of relevant associated partners, including partner research institutions, (SME) companies, societal stakeholders, and (non) governmental organisations, to create a unique educational environment where the next generation of European researchers and citizens can cooperate and work across different European and global cultures. Collectively we will enable deep institutional transformation by focusing on trans-European innovative learning processes grounded in the emergent field of Neurotechnology with its synergistic coupling of science, technology and application. We will create inclusive, wholistic, and comprehensive training programme in all eight NeurotechEU dimensions based on the NeurotechEU epistemic cycle and the knowledge square. This content-driven transformation will foster the next generation of multidisciplinary scientists and engineers by training them as integrators through the unique NeurotechEU pedagogical model, the complementarity of the partners and access to cutting-edge avant-garde infrastructure and training platforms. We will further advance and validate the initiative's sustainability and governance models. NeurotechEU is built on the common values and general principles of the European Union as laid down in the Bologna process, the Paris Communiqué, and the Magna Charta Universitatum, which are propagated through all activities.

LIST OF PARTICIPANTS

PARTICIPANTS

Grant Preparation (Beneficiaries screen) — Enter the info.

Number	Role	Short name	Legal name	Country	PIC
1	COO	RU	STICHTING RADBOUD UNIVERSITEIT	NL	999992110
2	BEN	UMH	UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE	ES	999851363
3	BEN	KI	KAROLINSKA INSTITUTET	SE	999978530
4	BEN	UBO	RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAT BONN	DE	999980276
5	BEN	BOUN	BOGAZICI UNIVERSITESI	TR	999882500
6	BEN	UMF	UNIVERSITATEA DE MEDICINA SI FARMACIE IULIU HATIEGANU CLUJ-NAPOCA	RO	999842439
7	BEN	ULille	UNIVERSITE DE LILLE	FR	888146648
8	BEN	HR	HASKOLINN I REYKJAVIK EHF	IS	966834406
9	AP	UD	DEBRECENI EGYETEM	HU	999881239
10	AP	UKB	UNIVERSITATSKLINIKUM BONN	DE	999867465
11	AP	LUH	LANDSPITALI UNIVERSITY HOSPITAL	IS	999821390

PARTICIPANTS					
<i>Grant Preparation (Beneficiaries screen) — Enter the info.</i>					
Number	Role	Short name	Legal name	Country	PIC
12	AP	SABANCI	SABANCI UNIVERSITESI	TR	999856892
13	AP	BBK	BILKENT UNIVERSITESI VAKIF	TR	999923628
14	AP	IU	ISTANBUL UNIVERSITESI	TR	998391222
15	AP	CLU	CENTRALE LILLE INSTITUT	FR	999878038
16	AP	CHULille	CENTRE HOSPITALIER REGIONAL ET UNIVERSITAIRE DE LILLE	FR	999587232
17	AP	UNIKENT	UNIVERSITY OF KENT	UK	999841275
18	AP	IMTNE	Institut Mines-Télécom Nord Europe	FR	894022132
19	AP	STU	STOCKHOLMS UNIVERSITET	SE	999885022
20	AP	KTH	KUNGLIGA TEKNISKA HOEGSKOLAN	SE	999990946
21	AP	DZNE	DEUTSCHES ZENTRUM FUR NEURODEGENERATIVE ERKRANKUNGEN EV	DE	974626416
22	AP	LBGMBH	LIFE AND BRAIN GMBH	DE	994637807
23	AP	MPINB	Max Planck Institute for Neurobiology of Behavior - caesar	DE	887070142
24	AP	HNP	HOSPITAL NACIONAL DE PARAPLEJICOS	ES	917979095
25	AP	CSIC	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	ES	999991722
26	AP	IPL	INSTITUT PASTEUR DE LILLE FONDATION	FR	999498089
27	AP	NOXM	NOX MEDICAL EHF	IS	934034147
28	AP	Össur	Össur hf	IS	993147790
29	AP	KAREL	KAREL ELEKTRONIK SANAYI VE TICARET ANONIM SIRKETI	TR	919499861
30	AP	InTech	Interact Medikal Teknolojileri A. S.	TR	910269826
31	AP	BBTECH	BIT & BRAIN TECHNOLOGIES SL	ES	983150291
32	AP	SATT NORD	SATT NORD	FR	885657628
33	AP	ISHEALTH	ISTANBUL HEALTH INDUSTRY CLUSTER ASSOCIATION	TR	884148987
34	AP	BfArM	BUNDESINSTITUT FUR ARZNEIMITTEL UND MEDIZINPRODUKTE	DE	998293931
35	AP	MUNI	MINISTERIO DE UNIVERSIDADES	ES	894297612
36	AP	CROUS	CROUS DE LILLE	FR	904883901
37	AP	MEL	Métropole européenne de Lille	FR	928651617
38	AP	RHF	REGION HAUTS-DE-FRANCE	FR	921692546
39	AP	RAL	RECTORAT DE L ACADEMIE DE LILLE	FR	887192653
40	AP	EURASANTE	EURASANTE	FR	939183489
41	AP	DPA	DIPUTACION PROVINCIAL DE ALICANTE	ES	984700448

PARTICIPANTS					
<i>Grant Preparation (Beneficiaries screen) — Enter the info.</i>					
Number	Role	Short name	Legal name	Country	PIC
42	AP	ASJA	Ayuntamiento de Sant Joan d'Alacant	ES	939775092
43	AP	EUIPO	OFICINA DE PROPIEDAD INTELECTUAL DE LA UNION EUROPEA	ES	884213977
44	AP	AYE	AYUNTAMIENTO DE ELCHE	ES	951341566
45	AP	BUTTO	Bogazici Universitesi Teknoloji Transfer Ofisi Anonim Sirketi	TR	886377950
46	AP	EAEC	European Association of Erasmus Coordinators	CY	949132488
47	AP	TITC	ASOCIATIA TRANSILVANIA IT	RO	900017508
48	AP	SCJU CJ	SPITALUL CLINIC JUDETEAN DE URGENTA CLUJ	RO	998139895
49	AP	RoNeuro	Fundatia pentru Studiul Nanoneurostiintelor si Neuroregenerarii	RO	905749238
50	AP	MINSAN	MINISTERUL SANATATII	RO	999831478
51	AP	IMM	Istanbul Metropolitan Municipality	TR	998498795
52	AP	SKH	SIDEKICKHEALTH EHF	IS	916535347
53	AP	INRIA	INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET AUTOMATIQUE	FR	999547074
54	AP	CNRS	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	999997930
55	AP	INSERM	INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE	FR	999997833

LIST OF WORK PACKAGES

Work packages						
Grant Preparation (Work Packages screen) — Enter the info.						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
WP1	Management and coordination	1 - RU	716.00	1	48	D1.1 – Governance structures and management including internal communication D1.2 – Governance structures and management including internal communication - Updated D1.3 – Quality guidelines and mechanisms for implementation D1.4 – Quality guidelines and mechanisms for implementation - Update D1.5 – Quality guidelines and mechanisms for implementation - Final update
WP2	Interdisciplinary Knowledge creation	1 - RU	726.00	1	48	D2.1 – Scientific challenges in neurotechnology D2.2 – Scientific challenges in neurotechnology - Update 1 D2.3 – Scientific challenges in neurotechnology - Update 2 D2.4 – Scientific challenges in neurotechnology - Final update D2.5 – Learning goals and joint education programmes - Goals D2.6 – Learning goals and joint education programmes - Programmes D2.7 – Learning goals and joint education programmes - Update

Work packages <i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						D2.8 – Learning goals and joint education programmes - Final update D2.9 – Establish an overarching online student platform following EWP standards D2.10 – Establish an overarching online student platform following EWP standards - Update D2.11 – Establish an overarching online student platform following EWP standards - Final update D2.12 – Develop inclusive and flexible pedagogical methods for learners at all levels D2.13 – Develop inclusive and flexible pedagogical methods for learners at all levels - Update
WP3	Empowering Learners and Staff	6 - UMF	569.00	1	48	D3.1 – Alliance-wide platform for grants and tenders D3.2 – Online training and support D3.3 – Online training and support - Update D3.4 – Online training and support - Final update D3.5 – Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact D3.6 – Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Update D3.7 – Charter of NeurotechEU++ values /

Work packages <i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						Guidelines for practitioners including a pathways for social impact - Final update D3.8 – Blueprint for new training formats in innovation and entrepreneurship D3.9 – Blueprint for new training formats in innovation and entrepreneurship - Update D3.10 – Blueprint for new training formats in innovation and entrepreneurship - Final update
WP4	Common Policies and Strategy Development	5 - BOUN	240.00	1	48	D4.1 – NeurotechEU report integrating multicultural components during events D4.2 – NeurotechEU report integrating multicultural components during events - Update 1 D4.3 – NeurotechEU report integrating multicultural components during events - Update 2 D4.4 – NeurotechEU report integrating multicultural components during events - Final update D4.5 – Cooperation models including the sustainable regional development D4.6 – Cooperation models including the sustainable regional development - Update 1 D4.7 – Cooperation models including the sustainable regional development - Update 2 D4.8 – Cooperation models including the

Work packages <i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						sustainable regional development - Final update D4.9 – Translation of innovations into the industry D4.10 – Translation of innovations into the industry - Update D4.11 – Translation of innovations into the industry - Final update
WP5	Impact and dissemination	3 - KI	280.00	1	48	D5.1 – Comprehensive communication and dissemination strategy D5.2 – Comprehensive communication and dissemination strategy - Update D5.3 – Roadmap report on achievements and impact indicators D5.4 – Roadmap report on achievements and impact indicators - Update D5.5 – Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative D5.6 – Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Update D5.7 – Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Final update

Work package WP1 – Management and coordination

Work Package Number	WP1	Lead Beneficiary	1. RU
Work Package Name	Management and coordination		
Start Month	1	End Month	48

Objectives

- To streamline and optimise the alliance's operations by creating a modular and scalable governance structure for international, multi-institutional and intersectoral collaboration.
- Enshrine the values of NeurotechEU in all its procedures.
- To oversee and manage the organisational budget and financial operations during the project's duration while ensuring compliance with EC and national rules and regulations.
- To enhance coherence and collaboration by consolidating effective internal communication procedures, tools and channels.
- To reduce risks by implementing a comprehensive risk management plan and performing regular risk assessments.

Description

Co-lead: 2-UMH

T1.1 Establishing Project Governance:

This task is focused on the overall coordination of the project, including the monitoring of the work packages with its related tasks and deliverables and adhering to the values of NeurotechEU throughout the project. Other tasks include ensuring smooth decision-making processes, communication with the EC Project Officer and initiation of amendments if necessary. As part of this task, monthly (online) meetings will take place to track planning, progress and interim results for early identification of risks and problems and to initiate contingency plans if necessary. As part of the project governance, a consortium agreement will be concluded as soon as possible after a positive review to optimise the continuing collaboration. All activities related to this task will be conducted by and divided between the Management and Coordination Work Group and the Administrative and Financial Work Group. A concrete description of the governance structure will be documented in the corresponding D1.1 and updated bi-yearly.

Contributors/participants: All beneficiaries

T1.2 Developing internal communication:

This task will focus on improving already existing internal communication procedures (and tools) and creating new channels and procedures to ensure an optimal communication flow in day-to-day operations between all institutions, work packages and working groups. This task will also align all collaboration with the strategic view of the alliance. All activities related to this task will be handled by an ad hoc created working group until all procedures, tools and flows are accepted and widely adopted by all alliance members (D1.1, M12). Once the internal communication plan is fully settled, the Management and Coordination Work Group will ensure follow up and apply mitigation measures if needed.

Contributors/participants: All beneficiaries

T1.3 Implementing Quality Management

This task is focused on the process of implementing quality plans, with a focus on finding a balance between excellence and the promotion of quick value releases. Three ad hoc quality working groups (WGs) will be created at the beginning of NeurotechEU++ to define the main principles and mechanisms to be followed by each of these three key categories of processes:

- Quality in Management processes;
- Quality in Strategic processes for the growth towards NeurotechEU++ long-term vision;
- Quality assessment of specific releases fully operational under the project objectives (e.g. NeurotechEU++ learning platform, NeurotechEU++ learning practices, NeurotechEU++ mobility practices). The WGs will be composed of both process owners and quality experts, and will last till the arrival of sustainable principles that could be implemented within each WP independently. The Quality Committee will be established to carry out the top-level supervision of the Quality WGs' activities and outputs, and the implicit quality reviews done within each WP. The precise description of quality guidelines and mechanisms established for each category of processes will be included in D1.2 planned for M6, updated on M24 and then biyearly. These quality guidelines and mechanisms for implementation will address the shortcoming of

the ESR regarding tasks, objectives, milestones and deliverables. Furthermore, as part of task 1.3, the quality guidelines and mechanisms for implementation (D1.3) will include an elaboration on how progress is monitored during the projects and the quantitative target indicators will be revised.

Contributors/participants: All beneficiaries

Work package WP2 – Interdisciplinary Knowledge creation

Work Package Number	WP2	Lead Beneficiary	1. RU
Work Package Name	Interdisciplinary Knowledge creation		
Start Month	1	End Month	48

Objectives

- Creating a comprehensive and accessible training programme in all eight NeurotechEU dimensions based on the NeurotechEU epistemic and didactic cycle and the knowledge square grounded in identified cross-institutional Master and Ph.D. programs addressing the diverse learning needs and skill levels of all students.
- Develop and deploy metrics to assess improvement in knowledge creation, retention and application.
- To increase the reach and accessibility of NeurotechEU content by further improving and extending its online platforms, e.g., Campus+, and their integration into active learning environments.
- Enhancing the training experience and impact for learners by developing and launching online, AI-supported interactive and immersive tools and complementary in-person learning resources.
- To enhance inclusivity by making the NeurotechEU training platforms (NeurotechEU Spaces) open to all.

Description

Co-lead: 3-KI and 4 UBO

T2.1 Defining a Common Science and Education Agenda:

The common science and education agenda task focuses on the scientific and educational challenges in neurotechnology, including societal impact, innovation and sustainability. We will organise monthly meetings to define the neurochallenges along the eight dimensions defined during phase 1 in the Research and Innovation Work Group. Similarly for education we will organise monthly meetings with the Education Work Group to create learning goals and programmes for PhD, MSc and BSc students that will remap the eight dimensions into five content spaces, based on the NeurotechEU epistemic and didactic cycle. In this process, we will align content and exchange of curriculum content between existing and future developing BSc, MSc and PhD programmes of our partners and work towards joint content and programmes. The programmes will link neurotechnology content with entrepreneurship, societal impact and sustainability to empower our students for the future. To ensure a tight coupling between research, innovation, and education, we will organise a yearly symposium (E5.6), where students and staff can interact. These symposiums can be followed up by the creation of ad hoc working groups to elaborate on new ideas. We also continue our efforts to offer courses for life-long learners to enable them to stay on top of their career.

Contributors/participants: All beneficiaries

T2.2 Building Educational Platform and Tools:

This task will focus on building platforms and tools and fill them with relevant content (NeurotechEU Spaces). Platforms and tools will be developed on established open-source standards. For content delivery (CMS and LMS) we will expand upon the tools and facilities used during phase 1, namely learn GALA and INCF, in which we continue to collaborate with designers to adapt the educational platforms to serve our specific needs. For SIS we aim to access an open platform that can communicate with the proprietary SIS of each partner; software IT architects from each partner will assemble monthly in an ad hoc created Educational Platform WG during the development phase. For this operation we follow the Erasmus Without Papers initiative of the EU and need to seek collaboration with NENs and other EUI to strive for one platform. Furthermore, we build platforms for Diploma Service around Campus+ using established open-source standards and we will update and continue developing our course catalogue for exchange students and create a more interactive version. For this, ad hoc working groups will convene to evaluate development of suitable courses by our partners.

Contributors/participants: All beneficiaries

T2.3 Developing pedagogical models:

The goal of this task is to develop inclusive and flexible pedagogical methods to train and engage learners at all levels (pupils and bachelor students to life-long learners) in the interdisciplinary teaching portfolio of NeurotechEU. Our vision is to create educational content for prospective and accomplished scientists, medical doctors, developers, and entrepreneurs that can be flexibly integrated into existing degree programmes or offered as modules that are compatible with the workload and mobility of a working parent, a busy entrepreneur, or a person with limited mobility. These measures will be closely aligned with our European values and commitment to inclusion and diversity (See T3.2). To this end, we will

- (1) build on existing and newly developed teaching content (developed by the Education Work Group) and transform it into more flexible and dynamic modules available in digital formats and complemented with self-learning online toolboxes and materials
- (2) introduce online learning groups and digital AI-guided learning buddies to foster interaction and group learning (see also Educational Work Group)
- (3) develop an online tool for personalised education portfolios based on skills and learning goals that identify the right content and combination for each individual
- (4) offer face-to-face content such as practicals, internships, and summer schools to complement online learning with hands-on experience where needed and desired to foster personal exchanges and contacts.

To facilitate virtual and physical mobility, we will build on existing European mobility programs and initiatives developed by the Mobility Work Group in the last funding period. Moreover, we will work with the institutions and chairs of pedagogy at the different partners to continuously improve teaching methods by integrating new research from neurosciences (Research and Innovation Work Group) into our teaching approaches. Improved teaching methodologies will be taught to faculty, current and prospective teachers (including at schools) in dedicated modules. These modules will also be offered as part of our NeurotechEU teaching portfolio on our online platforms.

Contributors/participants: All beneficiaries

Work package WP3 – Empowering Learners and Staff

Work Package Number	WP3	Lead Beneficiary	6. UMF
Work Package Name	Empowering Learners and Staff		
Start Month	1	End Month	48

Objectives

- Assure that in all NeurotechEU training programs, learners are familiarised with the NeurotechEU content space and its science, technology, and application epistemic cycle and pedagogical models are adapted accordingly.
- Enhance equity and inclusion by translating the values of NeurotechEU as expressed in its Living Values manifesto and Joint Mission Statement into concrete measures and monitoring procedures that are integrated into the various training, participation, and management platforms of NeurotechEU.
- To develop and apply ethical and socially responsible neurotechnology research and innovation in accordance with European values, and NeurotechEU's living values and Neurometaphysics dimension.
- Accelerate the translation from knowledge to high-impact applications by enhancing the role of entrepreneurship and ethical innovation training in the Neurometaphysics programs of NeurotechEU.
- To significantly increase the participation rate of learners and staff in training and mobility programs through implementing a comprehensive training and mobility strategy building on the complementarity among the partners and the bridges afforded by the NeurotechEU Cycle and the NeurotechEU content space.

Description

Co-lead: 7-ULille

T3.1 Enhancing quality of and opportunities for training and mobility:

This task is focused on the expansion of neuroscientific and neurotechnological expertise by the development of various formats for training and mobility based on the NeurotechEU content spaces and NeurotechEU Cycle. Therefore, we will use the professional expertise within the alliance in order to develop specific training content for the different target

groups. The training and mobilities can either be planned and executed virtually, in person or blended, for example in the form of Summer/Winter-Schools or Blended Intensive Programmes. The mobility opportunities will not only focus on mobility between higher education institutions, but also on mobility to other organizations such as companies and governmental institutions. We will create an overview of available (European) grants that will provide incentives and financial support for student and researcher mobility. In addition to professional training we will also foster the development of intercultural training enhancing cultural understanding and language skills in order to prepare NTEU graduates for working in an international environment and create awareness for European values, to which our alliance is dedicated. All activities of this task will be planned and conducted in close exchange with the Work Group for Student Affairs and the Work Group for Education. This task includes the enhancement of staff wellbeing, career enrichment and skills development (e.g. staff mobility, exposure to international networking and exchange opportunities).

Contributors/participants: All beneficiaries

T3.2 Improving equal opportunities and avoiding social bias:

This task is about strengthening equal opportunities in the alliance in line with the ERA policy agenda to “promote gender equality and foster inclusiveness”. Online training and support will continuously be made available for the partner universities, for example information about how to promote equal opportunities in different settings and bias in assessment training. Activities related with this task will be handled with an ad hoc created Work Group reflecting needs identified by all alliance members. As members of the ALBA network, which is a resource for concrete, positive, evidence-based actions that individuals and organisations at any level can take to promote equity and inclusivity, we will have access to various activities providing networking and mentoring opportunities to promote careers for members of under-represented groups. The Management and Coordination Work Group will do the follow up.

Contributors/participants: All beneficiaries

T3.3 Strengthening European Values through Neurotechnologies:

This task is focused on working on a comprehensive understanding of how all the activities of relevant NeurotechEU stakeholders (including the partners’ staff, researchers and students, as well as the stakeholders) are monitored to guarantee that they follow a shared foundation of European values as dictated in the Magna Charta Universitatum, as well as NeurotechEU living values and Neurometaphysics dimension. NeurotechEU European Values will be mapped on this foundation taking also into consideration the context of the so-called refugee crisis. The efforts done by each partner institution to identify any deviation and the corresponding action plans will also be included. An ad hoc Work Group will be constituted at the M1 and will be active throughout the project in order to: 1. clarify and define guidelines; 2. give support on the identification of potential deviations and corrective actions. Jean Monnet Scholarships at the partner institutions will be used to collaborate in this task.

Contributors/participants: All beneficiaries

T3.4 Training for entrepreneurship and ethical innovation:

The task will outline Neurometaphysics programs and opportunities to provide training for NeurotechEU++ students in entrepreneurship and innovation. Courses that focus on innovation in neuroscience and internships will be created in collaboration with companies and other organisations that are world-leaders in neuroscience and technology. Specifically, the task will have a three-fold focus: (i) internships will be part of program curricula; (ii) long-term relationships will be fostered with partner companies, NGOs, and institutions that have lead to co-created innovations; and (iii) the long term effects of the implementation of the program and internships will be evaluated. Therefore, this task will focus on developing study programs that have a focus on entrepreneurship, innovation, internships, conducting research, and collaboration with partner organisations, institutions and the industry using NEURICOO.

Contributors/participants: All beneficiaries

T3.5 Training for social impact:

This task will focus on tailoring NeurotechEU++ programs and activities to promote social impact. Neurotechnology will be used to improve the diagnosis and treatment of neurological and psychiatric disorders. For example, neuroimaging techniques such as functional magnetic resonance imaging (fMRI) will help study the brain in real-time, which will improve our understanding of conditions such as depression, schizophrenia, and autism. This will lead to the development of more effective treatments for these conditions. NeurotechEU++ programs will also improve education and training. Brain-computer interfaces (BCIs) will be used to improve the effectiveness of educational programs, by providing real-time feedback on student engagement and progress. Furthermore, BCIs can also be used to enhance training programs for skilled professionals, such as surgeons and pilots, by providing real-time feedback on performance. Moreover, BCIs can be used to improve accessibility and inclusion, by helping individuals with disabilities, such as those with paralysis

or amputations, to communicate and control assistive devices. Additionally, neurotechnology will be used to develop more natural and intuitive interfaces for people with disabilities, such as those with cognitive or motor impairments.
Contributors/participants: All beneficiaries

Work package WP4 – Common Policies and Strategy Development

Work Package Number	WP4	Lead Beneficiary	5. BOUN
Work Package Name	Common Policies and Strategy Development		
Start Month	1	End Month	48

Objectives

- Enhance collaboration within the alliance and associated partners by building on the NeurotechEU content space and science-technology-application cycle and by maintaining common roadmaps and realising their associated actions, including the realisation of common research programs.
- Expand the NeurotechEU consortium with minimally two new universities, which, at least one coming from widening countries based on complementarity and the NeurotechEU living values.
- To establish partnerships with minimally three European University Alliances based on alignment with NeurotechEU's content space, values and strategies through active engagement and sharing of programs.
- To develop scenarios on the long-term sustainability of NeurotechEU in the context of EU values and policies on the European Education Area, European Research Area, and the NeurotechEU Living Values and content space.
- To develop a common strategy for technology transfer to assure the translation of neurotechnology to high-impact applications serving European society and economy.

Description

Co-lead: 6-UMF

T4.1 Growing the Pan-European and International Network:

This task aims at enhancing collaborating within NeurotechEU and expanding the alliance beyond the current geographical boundaries. This will allow for the sharing of knowledge and resources between institutions, leading to a more efficient and effective use of resources, as well as the ability for students and faculty to collaborate on research and other projects. A strong network of European university alliances can also help to promote the internationalisation of higher education. This can lead to a more diverse student body and faculty, which can have a positive impact on the educational experience for all students. Growing the Pan-European and International Network will help promote the competitiveness of European universities on the global stage, by sharing best practices and the ability to collaborate on research and other projects that have the potential to have a significant impact on the community, increasing the competitiveness of European universities on the global stage. Specific subtasks include

- (1) attracting international students and faculty, as well as promoting the mobility of students and faculty beyond the current partners of the network
- (2) seeking Associate and Full Partners from outside the EU
- (3) organising activities to promote multiculturalism and multilingualism based on best practices identified in the first phase of consortium development.

Contributors/participants: All beneficiaries

T4.2 Collaboration with other universities and European University Alliances:

This task will focus on improving already existing collaborations with other alliances, as well as identifying new collaborations with universities and alliances that complement and further strengthen the NeurotechEU community, based on alignment with NeurotechEU's content space and the NeurotechEU living values. Internationalisation of higher education and research through cooperation needs to become more proactive and strategic, as competition for talent and resources is increasing globally. Activity across national borders as well as across alliances is therefore needed in order to expand the possibilities for what the alliances can collectively contribute to strengthening Europe's attractiveness for the communities we serve, as well as to build a structured model of best practices. Activities related with this task will be handled with an ad hoc created working group reflecting identified needs adopted by all alliance members. The Management and Coordination Working Group will do the follow up.

Contributors/participants: All beneficiaries

T4.3 Strengthening cooperation with companies:

This task aims at facilitating and institutionalising integration and cooperation among NeurotechEU partner universities and industrial associated partners aiming at developing and implementing challenge and technology-based roadmaps for a cost-effective mechanism for translation of innovations into the industry and market. NEURICOO, the central organisational structure for the university-industry collaboration of NeurotechEU will be serving for this task in conjunction with the Research and Innovation Work Group. We will characterise each of the eight dimensions of neurotechnology, the strengths, existing R&D focus and capacity as well as needs of each partner to conduct translational neurotechnology development and operationalize a matchmaking mechanism to establish functional bridging between academics and companies. The starting point to identify the existing potential to build up on in due course of time will be to detect large-scale university-industry cooperation platform development projects of NeurotechEU partners and their other corporate projects. The action point to show the academics and associated companies, highly impactful future directions is to utilise e.g., bibliometric analyses on and across the eight dimensions and to incorporate researchers from different disciplines to conceptualise the implications of the identified challenges and enabling technologies, not only for science, but also for the economy and the society. This will allow us to develop target based focused research and innovation actions with strongly synergistic teams, justify and receive funds for those actions and also devise tailored education programs for the neurotechnology experts of the future.

Contributors/participants: All beneficiaries

T4.4 Regional development:

This task aims at linking the eight dimensions of neurotechnology, in particular, D8: Neurometaphysics to regional development by taking into account socio-economic, environmental, and cultural needs in a manner that would also serve the UN Sustainable Development Goals (SDGs). Particularly relevant SDGs we will contribute to are Good Health & Well-Being, Sustainable Cities & Communities, Decent Work & Economic Growth, Clean Water & Sanitation, Climate Action, and Responsible Consumption & Production, and Reduced Inequalities, along with Quality Education, Industry, Innovation & Infrastructure. Building bridges between dimensions of neurotechnology and regional development requires coordination and close collaboration between Research and Innovation Work Group and Societal Innovation Work Group and with our stakeholders, including public bodies, municipalities, regional development agencies, and NGOs. Effective and sustainable governance of regional development in the context of complexity, interdependency, and uncertainty requires new ways of cooperation and capacity building since conventional approaches are not always well-adapted to addressing the increasing number of challenges regions face. Knowledge/technology ‘co-production’ offers one such opportunity, the objective of which is to create an ‘extended peer community’ of stakeholders, imagined not simply as affected/user groups but as experts/practitioners and knowledge generators in their own right. In concert with that, we will operationalize a co-production mechanism with a reimagined community of experts/partners— where knowledge and expertise are distributed, rather than hierarchically organised – to understand how neurotechnology can contribute to sustainable regional development.

Contributors/participants: All beneficiaries

Work package WP5 – Impact and dissemination

Work Package Number	WP5	Lead Beneficiary	3. KI
Work Package Name	Impact and dissemination		
Start Month	1	End Month	48

Objectives

- Assure visibility and relevance by communicating results and good practices achieved by NeurotechEU with its stakeholders and target groups to serve as a model organisation in the new European Education Area and European Research Area.
- Provide robust visibility of NeurotechEU and its EU funding measured with KPIs on a biannual basis.
- Enhance channels for impact creation by building the NeurotechEU innovation network through collaborations with European, national, and regional business development organisations and businesses.
- Develop a strategy to build on the European Innovation Council Regional Innovation Ecosystem initiative and realise the NeurotechEU Innovation Ecosystem.

Description
<p>Co-lead: 1-RU</p> <p>T5.1 Communication:</p> <p>This task aims at communicating the results and good practices achieved by NeurotechEU++ with the stakeholders and target groups of NeurotechEU to serve as a model organisation in the new European Education Area and provide robust visibility of EU funding. We aim to plan, build and implement a robust, modular, scalable, and cost-effective communication strategy that significantly increases the visibility of the NeurotechEU++ project. Target groups are not only informed about the project goals and results but become engaged by them and by the innovative, new solutions used to make NeurotechEU special in communication. The communication strategy and all the following communication processes should comply with the Quality management system of the NeurotechEU++ project.</p> <p>Contributors/participants: All beneficiaries</p> <p>T5.2 Dissemination and Public Engagement:</p> <p>This task aims at informing the target groups about NeurotechEU activities, current and upcoming opportunities to study, learn, educate, innovate and create NeurotechEU outcomes of the education, research, and innovation actions, and the societal and economic impact of the alliance actions and deliverables to raise awareness of the opportunities at NeurotechEU, to educate public, to kindle interest in life-long learning and to promote European identity. Taking full advantage of the NeurotechEU ecosystem that we are building by bringing together the founders, associate partners, collaborations with organisations and businesses to promote knowledge utilisation, commercial exploitation, and networking via cross-sectoral and integrative dissemination activities including but not limited to on-site training, network building, Neuroinnovation summits, sectoral and instructional publications.</p> <p>Contributors/participants: All beneficiaries</p> <p>T5.3 The Museum of Brain and Technology:</p> <p>The technological innovation within NeurotechEU will necessitate societal innovation for community building, and for both the societal preparedness and adoption of new technologies to solve challenges within society. These technological innovations will transcend the health domain, and will inspire others, such as humanities, economy, and politics. To facilitate these developments, the Museum of Brain and Technology will play an important role. The museum will act as the link between neurotechnological innovations and society, which will be made accessible to all groups within society. The exhibition(s) will be created by ad hoc created working groups, whereas the communication and dissemination will be executed by the Communications workgroup.</p> <p>Contributors/participants: All beneficiaries</p> <p>T5.4 Roadmap towards 2040 and Sustainability:</p> <p>Task 5.4 will be based on the NeurotechEU2040 Action Plan developed by the Student Council and approved by the BoG (Annex 4: Mission Statement). It will realise the common vision of the partners in three phases.</p> <p>The first phase of NeurotechEU will be completed at the end of the pilot project i.e. October 2023.</p> <p>The second phase (2024-2030) will capitalise on the achievements of the pilot project, develop intensively tailor-made approaches in education and research, and reduce obstacles in order to make a qualitative leap forward. During this period, NeurotechEU will also realise the NeurotechEU Innovation Ecosystem. The organisational structures of NeurotechEU members will be transformed by removing barriers to interface the teaching and research units and administrative bodies. NeurotechEU will define transparent processes to increase mobility and joint programmes and take advantage of new digital platforms to link education, research, innovation and society. It will design Joint Master and PhD programmes and experiment with the Joint European Degree label in the fields related to neurotechnology and other relevant disciplines. A NeurotechEU joint research centre will be created to align the scientific priorities of the members and engage learners in its activities. Financial sustainability will be reached through a fundraising opportunities platform and ad hoc project factory teams which will pool project ideas and resources to apply for funding in research and education from national, EU and international institutions. To move towards an institutional integration, NeurotechEU will write the founding statutes of its future organisation and define its legal form.</p> <p>The third phase (2031-2040) will be the full roll-out of the alliance as a model and lighthouse in the EHEA. The ambition is to set up a transnational campus that ensures Europe's scientific capacities in a competitive global arena. Through an anticipation of trends, a think tank of futurologists Neurotech2040 will foresee the societal needs and challenges in 2040 and beyond. Their work will feed into other NeurotechEU research and innovation action plans as well as NeurotechEU brand and model.</p>

Contributors/participants: All beneficiaries
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STAFF EFFORT

Staff effort per participant						
Grant Preparation (Work packages - Effort screen) — Enter the info.						
Participant	WP1	WP2	WP3	WP4	WP5	Total Person-Months
1 - RU	240.00	120.00	39.00	19.00	50.00	468.00
2 - UMH	96.00	72.00	38.00	17.00	21.00	244.00
3 - KI	72.00	120.00	60.00	14.00	66.00	332.00
4 - UBO	72.00	144.00	86.00	17.00	48.00	367.00
5 - BOUN	48.00	48.00	62.00	79.00	16.00	253.00
6 - UMF	72.00	129.00	117.00	45.00	22.00	385.00
7 - ULille	68.00	45.00	101.00	33.00	45.00	292.00
8 - HR	48.00	48.00	66.00	16.00	12.00	190.00
Total Person-Months	716.00	726.00	569.00	240.00	280.00	2531.00

LIST OF DELIVERABLES

Deliverables <i>Grant Preparation (Deliverables screen) — Enter the info.</i> <i>The labels used mean:</i> <i>Public — fully open (🚩 automatically posted online)</i> <i>Sensitive — limited under the conditions of the Grant Agreement</i> <i>EU classified —RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444</i>						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	Governance structures and management including internal communication	WP1	1 - RU	R — Document, report	SEN - Sensitive	12
D1.2	Governance structures and management including internal communication - Updated	WP1	1 - RU	R — Document, report	SEN - Sensitive	36
D1.3	Quality guidelines and mechanisms for implementation	WP1	2 - UMH	R — Document, report	PU - Public	6
D1.4	Quality guidelines and mechanisms for implementation - Update	WP1	2 - UMH	R — Document, report	PU - Public	24
D1.5	Quality guidelines and mechanisms for implementation - Final update	WP1	2 - UMH	R — Document, report	PU - Public	48
D2.1	Scientific challenges in neurotechnology	WP2	1 - RU	R — Document, report	PU - Public	12
D2.2	Scientific challenges in neurotechnology - Update 1	WP2	1 - RU	R — Document, report	PU - Public	24
D2.3	Scientific challenges in neurotechnology - Update 2	WP2	1 - RU	R — Document, report	PU - Public	36
D2.4	Scientific challenges in neurotechnology - Final update	WP2	1 - RU	R — Document, report	PU - Public	48

Deliverables

Grant Preparation (Deliverables screen) — Enter the info.

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D2.5	Learning goals and joint education programmes - Goals	WP2	1 - RU	R — Document, report	PU - Public	6
D2.6	Learning goals and joint education programmes - Programmes	WP2	1 - RU	R — Document, report	PU - Public	24
D2.7	Learning goals and joint education programmes - Update	WP2	1 - RU	R — Document, report	PU - Public	36
D2.8	Learning goals and joint education programmes - Final update	WP2	1 - RU	R — Document, report	PU - Public	48
D2.9	Establish an overarching online student platform following EWP standards	WP2	3 - KI	OTHER	PU - Public	24
D2.10	Establish an overarching online student platform following EWP standards - Update	WP2	3 - KI	OTHER	PU - Public	36
D2.11	Establish an overarching online student platform following EWP standards - Final update	WP2	3 - KI	OTHER	PU - Public	48
D2.12	Develop inclusive and flexible pedagogical methods for learners at all levels	WP2	7 - ULille	DEM — Demonstrator, pilot, prototype	PU - Public	18
D2.13	Develop inclusive and flexible pedagogical methods for learners at all levels - Update	WP2	7 - ULille	DEM — Demonstrator, pilot, prototype	PU - Public	36

Deliverables

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EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision [2015/444](#)

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D3.1	Alliance-wide platform for grants and tenders	WP3	4 - UBO	OTHER	PU - Public	24
D3.2	Online training and support	WP3	3 - KI	OTHER	PU - Public	24
D3.3	Online training and support - Update	WP3	3 - KI	OTHER	PU - Public	36
D3.4	Online training and support - Final update	WP3	3 - KI	OTHER	PU - Public	48
D3.5	Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact	WP3	6 - UMF	R — Document, report	PU - Public	4
D3.6	Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Update	WP3	6 - UMF	R — Document, report	PU - Public	12
D3.7	Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Final update	WP3	6 - UMF	R — Document, report	PU - Public	36
D3.8	Blueprint for new training formats in innovation and entrepreneurship	WP3	8 - HR	OTHER	PU - Public	24
D3.9	Blueprint for new training formats in innovation and entrepreneurship - Update	WP3	8 - HR	OTHER	PU - Public	36
D3.10	Blueprint for new training formats in	WP3	8 - HR	OTHER	PU - Public	48

Deliverables <i>Grant Preparation (Deliverables screen) — Enter the info.</i> <i>The labels used mean:</i> <i>Public — fully open (🚩 automatically posted online)</i> <i>Sensitive — limited under the conditions of the Grant Agreement</i> <i>EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444</i>						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
	innovation and entrepreneurship - Final update					
D4.1	NeurotechEU report integrating multicultural components during events	WP4	6 - UMF	R — Document, report	PU - Public	12
D4.2	NeurotechEU report integrating multicultural components during events - Update 1	WP4	6 - UMF	R — Document, report	PU - Public	24
D4.3	NeurotechEU report integrating multicultural components during events - Update 2	WP4	6 - UMF	R — Document, report	PU - Public	36
D4.4	NeurotechEU report integrating multicultural components during events - Final update	WP4	6 - UMF	R — Document, report	PU - Public	48
D4.5	Cooperation models including the sustainable regional development	WP4	1 - RU	R — Document, report	PU - Public	12
D4.6	Cooperation models including the sustainable regional development - Update 1	WP4	1 - RU	R — Document, report	PU - Public	24
D4.7	Cooperation models including the sustainable regional development - Update 2	WP4	1 - RU	R — Document, report	PU - Public	36
D4.8	Cooperation models including the	WP4	1 - RU	R — Document, report	PU - Public	48

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
	sustainable regional development - Final update					
D4.9	Translation of innovations into the industry	WP4	5 - BOUN	OTHER	PU - Public	24
D4.10	Translation of innovations into the industry - Update	WP4	5 - BOUN	OTHER	PU - Public	36
D4.11	Translation of innovations into the industry - Final update	WP4	5 - BOUN	OTHER	PU - Public	48
D5.1	Comprehensive communication and dissemination strategy	WP5	3 - KI	R — Document, report	PU - Public	12
D5.2	Comprehensive communication and dissemination strategy - Update	WP5	3 - KI	R — Document, report	PU - Public	36
D5.3	Roadmap report on achievements and impact indicators	WP5	7 - ULille	R — Document, report	PU - Public	36
D5.4	Roadmap report on achievements and impact indicators - Update	WP5	7 - ULille	R — Document, report	PU - Public	48
D5.5	Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative	WP5	1 - RU	R — Document, report	PU - Public	18
D5.6	Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Update	WP5	1 - RU	R — Document, report	PU - Public	30

Deliverables*Grant Preparation (Deliverables screen) — Enter the info.**The labels used mean:**Public — fully open ( automatically posted online)**Sensitive — limited under the conditions of the Grant Agreement**EU classified —RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision [2015/444](#)*

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D5.7	Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Final update	WP5	1 - RU	R — Document, report	PU - Public	42

Deliverable D1.1 – Governance structures and management including internal communication

Deliverable Number	D1.1	Lead Beneficiary	1. RU
Deliverable Name	Governance structures and management including internal communication		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	12	Work Package No	WP1

Description			
Develop a comprehensive digital report in English that provides an overview of the governance structures and management processes including the channels and procedures that will be used to ensure effective internal communication.			

Deliverable D1.2 – Governance structures and management including internal communication - Updated

Deliverable Number	D1.2	Lead Beneficiary	1. RU
Deliverable Name	Governance structures and management including internal communication - Updated		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	36	Work Package No	WP1

Description			
Develop a comprehensive digital report in English that provides an overview of the governance structures and management processes including the channels and procedures that will be used to ensure effective internal communication			

Deliverable D1.3 – Quality guidelines and mechanisms for implementation

Deliverable Number	D1.3	Lead Beneficiary	2. UMH
Deliverable Name	Quality guidelines and mechanisms for implementation		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	6	Work Package No	WP1

Description			
Define a comprehensive electronic quality guidelines and mechanisms document in English that outlines the specific quality standards, procedures and mechanisms.			

Deliverable D1.4 – Quality guidelines and mechanisms for implementation - Update

Deliverable Number	D1.4	Lead Beneficiary	2. UMH
Deliverable Name	Quality guidelines and mechanisms for implementation - Update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP1

Description
Define a comprehensive electronic quality guidelines and mechanisms document in English that outlines the specific quality standards, procedures and mechanisms.

Deliverable D1.5 – Quality guidelines and mechanisms for implementation - Final update

Deliverable Number	D1.5	Lead Beneficiary	2. UMH
Deliverable Name	Quality guidelines and mechanisms for implementation - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP1

Description
Define a comprehensive electronic quality guidelines and mechanisms document in English that outlines the specific quality standards, procedures and mechanisms.

Deliverable D2.1 – Scientific challenges in neurotechnology

Deliverable Number	D2.1	Lead Beneficiary	1. RU
Deliverable Name	Scientific challenges in neurotechnology		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP2

Description
Define and elaborate scientific challenges in neurotechnology along the eight dimensions, incorporating innovation, sustainability and societal impact in a English electronic report.

Deliverable D2.2 – Scientific challenges in neurotechnology - Update 1

Deliverable Number	D2.2	Lead Beneficiary	1. RU
Deliverable Name	Scientific challenges in neurotechnology - Update 1		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP2

Description
Define and elaborate scientific challenges in neurotechnology along the eight dimensions, incorporating innovation, sustainability and societal impact in a English electronic report.

Deliverable D2.3 – Scientific challenges in neurotechnology - Update 2

Deliverable Number	D2.3	Lead Beneficiary	1. RU
Deliverable Name	Scientific challenges in neurotechnology - Update 2		
Type	R — Document, report	Dissemination Level	PU - Public

Due Date (month)	36	Work Package No	WP2
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Description			
Define and elaborate scientific challenges in neurotechnology along the eight dimensions, incorporating innovation, sustainability and societal impact in a English electronic report.			

Deliverable D2.4 – Scientific challenges in neurotechnology - Final update

Deliverable Number	D2.4	Lead Beneficiary	1. RU
Deliverable Name	Scientific challenges in neurotechnology - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP2

Description			
Define and elaborate scientific challenges in neurotechnology along the eight dimensions, incorporating innovation, sustainability and societal impact in a English electronic report.			

Deliverable D2.5 – Learning goals and joint education programmes - Goals

Deliverable Number	D2.5	Lead Beneficiary	1. RU
Deliverable Name	Learning goals and joint education programmes - Goals		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	6	Work Package No	WP2

Description			
Define learning goals and create joint learning programmes in neurotechnology in English. Regularly assessed using metrics to improve knowledge creation.			

Deliverable D2.6 – Learning goals and joint education programmes - Programmes

Deliverable Number	D2.6	Lead Beneficiary	1. RU
Deliverable Name	Learning goals and joint education programmes - Programmes		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP2

Description			
Define learning goals and create joint learning programmes in neurotechnology in English. Regularly assessed using metrics to improve knowledge creation.			

Deliverable D2.7 – Learning goals and joint education programmes - Update

Deliverable Number	D2.7	Lead Beneficiary	1. RU
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Deliverable Name	Learning goals and joint education programmes - Update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP2

Description
Define learning goals and create joint learning programmes in neurotechnology in English. Regularly assessed using metrics to improve knowledge creation.

Deliverable D2.8 – Learning goals and joint education programmes - Final update

Deliverable Number	D2.8	Lead Beneficiary	1. RU
Deliverable Name	Learning goals and joint education programmes - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP2

Description
Define learning goals and create joint learning programmes in neurotechnology in English. Regularly assessed using metrics to improve knowledge creation.

Deliverable D2.9 – Establish an overarching online student platform following EWP standards

Deliverable Number	D2.9	Lead Beneficiary	3. KI
Deliverable Name	Establish an overarching online student platform following EWP standards		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP2

Description
Establish a facility for NeurotechEU that incorporates (1) CMS, (2) LMS and (3) SIS. Regularly assessed using metrics to improve application.

Deliverable D2.10 – Establish an overarching online student platform following EWP standards - Update

Deliverable Number	D2.10	Lead Beneficiary	3. KI
Deliverable Name	Establish an overarching online student platform following EWP standards - Update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP2

Description
Establish a facility for NeurotechEU that incorporates (1) CMS, (2) LMS and (3) SIS. Regularly assessed using metrics to improve application.

Deliverable D2.11 – Establish an overarching online student platform following EWP standards - Final update

Deliverable Number	D2.11	Lead Beneficiary	3. KI
Deliverable Name	Establish an overarching online student platform following EWP standards - Final update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP2

Description	
Establish a facility for NeurotechEU that incorporates (1) CMS, (2) LMS and (3) SIS. Regularly assessed using metrics to improve application.	

Deliverable D2.12 – Develop inclusive and flexible pedagogical methods for learners at all levels

Deliverable Number	D2.12	Lead Beneficiary	7. ULille
Deliverable Name	Develop inclusive and flexible pedagogical methods for learners at all levels		
Type	DEM — Demonstrator, pilot, prototype	Dissemination Level	PU - Public
Due Date (month)	18	Work Package No	WP2

Description	
1. Update and generate content (M18), 2. Develop online and AI-learning partners (M36), 3. generate online tools for personalised learning (M36), 4. foster practical experience and mobility.	

Deliverable D2.13 – Develop inclusive and flexible pedagogical methods for learners at all levels - Update

Deliverable Number	D2.13	Lead Beneficiary	7. ULille
Deliverable Name	Develop inclusive and flexible pedagogical methods for learners at all levels - Update		
Type	DEM — Demonstrator, pilot, prototype	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP2

Description	
1. Update and generate content (M18), 2. Develop online and AI-learning partners (M36), 3. generate online tools for personalised learning (M36), 4. foster practical experience and mobility.	

Deliverable D3.1 – Alliance-wide platform for grants and tenders

Deliverable Number	D3.1	Lead Beneficiary	4. UBO
Deliverable Name	Alliance-wide platform for grants and tenders		
Type	OTHER	Dissemination Level	PU - Public

Due Date (month)	24	Work Package No	WP3
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Description			
Development and implementation of alliance-wide platform for grants and tenders where students & staff are informed about available European grants & tenders to cover mobility. Format: electronic, Language: English and national languages			

Deliverable D3.2 – Online training and support

Deliverable Number	D3.2	Lead Beneficiary	3. KI
Deliverable Name	Online training and support		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP3

Description			
Online training and support in the field of equal opportunities available to the alliance. Representatives from all the partner universities shall take an online training course.			

Deliverable D3.3 – Online training and support - Update

Deliverable Number	D3.3	Lead Beneficiary	3. KI
Deliverable Name	Online training and support - Update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP3

Description			
Online training and support in the field of equal opportunities available to the alliance. Representatives from all the partner universities shall take an online training course.			

Deliverable D3.4 – Online training and support - Final update

Deliverable Number	D3.4	Lead Beneficiary	3. KI
Deliverable Name	Online training and support - Final update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP3

Description			
Online training and support in the field of equal opportunities available to the alliance. Representatives from all the partner universities shall take an online training course.			

Deliverable D3.5 – Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact

Deliverable Number	D3.5	Lead Beneficiary	6. UMF
Deliverable Name	Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	4	Work Package No	WP3

Description
Guidelines for identifying and correcting potential deviations from compliance of NeurotechEU++ values (M4, M12). Including apply ethical and socially responsible neurotechnology research and innovation Format: Printed, Language English

Deliverable D3.6 – Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Update

Deliverable Number	D3.6	Lead Beneficiary	6. UMF
Deliverable Name	Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP3

Description
Guidelines for identifying and correcting potential deviations from compliance of NeurotechEU++ values (M4, M12). Including apply ethical and socially responsible neurotechnology research and innovation Format: Printed, Language English

Deliverable D3.7 – Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Final update

Deliverable Number	D3.7	Lead Beneficiary	6. UMF
Deliverable Name	Charter of NeurotechEU++ values / Guidelines for practitioners including a pathways for social impact - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP3

Description
Guidelines for identifying and correcting potential deviations from compliance of NeurotechEU++ values (M4, M12). Including apply ethical and socially responsible neurotechnology research and innovation Format: Printed, Language English

Deliverable D3.8 – Blueprint for new training formats in innovation and entrepreneurship

Deliverable Number	D3.8	Lead Beneficiary	8. HR
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Deliverable Name	Blueprint for new training formats in innovation and entrepreneurship		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP3

Description
Plan for programmes and courses in innovation and entrepreneurship that include internships with partner organisations, companies, and institutions.

Deliverable D3.9 – Blueprint for new training formats in innovation and entrepreneurship - Update

Deliverable Number	D3.9	Lead Beneficiary	8. HR
Deliverable Name	Blueprint for new training formats in innovation and entrepreneurship - Update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP3

Description
Plan for programmes and courses in innovation and entrepreneurship that include internships with partner organisations, companies, and institutions.

Deliverable D3.10 – Blueprint for new training formats in innovation and entrepreneurship - Final update

Deliverable Number	D3.10	Lead Beneficiary	8. HR
Deliverable Name	Blueprint for new training formats in innovation and entrepreneurship - Final update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP3

Description
Plan for programmes and courses in innovation and entrepreneurship that include internships with partner organisations, companies, and institutions.

Deliverable D4.1 – NeurotechEU report integrating multicultural components during events

Deliverable Number	D4.1	Lead Beneficiary	6. UMF
Deliverable Name	NeurotechEU report integrating multicultural components during events		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP4

Description
Present the analysis of the integration of multicultural components into events organised by NeurotechEU in an English electronic format.

Deliverable D4.2 – NeurotechEU report integrating multicultural components during events - Update 1

Deliverable Number	D4.2	Lead Beneficiary	6. UMF
Deliverable Name	NeurotechEU report integrating multicultural components during events - Update 1		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP4

Description
Present the analysis of the integration of multicultural components into events organised by NeurotechEU in an English electronic format.

Deliverable D4.3 – NeurotechEU report integrating multicultural components during events - Update 2

Deliverable Number	D4.3	Lead Beneficiary	6. UMF
Deliverable Name	NeurotechEU report integrating multicultural components during events - Update 2		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP4

Description
Present the analysis of the integration of multicultural components into events organised by NeurotechEU in an English electronic format.

Deliverable D4.4 – NeurotechEU report integrating multicultural components during events - Final update

Deliverable Number	D4.4	Lead Beneficiary	6. UMF
Deliverable Name	NeurotechEU report integrating multicultural components during events - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP4

Description
Present the analysis of the integration of multicultural components into events organised by NeurotechEU in an English electronic format.

Deliverable D4.5 – Cooperation models including the sustainable regional development

Deliverable Number	D4.5	Lead Beneficiary	1. RU
Deliverable Name	Cooperation models including the sustainable regional development		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP4

Description
Foster and expand cooperation models relevant to identified needs and yearly evaluate through that will include common science and education agenda to sustainable regional development English electronic reports.

Deliverable D4.6 – Cooperation models including the sustainable regional development - Update 1

Deliverable Number	D4.6	Lead Beneficiary	1. RU
Deliverable Name	Cooperation models including the sustainable regional development - Update 1		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP4

Description
Foster and expand cooperation models relevant to identified needs and yearly evaluate through that will include common science and education agenda to sustainable regional development English electronic reports.

Deliverable D4.7 – Cooperation models including the sustainable regional development - Update 2

Deliverable Number	D4.7	Lead Beneficiary	1. RU
Deliverable Name	Cooperation models including the sustainable regional development - Update 2		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP4

Description
Foster and expand cooperation models relevant to identified needs and yearly evaluate through that will include common science and education agenda to sustainable regional development English electronic reports.

Deliverable D4.8 – Cooperation models including the sustainable regional development - Final update

Deliverable Number	D4.8	Lead Beneficiary	1. RU
Deliverable Name	Cooperation models including the sustainable regional development - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP4

Description
Foster and expand cooperation models relevant to identified needs and yearly evaluate through that will include common science and education agenda to sustainable regional development English electronic reports.

Deliverable D4.9 – Translation of innovations into the industry

Deliverable Number	D4.9	Lead Beneficiary	5. BOUN
Deliverable Name	Translation of innovations into the industry		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP4

Description
Develop a common strategy for technology transfer within the field of neurotechnology and provide recommendations for the implementation of the strategy translation of innovations into the industry and yearly updates with implementations.

Deliverable D4.10 – Translation of innovations into the industry - Update

Deliverable Number	D4.10	Lead Beneficiary	5. BOUN
Deliverable Name	Translation of innovations into the industry - Update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP4

Description
Develop a common strategy for technology transfer within the field of neurotechnology and provide recommendations for the implementation of the strategy translation of innovations into the industry and yearly updates with implementations.

Deliverable D4.11 – Translation of innovations into the industry - Final update

Deliverable Number	D4.11	Lead Beneficiary	5. BOUN
Deliverable Name	Translation of innovations into the industry - Final update		
Type	OTHER	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP4

Description
Develop a common strategy for technology transfer within the field of neurotechnology and provide recommendations for the implementation of the strategy translation of innovations into the industry and yearly updates with implementations.

Deliverable D5.1 – Comprehensive communication and dissemination strategy

Deliverable Number	D5.1	Lead Beneficiary	3. KI
Deliverable Name	Comprehensive communication and dissemination strategy		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP5

Description
Comprehensive communication and dissemination strategy setting out the precise aims, objectives, and mechanisms for communicating the NeurotechEU project including events and exhibitions of NeurotechEU and the Museum of Brain and Technology.

Deliverable D5.2 – Comprehensive communication and dissemination strategy - Update

Deliverable Number	D5.2	Lead Beneficiary	3. KI
Deliverable Name	Comprehensive communication and dissemination strategy - Update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP5

Description
Comprehensive communication and dissemination strategy setting out the precise aims, objectives, and mechanisms for communicating the NeurotechEU project including events and exhibitions of NeurotechEU and the Museum of Brain and Technology.

