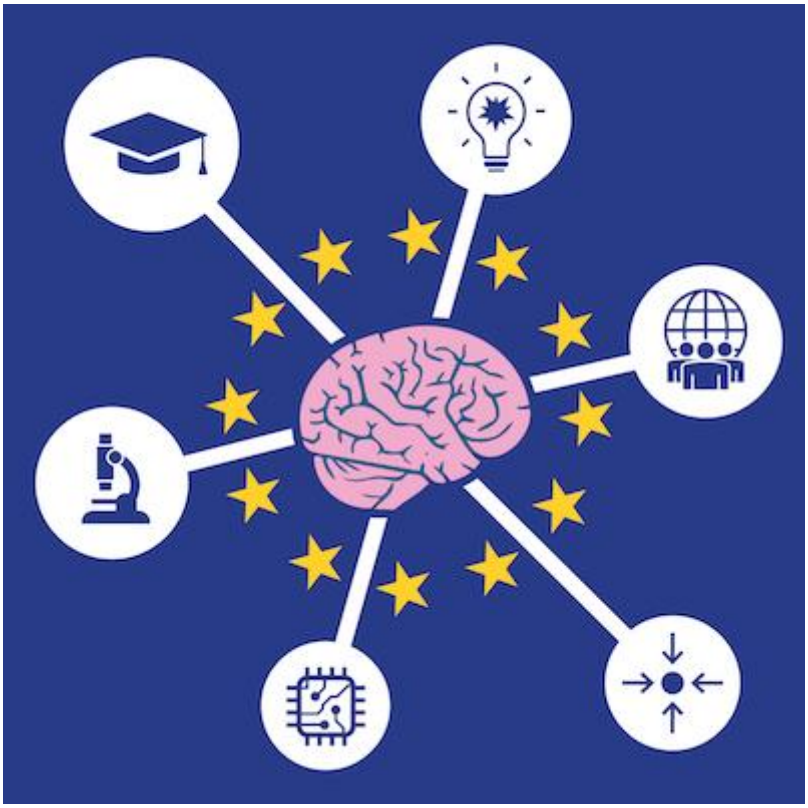
Neurotech^{EU}

The European University of Brain and Technology



[D2.2]
[Compendium: 1. Quality Plan]

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Executive summary

A quality system must be designed and deployed to ensure quality in all processes of Neurotech[EU], so that the **satisfaction of the needs and expectations of its stakeholders as well as the efficient use of resources is guaranteed.**

This document provides **the foundations for a Quality System** designed to fit with an ambitious project where the intention is to generate real impact from the very beginning. It is based on an ongoing co-creation incremental process, where **two distinct phases** are envisaged. In First Phase (2021-2023), a framework is provided to serve in the process of value creation, step by step, without constraining innovation. And from 2024, a complementary Quality System will be designed and deployed with an added framework more specific for the scope of each shaped Neurotech[EU] key deliverables (Neurotech Campus+, Graduate School, Life-long Learning Centre, Neurotech[EU] Spaces and Neurotech Ecosystem). This added framework is what is referred to hereinafter as “Internal Quality Assurance System'' (IQAS).

The **European Framework for the Comprehensive Quality Assurance of European Universities** (EUniQ) lays the foundations for the Neurotech[EU] Quality Plan throughout the long term plan.

Regarding the project dimension (2021-2023), a backbone for the **indicator system** is provided here. This will be the container for a specific indicator system built for the purpose of what really matters to track each expected incremental value.

At the dimension of the project, the responsibility of safeguarding the documentation related to the deployment and monitoring of the Quality Plan rests with the **owner of each process**. However, the **Quality Manager** catalogues and archives both the current versions and historical versions of the documents in custody.

It should be taken into account the feasibility and advisability of providing visibility to the degree of compliance resulting from each incremental deployment of the Quality Plan.

Therefore, the **Quality Committee** will decide, at the end of each cycle, the scope of what must be published for the purpose of transparency and commitment with society.

1. Introduction

This document is part of the Neurotech[EU] Education and Research Quality (NERQ) Compendium, under the corresponding part of the **Quality Plan**.

It includes the definition of a common framework to provide coherence to all the quality assessment details and indicators of NERQ required to fulfil the commitment by the Board of Governors to quality management (Annex 1).

2. Context

Before going into the definition of the Quality Plan, delving into the issue from these perspectives is necessary:

- The intended scope, as stated in all previous Neurotech[EU] documentation, as it reflects stakeholders' needs.
- The guidelines that are emerging from the working teams involved in the definition of the European Framework for the Comprehensive Quality Assurance of European Universities (EUniQ).
- The five Neurotech[EU] key deliverables and activities (Annex 3) as they put the Neurotech[EU] mission, vision, and values into practice.

The conjunction of all of them, outlined in the definition below.

2.1. Intended scope

A quality system must be designed and deployed to ensure quality in all processes of Neurotech[EU], so that the satisfaction of the needs and expectations of its stakeholders as well as the efficient use of resources is guaranteed.

There must be:

- A quality system to align Neurotech[EU] quality assessment on institutional and Alliance levels with **European standards**.
- Moreover, most importantly, a quality system to periodically measure the **achievements of Neurotech[EU] outputs** that could lead the Board of Governors (BoG) to make strategic decisions.

The assessment must cover the achievements related to the aims, activities, and deliverables.

2.2. Standards to measure the impact of the European University Alliances (EUniQ)

The European Framework for the Comprehensive Quality Assurance of European Universities (EUniQ) should lay the foundations for the Neurotech[EU] Quality Plan.

Even though the framework has not yet been fully defined, some main messages from the working groups involved must be followed from here onwards (from "Informal input on strategic indicators" FOREU1[1], 2021):

Reflection on strategic indicators that are needed to measure **the impact of the European Universities Initiatives:**

[1] Group of Alliances of European University Initiative-Erasmus, Call 1.

- The focus of evaluation should lie on the ambition of the alliances; e.g., strengthening strategic partnerships as a means to **revolutionise the quality and competitiveness of European higher education**, research, and innovation areas.