Deliverable D5.3 – Roadmap report on achievements and impact indicators

Deliverable Number	D5.3	Lead Beneficiary	7. ULille
Deliverable Name	Roadmap report on achievements and impact indicators		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	36	Work Package No	WP5

Description
Roadmap report on achievements and impact indicators, including: Processes, NeurotechEU joint programmes, NeurotechEU joint research centre, technology transfer and spin-offs, fundraising opportunities platform, statutes for NeurotechEU as transnational campus, NeurotechEU2040 revised action plan for phase III (NeurotechEU as a brand and a model for education, training and translational research for other HEI in the EHEA).

Deliverable D5.4 – Roadmap report on achievements and impact indicators - Update

Deliverable Number	D5.4	Lead Beneficiary	7. ULille
Deliverable Name	Roadmap report on achievements and impact indicators - Update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP5

Description
Roadmap report on achievements and impact indicators, including: Processes, NeurotechEU joint programmes, NeurotechEU joint research centre, technology transfer and spin-offs, fundraising opportunities platform, statutes for NeurotechEU as transnational campus, NeurotechEU2040 revised action plan for phase III (NeurotechEU as a brand and a model for education, training and translational research for other HEI in the EHEA).

Deliverable D5.5 – Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative

Deliverable Number	D5.5	Lead Beneficiary	1. RU
Deliverable Name	Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	18	Work Package No	WP5

Description
Outlining a comprehensive strategy report in English for the development and implementation of the European Innovation Council Regional Innovation Ecosystem Initiative, to encourage collaboration between all stakeholders and drive innovation in all regions.

Deliverable D5.6 – Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Update

Deliverable Number	D5.6	Lead Beneficiary	1. RU
Deliverable Name	Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	30	Work Package No	WP5

Description
Outlining a comprehensive strategy report in English for the development and implementation of the European Innovation Council Regional Innovation Ecosystem Initiative, to encourage collaboration between all stakeholders and drive innovation in all regions.

Deliverable D5.7 – Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Final update

Deliverable Number	D5.7	Lead Beneficiary	1. RU
Deliverable Name	Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative - Final update		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	42	Work Package No	WP5

Description
Outlining a comprehensive strategy report in English for the development and implementation of the European Innovation Council Regional Innovation Ecosystem Initiative, to encourage collaboration between all stakeholders and drive innovation in all regions.

LIST OF MILESTONES

Milestones					
Grant Preparation (Milestones screen) — Enter the info.					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
1	Project governance and quality management implemented successfully	WP1	1-RU	Description: Establishing and running clear organisational structures and responsibilities for the alliance and ensure that all stakeholders are aware of their roles, responsibilities and NeurotechEU's values, including a comprehensive quality management system that meets international standards and regulatory requirements Means of verification: D1.1 Governance structures and management including internal communication	12
2	European Master in Neurotechnology	WP2	1-RU	Description: neurotechnology master's programmes of our partners in a joint effort, leading to a certificate from NeurotechEU. Means of verification: Student registration for the master	24
3	Borderless learning	WP2	4-UBO	Description: Facilitate the ability to access education and resources for all learners without geographical or physical barriers Means of verification: Work Group Education review. Work Group Equal opportunity review. Feedback from a group of students and researchers asked to use learning tools from other institutions within the alliance	24
4	Mobility	WP3	7-ULille	Description: Reach of 35% student mobility and 15% of staff and researcher mobility Means of verification: Survey	48
5	NeurotechEU collaborations established	WP4	5-BOUN	Description: Establish collaborations with other alliances, universities, companies and public	36

Milestones					
Grant Preparation (Milestones screen) — Enter the info.					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
				bodies like municipalities, regional development agencies and NGOs, globally across 8 NeurotechEU dimensions based on dedicated impact analyses Means of verification: Identified institutions for mutually beneficial collaborations and established networking	
6	Communication and dissemination plan up and running	WP5	3-KI	Description: Implementing the communication and dissemination plan complying with the communication strategy and the quality plan of the project. Means of verification: D5.1 Comprehensive communication and dissemination strategy	12

LIST OF CRITICAL RISKS

Critical risks & risk management strategy			
Grant Preparation (Critical Risks screen) — Enter the info.			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
1	Delays in the formation of shared infrastructures (e.g. internal communication channels) due to technical or legal issues (Impact: high, likelihood: low)	WP1	<p>To ensure smooth implementation of shared infrastructure and communication channels, a comprehensive assessment will be conducted prior to their deployment. This assessment will specifically focus on identifying potential legal and technical barriers that may hinder and thus delay the implementation process. By conducting this assessment, it will be possible to determine the specific requirements needed for successful implementation.</p> <p>Moreover, this approach will allow for customized solutions to be developed or individual</p>

Critical risks & risk management strategy <i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
			adjustments to be made to the infrastructure, if needed. By tailoring the implementation to address specific legal and technical challenges, it will be easier to overcome any barriers and ensure that the shared infrastructure and communication channels meet the unique needs of the participating institutions.
2	Deviation from the project plan that may result in delays (Impact: low, likelihood: medium)	WP1	To prevent delays and ensure timely progress, we will incorporate a regular review process in our internal procedures. This allows us to identify any potential issues promptly and take necessary actions to address them and consecutively prevent actual delays. Through these regular reviews, we aim to maintain an adaptive and responsive approach in project management. As part of the review process, we will implement amendments based on identified needs. By addressing these issues as soon as possible, we can effectively mitigate the risk of actual delays.
3	Delays in generation of new content in formats appropriate for online and borderless learning (Impact: high, likelihood: low)	WP2	We will build on modules and content developed in the last funding period and involve the same players as previously. In addition, we will hire experts tasked with developing appropriate content for the extended online platforms to ensure timely delivery of new content and novel forms of content and learning tools in time.
4	Administrative hurdles in the development of our platforms and tools due to national, regional or European laws or in-use approaches for content and data sharing (Impact: medium, likelihood: medium)	WP2	We are already working together with the legal departments to ensure timely access to and dissemination of content for learning and research. Moreover, we are developing innovative blockchain accrediting approaches and certificates to enable faster and easier integration of new content and modules into existing national structures and programs.
5	Lack of available funds to cover physical mobility. (Impact: high, likelihood: low)	WP3	To maximize the availability of financial support for all forms of mobility, we are working together with institutional experts on mobility programs. Our aim is to leverage all available national, European and other funds to cover mobility. In the case that these funds are not sufficient to fully cover the mobility expenses, we are prepared to take proactive measures. We will review and amend our own budget to allocate additional resources specifically for (student) mobility. By doing so, we ensure that mobility goals will be reached.
6	Insufficient increase in participation rate of learners and staff in mobility programs due to a lack of motivation. (Impact: high, likelihood: low)	WP3	In case it is needed to adapt to changing circumstances such as the Covid-19 pandemic, we will strategically shift our focus from physical to virtual mobility. This shift will involve enhancing the appeal and desirability of virtual mobility experiences by actively developing innovative approaches. To achieve this, we will invest in the creation of new and engaging

Critical risks & risk management strategy <i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
			ways to facilitate virtual mobility. This may include the development of virtual exchange programs, virtual internships, online collaborative projects, and interactive virtual learning environments. By leveraging technology and innovative pedagogical methods, we aim to provide meaningful and enriching virtual mobility experiences for learners.
7	Difficulties in prioritising relevant institutions as associated partners or to achieve an informed growing of NeurotechEU's network in terms of complementarity. (Impact: low, likelihood: low)	WP4	To identify suitable partners with strengths in the specific neurotechnology dimensions, we will utilise and if necessary, specify the focus of the bibliometric analyses we are conducting to identify the strengths of potential partners. Our goal is to conduct targeted assessments of potential partner's expertise.
8	Close collaboration with the public bodies, municipalities, regional development agencies other than our associated partners may be not at a desired level due to difficulties of such stakeholders' in understanding the relation of the dimensions of neurotechnology e.g., Neurometaphysics to UN SDGs. (Impact: high, likelihood: medium)	WP4	We will be organising seminars and meetings to discuss how neurotechnology can contribute to sustainable regional development based on successful examples.
9	Variation in perception and performance of the intercultural communication among partners (Impact: medium, likelihood: high)	WP5	We will build on transparent, collaborative and consistent communication within the consortium and schedule regular meetings to ensure all parties are being heard and measures can be taken to overcome variation in perception and cultures.
10	Lack of communication with stakeholders and individual partner universities (Impact: high, likelihood: low)	WP5	We will highlight the importance and opportunities of a successful communication strategy for all the stakeholders connected to the project by having regular contact and share results and best practices.

TECHNICAL DESCRIPTION (PART B)

HISTORY OF CHANGES TABLE

HISTORY OF CHANGES TABLE			
VERSION	DATE	CHANGE	JUSTIFICATION
1.0	21/07/2023	PART A: the bank account for the coordinator has been added	To ensure compliance with the content requirements for the Part A and the Excel table.
1.0	21/07/2023	PART A: fixed start date of 1 November 2023 has been added	This date will allow to efficiently organize work among the consortium, rapidly launch activities and contribute timely to the objectives and tasks in line with the HEIs academic schedule
1.0	21/07/2023	PART A - Change to the budget: the budget was reallocated between ULille and its affiliated entities CNRS and INSERM in WP1, WP2, WP3, WP4 & WP5. Initial figures: ULille – € 2.157.412,00 CNRS - € 0 Inserm - € 0 Modified figures: ULille – € 1,919,258.77 CNRS - € 171.665,23 Inserm – € 66,488.00 Budget allocated to INSERM and CNRS (affiliated entities) under each Work Package: CNRS: - WP1: €55,798.52 - WP2: €21,821.89 - WP3: €50,401.04 - WP4: €21,821.89 - WP5: €21,821.89 INSERM: - WP1: €0 - WP2: €8,311.00 - WP3: €41,555.00 - WP4: €8,311.00 - WP5: €8,311.00	The affiliated entities, CNRS and INSERM, had no budget allocated in the application, but is now defined for each affiliated entity under the work packages where they will be contributing to the activities.
1.0	21/07/2023	PART A: Associated entity INRIA is removed as associated entity from ULille and added as associated partner	It has been decided by ULille that INRIA will not be declared as affiliated entity but remains associated partner without receiving funding from the grant
1.0	21/07/2023	PART A: The financial figures for all beneficiaries, WP per WP have been added	To ensure compliance with the content requirements for the Part A and the Excel table
1.0	21/07/2023	PART A - Change to staff effort: the staff effort was reallocated between ULille and its affiliated entities CNRS and INSERM in WP1, WP2, WP3, WP4 & WP5. Initial figures: ULille – 314 PM WP1: 76 PM WP2: 48 PM WP3: 110 PM WP4: 36 PM WP5: 48 PM CNRS – 0 PM Inserm - 0 PM Modified figures: ULille – 292 PM WP1: 72 PM WP2: 45 PM WP3: 101 PM WP4: 33 PM WP5: 45 PM	The affiliated entities INSERM and CNRS had no staff effort defined in the application. Staff effort has been defined according to the activities both affiliated entities will be contributing under the relevant Work Packages.

		<p>CNRS – 14 PM WP1: 4 PM WP2: 2 PM WP3: 4 PM WP4: 2 PM WP5: 2 PM</p> <p>Inserm – 8 PM WP1: 0 PM WP2: 1 PM WP3: 5 PM WP4: 1 PM WP5: 1 PM</p>	
1.0	21/07/2023	<p>PART B: The work packages' tables with timelines, description of objectives, tasks and contributors (WP leaders, participant to tasks) were removed from Part B and encoded in the online Part A.</p> <p>Clarification to the contributors/participants per work package task has been added</p>	<p>To ensure compliance with the content requirements for the Part A and Part B of the Description of Action</p> <p>To ensure compliance with the GAP instruction to review the information under Contributors/Participants.</p>
1.0	21/07/2023	<p>PART B: The staff effort' tables staff effort per work package and per participant were removed from Part B and encoded in the online Part A.</p>	To ensure compliance with the content requirements for the Part A and Part B of the Description of Action
1.0	21/07/2023	<p>PART B: The list of deliverables and their descriptions were removed from the Part B and encoded in the online Part A.</p>	To ensure compliance with the content requirements for the Part A and Part B of the Description of Action
	21/07/2023	<p>PART A: Split D1.1 Governance structures and management including internal communication into D1.1 & D1.2 Split D1.2 Quality guidelines and mechanisms for implementation into D1.3, D1.4 & D1.5 Split D2.1 Scientific challenges in neurotechnology into D2.1, D2.2, D2.3 & D2.4 Split D2.2 Learning goals and joint education programmes into D2.5, D2.6, D2.7 & D2.8 Split D2.3 Establish an overarching online student platform following EWP standards into D2.9, D2.10 & D2.11 Split D2.4 Develop inclusive and flexible pedagogical methods for learners at all levels into D2.12 & D2.13 Split D3.2 Online training and support into D3.2, D3.3 & D3.4 Split D3.3 Charter of NeurotechEU++ values / Guidelines for practitioners including a pathway for social impact into D3.5, D3.6 & D3.7 Split D3.4 Blueprint for new training formats in innovation and entrepreneurship D3.8, D3.9 & D3.10 Split D4.1 NeurotechEU report integrating multicultural components during events into D4.1, D4.2, D4.3 & D4.4 Split D4.2 Cooperation models including the sustainable regional development into D4.5, D4.6, D4.7 & D4.8 Split D4.3 Translation of innovations into the industry into D4.9, D4.10 & D4.11 Split D5.1 Comprehensive communication and dissemination strategy into D5.1 & D5.2 Split D5.2 Roadmap report on achievements and impact indicators into D5.3 & D5.4 Split D5.3 Strategy to build on the European Innovation Council Regional Innovation Ecosystem Initiative into D5.5, D5.6 & D5.7</p>	To ensure compliance with the GAP instruction to split deliverables with multiple delivery dates
1.0	21/07/2023	<p>PART B: The list of milestones was removed from the Part B and encoded in the online Part A.</p>	To ensure compliance with the content requirements for the Part A and Part B of the Description of Action
1.0	21/07/2023	<p>PART B: The list of critical risks and their descriptions (including the level of likelihood and</p>	To ensure compliance with the content requirements for the Part A and Part B of the Description of Action

		mitigation measures) were removed from the Part B and encoded in the online Part A.	
1.0	21/07/2023	PART A: This will be addressed during the project implementation in WP4, task 4.4 Regional development and as part of D4.5, D4.6, D4.7 & D4.8.	ESR – shortcoming: In addition, structural cooperation models for sustainable regional development are mentioned in the proposal; however, they are not described in detail.
1.0	21/07/2023	PART A: WP3 (Empowering Learners and staff) - task 3.1 (Enhancing quality of and opportunities for training and mobility) In order to address the ESR-shortcoming, the following statement has been included: “This task includes the enhancement of staff wellbeing, career enrichment and skills development (e.g., staff mobility, exposure to international networking and exchange opportunities)” and details will be developed in cooperation with all partners during the project.	ESR – shortcoming: The alliance will expand various mobility formats (physical, virtual, blended; short and long term) for students (to 35% by 2030), academics and administrative staff; for reasons of sustainability, a focus will be on virtual formats. All joint programs will implement seamless student mobility and stakeholders' virtual and physical mobility between member institutions will be promoted. However, the proposal is not sufficiently clear about the enhancement of staff wellbeing, career enrichment and skills development (e.g., staff mobility, exposure to international networking and exchange opportunities).
1.0	21/07/2023	PART A: Due to the nature of shortcoming requiring further collaboration between partners during the project implementation, the shortcoming will be addressed in WP1 (Management & Coordination, specially, task 1.3 (Implementing Quality management) including “These quality guidelines and mechanisms for implementation will address the shortcoming of the ESR regarding tasks, objectives, milestones and deliverables”. This will also be captured in deliverable 1.3.	ESR – shortcoming: The 5 work packages (WP) and underlying 8 Working Groups (WG) are transparently structured. WPs and WGs focus on relevant and complementary aspects and form a coherent approach. In general, the workplan and roadmap are feasible and describe the expected progress and outcomes. The declared milestones refer to achievable goals and feasible tasks. However, some tasks are formulated as objectives and events rather than concrete actions and are not sufficiently detailed; the objectives in some of the individual WPs are highly aggregated; there are only few milestones; some deliverables are not sufficiently detailed and concrete
1.0	21/07/2023	PART A: Due to the nature of shortcoming requiring further collaboration between partners during the project implementation, the shortcoming will be addressed in WP1 (Management and Coordination), task 1.3 (Implementing Quality management) by including “Furthermore, as part of task 1.3, the quality guidelines and mechanisms for implementation (D1.3) will include an elaboration on how progress is monitored during the projects and the quantitative target indicators will be revised”. This will also be captured in deliverable 1.3.	ESR – shortcoming: The quality and financial settings of the proposal are convincingly given by a quality assurance (QA) plan which relies on guiding principles and includes feedback from students and staff. However, the measurement of progress is not very ambitious and elaborated: most key performance indicators are not described as indicators but as deliverables; accordingly, there is a lack of concrete, especially quantitative target indicators
1.0	25/8/2023	PART B: The following paragraph was inserted in section 2.1.4 Cost effectiveness and financial management of the Part B to address the shortcoming: “The relatively high costs for Management and Coordination can be explained by three main reasons: First of all, the project involves collaboration between multiple institutions from different countries and requires a huge effort in project management and coordination personnel. The complexity of operations at the university alliance level needs a large workforce to manage each aspect efficiently at each institution and specifically to coordinate among the institutions. Example: local and coordination of the administrative systems, legal and regulatory compliance, mobility management, IT, social networks and online presence, community engagement, internationalisation, governance, relations with the students, high-quality assurance and evaluation, etc. are some of the high effort consuming tasks required for the correct functioning of the alliance. Second, the partners most involved in some work packages/tasks come from high-wage countries and this raises the associated average cost (example: Netherlands, Sweden, Germany, and Iceland)	ESR – shortcoming: Cost-effectiveness principles and budget planning are presented in sufficient detail. QA is expected to ensure that the alliance will be cost-efficient. However, the relatively high costs for Management and Coordination are not sufficiently justified and sufficient information is not provided to explain why only one type of staff categories is declared in the estimated budget.

		Finally, it is important to note that while these costs are relatively high and <u>only one type of staff is included in the budget file, several other experts</u> on e.g., mobility, infrastructure & technology, education and communication <u>from all partners will contribute to the project.</u>	
1.0	21/07/2023	PART A: The shortcoming was addressed in WP3 (Empowering Learners and Staff) in t k 3.1 (Enhancing quality of and opportunities for training and mobility) by including: “The mobility opportunities will not only focus on mobility between higher education institutions, but also on mobility to other organizations such as companies and governmental institutions”.	ESR – shortcoming: The consortium’s organisational framework is well designed to optimise the benefits of the integrated cooperation by mitigating administrative hurdles and encouraging all types of mobility within the alliance. However, mobility to and from organisations other than higher education institutions is not sufficiently addressed in the proposal.
1.0	21/07/2023	<p>PART A: The mitigation measure of risk 1, 2, 5, 6 & 7 have been revised. Mitigation measure Risk 1 – “ Before the shared infrastructure and communication channels are implemented, an assessment of potential legal and/or technical barriers will be conducted, and specific requirements for implementation will be identified. As such, there will be options for customised solutions or individual adjustments to the infrastructure. ” changed into “To ensure smooth implementation of shared infrastructure and communication channels, a comprehensive assessment will be conducted prior to their deployment. This assessment will specifically focus on identifying potential legal and technical barriers that may hinder and thus delay the implementation process. By conducting this assessment, it will be possible to determine the specific requirements needed for successful implementation.</p> <p>Moreover, this approach will allow for customized solutions to be developed or individual adjustments to be made to the infrastructure, if needed. By tailoring the implementation to address specific legal and technical challenges, it will be easier to overcome any barriers and ensure that the shared infrastructure and communication channels meet the unique needs of the participating institutions.”</p> <p>Mitigation measure Risk 2 – “We will include a regular review process in our internal procedures to make sure we can amend as soon as possible to prevent actual delays. These amendments will include a detailed project plan that includes clear milestones and deadlines. ” changed into “To prevent delays and ensure timely progress, we will incorporate a regular review process in our internal procedures. This allows us to identify any potential issues promptly and take necessary actions to address them and consecutively prevent actual delays. Through these regular reviews, we aim to maintain an adaptive and responsive approach in project management. As part of the review process, we will implement amendments based on identified needs. By addressing these issues as soon as possible, we can effectively mitigate the risk of actual delays.”</p> <p>Mitigation measure Risk 5 – “We are working together with institutional experts on mobility to make sure we use all available national, European and other funds to cover mobility. In the case that these funds are not sufficient, we will amend our own budget to cover (student) mobility. ” changed into “To maximize the availability of financial</p>	ESR – shortcoming: Risk analysis is overall adequate; however mitigation strategies are not always described in a sufficiently specific and operational manner.

		<p>support for all forms of mobility, we are working together with institutional experts on mobility programs. Our aim is to leverage all available national, European and other funds to cover mobility. In the case that these funds are not sufficient to fully cover the mobility expenses, we are prepared to take proactive measures. We will review and amend our own budget to allocate additional resources specifically for (student) mobility. By doing so, we ensure that mobility goals will be reached.”</p> <p>Mitigation measure Risk 6 – “Focus shift from physical mobility to virtual mobility by increasing the attractiveness of virtual mobility through the development of new innovative ways of virtual mobility experiences” changed into “In case it is needed to adapt to changing circumstances such as the Covid-19 pandemic, we will strategically shift our focus from physical to virtual mobility. This shift will involve enhancing the appeal and desirability of virtual mobility experiences by actively developing innovative approaches. To achieve this, we will invest in the creation of new and engaging ways to facilitate virtual mobility. This may include the development of virtual exchange programs, virtual internships, online collaborative projects, and interactive virtual learning environments. By leveraging technology and innovative pedagogical methods, we aim to provide meaningful and enriching virtual mobility experiences for learners.”</p> <p>Mitigation measure Risk 7 – “We will utilise and if necessary, specify the focus of the bibliometric analyses we are conducting to identify the strengths of potential partners, if needed, per 8 neurotechnology dimensions” changed into “To identify suitable partners with strengths in the specific neurotechnology dimensions, we will utilise and if necessary, specify the focus of the bibliometric analyses we are conducting to identify the strengths of potential partners. Our goal is to conduct targeted assessments of potential partner's expertise.”</p>	
1.0	21/07/2023	PART B: Joint mission statement has been added as Annex	To ensure compliance with the content requirements for the Part A and Part B of the Description of Action
1.0	22/08/2023	Part B: 2.2.1 consortium set-up (P61-69): The text that refers to associated partners and stakeholders has been revised. Associated partners that are not part of the list on Part A are described as stakeholders.	To ensure compliance with defined role of associated partners and similarity between Part A and Part B.
1.0	22/08/2023	Part B: Declarations The financial support to third parties has been changed into not applicable The text box “Seal of Excellence” has been removed	To ensure compliance with the GAP instructions and after review the instructions as what is considered as financial support to third parties.
1.0	23/10/2023	<p>Change CNRS and INSERM from Affiliated Entities into Associated Partners</p> <p>Part B: CNRS and INSERM are added to Table 7: Associated partners with ongoing collaborations under the category ‘Research Centres’</p> <p>Part A : Change of budget into original figures: CNRS and INSERM removed from the Beneficiaries tab as affiliated entities of Université de Lille</p> <p>CNRS and INSERM added as associated partners</p>	The inclusion of CNRS and INSERM as affiliated entities led into unnecessary increase of legal complexity without clear added value. It has been decided that CNRS and INSERM will participate as associated partners.

	<p>Initial figures: ULille – € 1,919,258.77 CNRS - € 171.665,23 INSERM – € 66,488.00</p> <p>Modified figures: ULille – € 2.157.412,00</p> <p>Budget allocation from INSERM and CNRS to ULille in Work Package: From CNRS to ULille: - WP1: €55,798.52 - WP2: €21,821.89 - WP3: €50,401.04 - WP4: €21,821.89 - WP5: €21,821.89 From INSERM to ULille: - WP1: €0 - WP2: €8,311.00 - WP3: €41,555.00 - WP4: €8,311.00 - WP5: €8,311.00</p> <p>Part A: Change to staff effort. The staff effort from CNRS and INSERM will be allocated to ULille in WP1, WP2, WP3, WP4 & WP5.</p> <p>Initial figures: ULille – 292 PM WP1: 72 PM WP2: 45 PM WP3: 101 PM WP4: 33 PM WP5: 45 PM</p> <p>CNRS – 14 PM WP1: 4 PM WP2: 2 PM WP3: 4 PM WP4: 2 PM WP5: 2 PM</p> <p>INSERM – 8 PM WP1: 0 PM WP2: 1 PM WP3: 5 PM WP4: 1 PM WP5: 1 PM</p> <p>Modified figures: ULille – 314 PM WP1: 76 PM WP2: 48 PM WP3: 110 PM WP4: 36 PM WP5: 48 PM</p>	
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1. RELEVANCE

1.1 Background and general objectives

Background and general objectives

Our growing understanding of the brain is critical to addressing some of the most pressing European challenges. The Organisation for Economic Co-operation and Development (OECD) initiated the Brain Capital initiative in order to recognise neuroscience as pivotal in our economy and society¹. Indeed, the economic and health burden of neurological disease is a global public health challenge, and neurological disorders are the leading cause of Disability Adjusted Life Years (DALYs, 276 million) and the second leading cause of deaths (9 million)² with an estimated total cost in Europe alone of over 1T€³. The World Health Organization estimates that half of the worldwide economic impact of disability will be specifically due to brain-related conditions by 2030⁴. Beyond the health domain, we can observe an increasing need for new brain-based technologies in the microprocessor, computer architecture, communication, and control domains. Indeed, with the end of Moore's law upon us, critical fundamental questions in computing are how our understanding of the efficiency and power of natural computation can be harnessed in silicon or neuromorphic computing⁵. In parallel, developing new soft robots with biomimetic bodies is considered as a crucial step toward safely integrating robots into society^{6,7}. However, classical control models do not generalise to the different qualitative forms of neuromorphic control that this transition to biomorphic robots requires. Lastly, the rapidly evolving field of AI introduces fundamental barriers to efficiency and transparency, which is an obstacle to its broad adaptation. It is also believed that a neuroscience-grounded AI can provide a path forward⁸, opening new avenues of applications from smart cities and space exploration to the Internet of Things (IoT) and nanorobotics. This landscape of opportunities and challenges is the interface of neuroscience and technology or *Neurotechnology*, technology for, from, and with the brain.

The European University Alliance of Brain and Technology (NeurotechEU) is a central network of higher education institutions that will train the future generation of researchers, innovators, and entrepreneurs that will implement the potential of neurotechnology into a reality for European society and beyond (Figure 1). Established in 2020, NeurotechEU is the first and only University Alliance focused on the education and research in Neurotechnology worldwide, bringing together eight leading universities, more than 50 partner research institutions, companies, societal stakeholders, cities, and non-governmental organisations across Europe. NeurotechEU delivers education and training for all segments of society and in all regions of Europe, educating students across all levels (bachelor's, master's, doctoral, and life-long learners) and shaping the next generation of multidisciplinary scientists, innovators, and entrepreneurs that will address Europe's challenges in technology and health. Being at the forefront of education and research in neurotechnology, NeurotechEU revolutionises *the quality and competitiveness of European higher education* placing Europa in the lead of Neurotechnology-higher education with no similar initiatives available globally. The NeurotechEU alliance directly serves the long-term vision of the European Universities approach by creating a network of universities across the European Union that, through their thematic complementarity and established collaboration framework, promote cooperation, innovation, and excellence in education and research.

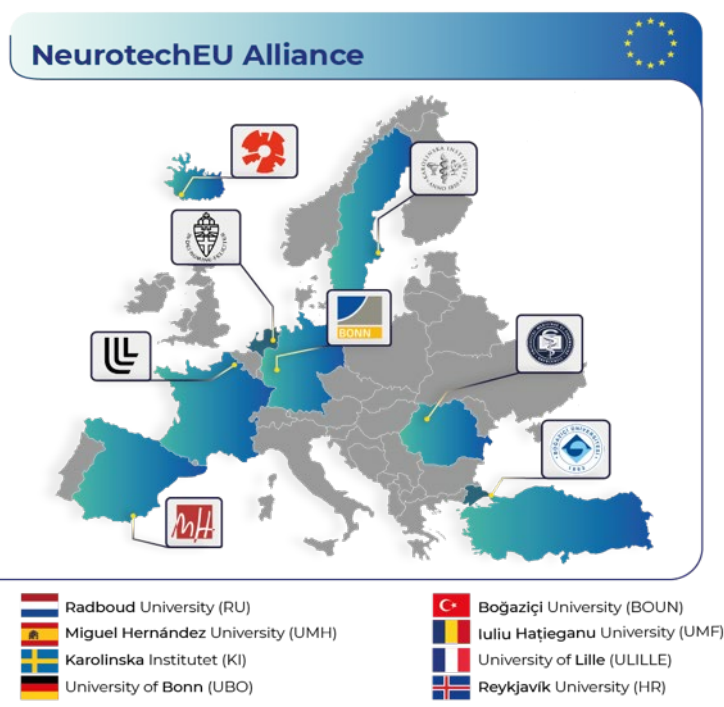


Figure 1: The European University of Brain and Technology (NeurotechEU) is the backbone of education and research in Neurotechnology, bringing together 183899 students and 31249 faculty and personnel across eight leading universities: Radboud University (RU, NL) 24633 students - 5886 personnel; University Miguel Hernández (UMH, ES) 19894 students - 2054 personnel; Karolinska institute (KI, SE) 6487 students - 5363 personnel; University of Bonn (UBO, DE) 33192 students - 7501 personnel; Bogazici University (BOUN, TR) 16233 students - 1767 personnel; University of Medicine and Pharmacy (UMF, RO) 8214 students - 1347 personnel; University of Lille (ULille, FR) 72000 students - 6700 personnel; Reykjavik University (HR, IS) 3246 students - 631 personnel.

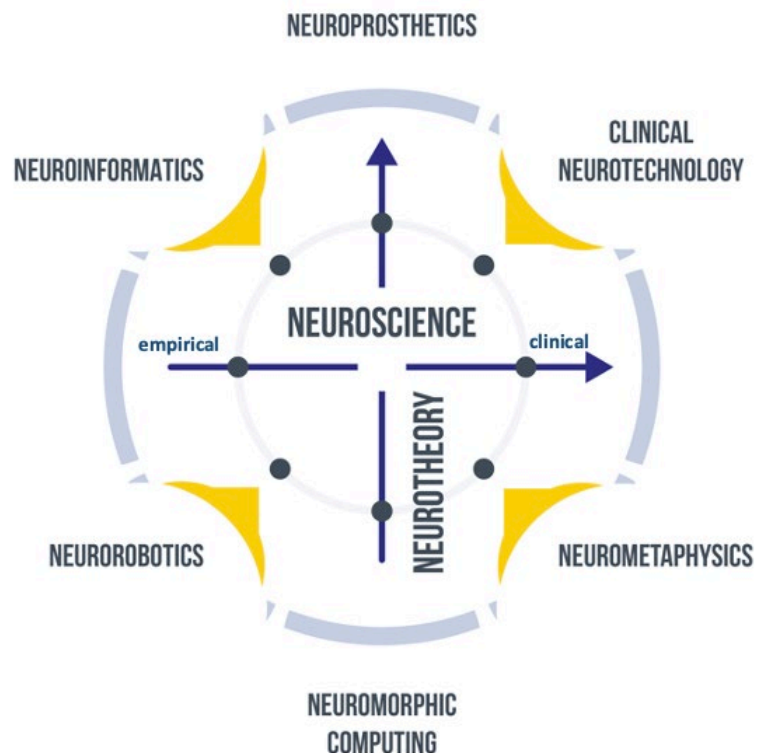
NeurotechEU contributes to the goal of creating a European Higher Education Area that is more interconnected, inclusive, and responsive to the needs of society and the economy by advancing research and education in the strategically placed area of brain and technology. Through a shared conceptual framework, common values, and established communication and training platforms, NeurotechEU will increase focused mobility and exchange opportunities for students and staff and foster collaboration on joint research and innovation projects.

NeurotechEU contributes to creating a European identity and a sense of belonging among students and researchers through its thematically structured and inclusive approach. By advancing the education and research in the emerging and high-impact field of Neurotechnology, NeurotechEU will establish the EU as a global leader in higher education and research in this field and so elevating the overall impact, credibility, and relevance of the European University initiative. In this way, NeurotechEU contributes directly to the objectives of the European Innovation Agenda (EIA) and assists in positioning Europe as a leading player on the global innovation scene beyond current deep tech. NeurotechEU will train thousands of the deep tech talented individuals the EAI calls for. Moreover, through its thematic focus, and well-structured, inclusive, and digitally enhanced approach, NeurotechEU can accelerate its development and achieve critical mass on a European scale. *Through its clear identity and values, the long-term commitment of all involved parties will be obtained and retained. At the same time, other stakeholders can find a short path towards inclusion in the initiative.*

THE EIGHT DIMENSIONS OF NEUROTECHNOLOGY

Neurotechnology is a crucial emerging scientific field that directly contributes to creating a high-impact future-oriented research, education, and innovation context that does not currently exist. Neurotechnology focuses on realising a broad set of methods, concepts, artificial systems, and technologies that aim to understand, interact with, repair, enhance, and directly influence the brain and behaviour. It will transform our growing understanding of the brain into technology that is relevant to various application areas, including neuroscience. In addition, Neurotechnology is a distinct methodology to advance our knowledge of the fundamental principles underlying the mind and the brain⁹. Neurotechnology provides strategic bridges between several disciplines, including neuroscience, medicine, engineering, artificial intelligence, cognitive science, robotics, social sciences, and the humanities, which can be arranged along eight dimensions (Figure 2).

Figure 2: The NeurotechEU Neurotechnology content space comprises eight dimensions that define the encompass current and future research, education, and the application of neurotechnology: 1) empirical and clinical neuroscience; 2) theoretical neuroscience; 3) neuromorphic computing; 4) neuromorphic control /neurorobotics; 5) neuroinformatics; 6) neuroprosthetics; 7) clinical neurotechnology; 8) neurometaphysics (neurophilosophy, neurolaw, neuroethics, neuroaesthetics, neurodesign). Each research and training programme defines clusters of activities in the neurotech content space, while each career and training path is a trajectory through it. See text for further explanation



The dimensions of Neurotechnology include:

Empirical and clinical neuroscience (Dimension 1, D1): The foundation of neurotechnology is our growing understanding of the brain as studied in empirical and clinical neuroscience, represented in dimension 1. The field of neuroscience is robust and supported by a range of training programs at all academic levels, and several of these are hosted by the NeurotechEU partners. Neurotechnology is built on progress in neuroscience, a field with increasing technological advances that have led to a doubling of the data generated every seven years¹⁰. This technology-oriented approach towards the science of mind and brain has defined a distinct development of neuroscience in which the correlations between specific manipulations and brain states are the standard. As a result, despite the exponential growth in neuroscience research, a fundamental understanding of the neuronal principles underlying the reported correlations still needs to be achieved. Indeed, it has been shown that the same data analysis approach towards deciphering the operations performed by a Commodore 64 processor fails to decode its algorithm or functions¹¹. The lack of progress in treating most neurological diseases such as stroke, addiction, and dementia further illustrates this challenge to the methods of empirical neuroscience. A noticeable exception is Parkinson's disease (PD), for which deep brain stimulation (DBS) has become a standard treatment method. This

is especially the case for patients for whom pharmacological interventions have ceased to be effective. This is thus a prime example of neurotechnology as a game-changer in the clinic¹². In addition, the effectiveness of these interventions has changed the perspective of NPD symptoms towards so-called 'tremor networks' contributing to a new and fundamental understanding of brain dynamics¹³. These examples illustrate that Neurotechnology creates a unique synergy with empirical and clinical neuroscience permitting progress in both domains¹⁴. NeurotechEU aims for this synergy at the heart of its program by strategically building on existing programmes in neuroscience and developing new complementary programmes, starting its specific contributions in dimension 2, Theoretical Neuroscience.

Theoretical neuroscience (D2): The development and implementation of neurotechnology requires specification. In neurotechnology, these are derived from our understanding of the principles of the organisation of the brain. The field of theoretical and computational neuroscience provides a necessary interface between empirical neuroscience and neurotechnology by unifying principles of neural organisation, which in turn permit further empirical evaluation and technical elaboration¹⁵. Without precise specifications, technological advances will be at most ad hoc and lack sufficient context in order to flourish. For this reason, training in neurotechnology must be based in understanding the principles of the organisation of the nervous system, the mind and brain. This link between theoretical neuroscience and engineering is also the intellectual motor inspiring the current AI revolution¹⁶. In addition, the further linking of neuroscience and artificial intelligence promises to inspire new brain-based approaches toward specialised and general artificial intelligence beyond our current capabilities¹⁷.

Neuromorphic systems/Neuromorphic computing (D3): Since Grey Walters and the early cybernetics movement of 1940, attempts have been made to recreate neuronal circuits and their operations using electronic hardware, giving rise to the field of neuromorphic computing. The need for these alternatives to the standard von Neumann computer architecture is that it promises to achieve high computational density while reducing power needs¹⁸. This approach is also seen as an alternative paradigm for computational hardware now that the exponential scaling of transistor density expressed in Moore's law is nearing an asymptote¹⁹. Neuromorphic hardware will also constitute an enabler for many applications of neurotechnology by providing brain-compatible computation at low power. This field also offers interfaces to material science and computer science.

Neuromorphic control/Neurorobotics (D4): The brain operates as an integrated architecture that is interfaced with the world through sensors and effectors. The field of morphological computation proposes that the biomechanics of biological bodies provide implicit computation, which offloads the central controller, i.e., the brain and the nervous system. The area of Neurorobotics combines the power of neuromorphic computation with the constraints of real-world interaction, embodiment, and control, providing benchmark theories and models of brain architectures²⁰. In addition, it offers new solutions to complex robot control challenges driven by demands for safe human-robot interaction, new types of soft robots, and their integration with advanced cognitive architectures.

Neuroinformatics (D5)²¹: The tools built for studying the brain will converge with those needed to analyse and control artefacts derived from our growing understanding of it. For this reason, developing such convergent tools and methods comprises a strategically critical dimension that will enhance the coherence of approaches between neuroscience and neurotechnology and strengthen the synergy between these fields. In addition, given the trend in neurotechnology toward complete integrated systems as opposed to discrete components, the core challenge of the area is to articulate a multi-scale theory of the brain based on which design decisions can be made, as opposed to being driven by what is technologically possible. This calls for advancing multi-scale whole-brain models as a core activity within neuroinformatics²².

Neuroprosthetics (D6): In a general sense, neuroprosthetics is a paradigmatic field of neurotechnology since it combines sensing of brain states, their transformation in a functionally appropriate way, and lastly, the functional modulation of brain states as a result of this transformation²³. As in the earlier example of the treatment of symptoms of PD through DBS, neuroprosthetics is based on a feedback system with distinct stages: input sampling, signal processing, transformation, output preparation, and stimulation. Each of these stages represents a universe of scientific and engineering challenges, from the design of effective interfaces and the identification of correct representational coding formats (e.g., rate, time, frequency, phase, single-cell, population) to the task-specific transformation of input signals and the drive onto neural and/or skeletal-muscle systems to give task-specific change taking into consideration appropriate weight, power, communication, energetic, and biocompatibility constraints. Neuroprosthetics thus builds on advances in the other dimensions of neurotechnology, exercising and testing our understanding of the principles of brain organisation and function.

Clinical neurotechnology (D7): Bringing imaging and interventions to patients and health professionals in the clinic or at home requires embedding specific intervention and monitoring systems into integrated human-in-the-loop digital brain health pipelines²⁴. These pipelines must be built and tuned to the neurotechnologies they deploy for assessment, diagnostics, and intervention, including advancing patient-specific whole-brain models. The deployment of these systems will radically impact how health care is provided and thus comprises a distinct domain of study and education. The objective of digital brain health will be to develop systems that have relevance in the real world, both given current challenges and future ones. In this context, the strategic choice will be to link medium- and long-term research and education objectives to fundamental challenges in digital brain health, including education and cognitive augmentation.

Neurometaphysics (D8), includes neurophilosophy, neurolaw, neuroethics, neuroaesthetics, and neurodesign): At the heart of advanced research and education are concepts, methods, and skills. These are also based on considerations and analyses beyond the physics and chemistry of biological systems. For this reason, advances in neurotechnology must be intrinsically coupled to core domains of the humanities. For instance, neuroprosthetics requires detailed neuroethics analyses and guidance, advanced biologically grounded general intelligence requires legal assessment, while the study of consciousness, agency, and volition requires proper philosophical frameworks²⁵. Hence, NeurotechEU will therefore advance a training agenda in which these Ethical, Legal, and Societal Aspects (ELSA) are integrated into the primary research and development activities. In addition, NeurotechEU considers business, management, and entrepreneurial skills as a vital part

of the profile of the next generation of researchers and innovators in neurotechnology. For this reason, our training will include Entrepreneurship creating ELSEA.

Collectively, the eight core partners of NeurotechEU cover the research and education in the eight dimensions of neurotechnology underlying the alliance program (Figure 3). The consortium is firmly grounded in neuroscience (D1), with subsets of partners providing a significant footprint in the other dimensions showing the partnership's complementarity (see section 2.2.1 Consortium set-up for a detailed analysis per partner). NeurotechEU also aspires to broaden its coverage of the NeurotechEU content space in research and education towards 2040, demonstrating how the conceptual commitments of NeurotechEU contribute to deep institutional transformation by inviting individual partners to redraw their roadmaps given the potential of the NeurotechEU partnership.

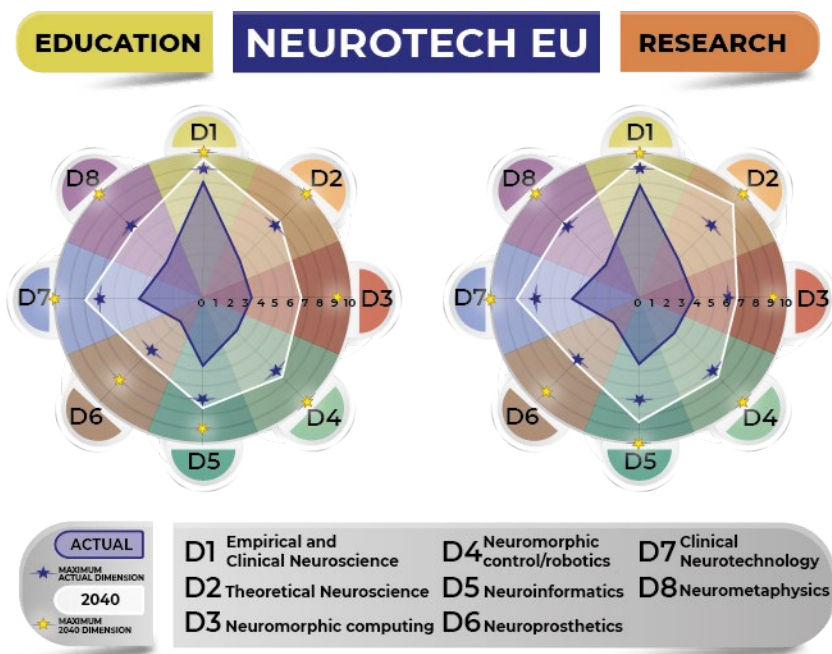


Figure 3: The NeurotechEU Education and Research Ambition: Radar plots of the current and future weight of the partners of NeurotechEU on the eight dimensions of Neurotechnology in education (left) and research (right). The blue area indicates the current weight of the partners of NeurotechEU on the eight dimensions of the Neurotech content space. The white area reflects the ambition toward 2040. The blue stars represent the current maximum level. The yellow stars represent the ambition toward 2040. Looking ahead to 2040, on average, alliance members intend to exceed the current individual maximum level. See text for further explanation.

THE NEUROTECHEU SCIENCE-TECHNOLOGY-INNOVATION VIRTUOUS CYCLE

For NeurotechEU to be sustainable and plausible, it must incorporate the best use of *innovative pedagogies and the core value of advancing education, research, innovation, and service to society as defined in the knowledge square adopted by the EC in 2020*²⁶. This implies that training programs must promote transversal skills such as critical thinking, entrepreneurship, creativity, and civic engagement, which are key for the next generations of students, researchers, and innovators to build a resilient society. We must find a balance between the risks of excessive specialisation, or the “learned ignoramus” of Ortega y Gasset²⁷ and the dissociation of science from the humanities sketched by Snow²⁸. In response, NeurotechEU is built around a model that logically links science, technology, and innovation from a transdisciplinary perspective. The novelty of NeurotechEU's training programs results from the unique combination of experimental, engineering, applied, and theoretical perspectives in a highly integrated program that cuts across disciplines and sectors by virtue of the Neurotechnology 8-dimensional content space. This is in great contrast with traditional approaches to master's and graduate training in various fields, including those related to neurotechnology, that are usually limited to a single discipline. All NeurotechEU training programs focus on mapping explicit theoretical concepts on brain organisation to advanced technologies and their impact on society and science. NeurotechEU combines and trains the concepts, methods, and technologies relevant to advancing Neurotechnology's impact-oriented research and education agenda: technology for, from, and with the brain in accordance with the values and goals of the European Education Area and Higher Education Initiatives²⁹.

NeurotechEU takes a unique integrative perspective concerning the explanation of the structure and function of the brain and the translation of this understanding into technology (Figure 4). NeurotechEU emphasises the role of synthesis, e.g., through theoretical models and technology, in understanding nature or following the 18th-century scholar Giambattista Vico who proposed that truths and facts are reciprocally related (“Verum et factum reciprocantur seu convertuntur” or Truth and fact are reciprocated or reversed)³⁰ or in the words of the Nobel laureate Richard Feynman: “What I cannot create, I do not understand.” Following Vico, the impact of neurotechnology can be considered twofold. On the one hand, it transforms our understanding of the brain into technology relevant to a broad range of application areas, including neuroscience itself. This is a deductive step from theory to technology through synthesis.

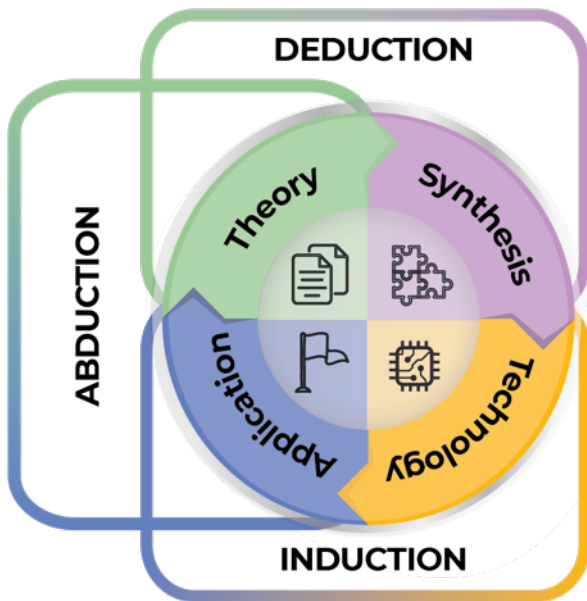


Figure 4: *Vico's loop is at the heart of the Neurotechnology science-technology-application cycle driving NeurotechEU's science and education. It maps theory and models to technology in a deductive step of synthesis which opens new avenues for induction by providing novel and untapped data sources, in turn creating new insights and thus abduction towards new theories closing a virtuous science-technology-application acceleration loop. See text for further explanation.*

On the other hand, it creates new data and thus opportunities for inductive knowledge to validate theories and models and so further advance our understanding of the fundamental principles underlying mind and brain. We call this the NeurotechEU cycle, which is an extension of the well-established notion of the empirical research cycle that limited itself to the logic of verification in deduction and induction³¹. This is a new perspective on mapping science to high-impact applications because it highlights the intrinsic coupling between science, technology, and applications, or Vico's loop³². This

fundamental relationship between science and technology is of special relevance to the field of neurotechnology because neuroscience itself is strongly dependent on new technologies, while conversely, future high-impact technologies in health and computation require grounding in basic principles of neural organisation. NeurotechEU positions its education and research as a model of research and training of the knowledge square, which can serve as an example for other domains. NeurotechEU will seek to also realise this potential. This new perspective on the close synergy between science, technology, and society is at the heart of the training programs of NeurotechEU. As a result, training programs in neurotechnology combine a comprehensive conceptual framework, i.e., the eight dimensions of neurotechnology, with an integrative methodology linking theory and technology following the NeurotechEU cycle affording extensive and consistent multi-disciplinary training of concepts, methods, and skills. This program encompasses all ambitions of the knowledge square: critical thinking by virtue of testability and direct experience, entrepreneurship by being project- and goal-oriented, creativity through the inclusion of abduction, and civic engagement by focusing on high-impact applications.

The neurotechnology training challenge

The current educational offering in neurotechnology in Europe does not match its promise and the current neurotechnology educational landscape is limited (Figure 5). Europe comprises 5,000 higher education institutions, and 2097 universities providing roughly 27501 master's programs³⁴. Of these master's programs that are accessible through study choice platforms, only 10 include the field of neurotechnology through mandatory and electable courses. These courses mainly address the dimensions of Neuromorphic systems, Neuroinformatics, and Theoretical neuroscience. Most of these programs are at German (N=3), Swiss (N=2) and UK (N=2) universities. A further nine programs include a small contribution representing neurotechnology. In comparison, in Europe, there are about 284 master programs in Neuroscience, covering topics such as molecular, cellular and systems neuroscience, cognition and behaviour, and clinical neuroscience. There are master programs in fields adjacent to neurotechnologies, such as biomedical (N=343), mechanical (N=549), and electrical engineering (N=399), that provide a small number of related courses and modules.

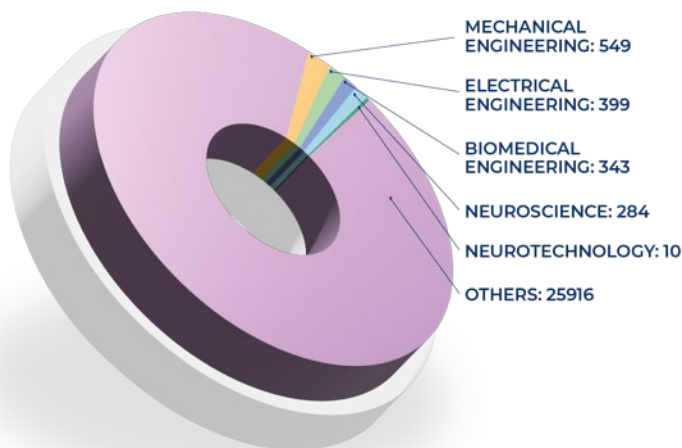
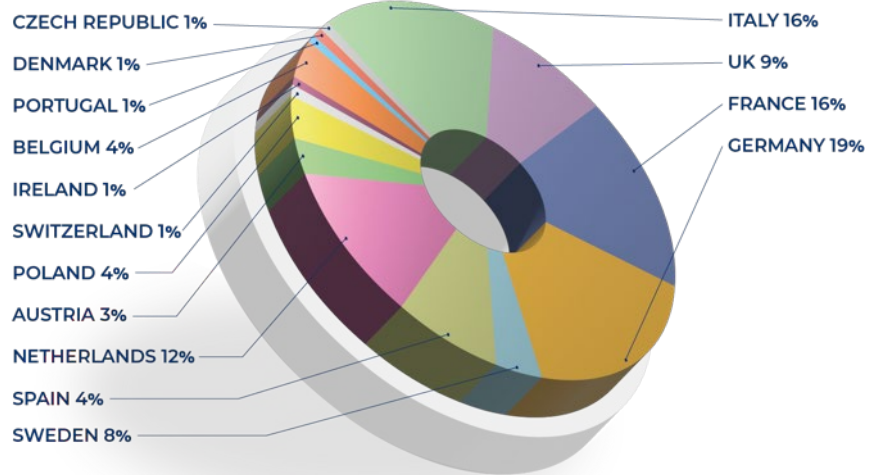


Figure 5: *The postgraduate training landscape in Europe and the contribution of neurotechnology-relevant programs. Data from Masterportal.com³⁵. See text for further explanation.*

Figure 6: The regional distribution of multi-disciplinary post-graduate training programs in Europe in Neurotechnology and a subset of Neurotechnology related fields, including Biomimetics, Biohybrids, Computational/Theoretical neuroscience, BioRobotics, Biomimetic Materials, Nanotechnology, and Mechatronics²⁰.



An earlier study assessing the training offered in fields overlapping with neurotechnology confirmed few courses and their uneven distribution across Europe (Figure 6). The above analysis shows that training capacity across Europe in neurotechnology is not only limited in number but also unevenly distributed across countries. This is an obstacle in realising the full potential of translating our growing understanding of the brain into high-impact technologies, applications, and future science. Increasing the training capacity within neurotechnology in Europe will be a crucial requirement for the ability of Europe to realise its potential in brain capital in terms of health, economy, and science. In response, new training programs must be developed and deployed in neurotechnology that provide in-depth and multidisciplinary training built around the concepts, methods, and technologies of this emerging field, that are distributed in an equitable form throughout Europe consistent with the European Education Area values and objectives. The NeurotechEU++ proposal provides critical steps towards these objectives.

The NeurotechEU partnerships for excellence

The NeurotechEU++ proposal submitted to the Erasmus+ call, ERASMUS-EDU-2023-EUR-UNIV-1 — European Universities, focuses on building a trans-European network of excellence in neurotechnology education and research, driving the competitiveness of European education, research, and innovation in neurotechnology, to the benefit of Europe's economy, and service to society. NeurotechEU++ will advance and validate new, diverse, innovative, and structural models for implementing and achieving systemic, structural and sustainable cooperation between the partners and stakeholders of NeurotechEU fueled by its unique view on the synergy between science, technology, and applications while both respecting the diversity of the higher education landscape and identifying channels of interaction and collaboration. By advancing and scaling its innovative concepts, technologies and methods, NeurotechEU aspires to serve both as inspiration for the wider higher education sector and to provide models for cross-disciplinary training and research.