- Achieving an impact is the ambition of all university alliances, but making an impact takes time. Therefore, we also believe it is important to **consider efforts** during the initial years: Realising investments and activities while working towards impact.

- The impact of the initiative will be the **result of joint forces** transcending the alliances: European policy makers, national states, the alliances, and higher education institutions eager to follow the experiences. Accordingly, close collaboration between and commitment by the different actors is needed, and the **indicators cannot only be linked to alliance** performance.

- The European Commission has defined the global objectives, and each alliance has defined a **strategic mission, vision, and own objectives** to align and contribute to some of the global objectives. Accordingly, we advocate that **indicators for each alliance be defined and connected to the respective mission, vision, and objectives.**

The final set of indicators for each alliance could be a combination of **qualitative** and **quantitative** indicators.

Measuring the right things are crucial when examining the impact of European University Alliances at the right strategic level. European University Alliances are pushing the boundaries of European collaboration beyond the missions of universities. The right indicators can measure impact at **different levels**:

- The **European Universities Initiative as a whole**, supporting work towards the next phase of the initiative, and towards a sustainable life cycle approach;
- The **higher education system** level (local, national, and European);
- The **alliance** level;
- A **single institution**, as part of a university alliance.

2.3. Range of Neurotech[EU] key deliverables and activities

The five Neurotech[EU] key deliverables and activities (Annex 3) put the Neurotech[EU] mission, vision, and values (Annex 2) into practice. Therefore, the Quality Plan should reach all of them (from learning and research spaces to virtual collaboration platforms and an innovation ecosystem).

Due to the innovation nature at the core of all of them, guidance on methods and practices to evaluate innovation activities are taken into account, being aware of the following main challenges (Evaluation of Innovation Activities. Guidance on methods and practices; European Commission, 2012)[2]:

- Setting the scope of any evaluation.

  The approaches and methods will vary according to the selected scope of the evaluation.

- Attributing the effects.

  The question of the attribution of effects (how to decide how much of a change in performance is due to a specific innovation measure) is complex.

[2] https://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/eval2007/innovation_activities/inno_activities_guidance_en.pdf

For robust conclusions on the results attributable to a specific measure, using a mix of quantitative and qualitative methods in order to crosscheck findings is recommended.

- Coping with time lags and unintended effects.

  Outcomes of innovation measures are subject to varying time lags and may take varied routes.

  Appraise shorter-term results through formative evaluations and allow sufficient time before conducting an impact assessment. Be open to unintended effects. Collect from the beginning of a programming cycle the baseline and monitoring information that captures changes in innovation activity and co-operation.

3. Definition of Quality Plan

This background above makes clear that the aim of the NeurotechEU Quality Plan must be able to face the Quality Assurance of **"something" very dynamic, open to change,** and with the high level of uncertainty of any innovation. Moreover, a framework should be defined to **address efforts from the very beginning to make real impact** under the *mission, vision, and values* defined in a cost-effective manner.

However, on the other hand, any Quality Plan requires **clear objectives** that define what to measure (indicator system), how to do that, and with a clear definition of who is involved in the process and how.

Therefore, the NeurotechEU Quality Plan is defined here based on a Plan-Do-Check-Act (PDCA) approach, where mechanisms are defined to address complex adaptive problems in order to productively and creatively deliver products of the highest possible value (*Change Management*).
Highlighting the three dimensions to be covered is also relevant:

- The alliance dimension.
- Each single institution, as part of the university alliance.
- The project dimension.

Only the latter, project dimension, ends after 36 months, but the *alliance* will endure beyond such time and be nurtured by the evolution in excellence of each single participating institution.

The **present document** provides a framework and guidelines to serve as the **project dimension**, as it is the birth stage of the alliance. As such, this document also points the way forward for the alliance scope.

In this respect, the following is presented in the sections below:

- The **quality workflow** to follow within each cycle.
- Moreover, a clear definition is given afterwards of who must participate (**stakeholders**), as well as the **inputs** and **outputs** required for each step.

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3.1. Workflow within each cycle

The quality workflow has four steps that must occur in the following sequential process:

3.1.1. "Aim" definition

A clear definition of the value to be delivered within each cycle should be made at two levels:

First level: [Increment]

A strategic definition of the value to be delivered, made at the "**needs**" level, where boundaries, key stakeholders, and target users are specified, but definitions of ways to solve each need are still avoided.

We will name it "**increment**", as in agile terminology[3], where it refers to each next concrete stepping stone toward achieving the project outputs in projects where the goal is not to deliver pieces of work with each cycle, but rather to deliver fully functional incremental value step by step.

Working separately at this level of definition will first promote a more open and cross-functional definition of the work to be done afterwards.

This is particularly recommended for work packages 3-6, and will require a decision-making effort from the value owners (Table 1) at the beginning of each cycle (produced at least yearly in each Annual Action Plan – [Deliverable D1.4]).

Second level: [To-Do List]

This will be a **list of tasks or work to be done** ("To-Do" items from here onwards) to cover the needs defined for each increment. It is highly recommended that it could be defined by a team with expertise in each portion of work, but also with a cross functional profile, and looking to consider as many points of view as possible from both inside and outside the alliance.
Examples of To-Do item writers could be a work package team, several of them, or a mixture between a work package team and other internal/external boards or parallel projects (e.g., CoLearn).

Each To-Do item will include:

- A short description of what piece of work must be done, including a specific goal (defined with SMART criteria – Specific, Measurable, Achievable, Relevant, Time-bound).
- Identifying a single work package team accountable for monitoring its accomplishment.
- Identifying the team responsible for its execution.

For long cycles (e.g., one-year periods), the definition of parent To-Do items would be recommended to facilitate easy and visual monitoring processes of achievements.

Both "Increment" and "To-Do List" should be part of the **Annual Action Plan** (Deliverable D1.4).

3.1.2. "Assessment Plan" definition

Once the "aim" has been defined within each cycle, the second step will be to define the assessment plan for its achievements. This will be done in two main strands:

[3] https://scrumguides.org/scrum-guide.html#increment

- **"Strategic Growth"** of Neurotech[EU] value in the direction mapped out by its mission, vision, and values (according to each "increment" definition).
- **"Internal Quality"** for each delivered "increment".

There will be an Internal Quality Assurance System (IQAS) throughout the life of the project **based on the Internal Quality System of each institution** participating in the University Alliance and according to its responsibility for the increment.

In addition, a **common framework on general guidelines** will be delivered at the end of the third year of the project, when the five key deliverables envisaged (Annex 3) take shape, and therefore a set of processes could be defined.

This IQAS will be preceded by a clear definition of the quality policy (already outlined in the NERQ Compendium).

This IQAS, referring to the three key deliverables related to education and research (Neurotech[EU] Campus+, Neurotech[EU] Graduate School, and Neurotech[EU] Lifelong Learning Center), will be designed following the *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG) (2015, Brussels, Belgium).

The IQAS will establish who makes decisions and how they are made in matters of quality of teaching activities, taking into account, at a minimum:

- Opinions of the groups of interest (students, teachers, administrative and service staff, business people, representatives from public and private institutions).
- Reports from surveys about quality as perceived by students, teachers (all groups of interests identified by each work package in each process).
  Note: The details about surveys and their reports will be included in D2.3. Q3R.
- Studies about procedures in teaching, learning, internships, mobility, and employability.
- Information about complaints, suggestions, and proposals by the groups of interest.

As outputs of the Assessment Plan definition, we will have:

- The **indicator system definition**, providing a clear definition of which information must be collected in order to monitor the quality and effectiveness of the actions executed in each cycle. A stable set of large categories of indicators are provided later in this document for the purpose of serving as a common framework throughout the broad spectrum of Neurotech[EU] achievements.

- The quality criteria definition for each indicator system step by step.

  Both outputs will be part of Deliverable D2.3.

3.1.3. Monitoring Process

This process is being defined in detail as deliverable work package 1 (Deliverable D1.5), but is part of the quality process.

The objective is to map out and monitor **how the "aim" is achieved within each cycle**. It will consist of a process of **data collection** from work package leaders mainly, but also from the Central Management Office (for added general data).

Data collection will be gathered to fulfil the indicator system defined in the previous process, and with the support of the tools provided in Deliverable D2.3 for that purpose.

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The main output of this quality process will be the ***Annual Monitoring Progress Report***.

3.1.4. Improvement Plan

This process will be defined in detail in Deliverable D2.4.

The process will follow, as well as the Assessment Plan, two main strands: Strategic Growth and Internal Quality.

The owners of both processes differ, since the first (Strategic Growth) must be owned by the same team that defines the value to be delivered (Value owners: BoG & key stakeholders) and the second process (Internal Quality) is owned by the Quality Committee together with the BoG.

The **Quality Committee** will provide tools to support the Assessment Plan also in strand “Growth”.

The vision from both will be integrated in Deliverable D2.4 (NERQ Compendium/ 3. Improvement Plan) as a single document.

3.2. Quality Workflow: responsibilities, inputs, and outputs

For each cycle or “increment” definition, it will be relevant to **guarantee participation by all relevant stakeholders**, and to produce the outputs to serve the interlocking of processes defined above.

A descriptive summary is attached here:

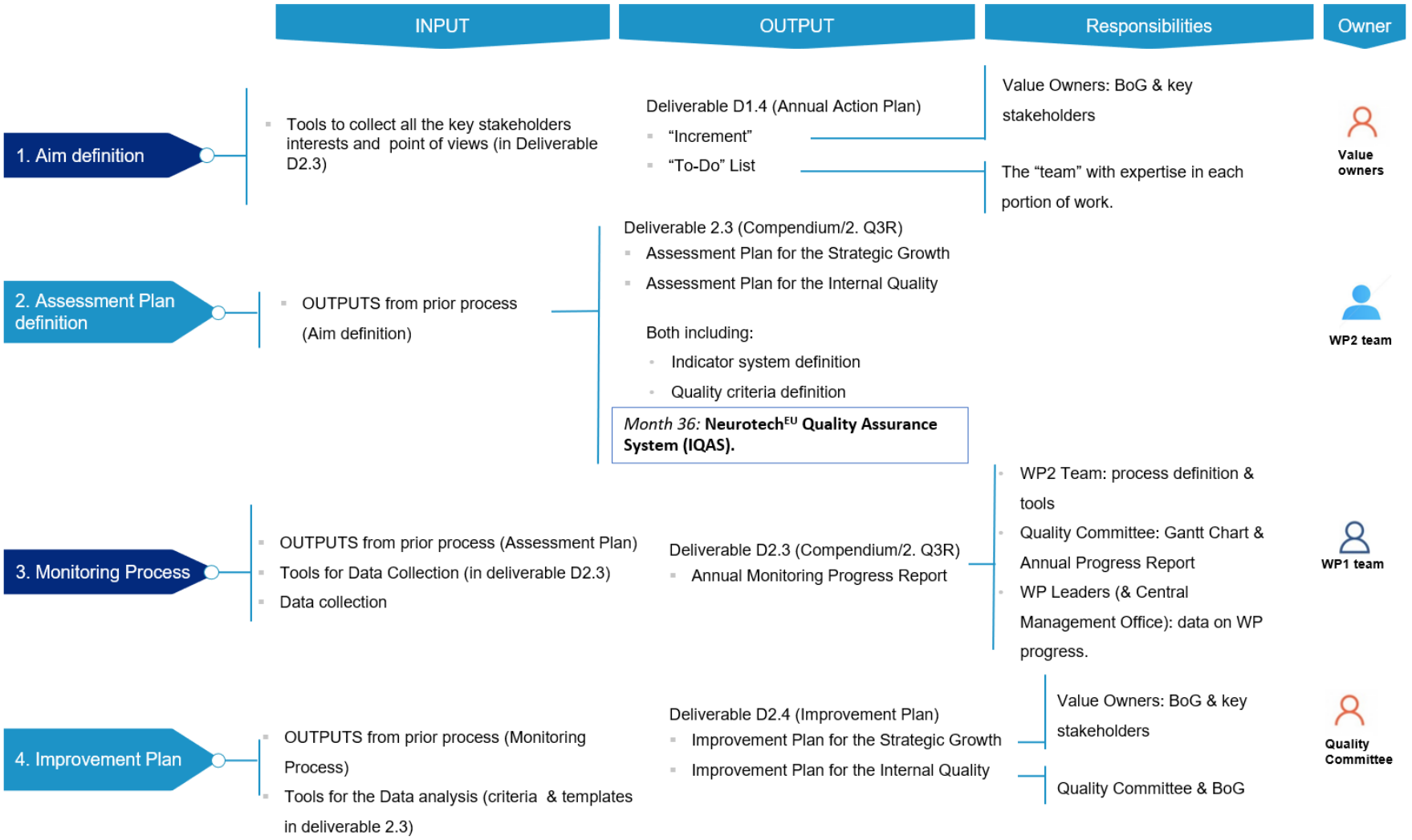

Table 1. Quality Workflow: responsibilities, inputs, and outputs.

3.3. External evaluation

After each quality cycle (or longer periods, if appropriate), an external evaluation of the whole quality workflow will be carried out, following the ESG Standards and Guidelines.

The evaluation will be conducted by a selection of experts using methodologies according to the purpose of each step in the quality cycle.

Cross-functional peer-review experts such as the Associated Advisory Committee (from industry, government, and academia) would be the recommended profile for this purpose. Additional external experts would be advisable, according to the aim in each step and dimension.

4. Indicator System

Regarding the project dimension, the indicator system must be defined in close relation with the “aim” defined for each incremental step. Thus, it will be very relevant to produce an indicator system containing what really matters to track each expected incremental value.

On the other hand, and **for the dimensions of the Alliance**, a stable set of categories should also be proposed. This set is required to serve as the first backbone from which alliance and European University Key Performance Indicators (KPI) should fit.

At the end of month 36, a stable indicator system will be produced as an evolution of the current backbone proposed below.
Here are the proposed **parent categories** as a **first approach** to the KPI backbone.

- Increased Funding.
- Dissemination & Impact.
- Management & Efficiency (Central, Representative Bodies, and Partner Levels).
- Equity, Equality, Diversity, and Inclusion.
- Ethics Committee.
- Work towards the United Nations Sustainable Development Goals (SDG).
- Engagement in Collaboration: Teaching & Learning.
- Engagement in Collaboration: Research.
- Engagement in Collaboration: Technological Innovation.
- Engagement in Collaboration: Societal Innovation.
- Engagement in Collaboration: Complementary Projects.

This list was compiled after conducting an alignment workshop with the indicator system’s main stakeholders (representing all NeurotechEU work packages and the Student Council).

An added exercise was also carried out to understand the **singularity of all different key deliverables** concerning indicators (Annex 4). As a result of this exercise, some overlaps were identified with the general indicators. Therefore, it was generally agreed to review their coverage with a new definition for them dependent on the 11 large categories defined above. In further versions of the indicator system, this issue will be reviewed.

Finally, some **other categories** were also identified as relevant for the alliance (internationalisation, clarity, and transparency), but affecting the rest transversally.

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Clarity & Transparency as a transversal need refers here to:

- Provide a clear understanding of where we are as an Alliance (work package progress) to help promote collaboration.
- Fit progress in deliverables (all should have a place in the indicator system).

These transversal categories will also be developed in further versions.

A first description of the 11 large categories of indicators is developed collaboratively now and added below.

4.1.Parent categories of indicators

Some examples accompany each category to facilitate and promote a common starting point for teamwork in upcoming versions.

After each project "increment" (annually), further developments will occur under the specific scope of each annual increment, where the WP2 team, together with the concerned stakeholder, refine the indicator system.

In some parent categories, some **segmentation layers** are defined. These are variables relevant to produce a data visualisation dashboard helpful for further analysis and the improvement plan definition. These layers are a first approach of what could be relevant filters for the indicators in a quality control panel, also under a further development by the teamwork in upcoming versions.

4.1.1. Increased Funding

This parent category will include measurements relevant to tracking efforts and their success to serve the financial support to move the alliance forward as required in its mission, vision, and values.

Example:
Source*: Neurotech[EU] Communication Plan*

Sub-categories	**Example of indicators**
New funding opportunities	● Number of proposals. ● % of success.

Segmentation layer:

- Subject matter: e.g., widening access (funding proposals related to plans for widening access)

4.1.2. Dissemination and Impact

This will include the measurements relevant to track the efficiency of efforts to provide visibility to the project outcomes: courses, networks, access to platforms, corporate collaboration.

This efficiency will be measured against our mission, vision, and values (the same applies for all the parent categories below).

Example:
Source: *Neurotech[EU] Communication Plan*

Sub-categories	**Example of indicators**
Impact of dissemination actions	● Number and description of dissemination actions. ● % of relevant activities to increase project impact. Note: tools will be provided to make a valuable qualitative review of activities to provide a quantitative %.

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Effort to provide visibility to **project outcomes** (courses, networks, access to platforms, and corporate collaboration).	● % of delivered outcomes that have been disseminated. (Definition of "been disseminated" according to the phase we are in the life cycle of each product).

Segmentation layers:

- Per owner: WP teams 1-8, Student Council, associated partners, European Commission
- Per target user: technological industry, citizen associations, first-year/doctoral students

4.1.3. Management & Efficiency (Central, Representative Bodies, and Partner Levels)

This will cover the necessary indicators to provide visibility to the effective work completed to make a cost-effective implementation of the alliance (efficient use of resources, collaboration pathways, processes, tools and methods …).

It is in close relation with WP1, and therefore indicators will be defined together.

It will also be relevant here to consider that these indicators should not be contradictory with the requirements of an innovation ecosystem (e.g., *fluidity*, an environment that avoids rigid processes that could inhibit the capacity to challenge constraints).

4.1.4. Equity, Equality, Diversity, and Inclusion

Although this category could be seen as a joined category, together with the parent categories of "Ethics Committee" and "Work towards the United Nations Sustainable Development Goals (SDG)", it will be considered separately for this first version, as it is a first priority per se, for the Alliance.