NeurotechEU++ expresses a **long-term vision of the NeurotechEU to transform the institutional cooperation between the associated higher education institutions and bring it to the next level** in particular through leveraging its unique thematic orientation and synergistic orientation towards education, research and innovation in its science-technology-application model. To answer the challenges of the call, the NeurotechEU Alliance has set the following general objectives for its phase 2 project NeurotechEU++:

1. Adopt and educate at all levels a common set of European values to strengthen European identity enshrined in a common joint mission statement (see below) and consortium-wide consolidated Living Values manifesto adopted by phase NeurotechEU following the guidelines of the Magna Charta Observatory 'Living values' project and to place these values at the centre of all consortium activities.
2. Training and inspiring a new generation of Europeans to work across sectors and academic disciplines acting as integrators in the avant-garde field of Neurotechnology, bridging the science-technology-society divide while flourishing within different European and global cultures, in different languages, and across borders based upon their mobility experience in NeurotechEU.
3. Contribute to a substantial leap in quality, performance, attractiveness and international competitiveness of Europe by delivering the NeurotechEU Cycle as a model for science, education, and innovation in neurotechnology and beyond.
4. Enable the deep institutional transformation of European higher education institutions and contribute to the European knowledge economy, employment, creativity, culture and welfare by delivering a conceptual, epistemic and pedagogical model which intrinsically integrates the knowledge square and so enables pan-European and cross-sectional collaboration and the boosting of higher education and strengthening the links to the European research and innovation landscape and its impact on society and the economy.

THE REALIZATION OF NEUROTECHEU++ IS GUIDED BY THE MISSION STATEMENT WHICH IS ENDORSED BY ALL OF OUR UNIVERSITIES:

NeurotechEU++ – Joint Mission Statement

The European University Alliance of Brain and Technology, NeurotechEU, envisions Neurotechnology as providing strategic bridges between various disciplines, including neuroscience, medicine, engineering, artificial intelligence, cognitive science, robotics, social sciences, and the humanities arranged along 8 different dimensions, or technology from the brain, for the brain, and with the brain. NeurotechEU constitutes the backbone of this vision by bringing together 8 leading universities across

Europe and a significant amount of relevant associated partners, including partner research institutions, (SME) companies, societal stakeholders, and (non) governmental organisations, to create a unique educational environment where the next generation of European researchers and citizens can cooperate and work across different European and global cultures, in different languages, and across borders, sectors and academic disciplines. Collectively we will enable deep institutional transformation by providing innovative learning processes grounded in the emergent field of Neurotechnology. This transformation will foster the next generation of multidisciplinary scientists and engineers with access to cutting-edge avant-garde infrastructure. Within the 2nd phase of the European University of Brain and Technology (awarded under the 2020 Erasmus+ call for proposals), 6 of the 8 founding Universities and two new full partners will build upon the foundation established and further deepen and intensify the collaboration to advance Neurotechnology in the service of European society.



Figure 7: The eight partner universities of NeurotechEU and their logos.

NeurotechEU values

The NeurotechEU alliance is built on the common values and general principles of the European Union; respect for human dignity, freedom, democracy, equality, the rule of law, and respect for human rights, including the rights of persons belonging to minorities. We value and protect academic freedom and integrity, institutional autonomy, inclusive governance, and high standards of ethics in research and education as laid down in the Bologna process, the Paris Communiqué, and the Magna Charta Universitatum. Every partner commits to promoting and protecting these fundamental principles, within their own community, in the NeurotechEU alliance, and towards society as a whole.

Since NeurotechEU is an alliance of 8 universities from different countries with geographical coverage across all of Europe, the alliance has committed to developing a common understanding of the core values that must permeate the alliance's activities. This allows us to live up to the vision of a strong coherent alliance with shared values rather than several loosely connected universities, departments, and administrative units. Our common values were already established during the 1st phase of the NeurotechEU alliance, but will be a permanent and continuously evolving feature of the Alliance, engaging staff and students and embedding them across the network and its activities emphasizing:

Integrity: be authentic, empathic, transparent, open, and honest; foster a culture of mutual respect and reciprocity;

Commitment and responsibility: be loyal and take full ownership and responsibility for the challenges the collective is facing; engage in professional, respectful, and collaborative interactions; contribute to a professional culture; engage in professional and ethical interactions with students and staff, respecting professional boundaries; promote equity, diversity, and inclusivity;

Creativity: proactively engage, intending to improve operations and impact continuously; fully embrace cross-disciplinary interactions; always seek innovation in activities; do not shy away from disruption if it serves advancement.

NeurotechEU vision

The NeurotechEU University Alliance has a common long-term vision summarized as:

- Realizing a joint long-term strategy for education and research capitalizing on the synergy of the eight dimensions of Neurotechnology.
- Increasing the competitiveness of European education, research, economy, and society in the high-impact research-intensive domain of Neurotechnology.
- Transforming universities with a joint long-term vision and action plan that is modular and scalable, that crosses academic, faculty and organisational boundaries.
- Seamless mobility for students, researchers, and staff to study, train, teach, research, and innovate, reaching 50% of students through innovative mobility programs, including both physical, virtual, and blended mobility programs driven by curiosity and opportunity.
- Flexible curricula tailored to each student's needs, de-constrained from institutional and/or national capabilities and borders.
- Promoting European identity among students and researchers through delivering multicultural, multilingual, international, and intersectoral academic experiences across the European continent.
- Lasting close collaboration between partners for a trans-European network of excellence in brain and technology, further removing borders and obstacles in mobility and exchange.
- Creation of the European Neurotech ecosystem, supporting our students during their formative years in the university, and afterward to transition into becoming responsible, ethical, and global citizens with an impact on society overall.
- Actively contributing to reducing inequalities within the European Research Area and society by promoting excellence in education and research throughout Europe and strengthening research and innovation capacity to mitigate brain drain and strengthen brain capital.
- To educate about the ethical, legal, and societal challenges and potential of neurotechnology.

This mission statement is accompanied by the NeurotechEU2040 action plan, which is added as an appendix to this document.

1.2 Needs analysis and specific objectives

Needs analysis and specific objectives

The long-term vision (toward 2040) of the NeurotechEU is to create a global Neurotechnology campus, make Europe competitive in Neurotechnology on the global stage, and promote talent development worldwide, showcasing the EC's Smart Specialization Strategy. To achieve this goal, the founding universities will intensify the close cooperation realized in phase 1 in education, research and innovation; the universities will work together with 100+ strategically placed associate partners from all segments of the society and economy, including HEIs, leading research organisations, small and large industry, regional development agencies, funding agencies, incubators, government organisations and branches of the European Commission to create impact in society and economy and accelerate Europe's digital transition also by moving beyond the current deep tech revolution towards a neurotech revolution.

Phase 2 of NeurotechEU (2024-2030) focuses on synergising our education, research and innovation efforts. The introduction of the multinational, intersectoral, interdisciplinary European certification by NeurotechEU at the intersection of Brain and Technology will form the foundation for the long-term sustainability of the Alliance while instilling deep transformation of the associated universities. These degree programs will benefit from the planned NeurotechEU research centre, which will anchor our research and innovation initiatives to the educational programs. As the Alliance enters the third phase (2031-2040), we will have a cohesive organisational structure, well-established education, research and innovation programs supported by an ecosystem of stakeholders, which will become direct beneficiaries of the progress at NeurotechEU. With this experience, to broaden the impact of NeurotechEU beyond the European borders and to promote talent development around the world, the Alliance will grow to include non-European partners, ultimately creating a global Neurotechnology campus.

NeurotechEU++ is organized around five work packages (explained in detail in section 2.1.1 and section 4). Two of these WPs (WP1 and 5) provide the necessary support in Management and Coordination (WP1) and Impact and Dissemination (WP5), while WPs 2, 3, and 4 aim:

- To nurture and structurally strengthen the NeurotechEU inter-university initiative
- To create transparent, modular, scalable and sustainable governance serving as a role model
- To ensure Interdisciplinary Knowledge Creation and Delivery in physical, digital, and hybrid forms
- To realize NeurotechEU's Living Values, and Epistemic Model also through its digital platforms
- To empower learners and ensure equal and universal access of all students and researchers to NeurotechEU
- To promote European identity with multilingual and multicultural activities across the four corners of Europe
- To build an information and communication infrastructure in which dialogue and interaction with all segments of society can take place
- To build common policies and strategies to sustain NeurotechEU

The specific objectives of NeurotechEU++ are described below and expanded on in section 4.2 with corresponding tasks, deliverables and milestones.

Management and coordination (WP1)

- To streamline and optimise the Alliance's operations by creating a joint, modular and scalable governance structure for international, multi-institutional and intersectoral collaboration.
- Enshrine the common vision and values of NeurotechEU in all its procedures.
- To oversee and manage the organisational budget and financial operations during the project's duration while ensuring compliance with EC and national rules and regulations.
- To enhance coherence and collaboration by consolidating effective internal communication procedures, tools and channels.
- To reduce risks by implementing a comprehensive risk management plan and performing regular risk assessments.

Interdisciplinary Knowledge Creation (WP2)

- Creating inclusive, wholistic, and comprehensive training programme in all eight NeurotechEU dimensions based on the NeurotechEU epistemic and didactic cycle and the knowledge square.
- Realize cross-institutional Master's and PhD programs addressing all students' diverse learning needs and skill levels.
- Develop and deploy metrics to assess knowledge creation, retention and application improvement.
- To increase the reach and accessibility of NeurotechEU content by further improving and extending its online platforms (NeurotechEU Spaces), e.g. Campus+, and their integration in active learning environments.
- Enhancing the training experience and impact for learners by developing and launching online, AI-supported interactive and immersive tools and complementary in-person learning resources.
- To enhance inclusivity by making the NeurotechEU Spaces open to all.

Empowering Learners and Staff (WP3)

- Assure that in all NeurotechEU training programs, learners are familiarised with the NeurotechEU content space and its science, technology, and application epistemic cycle and pedagogical models have adapted accordingly.
- Enhance equal opportunities for all by translating the values of NeurotechEU as expressed in its Policy and Action Plan for Equity, Diversity and Inclusion, Living Values, and Joint Mission Statement into concrete measures and monitoring procedures that are integrated into the various training, participation, and management platforms of NeurotechEU.
- To develop and apply ethical and socially responsible neurotechnology research and innovation in accordance with European values, and NeurotechEU's living values and Neurometaphysics dimension.
- Accelerate the translation from knowledge to high-impact applications by enhancing the role of entrepreneurship and ethical innovation training in the Neurometaphysics programs of NeurotechEU.
- To significantly increase the participation rate of learners and staff in training and mobility programs through implementing a comprehensive training and mobility strategy building on the complementarity among the partners and the bridges afforded by the NeurotechEU Cycle and the NeurotechEU content space.

Common policies and strategy development (WP4)

- Enhance collaboration within the alliance and associated partners by building on the NeurotechEU content space and science-technology-application cycle and by maintaining common roadmaps and realising their associated actions, including the realisation of common research programs.
- Expand the NeurotechEU consortium with minimally two new universities, which at least one coming from widening countries based on complementarity and the NeurotechEU living values.
- To establish partnerships with minimally three European University Alliances based on alignment with NeurotechEU's content space, values and strategies through active engagement and sharing of programs.
- To develop scenarios on the long-term sustainability and legal status of NeurotechEU in the context of EU values and policies on the European Education Area, European Research Area, and the NeurotechEU Living Values and content space.
- To develop a common strategy for technology transfer to assure the translation of neurotechnology to high-impact applications serving European society and economy.

Impact and dissemination (WP5)

- Assure visibility and relevance by communicating results and good practices achieved by NeurotechEU with its stakeholders and target groups to serve as a model organisation in the new European Education Area and European Research Area.
- Provide robust visibility of NeurotechEU and its EU funding measured with KPIs on a biannual basis.
- Enhance channels for impact creation by building the NeurotechEU innovation network through collaborations with European, national, and regional business development organisations and businesses.
- Develop a strategy to build on the European Innovation Council Regional Innovation Ecosystem initiative and realise the NeurotechEU Innovation Ecosystem.

Establish a European higher education inter-university campus on NeurotechEU's CAMPUS+: seamless mobility opportunities (physical, blended mobility or virtual learning) to study, train, teach, do research, work, or share services in any of the partner institutions. Embedded mobility at all levels, including at Bachelor, Master and Doctoral levels, is a standard feature. At least 50% of the students within the alliance should benefit from such mobility, be it physical, virtual or blended.

To facilitate Citizen Science and motivate life-long learning for all, we will amplify our efforts in delivering a brain and technology museum both as a virtual and as a physical exhibition (WP5, task 5.3). The collection of the NeurotechEU museum will also provide a reference for educational activities. For this we will also collaborate with associated organisations like the MuZIEum and BrainBee to bring science to labs in cities and schools. We will further expand this collaboration network by linking the NeurotechEU museum to the European network of science museums (ECSITE). This active involvement of citizens across a wide range of age groups will help to future-proof our efforts to bring science to society.

Flexible learning opportunities and alternative learning pathways are offered in the context of the NeurotechEU content space and epistemic model, in the three cycles (Bachelor, Master and Doctoral), to learners across disciplines and sectors at all stages of life. **New joint, flexible and innovative curricula** are delivered, integrating student-centred learning approaches and innovative pedagogies, including using the latest digital technologies and the STEAM approach. **Students at all levels are empowered to customise their own flexible curricula**, choosing where and what to study within the confines of pedagogically sound and logically structured study programmes between the different higher education institutions and other members of the alliance, setting a solid ground for exploring the feasibility of a possible joint degree at all levels, based on co-created European criteria, to be delivered at the national, regional and institutional level, in accordance with the National Qualifications Frameworks. This offering will include small volumes of learning to lead to **micro-credentials**. For this, we will develop and deploy a sand-box style blockchain-based accreditation system that will be validated and accepted by the partners of NeurotechEU. In this way, setting an example of how microcredits can be effectively allocated and used.

NeurotechEU sees its thematic focus on science and technology neurotechnology as the driver of building a future university. Hence, ideas should be central in driving the form of the future university. In addition, education and pedagogy are application areas of neurotechnology, and NeurotechEU takes learning and education as one of its challenges. Hence, NeurotechEU considers pedagogy and teaching technology as integral to its NeurotechEU cycle and can contribute to advancing new pedagogical methods and tools of relevance to the whole European University initiative (Figure 8).

Effective learners are active learners who internalize knowledge through experimentation, visualisation and repeated application of the learned information. This is well captured in the Neurotechnology science-technology-application cycle. Through the well-defined Neurotechnology content space, knowledge creation is collaborative, self-directed and able to make connections between distinct domains of knowledge, linking different branches of sciences, engineering, arts, and humanities. NeurotechEU will also, through its digital platforms (Neurotech Spaces) grouped around CAMPUS+, support teachers in using innovative pedagogical methods to promote all students to become effective learners. It will provide multidisciplinary education with different cultures of teaching and learning while using personalized and agile content delivery methods ranging from one-on-one training, collaborative learning, either in class, online or blended learning. Central to this stands the consideration of building future training on science-grounded methods **Crossover learning** helps students link the educational content provided in the classroom with their real-world applications through knowledge utilization and hands-on experimentation. When combined with **active learning in context**, outside of the classroom, in laboratories, companies, cities, and in places where learned information is applied, these methods support learners to internalize and leverage knowledge efficiently in context. To facilitate students' ability to think critically, NeurotechEU will focus on improving their **argumentation skills**. As students attend to contrasting ideas, they will improve their technical reasoning, refine their ideas and develop alternative theories and applications, which will promote students' creativity and innovation. The emphasis on **computational thinking**, in addition to their own chosen major programmes, will prepare NeurotechEU students for a variety of careers, as quantitative talents, computational background, ability to handle big data and being a polymath are highly sought-after skills in modern economies. Challenge-based **learning** will ensure that students are invested in deploying their newly gained insight to discover how they could make a difference and develop 21st-century skills, values and attitudes for global citizenship while promoting full immersion in education programmes. Innovative cognitive methods to boost learning will be used throughout the NeurotechEU curriculum. **Spaced learning**, for example, will utilize cutting-edge neuroscientific knowledge to maximise information retention while facilitating the rapid and accurate retrieval of memories. Due to the multilingual learning space, students and teachers will be involved in translanguageing pedagogies that foster openness to linguistic variety and develop strategic employment of multiple languages. Thus, NeurotechEU will provide the ideal platform where fundamental insight into how the brain learns, memorises, conceptualises, generalises and retrieves previously learned information can be directly translated for the benefit of generations of students at any stage of schooling. Enriching **education through entrepreneurship**, students, researchers, staff, and other life-long learners will learn how to maximise the benefits of their innovations for themselves, societies and economies, enabling NeurotechEU to fully utilize the knowledge triangle (education, innovation, business) with impact. Lastly, the NeurotechEU epistemic cycle advances teaching methods that build on the engagement with technology as a means to access, accumulate and create foundational knowledge.

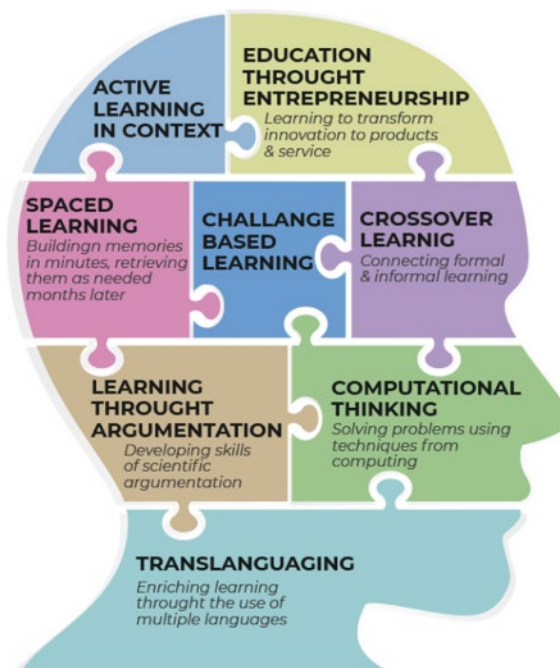


Figure 8: Different learning methods applied and elaborated in NeurotechEU. See text for further explanation.

Practical and work-based experience and traineeships supported by external mentors are provided to foster **entrepreneurial mindsets** and **civic engagement** and promote knowledge transfer with surrounding **ecosystems**. This will enhance employability and the flow of talent with other sectors. Access, participation and completion of under-represented and disadvantaged groups are ensured. **Diverse career paths** are rewarded and valorised, while the academic, teaching and research careers are strengthened.

Build European knowledge-creating teams following a challenge-based approach of students and academics, together with researchers, entrepreneurs, companies, local and regional actors, and civil society actors driven by the NeurotechEU content space and science-technology-application cycle. These stakeholders should be working together to address societal and other challenges. NeurotechEU pursues this **challenge-based approach** in education while helping students to excel in research-driven through its unique NeurotechEU cycle and epistemic model. Based on its analysis of eight challenges pursued in phase 1 of the project, NeurotechEU will focus on four challenge domains linked to its eight-dimensional Neurotechnology content space that can contribute to solving pressing societal needs in (1) brain health & healthcare, (2) learning & education, (3) computing & artificial intelligence, (4) law & ethics. We will coordinate our education and innovation efforts in these challenge domains to ensure education, research, innovation, and societal impact collectively shape our joint efforts as defined in the NeurotechEU cycle.

To prepare students to their (new) study programmes before the start of the academic year and provide them the necessary background skills in their choice of study, we will organize **online boot-camps** in the full content space of Neurotechnology. These will be combined with the NeurotechEU summer/winter schools organised across several campuses, which will, in addition, provide hands-on experience. Boot-camps will vary in length and in ECTS credits (3-9). The digital infrastructure to enable the online boot-camps have been tested in summer schools and are being readied to be deployed through the Neurotech CAMPUS+ platform.

Active learning ensures long-term retention of the learned information. Therefore, all founding partners promote formation of **NeurotechEU student study groups** for students to discuss, explore and learn together. We have partnered with Open Academic Environment (<http://oaproject.org/>) combined with the PubHubs philosophy of authenticated content production (<https://pubhubs.net/en/>) to provide NeurotechEU students with the necessary online space for them to join and form groups, discover a community of fellow students, chat and discuss in groups or individually, create, store and share online in a safe environment. The, so-called, NeurotechEU Spaces was released in the Spring 2022 building on the open-source learnGala platform (learngala.com) semester where teachers can distribute content and create classes. Integration with further platforms for discussion, exchange and and blockchain-based ECTS credits equivalency for the student's efforts are being realized now as part of the CAMPUS+ effort in phase one of the NeurotechEU project.

Educational content delivery

According to the UN Sustainable Development Goals education is a life-long endeavour and takes place through the formal and informal curricula, both inside and outside the classroom. NeurotechEU will thus deliver context-embedded educational content to enhance its relevance to its students building on its specific content model. Disciplinary learning is managed, both face-to-face and online, through its open-source, modular and scalable learning activity management system. In addition to this, the application of the learned information will take place in classrooms, laboratories and online - including through virtual reality - as well as through intersectoral training - including through work-based placements. This blended training approach will provide all learners with meaningful and engaging opportunities for learning. As part of this, standardized workbenches are being developed and distributed supported by the affiliated NeurotechRI project support through Horizon Europe program.

NeurotechEU CAMPUS+ is the crucial shared virtual space, an extension of the partnering organisations, where students across all three levels, teachers, and administrators work together without administrative, cultural and societal obstacles to provide physical, digital and blended learning and training. NeurotechEU wants to move away from the model where each HEI is a silo of information learners must navigate. This traditional model is a potential obstacle to creating the European Educational Area. To amplify mobility and exchange, the learner must be the purveyor of their own information. NeurotechEU will empower students to customize their curriculum from the well-structured and comprehensive course catalogues of the partnering universities. Benefiting from the strengths of each university and taking advantage of the best traditions in each country's culture, it will integrate popular and academic cultures, creating a collective European academic identity. CAMPUS+ allows students to explore course, research, training and internship opportunities. Close integration with NeurotechEU Spaces (see below) will ensure that Campus+ will become a content delivery channel and a tool for universities to deliver online education. This will democratise education and promote social inclusion while removing some of the barriers to learning.

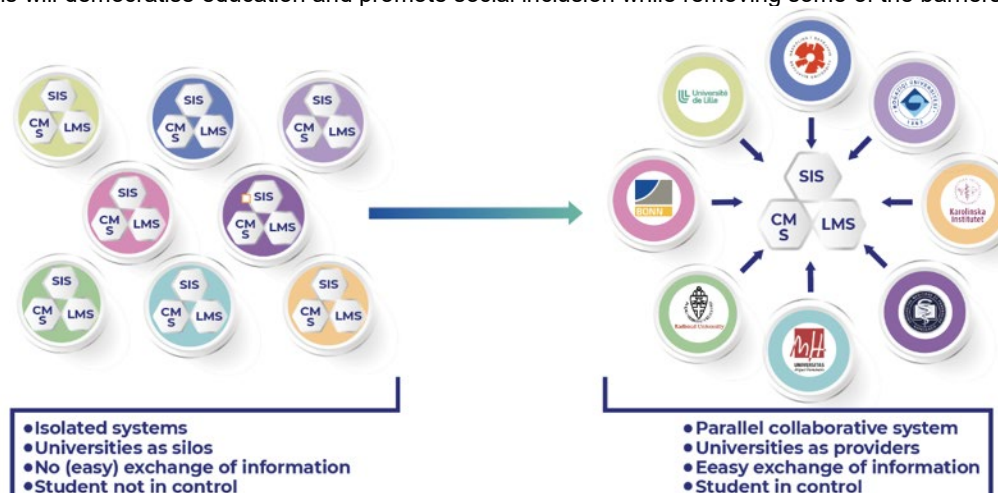


Figure 9: CAMPUS+ Towards a student centered collaborative digital space. See text for further explanation.

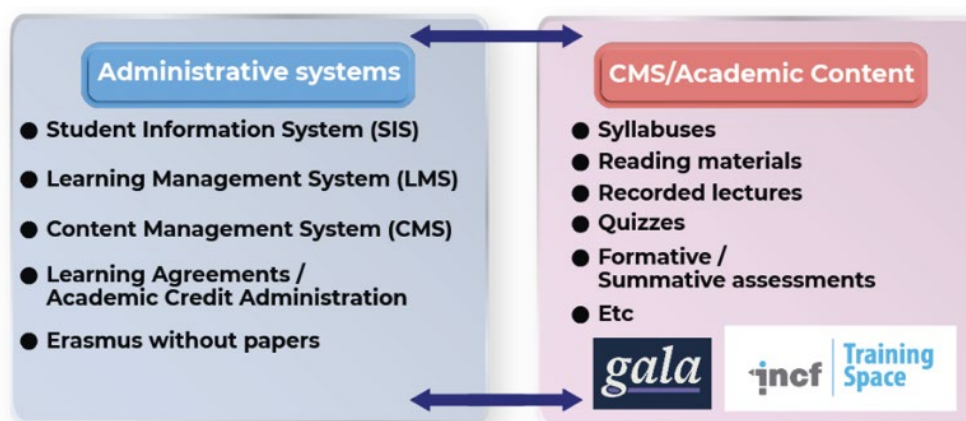


Figure 10: The overall architecture of NeurotechEU's digital campus linking CAMPUS+ (left) with the NeurotechEU Spaces (right) content management systems delivered in collaboration with existing platforms such as Gala and INCF Training Space. See text for further explanation.

NeurotechEU Graduate School will provide co-tutelage education at the master's and doctoral levels to train top-flight researchers in a multidisciplinary and intersectoral setting. Closely cooperating with Campus+ will promote innovation and an entrepreneurial mindset. The advanced training will bridge fundamental and applied brain sciences to develop next-generation technologies to study brain and behaviour and to diagnose, prevent, and cure brain disorders, promoting mental health. Each student will work on a Neurochallenge, i.e., a societal challenge that can be met by neuroscientific and neurotechnological knowledge and solutions now and in the near future and will be co-supervised by a team of experts, two from participating academic organisations and one from industry, benefiting from the unique knowledge, expertise, and capabilities of the partners, embedded mobility and NeurotechEU at large.

NeurotechEU Life-long Learning Centre will support the continued training of its graduates and society at large. It will provide the necessary knowledge, skill sets, and competencies for individuals to adapt to the changing personal, civic, societal and employment-related needs and provide them opportunities in brain research and technologies. An ever-expanding catalogue of certificate programs and nano- and micro-degrees is available for anyone with basic qualifications upon validation of prior learning. To ensure that learners have access to relevant basic skills we will closely cooperate with the EPAL, the electronic platform for adult learning in Europe, offered by the European Commission. This approach will ensure that NeurotechEU Life-long Learning Centre can focus on delivering content that will help people re- entering job market and promote career-long professional learning.

NeurotechEU Spaces is the content delivery platform of the NeurotechEU. Based on a suite of open-source software, the Spaces will provide the tools to communicate, create, share and store information safely in the cloud. With build-in streaming and messaging functions, the Spaces will be capable of handling real-time two-way communication for, e.g., group meetings, lecture delivery, student study groups. With shared blackboard, a sandbox, and digital locker it will address the needs of all students, staff and researchers from any background, from a scholar studying the philosophy of mind to students jointly working on robotic control algorithms. WP teams and Alliance management will utilize the Spaces for their online meetings, to coordinate information exchange and will strive to create a paperless European University. The Spaces will be open source and benefit from the expertise of the Apereo, which is a non-profit organisation for open-source software, serving the education market. Some of the functionalities Spaces will offer and the associated software include portal development and management (uPortal), time management (UniTime), casting and streaming (OpenCast), teleconferencing (Jitsi), learning management (Sakai), creation of collaboration space (open academic environment).

NeurotechEU aims for 50% student **mobility**, and 25% staff and researcher mobility as a gross total by the end of Phase 3 of the Alliance development while meeting the Leuven criteria for student mobility (i.e. 15 ECTS credits) in Phase 2. These goals cannot be met with traditional forms of mobility alone as physical mobility at this scale is cost prohibitive and will have a negative impact on the European Green Deal. In addition, a lot of students cannot be physically mobile due to different reasons. Therefore, we designed our programmes to reduce costs and carbon footprint while maximising mobility activities and their benefits to students. We took measures to ensure that mobility is not a time-constrained epoch but a daily part of studying at NeurotechEU. Three examples of these programmes, which will support our physical and blended mobility efforts, are:

Phase 1 (2020-2023 - Foundations): The consortium has laid the foundations for its long-term collaboration, yet mobility is more difficult to achieve than expected, further aggravated by the Covid-19 pandemic. In response, NeurotechEU has set in motion a more focused campaign of designing and communicating its mobility opportunities at all levels and creating concrete events and platforms to overcome the “start-up” problem of mobility. This implies designing for a logic of mobility with a purpose supported and communicated and supported by all stakeholders. Further, we have sought to establish additional Erasmus programs to support exchange and collaboration across the consortium.

Phase 2 (2024-2030 – Removing borders): To maximise the mobility, education, research, innovation and creative opportunities for students and staff, we will remove the borders between organisational units and partnering universities, finding and validating new organisational forms for a truly European University. The introduction of European Master and Doctorate Degrees in Neurotechnology and specialisations at the intersection of Brain, Technology and other related and relevant disciplines, spanning all campuses and faculties, will accelerate the progress towards this goal. To boost our innovation potential, align research interests and help students navigate the research offerings of the participating universities, we will build on the Neurotech content space and form the NeurotechEU virtual research centre, which will be an online platform complementing Campus+ and link distributed infrastructure. These developments will facilitate mobility and exchange as we reach 35% mobility for students and 15% mobility for staff by the end of phase 2.

Phase 3 (2031-2040 – NeurotechEU unfolded): With a well-established organisational structure, close cooperation across NeurotechEU partners, a rich catalogue of education, research and innovation programmes, and an ever-growing number of partners in the NeurotechEU alliance, we will expand the mobility and exchange programmes pushing the border of Neurotechnology and embedding in it pan-European innovation valleys. This enhances mobility and exchange for 50% of students and 25% of staff and researchers by the end of Phase 3.

Social diversity of the student body

The alliance will implement active measures to promote online and on-site access to NeurotechEU educational programmes, offers, events, and community. The issue of ensuring social diversity and access, participation, and inclusion of disadvantaged groups, such as persons with disabilities, ethnic groups, migrants and LGBT persons, will be coordinated throughout NeurotechEU via WP3 (Realizing NeurotechEU's Living Values and Epistemic Model Empowering Learners and Staff). Two documents that lie at the cornerstone of this are the United Nations Convention on the Rights of Persons with Disabilities (integrating the topic of disability) and the 2008 Students' Rights Charter (addressing freedom of access, social diversity and other types of under-represented groups). We have built on these values in formulating the Living Values manifesto of NeurotechEU and the Joint Mission Statement underpinning NeurotechEU++.

To support our project team, we will collaborate with two umbrella representation and advocacy organisations at the EU level, the European Disability Forum and the European Students' Union, which provide expertise and good practice examples to design and implement measures to improve diversity and equal rights for all students. We have also included in the governance model mechanisms to ensure the democratic election of student representatives for the Board of Governors and Working Groups according to best practices, including to ensure diversity, in all its forms.

E-accessibility (i.e., the ease of use of information and communication technologies by people with disabilities) will be advanced in CAMPUS+ and all digital materials. Strategies to promote freedom of movement for students, equality, respect for difference and acceptance of persons with disabilities as part of human diversity and humanity will be identified and implemented according to a specific action plan. As a part of WP3, we will allocate financial resources to maximise the social diversity of students benefiting from NeurotechEU via the Social Inclusion Fund. NeurotechEU will ultimately strive to achieve individual autonomy by empowering students to make their own choices. For all disadvantaged groups, our strategy is to promote their active participation and full inclusion in society.

NeurotechEU's Students' bill of rights All NeurotechEU students have equal rights, independent of their race, skin colour, religion or other beliefs, sex, transgender identity or expression, national origin, cultural background, political affiliation, sexual orientation, marital status, disability, genetic information, age, or other non-merit factors. NeurotechEU implements the Erasmus+ Student Charter code and also promises:

- An inclusive environment
- Flexible and personalised education programmes
- A multinational, multi-university, multicultural and multilingual community
- Student involvement in all decision-making bodies
- Accessibility of information
- Full recognition for satisfactorily completed activities of study mobility and, where possible, traineeships in terms of credits awarded (ECTS)
- Access to regularly updated online course catalogues well in advance of the mobility periods, to be transparent to all parties and allow mobile students to make well-informed choices about the courses they will follow
- Learning/training agreements for students validated in advance between the home and host institutions or enterprises and the mobile participants
- Equal academic treatment and services for home students and incoming mobile participants
- Integration of incoming mobile participants into the institution's everyday life
- Appropriate mentoring and support arrangements for mobile participants
- Appropriate linguistic support to incoming mobile participants
- All activities indicated in the learning agreement counting towards the degree, provided the mobile students have satisfactorily completed these
- Transcripts containing a full, accurate and timely record of the achievements at the end of the mobility period by the host institution
- Support for mobile participants upon their return, to foster reintegration and to build on their experiences for the benefit of the institution and their peers



1.3 Complementarity with other actions and innovation — European added value

Complementarity with other actions and innovation

EU added value

In the European Education Area³⁶, there is an emphasis on making quality education accessible for all and removing the barriers to learning. Within NeurotechEU, students and staff jointly develop a system of integrated and open study programmes where students can combine periods of study in different countries across different sectors with borderless online modules. Consequently, NeurotechEU will ensure more coherent, comprehensive and sustainable education programmes in neurotechnology. The profound benefits of this unique alliance will be evident for all the different stakeholders, e.g., for the scientific community, as Neurotechnology will gain more visibility within Europe and worldwide. Additionally, there will be widespread benefits for the clinical community and patients, as increased knowledge in Neurotechnology will create possibilities to better understand and positively modify the brain and behaviour, and for other Higher Education Institutions in Europe due to sharing of expertise and resources, facilitating partnerships and collaborations and providing state-of-the-art facilities and equipment in the field of Neurotechnology. The interdisciplinary knowledge creation in NeurotechEU focuses on the scientific and educational challenges within neurotechnology, including societal impact, innovation, and sustainability. Its main goal is to develop a joint educational and research agenda that brings together the complementary expertise and ambitions of all partners. Our digital education and research training programmes integrate neurotechnology courses with entrepreneurship, societal impact, and sustainability, in order to empower our students for their future. We will improve quality and equity in education and training across all levels of society, all ages, and genders by using open-source standards.

Open-source digital platforms (NeurotechEU Spaces) and tools will be built to disseminate training and research in neurotechnology. The development of training programmes will be evaluated by the entire alliance to promote and ensure high-quality education. To facilitate learning and collaboration at all levels, we will introduce online learning groups, develop AI-based online tools for personalised education portfolios, and offer in-person learning experiences. Different working groups together with partner pedagogy experts will be responsible for quality control and regular updates and improvements to educational platforms and learning content. For student information systems (SIS) we aim to access an open platform that can communicate with the proprietary SIS of each partner. For this, we will follow the Erasmus Without Papers initiative³⁷ of the EU and need to seek collaboration with NENs and other EUIs³⁸ to strive for the use of one platform. Furthermore, we will update and continue developing our course catalogue for exchange students and create a more interactive version. Finding ways to streamline the mobility actions within the alliance, we will furthermore organise summer schools, hackathons and other events for otherwise non-mobile students to be able to integrate with the rest of NeurotechEU. Our students will have the possibility to attend and get accreditation for neurotechnology modules offered by all partner universities, as well as to attend and get credit for summer schools, methods courses, and lecture courses at partner universities.

In addition to increasing our students' and staff' mobility, our project will include European language initiatives³⁹. NeurotechEU partners are committed to offering education programmes in English and, in the future, additional languages as well, in order to increase accessibility for learners and staff. With eight different languages spoken within the alliance, we support multilingual communication, education and research and will promote common European values and strengthen the European identity. By including a website that will be introduced in all partners' languages, NeurotechEU will promote cross-border collaboration and increase accessibility, visibility, and inclusion. Training in intercultural settings fosters civic and language competencies through immersion into different contexts and will promote a sense of European belonging and improve creative thinking, transversal and transnational solutions. In the end, NeurotechEU students will benefit from a Europe-wide alumni network, which will deliver its own benefits in terms of internships, networking opportunities and jobs across Europe.

Within NeurotechEU, we have already established a *Frontiers* research topic during phase 1 of the project in which we will have peer-reviewed article collections centred around Neurotechnology: the state-of-the-art of neurotechnology, its perspectives and research along the lines of dimensions and neurochallenges. NeurotechEU introduces to characterise the field. Initiating these sorts of actions will contribute to the European Research Area⁴⁰ by improving the coordination and integration of research and innovation activities across the EU, in order to increase competitiveness and impact of European research and innovation, specifically in the field of neurotechnology. During phase 2 of the project we will encourage innovation, research and technological development through the introduction of the eight dimensions of neurotechnology. NeurotechEU enhances access to research and innovation excellence within the consortium by facilitating significant interconnections between its partnering universities.

NeurotechEU aims at contributing to a more united, innovative, digital, connected, and green Europe, open to the wider world, by increasing the resilience, excellence, geographical and social inclusiveness of European higher education institutions. To achieve this ambition, NeurotechEU develops not only virtual research laboratories, and webinars but also training courses and facilitates the mobility of trainees and trainers/students and researchers.

The unique university-industry collaborations within NeurotechEU will be strengthened through NEURICOO. This is the central organisational structure that aims to institutionalise integration and coordination among NeurotechEU partnering universities and associated members by developing and implementing challenge and technology-based roadmaps for a cost-effective mechanism for translation of innovations into the industry and market. This contributes to the promotion of research and innovation, as well as the promotion of international cooperation and collaborations within and outside of NeurotechEU. The university-industry collaboration will promote international cooperation, collaboration and mobility, which is an important aspect of the European Strategy for Universities⁴¹. As our alliance will extend to the industrial world and will be leading in technological innovations for the brain, we will also impact society. The neurotechnology dimensions of Neuroprosthetics, clinical neurotechnology and Neurometaphysics will particularly affect European society. To further accelerate this process NeurotechEU will seek to contribute to the creation of Innovation Valleys at and between partnering universities together with national and regional stakeholders.

Complementarity with other actions and innovations

Exploiting the complementarity with other actions or initiatives is crucial for the NeurotechEU alliance for the following reasons:

- It allows for the leveraging of existing resources and infrastructure, which can help to increase the efficiency and effectiveness of the project.
- Building on the work of other actions, it can help to avoid duplication of efforts and can help to ensure that the project is aligned with broader goals and objectives.
- It allows for the integration of different perspectives and expertise, which can lead to more innovative and effective solutions.
- It increases the reach and impact of the project and can help to build stronger further partnerships and networks.

Establishing connections is crucial for a variety of reasons. One of the most important is that it allows for the sharing of information and resources, which can help to increase the efficiency and effectiveness of a project. By connecting with others, it can also help to increase the visibility and impact of the project and can help to build even wider partnerships and networks.

Another important aspect of establishing connections is that it allows for the integration of different perspectives and expertise, which can lead to more innovative and effective solutions. It also allows for the development of new ideas and opportunities by bringing together people from different backgrounds and disciplines. In addition, establishing connections can also help to build trust and collaboration among stakeholders, which is essential for the success of any project. Trust and collaboration are essential to creating a shared vision and a common goal, which in turn helps to create a culture of accountability and shared responsibility.

Finally, establishing connections can also help to increase the impact of the project by reaching new audiences, creating new opportunities and building a sense of community around the project. Overall, it is an essential component of effective project design and implementation and can help to ensure that the project is successful in achieving its goals and objectives. Exploiting complementarity can also help to optimise the use of financial resources and to ensure that the project is sustainable in the long-term. Overall, it is an essential component of effective project design and implementation and can help to ensure that the project is successful in achieving its goals and objectives.

In the following **table**, we list actions and innovations where there is an ongoing collaboration with NeurotechEU.

Table 1: List of current actions and innovations related to NeurotechEU.

Action/innovation	Added value
<u>ANIRIDIA-NET</u> - Aniridia: networking to address an unmet medical, scientific, and societal challenge (<u>COST-action, nr. 18116</u>) (<u>COST-action, nr. 18116</u>)	It complements the scope of NeurotechEU: Building an interdisciplinary research network to address an unmet medical, scientific, and societal challenge that complements NeurotechEU, from more than 20 countries.
<u>BIONECA-COST</u> Action - Biomaterials and advanced physical techniques for regenerative cardiology and neurology (<u>COST-action, nr. 16122</u>)	BIONECA complements the scope of NeurotechEU and may help to disseminate Neurotech achievements to the 37 countries involved in this Action.
<u>CENID</u> (Centro de Inteligencia Digital de Alicante)	This consortium of the Provincial Council of Alicante, the University of Alicante and UMH acts as a think tank to promote digital transformation in companies and institutions, and the implementation of artificial intelligence.
<u>DENORMS</u> - Designs for Noise Reducing Materials and Structures (<u>COST-action, nr 15125</u>)	DENORMS complements the scope of Neurotech and may help to disseminate Neurotech achievements to the 29 countries involved in this Action
Erasmus+ Key Action 2 Extended Learning for Higher Education teachers and trainers	It complements the scope of Neurotech: building a long-term strategy to guide teachers in the adoption of new mindsets and tools to have an active role in the Higher Education transformation towards new learning scenarios.
<u>ELLIS</u> - European Laboratory for Learning and Intelligent Systems.	ELLIS is a pan-European AI network of excellence which focuses on fundamental science, technical innovation and societal impact. ELLIS builds upon machine learning as the driver for modern AI and aims to secure Europe's sovereignty in this competitive field by creating a multi-centric AI research laboratory. ELLIS wants to ensure that the highest level of AI research is performed in the open societies of Europe.
Erasmus+ Key Action 2 <u>Intellectual Disability – Enhancing their Autonomy, Employability, Health and Learning Capacity through Physical Activity</u>	Contribution to the UN Sustainable Development Goals, by facilitating equitable and inclusive access to sport and physical activity for people with Intellectual Disability and/or autism spectrum disorder.
Erasmus+ Key Action 2 <u>Next Generation Training on Intelligent Greenhouses</u>	Contribution to the UN Sustainable Development Goals, by developing and implementing a lifelong learning system where farmers could improve their businesses.

Erasmus+ Key Action 2 <u>Strengthening the European Union by reinforcing its values</u>	It complements the NeurotechEU objective of promoting European identity among students and researchers by the implementation of debate, training activities and research actions to reinforce the EU's values in the university community in cooperation with the society.
Erasmus+ Key Action 2 <u>Universities for labour inclusion of people with intellectual disabilities</u>	Contribution to the UN Sustainable Development Goals, by the delivery of a common curriculum to be implemented at HE for the labour inclusion of students with intellectual disabilities.
<u>Horizon Europe</u>	Funding for health under the research and innovation framework programme. <u>Brain research</u> in Horizon Europe complements the scope of NeurotechEU: there is EU support for research and innovation in the area of the brain. Several members of the NeurotechEU consortium applied for the Doctoral Networks call in November 2022.
<u>INNOGLY</u> - Innovation with Glycans: new frontiers from synthesis to new biological targets (COST-action, nr 18103)	It complements the scope of Neurotech: Building an interdisciplinary research network in a specific topic of interest of NeurotechEU, from more than 20 countries.
<u>ValGRAI</u> : Valencian Graduated School and Research Network of Artificial Intelligence.	This non-profit foundation made up of the Generalitat Valenciana, companies and the five public universities of the Valencian Community (UV, UPV, UA, UJI and UMH) will contribute as a model of local cooperation between an heterogeneous profile of stakeholders (researchers, teachers, students and professionals) to create value for society through pioneering research and education in Artificial Intelligence.

Additionally, in the **table below**, we list potential collaborations or contacts with various actions and innovations.

Table 2: List of potential actions and innovations related to NeurotechEU in the future.

Action/innovation	Added value
<u>Collaborative research consortia 1089</u> "Synaptic Micronetworks in Health and Disease" (Germany)	The overarching goal of the CRC is to understand how behaviour is generated by coordinated activity of neuronal circuits, and how this is disrupted in neurological disorders.
Complementary non-EU, national or binational funding schemes	For multiple or joint study and research programmes, relevant for NeurotechEU.
<u>Digital Europe Programme</u>	Recognition and digital transformation in EU higher education and ongoing works linked to the Bologna Hub. Sharing good practice with NeurotechEU partners of ULille's experience in carrying out its digital transformation projects, such as " <u>DEM-ATTEST-ULille Blockchain digital credentials of the university of Lille</u> ". Additionally, creating a prototype of a Joint European Degree label template in a dematerialised format based, building a community of practice by interconnecting registrar's offices from the different EU partner institutions. Last, sharing the outcomes of the brand new "EBSI-VECTOR" project (EBSI enabled verifiable credentials and trusted organisations registries).
European Innovation Council (<u>EIC</u>)	Supporting high impact technologies and start-ups. Specific spotlight for Neurotech
European Research Area (<u>ERA</u>)	Horizon Europe - Work Programme 2023-2024 Widening participation, spreading excellence and strengthening the European Research Area
Erasmus+ Key Action 2 <u>Partnerships for cooperation, large and small-scale</u>	Widening to all sectors covered by Erasmus+: (not only higher education): adult non-vocational education/lifelong learning, school education, initial and continuing vocational education and training. In the field of adult education: the development of research-based university courses dedicated to older learners about active and healthy ageing which is a societal challenge shared by all European countries. Additionally, language teaching and learning practices by digital means, the " <u>DIAL4U</u> " project develops the digital culture of language teachers in eight European universities and their ability to use digital tools for didactic purposes.
Erasmus+ Key Action 2 <u>Partnerships for excellence Erasmus Mundus Joint Master Degree(s)</u>	Towards the NeurotechEU Joint European Degree, building on ULille's experience with its ten ongoing joint master programmes co-funded by Erasmus Mundus

<u>Erasmus+ Key Action 2 Partnerships for innovation</u>	alliances for innovation and forward-looking projects including NTEU's non-academic associated partner organisations from the private sector or the industry.
<u>Erasmus+ Key Action 3 Policy development and cooperation</u>	SMARTT submitted by UAM (CIVIS alliance). Towards facilitated delivery of European joint degrees 'from joint study programmes to joint degrees', identification of legal and administrative obstacles at institutional, national and European level, staff resistance against teaching only in English, high administrative burden (e.g. quality assurance, registration issues), testing the feasibility of a joint European degree.
<u>Erasmus+ Jean Monnet actions</u>	Modules/Chairs about a European Union approach in Neurotechnologies. Thematic Network about internal EU issues, depending on the topics to come in the next years.
<u>Erasmus Without Paper initiative</u>	A digital solution for higher education institutions to connect their Erasmus+ mobility management systems so they can manage their students' mobility online. NeurotechEU will be linked to the EU student card initiative.
<u>European Skills Agenda</u>	Fostering transversal skills like working together, critical thinking, and creative problem solving. Additionally, it complements the scope of NeurotechEU by future proofing education and skills required by the labour market and especially those that are needed for the twin transitions
<u>European universities strategy</u>	Preventing skills mismatches and bottlenecks in the area of Neurotechnology. It also complements the scope of NeurotechEU by stimulating pedagogical innovation, focused on the learners, with a variety of learning spaces and flexible, interdisciplinary paths. Besides, the creation of 'living labs' to train students to work on challenges in a holistic way, across disciplines, and how to support students' critical thinking, problem-solving, creative and entrepreneurial skills. The European Universities Strategy aims to address the underrepresentation of women in STEM fields and discuss principles on protecting fundamental academic values, based on the <u>Rome Communiqué</u> .
<u>FilmEU - The European University of Film and Media Arts</u>	Like NeurotechEU, FilmEU is one of the few thematically specified European University Alliances. This allows the exchange of information concerning how both alliances can best be organised, to ensure the best experience for its learners.
<u>FOR 2535 "Anticipating Human Behaviour"(German Research Foundation, DFG)</u>	In this project, we aim to develop the technology that lays the foundation for applications that require the anticipation of human behaviour. Instead of addressing the problem at a limited scope, the project addresses all relevant aspects including time horizons ranging from milliseconds to infinity and granularity ranging from detailed human motion to coarse action labels.
<u>French-Dutch Network FR-NL</u>	To strengthen cooperation between France and the Netherlands in the field of higher education and research, within the framework of the Bologna and Horizon 2020.
<u>Healthier together – EU non-communicable diseases initiative</u>	Support EU countries in identifying and implementing effective policies of major non-communicable diseases including mental health and neurological disorders.
<u>Innovative Health Initiative</u>	Is an EU public-private partnership funding health research and innovation
<u>iRECS - "Improving research ethics expertise and competences to ensure reliability and trust in science"</u>	Given the impact of research on society, in terms of potential to generate innovative solutions to problems, and yet with the associated risk of harm, rigorous ethical research conduct is essential to ensure public trust in the scientific endeavour. iRECS will address these problems in several ways.
<u>MACUSTAR - "Intermediate AMD: Development of novel clinical endpoints for clinical trials in patients with a regulatory and patient access intention" (IMI, grant nr. 116076)</u>	By developing and validating new methods to study disease progression, the overall goal of MACUSTAR is to help drug development and make clinical trials of potential treatments more efficient.
<u>MULTIPLIERS - "Multiplayers' partnerships to ensure meaningful engagement with science and research"</u>	MULTIPLIERS aims to facilitate the transition of schools into innovative and open collectors of new ideas, practices, scientific approaches, able to offer to the communities in which they are embedded a space for open, inclusive, and inquiry-based learning on science issues which have an impact on citizens' lives.

<u>NEOTEC Mujeres Emprendedoras</u> , CDETI, Spanish Ministry of Science and Innovation	Supporting the creation of new spin-off or start-up companies led by women created to transfer technologies or knowledge developed from Neurotech R+I activity
<u>NEOTEC Program</u> , CDETI, Spanish Ministry of Science and Innovation	Supporting the creation of new spin-off or start-up companies that transfer technologies or knowledge developed from Neurotech R+I activity
NRW Netzwerke 2021: " <u>iBehave</u> : Algorithms of Adaptive Behavior and their Neuronal Implementation in Health and Disease"	iBehave brings together a world-class group of scientists who will work across disciplines and species to study behaviours relevant for survival, and their underlying neuronal networks. We will use novel approaches for fine mapping of natural behaviours using machine learning and AI and combine them with emerging methods to record from large numbers of individual neurons in behaving animals.
<u>PHC Balaton</u> (Hungaria), <u>PHC Brancusi</u> (Romania), <u>PHC Bosphore</u> (Turkey), <u>PHC Jules Verne</u> (Iceland), <u>PHC Procope</u> (Germany), <u>PHC Van Gogh</u> (The Netherlands)	The objective of this program is to develop scientific and technological exchanges of excellence between the research laboratories of France and other countries. It finances the mobility of the researchers involved in this program, for up to 2 years.

2. QUALITY

2.1 PROJECT DESIGN AND IMPLEMENTATION

2.1.1 Concept and methodology

Concept and methodology

The highly ambitious, long-term vision of the project is a complex and challenging endeavour that requires a wide range of skills and resources and strong coordination and collaboration between the different partners involved. Our joint long-term strategy, as endorsed in the Joint Mission Statement (JMS), emphasises the following points:

1. Realising a joint long-term strategy for education and research capitalising on the synergy of the eight dimensions of neurotechnology.
2. Increasing the competitiveness of European education, research, economy, and society in the high-impact research-intensive domain of neurotechnology.
3. Transforming universities with a joint long-term vision and action plan that is modular and scalable, that crosses academic, faculty and organisational boundaries.
4. Seamless mobility for students, researchers, and staff to study, train, teach, research, and innovate by reaching 50% of our students through innovative mobility programs, including both physical, virtual, and blended mobility programs driven by curiosity and opportunity.
5. Flexible curricula tailored to each student's needs, de-constrained from institutional and/or national capabilities and borders.
6. Promoting European identity among students and researchers by delivering multicultural, multilingual, international, and interdisciplinary academic experiences across the European continent.
7. Lasting close collaboration between partners for a trans-European network of excellence in neuroscience and technology, further removing borders and obstacles in mobility and exchange.
8. Creation of the European Neurotech ecosystem, supporting our students during their formative years in the university, and afterward to transition into becoming responsible, ethical, and global citizens with an impact on society overall.
9. Actively contributing to reducing inequalities within the European Research Area and society by promoting excellence in education and research throughout Europe and strengthening research and innovation capacity to mitigate brain drain and strengthen brain capital.
10. To educate on the ethical, legal, and societal challenges and potential of neurotechnology.

We will work towards this joint long-term strategy by building further on the achievements made during phase 1 by scaling the efforts, making the learning experience and learning paths more student-driven, removing existing borders, and further amplifying the impact of NeurotechEU for all target groups. The above-described joint long-term strategy functions as the foundation for planning our joint activities for NeurotechEU++ (phase 2). All activities of NeurotechEU are divided among 5 closely related work packages (Figure 11) and section 4.

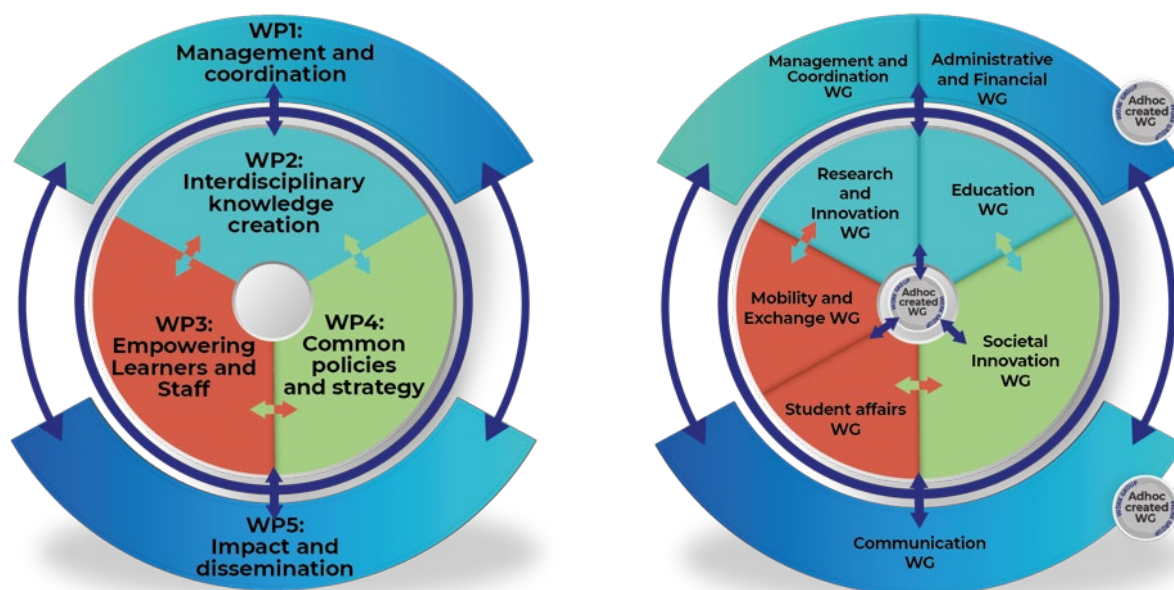


Figure 11: Work packages and related working groups

Work Package 1, “Management and Coordination”, focuses on the general management and coordination of the alliance. Work package 2, “Interdisciplinary knowledge creation”, focuses on the scientific and educational challenges in neurotechnology,

including societal impact, innovation, and sustainability. Its main goal is to develop a joint educational and research agenda that brings together the complementary expertise and ambitions of all partners. Work package 3 “Empowering learners and staff” will propose new forms of academic collaboration by rethinking the mobility of doctoral candidates, graduate students, staff and researchers. Work package 4 “Common policies and strategy” will improve collaborations with other alliances and expand the training, technology and sustainability-based innovations developed. Work package 5 “Impact and Dissemination” focuses on the communication and dissemination of the results and good practices achieved by NeurotechEU and the activities and events of the project with the stakeholders and target groups of NeurotechEU. To effectively address the challenges of each WP and, and in line with the Goal Oriented Governance (see Section 2.2.2) Working Groups (WG) are specialised groups working under quality principles towards concrete goals.