In subsequent versions, at a minimum, bridges should be built between all ethical subcategories. The role of Social Inclusion Advisor will be of primary importance for that issue.

It is in close relation with WP7, and therefore indicators will be defined with the collaboration of this work package team.

It will cover not only the number of interventions, but also a description of them.

Example:
Source: Deliverable D7.5 (Neurotech[EU] Policy and Action Plan on Equality, Diversity, and Inclusion) – "Actions planned inside and across Neurotech[EU]: Widening access"

Sub-categories	**Example of indicators**
Awareness: mapping diversity To gather accurate data and evidence on access and participation.	● Number of efforts to define the vulnerable population[4] in each participant country. ● Scope of maps of diversity made: % tracked on potential vulnerable groups. ● Scope of maps of areas considered of university life: % tracked.
Definition of interventions (action plan) Number of interventions defined.	**For all students:** ● Number of interventions to educate all students and on inclusivity, diversity, and equity using courses on topics such as cultural awareness or unconscious bias. **For target vulnerable populations**: E.g. (from D.7.1 Best Practices)

[4] (From D7.1) Vulnerable populations: (1) Individuals from lower socio-economic groups, backgrounds, or locations where access and participation to higher education is scarce, (2) Individuals living with disability, mental health issues, or learning difficulties, (3) International students and staff, as well as individuals with literacy or comprehension difficulties, (4) Ethnic groups or sub-groups, (5) Sexual orientation or gender identities, (6) Older and part-time learners, (7) Residents of rural areas, (8) Care leavers and carers, (9) Traveller community members, (10) Refugees, (11) First-generation students and people who attend schools and colleges where performance is below the national average, (12) Individuals estranged from their families.

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	Number of: ● Preparatory courses for those without formal eligibility. ● Funding policies: merit-based grants and need-based grants. ● Organisational policies to help students from disadvantaged backgrounds. ● Differentiation and introduction of shorter study programs. ● Information policies to alleviate uncertainty (especially for first-generation students).
Impact of interventions (evaluation of interventions)	E.g. (depending of the intervention and target population) (From "National Plan for Equity of Access to Higher Education 2015–2019. Ireland". https://hea.ie/assets/uploads/2017/06/National-Plan-for-Equity-of-Access-to-Higher-Education-2015-2019.pdf) ● % of participation by females in all levels of responsibilities inside the university community. ● Participation in higher education by people disadvantaged by socio-economic barriers. ● Participation in higher education by 'first-time' mature students. ● Participation in higher education by people with disabilities. ● Participation in part-time/flexible higher education. ● Progression to higher education by holders of further education qualifications. ● Participation in higher education by "Travellers". ● Data based on postcodes.

4.1.5. Ethics Committee

This will cover a wide range of indicators related to the efficient management of the Ethics Committee itself, as well as provide visibility of the effective work done to encourage ethical issues throughout the Alliance.

Example:
Source: "Neurotech[EU] Compendium with ethics"

Sub-Categories	Example of indicators
Management Activity of Neurotech[EU] Ethics Team[5]	● Number of meetings/year. ● Number of consultations made to local experts from the partners. ● Number of consultations received. ● Number of tasks assigned by the Board of Governors.
Proactive activity of Neurotech[EU] Ethics Team	Num. of activity to encourage ethical issues in: ● Medical treatments and trials: ○ Interventions in humans. ○ Use of human biological samples. ○ Use of animals. ○ Use of biological agents or genetically modified organisms. ● Use of personal data: privacy and data protection issues.

[5] Specific aims of the Neurotech[EU] Ethics Team: (in "Neurotech[EU] Compendium with ethics"):
- Ensure a high standard of the progress and documents of the project.
- Support and carry out research activities with ethical implications, including medical treatments and trials, privacy and data protection issues, artificial intelligence aspects, etc., specifically involving:
  - Interventions in humans.
  - Use of human biological samples.
  - Use of personal data.
  - Use of animals.
  - Use of biological agents or genetically modified organisms.
- Proactively encourage the incorporation of ethical issues into each relevant educational programme of the Alliance.
- Support the Work Packages, considering ethical issues in deliverables, where relevant.
- Serve the Alliance as an ultimate support team for each individual citizen of the Neurotech[EU] European University in case of ethical doubts and questions.

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	● Artificial intelligence aspects. ● Other.
Proactive activity of Neurotech[EU] Ethics Team to encourage the incorporation of ethical issues into each relevant **educational programme of the Alliance**.	To be determined in upcoming versions.
Activity of Neurotech[EU] Ethics Team to serve the Alliance as an ultimate support team for each **individual citizen of the Neurotech[EU] European University** in case of **ethical doubts and questions**.	To be determined in upcoming versions.

4.1.6. Work towards the United Nations Sustainable Development Goals (SDG)

This will cover the wide range of the SDGs, and not only the main strategic ones (SDG 3. Good Health and Well-being; SDG 4. Quality Education).

This will include indicators to provide visibility of Alliance contributions to them, in contrast with our mission, vision, and values.

Example:
Source: Indicators used by ***The Times Higher Education*** (THE) Impact Rankings as they assess universities against the United Nations Sustainable Development Goals (SDGs).

Sub-Categories	**Example of indicators**
SDG 3. Good Health and Well-being (Target *3.4* - Work on mental health as a priority for global development, and specifically on the identified burden of non-communicable diseases, including behavioural, developmental, and neurological disorders.)	● Number of activities that position the Alliance as **leader** of this goal (e.g., number of policies developed to support the health of students and staff …). ● **Relationships to support the goal:** ○ SDG policy development with the government. ○ Cross-sectoral dialogue about the SDGs with the government or NGOs. ○ Collaborate internationally to capture data relating to the SDGs. ○ Collaborate internationally to develop best practices on addressing the SDGs. ○ Collaborate with NGOs to address the SDGs through student volunteering programmes, research programmes, or educational resources.
SDG 4. Quality Education "Ensure **inclusive and equitable** quality education and promote **lifelong learning** opportunities for all".	● Increased number of evidences that position the Alliance as **leader** of this Goal. ○ Indicators from topics in the Neurotech[EU] key deliverable: Lifelong Learning Center. ○ Indicators from “Widening access” topic.
For all the SDGs: **Education on the SDGs** This metric explores how universities are teaching the next generation to adopt sustainability in their lives.	Number of educational programmes on: ● Sustainable mobility. ● Good water management. ● Responsible consumption and production. ● Climate change.
For all the SDGs: **Partnerships for the goals (SDG 17)**	● Number of **relationships to support the goals** (SDG policy development with government; Cross-sectoral dialogue about the SDGs with government or NGOs; Collaborate internationally to capture data relating to SDGs …). ● Identification of **Best Practices** inside partners in the Alliance, and in the Alliance itself and the **number of activities for its promotion** in: ▪ Spin-offs.