All planned activities are described in detail in section 4, but below we will summarise them and link them to our joint long-term strategy in a consistent manner. This will also demonstrate how the development of our joint strategy matches the level of ambition of European Universities and how our joint activities contribute effectively to the strengthening and enhancement of these ambitions.

- For our joint structures and joint activities in high quality education we will build on the synergy of the eight dimensions of neurotechnology. We will develop a common science and education agenda in T2.1 that focuses on the scientific and educational challenges in neurotechnology to stimulate challenge-based and interdisciplinary approaches (JMS, point 1 & 3). Furthermore, learning goals and programmes for students will be developed. During this process, content between existing and future learning programmes will be aligned with the ultimate goal of working towards joint content and programmes. We will establish NeurotechEU Masters and Doctorate Degrees, and align our Bachelor programmes, in T2.1 using interdisciplinary approaches to increase the competitiveness of European education in the field of Neurotechnology (JMS, point 2). In T2.3 we will develop pedagogical models that are innovative, inclusive and flexible in order to train and engage learners at all levels through the interdisciplinary teaching portfolio of NeurotechEU++. By extending and building platforms in T2.2, we will make the best use of digital technologies and strive for blended learning and work-based learning by introducing online learning groups and AI-guided learning buddies, tools for personalised education portfolios based on skills and learning goals and offer face-to-face content to complement online learning with hands-on experience (JMS, point 5). This will allow our students to develop forward-looking skills and competences. All of these activities will contribute to the strengthening and enhancement of high-quality education, in accordance with the JMS, point 2.
- We will strive for seamless mobility (JMS, point 4, 6 & 7) for all target groups of students, i.e. exchange/short term and degree-seeking/long-term, academic/researchers and professional staff in T3.1. Mobility can be in either physical, virtual or blended mode where we aim for 50% of our students to have an international (classroom) experience during their formative years at the end of phase 3. At the end of phase 2, we aim at 35% student and 15% staff & researcher mobility. To promote mobility and to remove potential cultural barriers, we will also foster the development of intercultural training to enhance cultural understanding and language skills.
- To maximise our innovation potential while linking education and research, we will involve researchers along the eight dimensions of neurotechnology as content developers for NeurotechEU Spaces educational platforms and tools (T2.1 and T2.2). This will ensure a tight alignment of research and education, a high level of education, and most importantly, it will ensure that research results and innovation feed back into education (JMS, point 2).
- We will enhance the level of engagement with key stakeholders in order to foster the societal engagement and entrepreneurial key competences of students and staff through activities planned in WP3 & WP4, which is linked to JMS point 8 and 10. We aim at facilitating and institutionalising integration and cooperation among NeurotechEU partner universities and industrial associated partners (T3.3). This will allow for the development and implementation of challenge and technology-based roadmaps for the cost-effective translation of innovations into the industry and market. The societal engagement of students and staff will be strengthened through all activities linked to T4.3 & T4.4. We will link the eight dimensions of Neurotechnology to (regional) development by considering socio-economic, environmental, and cultural needs in a manner that would also serve the UN Sustainable Development Goals (SDGs). The entrepreneurial competences of students and staff will be enhanced and strengthened by the development of courses that focus on innovation & entrepreneurship and through the creation of internships in collaboration with companies and other organisations.
- We will strengthen the social diversity and inclusivity of students, academics and staff through the activities in T3.1 and T3.2, empowering learners and staff. This is consistent with the JMS points 5, 6, 7 & 9. We will improve equal opportunities and avoid social bias by developing online training and support that is continuously available for all partners. Furthermore, we included a social inclusion fund in the budget to make sure that each partner has the resources to strive for social diversity and inclusivity. The social inclusion fund will promote the inclusion, access, participation and completion of under-represented groups and people with fewer opportunities, as well as support for gender equality and ethnic diversity in higher education.
- We will transform universities with a joint long-term vision and action plan that is modular and scalable, that crosses academic, faculty and organisational boundaries (JMS, point 3) by including specialisations that are at the intersection of Neurotechnology and other involved disciplines, spanning all campuses and faculties. These will include Robotics, Mechatronics, Neuroethics, Neurolaw, Brain & Mind, Cognitive Neuroscience, Brain-inspired Smart Design, Bio-actuation and Control, Neurodiversity and Society, Health and Smart Aging, and Life-style Medicine. By bringing together our departments, faculties, and institutes across all Working Groups as outlined in *section 4: workplan*, our universities will be transformed, and their borders and boundaries disrupted. Traditional education platforms will be modernised, and new platforms constructed by capitalising on new, digital-oriented platforms that blend well with traditional on-campus teaching (Task 2.2).

The above summary describes and explains our concrete work plan and roadmap. For a further and more in-depth explanation of the expected progress, outputs and outcomes for each phase associated with the strategic activities and actions contributing

to the joint long-term strategy, please consult *section 4 work plan, work packages, activities resources and timing*. Within this ambitious framework, the governance and management structures of the alliance have been tailored to ensure the achievement of the objectives within a dynamic and uncertain environment by keeping them as simple as possible. By linking the joint structures to the above-described joint long-term strategy and joint activities, we aim for consistency at all levels.

The goal-oriented joint governance structure (explained in detail in Section 2.2.2) is divided into three levels that clarify arrangements and responsibilities for the making of decisions during the course of this phase (Figure 12):

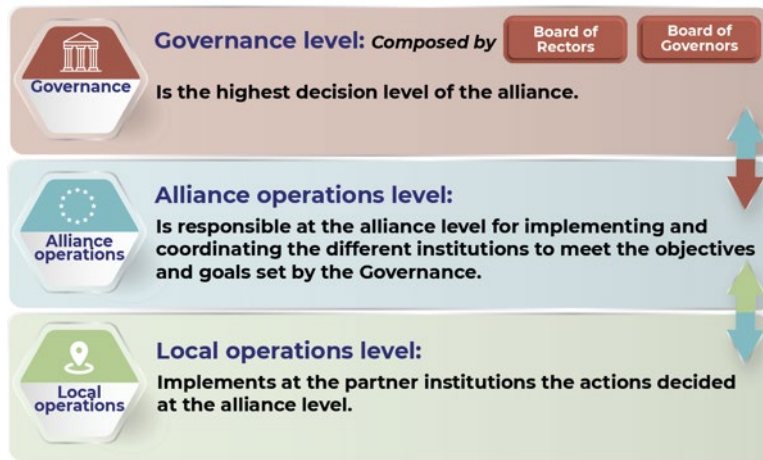


Figure 12: The three levels of the goal-oriented joint governance structure within NeurotechEU: (1) Governance level, (2) Alliance operations level and (3) Local operations level.

All operations of the NeurotechEU (alliance operations and local operations) are driven by quality. Quality assurance and quality control are implemented from the beginning and throughout the life of each process and action in order to identify and correct problems before they occur, to continuously improve the overall quality of the alliance procedures, services, and outcomes, and to ensure that desired quality levels are met. Under the supervision of the Quality Board, and in a similar fashion to Agile scrum & sprint practices^{42,43}, the NeurotechEU approach and methodology for reaching each goal is based on the idea that the early and continuous generation of value throughout the project should be a priority, and all processes and procedures should serve this priority. Thus, when an objective is defined at any Governance level, a group of specialists is formed to work towards this concrete objective, including representatives from **all the alliance institutions**. These Working Groups (WGs) will be dynamic, focused on defined tasks, and are led by two

representatives from two different partner institutions, as well as a Project Manager from the central NeurotechEU Management & Coordination office with specific expertise to ensure that the quality requirements are met. Some of these WGs will last for the entire duration of the project, due to their continuous importance, while others will be ad hoc for a limited time to address a specific need. All WGs and other joint structures will use the following methodology and concepts to ensure consistency between the joint long-term strategy and the joint activities:

- Top-down approach: The high-level goals defined by the NeurotechEU alliance are broken down into distinct phases, and progress is made in a linear and sequential manner. This approach is characterised by strict adherence to a plan, with progress moving from one phase to the next in 'incremental releases'. The typical steps in the top-down approach, representing a Plan-Do-Change-Act (PDCA) cycle, are per phase:
 - Defining the goal (Governance level)
 - Identifying requirements and analysis (alliance operations level)
 - Developing an action plan (alliance operation level)
 - Implementing the plan (local operation level)
 - Evaluating the results (local and alliance operations level)
 - Following up (local and alliance operations level)

In the top-down approach, each phase is built upon the previous one, and the project moves through each phase in a linear, step-by-step fashion. The alliance operations phase (identifying requirements and analysis) is used to define what actions are required to reach the goals, and the local operations phase is used to determine how the actions will be conducted at each partner institution. Once the action plan is complete, the implementation phase begins, whereby the action is implemented at one, several, or all partners. After the implementation, the action is thoroughly evaluated to ensure that it has met the objectives, and the follow-up of the action starts. With incremental releases, the objective is broken down into smaller chunks which are developed and released in a series of stages. This allows for more frequent testing and feedback, is based on accurate monitoring and evaluation, and permits more flexibility in responding to changing environments. Incremental releases also allow for more flexibility in the development process, as new features can be added or removed as needed. This can help to reduce the risk of delays or setbacks, as well as the risk of the final product not meeting stakeholder requirements. Additionally, incremental releases allow for more transparency and visibility of the development process, as NeurotechEU members and stakeholders can see the progress being made and provide feedback in a timely manner. This can help to maintain participant satisfaction and build trust between the project development team and stakeholders.



2.1.2 Project management, quality assurance and monitoring and evaluation strategy

Project management, quality assurance and monitoring and evaluation strategy

Project management, quality assurance and monitoring and evaluation strategies are defined so that they are consistent with the joint long-term strategy and joint activities. In the sections below we describe how both project management and quality assurance are defined within the project and how they will contribute to high-quality project implementation.

Project management

As described in brief in the above section 2.1.1, the project management is divided into three levels: 1) Governance, 2) Alliance operations, and 3) Local operations. The overall project management will have the following core tasks:

1. Definition of the project goals/subgoals: clearly define the purpose and scope of the goals and subgoals set by the governance, including what the project is trying to accomplish and what outcomes are expected.
2. Work plan development: creation of detailed plans that outline the tasks, milestones, and timelines for the project, including the resources (personnel, equipment, funding) that will be needed to complete the tasks.
3. Assembly of project teams in specific Working Groups: identifying the individuals and organisations that will be involved to accomplish the project goals and assigning specific roles and responsibilities to all team members.
4. Management of project resources: allocate and manage the resources needed to complete the project, including personnel, equipment, and funding.
5. Progress monitoring and amendments as needed: regularly track the progress of the alliance and make amendments if needed to keep it on schedule and within budget.
6. Stakeholder communication: keep stakeholders informed about the alliance's progress and any issues that arise and involve them in decision-making as appropriate.
7. Project documentation: besides the deliverables to be submitted to the EC, project reports should be created that include all documents regarding all aspects of the project, including goals, objectives, methods, results, and conclusions. This documentation will be useful for future reference and can also be shared with researchers outside the alliance.

In order to ensure high quality monitoring, planning and control of the whole project, the project management tasks, including the above-described core tasks, are embedded in a dedicated work package (see Section 4, workplan, WP1). This work package includes the tasks project governance (T1.1), internal communication (T1.2) and quality management (T1.3). Complete project governance, including all structures, is further explained in section 2.2.2 Consortium management and decision-making.

Quality assurance and monitoring strategy

NeurotechEU++ will follow the common quality framework developed during phase 1, where the process of monitoring, assessing and enhancing quality was implemented within the core structures and procedures of the alliance. In phase 2, building on what we learned together in phase 1 and to the fact that specific categories of challenges have begun to take shape, the following additional perspectives will be integrated:

- Quality assurance will be the responsibility of each process owner and, as such, any activity in the project can be classified into three different types of processes:
 - Management and governance processes
 - Strategic processes for growth towards the project's long-term vision
 - Specific deliverables already fully operational under the project objectives (e.g. learning platform and tools, enhanced learning practices, enhanced mobility practices)
- Quality assurance for management processes: The governance structures, procedures and mechanisms that are defined in WP1 will be updated whenever necessary to guarantee the smooth progress of the project in line with the quality approach and alliance values:
 - Developing documentation of project progress
 - Discovering deviations at an early stage
 - Initiating remedial actions (if necessary) as soon as possible

The monitoring of accomplishments of deliverables are included in the above procedures.

- Measure of progress for strategic processes: The NeurotechEU++ work plan is defined with a clear identification of Working Groups (WG) responsible for each type of operational activities within the alliance (see section 2.2.1). These WGs will have the responsibility of producing incremental releases according to a predefined timeline, and following a set of common guidelines provided (Progress Form developed in D1.5 –“NTEU– Process of monitoring – Annex III”) that covers:
 - A brief reflection on its contribution to Growth (under a predefined set of desired outcomes and acceptance criteria)
 - Identification of key activities that contribute to Growth, and a description of how they contribute.
 - Identification of deviations from the original plan
 - Identification of obstacles/difficulties/unexpected outcomes/spin-off effects
 - Cost-efficient analysis

- Contribution to NeurotechEU goals of inclusivity, diversity, equity and accessibility
- Quality assurance for outputs that are fully operational under the project objectives. Each WG will reflect at the beginning of each incremental stage on whether any of the expected outputs are a deliverable that will be fully operational according to the project. The quality assurance and monitoring strategy will be implemented under a set of principles established by the Quality Management Board at Month 6. These principles will be specific for each category of delivery, covering at least:
 - Learning platform and tools
 - Enhanced learning practices
 - Enhanced mobility practices

For the 'enhanced learning practices', guidelines will be aligned with the standards of the European Association for Quality Assurance (ENQA)⁴⁴ and the European Standards and Guidelines (ESG)⁴⁵, in consideration also with the developments of the European Framework for Comprehensive Quality Assurance of European Universities (EUniQ)⁴⁶. General quality principles to guide the WG developments for each category of outputs (even those not fully operational) will also be provided, always through the collaboration of each WG.
- Quality Committee: This committee will continue and expand their work regarding quality monitoring during phase 2 of the project. They will carry out the top-level supervision of quality reviews performed by each WG under the principles established at M6 (Quality deliverable D1.2, which will include all the quality guidelines). The relationship between the Quality Committee and the other governance structures is explained in section 2.2.2 where an organisation chart is included.
- Project management processes: To ensure correct monitoring and evaluation of project management processes, NeurotechEU++ has designed procedures for deliverables, events and centralised data storage to ensure that all documents and events undergo a uniform procedure.
 - Deliverables: To make sure the quality of all submitted deliverables is equal, the deliverables first go through an internal review procedure before being submitted to the European Commission (EC). The procedure starts four months before the submission deadline for the EC, when the Management and Coordination Office (MCO) at RU will remind the lead beneficiary responsible for the deliverable. Three months before the submission deadline, the deliverable should be ready for review by two partner institutions. Two months before the deadline, the reviewed deliverable will be sent by the MCO to the lead beneficiary. The lead beneficiary will then have one month to implement the feedback. Finally, one month before the deadline, the deliverable will be submitted to the Board of Governors (BoG) for consideration and approval. In case of the BoG being in favour of the submission, the deliverable will be submitted by the MCO to the EC.
 - Events: The process for managing events within NeurotechEU++ will also follow certain procedures for outlining and emphasising important components of the organisation of an event, thus preventing any miscommunication. Within this procedure, NeurotechEU makes a distinction between one-day events and multiple-day events.
 - Procedure meetings: The agenda for BoG meetings will be sent out at the latest 9 days prior to the BoG meeting. Minutes will be sent out no more than 7 days after the meeting. The meeting agenda will be devised and distributed by the MCO and the minutes will also be written and distributed by the MCO. All meeting documents will be saved on a secured drive.
 - Internal communication: The MCO is responsible for internal communication between partners and plays a vital role in fostering a collaborative and productive environment. As NeurotechEU focuses on a highly specialised field, clear and efficient communication between the different operations levels and individuals is essential to the success of the alliance.
- Monitoring and evaluation strategy: Monitoring and evaluation strategy will be based on the established procedures together with a clear identification of responsibilities. See the RASCI tables below (Table 3, 4, 5) summarising the list of procedures and ID responsibilities.
 - R: Responsible for doing the work.
 - A: Accountable for the correct completion of the work.
 - S: Supporting task completion.
 - C: Consulted with regards to the work.
 - I: Informed of progress.

Table 3: General quality management processes

	Each WG	WG Leader	WP 1 leader	Quality Committee	BoG
To define principles to guide each WG in their quality development and monitoring.	S	S	I/C	R	A
To collect annually best practices/deviations in the quality plan.	S	A	I/C	R	I/C
Propose improvements in quality guidelines.	S	S	C	R	A

Table 4: Monitoring strategic processes (for each incremental stage)

	Each WG	WG Leader	WP 1 leader	Quality Committee	BoG
To define desired outcomes and acceptance criteria for each WG	C	S	R	I	A
To define a calendar for Progress Reviews in each WG	C	S	R	A	I
To reflect on Progress (following guidelines provided).	R	A	I	I	C
To disseminate results of Progress measurements (within the alliance)	n/a	R	A	I	C/I

Table 5: Deliveries fully operational (for each typology of deliveries -e.g.: learning platform and tools, enhanced learning practices, enhanced mobility practices-, in its incremental stage -when applies-)

	WG	WG Leader	WP 1 leader	Quality Committee	BoG
To define guidelines for each typology of WGs	S	R	n/a	A	C/I
To evaluate if the release expected in next incremental is “fully operational”	S	R	n/a	n/a	A
To produce a release according to quality guidelines	R	A	n/a	n/a	n/a
To reflect on the final fulfilment of guidelines	R	A	I	I/C	I
To disseminate results of Quality measurements (within the alliance)	n/a	R	A	I	C/I

Key Performance Indicators (KPIs)

KPIs (Key Performance Indicators) are needed to provide a way to measure and track progress towards project goals and objectives, to help identifying areas that need improvement and provide insights into the effectiveness of research strategies, to facilitate decision making and ensure that resources are being used efficiently and to aid in communication and alignment of expectations among stakeholders.

Although at the beginning of phase 2, and led by the quality committee, an exhaustive analysis of the necessary KPIs will be made, the following table shows a first outline of those currently selected.

Table 6: NeurotechEU++ Key Performance Indicators

WP nr.	Subject	Deliverable	Task Owner	KPI	Target Group	Type	Quantitative aspects (if not report)	Deadline	Update
1	Alliance governance structure, management and coordination	1.1	WG Management & Coordination and WG Administrative and Financial	Develop an overview of the governance structures and management processes including the channels and procedures that will be used to ensure effective internal communication	Alliance members	Comprehensive digital report in English		M12	Biannual
		1.2	Quality Committee	Define specific quality guidelines and standards for procedures and mechanisms	Alliance Work Groups	Comprehensive electronic quality guidelines and mechanisms report in English	Half-yearly assessments	M6	Biannual

2	Knowledge creation for research, innovation and education	2.1	WG Research & Innovation	Define and elaborate scientific challenges in neurotechnology along the eight dimensions, incorporating innovation, sustainability and societal impact in a English electronic report	Research /Academic Staff	Electronic report in English	Eight dissemination papers	M12	Annual
		2.2	WG Education	Define learning goals and create joint learning programmes in all eight dimensions of Neurotechnology; assess them using metrics to improve knowledge creation	B.Sc.-, M.Sc.-, Ph.D.- students; life-long learners	Learning programmes and joint degrees	Minimum 25 students per learning line in 2040; 5-8 learning lines	Goals deadline: M6; Implementation deadline: M24	Assessment: Annual
		2.3	WG Education & ad hoc WG	Build platforms and tools for Content Delivery, Student Information Systems, Learning & Management system and Diploma Service around Campus+ using established open source standards	B.Sc.-, M.Sc.-, Ph.D.- students; life-long learners	Facility	Minimum 150 students and life-long learners in 2040	M24	Annual
		2.4	WG Education	Develop inclusive and flexible pedagogical models to train and engage learners	Students and academic staff	Demonstrator	Content update to 8 demonstrators	M18	Annual
3	Creating platforms, training and support for mobility, equal opportunities, social impact, innovation and entrepreneurship	3.1	WG Mobility & Exchange	Enhance training and mobility in quality and quantity	Students and staff	Public platform	Student mobility: 50%; Staff mobility: 25%	M24	Annual
		3.2	WG Societal Innovation and WG Student Affairs	Create online training and support for equal opportunities and social impact for all members of the alliance	Students and staff	Training sessions in English	All students and staff follow minimally one training	M24	Annual
		3.3	WG Management & Coordination, Ad hoc WG	Create guidelines for compliance to NeurotechEU values	Alliance members, staff and students	Printed report in English		M4	Semi-annual
		3.4	NEURICO	Create courses, internships and summer schools in innovation and entrepreneurship with partner organisations, institutions and companies	Students and life-long learners	Training programme	Internships 1:1; Summer schools: 15-50 attendees	M24	Annual
4	Growing the network for NeurotechEU	4.1	WG Research & Innovation	Grow the pan-European and international network to share knowledge, promote internationalisation and competitiveness of European higher education	Alliance members	Electronic report in English	25 Active collaborations	M12	Annual
		4.2	WG Societal Innovation	Expand and create cooperation models to sustainable regional development	Associate members	Electronic Report in English	Eight cooperation models	M12	Annual
		4.3	WG Research & Innovation	Develop a common strategy for technology transfer within neurotechnology and provide recommendations for the translation into industry	Associate members	Strategy report in English	25 Recommendations (two to three per dimension)	M24	Annual

5	Communication, good practices achieved by NeurotechEU to increase visibility and relevance, enhance channels for impact creation and strategy development towards EU Innovation council	5.1	WG Communications	Design a comprehensive communication and dissemination strategy in which we set out our precise aims, objectives and mechanisms for communicating NeurotechEU results and good practices, events, exhibitions and the Museum of Brain and Technology	Alliance members , European Union	Comprehensive electronic report in English and native languages of alliance members	10% Annual increase in views of Websites, social media, etc.	M12	Biannual
		5.2	WG Communications	Design a roadmap report on achievements and impact indicators on processes, joint programmes, joint research centre, technology transfer, fundraising opportunities transnational campus	Alliance members	Electronic roadmap report in English		M36	Annual
		5.3	WG Communications	Outline a strategy report for the development and implementation of the European Innovation Council Regional Innovation Ecosystem Initiative for collaboration with stakeholders	Alliance members	Electronic strategy report in English		M18	Annual

2.1.3 Project teams, staff and experts

In the table below, we include all personnel that will be involved in NeurotechEU++. Per person we highlight their strengths and where we see their contribution, either at provision of education, research, innovation, automation, or management. In light blue **researchers**, in white other staff (experts in education, mobility, project managers, etc.)

Project teams and staff			
Name and function	Organisation	Role/tasks	Professional profile and expertise
Paul Verschure (♂), Senior expert 	RU	Alliance coordinator; D4,5,8	Professor at the Biophysics department and chair of Neuro-Engineering at RU. Chairman of the Convergent Science Network Foundation, founder of the Future Memory Foundation and co-Founder of Eodyne Systems S.L and Sapiens5 Digital Health. His scientific aim is to find a unified theory of mind and brain using synthetic methods and to apply it to quality-of-life-enhancing technologies. Recipient ERC advanced grant (2013).
Léon de Bruin (♂), Senior expert 	RU	Education; D8	Vice-dean at the faculty of philosophy, theology and religious studies and associate professor of philosophy of mind and cognition at Radboud University. He is editor-in-chief of Philosophical Explorations and principal investigator of the NIAS- Lorentz Theme Group “What is translation?”, which investigates how findings from basic neuroscientific research can be translated into psychiatric practice and vice-versa. He also authored the Oxford Handbook of 4E Cognition.
Fleur Zeldenrust (♀), Junior expert 	RU	Education; D5	Assistant professor in computational neuroscience. She is also one of the founders of the Dutch Brain Olympiad foundation, promoting neuroscience education among secondary school students and the BrainHelpDesk. In 2021, she became the speaker of the theme ‘Natural Computation and Neurotechnology’ of the Donders Institute. I recently also became a member of the Young Academy of the Royal Netherlands Academy of Arts and Sciences.
Freyja Ólafsdóttir (♀), Junior expert 	RU	Researcher; D1,2	Assistant professor and Christine Mohrmann fellow at the Donders Institute for Brain, Cognition and Behaviour. The primary research objectives of her lab are to elucidate the neural circuit mechanisms underlying episodic and spatial memory, using state- of-the-art in vivo neural recording techniques, in pre-weanling rodents. Freyja is also committed to promoting diversity and inclusion in science.
Corina Greven (♀), Senior expert 	RU	Diversity, sustainable science	Professor of Environmental Sensitivity in Health at the Radboudumc and head researcher at Radboud University. Her research is dedicated to understanding the developmental underpinnings and treatment of mental health problems in the context of normal variation from positive functioning to psychopathology. She is established at the forefront of attention-deficit hyperactivity disorder (ADHD) research and is an internationally leading expert in mindfulness-based interventions for children with ADHD.
Christoph Lüthy (♂), Senior expert 	RU	Researcher; D8	Professor of the History of Philosophy and Science at Radboud University. He studied Philosophy and Modern Languages (BA, Oxford), physics (Basel) and the History of Science (MA & Ph.D., Harvard). His special interests are the Scientific Revolution, the logic of scientific imagery, the evolution of theories of matter, and the role of the expert.
Roshan Cools (♀), Senior expert 	RU	Researcher; D1,2,7	Professor of Cognitive Neuropsychiatry at the department of psychiatry of the Radboud University Medical Centre and principal investigator at the Donders Centre for Cognitive Neuroimaging. She received a James McDonnell Scholar Award, the 2012 young investigator award of the Cognitive Neuroscience Society, Vidi and Vici Awards from the Netherlands Organisation for Scientific Research Foundation, the Radboud, a Human Frontiers Science Program research grant and an ERC Advanced Grant in 2022.

<p>Francesco Battaglia (♂), Senior expert</p> 	RU	Researcher; D1,2,5,8	<p>Professor of Neuronal Networks of Memory at the Donders Institute for Brain, Cognition and Behaviour. His work has concentrated on neural ensemble recordings in freely behaving rodents, and he focused on the interaction between hippocampus and neocortex in memory encoding and consolidation. He received an ERC Advanced Grant of 2.5 million in 2019 for research into a universal memory. He is also the coordinator of the Netherlands-wide "The Dutch Brain Interface Project" (total worth: 22 million euros) aimed at developing the concepts for the next generation of brain-machine-interfaces.</p>
<p>Bernhard Englitz (♂), Senior expert</p> 	RU	Researcher; D6,7	<p>Associate professor of computational neuroscience. He received a M.Sc. in Mathematics and a Ph.D. in Computational Neuroscience from the Max-Planck-Institute for Mathematics in the Sciences and the University of Leipzig. He has performed research at the ETH Zurich, the Salk Institute, the University of Maryland in College Park and the Ecole Normale Supérieure in Paris. Since 2018 he has acted as the Data Steward for the Donders Center of Neuroscience.</p>
<p>Koen Haak (♂), Senior expert</p> 	RU	Researcher; D6,7	<p>Principal Investigator Vision and Imaging Neuroscience at the RadboudUMC and associate principal investigator at the Donders Institute for Brain Cognition and Behaviour. His current research focus, funded by an NWO Vidi grant, is to link clinical measures of visual function to visual performance in daily life by mapping individual differences in neural plasticity and neurodegeneration. He also sits in the scientific board and coordinates the neuroimaging work of the Healthy Brain Study, is the chair of the Open Science committee of the Organisation for Human Brain Mapping, and sits in the board of the Dutch Hemianopia Foundation.</p>
<p>Bert Kappen (♂), Senior expert</p> 	RU	Researcher; D3,4,8	<p>Professor of Biophysics and director of the Dutch foundation for neural networks who focuses on neural networks and machine learning, and the development of self-learning intelligent systems. He has co-founded the company Smart Research bv, that offers commercial service on machine learning and that has developed the Bonaparte Disaster Victim Identification software.</p>
<p>Corette Wierenga (♀), Senior expert</p> 	RU	Researcher; D1,2	<p>Professor in neurophysiology interested in the role of inhibitory synapses at the molecular, cellular and network level. She studies the molecular mechanisms underlying the formation and plasticity of inhibitory synapses. Ongoing studies in her lab examine changes in inhibitory synapses when normal development is disturbed and in early stages of Alzheimer's disease.</p>
<p>José Marques (♂), Junior expert</p> 	RU	Education; D5	<p>Associate PI at the Donders Centre for Cognitive Neuroimaging, where he leads a group on Quantitative Structural Imaging. Currently his focus is on improving the quantification of iron and myelin throughout the human brain, in normal ageing and disease. Quantification of such tissue is a high dimensional inversion problem of biophysical models of tissue structure, which require advanced computational modelling and signal processing.</p>
<p>Janneke Jehee (♀), Senior expert</p> 	RU	Innovation, diversion, education; D3,4,6-8	<p>Principal investigator that studies human vision and the signals we receive from the visual environment. She looks at the way in which we decide what we see based on limited information and looks at how we can make better decisions. Her lab uses a combination of neuroimaging (fMRI), computational modelling and visual psychophysics to address these and other questions regarding the neural basis of human vision and visual decision-making.</p>
<p>John van Opstal (♂), Senior expert</p> 	RU	Researcher; D3,4,6-8	<p>Professor of biophysics and previous director of the Donders Centre for Neuroscience. His facilities include five fully equipped human psychophysics labs, and a third research line concerns a humanoid robotics collaboration with the Vision Lab of the Instituto Técnico Superior of Lisbon University. Over the last 10 years he acquired ±10 million euro in grants for his research. His current research interests concern the neural mechanisms of eye-head gaze control, the auditory system, and neurocomputational modelling.</p>

<p>Wim Scheenen (♂), Senior expert</p> 	RU	Education	<p>Previous director of the Education Institute Biosciences and head of the Education Center at the Faculty of Science of the Radboud University he has ample experience with curriculum development and revisions as well as process optimization of all student- and education-related activities. As chair of the Management team Educational and Student Affairs he collaborated in harmonising processes related to student and educational support of the Radboud University. He currently uses his experiences to further the educational and student-related goals of NeurotechEU.</p>
<p>Guillermo Talavera (♂), Senior project manager</p> 	RU	General management and coordination	<p>Physicist and Electronic Engineer, Ph.D. in Computer Science, MBA and co-founder of IoT-Partners. EU project manager with more than 12 years of experience in planning and management of collaborative R&D projects, technology Innovation, Interdisciplinary Projects, Research, Project Management, and Team Management. He also has technical expertise in e.g., Embedded Systems (hardware/software), and Processor Architectures, amongst others.</p>
<p>Femke Maij (♀), Senior expert</p> 	RU	Management	<p>Femke Maij is managing director of the Donders Institute. As such, she is responsible for leading the Institute as a whole along with the Institute's current chair, Barbara Franke. Her duties cover the strategy, finances and policies of the Institute.</p>
<p>Antoine Wellink (♂), Senior advisor</p> 	RU	Innovation and Industry	<p>Head of Radboud Innovation Science, the Knowledge Transfer Office within the Faculty of Science at Radboud University. He is an experienced life science executive with a strong track record in international business development, drug discovery and -development, regulatory affairs, IP & Licensing and general management in several companies and institutes. Antoine has ample experience with coaching young people, acquisition of funding, patenting and partnering.</p>
<p>Rona-Jualla van Oudenhoven (♀), Senior advisor</p> 	RU	Diversity	<p>Chief Diversity Officer of Radboud University. She previously held positions as International Development Consultant; Director, Diversity and Inclusion at Durham College; Director Equity, Communications and Community Partnership at Durham Children's Aid Society, Canada. Currently, she is Co-Founder True Play Foundation, China and Executive Director Defence for Children International, Trinidad and Tobago Section (DCITT).</p>
<p>Maud Hendriks (♀), Senior project manager</p> 	RU	General management and coordination	<p>BSc in Health Sciences, MSc in Health Food Innovation Management. Project coordinator and manager with a focus on finances. Extensive experience in collaborative European projects, responsible for (financial) planning and management.</p>
<p>Aaron Klomp (♂), Project manager</p> 	RU	Management	<p>Junior project manager within NeurotechEU. He has a background in Molecular life Sciences (BSc), Neurobiology (MSc), and is specialised in Science, Management & Innovation. He has been involved in NeurotechEU in reporting (deliverables), events, and mobility.</p>
<p>Gemma van der Sluijs (♀), Project manager</p> 	RU	Management	<p>Junior project manager within NeurotechEU. She has a background in Medical Imaging and Radiotherapy (BSc) and Human Biology with a specialisation in Science, Management and Innovation (MSc). Her focus within NeurotechEU will be largely on the educational content.</p>

<p>Pam Graave (♀), Project manager</p> 	RU	Management	Junior project manager within NeurotechEU. She has a background in Human Biology and specialised in Science, Management and Innovation. She will take up the part of communication and will be the contact point for the student council within NeurotechEU.
<p>Juana Gallar (♀), Senior expert</p> 	UMH	UMH lead and general coordinator; education, quality, equity; D1,2,3,7	Professor of Physiology and chair of Ocular Neurobiology Group at the UMH-CSIC Instituto de Neurociencias. She has extensive administrative experience at UMH, nationwide and for scientific societies. Her research interest is focused on the mechanisms underlying neuropathic pain, looking for new treatments to combat pain and promote nerve regeneration. She has several families of patents of new drugs and medical diagnose equipment, some licensed to spin-off companies she co-founded.
<p>Santiago Canals (♂), Senior expert</p> 	UMH	Researcher; D1,2,3,5	Staff Research Scientist of the Spanish Superior Research Council, he leads the Laboratory of Plasticity of Brain Networks at the Institute of Neurosciences. After joining the IN in 2009, his research focuses on understanding the functional reorganisation of brain circuits associated with learning and memory in health and disease.
<p>José María Azorín (♂), Senior expert</p> 	UMH	Researcher; D3-7	Full Professor of Systems Engineering and Automation, he leads the Brain–Machine Interface Systems Lab at the Institute for Engineering Research of Elche. He has been a visiting professor at the University of Houston (USA) and the Imperial College London (UK). He is also a Distinguished Lecturer of the IEEE Systems Council. His research interests are Brain–Machine Interfaces, Neuro-robotics and Rehabilitation Robotics.
<p>Sandra Jurado (♀), Senior expert</p> 	UMH	Researcher; D1-3	CSIC Staff Research Scientist, she leads the Laboratory of Synaptic Neuromodulation, where she serves as Director of the Department of Cellular and Systems Neurobiology. Her interests include molecular mechanisms of synaptic transmission and plasticity, trying to understand how synaptic plasticity is regulated in discrete neural circuits, and how alterations of this process can lead to neurodegenerative and neuropsychiatric diseases such as Alzheimer's disease and autism.
<p>Esther Sendra Nadal (♀), Senior expert</p> 	UMH	Researcher; D1,8	Full Professor of Food Technology at the School of Engineering of Orihuela, and Academic Secretary of the Department of Agro-Food Technology. She is member of the Industrialization of Animal Raw Materials research group, interested in eco-efficiency of food industries mainly through the valorization of co-products from agro-food industries to obtain bioactive compounds to be applied as food matrices.
<p>María del Carmen Acosta (♀), Senior expert</p> 	UMH	Education; D1,2,7	Full Professor of Physiology at the UMH Medical School. She has developed an administrative activity of increasing responsibility as Deputy Director of the Department of Physiology, Associate Dean of the Medical School, and Vice Rector for Academic Affairs. Her research interest is focused on the pathophysiology of pain associated with ocular or systemic diseases of metabolic, inflammatory or infectious origin.
<p>Fernando Miró (♂), Senior expert</p> 	UMH	Researcher; D8	Full Professor of Criminal Law, Director of the Research Center CRIMINA, and former Dean of the Social and Legal Sciences of Elche. He is interested in the study of economic-business crime, crimes against intellectual property, and the Internet and cybercrime, as well as in the repercussions of Artificial Intelligence in crime mapping and prevention.

Raúl Reina (♂), Senior expert 	UMH	Diversity, inclusion; D1,8	Full Professor of Adapted Physical Activity in the bachelors on Physical Activity and Sport Sciences, and on Occupational Therapy. He has extensive administrative experience as Vice Dean for Academic Affairs of the Faculty of Health and Social Sciences, Director of the UMH Office for Students with Disabilities. He is currently the Vice-Rector for Inclusion, Sustainability and Athletics.
Diego Echevarría (♂), Senior expert 	UMH	Mobility, inclusion; D1	Professor of Human Anatomy. He teaches human anatomy at Medicine, Pharmacy, Podiatry and Physiotherapy degrees, and brain development at the Master in Neuroscience: from Research to the Clinic. He is the Associate Dean for International Relations and Quality Control at the UMH Medical School. Diego combines his activity as coordinator of medical students' mobility with permanent collaboration with NGOs supporting displaced people, especially children.
Francisco J. Martini (♂), Junior expert 	UMH	Researcher; D1-3	He lectures Human Physiology to first-year students of different health sciences degrees. In addition, he collaborates in the Neuroscience Master's Programme teaching on two subjects: 1) Visual information processing, and 2) Statistical tools for neuroscientists. Previous teaching activity in Argentina. His research interest is focused on morpho-functional or thalamic-cortical connections during development.
María del Carmen Neipp (♀), Senior expert 	UMH	Education; D7	Professor of Social Psychology. She has held different positions at UMH (Associate Dean of Psychology, Director for the Accreditation of Degrees) and is currently Deputy Vice Rector for the Accreditation of Bachelor and Master Degrees. Her research is focusing on studying psychosocial variables (beliefs, coping skills, communication, etc.) and its influence on the well-being of individuals.
María del Carmen Lillo (♀), Senior expert 	UMH	Education; D1,7	PhD in Physiotherapy. She teaches Physiotherapy in clinical specialties, including Physiotherapy in Central Nervous System disorders and in Paediatrics. She is interested in the neurobiology of childhood disabilities. She is former Deputy Dean of the UMH Medical School.
José Manuel Blanes (♂), Junior expert 	UMH	Mobility; D4	Telecommunication Engineer who is currently Associate Professor of the Department of Materials Science, Optics and Electronic Technology, and director of the area of internationalisation at UMH. He is involved in technology transfer projects in the field of power electronics. His current research interest is focused on space power electronics, renewable energy and industrial electronics.
Mario Ortiz (♂), Junior expert 	UMH	Researcher; D3-7	Industrial Engineer and PhD in Robotics. He is associate Professor at the Mechanical Engineering and Energy Department, where he is Deputy Director. He has been a visiting professor at the University of Houston (USA). He is member of the BMI Lab and his research activities include mathematical transforms applied to electrical signal processing, Neural Network Applications for signal classification and Brain-Machine Interfaces applied to prosthetics.
José López-Atalaya (♂), Junior expert 	UMH	Researcher; D1-3,5,7	CSIC Staff Research Scientist at IN. His research aims are to develop novel approaches to treat chronic neurodegenerative conditions by modulating immunity and neuroinflammation. Jose combines animal models of neurodegenerative disease and neuroinflammation, samples from patients with the associated pathologies, mouse genetics, transcriptomics and epigenetic analyses, state-of-the-art histological, cellular and molecular biology methods and techniques, and bioinformatics.

<p>Iván Albalade (♂), Junior expert</p> 	UMH	Mobility; D8	Associate Professor of Painting at the bachelor in Fine Arts and the Master degree in Art Projects and Research. His research activity is developed in the Media Archaeology and Art Practice Group, interested in the aestheticization of mechanical analogical and digital recording, and reproduction media, the archaeology of blurring. He is the General Secretary of the faculty of Fine Arts and has experience in the development of international exchange programmes.
<p>Inmaculada Blaya Salvador (♀), Senior expert</p> 	UMH	Mobility, Quality	Director of the Service International Relations, Development Cooperation, and Volunteerism since 2015. She leads the UMH office managing incoming and outgoing mobility exchanges for students and staff. She has also broad experience in Higher Education Quality management and accreditation processes at HEIs, as Director of the UMH Service of Quality 1997-2015.
<p>Ángeles Gallar (♀), Junior expert</p> 	UMH	Communication and dissemination	Specialist in scientific communication and science outreach of the UMH Communication Office. She is actively involved in the UMH definition and implementation of the social media communication strategy (Facebook, twitter, google plus, scoop it, Instagram, etc.). She implements actions of science communication, such as the development of specific content on scientific and translational UMH activities for radio and TV media, and the quarterly magazine "UMH Sapiens".
<p>María José Such (♀), Senior project manager</p> 	UMH	Management, quality	Senior Project Manager with experience in User-Centered Design, Business Intelligence, Customer Experience, Market Research and Business Transformation. She has more than 15 years as consultant in the field of Perceived Quality and Impact Indicators for Innovation Projects from a broad range of sectors (Insurance, Utility, Banking, Health and High Education).
<p>Mónica Candela Sempere (♀), Senior expert</p> 	UMH	Management, mobility	Master Degree of Marketing Research and Bachelor Degree in Business Administration. She has more than 18 years of experience in international project management. Since 2015 she has been an expert for the Spanish National Agency for the Internationalisation of Education (SEPIE) in the field of exchange programs.
<p>Robert Harris (♂), Senior expert</p> 	KI	Academic leader KI; D1,2,5	Professor within the Centre for Molecular Medicine, a designated translational medicine centre at Karolinska Institutet. Since 2019, he is also the Academic Vice President of Doctoral Education at KI. In this latter role he has ultimate responsibility for the >2000 PhD students at KI, and still actively develops quality control of doctoral education through a variety of teaching and organisational activities, which he also teaches widely at international institutions.
<p>Joana Pereira (♀), Senior expert</p> 	KI	Scientific coordinator KI; D1,2,5	Principal Researcher, Associate Professor and Group Leader at the Division of Clinical Geriatrics of Karolinska Institute. Her group is working with brain connectivity measures derived from structural MRI, functional MRI and diffusion tensor imaging in patients with Alzheimer's disease and Parkinson's disease.
<p>Lennart Brodin (♂), Senior expert</p> 	KI	Education; D1,2	Professor in Neuroscience at the Department of Neuroscience. His research deals with the molecular mechanisms of synaptic transmission with focus on presynaptic mechanisms. He is the Vice Chair of the Department of Neuroscience, and a Faculty Member of F1000's Neuroscience Section. He also has a broad interest in neuroscience education at all levels.

<p>Ola Hermansson (♂), Senior expert</p> 	KI	Education; D1,2,5	Professor of neuroscience at the Department of Neuroscience. His/her research focuses on elucidating transcriptional and “epigenetic” mechanisms governing the development, function, and evolution of the human cortex in health and disease, and her research focuses on the development of the brain and maturation of neural stem and progenitor cells, in psychiatric and neurological disease as well as tumours in the nervous system.
<p>Rune Brautaset (♂), Senior expert</p> 	KI	Management; D1,2	Head of undergraduate education at Clinical Neuroscience (CNS) and vice chairman of the committee of education. Professor in optometry, his research today focuses on the structure and function of the eye.
<p>Maria Ankarcrona (♀), Senior expert</p> 	KI	Management; D1,2	Professor of Experimental Neurogeriatrics focusing on the role of mitochondria in Alzheimer’s disease. She is head of the Department of Neurobiology, Care sciences and Society (NVS). NVS has a strong focus on ageing and dementia with several world leading research groups investigating pre-clinical, clinical and epidemiological aspects of neurodegenerative disorders.
<p>Konstantinos Meletis (♂), Senior expert</p> 	KI	Coordination; D1,2,5	Professor and Director of the Strategic Research Area Neuroscience. His research focuses on defining brain circuits that are important in reward and aversion and employs advanced technologies to map the identity and connectivity of neurons, and how these relate to specific functions during behaviour. He is faculty representative on KI’s Board of Research.
<p>Mats Olsson (♂), Senior expert</p> 	KI	Coordination	Professor of Experimental Psychology, Department of Clinical Neuroscience (CNS) and head of CNS. He has extensive experience as course leader for approximately 25 years at both graduate and postgraduate levels. Further he is a recipient of 10 major grants from the Swedish Foundation for Humanities and Social Sciences and the Swedish Research Council as main applicant.
<p>Gilberto Fisone (♂), Senior expert</p> 	KI	Coordination	Professor and Head of the Department of Neuroscience. His research is centred on the study of dopamine transmission and neurodegenerative diseases with particular emphasis on the molecular mechanisms at the basis of motor and non-motor symptoms and complications in Parkinson’s disease. He has been responsible for the organisation of undergraduate courses in Neuroscience and of postgraduate courses on signal transduction in brain disorders.
<p>Susanne Guidetti (♀), Senior expert</p> 	KI	Education, innovation	Professor in Occupational Therapy at the Department of Neurobiology, Care Science and Society and the group leader for the research group “Health in Everyday Life among people with neurological Disorders” that targets knowledge gaps identified in the health care sector and in issues concerning the everyday lives among people with long-term neurological disorders.
<p>Emma Hägg (♀), Senior expert</p> 	KI	Communication	International coordinator and communications officer at the Faculty Office and External Relations. She supports the Committee for Higher Education in matters related to internationalisation of education. She had different positions within higher education administration working in project management, student recruitment, internationalisation and communication.

<p>Anna Dahlerus (♀), Senior expert</p> 	KI	Education, coordination	International Coordinator at the Faculty Office and External Relations, focusing on strategic internationalisation of the university's study programmes on undergraduate and master level. She has worked for more than 20 years in the international field of higher education. She has gained extensive experience in administering, monitoring, coordinating, managing and reporting projects, student and staff mobility as well as organising conferences and meetings
<p>Erika Dabhilkar (♀), Senior expert</p> 	KI	Management, coordination	Head of the International Relations Office which is responsible for the implementation of NeurotechEU at KI. She has more than 10 years of experience from an equivalent role at Uppsala University as Director for Internationalisation. At Uppsala University she was responsible for implementing the university's international strategy as well as the European University Initiative Enlight.
<p>Ylva Olsson (♀), Project manager</p> 	KI	Management, coordination	Project manager for NeurotechEU at KI. She has extensive experience of education, especially within the field of lifelong learning where she has managed sales and marketing, development and overall organisation of courses for the national and international market for more than 12 years. She also has prior long experience from different managerial positions within the private sector, mainly relating to education, health and travel.
<p>Maria Olsson (♀), Project manager</p> 	KI	Management, coordination	One of the project leaders for NeurotechEU. She works at the international office and has extensive experience in administering, monitoring, coordinating projects. She also has long experience of organising conferences and meetings.
<p>Mathew Birdsall Abrams (♂), Senior expert</p> 	KI	Education; D5	Director of Science and Training for the International Neuroinformatics Coordinating Facility. His current work focuses on coordinating international efforts to develop (meta)data standards, software tools, and infrastructures that enable data reuse, sharing, and integration. In addition, he has developed open access training platforms for neuroscience education.
<p>Vasco Sousa (♂), Senior expert</p> 	KI	Coordination; D2	Head of Unit and is a research specialist and manager of the autoradiography (ARG) core facility. He is also the coordinator for the Strategic Research Program in Neuroscience (StratNeuro)
<p>Jonas Sundbäck (♂), Senior expert</p> 	KI	Education	Faculty representative in the Committee for Higher Education, with special responsibility for internationalisation of education. He is director of studies for the international bachelor's programme in biomedicine and has also been in charge of (international) summer research courses. He is a representative in the Eurolife Educational Alliance, a collaboration between research intensive universities in Europe.
<p>Karen Gustafsson (♀), Senior project coordinator</p> 	KI	Education	Karen Gustafsson works as an educational developer at the Department of teaching and learning and is involved in several international collaborative projects at KI.

<p>Klara Regnö (♀), Senior expert</p> 	KI	Expert diversity/equal opportunities	Equal Opportunities Strategist who is developing and implementing KI's gender mainstreaming and works for equal opportunities to provide an inclusive work and study environment. Gender mainstreaming involves the integration of a gender perspective into KI central operations such as research and funding, career opportunities, pedagogy and curriculum. Her research interest concerns gender, management, gender equality and organisational change
<p>Victoria Hansson (♀), Senior advisor</p> 	KI	Coordination	Coordinator for students with disabilities at the Education Support Office. Her assignment includes handling students' applications for targeted educational support and supporting departments and teachers.
<p>Ilona Grunwald Kadow (♀), Senior expert</p> 	UBO	General administration; D1	Full professor of physiology at the Faculty of Medicine of the University of Bonn and the Director of the Institute of Physiology II. Her research interests include circuit neuroscience, genetics, adaptive and innate behaviour as well as molecular neurobiology. She has recently joined the NeurotechEU alliance in the University of Bonn and together with Katharina Fuchs-Bodde she is the primary contact of the alliance at the University of Bonn.
<p>Alexandra Philipsen (♀), Senior expert</p> 	UBO	Researcher; D1,7	Full professor of psychiatry and is currently holding the position at the University Hospital of Bonn. Her research focuses on translational therapy research on cognitive dysfunctions, attention and emotion dysregulation development and evaluation of pharmacological and non-pharmacological treatments. of Director of the Department of Psychiatry and Psychotherapy
<p>Andreas Zimmer (♂), Senior expert</p> 	UBO	Researcher; D1	Professor of neuroscience at the University of Bonn and director of the Institute of Molecular Psychiatry. His research focuses on the molecular underpinnings of behaviour and psychiatric diseases. He is the Vice-Rector for Research and Innovation at the University of Bonn. He will also facilitate communication between the faculties and the rectorate and NeurotechEU.
<p>Anne Driemel (♀), Senior expert</p> 	UBO	Researcher; D2,5	Anne Driemel is a full professor of Algorithms and Complexity at the Institute of Computer Science. Her research focuses on Discrete and Computational Geometry, Algorithms and Data structures and Trajectory and Time Series Analysis. She is an active member of the network for cross-species investigation of behavioural structure and has received a DFG research grant for the investigation of "Efficient Representation of Geometric Similarity".
<p>Christian Henneberger (♂), Senior expert</p> 	UBO	Researcher, general administration; D1	Christian Henneberger is a full professor for neuroscience at the University of Bonn. The main research interests of his lab are the cellular and network mechanisms underlying learning and memory function, hippocampal function and dysfunction.
<p>Dominik Bach (♂), Senior expert</p> 	UBO	Researcher; D1,2,7	Hertz-Professor for artificial intelligence and neuroscience, TRA „Life and Health“ at the University of Bonn. He also works at BIGS Neuroscience guiding PhD scholars in the field of computational and theoretical neuroscience. His area of expertise includes cognitive-computational neuroscience as applied to humans, with an ultimate goal of contributing to clinical questions in psychiatry.

<p>Elena Demidova (♀), Senior expert</p> 	UBO	Researcher; D2,3,5	Full professor of Computer Science and head of the Data Science and Intelligent Systems Group (DSIS). She has been involved in the leading roles in several large-scale EU-funded and national projects. Her research focuses on Data Analytics, Spatio-Temporal data, Artificial Intelligence and Machine Learning.
<p>Eva Hoppe (♀), Junior expert</p> 	UBO	Researcher; D8	Associate professor of economics at the University of Bonn. She is interested in theoretical and applied microeconomics. Specifically, her research is focused on the theory of economic incentives, agency theory (moral hazard, adverse selection), and the incomplete contracting approach.
<p>Heinz Beck (♂), Senior expert</p> 	UBO	Researcher; D1	Full professor at the Institute of Experimental Epileptology and Cognition Research ("Life & Brain") at the University Hospital of Bonn. He is the founder of the Bonn International Graduate School 'BIGS Neuroscience'. He is the Principal Investigator in the Beck Group about "Neuronal input-output computation and mechanisms of cognition in health and disease".
<p>Jürgen Gall (♂), Senior expert</p> 	UBO	Researcher; D3	Full professor of computer science and head of the Computer Vision Group at the University of Bonn since 2013. His research focuses on Action recognition and video understanding, Anticipation and forecasting, Human pose estimation and Semantic segmentation. He is PI of the Cluster of Excellence "PhenoRob – Robotics and Phenotyping for Sustainable Crop Production" and also active in the network for cross-species investigation of behavioural structure.
<p>Martin Reuter (♂), Senior expert</p> 	UBO	Researcher; D2,8	Full professor of psychology and heads the unit "Biological & Personality Psychology". He is one of the directors of the Center for Economics and Neuroscience (CENs) and member of the Bonn International Graduate School (BIGS) Neuroscience. His research focuses on the biological basis of individual differences in behaviour from the normal range to psychopathology.
<p>Matthias Hullin (♂), Senior expert</p> 	UBO	Researcher; D3,4	Professor of Digital Material Appearance and associate director of the X-Rite Graduate School for Digital Material Appearance. An important strand of his research is dedicated to developing new methods for the acquisition, representation, manipulation and reproduction of digital material models, and understanding the factors that contribute to successful communication of measurable and subjective material properties.
<p>Rainer Surges (♂), Senior expert</p> 	UBO	Researcher; D1	Full professor of epileptology and is the head of the Department of Epileptology at the University Hospital of Bonn. His group works on topics like the biochemical, imaging and physiological biomarkers of seizures and epilepsy that allow diagnosis as well as accurate monitoring of disease progression and anticonvulsant therapy.
<p>Reinhard Klein (♂), Senior expert</p> 	UBO	Researcher; D3-5	Full professor and the head of the Computer Graphics Group. He is the director of the Institute of Computer Science II. He is cofounder and head of the Steinbeis Research Center "Computer Graphics and Digitization", fostering implementation of the very latest know-how and findings from research and development within companies. His research interests include computer graphics with a special focus on digitization of 3D geometry and surface materials, rendering, geometric modelling and shape analysis, hardware accelerated graphics, large datasets and interaction techniques.

<p>Ronald Jabs (♂), Senior expert</p> 	UBO	Education; D1	Head of Functional Imaging at the Institute of Cellular Neurosciences. The Functional Imaging group focuses on combined electrophysiological and fluorescence-based recording techniques, performed on individual cells. Within the field of glial cell research, their primary interest is on the interplay between the activation of voltage and ligand activated transmembrane ion channels and subsequent changes in the intracellular calcium concentrations.
<p>Sandra Blaess (♀), Senior expert</p> 	UBO	Management; D1	Associate professor for neuroscience. The main foci of her research work are the mechanisms underlying the development of molecular and functional neuronal diversity in the dopaminergic system. She is the head of the BIGS Neuroscience Teaching Committee since 2018, coordinating and developing the teaching curriculum.
<p>Ulrich Ettinger (♂), Senior expert</p> 	UBO	Education; D1,8	Ulrich Ettinger is a full professor for Psychology, and is trained in psychology and neuroscience. His research focuses on the neural mechanisms of cognitive and oculomotor control and its alterations in psychiatric disorders. Methods include functional magnetic resonance imaging, oculography and pharmacological designs.
<p>Tobias Raupach (♂)</p> 	UBO	Education; D8	Full professor of medical didactics and the head of the Institute of Medical Didactics at the University Hospital Bonn. This Institute wants to provide new impulses for the further development of medical studies through research into digitally-supported teaching formats based on learning psychology.
<p>Anne Boehlen (♀), Administrative specialist</p> 	UBO	General administration	Administrative Specialist and Programme Coordinator at BIGS Neuroscience at UBO and an experienced PhD researcher with proven experience in the research industry. Her skills and experience qualify her to organise graduate and undergraduate student mobility and neuroscience teaching.
<p>Katharina Fuchs-Bodde (♀), Senior advisor</p> 	UBO	Management	Head of the International Office at the University of Bonn. She manages the International Office, coordinating its various activities and organising the requisite resources for measures and projects. Working closely with the Vice Rector for International Affairs, she is also responsible for the strategic internationalisation of the University of Bonn. Together with Ilona Grunwald Kadow she is the primary contact of the alliance at the University of Bonn.
<p>Sarah Monreal (♀), Project manager</p> 	UBO	Management, coordination	Master of Arts degree in German Studies and Psychology, as well as a PhD in German Studies. With more than 10 years of experience in international Project Management, she is the Project Coordinator of NeurotechEU at the University of Bonn and the primary organisational contact.
<p>Tina Odenthal (♀), Senior expert</p> 	UBO	General administration, management	Deputy head of the International Office and Head of the Section for Partnerships and International Researchers. She coordinates strategic partnerships and grant programs and provides advice and support for the establishment and expansion of international cooperation programmes.

<p>Uta Brus (♀), Senior teacher</p> 	UBO	General administration	Uta Brus is an experienced teacher for German as a Foreign Language and within NeurotechEU she is the Coordinator for German Language Courses offered to all partner universities. From 2014 to 2019 she worked as a DAAD-Lecturer for German at the Universidad Pablo de Olavide, Seville, Spain. She has broad experience in project management and pedagogy.
<p>Can Yücesoy (♂), Senior expert</p> 	BOUN	BOUN academic lead, general management, coordination of university-industry collaborations, development of technological innovations; D2,4,7	Professor of biomechanics at the Institute of Biomedical Engineering. Director of the Institute of Biomedical Engineering. Coordinator of Neurotechnological Solutions Platform, a national centre of excellence and university-industry ecosystem for R&D in neurotechnology. His aim is to develop innovations and technologies for movement disorders and to translate them into novel patient-specific motion assistive devices and neurorehabilitation systems.
<p>Necati Aras (♂), Senior expert</p> 	BOUN	General management, Quality control, Undergraduate education and Lifelong learning programs; D7,8	Professor of Industrial Engineering. He served as a consultant to the rector in international affairs and as head of the International Relations Office in BOUN. He has major experience in arranging the university's international partnerships, outbound and inbound mobility activities, support services addressing international students and researchers, and the development of international study programs.
<p>Arzu Çelik (♀), Senior expert</p> 	BOUN	General management, Undergraduate education programs, Sustainability and dissemination actions; D1,7	Professor at the MBG Department. Group leader of Developmental Neurobiology Group. Active member of the undergraduate and graduate programs at MBG Department, instructor at BOUN Lifelong Learning Center teaching high school students. Her aims are to develop models of neurodevelopmental and neurodegenerative diseases and to establish cures for these diseases by performing chemical screens in flies.
<p>Esin Öztürk Işık (♀), Senior expert</p> 	BOUN	Development of technological innovations, Undergraduate and lifelong learning education programs; D2,3,7	Associate Professor of Medical Imaging. Vice Director of the Institute of Biomedical Engineering. She currently leads the Computational Imaging Laboratory that has 15 Ph.D. students working on developing novel molecular magnetic resonance imaging (MRI) techniques to allow for a better understanding of underlying biochemistry of diseases in order to improve patient health.
<p>Begüm Özkaynak (♀), Senior expert</p> 	BOUN	General management, Future emerging technologies & neurochallenges, Social science, Societal innovation actions, Sustainable regional development; D8	Professor at the Department of Economics. Co-Editor-in-Chief of the Ecological Economics Journal. She is an expert on participatory processes and values assessment techniques. Her interest is in understanding the economic-environment relationship better, the root causes of our socio-environmental crisis and conflicts, and what behavioural, institutional, and technological changes are needed for sustainability transformation.
<p>Naz Zeynep Atay (♀), Senior expert</p> 	BOUN	Management, coordination	A tenured professor in the Chemistry Department. She has served the university administration as Dean of Student Affairs, Head of Academic Integrity Commission, Head of Scientific Research Projects Committee, Director of School of Foreign Languages, Coordinator of International Affairs, Erasmus Exchange Programs Coordinator, Department Head and Vice-Rector responsible for all levels of education programs in BOUN.
<p>Daniela Schulz (♀), Senior expert</p> 	BOUN	Development of Technological innovations and Societal innovations; D1,6,8	Associate professor of neuroscience at the Institute of Biomedical Engineering. Her goals are (i) to improve neuroscientific methods and approaches by integrating real-time behavioural dynamics with brain function, (ii) study and improve animal models of human disease, (iii) understand societal perspectives on neurotechnological advances across the NeurotechEU partner countries.

<p>Emre Uğur (♂), Senior expert</p> 	BOUN	Development of technological innovations and pedagogical innovations; D1-4,8	Associate Professor of Computer Engineering. Chair of Cognitive Science Master of Arts Graduate Program. Head of Cognition, Learning and Robotics (CoLoRs) Lab. Co-director of Boğaziçi University Virtual Reality Laboratory. His aims are to use computational techniques such as Virtual Reality tools and computational models in order to understand embodied cognition in humans, among others.
<p>Özlem Durmaz İncel (♀), Senior expert</p> 	BOUN	Sustainable regional development; D2-4,8	Ph.D. in computer science from the University of Twente, Netherlands. She is currently working as an associate professor in the Computer Engineering Department. Her scientific objective is to utilise sensing technologies available on the Internet of Things and mobile and wearable devices, to build context-aware and intelligent systems that ease people's lives and improve their well-being.
<p>Burak Güçlü (♂), Senior expert</p> 	BOUN	Researcher; D1,4-6	Holds a Ph.D. degree in Neuroscience and he is a professor of neuroscience at the Institute of Biomedical Engineering. He is the director of Tactile Research Laboratory and is the founder of the University Vivarium. His studies include mathematical modelling of the sense of touch, psychophysical experiments in human, species-specific vocalisations and prefrontal cortex recordings of awake-behaving macaque monkeys.
<p>Gülcan Erçetin (♀), Senior expert</p> 	BOUN	Development of pedagogical innovations; D7,8	M.A. and Ph.D. in Language Education. Professor at the Department of Foreign Language Education. Her scientific aim is to establish a bridge between neuroscience and education in understanding reading and reading difficulties by (i) combining neural, cognitive and linguistic accounts; (ii) developing evidence-based innovative assessment tools and pedagogic interventions.
<p>Yasemin Bayyurt (♀), Senior expert</p> 	BOUN	Development of pedagogical innovations, Curriculum development, Lifelong learning education programs for NeurotechEU; D7,8	Professor of Applied Linguistics. She served as Dean of Faculty of Education and has major experience in curriculum development, planning of educational programs, and development of pedagogical innovation. She has an extensive network of experts to support NeurotechEU educational program development actions including partnerships for digital education readiness. She is also leading the development of BOUN R&D School in Neurotechnological Solutions Platform.
<p>Lale Akarun (♀), senior expert</p> 	BOUN	Development of technological innovations; D2,3	Professor in the Computer Engineering department. She was the Department Chair for many years and served as the Vice Rector for Research and Innovation affairs. She is the director of Telecommunications and Informatics Technologies Research Center and is also the director of Perceptual Intelligence Laboratory. Her research is focused on gesture recognition for human computer interaction, sign language recognition, biometrics, 2D and 3D face recognition, hand vein recognition, activity analysis, human tracking, action detection, and quantization and dithering of colour images.
<p>Cem Ersoy (♂), senior expert</p> 	BOUN	University-industry collaborations, development of technological innovations; D2,3,8	Professor in the Computer Engineering Department. He served many years as the department chair and is the co-founder of Computer Networks Research Laboratory. His research is focused on pervasive health applications, smart homes, smart cities, internet of things, 5G and beyond, SDN/NFV, SON, green networking, vehicular edge/fog computing, multi tier cloud/edge systems, service centric networking, federated learning for computer networks, machine learning for computer networks.
<p>Sema Dumanlı Oktar (♀), Senior expert</p> 	BOUN	University-industry collaborations, development of technological innovations; D2,4,7	Associate professor who worked in Toshiba Research Europe, Bristol UK as a research engineer and a senior research engineer. She is a tenured faculty member in the Electrical and Electronics Engineering Department. She serves on the Management Board of BULifeSci. She is a part of Neurotechnological Solutions Platform. Her research interests include antenna element and array design for body area networks, implantable and wearable devices and MIMO communications.

<p>Sinan Öncü (♂), Junior expert</p> 	BOUN	University-industry collaborations, Development of technological innovations and societal innovations; D4,7,8	B.Sc. in electronics and telecommunications engineering, M.Sc. in mechatronics engineering and Ph.D. in mechanical engineering (TU/e the Netherlands). He is an assistant professor of mechanical engineering. He runs the Smart and Autonomous Mobility Research Lab. Technological application areas of particular interest are autonomous aerial and ground vehicles used for logistics, smart farming, and intelligent transportation systems in cities.
<p>Güneş Ünal (♂), Senior expert</p> 	BOUN	Societal innovation; D1,7	Associate professor in the Department of Psychology. He is the vice chair for Cognitive Science Programme and is the director of the Behavioral Neuroscience Lab. He is teaching courses on Psychology, Neuroscience, Brain and Behavior and Learning. His research is focused on the limbic system, basal forebrain, neuronal oscillations, animal models of anxiety and depression and neuromodulatory systems.
<p>Elif Aşşımı Duman (♀), Junior expert</p> 	BOUN	Societal innovation, social impact; D1,7	Assistant professor of psychology. She is head of the PsychoEpiGenetics Laboratory. Her research is focussed on early life stress, gene-environment interactions, behavioural epigenetics, psychoneuroendocrine immunology, foetal programming, perinatal environment and health, individual differences in risk-taking behaviour
<p>Pınar Özbay (♀), Junior expert</p> 	BOUN	Researcher; D7,8	M.Sc. in Computational Science and Engineering and Ph.D. in Biomedical Engineering. Principal Investigator of the Multimodal Imaging and Physiology Lab. She is interested in how systemic physiology responds to different vigilance states, such as mental stress and caffeine intake. Her scientific aim is to combine multimodal neuroimaging and biomarkers with advanced computational signal analysis techniques to better understand the human brain and body.
<p>İrem Daloğlu (♀), Junior expert</p> 	BOUN	Societal Innovation, Sustainable regional development; D8	B.Sc. in Geological Engineering, M.Sc. in Engineering Management and Ph.D. in Resource Ecology and Management. She is a faculty member in the Institute of Environmental Sciences. Her research focuses on modelling social ecological systems, impacts of climate change on freshwater systems and impacts of human activities on sustainability of natural resources.
<p>Tamer Atabatur (♂), Senior expert</p> 	BOUN	Lifelong learning, sustainable regional development; D7,8	B.S. in civil engineering, MSc, and PhD in environmental technologies. He has expertise in sustainability, climate change, waste management, urban infrastructure investments, and industrial wastewater treatment. He serves as Turkey UN SDGN board member. He is also the head of BOUN Life-long Learning Center. His aims are to support research on several dimensions of sustainability and development and operationalization of innovative services for life-long learning.
<p>Kathryn Kranzler (♀), Coordinator international relations</p> 	BOUN	Mobility	She holds a M.Sc. degree in history. She is the coordinator for Erasmus+ and Exchange Programs for BOUN and she will sport all mobility actions for BOUN in NeurotechEU.
<p>Anca Dana Buzoianu (♀), Senior expert</p> 	UMF	Management, coordination	Rector, senior clinical pharmacologist and paediatrician, the coordinator of a dynamic research team group in pharmacology, and a member of the Neuroscience Research Center of Iuliu Hatieganu University of Cluj-Napoca. She is involved in pharmacogenetics studies regarding the metabolising status of some drugs such as oral anticoagulants, antiepileptic drugs, and various biologic products. Other research themes are the therapeutic approach of multiple sclerosis and stroke, pharmacogenetics of the drugs used in dermatological diseases, the effects of some new compounds in pain and inflammation.








Stefan Strilciuc (♂), Senior expert 	UMF	Management, coordination	Stefan Strilciuc is a public health expert currently representing the Iuliu Hatieganu University of Medicine and Pharmacy on the Board of Governors of NeurotechEU. He has diverse research experience at the intersection of public health and medicine, having been involved in over 50 interventional and observational clinical trials and studies, including economic evaluation in health. He is also Advisor to the Romanian Health Minister and serves as an international expert for central healthcare institutions.
Mihaela Baciut (♀), Senior researcher 	UMF	Researcher; D1-8	Scientific Vice Rector of UMF "Iuliu Hatieganu" Cluj-Napoca, member of the University Senate, member of the Doctoral Studies Council, member of the Council of the Faculty of Dental Medicine, member of the Board of Department 1 – Maxillofacial Surgery and Radiology.
Dafin F. Muresanu (♂), Senior researcher 	UMF	Researcher, education; D1,2,4,6,7	Director of the Neurosciences Department at UMF Cluj-Napoca, and the President of the European Federation of Neurorehabilitation Societies. He is an experienced neurologist with vast experience with research. He is also a specialist in Leadership and Management of Research and Health Care Systems, and as the organiser of many European and international educational projects, he has been increasingly focused on translating neuroscience research into clinical practice.
Stefan Ioan Florian (♂), Senior researcher 	UMF	Researcher; D1,2,4,6,7	Professor and head of department of Neurosurgery at the University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, Romania, senior neurosurgeon and head of department of Neurosurgery at the Cluj County Emergency Hospital, Cluj-Napoca, Romania. His main areas of interest are cerebrovascular pathology, neuro-oncology and paediatric neurosurgery.
Cristina Iuga (♀), Senior researcher 	UMF	Researcher; D1,2,7	Director of the Research Center for Advanced Medicine, Chair of the Department of Proteomics and Metabolomics. Holder of the course and practical activities of Medicine Analysis for students of the 5th year of Pharmacy. She is director of the "Applied Pharmaceutical Sciences" master's program. Her research directions are the evaluation of the quality and stability of pharmaceutical forms through separate methods of analysis, especially LC/MS/MS, applied in metabolomics and proteomics
Vitalie Vacaras (♂), Senior teacher 	UMF	Education; D1,2,4,6,7	Associate Professor of Neurology in the Department of Neurosciences at UMF Cluj-Napoca. He leads the 2nd Neurology ward in the Cluj County Emergency Hospital in Romania. His expertise in neurology, as well as extensive experience with management, will allow NeurotechEU medical students to participate in internships, clinical and research fellowships in Cluj-Napoca.
Adina Dora Stan (♀), Senior teacher/junior researcher 	UMF	Researcher, education; D1,2,4,6,7	Associate Professor of Neurology in the Department of Neurosciences at UMF Cluj-Napoca. She works with multiple clinical research hypotheses for multimodal biological agents in the context of neurorecovery in patients with stroke and traumatic brain injury. She also has extensive experience in the field of thrombolysis, being one of the promoters of the Cluj centre for acute stroke care.
Livia Popa (♀), Senior teacher/junior researcher 	UMF	Researcher, education; D1,2,4,6,7	Assistant Professor in the Department of Neurosciences at UMF Cluj-Napoca. She has completed several specialisation modules in Psychiatry, Internal Medicine, Neurology and Electroencephalography (EEG) in different hospitals in Belgium. Her areas of interest include modern neurophysiology techniques, such as FES, TMS, tDCS, EEG and Eye tracking.

Dragos-Nelu Font (♂), Junior researcher 	UMF	Researcher; D1,2,4,6,7	Dragos is a 4th year student at the "Iuliu Hațieganu" University of Medicine and Pharmacy, his main areas of interest are neurosurgery and neurosciences, especially neurooncology and cerebrovascular diseases. He coordinates the Student Circle of Neurosurgery and Neurology in Cluj-Napoca and has experience in organising congresses, hackathons and other events.
Daniel Muresan (♂), Senior advisor 	UMF	Management, coordination	President of the UMF Senate. He is a professor of Obstetrics and Gynecology and has been involved in the curriculum development, accreditation and teaching in the Licensed Nurses and Midwives educational programme. Research areas of interest include laparoscopic surgery, diagnosis and treatment of pre-invasive cervical lesions, development of ultrasound techniques in Obstetrics and Gynecology and prenatal diagnosis, and pregnancy dispensing and obstetric pathology.
Calina Retisan (♀), Project manager 	UMF	Management, coordination	Graduate in Computer Science, she has over 20 years of experience in writing and implementing projects. She has worked in both the public and private sectors. Her general experience as well as her permanent contact with the beneficiaries and financiers of national and international projects recommend her for the multiple responsibilities within the Research, Development and Innovation Department.
Adriana Rosu (♀), Administrative personnel 	UMF	Management, mobility	International Relations Coordinator at UMF Cluj-Napoca. She is currently the representative of UMF for the Francophone space. Adriana provides student guidance regarding study opportunities abroad. Her overall experience with diversity, multiculturalism, as well as direct contact with the university's multilingual educational programmes and learning content are key strengths that will allow UMF to successfully implement project tasks and deliverables.
Radu Nicolaie Oprean (♂), Senior expert 	UMF	Management, quality	Vice-Rector of Quality Assurance at UMF Cluj-Napoca. He is a professor at the Faculty of Pharmacy. In the past, he coordinated the quality assurance department as director. At national level, he is a member of the board of the Romanian Agency for Quality Assurance in Higher Education (ARACIS) since 2009 and member of the Pharmacy Commission (former chairman) within the Accreditation and Evaluation Board of University Degrees (CNATDCU).
Ana Petrovan (♀), Technical personnel 	UMF	Communication	PR and Communication specialist based in Cluj-Napoca, passionate about social media tools and PR campaigns and has a track record of creating and implementing successful projects. She keeps up-to-date with constantly evolving trends in communication, online social networking, and the media, and works closely with her clients to deliver creative and effective campaigns.
Carmen Mihaela Mihu (♂), Senior advisor 	UMF	Education	Vice-Rector of Educational Affairs at UMF Cluj-Napoca. She has contributed significantly to the development of the Histology Department in the university, both in terms of teaching and research. As Vice-Rector of Educational Affairs, her primary task is the development of an organisational structure oriented to quality and achieving excellence, characterised by performance standards in all fields of activity.
Soimita-Mihaela Suci (♂), Senior advisor 	UMF	Education	Dean of the Faculty of Medicine at UMF Cluj-Napoca. Previously, she has led the Oxidative Stress Research Laboratory. As a researcher, she studies the role of reactive oxygen and nitrogen species in physiology and pathology (proliferative and degenerative diseases), the effects of ultrasound and electromagnetic radiation and their association with oxidative stress in animal models, as well as the antioxidant, anti-inflammatory, anti-proliferative and pain modulation effects of some natural products.

<p>Cristian Dinu (♂), Senior advisor</p> 	UMF	Education	Dean of Dental Medicine at UMF Cluj Napoca. He is a specialist in oral and maxillofacial surgery, oral implantology and ultrasonography in the oral and maxillofacial areas. His professional activity includes teaching dental and general medicine, organising and structuring postdoctoral programmes by recruiting students and forming interdisciplinary research groups, fundamental and applied research in the field of comparative oncology and translational medicine. Dr. Dinu won the Outstanding Oral Presentation Award at XIX International Conference of Oral and Maxillofacial Surgery in China for the project "Individualised mandibular reconstruction using free fibula flaps: our experience".
<p>Gianina Crisan (♀), Senior advisor</p> 	UMF	Education	Dean of Dental Medicine at UMF Cluj Napoca. He is a specialist in oral and maxillofacial surgery, oral implantology and ultrasonography in the oral and maxillofacial areas. His professional activity includes teaching dental and general medicine, organising and structuring postdoctoral programmes by recruiting students and forming interdisciplinary research groups, fundamental and applied research in the field of comparative oncology and translational medicine.
<p>Sorin Claudiu Man (♂), Senior advisor</p> 	UMF	Education	Vice Rector for Academic Development and Administration. He is a primary paediatric doctor with complementary studies in Allergology and Pediatric Immunology and has competence in "Special Respiratory Functional Explorations". His research areas of interest are paediatric pneumology and clinical pharmacology, having expertise in asthma, infection, lung diseases, allergic diseases, airway obstruction and respiratory physiology. He is also a specialist in nephrology and special respiratory functional explorations.
<p>George Dindelegan (♂), Senior expert</p> 	UMF	Education	Vice Rector for Residency and Postgraduate Studies. He is a member of the Ethics Committee for clinical trials of Cluj-Napoca Emergency Clinical Hospital, the UMF residents Committee of Surgery Department, The Transplantation Society, European Association for Endoscopic Surgery, Romanian Society of Biomaterials, Romanian Society of Reconstructive Microsurgery and Romanian Association for Endoscopic Surgery.
<p>Luc Buée (♂), Senior expert</p> 	ULille	Scientific coordinator; D1,3	CNRS Research Professor. Director of the research centre "Lille Neuroscience & Cognition" and head of the INSERM laboratory Alzheimer & Tauopathies. He has been working on Alzheimer's disease and related disorders for more than 30 years. Member of operating committees of the Lille Centre of Excellence in Neurodegenerative Disorders (LiCEND), the LabEx DISTALZ (National consortium on Alzheimer's disease) and the 7T MRI programme for Lille-University-Hospital.
<p>Fabien Alibart (♂), Senior expert</p> 	ULille	Researcher and teacher; D2,3,5,6	Associate research professor IEMN. Researcher in neuromorphic/bio inspired computing with emerging memory technologies. He developed amorphous carbon thin films for optoelectronic applications and proposed the concept of NOMFET, a synaptic memory transistor for bio-inspired computing at CNRS. Awarded the prestigious ERC consolidator grant from the EU to conduct research in the field of bio-nano interface in 2017.
<p>Pascal Antoine (♂), Senior expert</p> 	ULille	Researcher and teacher; D8	Pascal Antoine is a Professor of Psychopathology and Clinical Health Psychology, at the Cognitive and Affective Sciences Laboratory (SCALAB). In the context of neurodegenerative diseases, his main fields of interest are the emotional and psychological issues involved in diagnosis and treatments, and the assessment of caregivers' needs and difficulties and the development of training and support strategies for caregivers and patient/caregiver dyads.
<p>Alexandre Billon (♂), Senior expert</p> 	ULille	Researcher; D8	Associate professor of philosophy of psychology and cognitive science at the University of Lille (Laboratory Savoirs, Textes, Langage). His research focuses on the study of certain psychiatric conditions that raise important philosophical problems regarding the nature of our conscious experience. He frequently interacts with psychiatrists and neuroscientists working in the same domain.

Pierre Boulet (♂), Senior expert 	ULille	Researcher and teacher; D2-4,6	Professor of computer science. His interests range from parallelism, compilation, embedded system co-design to model driven engineering and synchronous languages. He is currently investigating how to program time and energy aware embedded applications on post-Moore architectures, and help design neuromorphic accelerators. He was vice-president for digital transformation of the University of Lille between 2018 and 2021 and has been vice-president for digital infrastructures since 2022. He is a member of the HiPEAC EU support action, and senior member of the IEEE and ACM professional societies.
François Caberstaing (♂), Senior expert 	ULille	Researcher and teacher; D2-6	Professor in the field of Brain-Computer Interfacing (BCI). Brain-computer interfaces could offer people a new communication or device control channel if they became efficient and robust as well as if "out of the lab" devices became available. He has also been investigating the field of neurofeedback, very similar to BCI from a technical point of view but aiming to provide new therapies rather than functional substitution. Finally, he started to look at so-called "passive" BCIs that monitor the user's mental activity rather than providing a control channel (GENESIS project, funded by the EU through the CHISTERA program).
Laurent Grisoni (♂), Senior expert 	ULille	Researcher and teacher; D2,3,5,6	Professor at University of Lille. His teaching covers a large spectrum of subjects at master degree: human-computer interaction, data compression, cryptography, programming, advanced computer graphics and virtual/augmented/mixed reality and interaction design. He is a researcher in the CRISTAL laboratory where he leads the MINT research team. Its objective is to design interactive systems that explore novel manners to use hands for interaction, and apply such approaches to situations that potentially make sense, such as interaction in public situations for example.
Elsa Heyman (♀), Senior expert 	ULille	Researcher; D	Associate professor investigating exercise-induced metabolism/brain interactions in diabetic populations. Her recent work mainly focuses on vascular adaptations to exercise in type 1 diabetes. Her team also investigated underlying mechanisms including nitric oxide metabolism, muscle mitochondrial respiration, and neurotrophic factors. Her aim is to develop a therapeutic approach reducing the risk of vascular complications.
Virginie Hoel (♀), Senior expert 	ULille	Researcher and teacher; D3	Professor of Electronics and researcher at the IEMN. She develops activities related to: (i) Neurocomputing engineering, based on the development of neuro-inspired artificial spiking network architecture to bring cognitive functionalities to existing systems, and (ii) Neurosystems engineering, to develop new technological solutions in the scope of (a) biosensors to monitor electrical spiking activities, (b) brain interfaces allowing a direct communication pathway with external devices and (c) neural prostheses.
Renaud Jadri (♂), Senior expert 	ULille	Researcher; D	Professor of child and adolescent psychiatry at the school of medicine, France, deputy chairman of the CRBSP of Lille (Biomedical and Public Health Research Committee), head of the hallucinations group at the Lille Neuroscience & Cognition, Medical Director of the research platform CURE (Fontan Hospital, CHU Lille, France) and head of the Perinatal Psychiatry Dept. at the Lille University Hospital.
Sophie Lacoste-Badie (♀), Senior expert 	ULille	Researcher and teacher; D4,5,8	Professor of Marketing at IAE Lille University School of Management, and a member of Lille University Management Lab (LUMEN). Her research interests cover consumer neuroscience in general. Specifically, her research has shown that the main neuroscientific methods used in marketing as part of consumer behaviour research (eye-tracking, fMRI, facial electromyography, measurement of electrodermal activity) make an original contribution to research on societal issues (food, addictions, prevention).
Renaud Lopes (♂), Senior expert 	ULille	Researcher and teacher; D2,5-7	Researcher who obtained his Master's in Mathematical Engineering Applied to Signal Processing. He completed a PhD entitled "Fractal and multifractal analysis in medical imaging: Tools, validation and applications" in 2009, followed by his habilitation in 2018. His research focuses on multimodal imaging and network approaches in the study of cognitive disorders. In addition to his research, he is also the head of the MRI brain imaging research platform at the Lille University Hospital.

Marcel Moritz (♂), Senior expert 	ULille	Researcher and teacher; D8	Heads the Master's degree in digital law at the University of Lille and the double degree in cyberspace and biolaw with the university of Murcia (Spain). His research focuses on the legal issues of digital technologies and data protection. He is notably a partner of the Erasmus+ KA2 Capacity Building in Higher Education project "Prohuman biolaw": www.biolaw.eu .
Laurent Sparrow (♂), Senior expert 	ULille	Researcher and teacher; D5,6	Associate Professor of Psychology. Research themes focus on the study of written language with different populations (all-coming, dyslexic), with particular attention on the analysis of the cognitive processes involved in the processing of documents containing both graphics and text and to the role of attention in information processing. He is co-coordinator of the ENHANCE project offering an original approach to the relationship between heritage, history and society by placing the individual in interaction with digital developments at the heart of scientific reflections and achievements.
Anahita Basirat (♀), Senior expert 	ULille	Researcher and teacher; D7	Associate professor in the department of speech and language therapy (Faculty of Medicine) in Lille. She is interested in neurolinguistics and has studied the neurocognitive mechanisms which underlie speech communication. Her current research program focuses on the impact of musical and linguistic rhythm on speech production, mainly in Parkinson's disease. She uses an interdisciplinary approach applying speech analyses, behavioural methods and electrophysiological measures.
Kathleen O'Connor (♀), Senior expert 	ULille	Management	Vice-President for international and European networks. Associate professor of English linguistics; member of the research laboratory Savoirs, Textes, Langage, where she focuses on autonomous second language learning. Since 2016, she has held a variety of vice-president positions in the area of international relations, as well as coordinated the international strategy of the Ulille excellence project.
Jutta Escher-Koski (♀), Senior advisor 	ULille	Administration	Senior Officer for internationalisation at the central level with more than 25 years of experience in international relations in the higher education sector with a focus that shifted from mobility of students and academics to internationalisation of the curriculum and development of educational cooperation at EU level. She held positions at three French universities as head of IRO, manager and institutional coordinator.
Arelis Ardiles (♀), Administrative staff 	ULille	Administration	Communications officer in the Office of International Relations. She collaborates with internal operators, to develop the tools necessary to strengthen the international visibility of the university in all its dimensions, in particular for education and research. She organises the International Student Week at the University of Lille (ISW), represents the University at international recruitment fairs and participates in the creation and implementation of innovative communication tools. She also participates in hosting foreign delegations.
Joseph Armando Soba (♂), Senior expert 	ULille	Senior advisor	Director for International Development at the University of Lille. He informs, counsels and fosters the university community to shape and reinforce its international projects. In his position, Armando Soba supervises the elaboration and the implementation of a wide variety of Erasmus+ projects.
Fanny Leraille-Bekhit (♀), Administrative staff	ULille	Administration	Administrator for accounting and financial affairs at the central international relations office, she has headed the office Financial Resources and Support for Mobility and Projects since 2018. Her team, composed of 4 officers, carries out the expenditures of several external funding schemes and EU grants at central level, such as Erasmus+ KA131, KA171, KA2, Jean Monnet and the PIA fund.

<p>Anna Sigríður Islind (♀), Senior expert</p> 	HR	Researcher; D1,3,5,7	<p>Anna Sigríður Islind has a Ph.D. in informatics and is an Associate Professor at the Department of Computer Science and director of the research centre Center of Information Systems and Data Science Research (CISDAS). Her research focuses on digital health in general and data-driven healthcare in particular, focusing on improving personalised health through data. Dr. Islind has ongoing collaborations with National University Hospital of Iceland, Sidekick Health and Nox Medical to name a few and she is leading the digitalisation effort in a large-scale EU project called Sleep Revolution.</p>
<p>Stefán Ólafsson (♂), Junior expert</p> 	HR	Researcher; D1,3,5,7	<p>Stefán Ólafsson is an Assistant Professor at the Department of Computer Science at Reykjavik University. He has a Ph.D. in Personal Health Informatics and a masters in Language Technologies. His research for the past decade has focused on artificial intelligence, natural language processing, and human-computer interaction, and their application in healthcare. Dr. Ólafsson has ongoing collaborations with healthcare providers, such as the National University Hospital of Iceland and Vogur Addiction Treatment Hospital, and has a network of collaborators in health informatics, medicine, and computer science in the United States and Europe.</p>
<p>Paolo Gargiulo (♂), Senior expert</p> 	HR	Researcher; D3,6,7	<p>Ph.D. in technological science, Professor. Paolo Gargiulo is the director of the Institute of Biomedical and Neural Engineering and the Icelandic centre of Neurophysiology and manages the centre of Medical Technology at the University Hospital Landspítali/ Reykjavik University. Paolos lab currently includes the following facilities: high density Electroencephalographic system (256-EEG), Postural control platform and Virtual reality system, polyjet 3D printer and multimetric Biosignal platform. In January 2019 he received an EU grant (RESTORE). The Icelandic team will be responsible for the 1st European Database of patient-specific anatomical models for condyle lesions.</p>
<p>Kamilla Rún Jóhannsdóttir (♀), Senior expert</p> 	HR	Researcher; D2,7	<p>Associate Professor and dean at Reykjavik University Department of Psychology. She is also a member of the Centre for Analysis and Design of Intelligent Agents and the Institute of Biomedical and Neural Engineering. Her research focuses on cognitive mechanisms and neurophysiological signals. Other projects include examining the impact of sleep disorders on cognitive function, based on behavioural as well as neurophysiological measures.</p>
<p>María Kristín Jónsdóttir (♀), Senior expert</p> 	HR	Researcher; D2,7	<p>Ph.D. in Clinical Neuropsychology. Professor in the Department of Psychology. Part-time clinical supervisor and researcher at the Memory Clinic, Landspítali – The National University Hospital of Iceland. Dr. Jónsdóttir's research focuses on concussions among athletes and the general public as well as cognitive ageing, mild cognitive impairment, and dementia.</p>
<p>Brynja Björk Magnúsdóttir (♀), Junior expert</p> 	HR	Researcher; D2,7	<p>Ph.D. in Neuropsychology. Associate Professor in the Department of Psychology and a project director for BSc in psychology. Part-time clinical neuropsychologist at departments of psychiatry and rehabilitation at Landspítali – The National University Hospital of Iceland. Research focuses on mental health, brain, cognitive function and cognitive rehabilitation.</p>
<p>Inga María Ólafsdóttir (♀), Junior expert</p> 	HR	Researcher; D2,7	<p>Ph.D. in Cognitive Psychology, focusing on the development of visual attention and executive functions. Assistant Professor in the Department of Psychology and co-principal investigator of the Icelandic Vision Lab (www.visionlab.is). Dr. Ólafsdóttir's research focuses on visual cognition and machine learning, as well as developmental factors and individual differences in visual attention and object recognition.</p>

Erna Sif Arnardóttir (♀), Senior expert 	HR	Researcher; D1,7	Ph.D. in Biomedical Science, focusing on sleep research. Director of the Reykjavik University Sleep Institute. She has over 17 years of experience within the field of clinical and scientific sleep research. Dr. Arnardóttir is the Secretary of the European Sleep Research Society (ESRS) and the Past President of the Icelandic Sleep Research Society (2011-2021). She is the Principal Investigator of a 15 million euro grant from EU Horizon 2020 Research and Innovation Programme. Sleep Revolution, is an interdisciplinary and international research and development project with 39 partner institutions and companies in Europe and Australia.
Hannes Högni Vilhjálmsson (♂), Junior expert 	HR	Researcher; D1,5,7	Ph.D. in Media Arts and Sciences. Current research focuses on using scientific theories to construct Virtual Reality experiences that effectively transform those that are exposed to them in meaningful and predictable ways. As the leader of the Socially Expressive Computing Group at RU, Dr. Vilhjálmsson has led 7 large national project grants, supervised over 40 theses and taught courses that range from the theory and practice of virtual humans to game engine architecture. Dr. Vilhjálmsson has co-founded three start-ups around serious games and virtual experiences and has received several awards including DARPA's technical achievement award
María Óskarsdóttir (♀), Junior expert 	HR	Researcher; D5	Ph.D. in Business Analytics and MSc in Mathematics. Her research is focused on practical applications of data science and analytics whereby she leverages advanced machine learning techniques, network science, and various sources of data with the goal of increasing the impact of the analytics process and facilitating better usage of data science for decision making in various domains, currently focusing on sleep research.
Kristinn R. Þórisson (♀), Junior expert 	HR	Researcher; D2,5	Professor of Computer Science at Reykjavik University, co-founder of R.U.'s AI lab CADIA, and Founding Director of the Icelandic Institute for Intelligent Machines. During his three decade-long career in AI he has worked at MIT, LEGO, and NASA and founded several startups.. Dr. Þórisson has served as advisor to the Prime Minister of Iceland and the Swedish government on AI and digital technologies, and is a two-time recipient of the Kurzweil Award for his work on general machine intelligence. He holds a Ph.D. from the MIT Media Lab.
Jose Savedra (♂), Junior expert 	HR	Researcher; D2,7	Ph.D. in Sports Science. Professor in the Department of Sport Science. Current research focuses are sport exercise and health (sleep disorders) and sport science and performance. He has published more than 100 papers. 70 of them in journals indexed in the Journal Citation Report, mainly in "Sports Science" and "multidisciplinary" categories.
Kristján Kristjánsson (♂), Senior expert 	HR	Senior expert	Ph.D. in biology and agricultural science. Head of Science Division and Assistant Director at The Icelandic Centre for Research (RANNIS) from 1994-2007. Director of Reykjavik University Research Services, since 2007.
Ragnheiður Þórhallsdóttir (♀), Project manager 	HR	Management	Works at the President's office and is one of HR's project leaders for NeurotechEU and has extensive experience in administering, monitoring, and coordinating projects. Ragnheiður joined HR in early 2020 as a project manager at the University's Language and Voice laboratory and in the summer of 2022, she joined the President's office.

Outside resources (subcontracting, seconded staff, etc)

Not applicable

2.1.4 Cost effectiveness and financial management

Cost effectiveness and financial management

For large European cooperation projects, such as this European University project, proper financial management is of utmost importance not only to manage the financial resources efficiently, but also to achieve the overall project objectives. In this section, we will discuss the key aspects of our financial management, including cost-effective budgeting, financial reporting and expenditure control.

Cost-effective budgeting

During the proposal stage, the budget is an important element of the application and it is an essential tool for managing the financial resources of the project. Our extensive template for cost estimations (submitted as annex) includes in detail the projected expenditures of the project and provides an overview of the financial resources requested and how they will be used. The budget was drawn up by the financial project manager of Radboud University in close consultation with the technical & financial experts of each consortium partner. To ensure that the budget, but also the proposed results and objectives, will be achieved most cost-effectively, a critical path methodology was used.

The first step was to define the project objectives. Once these objectives were identified, the consortium conducted a critical path analysis where a logical project overview with milestones, tasks and dependencies was defined. This project plan includes all activities that are needed to achieve the desired project results and also includes a risk assessment which helps to identify potential risks that could prevent the project from achieving its goals. Afterwards, the work packages were defined based on the above analysis. The next step was to predict the necessary resources to complete all the activities. In order to match the activities with proper financial resources, a high-over budget per theme was defined and all partners wrote the tasks they would perform during the project, with best fit to their expertise. Next, the financial experts of each partner estimated the actual costs needed for each cost category per task and/or deliverable per work package. Key criteria for these estimations to ensure cost-effectiveness in this lump sum project were:

- Subject to same eligibility rules as in actual costs grants
- In line with normal practices
- Reasonable and non-excessive
- In line with and necessary for proposed activities
- Best value for money

The Management and Coordination Office of NeurotechEU organised monthly financial workshops during the budget preparation phase to ensure proper and cost-effective budgeting. During these workshops, more information was given on, e.g., how to prepare a lump sum budget and there was room for interactive discussion. The relatively high costs for Management and Coordination can be explained by three main reasons:

First of all, the project involves collaboration between multiple institutions from different countries and requires a huge effort in project management and coordination personnel. The complexity of operations at the university alliance level needs a large workforce to manage each aspect efficiently at each institution and specifically to coordinate among the institutions. Example: local and coordination of the administrative systems, legal and regulatory compliance, mobility management, IT, social networks and online presence, community engagement, internationalisation, governance, relations with the students, high-quality assurance and evaluation, etc. are some of the high effort consuming tasks required for the correct functioning of the alliance.

Second, the partners most involved in some work packages/tasks come from high-wage countries and this raises the associated average cost (example: Netherlands, Sweden, Germany, and Iceland)

Finally, it is important to note that while these costs are relatively high and only one type of staff is included in the budget file, several other experts on e.g., mobility, infrastructure & technology, education and communication from all partners will contribute to the project.

Financial reporting/expenditure control

Although financial reporting is not requested by the European Commission for lump sum projects, we do believe that it is important to track how each partner is using and managing their allocated resources. The Management and Coordination Office will therefore continue organising regular financial workshops during which partners can share their results and open discussions can take place. In case the consortium wishes to modify budget transfers between work packages and/or partners, we will request an amendment. In order to be cost-effective, a set of procedures will be defined (according to the project decision structure and the procedures defined during phase 1) and implemented. These procedures include, but are not limited to:

- Definition (in loop cycles) of action plans with the contribution of all WGs, where the ambition for each subsequent next incremental release will be concretised (desired outcomes, timebox, and acceptance criteria for each WG).
- Identification of a calendar, approximately every 3-6 months, for the implementation of Progress Reviews, as appropriate to deliver value within each WG (must be defined at the very beginning of each incremental stage).
- Change of management processes

Since payment depends on completion of activities (WPs) in lump sum projects, dependencies between partners are key. The aforementioned regular meetings will allow us to amend the budget according to scientific-technical needs and make sure that work packages are completed at the end of the project and that the corresponding payment is assured.



2.2 PARTNERSHIP AND COOPERATION ARRANGEMENTS

2.2.1 Consortium set-up

Consortium cooperation and division of roles (if applicable)

Phase 1 has produced a tight trans-institutional and transnational cooperation on which to build phase 2

With almost three years of interactions between the founding partners, both prior to and after the start of phase 1, we have had much time to develop a strong alliance. While the founding principles of academic freedom and integrity, institutional autonomy, the participation of students and staff in alliance governance, as well as ethics in research and education were all agreed on from the start, the development of our shared Living Values (Integrity, Commitment/Responsibility and Creativity) has guided the development of an improved organisational structure that all partners will actively contribute to during NeurotechEU++ as outlined below in Partner contribution and distribution of responsibilities. An example of lessons learned during phase 1 is that subgroups of work packages work more efficiently in achieving deliverables, e.g. agreement on our credit transfer strategy, which has led to the formation of Working Groups for tasks in phase 2.

The inclusion of new partners is an opportunity not only to incorporate them into the existing NeurotechEU organisation, but also an opportunity to redefine the role of each founding partner as a new undertaking. Thus, while the foundations for collaborative educational and research activities were developed during phase 1 by the founding partners, their implementation during phase 2 will be enriched by the new partners, and this development will be expected to continue during an eventual Phase 3 during which the alliance will continue to grow.

Towards the distribution of responsibilities and tasks: together we are stronger than we are alone

The new NeurotechEU alliance comprises two medical and six comprehensive universities encompassing all scientific, technological and scholarly disciplines. The diversity in terms of geographical distribution, pedagogical approaches, content of degree programmes (at three levels with professional degrees and lifelong learning programmes), cultural and linguistic diversity in student populations, and the 19 instructional languages used by the partners provides NeurotechEU with a multifaceted and multicultural foundation of educational distinction.

Modern research is for the most part conducted as collaborative efforts, in which different partners contribute with different expertise in order to address a research question. This model is not only more effective, but also allows for mutual learning and extension of institutional boundaries for those involved. Likewise, collaboration within educational programs is efficient in maximising the use of both human and physical resources in order to educate the future generation of neurotechnologists that benefit from international exchange, hence strengthening the foundation of future collaboration between our European partners. This provides end-users with the possibility to extend their local institutional knowledge, and especially as the world becomes more digital, digital mobility is increasingly utilised. Digital educational programmes enrich the European context of our students, and the national Master's programmes in neuroscience and neurotechnology that we have already developed, or will develop in the near future, will be implemented in our digital platforms early during phase 2 to open them to our students.

While all partners share the interest in neurotechnology, each has specific area(s) of expertise (outlined below per partner) representing a focused contribution that complements that of other partners and adds value to our collaboration. Importantly, our vision is not just for individual partners to make these skills available to each other, but rather the focus will be on how to combine these different foci into innovative themes which are new to everyone. This is an important distinction, as we aim to enrich each partner's experience and portfolio within the alliance. Our common vision of internationalisation in education and research will promote innovation and excellence, not only in our universities but also more widely within Europe through extended interaction with associate partners from different parts of society (industry, patient organisations, NGOs). By working together, we should not only be able to efficiently reduce administrative burdens, enrich student experiences, reduce the costs of education and establish education and training as life-long processes, but also inspire the development of institutional cultures that embrace a common EU vision and train researchers to become actors of innovation. These goals are well aligned with the main objectives of the European Education Area as we have outlined in detail in section 1.3.

We will now present our individual partners, their diversity as higher education institutions and how they will make their valuable contributions to the joint implementation of the NeurotechEU vision, strategy and common activities:

RU is a leading Dutch university, known for its international orientation, wide range of academic disciplines, interdisciplinary research and aim to create societal impact at regional, national and international levels. RU aims to contribute to a healthy, free world with equal opportunities for everyone and to make a significant impact. The multi-disciplinary, inter-faculty and campus-wide *Donders Institute for Brain, Cognition and Behaviour* has helped RU to become one of the top 35 universities in the world of Neuroscience and Behaviour. RU will contribute to the mission of NeurotechEU by continuing to coordinate the efforts of the NeurotechEU consortium toward academic and research excellence, international leadership, and to maximise global impact on the training and dissemination of the next generation of neurotechnologists in a unique multidisciplinary approach to unravel the current neurotechnology challenges. Regarding scientific knowledge generation and training, RU will build on its strong track record in Empirical and clinical neuroscience and make specific contributions within the dimensions of Theoretical Neuroscience, Neuromorphic computing, Clinical Neurotechnology, Neurometaphysics and Neuroinformatics.

UMH is one of Europe's leading examples of human resource management, as recognised by the European Commission with an HR Excellence in Research award, and has a unique character reflecting inclusiveness, excellence and collective intelligence. This expertise within recruitment procedures, working conditions, training, management, and the responsibilities of research personnel makes UMH uniquely qualified to oversee the continued quality control and assurance work within NeurotechEU, which allows us to achieve excellence in all aspects of its organisations. Regarding the generation of scientific

knowledge and training, UMH is a young public university committed to innovation and excellence, with a unique people-centred character and a firm commitment to be actively involved in local and regional development, and worldwide. UMH will contribute to advancing neurotechnology research and education, always based on inclusivity, equity, and alignment with the UN Sustainable Development Goals, providing specific expertise in Empirical and clinical neuroscience, Neurorobotics and Neurometaphysics.

KI is now the top-ranked medical university among the EU in European member states. With a vision to improve health for all, KI works to address local and global challenges beyond the current state of art in medicine, biomedical and health sciences. KI has an excellent international reputation for its educational programmes, which combine interprofessional learning and international perspectives. With a research focus addressing health and diseases both at preclinical and clinical levels, KI will provide expert input to NeurotechEU within the dimensions of Clinical Neurotechnology and Neuroinformatics, providing knowledge about clinical registries, biobanks, clinical trials and how research results can be translated from bench-to-bedside and providing expertise about the development of infrastructure and software tools that embrace the principles of open, FAIR, and citable neuroscience.

UBO has a well-earned reputation for world-leading fundamental and translational neuroscience research and using innovative research and teaching methods. It was the most successful university in the last round of national excellence funding by the German research foundation (DFG) with innovative collaborative research and education initiatives such as 'Immunosensation', 'phenorob', and the 'Hausdorff centre for mathematics'. Through interdisciplinary collaborative structures in 'Transdisciplinary research areas (TRAs)' between computer sciences, maths, basic and clinician neuroscientists, it aims for an innovative integration and advancement of translational and basic (neuroscience) research to meet the medical, societal, and economic challenges of the future. With a strategic vision for internationalisation and removal of borders in training and education curricula, UBO will continue to oversee the development and implementation of the joint educational platforms within NeurotechEU. From a research perspective UBO will provide particular expertise in Neuromorphic computing, Empirical and Clinical neuroscience as well as Theoretical neuroscience. UBO has a long-standing commitment to lifelong learning for all levels (pupils to pensioners) of learners, strong programmes for student and scientist mobility, as well as open research data structures for data sharing and joint developments and research.

BOUN has an outstanding track-record in public-private enterprises and not only runs the top ranked engineering programs in Turkey, but also successfully promotes innovation for the benefit of society and economy. The development of the NEURICOO platform during phase 1 was a major achievement to establish an innovation platform for NeurotechEU, and its continued development will remain a responsibility for BOUN. In that regard, for the 8 dimensions of neurotechnology, BOUN will provide expertise particularly within Neuromorphic Control/Robotics and being a comprehensive university also within several other dimensions including Empirical and clinical neuroscience and Neuroinformatics. Additionally, with its strong background in social, economics, administrative and environmental sciences as well as humanities, BOUN will provide expertise within Neurometaphysics and support NeurotechEU actions aiming at understanding how neurotechnology can contribute to sustainable regional development.

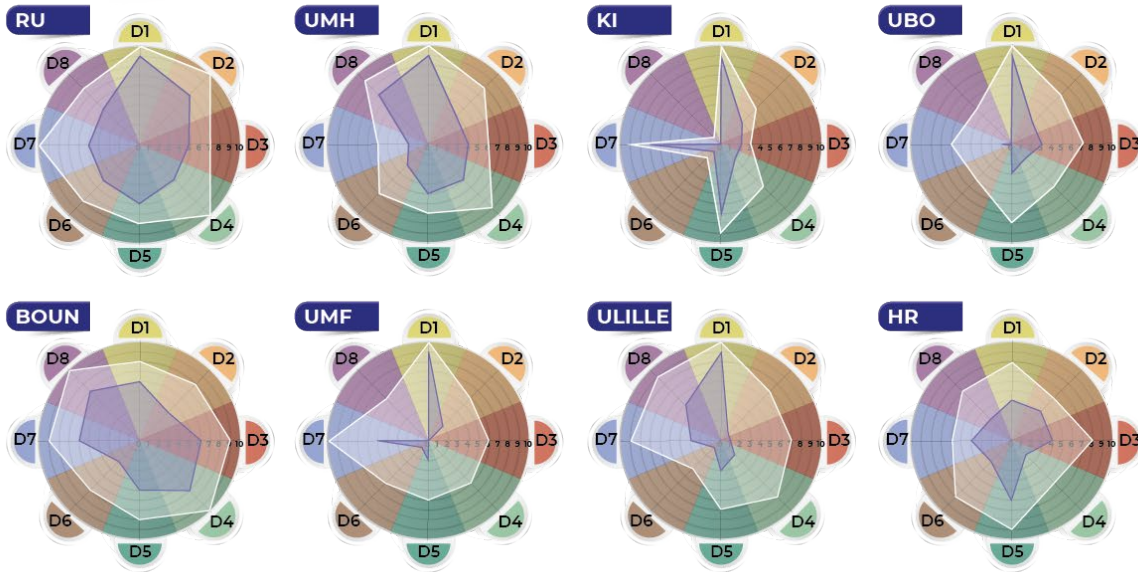
UMF delivers its educational programs in three languages (Romanian, French and English), and so has an organisational approach that truly promotes internationalisation through this diverse, multilingual and multicultural education environment. The process of promoting diversity, multilingualism and multiculturalism within NeurotechEU will continue to be a responsibility for UMF, and this will need to be addressed continuously as and when new partners and associate partners are assimilated into the organisation. Cluj-Napoca is also an important medical centre that attracts patients from across the region. For the 8 dimensions of neurotechnology, UMF will focus on Clinical Neurotechnology.

ULille offers a range of integrational and innovative programs and projects, and all of the University's structures are becoming increasingly international. They combine training, research and high-quality support with a spirit of inclusion and openness to the rest of the world. The international dimension is also a key part of the University's strategy of inclusive excellence. As a new partner with a valued technical portfolio, ULille will make specific contributions within Clinical Neurotechnology and Neurometaphysics.

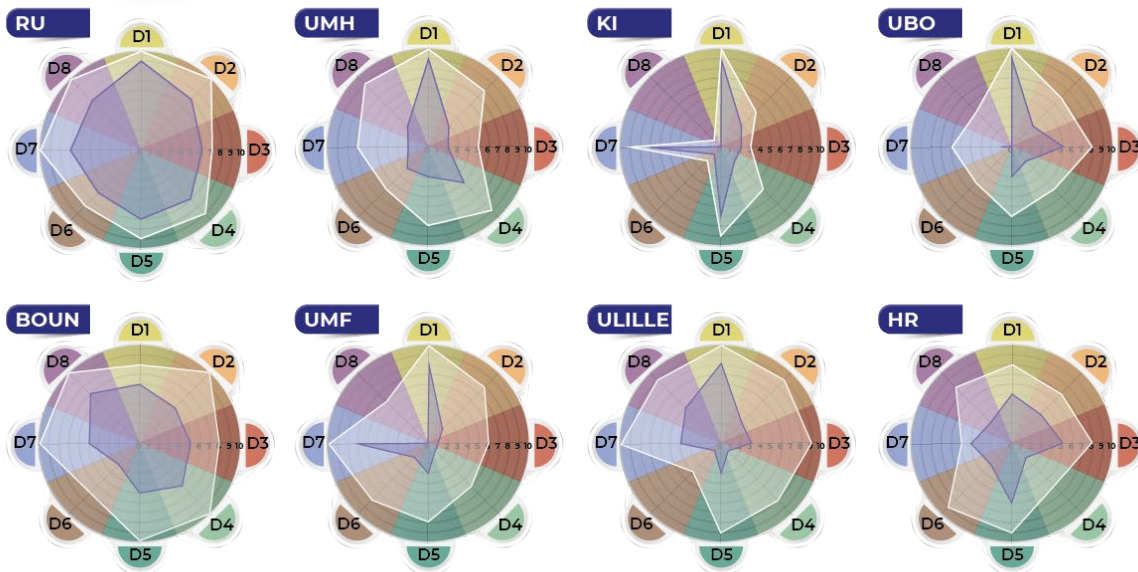
HR's core activities are teaching and research with strong ties with industry and society, emphasising interdisciplinary work, international context, innovation and service excellence. The HR culture is crafted by personal relations and respect for society and the environment. HR has a clear and progressive research strategy and stands first among equals in Iceland when it comes to research in its main academic fields. As a new full partner, HR will contribute specific expertise in Neuroinformatics and Neuromorphic computing within the 8 dimensions of neurotechnology.

The contributions outlined above show the collaboration and complementarity in the eight dimensions of neurotechnology. These contributions are graphically presented in the figure below (Figure 13). The financial, structural and organisational commitment of our partners is demonstrated by the joint mission statement, which has been endorsed by all rectors.