	▪ Graduate companies[6]. ▪ Industries. ▪ Other partners.

4.1.7. Engagement in Collaboration: Teaching & Learning

As "engagement in collaboration" is such a relevant and strategic component of Neurotech[EU] at the Alliance dimension, it has been considered it should be heading the four large categories that cover the core content of Neurotech[EU]:

- Teaching & Learning.
- Research.
- Technological Innovation.
- Societal Innovation.

The indicators for all of them will be formulated on those terms (engagement in collaboration).

Example:
Source:

- Catalogue of Indicators of U-Multirank.[7]: 'higher education cooperation index' created by U-Multirank.
  https://www.umultirank.org/about/methodology/indicators/
  https://www.umultirank.org/blog/umultirank-cooperation-index/
  https://www.umultirank.org/press-media/press-releases/u-multirank-creates-new-higher-education-cooperation-index/

- SDG 9. Industry, Innovation, and Infrastructure.
  https://www.timeshighereducation.com/rankings/impact/2020/industry-innovation-and-infrastructure#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/undefined

- Technopolis workshop on indicators – NeurotechRI

Example of indicators
Promotion of **teaching** at the **intersection of disciplines**: ● Number of courses with co-teaching through instructors from different research fields. Efforts to achieve **automatic recognition** of learning period internships and diplomas **between the partners** (from D7.1): ● Number of activities carried out to find ways for automatic recognition of learning periods, internships, and diplomas between the partners. ● Improvements in transparency and excellence in quality systems. **Participation of students** in designing learning programmes (from D7.1): ● Number of participation of students jointly with staff in developing integrated and open programs.

Other sub-categories to consider include:

Sub-categories	**Example of indicators**
Student engagement 1. Does the Neurotech[EU] offer attract students (1st enrolment)?	Increase pan-European **mobility** among partnering institutions: ● Number of exchange activities for students (bachelor, master's, and doctoral), staff, and researchers. Increased recruitment of students from EU and partner countries:

[6] Graduate companies: Companies newly founded by graduates.
[7] This Catalogue of Indicators is defined to measure how higher education institutions engage in collaboration with other higher education institutions, business, and society. This is because universities tend to strategically seek cooperation in the areas they value most, and in doing so generally perform better than universities that do not. It is not confined to research but takes into account different aspects and dimensions of the performance of universities: teaching and learning, research, knowledge transfer, international orientation, and regional engagement.

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2. Rate of engagement (finished degree, hooked by other courses/activities).	● Number of applications and number of accepted students from target countries for the master and PhD programmes. Student satisfaction index (NPS & open feedback). From SDG 11. Sustainable Cities and Communities: ● Number of policies and practices to promote **sustainable mobility** practices between students and researchers and staff: ○ Encourage telecommuting, remote working, or condensed workweeks. ○ Targets on sustainable commuting. ○ Promote sustainable commuting.
Identity of course catalogue: 1. Benefiting from the strengths of each university.	Per categories[8]: ● Number of seminars/courses open for students in each category (per field of interest). ● Participation of local students in partner seminars/courses.
Identity of course catalogue: 2. Cultural approach: taking advantage of the best traditions in each country's culture. 3. Creating a collective European academic identity.	Inputs from cultural environment: ● Number of language courses. ● Number of participants in regional cultural activities. ● Number of participants in activities to promote a collective European academic identity. ● New entrants from the region[9] (U-Multirank).
Innovative teaching methodologies implemented	Development of innovative pedagogical approaches ● Number of seminars/courses with Virtual Exchange, Virtual Reality …

OTHERS (from U-Multirank):

- Expenditure on teaching (%): Expenditure on teaching activities as a percentage of total expenditure.
- Degree level focus: Number of master degrees and doctorates awarded as a percentage of total number of degrees awarded.
- Scope: Number of educational fields in which educational programmes were awarded.

4.1.8. Engagement in Collaboration: Research

The indicators here will try to provide visibility on the efficiency of research efforts by the Alliance, also in terms of engagement in collaboration, as per following our mission, vision, and values.

Example:
Source:

- Catalogue of Indicators from U-Multirank: 'higher education cooperation index' created by U-Multirank.
  https://www.umultirank.org/about/methodology/indicators/
  https://www.umultirank.org/blog/umultirank-cooperation-index/
  https://www.umultirank.org/press-media/press-releases/u-multirank-creates-new-higher-education-cooperation-index/

- SDG 9. Industry, Innovation, and Infrastructure.
  https://www.timeshighereducation.com/rankings/impact/2020/industry-innovation-and-infrastructure#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/undefined

- Technopolis workshop on indicators - NeurotechRI

[8] Categories of courses relevant to be tracked should be defined (e.g., short courses, seminars, cross-disciplinary …).
[9] According to the U-Multirank Catalogue of Indicators, "New entrants from the region" refer to the number of first-year bachelor students from the region as a percentage of total number of first year bachelor students.

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Example of indicators
● Promotion of **research** in the **intersection of disciplines**: ○ Number of publications with co-authors from different research fields. ○ Number and amount of funding for distinctly interdisciplinary research projects. ● Promotion of **research on industry, innovation, and infrastructure** (from SDG 9/THE): This focuses on research that is relevant to industry, innovation, and infrastructure, measuring the volume of research produced. (Indicators from SDG 9/THE): ○ Research income from industry (SDG 9). ○ Research on industry, innovation, and infrastructure (SDG 9). ● **Research income from industry** (from SDG 9/THE): This metric reflects the ability of the university to generate new research income and it is used in the *Times Higher Education* World University Rankings. It measures the amount of research income an institution earns from industry (adjusted for purchasing-power parity (PPP)), scaled against the number of academic staff it employs. ○ % of external research income.