EDUCATION



RESEARCH



ACTUAL

2040

D1 Empirical and Clinical Neuroscience
 D2 Theoretical Neuroscience
 D3 Neuromorphic computing
 D4 Neuromorphic control/robotics
 D5 Neuroinformatics
 D6 Neuroprosthetics
 D7 Clinical Neurotechnology
 D8 Neurometaphysics

Figure 13: Institutional complementarity radar plots of the 8 dimensions of neurotechnology research and education. See text for further explanation

The individual profiles of the partners of NeurotechEU show a strong weight on neuroscience in both education and research complemented by comprehensive and specialised universities. We also see that for all partners the education and research profiles, both current and projected, are strongly coupled illustrating the close synergy between the two in the NeurotechEU University Alliance. The plots also show how the majority of partners expects a broad expansion of its research and education along the 8 dimensions of neurotechnology which illustrates the creation of a common education and research perspective.

Linking local networks with the new NeurotechEU

An important development during phase 2 will be the integration of associate partners and linking local networks within the alliance's activities. The foundation for interaction of industrial partners was developed within the NEURICOO platform during phase 1. In task 3.4 we outline mobility during internships with associated partners. Now that NeurotechEU as an organisation has become more well known, the interest of other academic partners, healthcare and other organisations has increased, which allows the potential for easy alliance enrichment. For example, as KI is part of the 'Stockholm Trio' local university alliance together with Stockholm University (SU) and the Royal Institute of Technology (KTH), access to the infrastructures of these universities is directly accessible to NeurotechEU via KI. Access to the technical platforms that have been developed at KTH will be of great benefit to the research activities of NeurotechEU's 8 dimensions of neurotechnology. In a similar manner, all partner universities will provide access to their local organisations to further enrich the connectivity of NeurotechEU.

Another example is the partnering of RU as one of the three universities in the region with OostNL (East Netherland Development Agency), an agency that focuses its activities and projects on strengthening and stimulating the economy of the provinces of Gelderland and Overijssel, in the Netherlands. Within OostNL, RU works with businesses in the region as commissioned by the Ministry of Economic Affairs and Climate Policy and the respective Provinces. OostNL plays an important role in executing the economic policies of the Dutch government and the Provinces of Gelderland and Overijssel and its various city governments and encourages close cooperation between businesses, regional institutes, knowledge institutes, and intermediaries. OostNL acts as a bridge between government, companies, and knowledge institutes and is active in areas of internationalisation, innovation, and investment. Through this strategic link, access can be found to experience and funds for accelerating start-ups and spinouts in the domain of neurotechnology. RU has strategic collaborations with the University of Maastricht and Twente, representing the HEIs of the east of the Netherlands, which is used for common programs and shared infrastructure. Building on these links, RU is also central in the national network NeurotechNL which brings together all stakeholders in the Netherlands around the theme of Neurotechnology from academia, the clinic, and industry. Through its role as coordinator of NeurotechNL, RU also represents the Netherlands in the European brain data infrastructure EBRAINS, which is also an associated partner of NeurotechEU.

In Spain, The CENID (Alicante Digital Intelligence Center) is established in Alicante as a consortium of the Provincial Council of Alicante, the University of Alicante and UMH as a think tank to promote digital transformation in companies and institutions, and the implementation of Artificial Intelligence (AI) in all activities. Its activities are complementary to those of ValGRAI (the Valencian Graduated School and Research Network of Artificial Intelligence), a non-profit foundation created by the Valencian regional Government, several companies, and the five public universities of the Valencian Community (UV, UPV, UA, UJI and UMH) to act as a model of local cooperation between an heterogeneous profile of stakeholders (e.g. researchers, educators, students, professionals, companies) to create value for society through pioneering research and education in AI. The interaction with both consortia will be a great benefit to NeurotechEU++ education and research activities in all the 8 dimensions. In addition, UMH (through its Scientific Park, with more than 80 spin-off or start-up companies) collaborates with the Valencian Community Regional Government as an incubator and cluster for the development of technological companies, especially in the fields of engineering, nutrition and health.

UBO is the leading partner of the large regional Neuroscience Network iBehave (speaker: Ilona Grunwald Kadow; www.ibehave.nrw) of six renowned partner institutions in the state of North Rhine-Westphalia (NRW). The network of UBO, University of Cologne (UoC), University of Aachen (RWTH), the German Centre for Neurodegenerative Diseases (DZNE), the Max-Planck-Institute of Neurobiology of Behaviour (MPINB), and the research centre Juelich, funded with 20 million Euros by the state of NRW, aims to develop technology and education platforms to train the next generation of neuroscientists. iBehave partners are committed to outstanding training programs in emerging interdisciplinary research areas to foster future leaders of the field. The iBehave community has established high-level programs at all levels of education and will link them in the Neuroscience Campus NRW. The Neuroscience NRW structure will have outstanding critical mass and visibility and will be an enduring structure beyond the funding period. Moreover, iBehave is building core technology platforms to support interdisciplinary research in Neuroscience by providing key technologies in computer and data science, behavioural and neuronal activity recordings in basics and clinical neurosciences. The iBehave Neuroscience Campus NRW and the technology platforms will be made accessible to all NeurotechEU partners. In addition to iBehave, UBO has been collaborating in several other initiatives in Neurosciences with national and international institutions. For instance, UBO has a strong partnership with the University of St. Andrews, UK.

In Turkey, BOUN has been collaborating with Bilkent University (in medical imaging hardware/software development and brain research with the Faculty of Engineering and National Magnetic Resonance Imaging Centre-UMRAM), Sabancı University (in robotic motion assistive devices research with the Faculty of Engineering) and Istanbul University (in biomechanics, orthopaedics, neuroscience and rehabilitation research with the Faculty of Medicine). In addition, BOUN has been academically coordinating the Istanbul Health Industries Cluster (ISEK) and has been collaborating with several ISEK companies. These institutions were associated partners of NeurotechEU. Flourishing this local network into a dedicated alliance, during phase 1 of NeurotechEU, BOUN has led a large-scale high-technology centre of excellence initiative, which received a major funding. This centre entitled Neurotechnological Solutions Platform brings together the aforementioned universities with several ISEK companies including Interact Technologies and integrates them with industrial giants of Karel Electronics and ASPILSAN. In phase 2, this local network will do translational R&D in NeurotechEU dimensions 1, 4-7 and link that to the challenge and technology based NeurotechEU common science and education agenda for a global impact.

UMF has been collaborating with Transilvania IT Cluster, an organisation originally aimed to support employees of member companies in the acquisition process of technical and soft skills, as well as offer a platform of knowledge and training for the implementation of collaborative projects. While this continues to remain an important focus, Transilvania IT Cluster further developed to match the sector development in Cluj-Napoca. A key initiative which can provide translational value to the NeurotechEU project is the Transilvania Digital Innovation Hub, which works strategically to catalyse regional innovation potential and capabilities. On the other hand, it acts as a provider of competences, know-how, innovation programs, support for startups and SMEs. With a vision to increase competitiveness through an innovative mix between technologies, skills,

systemic approach, operational models, it engages relevant regional stakeholders and proactively adapts to European and global trends. Transilvania DIH sets the framework for digital transformation in all businesses and public sectors through a cross-sectoral approach. UMF is also a partner in the Global StartupCity Cluj-Napoca, part of the bottom-up #EiA – European Innovation Area – a initiative in which ecosystems from all over the world aim to offer innovative products and services from startups and SMEs for creating a common, synergic, and connected space between all the Global StartupCities (new innovation ecosystems) – this is an alternative to the migration to established global poles, such as Silicon Valley, or other similar areas.

ULille is collaborating with tech transfer, startups incubator and accelerator in and around Lille in the Northern France region. Eurasanté, a tech transfer, incubator, accelerator and cluster manager in the nutrition and health sector. For more than 20 years, Eurasanté has been working on supporting the emergence, transfer and development of innovation in both academic and industrial worlds. Our missions are to ameliorate and stimulate prevention and care thanks to the development of innovation coming from research and industry and to sustain the economic development of this territory. The Northern France region counts more than 1100 health-nutrition companies (representing 32 000 employees) and 4000 public and private researchers. At the international level, Eurasanté has a strong experience in managing European projects. Eurasanté is a partner or a lead partner in 18 current European projects (e.g. Interreg, H2020 Innosup 5). Our European network is composed of over 124 partners coming from 17 countries. EuraTechnologies, a public-private partnership, is a startups incubator and accelerator settled on four campuses: Lille, Roubaix, Willems and Saint-Quentin. Euratechnologies boosts DeepTech, FinTech, eCommerce, PropTech, AgTech and Robotics entrepreneurship projects. Some of the biotech companies developed by Euratechnologies are spin-offs from ULille.

The Institute of Biomedical and Neural Engineering (IBNE) at HR was established to coordinate large-scale, multi-disciplinary research initiatives between HR, the University of Iceland, Landspítali University Hospital, and Med-Tech companies. The IBNE institute draws together scientists, medics, and engineers from across Iceland to create revolutionary progress in neuroscience, biomedical engineering, tissue engineering, and clinical research and will therefore be a great asset to NeurotechEU to have access to this institute via HR. IBNE operates within the Medical Technology Center (MTC), an infrastructure established by Landspítali and HR to strengthen the impact of Biomedical Engineering expertise in clinical environments.

We have a documented high level of long-standing interaction

The founding partners of NeurotechEU have a long tradition of university-wide cooperation, as demonstrated by joint publications (5277 peer-reviewed articles since 2015) from collaborative research projects, joint grant applications (231M Euro granted from 171 joint research projects within FP7 and Horizon 2020), student and staff exchange. For an interactive list of the collaborative publications and projects see online (theneurotech.eu/synergy). These interactions indicate the great academic synergy across departments, faculties and institutes from participating universities, both within the field of brain and technology and more widely. There is thus a very firm foundation for the work proposed during phase 2.

Existing management structures and core services are in place

The critical activity of achieving a functional, effectively communicating and understandable decision-making organisation within the alliance was achieved during phase 1, as exemplified in the Management Compendium and our completed efforts to describe the implementation of diversity, multilingualism and multiculturalism. This has been an iterative process, but the key aspect is that at the start of phase 2 everything is working smoothly. Representation of all partners within the Board of Governors (BoG) and Board of Rectors (BoR) will continue as before, and with the incorporation of representatives from the new partners. The strategic institutional decisions or operational strategic decisions will continue to be taken by the respective Boards during phase 2 in which the BoG is involved in daily strategic and operational decisions and the BoR involved in institutional and alliance-wide decisions. The management structures are discussed into more detail in section 2.2.2 Consortium management and decision-making.

An important aspect in communication within the alliance is to have a platform (NeurotechEU Spaces) for joint teaching activities, as well as a way to inform the extended alliance neuroscience community of activities such as seminar series, research lectures and workshops. While full-fledged implementation of the digital platform for teaching will occur first during NeurotechEU++, the communication pathways are now functional and greatly facilitate wider dissemination of information from the management and leadership to the alliance members, and *vice versa*. Expansion and refinement of these core services will be an ongoing iterative process throughout the life of the alliance as part of the internal quality assurance and quality control processes.

Our students are our future

One of the most significant stakeholders in the alliance is our student population. While this is true for all levels of higher education, it is of particular relevance that the voice of MSc and PhD students has weight within the alliance as we are planning a future for **this** and next generations of neurotechnologists and not necessarily for the well-established researchers and educators currently within our universities. We have a lot to benefit from the knowledge of our students and their experience gained from an international classroom that we provide, in particular how to communicate most efficiently using digital platforms, but their opinions regarding the largest alliance strategic decisions are also valued highly. To solidify their importance during (board) meetings, agenda items will start with student-related issues rather than leaving them to the end. A detailed explanation on the students' structure and organisation can be found in Section 2.2.2.6.

Consortium expansion strategy

NeurotechEU has become well known within the European scientific community, there is a constant stream of universities approaching us for inclusion as new full or associate partners. While this underlines the favourable perception of our scientific and educational missions, it also necessitates having a clear strategy for how and when to consider additional partners for the alliance, and we expect that these requests will only increase in number. As a direct result of this challenge, we have already developed a Standard Operating Procedure (SOP) for the process of recruitment and assimilation of new partners, which includes a strategy for this. However, this strategy requires optimization. We will therefore develop a new strategy document that will (i) define the criteria for new applicants approaching NeurotechEU; (ii) determine a priority procedure in relation to

these criteria; (iii) define a maximum number of full and associate partners that will ensure efficient functionality of the alliance during phase 2; (iv) develop an exit process for partners leaving the alliance; and (v) devise a process for active recruitment of full and associate partners. Currently, the NeurotechEU alliance has eight members, and we plan to expand this further during phase 2 with at least two new full partners, of which at least one from an widening country. In addition, we will develop a strategy to define how NeurotechEU can interact with other established EUIs, in order to provide greater possibilities for interdisciplinary interactions with established networks. As one of the few thematic science EUIs, NeurotechEU has an important function in this context as serving as a role model for this type of EUI, and so interactions with other EUIs will serve this purpose. NeurotechEU will thus invite representatives of other EUIs to take part in our events when relevant, and via our open-source infrastructure other EUIs may directly benefit from the organisational and structural framework of NeurotechEU.

Together we represent Neurotechnology from all European geographical regions

It is important for a theme focussed EUI such as NeurotechEU to include partners from all corners of Europe, in order to represent universities with different specialities within the research field, different national strategies as well as motivation towards neurotechnology, and with varying degrees of associated infrastructure. The richness of the consortium resides in what we learn from each other and in having the possibility for a varied interaction that will enrich all our universities. Over the course of phase 1 our NeurotechEU alliance changed and now includes eight countries (NL, ES, SE, DE, TR, RO, FR, IS), geographically covering all different European geographical regions, namely western Europe (RU, UBO, ULille), northern Europe (KI, HR), Central and Eastern Europe (UMF) and southern Europe (UMH, BOUN). This geographical balance ensures a wide geographical coverage of the alliance. The composition of the alliance has changed compared to its original composition of eight universities from six EU countries (NL, ES, SE, DE, RO, HU), one recently departed state (UK) and one candidate country (TR). The proposed partnership includes 6/8 founding members from phase 1 now being complemented with new partners from Iceland (HR) and France (ULille), so the geographical spread of partners is even more extensive. In numbers, NeurotechEU brings together 180,000 students and 90,000 staff from all the four geographical regions of Europe.

Associated Partners

The associated partners in this project proposal have been split into two types. First, there are the associated partners with whom there are *actual ongoing collaborations* already. Second, there are the stakeholders with whom the alliance is in contact to set up collaborations in the future.

Associated partners with actual ongoing collaboration(s)

The following table presents the associated partners with whom we have ongoing collaborations at present.

Table 7: Associated partners with ongoing collaborations.

Name of the organisation	Type of org	Country	Main aims and activities	Role in the alliance
Higher Education Institutions				
<i>The collaboration with different Higher Education Institutions (HEIs) will benefit the stakeholders involved in this project. Additional HEIs involved may contribute to the project by their involvement in the following aspects: provision of research infrastructure and training for students and staff, allowing access to data and technologies, and adding to each other's projects in terms of content.</i>				
University of Debrecen	Higher Education Institution	HU	It is one of the largest higher education institutions in Hungary. It offers more than 80-degree programmes fully taught in English. Furthermore, this HEI was a Beneficiary of the alliance in phase 1.	The university will be involved in hosting students for internships, providing training and research infrastructure.
UKB - University Hospital Bonn	Higher Education Institution	DE	It is one of Germany's leading HEIs and one of the world's leading clinical research-based institutions. Neurosciences is one of the main research areas of the clinic and associated research institutes.	Involved in hosting students for internships, providing training and research infrastructure.
Cluj County Emergency Hospital	Hospital	RO	This is the hospital where clinical trials in the framework of NeurotechEU are aimed to take place.	It will allow NeurotechEU students and staff better access to patients, established databases, medical technologies, and clinical expertise.
Landspítali University Hospital	Hospital	IS	The Institute of Biomedical and Neural Engineering (IBNE) is co-financed by Landspítali with a yearly budget to strengthen the biomedical engineering applications in healthcare.	The cooperation between the hospital, IBNE and NeurotechEU will allow improved access to: Medical technologies, patients, data, clinical expertise, and clinical sleep research.
Sabancı University	Higher Education Institution	TR	One of the leading Turkish research universities, excelling in engineering and natural science, with a strong emphasis on applied research.	Together with researchers from BOUN (amongst others), Sabancı University will be developing new technologies in Neuromorphic Control, Neurorobotics and Clinical Neurotechnology towards product development, e.g., patient specific medical robots, rehabilitation robotic systems, neurorehabilitation devices.

Bilkent University	Higher Education Institution	TR	One of the leading research universities in Turkey, excelling in engineering and natural sciences. Apart from strong Electrics, Electronics Engineering, Computer Science, and Engineering Departments, the University houses two major research centres: National Magnetic Resonance Imaging Centre (UMRAM) and Aysel Sabuncu Brain Research Centre.	Together with researchers from BOUN (amongst others), Bilkent University will be developing new technologies in Empirical and Clinical Neuroscience, Neuroinformatics, Neuroprosthetics and Clinical Neurotechnology.
Istanbul University	Higher Education Institution	TR	As the strongest medical institution in Turkey, and together with the Center for Research and Practice in Clinical Research Excellence (IUKAMM), it is a key academic partner of the Neurotechnological Solutions Platform led by BOUN.	Together with researchers from BOUN (amongst others), Istanbul University will be developing new technologies in Neuromorphic Control, Neurorobotics and Clinical Neurotechnology towards product development, e.g., patient specific medical robots, rehabilitation robotic systems, neurorehabilitation devices.
Centrale Lille Institute - VdA	Higher Education Institution	FR	Centrale Lille is a partner of ULille's excellence project and its researchers are members of ULille's laboratories. Also, they share common academic programmes.	This institution could contribute to NeurotechEU via employed highly skilled engineers in neurotechnologies.
Centre Hospitalier Regional et Universitaire de Lille	Higher Education Institution	FR	This is a regional university hospital centre that is linked to ULille.	This institution could contribute to both NeurotechEU students and staff by providing infrastructure, patient cohorts, AI, and access to databases.
University of Kent	Higher Education Institution	UK	This institution is a member of the 3i network with ULille (Interregional Internationalisation Initiative University Network).	UKent's signature research theme "Future Human" deals with many areas also developed by NeurotechEU and can help develop the project in the UK.
Institut Mines-Telecom Nord Europe (IMT)	Higher Education Institution	FR	IMT is part of the national excellence initiative I-SITE, with some research laboratories being affiliated to ULille.	IMT can contribute to NeurotechEU by providing student and staff training and mobilities.
Stockholm University	Higher Education Institution	SE	Ranked in the world's top 100 universities, Stockholm University is one of Europe's leading centres for higher education and research in (human) science.	This HEI will be involved in research and education collaborations in relevant fields.
KTH Royal Institute of Technology	Higher Education Institution	SE	KTH in Stockholm has grown to become one of Europe's leading technical and engineering universities, as well as a key centre of intellectual talent and innovation.	This HEI is willing to contribute to research activities and education collaboration in relevant fields.
Research Centres				
<i>The collaboration with research centres is crucial in this project to further boost technology development and to provide additional access to research infrastructure and training possibilities for students and staff.</i>				
DZNE - German Center for Neurodegenerative Diseases	Research Centre	DE	Comprising 10 sites in Germany, the centre concentrates expertise which is distributed throughout Germany. The aim is developing new preventive and therapeutic approaches.	Involved in hosting students, provide support for researcher mobility and joint research projects.
Life and Brain GmbH - Biomedical and Neuroscientific Technology-Platform	Research Centre	DE	The rationale behind this biomedical and neuroscientific technology platform is closing the gap between university research and business.	Involved in hosting students for internships, providing training & research infrastructure, and strategic advice.
Max Planck Institute for Neurobiology of Behavior - Caesar	Research Centre	DE	The MPI in Bonn focuses on basic research in neuroethology, spanning a wide range of interdisciplinary research.	Involved in hosting students for internships.
Institut National de Recherche Informatique et Automatique (INRIA)	Public research organisation	FR	Many of the laboratories at ULille are affiliated to the INRIA.	This organisation can contribute with their research that is related to mathematics, computing, and AI.

RoNeuro Institute for Neurological Research and Diagnostic	Research Centre	RO	The RoNeuro Institute is a centre of excellence in Romania and Eastern Europe dedicated to research and diagnosis of neurological diseases.	RoNeuro Institute for Neurological Research and Diagnostic will be involved in hosting students for internships; providing training & research infrastructure and dissemination & public engagement.
Hospital Nacional de Paraplejicos	Hospital	ES	The National Paraplegic Hospital of Toledo (HNP) is the public reference hospital in Spain for the treatment of spinal cord injury. It has a team of highly qualified professionals to deal with this pathology from all areas: medical, rehabilitation and social.	The National Hospital for Paraplegics has been involved in NeurotechEU since the constitution of the consortium. HNP will continue hosting students for internships and providing training & research infrastructure.
Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)	Public research body	ES	The CSIC is the largest public research body in Spain. It plays an active role in the science policy of all the autonomous regions through their centres across Spain. CSIC's mission includes: 1) Multidisciplinary scientific and technical research; 2) Scientific and technical advice; 3) Transferring results to the private sector; 4) Contributing to the creation of technology-driven companies; 5) Training specialised personnel; 6) Management of infrastructure and large facilities; 7) Promoting scientific culture.	The CSIC has been an associate partner of NeurotechEU since 2020. CSIC will be involved in hosting students for internships, providing online learning material, training & research infrastructure, as well as strategic advice.
Institut Pasteur de Lille Foundation (IPL)	Research organisation	FR	IPL is a statutory partner organisation of ULille, with some research laboratories being affiliated.	Scientific and professional staff lecture in university courses (teaching, training, including master thesis work), Virtual Exchange and on-site symposia, host students for MA and PhD research, lab or project work and internships.
Institut National de la Santé et de la Recherche Médicale (INSERM)	Public research organisation	FR	INSERM is part of the French Clinical Research Infrastructure (F-CRIN). Also, many of the laboratories at ULille are affiliated with the INSERM.	This organisation can contribute to NeurotechEU by providing student mobilities for teaching, training, (virtual) exchange, symposia, and internships.
Centre National de la Recherche Scientifique (CNRS)	Public research organisation	FR	Many of the laboratories at ULille are affiliated to the CNRS.	This organisation can contribute with their research that is related to neurotechnology.
Companies				
<i>Companies will be of added value to this project as they can provide access to (research) infrastructure, training of students and staff, and companies can play a role in the valorisation of neurotechnologies.</i>				
Nox Medical	Company	IS	The aim is to improve health by improving sleep diagnostics.	The active collaboration between Nox Medical and HR provides access to a world-leading sleep diagnostics company, product expertise, and signal analysis.
Sidekick Health	Company	IS	The aim is to engage and empower people to take control of their health to improve their treatment outcomes and overall quality of life.	Sidekick is designing and developing digital therapeutics products to target brain centres affecting long-lasting behavioural modifications, by appealing to people's emotions.
Össur	Company	IS	Össur is a global leader in non-invasive orthopaedics; innovating, producing, and providing advanced technological solutions within the prosthetics and bracing & supports market.	NeurotechEU could contribute to the expertise in the field of software for electronic orthopaedics products, data analysis, and related.
Karel Electronics	Company	TR	A major telecommunication engineering company excelling in electronical-mechanical design and manufacturing to product development utilising all related technologies, including AI, IoT, and multi-sensor support platforms.	Together with researchers from BOUN (amongst others), Karel Electronics will be developing new technologies in Neuromorphic Control, Neurorobotics and Clinical Neurotechnology towards product development, e.g., patient specific medical robots, rehabilitation

				robotic systems, neurorehabilitation devices.
Interact Medikal Teknolojileri A. S. (Interact Technologies)	Company	TR	A high-tech company excelling in robotics and AI technologies, mostly experienced in designing, developing, and commercialising award-winning robotic rehabilitation devices.	Together with researchers from BOUN (amongst others), Interact Technologies will be developing new technologies in Neuromorphic Control, Neurorobotics and Clinical Neurotechnology towards product development, e.g., patient specific medical robots, rehabilitation robotic systems, neurorehabilitation devices.
Bit & Brain Technologies SL	Company	ES	Bitbrain is a brain technology company that combines neuroscience, artificial intelligence, and hardware to develop innovative products. The company develops high-tech EEG brain sensing devices and software solutions for real-world human behaviour research, health and neurotechnology development.	BitBrain joined NeurotechEU in 2020 as associate partner. This company will continue supporting the project by: Hosting students for internships (at e.g. universities, research institutes, companies, non-profits); Providing training & research infrastructure (at e.g. universities, research institutes, companies); contributing to dissemination & public engagement (at e.g. companies, non-profits, foundations, patient groups).
Société d'Accélération du Transfert de Technologie du Nord (SATT Nord)	Private for-profit organisation	FR	SATT du Nord is ULille's partner for the valorisation of technology.	This organisation can contribute to NeurotechEU by offering help in the process of neurotech valorisation.
Regional innovation networks				
<i>Regional innovation networks bring together different stakeholders from academia, industry, government and civil society to collaborate and facilitate the exchange of knowledge and expertise, providing opportunities for cross-fertilization of ideas and approaches.</i>				
Transylvania IT Cluster (TITC)	Regional consortium	RO	The Transylvania Digital Innovation Hub is part of the EU Network of Innovation and Digital Transformation hubs. Its aim is to support the digital transition of industry and the public sector, using the main innovation actors in the North-West region of Romania.	TITC can provide expertise in order to implement the following activities within NeurotechEU: needs validation, co-creation of the digital health, safety service through workshops.
Istanbul Health Industries Cluster (ISEK)	Regional industry cluster	TR	ISEK brings together all the major medical device companies, university research centres, NGO's and public institutions, in Istanbul region.	ISEK is a part of NEURICOO and will actively participate in the NeurotechEU for (1) creating intersectoral, international, multicultural research and training opportunities for the students and researchers; dissemination & public engagement and will provide strategic advice. In addition, (2) the companies in ISEK will take part in university-industry collaboration actions towards translating innovations into the industry and market in multiple defined dimensions.
Public bodies & NGOs				
<i>The role of public bodies & NGOs is crucial in this project, due to their versatility. First, public bodies & NGOs could provide access to (research) infrastructure and training for students and staff. Second, because of their (often more) public engagement, they play an important role in the valorisation of neurotechnologies. Thirdly, they will be involved in the strategic advice for the alliance.</i>				
Federal Institute for Drugs and Medical Devices (BfArM)	Independent federal higher authority	DE	The organisation, which is part of the Federal Ministry of Health, is involved in the task of licensing, improving the safety of medicinal products, detecting and evaluating the risks of medical devices, and monitoring the legal traffic in narcotic drugs and precursors.	Involved in hosting students for internships, and teaching students with existing courses where institutional lecturers are involved.

Ministerio de Universidades, Gobierno de España	Public body	ES	The Spanish Ministry of Universities has established a very close relationship with the Spanish universities that participate in the calls for creation of European Universities (EUs), declaring a firm commitment to this type of alliance. MofU regularly holds meetings with representatives of the Spanish universities participating in EUs, where issues of common interest are addressed. As a reflection of this commitment, the MofU has expressly included the EU consortia in its last regulation on the quality of studies, establishing that the accreditation of joint studies will be facilitated.	The involvement of legislators is crucial for the full achievement of part of the EU goal, such as the approval of new degrees, the creation of recognition systems allowing to issue legally valid titles/diplomas, etc. MofU is also exploring co-financing possibilities to help give continuity to the EUs.
Ministry of Health, Romania	Public body	RO	The Ministry is building on the collaboration with KI to implement Swedish neuroregistries in Romania.	It will allow NeurotechEU students and staff better access to (patient) databases.
Istanbul Greater Municipality, Department of Environmental Protection and Development	Public organisation	TR	This department is the key policy maker for the Istanbul Greater Municipality, addressing numerous environmental and sustainability challenges.	Together with researchers from BOUN (amongst others), this organisation will be developing new technologies and policies in Neurometaphysics, with major implications, and societal and economic potential for the megacity of Istanbul.
Centre Régional des œuvres universitaires et scolaires de Lille	Public organisation	FR	This organisation has a partnership with the ULille International Relations department to reserve room quotas in halls of residence around Lille.	This organisation could contribute to NeurotechEU mobilities both for students and staff, by ensuring housing.
Métropole Européenne de Lille (MEL)	Public organisation	FR	The MEL and ULille have a partnership agreement that covers cooperation in research and international relations.	The MEL can contribute to NeurotechEU by (e.g. financially) supporting research projects that are in line with its strategy.
Région Hauts-de-France	Regional public authority	FR	Among many other competencies, the Hauts-de-France Region is competent in European regional cooperation issues (ERDF Managing authority) and leader of the regional higher education, research and innovation strategy.	The role of this public authority in the project will be to support the tasks associated with the development of the concept of regional community engagement.
Rectorat académie de Lille	Regional public body	FR	The Académie de Lille is one of the administrative structures of the decentralised services of national education in the "region académique" Hauts-de-France, ensuring the territorial organisation of the policy defined by the national ministry of education.	The promotion of transnational education and of European and international openness are strategic priorities of this body; their role will be to support the activities related to the design and pilot implementation of a mentoring scheme pairing NTEU students and school children.
Eurasanté	NPO Economic Interest Grouping	FR	Eurasanté is a tech transfer, an incubator, an accelerator and cluster manager in the nutrition and health sector in the Northern France region. A part of the biotech companies are spin-offs from ULille.	This EIG can offer a lot to NeurotechEU, mainly for students. Examples include chosen modules from the Health Entrepreneurship Programme, participation in hackathon-type actions in health, nutrition and cognition, neurotechnology and big data, to make young scientists aware of the value of their research and entrepreneurship. Eurasanté supports start-up projects resulting from public research in neuroscience.
Diputacion Provincial de Alicante	Public body	ES	The Provincial Council of Alicante seats in Alicante and is the institutional body of the Province of Alicante, responsible for the various administrative and executive functions of the province.	Associate with NeurotechEU since its creation, Alicante Provincial Council will be involved in strategic advice and increase the involvement of NeurotechEU++ in regional development.
Ayuntamiento de Sant Joan d'Alacant	Public body	ES	Sant Joan d'Alacant is a municipality belonging to Alicante metropolitan area, in the southeast of Valencian	The City Council of Sant Joan d'Alacant will continue supporting the project by being involved in

			Community. The municipality has part of the campus of the University Miguel Hernández of Elx/Elche.	dissemination and public participation and strategic advice.
European Union Intellectual Property Office (EUIPO)	European Union Agency	ES	EUIPO, which was known as OHIM until 23 March 2016, was created as a decentralised agency of the European Union to offer IP rights protection to businesses and innovators across the European Union (EU) and beyond.	The EUIPO will continue supporting NeurotechEU by being involved in promoting and reinforcing the role of Intellectual Property in the development of innovation and sustainable economic growth, including hosting students for professional traineeship periods, and providing access to online learning material available on the EUIPO Academy e-Learning Portal.
Ayuntamiento de Elche	Public body	ES	The City Council of Elche is the governing and administrative body of the municipality, as a Public Law Corporation. The City Council has a strong emphasis on social responsibility.	Elche City Council is strongly involved in NeurotechEU since 2020. It will continue being involved in assistance with housing, support for mobility initiatives, hosting students for internships, providing training and research infrastructure, dissemination and public engagement, and strategic advice.
Widening countries				
<i>The involvement of associated partners from widening countries is relevant for the inclusion of more (and new) geographical and cultural areas of Europe. Besides the contribution of the associated partners from the widening countries, his will contribute to an increased European awareness of the alliance.</i>				
European Association of Erasmus Coordinators (EAEC)	NGO	CY	Consisting of around 140 members throughout Europe, their aims are to enable networking of Erasmus+ programme coordinators, to promote mobility of staff and students in the EHEA, to support the Bologna process of education and quality standards.	The EAEC can contribute to NeurotechEU by sharing experiences and by the providing information on relevant Erasmus experiences.
Others				
<i>This includes associated partners that have not been mentioned before, as they do not fit in another category. However, despite this, their contribution to the project can be regarded as indispensable.</i>				
Boğaziçi University Technology Transfer Office AŞ	Technology Transfer Office	TR	BOUN TTO is a legal entity aiming at assisting inventors, innovators and entrepreneurs in the process of converting their ideas into technology, commercializing the technology by transferring it to the industry and creating an economic value from which both society and university benefit mutually.	BOUN TTO has been supporting BOUN's actions in NeurotechEU in technological innovation and is a part of NEURICOO, the central organisational structure for the university-industry collaboration of NeurotechEU.

Contacted stakeholders for potential future collaborations

The following table shows the stakeholders with whom we are already in contact and working towards establishing a collaboration in the near future.

Table 8: Stakeholders with potential collaborations in the future.

Name of the organisation	Type of org	Country	Main aims and activities	Role in the alliance
Higher Education Institutions				
<i>The collaboration with different Higher Education Institutions (HEIs) will benefit the stakeholders involved in this project. Additional HEIs involved may contribute to the project by their involvement in the following aspects: provision of research infrastructure and training for students and staff, allowing access to data and technologies, and adding to each other's projects in terms of content.</i>				
University of Genova (UniGe)	Higher Education Institution	IT	UniGe is one of the oldest universities in Italy, with high/ranking positions in the field of computer science (machine learning, computer vision and graphics, etc.).	UniGe can contribute to NeurotechEU by providing access to relevant research infrastructure and to provide mobilities and training for students and staff.
Université franco-allemande Deutsch-Französische Hochschule (FGU)	Higher Education Institution	DE	One of FGU's core functions is to provide expert guidance on relations between French and German universities with the aim of improving cooperation in the areas of university study programmes and research in both countries and in Europe.	FGU can contribute to NeurotechEU via bilateral participation in events and workshops. Also, FGU could support both student and staff mobility.
Higher Education Institutions from widening countries				
Alma Mater Europaea ECM (AMEU)	Higher Education Institution	SI	AMEU is an independent higher learning institution that specializes in the provision of career-focused education in career-deficient fields of study.	Alma Mater Europaea can contribute to NeurotechEU by providing training and infrastructure for students and staff.
Medical University of Białystok	Higher Education Institution	PL	A modern university, with a mission to provide the best possible education for professional, responsible, leading-edge medical staff; to carry out scientific research at the most advanced level worldwide; to implement innovative solutions in cooperation with medical service providers; and to respond to social needs.	This HEI can contribute to NeurotechEU by providing training and infrastructure for students and staff.
Goce Delcev University Shtip (UGD)	Higher Education Institution	MK	UGD is a pioneering institution committed to increasing access to education, and innovation and delivering social well-being for all.	This HEI can contribute to NeurotechEU by providing training and mobility for students and staff.
Research Centres				
<i>The collaboration with research centres is crucial in this project to further boost technology development and to provide additional access to research infrastructure and training possibilities for students and staff.</i>				
IMEC	Research Center	BL-NL	Imec is a world-leading research and innovation hub in nanoelectronics and digital technologies.	Can provide access to IMEC's facilities and expertise and contribute to the development of new technologies in the field of Neurotechnology.
Companies				
<i>Companies will be of added value to this project as they can provide access to (research) infrastructure, training of students and staff, and companies can play a role in the valorisation of neurotechnologies.</i>				
PlusEthics	Company	ES	PlusEthics is highly specialised in providing ethical and legal support for research and innovation in international R&D projects.	This recently created UMH spin-off company can contribute to NeurotechEU by sharing its expertise to address ethical and social issues to meet its needs for a holistic approach to sustainability.
deCODE	Company	IS	deCODE is a global leader in analysing and understanding the human genome.	The active collaboration between deCODE and HR provides access to a state-of-the-art human gene discovery engine, i.e., to identify genetic variations associated with human disease.
Betri Svefn	Company	IS	The company has expertise in clinical insomnia and the cognitive behavioural treatment for insomnia, including web-based treatment.	The active collaboration between Betri Svefn and HR provides access to the expertise related to behavioural treatments for insomnia.

Eodyne Systems S.L.	Company	ES	Eodyne owns the software Rehabilitation Gaming System (RGS), a science-based neuro-rehabilitation solution for the integrated treatment of deficits resulting from brain damage and its pipeline represents a new model for transfer and innovation in digital health and value based.	Eodyne will provide advanced training course on specific research skills focusing on hands-on training on the company's and participating in the summer school of the network.
Public bodies & NGOs				
<i>The role of public bodies & NGOs is crucial in this project, due to their versatility. First, public bodies & NGOs could provide access to (research) infrastructure and training for students and staff. Second, because of their (often more) public engagement, they play an important role in the valorisation of neurotechnologies. Thirdly, they will be involved in the strategic advice for the alliance.</i>				
ISABIAL (Foundation for the Alicante Institute for Health and Biomedical Research)	Foundation for the promotion of biomedical research	ES	The foundation was created as a multidisciplinary and translationally oriented research environment where researchers from UMH, University of Alicante and the Alicante Health Area develop biomedical research by carrying out several competitive research projects.	ISABIAL will allow NeurotechEU students and staff better access to patients, established databases, medical technologies, and clinical expertise. Also, since it is an IIS recognised as ISCIII, the foundation can contribute to the sustainability of NeurotechEU by means of specific calls.
FISABIO (Foundation for the Promotion of Health and Biomedical Research of Valencia Region)	Foundation for the promotion of biomedical research	ES	The foundation manages the biomedical research carried out in 22 Health Areas of the provinces of Valencia, Castellón and Alicante.	FISABIO will allow NeurotechEU students and staff better access to patients, established databases, medical technologies, and clinical expertise.
Icelandic Institute for Intelligent Machines (IIIM)	NGO	IS	IIIM acts as a bridge between academic and industry research, facilitating knowledge transfer, internships, and building of cutting-edge technologies for industrial and government partners in the field of applied artificial intelligence.	Not only can IIIM contribute to NeurotechEU with their expertise in the field of applied AI, but they can also link the alliance to a broad range of relevant industry stakeholders.
European Association for the Education of Adults (EAEA)	NGO	BE	Founded in 1953, the organisation's purpose is to link and represent European organisations directly involved in adult learning.	This organisation could contribute to NeurotechEU by forming the link to the "EU Brussels" environment, specifically focussed on lifelong learning and targeting more senior learners.
European University Foundation Campus Europae	NGO	LU	EUF aims to accelerate the modernisation of the European Higher Education Area, focussing its action on five pillars and standing for diversity and social fairness in Higher Education.	As this organisation has expertise in EU project development and running it, it could help NeurotechEU with its "project factory" to build a community of practice of EU project developers.
European Federation of Neurorehabilitation Societies (EFNR)	NPO	AT	(EFNR) is an international non-profit organisation, dedicated to research, education, intellectual and scientific exchange, advocacy and philanthropic activities in the field of NeuroRehabilitation medicine and related professional.	This NPO can contribute to NeurotechEU via support for mobility initiatives; hosting students for internships; online learning material; providing training & research infrastructure; dissemination & public engagement; and strategic advice.
Academy for Multidisciplinary Neurotraumatology (AMN)	NPO	DE	The purpose of the AMN is the advancement of neurotraumatology in research, practical application and teaching	The AMN will be involved in hosting students for internships; providing training & research infrastructure; dissemination & public engagement; and strategic advice.
International Neuroinformatics Coordinating Facility (INCF)	NPO	SE	The INCF network is composed of researchers, infrastructure providers, industry, and publishers from 18 countries spanning 4 continents committed to the development, evaluation and implementation of standards and best practices that embrace the principles of Open, FAIR, and Citeable neuroscience.	INCF will be involved in infrastructural support for online learning resources, dissemination, and public engagement.
The Scientific and Technological Research	Public Organisation	TR	TUBITAK is the national agency, which develops Science, Technology and Innovation (STI) policies, helps create the necessary infrastructure	TUBITAK will contribute in particular to supporting the organisation in the areas of innovation, mobility and regional development via International

Council of Turkey (TÜBİTAK)			and the means for implementation of these policies, funds R&D, performs R&D, coordinates international STI relations and leads the way for fostering a culture of science and technology in society.	Cooperation Department.
OpenLab	Innovation community	SE	OpenLab is a challenge-driven innovation community providing courses for professionals and master's students, co-working space, innovation projects and a conference centre.	OpenLab will be involved in strategic advice on interdisciplinary challenge driven innovation training and the possibilities for students and researchers to participate in OpenLab activities.
Others				
<i>This includes stakeholders that have not been mentioned before, as they do not fit in another category. However, despite this, their contribution to the project can be regarded as indispensable.</i>				
Euratechnologies	Private for-profit organisation	FR	A number of biotech companies that are developed by Euratechnologies are spin-offs from ULille.	This organisation can contribute to NeurotechEU by serving as an incubator and accelerator.
Blockchain Certified Data	Private for-profit organisation	FR	This is a subcontractor for BC digital diploma certificates, more than 20,000 were issued to graduates in 2021/22 with "probative value". Partner of the EBSI VECTOR consortium, in the framework of the Digital Europe Programme, together with ULille.	The organisation allows the digital transformation of registrar's offices by issuing graduates a digital certificate of completion of their degree or a credential anchored in a low-energy blockchain. NeurotechEU can create its own Joint European Degree label template in a dematerialised format, and it could be an objective to issue these BC digital certificates.

2.2.2 Consortium management and decision-making

Consortium management and decision-making

Experienced coordination of NeurotechEU

During phase 1 the coordination of NeurotechEU was assigned to RU, and they will continue in this role during phase 2. Development of the coordinating team including the Management and Coordination Office (MCO) has been an iterative process, and we now have a fully functional team of coordinators and administrative managers with a defined mandate to provide service to the alliance. The continuity of the coordination team is an important foundation as the alliance continues to expand during phase 2, and the groundwork of preparing SOPs (Standard Operating Procedures) for the key organisational processes and activities is already completed.

While the delegation of tasks between partners lies with the BoG, the central NeurotechEU MCO at RU has the responsibility to administer the communication of all activities as well as all NeurotechEU meetings at all levels (e.g. BoG, BoR). RU will thus run a MCO at RU from which all contact with the EU commission is conducted, which is a source of contact and support for all partners, and through which the MCO will inform the partners of all matters concerning the alliance. These functions include internal communication between partners, including the webpage content, and both supply and maintenance of the teaching platforms used within NeurotechEU. Apart from continuous availability for partners and the student council for discussion of any matter arising, the NeurotechEU MCO team will organise and host monthly meetings of the BoG and biannual in-person meetings of the BoR. The NeurotechEU MCO has the overall responsibility for both quality assurance and quality control of the alliance's activities, although this may be specifically delegated to partners. For example, while the existence of education programmes of NeurotechEU and the reports of these activities are the responsibility of the coordination team, the quality of the educational activity and its evaluation (that is included in the report) are the responsibility of the specific partner tasked with conducting the activity. An important aspect of the role of the NeurotechEU MCO is to give feedback to partners about that particular partner's performance within the alliance, as well as to update all partners about the general progress status for the project. In the sections below we describe the governance structure, different levels of operations and creation of Working Groups that will ensure added value of collaboration, and clear roles and responsibilities of the members to deliver individual components of the joint common vision, strategy and planning of activities.

2.2.2.1 Governance

The project governance of NeurotechEU has been designed by capitalising on phase 1 successes and lessons learned. It is oriented towards implementing a modular and scalable **Goal-Oriented Governance (GoG)** structure to ensure all objectives of the alliance are reached within the given timeframe.

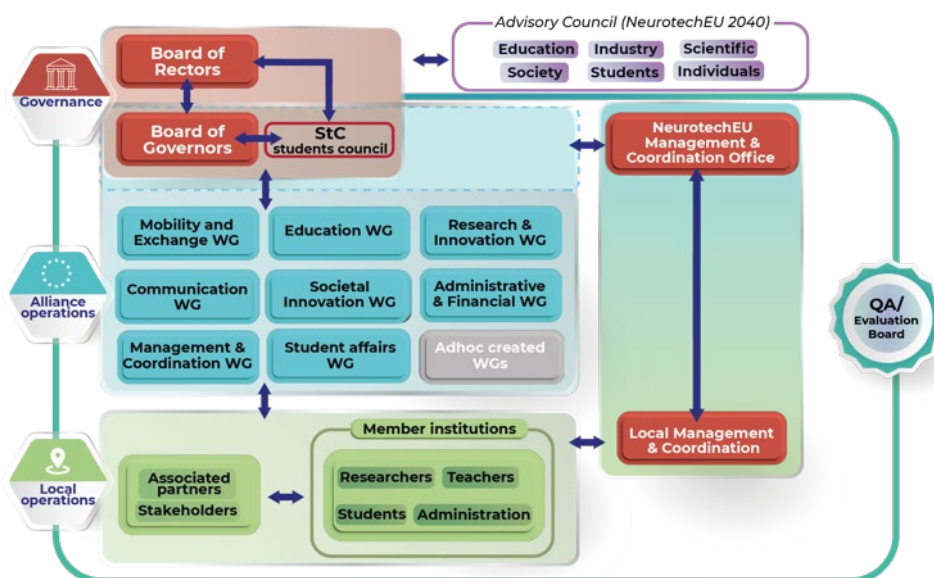


Figure 14: The Goal-Oriented Governance structure applied in NeurotechEU. The Governance level is the highest decision level of the alliance and is composed of the Board of Rectors and the Board of Governors. The Alliance operations level is responsible for implementing and coordinating the different institutions to meet the objectives and goals set by the governance. The local operations level implements at the partner institutions the actions decided at the alliance level.

For this, NeurotechEU will continue to go beyond their existing collaboration (including but not limited to exchange programmes and joint research) by further implementing a structure for international, multi-institutional and intersectoral collaboration. This is done using a multi-levelled and multi-layered structure with clear connections between the different bodies. At a high level, the management structure with Neurotech is composed of three main levels:

1. **Governance level:** Provides oversight, guidance, and is the ultimate decision-making authority for the alliance ensuring alignment with the EC requirements. It is composed of the **Board of Rectors** and the **Board of Governors**.
2. **Alliance operations level:** Responsible for managing the day-to-day operation at the alliance level. Its primary role is to ensure that the alliance is functioning effectively following the appropriate quality principles, that the goals set by the Governance are met. It is composed of the **Board of Governors**, the **Working Groups** and the **NeurotechEU**

Management and Coordination Office. The Quality Committee will give support to WGs in quality implementation as required.

3. **Local operations level:** Implements operations at the partner institutions considering local resources, constraints, laws, etc. It is composed of **Local Management and Coordination Offices** and member institutions researchers, administration, students and teachers and in close contact with all stakeholders and associated partners.

Through this governance structure, the alliance provides a structural and sustainable approach to reaching all objectives and permits the inclusion of all voices on campus (bachelor's, master's and doctoral students, life-long learners, teaching and research staff, support and administrative staff, management positions) and off campus (public policy-makers, associate partners, associated (European) universities, industrial and innovation partners, regional stakeholders, governmental and non-governmental organisations, and society at large).

The different actors of the governance structure are explained in more detail below:

- **Board of Rectors**, the assembly of all rectors from the partner universities within the Alliance. In addition to the rectors, each partner may delegate one additional representative. Additional guests may attend upon invitation. The Board of Rectors is responsible for all fundamental, alliance-wide decisions. Beyond the control over the NeurotechEU organisation, this platform will implement the cooperation principles in participating universities, **ensuring impact across all branches of the universities**. The Board of Rectors meet two times a year in person.
- **Board of Governors** consists of one representative of each institution and two student representatives (**democratically elected** by and from the NeurotechEU student body; see Subsection 2.2.2.6 NeurotechEU Student Council). The Board of Governors is responsible for providing oversight and guidance for the project, including reviewing progress reports, approving changes to the research plan, and making recommendations for future funding. They also review and approve all relevant documentation such as the communication and dissemination plans, deliverables to evaluate the progress of the project and assess the impact of the research and actions accomplished. The Board of Governors also provides guidance on the management of any ethical issues that may arise and decides on quality control issues in case of conflict between the Quality Committee and a Working Group. The Board of Governors meets monthly to review progress and provide guidance on next steps. Meetings are chaired by the Project's coordinator (RU), and minutes are kept documenting the decisions and recommendations of the board. Two members of the MCO will attend these meetings but do not have a vote; they are present to write the minutes, provide documentation and answer questions when necessary.
- **Advisory Council:** consists of a group of experts and professionals who provide independent advice to the Governance of the alliance at different branches: Education, Science, Society, Industry and Students affairs. Their insight **will help shape the NeurotechEU policies, teaching and research priorities, innovation targets and diversify its impact in teaching, research and society at large**.
- **Quality Committee:** The Quality Committee (QC) is composed of experts on quality assessment. The QC will take a more prominent role regarding quality monitoring, as expected in phase 2 of the project. The main goals of the QC are to carry out the top-level supervision of the quality reviews performed by each WG under the principles established by D.1.3, the project deliverable that will include all the quality guidelines. Furthermore, the QC addresses all the *ad hoc* needs formulated by each WG to cover a proper quality implementation at each project phase. Note: at the beginning of the project, the quality committee will create an Ad Hoc Working Group for Quality to support and train the different PMs in the quality procedures and to support the different Working Groups until they can be independent in their quality implementations under the top-level supervision of the Quality Committee.
- **NeurotechEU Working Groups:** Working Groups (WG) are specialised groups working under quality principles towards concrete goals. Two types of WGs will exist:
 - *Continuous Working Groups:* are the crucial WGs that will last during the whole project duration and will need continuous dedication to ensure the operation of the Alliance. The dedicated time can change during the project. Education, Mobility and Exchange, Research and Innovation, Communication, Student affairs, Societal Innovation, Administrative and Financial, Management and Coordination are the Continuous Working Groups currently defined until. Continuous Working Groups will consist of two leads from two different institutions and at least one representative of each remaining institution. A project manager from the MCO with specific quality training and corresponding expertise will support each WG. All Working Groups will meet on a monthly basis, or at a higher frequency when required by the progress of subtasks.
 - *Ad Hoc Created Working Groups:* are temporary WG created when there is a specific need and until the objective is accomplished. For example, we already defined Ad hoc Working Groups for Internal communication and management. Ad Hoc *created Working Groups* will consist of one lead and one project manager from the MCO with specific quality training with corresponding expertise and at least three members of different institutions.
 - The leads and project managers of all eight WG will coordinate their work by participating in the BoG two times a year, or at a higher frequency per WG whenever necessary. The progress of the WGs will be presented and further steps discussed.
- **NeurotechEU Management and Coordination Office:** The alliance-wide Management and Coordination Office is located at Radboud University, the Alliance Coordinator. It consists of a team of professionals with in-depth experience in coordinating European collaborations. It serves as the operative core of the alliance, ensuring the implementation of the BoG's decisions in consultation with the local alliance coordinators. It is currently composed of 6 persons.
- **Local Management and Coordination Offices:** While working closely with the NeurotechEU Management and Coordination Office, the local institutions (researchers, students, teachers and staff), local stakeholders and associated

partners, the main goal of the local Management and Coordination Offices is to ensure that local activities are implemented and executed effectively and efficiently and aligned with the overall strategic goals of the alliance.

2.2.2.2 Continuous Working Group descriptions

The following table briefly describes the high-level tasks of the continuous working groups.

Table 9: Working groups tasks description

Working group	Tasks
Management and Coordination	This WG is responsible for the overall management and coordination of all activities of the alliance . It is composed of the members of the alliance who are also present in the Local Management and Coordination Offices. Next to the overall management and coordination of the alliance, this WG will take responsibility for the management and coordination of the different tasks that do not have an appointed WG. When more dedication is required for a specific need, this WG coordinates the creation of an ad hoc or continuous WG to handle it.
Administrative and Financial:	This WG is responsible for the administrative and financial aspects of the alliance towards the EC, but also within the alliance.
Research and Innovation	This WG is responsible for conducting research and developing new ideas within an organisation or project. This can include tasks such as identifying research priorities, designing and conducting studies, analysing data, and developing new products, processes, or services. Its goal is to support the alliance's mission and goals by generating new knowledge and innovation that can help the organisation to grow and adapt to changing environments.
Education	This WG is responsible for designing, implementing and evaluating educational programmes and initiatives within NeurotechEU. This can include tasks such as curriculum development, teacher training, and student assessment. The group will consist of educators and other professionals who have expertise in education. Its goal is to support the alliance's mission and goals by providing high-quality educational experiences that can help learners to acquire the knowledge, skills, and values they need to succeed in life.
Mobility and Exchange	This WG is responsible for coordinating and facilitating mobility and exchange programmes within NeurotechEU. This can include tasks such as recruiting participants, organising language classes, summer schools and conferences, overseeing logistics, providing support services, and evaluating the impact of the programmes.
Student affairs	This WG is responsible for providing a wide range of services and support to students within NeurotechEU. This can include tasks such as advising, counselling, housing, health and wellness, extracurricular activities, and career services. The group may be made up of staff members, volunteers, or a combination of both, with different backgrounds and expertise, such as educational professionals, student affairs administrators, and student leaders. The goal of the student affairs working group is to support the alliance's mission and goals by creating a positive and inclusive campus environment that promotes student success, retention, and development.
Societal Innovation	This WG is responsible for identifying and addressing societal challenges through innovation and collaboration, including cultural innovations. This can include tasks such as researching and analysing societal issues, developing and implementing solutions, engaging with stakeholders, and evaluating the impact of the initiatives. The goal of the societal innovation working group is to support the alliance's mission and goals by contributing to the betterment of society through innovative thinking and problem-solving. The working group may focus on issues such as sustainable development, social equity, or inclusive growth. They may also aim to create new partnerships, models, and technologies to address these challenges.
Communication	This WG is responsible for planning, implementing, and evaluating communication strategies within NeurotechEU. This can include tasks such as developing messaging, creating content, managing social media, and coordinating events. The group may be made up of staff members, volunteers, or a combination of both, with different backgrounds and expertise, such as marketing and public relations professionals, writers, and designers. The goal of the communication working group is to support the alliance's mission and goals by effectively communicating with its target audiences, stakeholders, and the general public. This can include sharing information about the organisation's activities, promoting its products or services, and building and maintaining relationships with key groups. The communication working group will also work to ensure that the organisation's messages are aligned with its overall strategy and are delivered in a consistent, effective, and engaging manner.

2.2.2.3 Quality assurance and risk management

During their monthly assembly, the Board of Governors will schedule part of their assembly to discuss foreseeable risks and uncertainties that the alliance is facing. Quality assurance procedures, under guidance of the Quality Committee, will support

their identification in a proactive approach (see section 2.1.2). When necessary, measures and actions are taken, such as contacting corresponding bodies directly or updating and revising contingency plans. If risk or problem arises, the Board of Governors has the right to implement contingency plans and/or call for a crisis meeting with the Board of Rectors. On request of the board, a dedicated WG can be created to solve the problem.