4.1.9. Engagement in Collaboration: Technological Innovation

The indicators here will try to provide visibility to the efficiency of technological innovation with regard to accomplishing our mission, vision, and values.

The specific indicators will be defined together with WP5.

Moreover, they should be in coherence with some requirements of relevance for an Innovation ecosystem[10]:

- **Density & Diversity**: Pure volume of stakeholders alone is naturally not enough. Measures should be distinguished on different types of firms and specialisations.
- **Connectivity**: The connections between the elements matter just as much as the elements themselves.

[10] Source: “Measuring an Entrepreneurial Ecosystem” (Stangler & Bell-Masterson, 2015). https://www.kauffman.org/wp-content/uploads/2019/12/measuring_an_entrepreneurial_ecosystem.pdf

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Example:
Source:

- Catalogue of Indicators of U-Multirank: 'higher education cooperation index' created by U-Multirank.
  https://www.umultirank.org/about/methodology/indicators/
  https://www.umultirank.org/blog/umultirank-cooperation-index/
  https://www.umultirank.org/press-media/press-releases/u-multirank-creates-new-higher-education-cooperation-index/

- SDG 9. Industry, Innovation, and Infrastructure.
  https://www.timeshighereducation.com/rankings/impact/2020/industry-innovation-and-infrastructure#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/undefined

- Technopolis workshop on indicators - NeurotechRI

Sub-categories	Example of indicators
Engagement in collaboration: **knowledge transfer** (industry)	From U-Multirank: ● % of co-publications with industrial partners.[11] ● Ratio for number of graduate companies per 1000 graduates. From SDG 9/THE (Industry, Innovation, and Infrastructure) ● **Number of university spin-offs.** University spin-offs are defined as registered companies set up to exploit intellectual property that has originated from within the institution. They must have been established at least three years ago and still be active. ● **% of co-patents with industrial partners** (U-Multirank). From Technopolis workshop on indicators - NeurotechRI: ● **Existence of courses & training enabling entrepreneurial aspirations of researchers at all career stages**.
Engagement in collaboration: **regional engagement** (regional industry)	● Income from regional sources. ● Co-publications with regional industrial partners.[12]

4.1.10. Engagement in Collaboration: Societal Innovation

This will cover the measurements to highlight the impact of Alliance achievements in Society.

Example:
Source: *Technopolis workshop on indicators - NeurotechRI*

Example of Indicators
From Technopolis workshop on indicators/TM6: Embedding citizens and society - NeurotechRI: ● Participation in activities/settings that allow the transfer of (academic) knowledge into **policy making** (such as regional strategic boards, strategy development processes at national or global levels, etc.). ● Existence and identification of infrastructures/institutional settings within the HEI that enable **engagement of citizens, civil society, and local communities** (such as science shops, maker space/fablab, living labs, etc.). ● Existence of training, webinars, and courses for researchers to acquire the **skills needed to develop citizen science projects** and learn about approaches to **co-creating innovations** with society. ● Realisation of **activities to engage with citizens, civil society, and local communities** (such as focus groups, science slams, open seminars, science weeks, cooperation with museums, etc.).

[11] The percentage of the university's research publications that list an author affiliated to an address of a for-profit business enterprise or private sector R&D unit (excludes for-profit hospitals and education organisations).
[12] "Regional joint publications" in U-Multirank: The percentage of the department's research publications that list at least one co-author with an affiliate address in the same spatial region (within a distance of 50 km from the university).
https://www.umultirank.org/about/methodology/indicators/

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- Existence of incentives regarding citizen engagement.

4.1.11. Engagement in Collaboration: Complementary Projects

This category will include measurements for tracking activities and interdependencies of complementary projects with source grants.

This category will be defined together with WP1.

5. Documentation Management

The main objective of document management is to organise actions to guarantee the creation, cataloguing, custody, and accessibility of different documents in a reliable and controlled way.

At the dimension of the project, the responsibility of safeguarding the documentation related to the deployment and monitoring of the Quality Plan rests with the **owner of each process** as detailed before. However, the **Quality Manager** catalogues and archives both the current versions and historical versions of the documents in custody.

In addition, at the end of the project, a process will be defined as part of the IQAS where all the details about document management for the **Alliance** and **European University** will be established (access permissions and its management, identification of responsibilities to update latest versions …).

6. Public Information and Accountability

It should be taken into account the feasibility and advisability of providing visibility to the degree of compliance resulting from each incremental deployment of the Quality Plan.

Therefore, the Quality Committee will decide, at the end of each cycle, the scope of what must be published for the purpose of transparency and commitment with society.

7. References

- Standards and guidelines of the European Association for Quality Assurance (ENQA) and Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). (2015) Brussels, Belgium.
- Developments of the European Framework for Comprehensive Quality Assurance of European Universities (EUniQ).
- European Approach for Quality Assurance of Joint Programmes.
- Guidelines of the European Charter for Researchers.

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Annex I. Commitment of the Board of Governors to quality management

From Deliverable D2.1.

COMMITMENT OF THE Board of Governors TO QUALITY MANAGEMENT

In the framework document, "Criteria and Guidelines for the Quality Assurance of the EHEA", the ENQA establishes that "institutions must guarantee that they collect, analyse, and use relevant information for the effective management of their study programs and other activities", since "an institution's self-knowledge is the starting point for effective quality assurance".

The BoG is committed to improving the quality of management at Neurotech[EU]. In this context, the system requires periodic analysis of data, indicators, results and, ultimately, organisational processes that should allow the BoG to share its current situation and evolution followed based on the objectives set and that, finally, lead to making strategic decisions.

As a fundamental part of its policy, the BoG expresses its commitment to quality management, making, for this, a public and written declaration of its commitment.