2.2.2.4 Conflict resolution & decision making process

As an alliance, we believe that open and transparent communication strategies can help prevent miscommunication and conflicts. Therefore, the Management and Coordination Office has the responsibility to plan, monitor and evaluate the internal communication and its consistency with NeurotechEU++s mission, vision and values. In case of conflict, the alliance Management and Coordination Office takes on the responsibility of establishing constructive dialogue and conflict resolution among the partners. Throughout the whole consortium, we will implement the same decision-making process. In general, all decisions will be made by a majority vote. All decisions made during meetings will be included in the minutes of that particular meeting and shared with the whole consortium. More details on the decision-making process will be included in the Consortium Agreement (based on the DESCAs model), which will be drafted and signed as soon as possible upon a positive review of this proposal.

2.2.2.5 Management and Internal communication

The NeurotechEU Management and Coordination Office and the local Management and Coordination Offices of each partner collaborate remotely in such a way that NeurotechEU has the possibility to expand and create the best environment for its learners and staff in the future. The Management and Coordination Office adopts the appropriate tools for video conferencing (e.g. Teams), task management (e.g., Asana), chatting applications (e.g. Slack), and an open-source social network to work in in the future (e.g. HumHub). These tools will help NeurotechEU members to acquire skills and create consent/agreement when the tools are used consequently. To inspire this harmony and present a unified image, a professional image is required where members use templates and emails linked to the visual identity of NeurotechEU, and where related information, such as a photo and the expertise of our members, will be added to the website. NeurotechEU can work towards an era of an interchangeable management office. Because of the remote fashion in which the NeurotechEU Management and Coordination Offices operate, it is practicable to interchange tasks with other managers in the consortium. This also contributes to establishing transparency and exchanging cultures within the consortium.

Effective internal communication is essential for a constructive and effective working environment of the alliance. To ensure this, the alliance will create a dedicated ad hoc Working Group that will be responsible for establishing a clear internal communication plan that, capitalising on phase 1 experiences, will outline the key communication channels, methods, protocols and procedures that will be used within the alliance. Several key strategies will be implemented:

- Encourage open and transparent communication: Encourage members and stakeholders to share information and ideas freely and openly. Create a culture of openness and transparency where members feel comfortable sharing their thoughts and ideas.
- Use technology: Utilise modern communication tools and technologies to facilitate fast and efficient communication.
- Encourage periodic communication: Encourage members to hold regular team meetings and alliance-wide meetings.
- Encourage in person (physical) meetings: while technology is important, in person (physical) communication is also essential for building trust and understanding. The communication plan will establish a minimum but necessary number of in person meetings between different WG members, Governors or Rectors.
- Establish clear roles and responsibilities: Define clear roles and responsibilities for all members and stakeholders, and ensure that everyone knows who to contact in case of any communication-related issues.

Once completed this plan will be distributed among all alliance members and will ensure virtual communication for administration, cooperation and accountable resource utilisation. It will also provide flexibility by allowing remote work and cooperation independently from the constraints of space and time. Once the internal communication plan is finalised and distributed, the Management and Coordination WG will follow-up its constant implementation and continuous improvement. This includes the following tasks:

- Provide regular updates: Provide regular updates to members and stakeholders on important developments and decisions. This can be done through emails, newsletters, or alliance-wide meetings.
- Encourage feedback: Encourage members and stakeholders to provide feedback on the communication plan and make adjustments as needed.
- Encourage members from different partner institutions, departments and teams to communicate and collaborate with one another.
- Continual improvement: Continuously assess the communication process within the alliance and adjust as needed to ensure efficient communication.

2.2.2.6 Student Council management structure

After two years of project implementation, the **NeurotechEU Student Council (NtSc)** has brought together students from NeurotechEU universities under an independent governance structure, with a ratified constitution and a democratically elected steering group composed of two co-chairs and two secretaries. They have also formed Working Groups (WGs): WG Communications, WG Events, and WG Synapses, serving as catalysts for content creation and alliance-wide interaction. Each WG has a democratically elected manager who is responsible for the administrative tasks and reporting to the NtSc. The NtSc has organised several events and seminars, thus reaching students across the consortium and beyond. The independent activity of the NtSc has been thus far largely voluntary (i.e., not supported by the ERASMUS+ phase 1 grant or other sources), except for travel and subsistence costs being covered for NtSc members participating in consortium events (e.g. Board of Rectors meetings, Summer Schools). The activity of the NtSc to date has secured a solid foundation for achieving the *NeurotechEU2040* promise: *an alliance designed by students for students*. As phase 2 of the project is approaching, additional

measures are required to ensure the participation and representativity of students, in line with efforts deployed to achieve our shared vision. These measures have been developed following consultation with student representatives and are subject to NtSc and BoG approval. The activities of the NeurotechEU Student Council (NtSc) to ensure a high level of involvement of students are as follows:

- Representation: NeurotechEU students are entitled and encouraged to advise on various areas, including education, organisation and management, and have the right to participate and vote in governing bodies. To achieve this goal, student populations from each university will select 3 University Representatives (NtSc URs) from existing student representation mechanisms (i.e., does not refer to individuals but to appointments that may be succeeded) in line with institutional policies including democratically elected Senate/Assembly representatives; leaders of student unions or traditionally appointed individuals, and communicate their names, together with a fixed mandate communicated *a priori* to the Management and Coordination Office (MCO). One month before mandates are fulfilled, the CO asks universities to communicate the successors to these positions. New representatives must be briefed on the current state of affairs, tasks and duties by their predecessor and handover documents are provided to keep track of affairs. The NtSc must ensure that all students are heard in the overall decision-making process. It is therefore essential that the representatives attend their respective Student Union Senate and Governing Body meetings. The roles of URs are (1) to represent the interests of all students enrolled at the NeurotechEU Alliance members from the perspective of their institution and ensure equitable opportunities, (2) to facilitate exchanges of knowledge and experiences between students within academia, industry and society, and (3) to assist with skill transfer that enables open discussion and collaboration. In addition to representation, NtSc URs must facilitate communication and dissemination within host institutions and liaison with the local university project coordinator and relevant student groups. NtSc URs convene as needed or otherwise specified by the constitutive acts in plenary meetings of the NtSc, co-chaired by two (2) students. UR contributions are unpaid.
- Student Chairs (SCs) and their *two (2) associates* are elected annually to ensure co-chairmanship rotation and opportunities of gaining experience and knowledge relevant to their future careers for several NtSc URs holding this leadership position. Voting for NtSc elections and issues will be done online and democratically, including all NtSc representatives. SCs represent students as full members of the Board of Governors and Board of Rectors, magnifying the student's voice and ensuring direct communication between project management and the student body. SCs ensure events are promoted in the student networks across the consortium. When needed, SCs bridge required consultation tasks that have not been successful via conventional consultation mechanisms (see next section).
- Consultation and work within the project: NtSc will be consulted regarding all deliverables, events and other relevant areas of consortium activity through their participation in governing bodies. SCs and URs will also be invited to attend *status meetings* organised by the Management and Coordination Office. Project working groups/task forces/hubs will include mandatory student contributions from the NtSc, based on the background of the students involved. Students will not be asked to provide mandatory contributions for the day-to-day tasks and deliverables of partner universities. Nevertheless, all working groups will primarily tap into the experiences of NtSc representatives and must advertise their activity and relevant opportunities through the NtSc., such as receiving assistance with wider student participation when required. To include student involvement in all decision-making bodies, the NtSc was asked to contribute to the phase 2 proposal and is consulted regarding consortium management and decision-making. The structure for proposal contributions is provided via a single contact person from the NtSc. The contact person attends the phase 2 preparation meetings and communicates with the Management and Coordination Office. The NtSc will follow templates and timelines set up by the Management and Coordination Office when contributing to the proposal.
- Community-building: Synapses is the NeurotechEU Student Society, which organises educational, scientific and social events targeting students across the consortium and beyond, promoting open science and knowledge exchange. Successful events have already been held over the past one and a half years, including the Synapses kick-off (2021), research seminar on the occasion of Cajal's 169th birthday (2021), a Three-minute thesis competition (2022), International Women's Day events (2021 and 2022) and the monthly Synapses Lecture Series where early career and senior researchers are invited from the alliance partners to share their research and network with the participants. Synapses is the self-governing engine of NtSc-led initiatives and the social hub/community for students in the consortium. The manager of Synapses is elected from the NtSc. URs and SCs may choose to be involved (or not) in Synapses, either as participants or initiative owners. Members of Synapses are welcome to attend and observe all plenary meetings of the NtSc, without voting rights. To ensure appropriate support is provided to NtSc initiatives, Synapses members will work closely with host partners to access project resources (financial, infrastructure, human resources) and ensure the feasibility of the initiative within the constraints of the ERASMUS+ guidelines and local context./financial support regarding organising events, joining consortium-wide events, travel costs, etc. Local teams should therefore facilitate the NtSc-led initiatives and create an inclusive student environment. Each university should at least provide the resources to organise one student event per year. NtSc is planning an in-person event for International Women's Day, with the support of UMF, an initiative born through dialogue between students and project staff. By adopting this model, Synapses may have more autonomy in organising events, working less and better with project staff, and tapping into local partner budgets.
- Administrative and miscellaneous
 - The Management and Coordination Office will be the point of contact with the student council for additional support if necessary.
 - In each partner university, there will be one secretary to serve as the contact point with the local universities and Management and Coordination Office. This way, communication between the different parties will be more efficient.
 - The Management and Coordination Office should have a central role in relieving current NtSc administrative and logistical burdens in the future so that members may focus on representation-related capacities. Initiatives with budget impact should be started and developed in collaboration with local university partners and jointly discussed with the CO to ensure feasibility and opportunity. Each local university is financially responsible for its NtSc representatives.

- Each local university has its legislative context and potential constraints that can hinder the activities of the NtSc. The Management and Coordination Office will contact each partner university to discuss any legislative constraints per partner university regarding the NtSc and budget costs set aside per local university. In the case of the potential employment of students as project staff, this should be approached case-by-case, in line with national legislation and standard practices/policies of individual partners. NtSc representatives should initiate this and notify the local universities and Management and Coordination Office if this is requested.
- Furthermore, if any issues arise during the preparation of an NtSc event/mobility action or the NtSc requires additional information or support, the NtSc representatives will be responsible for contacting their partner universities in time and, if necessary, the Management and Coordination Office to ask for support.
- The appropriate forum to report misconduct of any kind within the NeurotechEU Alliance is the Alliance Equity Officer. The Alliance Equity Officer will sustain a culture of equity and inclusion for all students (to be appointed by the Management and Coordination Office).

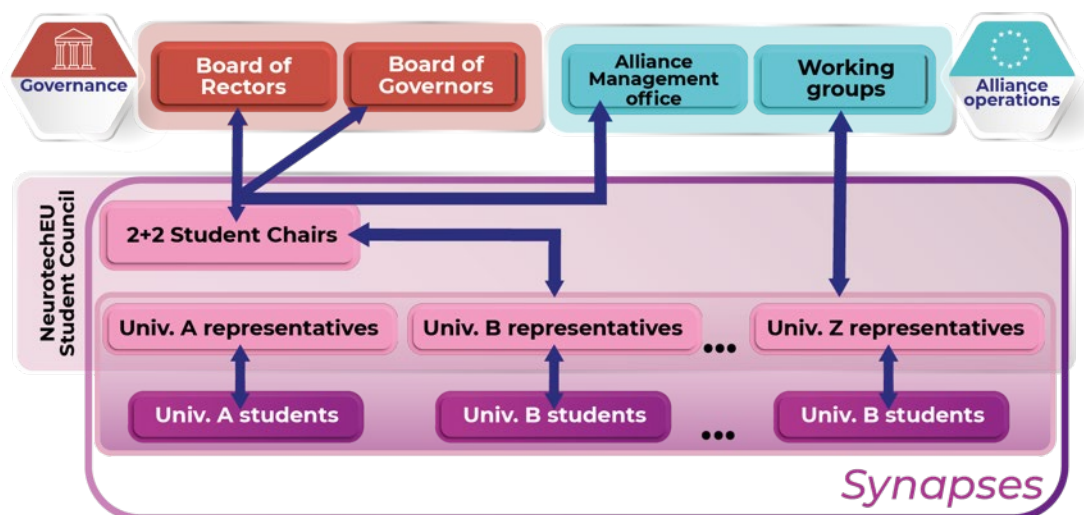


Figure 15: Neurotech Student Council organisation and relation with NeurotechEU governance.

3. IMPACT

3.1 Impact and ambition

Impact and ambition

NeurotechEU is building a European Alliance of like-minded entities focused on brain and technology that promotes European values and identity and revolutionises the quality and competitiveness of European higher education. The formation of this alliance has a significant impact on a wide range of target groups at the regional, national and European levels. NeurotechEU anticipates that it will have the greatest impact on stakeholders towards the end of the second phase of the project: NeurotechEU summer schools, training and (online) bootcamps will be flourishing, the NeurotechEU CAMPUS+ platform will be in full force, the NeurotechEU Graduate School will be running and the Lifelong Learning Centre will have already helped adult learners in their paths. In an effort to transform the alliance into a fully-developed European University, NeurotechEU has focused on the expansion of the alliance and how to legally formalise the collaboration. Our universities are not only prioritising development of neurotechnologies but we are also working on thematic focuses for each partner. Developing virtual laboratories will allow NeurotechEU to strengthen collaborations on these specific topics and questions. Altogether, NeurotechEU will offer an outstanding offer for higher education and research in neurotechnologies, serving as a model for other alliances. To facilitate the process, NeurotechEU will form a new style of “development agency”, or the NeurotechEU Ecosystem, where knowledge institutions, small and large companies, governments and societal stakeholders work in synergy. By acting as a stimulator and the backbone of the education, research, innovation and societal impact rectangle, NeurotechEU will foster regional growth and European leadership in neurotechnologies. The NeurotechEU Ecosystem aims at acting as a pacemaker for the development of new instruments and legal frameworks to accelerate the transformation of all universities across Europe.

NeurotechEU is a result of a bottom-up ambition that started with students, teachers, researchers and staff coming together to organise an inter-campus initiative to solve some of the most urgent, but unmet, needs of the (rapidly ageing) European societies. Therefore, the NeurotechEU vision, action plan, goals and deliverables all reflect the current and future needs of the society. Management of the partnering universities promptly responded to this organised call, shaping the NeurotechEU organisational structure, by bringing together all the stakeholders across faculties in each university, and by creating a mission to jointly coordinate their education, research and innovation activities around **dimensions of neurotechnology to address society's neurochallenges now and in the future**. The formation of the NeurotechEU alliance is a unique example for HEIs and European Universities, and provides a road-map for bottom-up initiatives to form inter-universities alliances. NeurotechEU has a focus on Brain and Technology but it is scalable. This thematic focus is critical to reach the alliance's objectives. It allowed us to create ambitious, yet obtainable, short-term goals which will ensure long-term sustainability of the alliance. With a thematic focus, we were able to develop transformative goals for our universities and bring all key stakeholders together. Associate organisations who partnered with NeurotechEU and the individuals across universities which teamed up to make NeurotechEU a reality support the notion that an actionable vision can facilitate synergy across organisations, sectors and countries.

The partners of NeurotechEU have demonstrated expertise in neurosciences and technologies, with each member bringing a particular strength to the consortium. This means that together, the NeurotechEU alliance is a giant in terms of its capacity for **research, innovation and education**, thus contributing to the visibility, attractivity and competitiveness of the alliance and its collaborators. In Phase II of alliance development, our education programmes and research will be recognized for their high quality and for the expertise of graduates. We expect that NeurotechEU will be synonymous with excellence in the neurosciences, technologies and related areas. Our combined forces in neurotechnological **research** will allow us to innovate new technologies that will benefit students, researchers and European society as a whole, since we view neurotechnology as a key to meeting many of the challenges that European society is currently facing.

Given the established contacts between researchers in the alliance, the cooperation will be efficient and protocols for sharing research are already well under development. Our alliance is currently finalising an **Open Science Strategy** under the Horizon2020 grant NeurotechRI, which will outline a long-term joint strategy aiming to organise the implementation and promotion of open practices in research and innovation. Our open ambitions are currently being translated into key actions that will be implemented across the alliance activities. These include research-focused sharing of data, which will be empowered by our partnership with leading research infrastructure providers (e.g. EBRAINS). In addition, materials, documents, audiovisual and social media activity, will be made available to other higher education institutions and European Universities in Europe via internal management, coordination, and dissemination processes (further outlined in the following section), as well as via external platforms such as [EU-Citizen.Science](#), an online platform for sharing knowledge, tools, training and resources. Open education and open science will help foster Citizen Science. Only when the public is involved in and understands the scientific process (including self-correction), the legacy of scientific knowledge and its impact in society will become irreplaceable. Bringing these three initiatives together will help to address society's challenges, stimulate innovation and counteract the loss of societal trust in science. To make data searchable, accessible, interoperable, and re-usable, the [FAIR Guiding Principles](#) for scientific data management and stewardship will be integrated in the Open Science Strategy and implemented throughout consortium activity during phase 2. The NeurotechEU partners already have a large number of ongoing projects that promote Open Science including but not limited to managing open access journals and data repositories, partnering with EU-funded projects that support open research (i.e. OpenAIRE), organising workshops, symposia, and awareness events promoting sharing of practices and results. A goal of the NeurotechEU alliance is to consolidate these independent Open Science initiatives to increase their visibility and contribute to the OpenAIRE, the European Open Science Infrastructure for scholarly and scientific communication, the European Open Science Cloud and European Cloud Initiative, instead of creating our own tools which will decentralize the access and fragment resources. To ensure that our contributions

are FAIR we will adopt a set of standard regulations, not only for data but also for other NeurotechEU dissemination, in order to make information (1) **findable** (content will receive a globally unique and persistent identifier (DOI) and content will have rich metadata which will be cross-linked to the content with DOI; metadata itself will be registered and searchable), (2) **accessible** (content and metadata will be retrievable using standard communication protocols; the protocols deployed will have to be open, free and universal; for content under intellectual property, the protocol will need to implement authenticated access.), (3) **interoperable** (knowledge representation in relation to the data and metadata will be encoded in a broadly applicable language that is formal, accessible and shared; terminologies will be defined and implemented FAIR principles to ensure free and open accessibility; the information will be cross-linked to ensure findability and interoperability.) and (4) **reusable** (accurate representation of the data and metadata will be accessible based on a standard pre-defined set of meta-data usage licences; established rules and regulations will meet community standards in each field.).

During phase 2, we will continue to develop our **educational** programmes, based on the institutional strengths of each member. Our complementarity will allow us to shape stackable and customisable educational and research programmes. These will take many forms, including short programmes (summer and winter schools), continuing education programmes for professionals, joint European degrees and a master joint doctoral course programme. These activities will increase the attractiveness and competitiveness of participating higher education institutions on the global scene, due to deeper and stronger translational cooperation on all levels (which is part of the European [Commission's Strategy and Policy: A stronger Europe in the world](#)). In the *short-term*, building on the phase 1 of the project, our alliance will enhance production and distribution of specialty courses, webinars and lecture series across the alliance. In the *medium and long-term*, such shared courses may benefit from incorporation of [micro-credentials](#) and the development of a **NeurotechEU European Degree Label**. This will contribute to streamlining the mobility process and the recognition of credits for students moving between member institutions. Finally, by 2040 we expect to develop a global neurotechnology campus that enables the development of joint degrees that will allow for a new model for neurotechnology education in Europe. Giving each student the possibility to establish an educational pathway *à la carte* to accompany their personal project is the objective of our alliance. It is ambitious to consider the extreme diversity of future NeurotechEU students (biology, medicine, business, computing, health, humanities, law, mathematics, physics, and others). The NeurotechEU educational offer is therefore aligned with the very definition of [Open Education](#), aiming to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all, by offering multiple ways of teaching and learning, building and sharing knowledge and also providing a variety of access routes to formal and open education, experiences and opportunities. From the NeurotechEU perspective open education has many facets. It will require democratizing access to the educational materials and overcoming financial or geographical barriers to the access of the materials. To achieve this, we will develop, implement, deploy, and promote the use of open educational resources which will be distributed digitally throughout the NeurotechEU Campus+. We will openly and freely share our pedagogical practices promoting learning in and outside of the classroom through our wide network of associates. We will work to create guidelines to ensure recognition of degrees/certificates acquired from open programmes, increasing the accessibility of free education for everyone. Open education will become a common strategy integrated across all levels in the NeurotechEU, transforming our universities.

A selection of **innovative pedagogical models** is also currently being developed by the alliance building on the NeurotechEU epistemic and pedagogical models (see also section 1.1 and 1.2). Crossover learning helps students link the educational content provided in the classroom with their real-world applications through knowledge utilisation and hands-on experimentation. When combined with active learning in context, outside of the classroom, for instance in laboratories, companies, cities, in places where learned information is applied, these methods help learners to internalise and leverage knowledge efficiently in context. To develop students' critical thinking ability, NeurotechEU will focus on improving their argumentation skills. Through debating contrasting ideas, students will improve their technical reasoning, refine their ideas and develop alternative theories and applications which will promote creativity and innovation. The emphasis is on analytical thinking and computational skills, in addition to their chosen major programmes, this will prepare NeurotechEU students for a variety of careers, as quantitative skills and a computational and programming background, with an ability to handle big-data are highly sought-after skills. Innovative cognitive methods to boost learning will be used throughout the NeurotechEU curriculum. Spaced learning, for example, will utilise cutting-edge neuroscientific knowledge on how to maximise information retention while facilitating the rapid and accurate retrieval of memories. Thanks to the multilingual learning space, students and teachers will be involved in multilingual pedagogies that will foster openness to linguistic variety and develop the strategic employment of multiple languages. NeurotechEU will thus provide the ideal platform where fundamental insight about how the brain learns, memorises, conceptualises, generalises and retrieves previously learned information can be directly translated for the benefit of generations of students at any stage of schooling. By enriching education through entrepreneurship, students, researchers, staff and other life-long learners will learn how to maximise the benefits of their innovations for themselves, societies and economies, enabling NeurotechEU to fully utilise the knowledge triangle (education, innovation, business) with impact.

To illustrate NeurotechEU's synergistic effect on neurotechnologies applied in the **European Society**, our development linked to brain imaging, computational neuroscience, new biomarkers applied to neurology and psychiatry are key activities in some of our universities, which build bridges between empirical and theoretical neurotechnologies. Using such institutional strengths and complementarities, we are shaping stackable, customised educational/research programmes. To achieve its objectives, the NeurotechEU alliance first brought together universities from different backgrounds with complementary knowledge. Our continued ambition is to share this through coordinated teaching and targeted collaborations between partners on research projects that meet the needs of the European citizen. Our alliance will have to extend to the industrial world and be a driving force in technological innovations. Finally, it is important to prepare European society for the technologies of tomorrow. NeurotechEU integrates, with the different components of its universities, a great diversity of European citizens by respecting their free will, their independence and by improving their daily life. NeurotechEU aims to play a critical role in promoting the [European way of life](#), and in achieving the goals of the European Education Area and the European Research Area, in synergy with other alliances. Europe's wealth comes from its multiculturalism and common values. We are committed to **human dignity, freedom, democracy, equality, respect for laws and human rights**. Our European diversity must be our strength, not our division. Awareness of the strengths of European diversity have a prominent focus within NeurotechEU, following the [European](#)

Commission's Policies on Justice and Fundamental Rights. NeurotechEU's ambition is to give future generations the ability to understand the Europe of tomorrow by fostering their integration and expanding the European perimeter and its international influence. Approaching European society through the lens of neurotechnology is the way to bring tomorrow's technologies to European citizens for the Europe of the future. If our multiculturalism and multilingualism are our wealth, they are also a challenge in our exchanges and discussions. By integrating sociological, societal, medical and technical aspects, NeurotechEU proposes to develop tools to improve the quality of life of European citizens and their interactions with the world in an ever greener Europe, a Europe where the virtual environment and augmented reality will contribute to its development. Understanding ourselves better using neurotechnology - an objective of NeurotechEU - will help us better understand disabilities and develop opportunities for people coping and managing them, determining **better living, better valuing and sharing our knowledge**. Our ambition is to become a European model of higher education and research, for innovation and technology transfer, for the European citizen.

Table 10: Envisioned benefits for NeurotechEU target groups on the short-term, medium-term and long-term.

Envisioned benefits for project target groups			
Target groups	Phase 2 short-term	Phase 3 medium-term	up to 2040 and beyond long-term
Students (exchange/short-term, degree-seeking or lifelong learners)	<ul style="list-style-type: none"> Increased opportunities for international exchange and collaboration. Access to specialized training programs and resources through the development of CAMPUS+ and the Graduate School. Exposure to a diverse range of perspectives and approaches to brain research through participation in the NeurotechEU ecosystem. Opportunities to gain hands-on experience through student and staff participation in all stages of the alliance's development. Higher likelihood of employment at home and abroad Better foreign language proficiency 	<ul style="list-style-type: none"> Access to specialized resources and stackable, personalized training programs to support professional development and career advancement. Improved access to and recognition of advanced education and training in the field of brain research. Greater opportunities for interdisciplinary collaboration and networking with leading researchers and institutions in the field. Opportunities to contribute to the development of new diagnostic tools, treatments, and therapies for brain disorders through participation in large-scale research projects. 	<ul style="list-style-type: none"> Development of a global neurotechnology campus World-class joint degrees in neurotechnology Continued access to the leading research and technology developments in the field of brain research through ongoing participation in the NeurotechEU ecosystem. Opportunities to contribute to shaping the future of brain research and healthcare through active participation in the governance and management of the alliance. Opportunities to collaborate and network with a global community of leading researchers and institutions in the field of brain research. Engagement with societal challenges
Academics & Researchers	<ul style="list-style-type: none"> More and better publications Better access to funding and mobility Access to cutting-edge technologies and equipment through collaboration with member institutions Opportunities for interdisciplinary research and knowledge exchange Increased visibility and impact through participation in large-scale, European research projects Support for the development of new diagnostic tools and therapies for brain disorders Opportunities for professional development and training through the alliance's graduate programs and training initiatives 	<ul style="list-style-type: none"> Access to advanced technology and resources for research and innovation Opportunities for collaboration and partnership with industry and companies to bring research discoveries to market Enhanced support for interdisciplinary research and knowledge exchange Greater impact and influence in shaping the direction of research and development in the field of neuroscience Opportunities for professional development and career advancement through involvement in the alliance's research, innovation, and impact programs. 	<ul style="list-style-type: none"> Leadership in advancing the field of neuroscience and brain research Development of new therapies and treatments for brain disorders that improve the lives of individuals and communities Creation of new economic opportunities through the commercialization of research discoveries Unprecedented opportunities for interdisciplinary collaboration and knowledge exchange Positive impact on society through advancements in healthcare, education, and public health.
EU Citizens	<ul style="list-style-type: none"> Social engagement with neurotechnology 	<ul style="list-style-type: none"> Eliminating transnational cooperation obstacles Increasing relevance of higher 	<ul style="list-style-type: none"> Progress in achieving SDGs

		education to the labour market	<ul style="list-style-type: none"> • European integration and cohesion • Economies of scale • Positive attitudes towards open borders and democracy
Higher Education Institutions	<ul style="list-style-type: none"> • Increased rates of student and staff mobility (of any kind) • Increased institutional visibility and reputation • Desirability for students and academics • Promoting linguistic diversity and multilingualism • Strong links between research, teaching, and innovation 	<ul style="list-style-type: none"> • New international partnerships • Mainstreaming good practices and capacity building • Improved offer, quality and innovativeness of teaching and learning • Strengthened research and teaching capacity • More and better scientific output • Attractiveness to foreign academics • Funding sustainability for neuroscience and neurotechnology 	<ul style="list-style-type: none"> • Strong legal entities to support the alliance • Harmonisation of national qualification frameworks • Homogenisation structure of bachelor programmes in different countries • Achieving sustainable education • Integration of higher education systems beyond the Bologna Process • Adaptive governance structure
Healthcare systems	<ul style="list-style-type: none"> • Building accurate and efficient diagnostic tools for brain disorders • Earlier interventions and better outcomes for patients. • Reduced healthcare costs by reducing the need for unnecessary tests and treatments. 	<ul style="list-style-type: none"> • Deeper understanding of the underlying causes of brain disorders. • Developing new technologies for brain imaging and monitoring, to improve diagnosis, treatment and monitoring of brain disorders. 	<ul style="list-style-type: none"> • Discovering new treatments and therapies for brain disorders that are more effective and have fewer side effects than current options. • Increased institutional resilience in times of crisis
Industry & companies	<ul style="list-style-type: none"> • Access to highly skilled workforce • Access to cutting-edge research and technology in the field of neurotechnology, allowing for the development of new products and services. • Opportunities for collaboration and partnership with leading research institutions and experts in the field. • Potential for increased efficiency and improved performance in industries related to neurotechnology such as healthcare, AI, and robotics. 	<ul style="list-style-type: none"> • Further advancements in neurotechnology leading to new and improved products and services. • Increased competitiveness in global markets. • Access to a highly trained and specialized workforce in the field of neurotechnology. • Opportunities for co-creation of new products and services with researchers, clinicians and patient representatives. • Potential cost savings through shared resources and infrastructure. 	<ul style="list-style-type: none"> • Continued advancements in neurotechnology leading to even more advanced and effective products and services, as well as more and better patents. • Increased market opportunities as the field of neurotechnology continues to grow. • Continued access to leading research institutions and experts in the field. • Opportunities for collaborations with universities and research centres in the field of neuroscience and neurotechnology on the global scale.

It is critical for young generations to have a real motivation for education. In fact, European objectives in training and education have to be highlighted. Based on the [Strategic Framework](#) targets of the **European Education Area**, by 2025 at least 60% of recent vocational graduates should benefit from exposure to work-based learning during their vocational education and training and at least 47% of adults aged 25-64 should have participated in learning during the last 12 months. By 2030; less than 15% of 15-year-olds should be low-achievers in reading, mathematics and science; less than 15% of eighth-graders should be low-achievers in computer and information literacy, at least 96% of children between 3 years old and the starting age for compulsory primary education should participate in early childhood education and care; less than 9% of pupils should leave education and training early and at least 45% of 25-34 year-old should have a higher education qualification. Building on the NeurotechEU ecosystem, which will provide opportunities for work-based learning, organising neurotechnology-related events, activities and experiences focused on youth and through the continued development of the **Lifelong Learning Center**, NeurotechEU aims to help Member States achieve these objectives, by targeting middle and high schools, as well as life-long learners. NeurotechEU strives to make lifelong learning an immediate reality in higher education: *“Active and healthy ageing is a societal challenge shared by all European countries, but it is also an opportunity. It is a chance for Europe to establish itself as a global leader that is capable of providing innovative solutions”* - [“European Innovation Partnership on Active and Healthy Ageing”](#).

NeurotechEU universities and associate partners will contribute to meet this challenge by developing courses dedicated to adult learners. Most older people who are still healthy fall outside the scope of social structures and their 'successful ageing' is related to their own ability to take care of themselves. Helping them to reinforce their skills is a challenge and a priority. The relevance of university courses on active ageing for senior learners is enhanced by the fact that the university context fits the level of studies reached by many young seniors nowadays. One of the outcomes is to increase the ratio of older learners in higher education, and to upskill the elderly population (life skills versus skills for life). NeurotechEU will therefore impact older adults by increasing knowledge of the aging-process and by helping them improve themselves and preserve an active role in society by allowing them to follow a programme in an intergenerational context.

NeurotechEU enhances access to research and innovation excellence within the consortium by facilitating profound **interconnections between its partnering universities**. An illustrative example is the newly formed collaboration between two medical universities within the alliance, which is based on institutional knowledge transfer and capacity building from a world leading HEI (KI) to an emerging, internationalisation-focused institution in Eastern Europe (UMF). This type of interaction reaches well beyond the explicit targets (i.e., mobility, exchange, access to educational and research programs) of the ERASMUS+ initiative, seeking to transfer best practices in higher education and elicit profound institutional changes in several areas of UMF activity (e.g., doctoral school management, equal opportunity policies). In this way, the alliance is therefore already achieving excellence-based integration of research-performing organisations from countries with lower R&I performance (i.e., Romania, as compared to Germany, France, or Sweden). UMF is ranked as the leading research university in Romania, despite its medical focus, yet in 2022 it was classified 801-1000 in the World University Rankings (Times Higher Education). Through fast-paced changes that have yielded encouraging short-term results and by association with pillars of excellence within the consortium, the initiative has also managed to galvanise national investments in research and education in Romania. Moreover, increased collaborative links between KI and UMF have led to a pilot project with the Romanian Ministry of Health, focused on transferring knowledge from the initiators of the Swedish Neuro Registries (Svenska Neuroregister) to the ongoing effort to build Romania's first integrated, population-based registries (via the RegInterMed EU-funded project). In the second phase of the project, our alliance seeks to continue this initiative and initiate similar ones in other partnering countries. Not only will this further intensify transnational cooperation between the different institutions in the alliance, it also encourages regional development which will positively impact the local communities and ecosystems as we have outlined in section 2.2.1: *Linking local networks with the new NeurotechEU*.

NeurotechEU aims at contributing to a more **united, innovative, digital, connected and green Europe**, open to the wider world, by increasing the resilience, excellence, geographical and social inclusiveness of European higher education institutions. To achieve this ambition, NeurotechEU develops not only virtual research laboratories and webinars but also training courses and facilitates the mobility of trainees and trainers/students and researchers. Immersive Experience Laboratories, spaces equipped with virtual reality, augmented reality and mixed reality technologies are already available in some of our universities. These technologies will be used for the transformation of education, for the consideration of use value in technological research projects and for cooperation and exchange with the socio-economic world. Immersive neurotechnologies represent an opportunity for the alliance to strengthen its excellent training courses through pedagogical innovation to increase the professional integration of its students, but also to contribute to the positioning of NeurotechEU at the best international level in terms of research.

By having anticipated neurochallenges of Europe and beyond in phase 1 of our development, NeurotechEU can now follow-up and ensure that citizens have a better chance to access education, healthcare, knowledge, leisure and overall well-being. The COVID pandemic is an example of Europe's ability to withstand health crises. COVID has also enabled the development of the [future of work](#), which has already been identified as a field of action for the **European Research Area**. The encompassing virtual environment, powered by the development of virtual and augmented reality, will help initiatives such as NeurotechEU shape the future of academia. These envisioned changes are not restricted to aspects of teleworking, training, education, and research, but also in our private lives as communication and entertainment have become deeply integrated dimensions of virtual reality. Our youngest generations are particularly exposed to this phenomenon. NeurotechEU aims to foster this development, while remaining mindful of its potential health implications for European citizens. Virtual environments and augmented reality might change the behaviour of young people and isolate older people. The development of neurotechnologies must be **accompanied by the means to monitor and protect our citizens** (e.g. surveillance on how technology influences the brain's functional connectivity in specific target groups). Human contact is a key issue for older people. NeurotechEU partners are already working on 'passive' brain-computer interfaces that monitor the user's mental activity rather than providing a control channel. Such approaches allow for the detection of markers of cybersickness (i.e., dizziness similar to motion sickness when using virtual reality (VR) devices; see EU GENESIS project, CHISTERA program). NeurotechEU will therefore aim to support the development of neurotechnology through **societal support and monitoring**, through **social innovation hubs**.

Our network is deeply committed to the European Union and its [values](#). To uphold and foster these, we will implement the following main strategies: Firstly, in the short and medium-term, NeurotechEU will develop and sustain programmes to **promote mobility** between partners at all career levels. To this end, all partners have dedicated officers to manage incoming and outgoing students and scientists. The support includes **language course offerings** prior to mobility, assistance with housing and childcare issues as well as dual career support. Secondly, NeurotechEU partners are committed to offering **education programmes in English and in the future in additional languages** to increase the accessibility of websites and programs for all EU countries. These include the main websites of NeurotechEU. Thirdly, **academic and intellectual freedom** as well as freedom of speech are core values for the NeurotechEU alliance. To ensure that these values are upheld by the network partners, we will identify a compliance officer at each partner institution. **Compliance officers** can be contacted by students, employees and faculty of their own institution but also from partner institutions. Compliance officers will first try to resolve issues locally but can, if necessary, bring such cases and concerns to the Board of Governors for further discussion and handling. Fourthly, all alliance members will actively live up to their commitment to diversity and equal opportunity by fostering a work and education culture of **multilingualism and multiple cultures**. Finally, NeurotechEU will use methods from neuroscience and technology to open structures, organisations, and programmes to all members of society. NeurotechEU will

help imprint European Values through study programmes in the social sciences and humanities (e.g. the interdisciplinary joint Erasmus Mundus master's programme currently operated by ULille together with six universities across Europe which addresses international migration issues, [MITRA – Transnational migrations](#)). We see many different facets of mobility from moving and living physically in a partner country to experiencing European culture and education through virtual reality with the support of travel and experience buddies. People with fewer possibilities for mobility due to disability or care responsibilities will travel virtually with a mobile buddy who takes them along for the experience. Making mobility possible for all learners throughout Europe, experiencing [European culture](#) and education, will contribute to the [European way of life](#), one of the Commission's 2019-2024 priorities.

Europe has set up a [Recovery and Resilience Facility](#), which is a temporary instrument that mitigates the economic and social impact of the COVID-19 pandemic and make European economies and societies more sustainable, resilient, and better prepared for the challenges and opportunities of the green and digital transitions. NeurotechEU will train new generations of students in the world of neurotechnologies (virtual environments, augmented reality, neurofeedback, medical devices and others) which are key factors in **digital transition**. In addition, NeurotechEU develops neuromorphic computing to speed up data exchange by using electronic circuits to mimic neural brain biological networks (dimensions 3 and 4). Artificial intelligence and bio-inspired algorithms have already shown potential interest for **sustainable energy development**. For example, with neuroinformatics and neuromorphic computing, Neurotech^{EU} aspires to develop tools to exchange and store data at low energy cost, thereby contributing to the [European Green Deal initiative](#).

NeurotechEU is committed to using and scrutinising all modern methods of neuroscience and technology to improve **equal opportunities** for all students and scientists. While we are convinced of the advantages of the use of modern technology in education, teaching and life, potential disadvantages and negative consequences will be carefully analysed and if possible counteracted. For instance, is the fact that an entire generation grows up with digital servants with female voices such as Siri and Alexa without negative consequences for gender image in society? Do all nursing robots have to be female? Is gender neutrality possible in a digital world? NeurotechEU partners will regularly improve their recruitment policies, mentoring and promoting strategies by collecting and analysing data on outcomes of interviews, application processes and alike. In doing so, the consortium will ensure that no one shall be discriminated against due to their gender, race, religion, age, disability or sexual orientation, in concordance with the European Commission's Policies on Justice and fundamental rights to [combat discrimination](#). Regular scientific events followed by discussions and workshops on the topics of implicit bias and its impact on decision-makers will expose all alliance members including NeurotechEU staff and students to the latest scientific data and measurements against bias and discrimination. For instance, UBO will host a workshop for students and faculty with seminars of two renowned social psychologists on this topic in February 2023. Moreover, all alliance members will implement measures to prevent exclusion or loss of minorities and women from their student body and workforce at all levels. To these ends, NeurotechEU has signed the declaration of the [ALBA network](#) for diversity and inclusion in brain sciences, developed a [Policy & Action Plan on Equity, Diversity, and Inclusion](#), and implemented a Social Inclusion Fund within the alliance. The latter initiative is specifically designed to support the participation of disadvantaged and marginalised individuals in the program's activities and initiatives. The goal of the fund is to promote social inclusion and diversity within the NeurotechEU community, and to ensure that all members of the program have equal opportunities to benefit from the educational, research, and networking opportunities offered by the program. The fund is being used to provide financial support for disadvantaged students to participate in programme activities, such as conferences, workshops, and internships (i.e., funding for travel, accommodation, and other costs associated with participation in program activities). We hope that through the support provided by the fund, all members of the program will have the opportunity to fully engage with and benefit from the opportunities offered by NeurotechEU. In a subsequent iteration, we plan to expand the Social Inclusion Fund to also support the development and implementation of inclusive and accessible events and activities, as well as more comprehensive training and development opportunities for disadvantaged individuals within the alliance. NeurotechEU embraces the LGBTQIA+ communities at all levels of the alliance. As scientists and educators, we are convinced that diversity is a strength that is best brought to research and teaching through the diversity of the people involved. We will actively seek to attract and retain a diverse group of staff, students and faculty by promoting awareness of discrimination through language, infra- and building structure, and educational subjects and topics by offering regular group training and personal counselling. Through language courses that not only teach vocabulary but also social habits and interpretations, we will aid in promoting understanding and exchange across groups of different beliefs, gender, and lifestyle. We will again do so as a network of partners with complementary strengths and experience such that students and staff of any partner can participate in workshops, classes, and counselling at any other partner of the alliance. On our webpage, we will regularly feature the diversity of our network through short articles and interviews with members of the student body, staff, and faculties. We will foster an environment of inclusion by bringing members of different communities within NeurotechEU together across institutions. The large alliance will facilitate defining role models for all students, junior staff and faculty even if such people do not exist at their own institution. To this end, mobility funds will be offered to allow members of one partner to visit other partner institutions for exchange and mentoring. As a diverse network, NeurotechEU members believe that minorities are best served by training and mentoring not only the minority but also by equally educating and mentoring the majority. For instance, gender equality workshops will be offered for men and women. Implicit bias awareness courses will be made mandatory for all members of the alliance with a special emphasis on decision-makers at different levels. Such courses will be offered digitally at all NeurotechEU alliance members and will be regularly updated and improved through inclusion of new scientific findings and new digital technologies.

Technologies and especially neurotechnologies will benefit from a **strong technology transfer**. How to trigger a much deeper level of cooperation between Universities from different countries? We would like to have a sustainable alliance to impact learning tools, student and learner activities, education and research. How to reinforce technology transfer and intellectual property? **Employability perspectives**, including entrepreneurial, transversal, intercultural, and digital skills are a solution. Our knowledge and research collaborations will facilitate the establishment and scaling up of **start-ups and SMEs** in Europe. This is in line with the European Commission's priority to ensure [social fairness and prosperity](#). Phase 1 of NeurotechEU has allowed us to establish bases of a strong consortium agreement outlining educational and research collaborative areas in computational neuroscience, neuromorphic systems, brain-computer interface, virtual environment, robotics, brain imaging and modulation of brain activity. Partners have defined their complementary knowledge within the alliance and shared patents

and interactions with industries will be the next steps. We have defined milestones and deliverables to stay on course. NeurotechEU partners (e.g., RU, KI, ULille) have already set up unique education programmes in the field of brain imaging. It is possible for students from engineering schools to develop their skills in university-hospitals through a PhD training. Such training in brain imaging can be conducted in collaboration with big industry.

Digital developments that combine virtual and augmented reality allow for the reconstitution and enhancement of tangible and intangible **cultural content** (e.g. images, textures, architecture, visual artefacts), partly in connection with the history of Europe. An example of how NeurotechEU may offer education opportunities is the ENHANCE project at the University of Lille. It aims to federate scientific forces to structure research on **cultural heritage** and **digital visualisation devices**. This multidisciplinary project (history, art history, psychology, computer science, mathematics, information science, arts) offers an **original approach** to the relationship between heritage, history and society by placing the **individual in interaction with digital developments at the heart of scientific reflections and achievements**. Similarly, the Museum of Brain and Technology is a dedicated task showing our public engagement. These approaches build on neurotechnologies that require and can contribute to new forms of training and education of our Society.

According to the [UN Sustainable Development Goals](#), education is a life-long endeavour and takes place through the formal and informal curricula, both inside and outside the classroom. NeurotechEU will deliver context-embedded educational content to enhance its relevance to its students. Disciplinary learning will be managed, both face-to-face and digitally, through an open source, modular and scalable learning activity management system. In addition to this, the application of the learned information will take place in classrooms, laboratories and online - including through virtual reality - as well as through intersectoral training - including through work-based placements. This blended training approach will provide all learners with meaningful and engaging opportunities for learning.

NeurotechEU is also working towards mitigating the current and future burden of non-communicable diseases, including behavioural, developmental, neurological and psychiatric disorders, which SDGs also define as a priority for global development. Our alliance will help tackle not only these illnesses, but also other areas of medicine and public health. By pooling resources and expertise from its member institutions, NeurotechEU can conduct large-scale, interdisciplinary research which can lead to the development of new diagnostic tools, treatments, and therapies for brain disorders and beyond using innovative approaches (e.g., brain-computer interfaces, artificial intelligence, gene therapy, advanced neuroimaging, neuromodulation and others).

In Europe, **migration** is still a major challenge. Surprisingly, in 2020, asylum demand was back to a level prior to 2014. NeurotechEU aims to develop AI tools, which could help anticipate migration flows, contributing to the development of a solidarity mechanism and asylum procedures that cater to both normal and exceptional migratory circumstances. Anticipatory capacity may also be very helpful in extreme epidemiological circumstances, such as the next pandemic. The NeurotechEU alliance also brings together partners on both sides of brain drain which occurs geographically and across institutions and sectors. Geographically, NeurotechEU needs to be mindful of the ongoing brain drain from Eastern/Southern to Western/Northern Europe. Measures will be taken to mitigate the brain drain that NeurotechEU may cause and to lessen its impact. Brain drain between sectors may occur in two ways: Movement from academia into private businesses and the public sector and *vice versa*. A net movement of graduates and researchers to private business is one of the goals of educational institutions, providing the labour market with skilled professionals. It becomes problematic when universities are drained of the top tier students and researchers as this decreases the ability of universities to be the main drivers of scientific progress and innovation (e.g. curiosity-driven research). NeurotechEU will therefore outline routes into academia for its graduates, as well as points of re-entry from industry (brain circulation). This advancement of knowledge will enable talent circulation and thus foster education, resulting in a more sustainable European future with a lower chance of a [decreased potential for productivity](#). Our strategy to counteract brain drain will include the following measures and considerations: (1) sustainable, long-term perspectives and appropriate working conditions to retain and attract highly skilled professionals, (2) funding schemes that allow **students, scientists, and educators** to study/work abroad but also have measures for reintegration in their home countries, and (3) career development grants to retain researchers beyond the initial funding and strengthen academia in a geographically balanced way. The medical and technical professions, as well as the innovation capacity are important when discussing European skills shortages. NeurotechEU aims at addressing the double-sided nature of skills mobility in Europe. Increased mobility of students, researchers and professionals must not result in a one-sided brain drain. Therefore, NeurotechEU will focus on mobility actions that will give strong incentives to brain circulation. In this endeavour it is of particular importance that employers and other stakeholders take part. The NeurotechEU alliance aspires to become an attractive European University that will attract skilled researchers, students and innovation partners from all around the world. The mutuality of the alliance will be key to the long-term sustainability of the NeurotechEU. Therefore, phase 2 of the project, which is dedicated to deploying and scaling the initiative, will thus be **mindful of brain drain** by outlining routes into academia for its graduates and points of re-entry from industry (brain circulation).

Our universities are economically integrated in their regions and serve local economies in various ways, including but not limited to **educating the workforce**, boosting **innovation**, **creating jobs** and contributing to the supply chain through **spin-offs and spinouts**, kindling the knowledge economy and facilitating knowledge transfer to companies, as providers of services (education, healthcare). Therefore, it is not surprising that we are already **major economic power houses** for the development of our cities and regions. NeurotechEU alliance members contribute to **regional development** and positively impacts the **local communities** and **ecosystems** through education, training, research and knowledge exchange, as showcased by section 2.2.1. Improvements in societal well-being are achieved through **communication to the lay public** (Brain awareness week and other public events). In addition, a specific target is the young generation of European citizens. The NeurotechEU community regularly visits **schools (from primary to high schools)** to explain its ambition and generate interest, because we believe that neurotechnologies are technologies for the future. This is illustrated by the governmental education authority in Hauts-de-France region which is committed to facilitating the access of NeurotechEU Alliance members to potential research fields in schools (primary and secondary).

NeurotechEU will further foster the contribution of its partners to regional and ultimately European development. With a challenge based **educational approach** and a focus on providing solutions to some of the most fundamental problems that our society is facing, NeurotechEU graduates will be in a prime position to impact regional development. Because brain-inspired smart technologies* are key enabling technologies for **modern, knowledge-based economies**, NeurotechEU education, research and innovation missions will promote **sustainable innovation** across the four corners of Europe. Thanks to the rapid integration of information and communication technologies into all aspects of daily life and economies, including (digital) health care, medical technologies, personalised medicine, our graduates, who are trained in a **multidisciplinary and intersectoral setting** with strong quantitative skill sets, will provide the necessary talent to **promote regional development**.

NeurotechEU aims to be a **model of good practice** for current and inspiring (European) universities and HEIs also from an organisational perspective. By sharing managerial responsibilities among the partnering universities based on the strengths of each organisation, student and staff participation in all stages of the Alliance development, and the membership of democratically elected students and staff members in all levels of the management, including in the Board of Governors, NeurotechEU is committed to promoting transparency and inclusivity. Furthermore, the Alliance's design and implementation of training programmes based on the students' needs, efficient use of financial resources to ensure long-term sustainability, and creation of a continuum across education, research, innovation and impact, demonstrate our commitment to maximising the impact of our work. Additionally, the implementation of the European Student Card to provide local services, in addition to transfer of learning periods and automatic recognition of achievements, the development of CAMPUS+, Graduate School and Life-Long Learning Centre to address the needs of a broad segment of the society from 17-50+, and the implementation of Open Education and Open Science strategies along the backbone of NeurotechEU to facilitate resource-sharing, are all examples of the Alliance's efforts to promote collaboration and innovation. In addition, NeurotechEU is also committed to sharing the outputs and good practices generated by the alliance beyond our member institutions. By mainstreaming our successes and actively promoting cooperation with other higher education institutions in Europe and beyond, NeurotechEU aims to act as a role model for other organisations to follow. Through the NeurotechEU ecosystem, we hope to foster intersectoral cooperation that supports the growth and development of European universities, while also promoting knowledge-sharing and collaboration on a global scale.

The NeurotechEU Alliance is thus well-positioned to take advantage of the opportunities presented by the European Universities Initiative (EUI) Phase II. As a leader in the field of brain and technology, our alliance is uniquely suited to drive the development of a coherent regulatory framework for higher education, research, and innovation. Our partners are committed to implementing new educational approaches and driving innovation in the field of neurotechnology. By leveraging the strengths of our diverse membership, we will be able to create a truly European university that is responsive to the changing needs of students and the labour market. Furthermore, as experts have suggested, the EUI presents opportunities for alliances to expand their reach beyond the EEA and attract participation from non-EU countries. NeurotechEU is committed to strengthening higher education institutions in border countries of Europe and increasing the global attractiveness of European HEIs.

We are poised to make a significant impact through our participation in the EUI Phase II. Our commitment to innovation, new educational approaches and expanding our reach beyond the EEA, will position us as a leader in the field of brain and technology and help to shape a more favorable conditions for European Society.

3.2 Communication, dissemination and visibility

Communication, dissemination and visibility of funding

Background

During the almost three years phase 1 of NeurotechEU, we have built a strong Alliance between the founding partners. One reason for the success of our collaboration is not only our shared belief in the vision of integrating European society and promoting universal values and rights, but also the effective internal and external communication we have established during this period. Phase 2 should therefore continue to build on the successful communication and dissemination activities of phase 1 and to consider the extended scope of the NeurotechEU alliance's long-term strategy. We have started the adoption process of guidelines during phase 1, initially developed by the EC-funded thematic network VERITE. These guidelines include the ten essential elements (Goals, Objectives, Target Group, Content, Source(s), Communication medium, Definition of success, (Inclusive) accessibility, (Resource) availability and Barriers) of an effective dissemination plan and provides a foundation for the planning and implementing of the phase 2 communication processes.

Aims

Our communication activities were planned during phase 1 for a period running until 2040 (see Part B3), so the communication activities of phase 2 should comply with these plans and the three pillars already defined in phase 1:

- Communicating the results and good practices achieved by NeurotechEU with the stakeholders and target groups of NeurotechEU to serve as a model organisation in the new European Education Area and provide robust visibility of EU funding.
- Informing target groups about (1) NeurotechEU activities, (2) current and upcoming opportunities to study, learn, educate, innovate and create at NeurotechEU (3) outcomes of the education, research, and innovation actions, and (4) the societal and economic impact of the alliance actions and deliverables to raise awareness of the opportunities at NeurotechEU, to educate the public, to inspire interest in life-long learning and to promote European identity.
- Taking full advantage of the NeurotechEU ecosystem that we are building by bringing together the eight partners and numerous associate partners to promote knowledge utilisation, commercial exploitation, and networking via cross-sectoral and integrative dissemination activities including but not limited to (1) on-site training, (2) network building, (3) Neuroinnovation summits, (4) sectoral and instructional publications.

Based on these three pillars and the VERITE guidelines, we aim to implement a robust, modular, scalable, and cost-effective communication strategy that significantly increases the visibility of NeurotechEU. Target groups are not only informed about the project goals and results but can become inspired by them and by the innovative, new solutions used to make NeurotechEU special in communication. The communication strategy and all the following communication processes should comply with the Quality Plan (WP1) of NeurotechEU, 'so that the satisfaction of the needs and expectations of its stakeholders as well as the efficient use of resources is guaranteed' (NeurotechEU Compendium: 1. Quality Plan).

Communication strategy

The comprehensive communication strategy of phase 2 will be built upon the three pillars outlined above and will set out the precise aims, objectives, and mechanisms for communicating on the NeurotechEU project. The strategy shall provide the strategic communication aims of the NeurotechEU boards (Board of Rectors, Board of Governors), the NeurotechEU Student Council, and lead university partners.



The strategy will define (i) exact and detailed target groups, key stakeholders and interest groups who require regular updates and accurate information about the NeurotechEU activity, (ii) the communication channels providing this information, and (iii) the monitoring and evaluation procedures to support continuous improvement. It will contain a communication guideline (NeurotechEU Publicity Requirements) that should be used during the planning and implementation of all the communication and dissemination activities.

The strategy will ensure NeurotechEU communications activity is robust and effective, and that information is communicated clearly, accurately and consistently, following the order of strategic communication steps (Figure 16). The communication strategy will provide a SMART (specific, measurable, achievable, relevant, and timely) action plan for the dissemination. Because the medium of communication and the definition of success and barriers to the target group will be based on the challenges of each dissemination target, we will be able to adapt our dissemination strategy to any challenges in a context-specific manner.

The strategy will list all the relevant key performance indicators that measure the impact and success of each communication tool, the channel used, and every Euro spent – inspiring the transparency and cost-effectiveness of the entire communication process.

Figure 16: Strategic communication steps taken in NeurotechEU, including (1) Goals & objectives, (2) Audience, (3) Message, (4) Media & means and (5) KPIs and re-evaluation.

with wider, (non-) academic audiences in order to raise awareness of NeurotechEU and European Universities and invite audience engagement and feedback. This will raise the profile of NeurotechEU, create new opportunities to extend the project and develop partnerships for the future.

In the case of a physical or digital event, dissemination will begin at the time of the (mobility) action: this will take place by communicating via the website, and targeted marketing within the consortium to our partner universities. After the end of the action, long-range and long-lasting dissemination of the results will be conducted, in which we will highlight the positive implications that the action had on the individuals involved (students, teachers, partner universities).

Stakeholders

NeurotechEU phase 2 shall include partners from all corners of Europe, bringing together many students and staff members from the eight universities representing various academic cultures, national legislations, and mindsets. One of the important developments during phase 2 will be the integration of associated partners and linking local networks within the alliance's activities. NEURICOO, the central organisational structure for the university-industry collaboration, will aim to institutionalise integration and coordination among NeurotechEU partnering universities and associated members by developing and implementing challenge and technology-based roadmaps for a cost-effective mechanism for translation of innovations into the industry and market.

The main stakeholders of NeurotechEU are:

- NeurotechEU Scientific Advisory Board
- NeurotechEU Student Council
- NeurotechEU Industrial Partners
- NeurotechEU Non-industrial Associate Partners
- Political Representatives
- European Commission
- Collaborating European Universities

Target groups

The numerous instructional languages used by these institutions and the multicultural background of our students with a wide range of ages and study levels (bachelor, master, doctorate, and life-long learners) provide a diverse and multifaceted target population. The network of HEIs, the academics, and researchers of the participating higher education institutions form the next two important target groups.

As our education, research, and innovation activities are planned for a period until 2040, the young generations of European citizens, from primary to high school students, are significant target groups.

Additional target groups as detailed in Section 3.1 are: industries, hospitals, healthcare systems, European and national expert bodies and government agencies for higher education, politicians and local communities.

To effectively reach and engage these target groups, it will be essential to use a variety of communication channels and formats that are appropriate for each group. We will use social media and digital platforms as well as events and workshops to engage students, academics and other staff. We will consider each target group's specific needs and cultural preferences when selecting communication channels and developing messaging strategies. Overall, by carefully planning and implementing communication and dissemination activities that are tailored to the needs and preferences of each target group, we will be able to promote NeurotechEU activities, their results and maximise their impact.

Tools

Real-time communication and cooperation platforms which have been actively used during phase 1 will be extended with a professional online project management platform that will ensure continuous and secure information exchange, precise task management, coordination and clarity of implementation responsibilities across the team. The communication team will have regular monthly digital meetings. Once a year the team will gather in one of the campuses on a rotating basis for an annual coordination meeting. In addition to the communication team, three members (staff, student or researcher) from each partnering



Figure 17: NeurotechEU target groups.

university will join these meetings to ensure the successful implementation of NeurotechEU dissemination activities in all campuses.

Activities and communication channels

The NeurotechEU phase 2 communication mix will be built upon the already working communication system from phase 1, using the existing channels in a modified way but based on our previous experiences, behaviour of target groups and their rate of engagement. In this way we will establish robust, modular, and scalable communication channels by building online and offline frameworks to deliver the key messages to the target groups and stakeholders defined in the strategy. We aim that all the communication channels will include information about the EU funding that has supported the project in all communication and dissemination materials. This will promote the visibility of EU funding and highlight the project's impact. Establishing the infrastructure for communication, developing effective delivery channels for materials, and promoting activities during dissemination events will all be coordinated alliance-wide to ensure that all target audiences in Europe are well informed. In accordance with the Guidelines of the European Charter for Researchers, our communication efforts will target multiple audiences using a different mix of channels (while continuously searching for new, innovative methods, tools and channels) of communication for the diverse target groups. They will include, but will not be limited to:

NeurotechEU website: The project website (<https://theneurotech.eu>) is the primary source of information for NeurotechEU. It offers information on the activities to all interested parties, students, the public, other stakeholders, and will chart our progress. We will announce alliance activities, networking events, training, research and innovation opportunities within NeurotechEU, and will communicate the results of the activities. All information will be presented in English and in local languages wherever possible. The site is already online and maintained by the Management and Coordination Office. Research products, e.g. data, and software tools, will be provided as open source whenever possible. The portal is the main distribution channel of all the NeurotechEU static (written and graphical) content and is the first landing page of all our social media channels and newsletters.

Events

To increase NeurotechEU's visibility, inspire a wider community benefit from our experience and results, and share research results with external target groups (research communities, European University Alliances, students, policymakers), NeurotechEU will participate in and host a variety of events. These will bring people together and build a community by sharing our experiences and will enable our target audiences to learn and to be inspired. Besides this goal of reaching out to the event participants, these events provide useful content for all of our communication channels both prior to and after the events. All events should comply with the NeurotechEU Publicity Requirements and the NeurotechEU Quality Plan (WP1).

- **NeurotechEU hackathons** (e.g. at KI in 2023): NeurotechEU hackathons will serve as an event to bring people together and to build a stronger alliance community, including international staff and students from all NeurotechEU universities. The hackathons will develop students' and academic staff's networking skills. Challenges will be introduced to stimulate responses from the participants. These challenges may include future strategies to improve healthcare and create better conditions for individuals affected by brain diseases. The hackathons will inspire innovation, teamwork, and will help the students' networking skills.
- Participation in **public events** (e.g., annual national Brain Bee competitions, Brain Awareness Week, Researcher's Night, and open days of universities): annual participation in public events will increase the visibility of NeurotechEU for a wider public, regional or even nation-wide and will enhance networking opportunities for the people involved in the alliance.
- **Symposia:** NeurotechEU will join symposia or organise symposia to meet with experts in the field of neurotechnology, discuss relevant and hot topics, and examine trends within neurotechnology. Symposia serves several purposes for NeurotechEU, such as advancing the field, disseminating new findings, for training and education, networking and raising awareness on the impact of neurotechnology on society.
- **Science and art competition:** We will create a yearly science and arts competition for Ph.D. students linked to their research. This will capture the identity of NeurotechEU students, showcase their diversity through visual art, and enable them to present their research in a visual and creative manner. The science and art competition can enhance inspiration, inclusivity and visibility.
- **Neuroinnovations summit:** NeurotechEU organises a yearly event to generate a strong collaboration between researchers, teachers, students, staff, and partners within the consortium to discuss items related to education, research and innovation.
- Events established by the **Student Council** during phase 1, such as the Women in Science and Cajal event, will be repeated on a yearly basis. Students are involved in the dissemination activities through the Student Council social media and by sharing their experiences via social media/blogs.
- **Concluding colloquium:** Could be organised to review and discuss the progress and outcomes of NeurotechEU with researchers and stakeholders to mark the end of the current funding period.
- **FOREU Conference:** Practices, experiences, lessons learned, and results with other University Alliances will be shared in a Forum of European Universities (FOREU) conference. The aim is to discuss and share intelligence resulting from best practices, progress in long-term strategies and sharing of legal/financial barriers.
- **Science festivals and science slams:** To move NeurotechEU and its research beyond the walls of universities, we will engage in more already existing participatory live events, such as science festivals like *Pint of Science*. These types of events will address wider audiences and create more visibility and engagement for NeurotechEU. Our students will be invited to join science slams, which are short talks in which (young) researchers explain a scientific topic to a non-expert audience. Through these science slams, more awareness will be created in the field of neurotechnology. Additionally, these kinds of activities for students will boost the students' presentation and networking skills.

- **NeurotechEU Graduate School annual meeting:** We will conduct a yearly meeting of the NeurotechEU Graduate School including scientific talks on different levels (PI's and students), poster sessions and a match-making speed dating for research cooperation and networking.

Exhibitions

- **Experience Induction Machine (XIM):** an immersive room equipped with several sensors and effectors that have been constructed to conduct experiments in mixed reality. XIM is a unique data visualisation infrastructure that affords an interactive encounter with complex multi-modal brain data delivered through BrainX3. The installation includes an interactive composition, Brainscapes developed by the renowned Brazilian composer and mathematician Jonas Manzoli - 'From data to imagination'. The XIM can be exhibited during public events, such as university open days.
- **NeurotechEU student exhibitions:** NeurotechEU students are motivated to join student exhibitions that display the created work during their studies, and to make their learning relevant by sharing their accomplishments with a larger audience. This will also contribute to the students' communication and presentation skills and increase visibility of NeurotechEU.
- **The Museum of Brain and Technology** will act as the link between neurotechnological innovations and society, which will be made accessible to all groups within society. The exhibition(s) will be created by ad hoc created Working Groups, whereas the communication and dissemination will be executed by the Communications Working Group.

NEURICOO is the central organisational structure for the university-industry collaboration of NeurotechEU, which is currently institutionalising integration and coordination among NeurotechEU partnering universities and associated members aiming at developing and implementing challenge and technology-based roadmaps for a cost-effective mechanism for translation of innovations into the industry and market. NEURICOO will be hosting match-making events throughout phase 2 of the alliance.

NeurotechEU press releases:

Press releases are one way to communicate about what is unique and interesting about the project and can be employed to reflect a key milestone or event in NeurotechEU. They can reach a wider audience via local, regional or national press and can be used on NeurotechEU's website or as handouts at physical events. Press releases can also be used to promote Erasmus+ and raise awareness for these kinds of international projects.

Social media:

The NeurotechEU *Twitter* (@theneurotechEU), *Facebook* (The Neurotech EU), *Instagram* (@theneurotechEU), *LinkedIn* (@neurotechEU), *ResearchGate* accounts, *YouTube* channel (@NeurotechEU), and a newly created TikTok account (@theneurotechEU) for the effective outreach to the younger generation are used to distribute accurate, updated information about the programs, as well as other relevant information of interest to stakeholders. In particular, the accounts drive viewers to the website where we will post relevant information. Additionally, *Yammer* will be used to reach out to larger communities through communication with other European Universities. The social media accounts are cross-linked with institutional accounts to increase their visibility. The social media channels will be regularly analysed in order to assess development of online engagement activities.

Newsletters

All newsletters will only be sent to registered subscribers. To increase the range of NeurotechEU subscribers, each partner university is encouraged to add a newsletter registration call to action, e.g. through their own email campaigns or via channels within the partner university. The Newsletters will be made available in a section on the NeurotechEU website and will be circulated via relevant social media, such as *LinkedIn* or *Yammer*. **NeurotechEU newsletter:** A monthly edition is sent out within and outside the consortium, to associated partners and interested individuals that register via the NeurotechEU website. The newsletter will contain reports about completed activities, and an insight into the staff working for NeurotechEU.

NeurotechEU management bulletin: This is a biweekly internal newsletter that distributes information discussed in the WP1 management meetings within the consortium regarding internal information, planned activities, and new procedures that will be used. This has already been applied in phase 1 within members of WP1 only, and this will continue in phase 2 throughout the consortium.

NeurotechEU magazine: A biannual online magazine will be developed to provide more in-depth information about NeurotechEU's activities of the year and background stories about the activities, universities, and research that has been published in the framework of NeurotechEU. The expertise of UMH, which itself publishes the scientific magazine '*Sapiens*', will aid in this.

Communication platforms

European Cluster Collaboration Platform (ECCP): The ECCP is an open community that focuses on communicating the EU Cluster Initiatives, the search for partners at the European level, dissemination of achievements, success, and best practices within NeurotechEU, and focuses on networking among clusters and companies. NeurotechEU will make use of the ECCP tool to systemically communicate to all users of this European platform.

Neurostars: Neurostars is an open-source question-and-answer site that serves the INCF network (associate partner of NeurotechEU) and the global neuroscience community as a forum for knowledge exchange between neuroscience researchers at all levels of expertise, software developers, and infrastructure providers. Neurostars is used for software, infrastructure, scientific societies, and virtual courses. NeurotechEU will use Neurostars to increase the visibility of NeurotechEU within the Neuroscience community and will therefore increase more interest in Neurotechnology.

PubHubs: PubHubs is a new open-source and non-profit community network based on public values. PubHubs focuses on reliable information, using digital signatures, and on trusted communication, with guarantees of the identity of participants. Users, which could for example be NeurotechEU students, can interact within a hub and can switch between hubs.

Additional offline channels:

To reach relevant stakeholders and the target groups of industries, hospitals, healthcare systems, European and national expert bodies and government agencies for higher education, politicians and local communities, we will use a variety of additional channels such as public presentations, panel discussions and media interviews. It will be useful to engage with key influencers and opinion leaders in order to amplify the reach and impact of the communication efforts.

Evaluation communication and dissemination activities

To make sure NeurotechEU's dissemination activities are having the right impact, we will evaluate our dissemination efforts via the use of quantitative and qualitative indicators. Additionally, questionnaires, interviews and assessments can be used to measure the impact of dissemination activities. Examples of quantitative indicators may include the number of visitors on the website, the number of events and the number of participants in those events, and activity on social media (number of likes and comments). Qualitative indicators might for example include visibility in social media or feedback from target groups, among others.

3.3 Sustainability and continuation

Sustainability, long-term impact and continuation

The NeurotechEU long-term strategy reaches beyond the funding phase of this project. The NeurotechEU consortium is committed to maintaining the project beyond the funding phase by putting into place the necessary resources, both financial and human. As such, the governance of our universities at the highest level has pledged the necessary resources to initiate, develop and sustain NeurotechEU as a long-term endeavour.

The NeurotechEU Alliance expects to continue many of its activities beyond the timeline of the current project, ending in 2027. These include but are not limited to:

- **Mobility for students:** the ability to attend and get accreditation for modules at all partner universities offering modules geared towards neurotechnology, as well as the possibility to attend and get credit for summer schools, methods courses, and lecture courses at partner universities.
- **Research cooperation:** joint research projects between all partners will continue (e.g. through additional funding through Horizon Europe), along with joint graduate school projects and theses (bilateral or across more partners), and postdoctoral networks.
- **Scientific meetings** will be held yearly to promote and disseminate research findings between the partners, e.g. the NeurotechEU summit at the Donders Cognition Brain and Technology summer school, Sept. 12-13 2022.
- **Joint European degrees and programmes** offering multiple degrees at the Bachelor, Master, and Doctoral levels.
- **Joint NeurotechEU European laboratory**, a virtual and physical space, that shares resources, such as equipment, software, and personnel.

The organisational sustainability will be ensured through continued coordination of administrative and academic personnel. For example, more than 150 staff members from the founding universities are directly involved in NeurotechEU (see section 2.1.3 and section 2.2.2) and each member pledges to ensure continued funding of an administrative position at their institution dedicated to the NeurotechEU Alliance beyond the funding phase.

During the phase 1 of the project, we have laid the groundwork for this strong coordination through the organisation of project governance: the Board of Rectors, the Board of Governors, Project Coordinators, other dedicated personnel, the Student Council and other councils and committees dedicated to managing different aspects of the project. We plan to continue this system of governance during the second phase in order to maintain communication between the partners and ensure the effective deployment of the tasks within the work packages.

Second, it is crucial that university communities feel involved in the project and motivated to continue it once the initial funding has run out. In order to include more members of each university's community, it will be necessary to broaden our vision, for example by focusing on technology at the service of European society and well-being, by applying what we have learned from working on neurotechnology to other ways in which technology can serve people and European society. During phase 1, we developed a set of best practices for widening access within NeurotechEU. These will serve us in the current project as we continue to bring more students, staff and researchers into the community. An example is the inclusion of the Universities of Reykjavik and Lille into our alliance, which will benefit it by providing complementary technological and clinical expertise.

Third, in order for the partners to work together effectively, we will continue to work towards greater consistency in our respective strategies, by creating more joint services and tools. This will further contribute to overcoming national, cultural and legal barriers and, moreover, structure the collaboration, strengthen integration, and create collective dynamics of mutual and sustainable trust. For example, we will create a joint virtual laboratory to bring together the expertise of each institution for joint research projects. Given the strategic nature of the project, our universities can contribute financing from their individual research budgets to maintain the virtual lab beyond the funding phase. Furthermore, the partners will agree on a common recruitment framework and criteria.

During phase 1, our education, research and innovation activities were planned for a period running at least until 2040 (see Part B3 for the phases of NeurotechEU development). The think tank of NeurotechEU, i.e., Neurotech2040, will continue to be critical to our future education, training and research goals, while the transparent, modular and scalable organisational structure we designed for the alliance will ensure that NeurotechEU will remain at the service of European education, research and innovative landscape for the decades to come.

In addition, the alliance will continue its long-term project of developing into a united single European entity formed by different universities and companies devoted to research and innovation in neuroscience. This entity will train generations of researchers who will gain a broad international experience in their research topic and who will be well integrated into academic circles and industrial communities. These next generations will therefore have the tools to address important challenges in neuroscience, such as the creation of effective approaches to precision medicine, development of more ecological technologies and the ethical implementation of artificial intelligence into our lives to achieve a healthier lifestyle and a better quality of life.

Sustaining education programmes and degrees will also contribute to maintaining enthusiasm for the project beyond the funding phase. We expect NeurotechEU to become an international reference for high quality research and education in neuroscience, neurotechnology and related areas, such that a diploma with a NeurotechEU label is synonymous with excellence. During phase 1, we established the Campus+ catalogue of modules offered at the partner universities. This provides the groundwork for our plan to share existing programmes and courses while beginning to define and develop long-lasting joint programmes to move toward a NeurotechEU European degree label. This has already begun and will continue to expand during the next project phase. As described in the original project, activities are tested by the alliance at a low initial cost, after which the most successful are scaled-up and extended progressively. Furthermore, the digital infrastructure of

Campus+, the Graduate School and the Life-Long Learning Centre will reduce the cost of NeurotechEU in the future, contributing to the sustainability of the initiative. Furthermore, these joint programmes could also be submitted as Erasmus Mundus Joint Master Degrees, in order to fund student mobility once the funding period has ended. Mobility can otherwise be funded through Erasmus agreements between the partners, which have already been signed. Additionally, the Learn Gala collaborative learning platform was tested and the decision was made to use the International Neuroinformatics Coordinating Facility (INCF) as a platform for hosting joined courses, lecture material, NeurotechEU Methods seminars, and other education and training content.

Part of the sustainability of these programmes is supported by interaction with the Student Council, which has an active role in all meetings, including those involving the Board of Governors and the Board of Rectors. This council is currently responsible for providing NeurotechEU with information on the needs of undergraduate and graduate students and how they will benefit most from NeurotechEU initiatives. In the future, the student council could be further divided into different bodies of students performing a master in Neurosciences, students already conducting a PhD and more senior researchers performing Postdoctoral studies. The rationale behind this is that these different bodies or stages of a student's career are associated with different challenges that should be addressed separately so that the entire education of students devoted to research can be improved as a whole.

Collaboration with industry is also crucial for educational sustainability, especially for the development of future doctoral degrees, since students will benefit from work experience at companies, governmental organisations, NGOs, patient groups, and other academic and research organisations that research and develop neurotechnologies. As many PhD students eventually end up working in industry this early contact with this sector may help them in their career. For research in general, a stronger collaboration between academia and industry is also needed since the development of products and applications can be achieved at a faster rate by industrial partners in close collaboration with universities. For the future of NeurotechEU, it will be important to include companies that play an active role within the alliance to improve education and research. During phase 1, we created NEURICOO. This is the central organisational structure for the university-industry collaboration of NeurotechEU, being responsible for integrating and coordinating NeurotechEU partnering universities and associated members in order to develop and implement roadmaps for a cost-effective translation of innovations into industry. NEURICOO will be maintained through periodic meetings between members, as well as expansion to more industrial partners. Furthermore, industrial partners will participate in alliance governance as part of the Associates Advisory Committee, which will also be maintained beyond the funding.

Financial sustainability is crucial to the implementation of the actions of NeurotechEU. During phase 1, all members committed to co-fund 20% of the total project costs each year. This financial commitment will be sustained during the second phase of the project. Until NeurotechEU is financially independent, all stakeholders will actively explore and apply for funding resources relevant to the activities of the alliance. This includes the development of mobility programmes and pedagogical approaches, international cooperation, summer and winter schools, consortia funding, RISE exchange programmes, other Erasmus+ funding programmes (e.g. Knowledge Alliance), Lifelong Learning activities, among many others. Centrally, the sustainability and dissemination activities of WP5, supported by the NeurotechEU Management and Coordination Office, will create new (financial) resources for the alliance, which will solely be used for the continuation of the European University of Brain and Technology.

After 2027, sustainability will be guaranteed by funds acquired and revenues generated by NeurotechEU and the confirmed partners' commitment to co-fund the project by their own additional resources. To acquire additional funding for NeurotechEU, efforts will be made to coordinate awareness and monitoring of funding opportunities and organise joint proposal writing and submission. This 'Project Factory' is expected to generate substantial funds that will allow the partners to continue many of the project's actions. Indeed, during the pilot phase, the partners submitted responses to several other calls including an MSCA joint doctoral network in 2022. Participation by NeurotechEU Partners: RU, UMH, UBO, BOUN, UMF, Lille, HR; Additional MSCA consortium partners: University of Genova, Fondazione Istituto Italiano di Tecnologia, Radboud Medical Centre.

In acquiring additional funding, NeurotechEU will put forward two major assets beyond its academic and research excellence: (1) its nature as a transnational alliance of major players in a very dynamic research and educational area with great potential for application in everyday neurochallenges; and (2) its network of civic and social stakeholders at the local, regional and international levels. In addition to this, we will continue to deepen the involvement of NeurotechEU associates in the activities, resulting in potential additional sources of funding: in this way, by taking advantage of a large network of associates on board, the long-term development of NeurotechEU ambitions will be sustainable on all fronts.

Sources of funding to be considered will include, but will not be limited to:

- Other European calls for proposals, such as the RISE network, Strategic Partnerships and Knowledge Alliances within Erasmus+ Key Action 2, and Horizon Europe.
- National calls from regional governments and innovation clusters could provide additional support towards the development of NeurotechEU through mobility grants, as well as co-funding of summer schools and events. Moreover, some of the partners' governments have announced top-up funding for complementary activities.
- Third parties, stakeholders and companies' support and sponsorships, also in kind: WP4 and WP5 will strive to continuously extend and reinforce their participation.
- Joint Lifelong Learning activities within the NeurotechEU that will generate funding through commissioned education tailored for employers and other stakeholders.
- Tuition fees for learning certificate and degree programmes.

NeurotechEU has begun creating an alumni network. In the long term, this network will allow systematic implementation of systems of sponsorship and experience-sharing within NeurotechEU projects, within the different categories of staff or participants involved in the activities: students, teachers, administrative staff, and researchers. It will also contribute to the

creation and maintenance of a "NeurotechEU spirit" and promote networking at all levels, access to internship or employment opportunities, and the collection of support from institutions or private partners where alumni are active.

4. WORK PLAN, ACTIVITIES, RESOURCES AND TIMING

4.1 Work plan

Work plan

All activities of NeurotechEU are divided between 5 closely related work packages (Figure 18). Work Package 1, “Management and Coordination”, focuses on the general management and coordination of the alliance. Its main objective is to ensure proper management and planning of the work plan and to enshrine the values of NeurotechEU in all procedures. It will plan, organise, command, coordinate and oversee all alliance actions and is therefore closely interconnected with all other work packages. Furthermore, the (ad hoc) working groups in Work Package 1 will ensure proper utilisation of (financial) resources and human capital. In addition, a tailored quality assurance and monitoring strategy is defined and will be implemented to support the broad range of activities of NeurotechEU++.

Work package 2, “Interdisciplinary Knowledge Creation”, focuses on the scientific and educational challenges in neurotechnology, including societal impact, innovation, and sustainability. Its main goal is to develop a joint educational and research agenda that brings together the complementary expertise and ambitions of all partners. Our education and research training programmes integrate neurotechnology courses with entrepreneurship, societal impact, and sustainability to empower our students for the future. We will build platforms and tools (NeurotechEU spaces) to disseminate this training and research content across all levels of society, all ages, genders. using open-source standards. Ad hoc working groups will convene regularly to evaluate the development of suitable training content by our partners. To facilitate learning and collaboration at all levels, we will introduce online learning groups, develop AI-based online tools for personalised education portfolios, and offer personal learning experiences. Different working groups together with pedagogy experts at the partners will be responsible for quality control and regular updates and improvements to platforms and content.

Work package 3 “Learners and Staff” will aim to increase participation rate and mobility by setting up physical mobility as well as virtual exchange and blended mobility by implementing a range of cross-border collaborations of students, staff and stakeholders in three dimensions: international, intersectoral (between academic and non-academic world) and interdisciplinary, based on the NeurotechEU content space and NeurotechEU Cycle. We will enhance equity and inclusion by translating the values of NeurotechEU and develop and use innovative learning and training methods by enhancing the role of entrepreneurship to address ethics and societal issues in accordance with NeurotechEU’s living values and the Neurometaphysics dimension. This will reinforce connections between the NeurotechEU graduate school and enlarge the audience of the events, improving the impacts of the alliance.

Work package 4 “Common Policies and Strategy” will improve and expand collaborations with other alliances and expand the training, technology and sustainability-based innovations developed, by building on the NeurotechEU content space and science-technology-application cycle. The objectives of this work package are to institutionalise cooperation among NeurotechEU partner universities and companies and develop challenge and technology-based roadmaps for translation of innovations into the industry and market. The work package also aims to link training and innovation content in all eight NeurotechEU dimensions to regional development by considering socio-economic, environmental, and cultural needs. The tasks of the work package include Growing the Pan-European and International



Figure 18: Work packages present in NeurotechEU++ and their relationships.

Network, Collaboration and expansion with other universities and European University Alliances, Strengthening cooperation with companies and Regional development. These tasks will be carried out by an ad hoc created working group, reflecting identified needs adopted by all alliance members, under the guidance of the Management and Coordination working Group. The work package will contribute to the UN Sustainable Development Goals (SDGs) and will develop ideas on the long-term sustainability of NeurotechEU in the context of EU values and policies.

Work package 5 “Impact and Dissemination” focuses on the communication and dissemination of the results and good practices achieved by NeurotechEU and the activities and events of the project with the stakeholders and target groups of NeurotechEU. It details how we are going to distribute all the available content through the carefully selected communication channels, and how we plan to organise, coordinate and control this process using the appropriate human and financial resources. Technological innovations within NeurotechEU will be facilitated and linked by societal innovations, such as the Museum of Brain and Technology, that will play a big role in connecting neurotechnology and society. The aim of this work package will be to ensure that results, outputs and innovation generated by NeurotechEU will be fully accessible and shared openly and effectively to all our stakeholders during and after the funding period of the alliance. NeurotechEU will work to enhance channels for impact creation by building on organisations, businesses and will also realise the NeurotechEU Innovation Ecosystem.

4.2 Activities, resources and timing

Subcontracting

Not applicable

Events meetings and mobility

Events meetings and mobility							
Event No	Participant	Description					Attendees
		Name	Type	Area	Location	Duration	Number
E1.1	All. two attendees per partner	Board of Rectors	Bi-yearly governance meeting	Governance, decision making	Rotating, twice per year	2	16 per event, 128 in total
E1.2	All, one per partner, two from Management & Coordination Office and two student representatives	Board of Governors	Monthly governance meeting	Governance, decision making	Online, twice per year live, rotating organiser	2	13 per event, 624 in total
E1.3	All, one representative per partner and one from Management & Coordination Office	Management and Coordination Work Group	Monthly alliance operational meeting	Implementation, coordination, management	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E1.4	All, one representative per partner and one from Management & Coordination Office	Administrative & Financial Work Group	Monthly alliance operational meeting	Implementation, administration, finances	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E1.5	All	Project manager exchange	Training, 3 exchanges per partner per year, 5 exchanges per year for the Management and Coordination Office	Project management, knowledge exchange	Three times per year per partner, additional two for coordinator, rotating location	4	104
E2.1	All, one representative per partner and one from Management & Coordination Office	Research and Innovation Work Group	Monthly alliance operational meeting	Research priorities, conducting studies, analysing data, developing new products, processes and services	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E2.2	All, one representative per partner and one from Management & Coordination Office	Education Work Group	Monthly alliance operational meeting	Educational programs and initiatives, curriculum development, teacher training, student assessment	Online, three times per year live, rotating organiser	2	10 per event, 480 in total

E3.1	All, one representative per partner and one from Management & Coordination Office	Mobility and Exchange Work Group	Monthly alliance operational meeting	Coordination of mobility and exchange programs, impact evaluation	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E3.2	All, one representative per partner and one from Management & Coordination Office	Student affairs Work Group	Monthly alliance operational meeting	Student support, inclusion	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E4.1	All, one representative per partner and one from Management & Coordination Office	Societal Innovation Work Group	Monthly alliance operational meeting	Identify and address societal challenges, stakeholder engagement, impact evaluation	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E5.1	All, one representative per partner and one from Management & Coordination Office	Communication Work Group	Monthly alliance operational meeting	Communication, dissemination, public relations, promotion	Online, three times per year live, rotating organiser	2	10 per event, 480 in total
E5.2	All, at least two students per partner	Summer school	Training	Varying topics/research areas	Rotating organiser	7	16 per event, 128 in total
E5.3	All, at least two students per partner	Winter school	Training	Varying topics/research areas	Rotating organiser	7	16 per event, 128 in total
E5.4	All, at least three per partner	Annual Conference	Conference (e.g. EAIE)	Varying topics/research areas	Rotating organiser, 6 live events	3	24 per event, 144 in total
E5.5	All, at least three per partner	NeurotechEU hackathon	Yearly workshop	Varying topics/research areas	Rotating organiser, 4 live events	2	24 per event, 96 in total
E5.6	All, at least three per partner	Symposia	Yearly symposium	Varying topics/research areas	Rotating organiser, 4 live events	2	24 per event, 96 in total
E5.7	All, at least three per partner	Neuroinnovation Summit	Conference	Dissemination of research findings, varying topics/research areas	Rotating organiser, 4 live events	3	24 per event, 96 in total

Timetable

<i>Timetable (projects of more than 2 years)</i>																
ACTIVITY	YEAR 1				YEAR 2				YEAR 3				YEAR 4			
	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
<i>Task 1.1 – Project governance</i>																
<i>Task 1.2 – Internal communication</i>																
<i>Task 1.3 – Quality Management</i>																
<i>Task 2.1 - Common Science and Education Agenda</i>																
<i>Task 2.2 – Building Educational Platform and Tools</i>																
<i>Task 2.3 – Developing pedagogical models</i>																
<i>Task 3.1 – Enhancing training and mobility</i>																
<i>Task 3.2 – Equal opportunities</i>																
<i>Task 3.3 – European Values</i>																
<i>Task 3.4 Training for entrepreneurship and innovation</i>																
<i>Task 3.5 – Training for social impact</i>																
<i>Task 4.1 – Growing the Pan-European and International Network</i>																
<i>Task 4.2 – Collaboration with other alliances</i>																
<i>Task 4.3 – Strengthening cooperation with companies</i>																

Task 4.4 – Regional development																
Task 5.1 – Communication																
Task 5.2 – Dissemination and Public Engagement																
Task 5.3 – The Museum of Brain and Technology																
Task 5.4 – Roadmap towards 2040 and Sustainability																

5. OTHER


5.1 Ethics

Ethics
Not applicable

5.2 Security

Security
Not applicable

6. DECLARATIONS

Double funding	
Information concerning other EU grants for this project  Please note that there is a strict prohibition of double funding from the EU budget (except under EU Synergies actions).	YES/NO
We confirm that to our best knowledge neither the project as a whole nor any parts of it have benefitted from any other EU grant (including EU funding managed by authorities in EU Member States or other funding bodies, e.g. Erasmus, EU Regional Funds, EU Agricultural Funds, etc). If NO, explain and provide details.	YES
We confirm that to our best knowledge neither the project as a whole nor any parts of it are (nor will be) submitted for any other EU grant (including EU funding managed by authorities in EU Member States or other funding bodies, e.g. Erasmus, EU Regional Funds, EU Agricultural Funds, etc). If NO, explain and provide details.	YES

Financial support to third parties
Not applicable

7. ANNEXES

ANNEX 1: JOINT MISSION STATEMENT

Neurotech^{EU++}

The European University of Brain and Technology



Joint Mission Statement



NeurotechEU – Joint Mission Statement

European universities

NeurotechEU – Joint Mission Statement

The European University Alliance of Brain and Technology, **NeurotechEU**, envisions Neurotechnology as providing strategic bridges between various disciplines, including neuroscience, medicine, engineering, artificial intelligence, cognitive science, robotics, social sciences, and the humanities arranged along 8 different dimensions, or technology *from* the brain, *for* the brain, and *with* the brain. NeurotechEU constitutes the backbone of this vision by bringing together 8 leading universities across Europe and a significant amount of relevant associated partners, including partner research institutions, (SME) companies, societal stakeholders, and (non) governmental organizations, to create a unique educational environment where the next generation of European researchers and citizens can cooperate and work across different European and global cultures, in different languages, and across borders, sectors and academic disciplines. Collectively we will enable deep institutional transformation by providing innovative learning processes grounded in the emergent field of Neurotechnology. This transformation will foster the next generation of multidisciplinary scientists and engineers with access to cutting-edge avant-garde infrastructure. Within the 2nd phase of the European University of Brain and Technology (awarded under the 2020 Erasmus+ call for proposals), 6 of the 8 founding Universities and two new full partners will build upon the foundation established and further deepen and intensify the collaboration to advance Neurotechnology in the service of European society.



NeurotechEU values

The NeurotechEU alliance is built on the common values and general principles of the European Union; respect for human dignity, freedom, democracy, equality, the rule of law, and respect for human rights, including the rights of persons belonging to minorities. We value and protect academic freedom and integrity, institutional autonomy, inclusive governance, and high standards of ethics in research and education as laid down in the Bologna process, the Paris Communiqué, and the Magna Charta Universitatum. Every partner commits to promoting and protecting these fundamental principles, within their own community, in the NeurotechEU alliance, and towards society as a whole.

Since NeurotechEU is an alliance of 8 universities from different countries with geographical coverage across all of Europe, the alliance has committed to developing a common understanding of the core values that must permeate the alliance's activities. This allows us to live up to the vision of a strong coherent alliance with shared values rather than several loosely connected universities, departments, and administrative units. Our common values were already established during the 1st phase of the NeurotechEU alliance, but will be a permanent and continuously evolving feature of the Alliance, engaging staff and students and embedding them across the network and its activities emphasizing:

- **Integrity:** be authentic, empathic, transparent, open, and honest; foster a culture of mutual respect and reciprocity;
- **Commitment and responsibility:** be loyal and take full ownership and responsibility for the challenges the collective is facing; engage in professional, respectful, and collaborative interactions; contribute to a professional culture; engage in professional and ethical interactions with students and staff, respecting professional boundaries; promote equity, diversity, and inclusivity;
- **Creativity:** proactively engage, intending to improve operations and impact continuously; fully embrace cross-disciplinary interactions; always seek innovation in activities; do not shy away from disruption if it serves advancement.

NeurotechEU vision

The NeurotechEU University Alliance has a common long-term vision summarized as:

- Realizing a joint long-term strategy for education and research capitalizing on the synergy of the eight dimensions of Neurotechnology;
- Increasing the competitiveness of European education, research, economy, and society in the high-impact research-intensive domain of Neurotechnology;
- Transforming universities with a joint long-term vision and action plan that is modular and scalable, that crosses academic, faculty and organizational boundaries;

<http://www.theneurotech.eu/>



NeurotechEU Joint Mission Statement

- Seamless mobility for students, researchers, and staff to study, train, teach, research, and innovate, reaching 50% of students through innovative mobility programs, including both physical, virtual, and blended mobility programs driven by curiosity and opportunity;
- Flexible curricula tailored to each student's needs, de-constrained from institutional and/or national capabilities and borders;
- Promoting European identity among students and researchers through delivering multicultural, multilingual, international, and intersectoral academic experiences across the European continent;
- Lasting close collaboration between partners for a trans-European network of excellence in brain and technology, further removing borders and obstacles in mobility and exchange;
- Creation of the European Neurotech ecosystem, supporting our students during their formative years in the university, and afterward to transition into becoming responsible, ethical, and global citizens with an impact on society overall;
- Actively contributing to reducing inequalities within the European Research Area and society by promoting excellence in education and research throughout Europe and strengthening research and innovation capacity to mitigate brain drain and strengthen brain capital;
- To educate about the ethical, legal, and societal challenges and potential of neurotechnology.

This mission statement is accompanied by the NeurotechEU2040 action plan which is added as an appendix to this document.

This mission statement is endorsed by all of our universities:

<http://www.theneurotech.eu/>



PLEASE MODIFY ACCORDINGLY THIS PAGE BEFORE SIGNING IT.

NAME OF YOUR INSTITUTION (ACRONYM): Radboud University


Signature(s)

Name(s): J.H.J.M. van Krieken

Title(s): prof. dr. Rector Magnificus

Date: 23-01-2023


<http://www.theneurotech.eu/>



Neurotech^{EU}: Joint Mission Statement

NAME OF YOUR INSTITUTION (ACRONYM) **UNIVERSIDAD MIGUEL HERNÁNDEZ DE ELCHE (UMH)**

Signature(s)
Name(s) Prof. Juan José Ruiz Martínez
Title(s) Rector
Date 23/01/2023







<http://www.theneurotech.eu/>



Karolinska Institutet

A handwritten signature in blue ink, reading "Ole Petter Ottersen".

Ole Petter Ottersen
President, Karolinska Institutet

Stockholm 2023/19/01

<http://www.theneurotech.eu/>





PLEASE MODIFY ACCORDINGLY THIS PAGE BEFORE SIGNING IT.

NAME OF YOUR INSTITUTION (ACRONYM): Bogazici University (BOUN)

Signature(s)

Name: Prof. Dr. Mehmet Naci inci

Title: Rector

Date: 20/01/2023

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PLEASE MODIFY ACCORDINGLY THIS PAGE BEFORE SIGNING IT.

NAME OF YOUR INSTITUTION (ACRONYM) UMF

Signature(s)

Name(s) Anca Dana Buzoianu

Title(s) Rector

Date 18.01.2023



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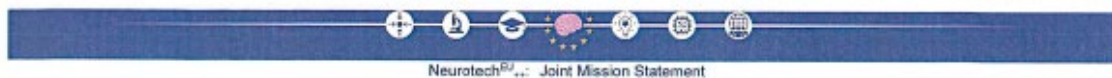
Université de Lille, France (ULille)



Pr. Régis BORDET
Président de l'Université de Lille
19 Janvier 2023

The logo of the University of Lille, featuring a stylized 'UL' inside a circular frame with the text 'Université de Lille' and 'Lille'.

<http://www.theneurotech.eu/>



Reykjavik University (HR)

Ragnhildur Helgadóttir

Dr Ragnhildur Helgadóttir, President.
19.01.2023

<http://www.theneurotech.eu/>



Appendix NeurotechEU2040 Action Plan: Designed by students for students

Our action plan to realize our shared vision is based on broad consultation with our students while preparing the 2020 Erasmus+ proposal and subsequently through the NeurotechEU student council. We have asked them to articulate what they would need to succeed both during their education and to start their professional life. More than 3,500+ students responded to the survey, and we built on these responses to design a three-phase action plan to realize the NeurotechEU vision. Using the first round of the University Alliance Erasmus+ programme we have realized a strong foundation for NeurotechEU. The consortium is ready to deepen its institutional and transnational collaboration to advance our mid- and long-term vision.

Phase 1 (2021-2023) Foundations

During this phase, we will establish the necessary conceptual framework and digital infrastructure, initiate collaborative inter-campus programs, form sustainable exchange and mobility programs, launch joint educational programs (starting with summer schools and certificate programs), and lay the foundations for the realization of our common vision, starting with:

NeurotechEU Campus+ is a shared virtual space, an extension of the partnering organizations, where students at all levels (bachelor, master, and graduate), teachers, and administrators work together without administrative, cultural, and societal obstacles supporting and delivering physical, digital and blended training. The CAMPUS+ platform development process started in 2021, and with contributions from staff and students from all partner universities, we have our first pilot version of [CAMPUS+](#) up and running. Our digital campus will empower students to customize their curriculum from the well-structured and comprehensive course catalogs of the partnering universities to build their individual learning trajectories through the 8 dimensions we have defined for neurotechnology (Empirical and clinical neuroscience, Theoretical neuroscience, Neuromorphic computing, Neuromorphic control /neurorobotics, Neuroinformatics, Neuroprosthetics, Clinical neurotechnology, and Neurometaphysics). Benefiting from the strengths of each university and taking advantage of the best traditions in each country's culture, CAMPUS+ will integrate popular, multi-disciplinary, and academic cultures, creating a hub for collective European academic identity.

NeurotechEU Graduate School will provide co-tutelage masters and doctoral scholarships to train top-flight researchers in a multidisciplinary and intersectoral setting. In the short term, the Graduate School will function as an umbrella of content already available at the partner universities. In the mid-term, it will be elaborated to fill the eight-dimensional neurotechnology space. While in the long term, the Graduate School will have its own funding for students, a defined scientific scope and program, and a fixed curriculum anchored in neurotechnology research and innovation programs at the partner universities. Once completed, students will be offered co-supervision by a team of experts from participating academic organizations and industry, benefiting from the partners' unique knowledge, expertise, and capabilities, including through mobility, within the NeurotechEU network.

NeurotechEU Life-long Learning Center will support the continued training of its graduates and society at large, also boosted by advanced neurotechnologies. It will provide the necessary knowledge, skill sets, competencies, and values for individuals to adapt to the changing personal, civic, societal, and employment-related needs and provide them opportunities in brain research and technologies. It will help to develop public engagement and redress inequalities, e.g., due to past educational background and lack of inclusive higher education, to attract and shape new talent facilitating new career paths. With the realization of the CAMPUS+ virtual space, of which the Life-long Learning Center is a part, the roll-out of the center has commenced and will be further scaled.

Phase 2 (2024-2030): Scaling and removing borders

Within phase 2, we aim to build further on the achievement made in phase 1 by scaling the efforts, individualizing the learning experience and learning paths, removing existing borders, and further amplifying the impact of NeurotechEU. By bringing together our departments, faculties, and institutes and removing the borders between organizational units and partnering universities, we will transform the organization of traditional university structures also by capitalizing on new and disruptive educational digital platforms. To aid in this process, and link education, research, innovation, and society, we will establish NeurotechEU Master, and Doctorate Degrees following European learning certificates and shared degree programmes including in specializations that are at the intersection of Neurotechnology and other involved disciplines, spanning all campuses and faculties including Robotics, Mechatronics, Neuroethics, Neurolaw, Brain & Mind, Cognitive Neuroscience, Brain-inspired smart design, Bioactuation and Control, Neurodiversity and Society, Health and Smart Aging, Life-style medicine. To maximize our innovation potential, align research interests, and assist students in navigating the research offerings of the participating universities, we will form the NeurotechEU research center, which will be an online platform complementing CAMPUS+. The outcome of this phase is also a creative disruption of research domains affiliated with neurotechnology, identifying frontiers and moving them forward.

Phase 3 (2031-2040): NeurotechEU unfolded

With a mature organizational structure, a catalog of education, research, and innovation programs, and an ever-growing number of partners and students in the NeurotechEU Alliance, we will be in a prime position to act as a role model for universities, multi-organizational initiatives, large-scale programs that bring together universities,

<http://www.theneurotech.eu/>



NeurotechEU Joint Mission Statement

Industry, and societal stakeholders. By training the next generation of researchers and innovators, NeurotechEU will impact each of its stakeholders, setting in motion a virtuous cycle of education, research, innovation, and impact. Taking an active role in transforming our partnership, we will establish a Global campus, helping Europe to be competitive on the global stage, and promoting talent development worldwide. To achieve this goal, we will have to continually revise the NeurotechEU initiatives based on current and future demands under the consideration that the shaping and conservation of talent ask from us to offer them intellectually challenging, nurturing, and creative environments that are relevant and impactful. This will be achieved by our think tank Neurotech2040, which will imagine the world and its societal needs in 2040 and beyond. This NeurotechEU futurology will feed into the design of further NeurotechEU programs and innovative action plans that will maximize the benefits of the developed technologies and interventions for the European economy and society at large for the decades to come. Seamless integration of Neurotech2040 with the defined Neurochallenges in Education & Research, Technological Innovation, and Societal Innovation will ensure that NeurotechEU will continuously evolve to meet the needs of students, researchers, the economy and society at large and become a fully-fledged European University embedded in Europe and its culture, values, and challenges.

Transforming institutional cooperation: NeurotechEU's vision

There has never been a branch of study that is as inter- and multi-disciplinary as Neurotechnology. From neuroscience, computation, and robotics to the humanities, social sciences, and law to medical sciences, engineering, and management. Indeed, practically all traditional disciplines in modern universities require content **from** the brain, **for** the brain, and **with** the brain, including pedagogy itself. NeurotechEU takes advantage of this unique position of neurotechnology to transform institutional cooperation between universities and bring it to the next level of integration and collaboration. By further building on our established ecosystem of XX universities, research organizations, industrial partners, societal partners, cities, governmental and non-governmental organizations, and other interest groups, we will not only remove the borders between universities but also anchor their position within society by always demonstrating relevance through impact. A direct outcome of this approach is that the students of NeurotechEU will have uninterrupted access to an Alliance that will support them throughout their careers, as they themselves will, in turn, take over the lead in the process of shaping neurotechnology. As a result, collaborations on topics beyond Neurotechnology will evolve, which will make use of NeurotechEU as a model to rapidly implement a sustainable strategy for inter-campus cooperation and the creation of self-propelled future-oriented higher-education programs.

<http://www.theneurotech.eu/>

ANNEX 2: REFERENCES

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ANNEX 2

ESTIMATED BUDGET (LUMP SUM BREAKDOWN) FOR THE ACTION

Forms of funding	Estimated EU contribution					Maximum grant amount ¹
	Estimated eligible lump sum contributions (per work package)					
	WP1 Management and coordination	WP2 Interdisciplinary Knowledge creation	WP3 Empowering Learners and Staff	WP4 Common Policies and Strategy Development	WP5 Impact and dissemination	
	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	
	a	b	c	d	e	f = a + b + c + d + e
1 - RU	1 479 168.00	729 312.00	281 282.00	196 366.00	486 516.00	3 172 644.00
2 - UMH	457 104.00	323 568.00	197 586.00	139 078.00	231 938.00	1 349 274.00
3 - KI	473 395.00	727 360.00	398 220.00	171 272.00	539 568.00	2 309 815.00
4 - UBO	392 596.00	708 152.00	450 166.00	152 595.00	370 790.00	2 074 299.00
5 - BOUN	161 270.00	130 454.00	177 813.00	210 854.00	198 100.00	878 491.00
6 - UMF	169 488.00	237 968.00	231 420.00	128 443.00	167 682.00	935 001.00
7 - ULille	465 322.00	294 806.00	680 606.00	291 982.00	424 696.00	2 157 412.00
8 - HR	312 186.00	281 370.00	409 034.00	185 680.00	216 013.00	1 404 283.00
9 - UD						
10 - UKB						
11 - LUH						
12 - SABANCI						
13 - BBK						
14 - IU						
15 - CLU						
16 - CHULille						
17 - UNIKENT						
18 - IMTNE						
19 - STU						
20 - KTH						
21 - DZNE						
22 - LBGMBH						
23 - MPINB						
24 - HNP						
25 - CSIC						
26 - IPL						
27 - NOXM						
28 - Össur						
29 - KAREL						
30 - InTech						
31 - BBTECH						
32 - SATT NORD						
33 - ISHEALTH						
34 - BfArM						
35 - MUNI						
36 - CROUS						
37 - MEL						

Forms of funding	Estimated EU contribution					
	Estimated eligible lump sum contributions (per work package)					Maximum grant amount ¹
	WP1 Management and coordination	WP2 Interdisciplinary Knowledge creation	WP3 Empowering Learners and Staff	WP4 Common Policies and Strategy Development	WP5 Impact and dissemination	
	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	
	a	b	c	d	e	f = a + b + c + d + e
38 - RHF						
39 - RAL						
40 - EURASANTE						
41 - DPA						
42 - ASJA						
43 - EUIPO						
44 - AYE						
45 - BUTTO						
46 - EAEC						
47 - TITC						
48 - SCJU CJ						
49 - RoNeuro						
50 - MINSAN						
51 - IMM						
52 - SKH						
53 - INRIA						
54 - CNRS						
55 - INSERM						
Σ consortium	3 910 529.00	3 432 990.00	2 826 127.00	1 476 270.00	2 635 303.00	14 281 219.00

¹ The 'maximum grant amount' is the maximum grant amount fixed in the grant agreement (on the basis of the sum of the beneficiaries' lump sum shares for the work packages).

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE (UMH), PIC 999851363, established in AVENIDA DE LA UNIVERSIDAD S-N, ELCHE 03202, Spain,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and** the **European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

KAROLINSKA INSTITUTET (KI), PIC 999978530, established in Nobels Vag 5, STOCKHOLM 17177, Sweden,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and the European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITÄT BONN (UBO), PIC 999980276,
established in REGINA PACIS WEG 3, BONN 53113, Germany,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and the European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

BOGAZICI UNIVERSITESI (BOUN), PIC 999882500, established in BEBEK, ISTANBUL 34342, Türkiye,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and** the **European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

UNIVERSITATEA DE MEDICINA SI FARMACIE IULIU HATIEGANU CLUJ-NAPOCA (UMF), PIC 999842439, established in VICTOR BABES STREET 8, Cluj-Napoca 400012, Romania,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and** the **European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

UNIVERSITE DE LILLE (ULille), PIC 888146648, established in 42 RUE PAUL DUEZ, LILLE 59000, France,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and the European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

HASKOLINN I REYKJAVIK EHF (HR), PIC 966834406, established in MENNTAVEGUR 1, REYKJAVIK 102, Iceland,

hereby agrees

to become beneficiary

in Agreement No 101124386 — NeurotechEU ('the Agreement')

between STICHTING RADBOUD UNIVERSITEIT (RU) **and** the **European Education and Culture Executive Agency (EACEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

FINANCIAL STATEMENT FOR THE ACTION FOR REPORTING PERIOD [NUMBER]

	EU contribution											
	Eligible lump sum contributions (per work package)											Requested EU contribution
	WP1 [name]	WP2 [name]	WP3 [name]	WP4 [name]	WP5 [name]	WP6 [name]	WP7 [name]	WP8 [name]	WP9 [name]	WP10 [name]	WP [XX]	
	Forms of funding	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	/ Lump sum contribution// Financing not linked to costs/	
Status of completion	COMPLETED	COMPLETED	COMPLETED	COMPLETED	COMPLETED	COMPLETED	COMPLETED	PARTIALLY COMPLETED	PARTIALLY COMPLETED	COMPLETED	NOT COMPLETED	
	a	b	c	d	e	f	g	h	i	j	k	l = a + b+ c+ d+ e+ f+ g+ h+ i+ j+ k
1 – [short name beneficiary]												
1.1 – [short name affiliated entity]												
2 – [short name beneficiary]												
2.1 – [short name affiliated entity]												
X – [short name associated partner]												
Total consortium												

The consortium hereby confirms that:

The information provided is complete, reliable and true.

The lump sum contributions declared are eligible (in particular, the work packages have been completed and the work has been properly implemented and/or the results were achieved; see Article 6).

The proper implementation of the action/achievement of the results can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 19, 21 and 25).

ANNEX 5

SPECIFIC RULES

INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE (— ARTICLE 16)

Rights of use of the granting authority on results for information, communication, publicity and dissemination purposes

The granting authority also has the right to exploit non-sensitive results of the action for information, communication, dissemination and publicity purposes, using any of the following modes:

- **use for its own purposes** (in particular, making them available to persons working for the granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services)
- **distribution to the public** in hard copies, in electronic or digital format, on the internet including social networks, as a downloadable or non-downloadable file
- **editing** or **redrafting** (including shortening, summarising, changing, correcting, cutting, inserting elements (e.g. meta-data, legends or other graphic, visual, audio or text elements extracting parts (e.g. audio or video files), dividing into parts or use in a compilation
- **translation** (including inserting subtitles/dubbing) in all official languages of EU
- **storage** in paper, electronic or other form
- **archiving** in line with applicable document-management rules
- the right to authorise **third parties** to act on its behalf or sub-license to third parties, including if there is licensed background, any of the rights or modes of exploitation set out in this provision
- **processing**, analysing, aggregating the results and **producing derivative works**
- **disseminating** the results in widely accessible databases or indexes (such as through ‘open access’ or ‘open data’ portals or similar repositories, whether free of charge or not.

The beneficiaries must ensure these rights of use for the whole duration they are protected by industrial or intellectual property rights.

If results are subject to moral rights or third party rights (including intellectual property rights or rights of natural persons on their image and voice), the beneficiaries must ensure that they

comply with their obligations under this Agreement (in particular, by obtaining the necessary licences and authorisations from the rights holders concerned).

Access rights for the granting authority, EU institutions, bodies, offices or agencies and national authorities to results for policy purposes

The beneficiaries must grant access to their results — on a royalty-free basis — to the granting authority, other EU institutions, bodies, offices or agencies, for developing, implementing and monitoring EU policies or programmes.

Such access rights are limited to non-commercial and non-competitive use.

The access rights also extend to national authorities of EU Member States or associated countries, for developing, implementing and monitoring their policies or programmes in this area. In this case, access is subject to a bilateral agreement to define specific conditions ensuring that:

- the access will be used only for the intended purpose and
- appropriate confidentiality obligations are in place.

Moreover, the requesting national authority or EU institution, body, office or agency (including the granting authority) must inform all other national authorities of such a request.

Access rights for third parties to ensure continuity and interoperability

Where the call conditions impose continuity or interoperability obligations, the beneficiaries must make the materials, documents and information and results produced in the framework of the action available to the public (freely accessible on the Internet under open licences or open source licences).

COMMUNICATION, DISSEMINATION AND VISIBILITY (— ARTICLE 17)

Additional communication and dissemination activities

The beneficiaries must engage in the following additional communication and dissemination activities:

- **present the project** (including project summary, coordinator contact details, list of participants, European flag and funding statement and project results) on the beneficiaries' **websites** or **social media accounts**
- for actions involving public **events**, display signs and posters mentioning the action and the European flag and funding statement
- upload the public **project results** to the Erasmus+ Project Results platform, available through the Funding & Tenders Portal.

SPECIFIC RULES FOR CARRYING OUT THE ACTION (— ARTICLE 18)

EU restrictive measures

The beneficiaries must ensure that the EU grant does not benefit any affiliated entities, associated partners, subcontractors or recipients of financial support to third parties that are

subject to restrictive measures adopted under Article 29 of the Treaty on the European Union or Article 215 of the Treaty on the Functioning of the EU (TFEU).



This electronic receipt is a digitally signed version of the document submitted by your organisation. Both the content of the document and a set of metadata have been digitally sealed.

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