The BoG is committed to the design and deployment of its system that allows guaranteeing quality in all its processes, ensuring the satisfaction of the needs and expectations of its stakeholders and using resources efficiently.

The BoG assumes the following commitments in relation to quality management:

- Define, review, and permanently update its Policy for Quality, formulated by the **Quality Assessment Committee**.
- Promote the understanding and acceptance of this Policy for Quality by Neurotech[EU] personnel and its dissemination to stakeholders.
- Establish a system of documentation to guarantee the quality of all the processes it comprises.
- Assume permanent commitment to continuous improvement, for which it proposes to carry out preventive and corrective actions that may be necessary.
- Ensure that the Internal Quality Assurance System (IQAS) remains effective and is controlled and reviewed periodically.

Commitments that are assumed take into account the following principles:

- Orientation to students and society.
- Development and involvement of people.
- Leadership of the management team.
- Learning, innovation, and continuous improvement.
- Process management.
- Strategy based on understanding the needs of stakeholders and the external environment.
- Adequate management of resources.

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Annex II. Mission, Vision, and Values

As in the Neurotech[EU] Proposal – Part B3 (Mission statement European Universities 2020)

Neurotech[EU] mission

From health and healthcare to learning and education, Neuroscience plays a key role in addressing some of the most pressing challenges that we face in Europe today. Whether the challenge is the translation of fundamental research to advance the state of the art in prevention, diagnosis or treatment of brain disorders or explaining the complex interactions between the brain, individuals and their environments to design novel practices in cities, schools, hospitals, or companies, brain research is already providing solutions for society at large. On this front, real progress is being made by bringing researchers and educators together from many different disciplines, including medicine, social sciences, science, technology, management, economy, humanities and philosophy.

Neuroscience shows great promise to become an applied science, to provide brain-centred or brain-inspired solutions that could benefit society and kindle a new economy in Europe. **The European University of Brain and Technology** (Neurotech[EU]) aims to be the backbone of this new vision by bringing together eight leading universities across the four corners of Europe, 250+ associates, including previously funded European Universities, partner research institutions, companies, societal stakeholders, cities, and (non) governmental organisations to implement a comprehensive training program for all segments of society and in all regions of Europe. We will educate students across the three cycles (Bachelor, Master, Doctoral), promote life-long learning and train the next-generation multidisciplinary scientists and engineers, provide them with direct access to cutting-edge infrastructure for fundamental, translational and applied research in a large variety of mother disciplines to help Europe address this unmet challenge.

Neurotech[EU] values

The Neurotech[EU] partnership envisages itself as an alliance 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.

Academic freedom and integrity, institutional autonomy, the participation of students and staff in alliance governance and ethics in research and education as expressed in the Bologna process, the Paris Communiqué and the Magna Charta Universitatum form the backbone of the Neurotech[EU] Alliance. Every partner commits to promote and protect these fundamental principles whether in its own university or in the Neurotech[EU] as a whole.

In order to live up to the vision of a strong alliance with shared values, rather than a number of different universities, departments, and administrative units, the Neurotech[EU] partners are committed to developing a common understanding of the core values that must permeate the activities of the alliance. The aim is to establish the use of values as a permanent and ongoing feature of the Neurotech[EU] organisation, engaging staff and students and embedding them across the network and its activities. This will remain an ongoing discussion that may be inspired by the guidelines for universities developed within The Magna Charta Observatory 'Living values' project, which is a project devoted to supporting universities in enacting their values.

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NeurotechEU vision

- Creating synergy for a joint long-term strategy for education and research at the intersection of Brain Sciences and Technology to increase the competitiveness of European education, research, economy, and society
- Transforming our universities with a joint long-term vision and action plan that is modular and scalable, that crosses academic, faculty or organisational boundaries
- Seamless mobility for students, research and staff to study, train, teach, do research and innovate, reaching 50% of students through innovative mobility programs, including physical and virtual mobility programs
- Flexible curricula tailored to each student's needs and not constrained by institutional capabilities and borders
- Promoting European identity among students and researchers with multicultural, multilingual, international and intersectoral experiences across the European continent
- Lasting close cooperation between partners for a trans-European network of excellence in brain research and technologies
- Creation of the European Neurotech ecosystem which will support our students during their formative years in the university, and afterwards to transition into becoming responsible, ethical and global citizens of the economy and society
- Using our educational prowess to provide the necessary talent and innovative solutions for the European Neurotech ecosystem as a whole
- Actively contribute to the reduction of inequalities within the European Research Area by promoting excellence in education and research throughout Europe, and help strengthen the research and innovation capacity to fight against the brain drain
- Raising awareness of ethical challenges at the intersection of neuroscience and technology

- Working towards the United Nation's Sustainable Development Goal that identifies the burden of non-communicable diseases, including behavioural, developmental and neurological disorders, and defines mental health as a priority for global development

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Annex III. Key Deliverables/Activities

From the Neurotech[EU] Factsheet:

KEY DELIVERABLES / ACTIVITIES

- **Neurotech[EU] Campus+** will create the crucial shared virtual space, an extension of the partnering organisations, where students, teachers, and administrators work together without obstacles to provide physical, digital and blended education.

- **Neurotech[EU] Graduate School** will provide co-tutelage education at master's and doctoral level to train top-flight researchers. It will promote innovation and an entrepreneurial mindset. Each student will work on a **Neurochallenge**, i.e. societal challenge that can be met by neuroscientific and neurotechnological solutions.

- **Neurotech[EU] 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 competences to adapt to changing personal, civic, societal and employment-related needs and provide them with opportunities in brain research and technologies.

- **Neurotech[EU] Spaces** will be the virtual collaboration platform. Based on open source software, the Spaces will provide the necessary tools to communicate, create, share and store information safely. It will address the needs of users from any background.

- **Neurotech[EU] Ecosystem**. Modern universities need to be integrated into society and the economy to help universities to focus on their education, talent development and innovation efforts; to help boosting graduates' employability and to promote entrepreneurship.

Annex IV. Singularity of All Different Key Deliverables Concerning Indicators (Exercise)