**Scientific Methodologies for Advanced Research in Teaching**

**List of participants (1 page)**

| **Participant No.** | **Participant organisation name** | **Country** |
| --- | --- | --- |
| **1**  **(Coordinator)** | NOVA UNIVERSITY OF LISBON | PORTUGAL |
| **2** | UNIVERSITY OF BOLOGNA | ITALY |
| **3** | THE HEBREW UNIVERSITY OF JERUSALEM | ISRAEL |
| **4** | STAB VIDA INVESTIGACAO E SERVICOS EM  CIENCIAS BIOLOGICAS LDA | PORTUGAL |
| **5** | UNIVERSITY OF ATHENS | GREECE |
| **6** | EXELIXIS RESEARCH MANAGEMENT AND COMMUNICATION | GREECE |
| **7** | UNIVERSITY OF CAMPINAS | BRASIL |
| **8** | YAGMA | NETHERLANDS |
| **9** | UNIVERSITY OF PERNAMBUCO | BRASIL |
| **10** | Taras Shevchenko National University of Kyiv | Ukraine |
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**1. Excellence** #@REL-EVA-RE@#

**1.1. Objectives** #@PRJ-OBJ-PO@#

[e.g. 1 page]

*Briefly describe the objectives of your proposed work.*

* *Why are they pertinent to the work programme topic?*
* *Are they measurable and verifiable?*
* *Are they realistically achievable?*

By 2030, our consortium envisions (See Table A) a **transformation in science education within universities across Europe**, **replacing traditional theoretical approaches with practical, individualized, and technology-driven learning experiences.** Central to this vision is integrating our **Dr. Vida Education device**—a multitask, compact, affordable, and eco-friendly tool—into the academic curriculum of technology and scientific degrees (<https://smartupdreducation.wixsite.com/welcome> password: SMART). The device bridges theoretical learning with practical experimentation, encompassing disciplines such as bioinformatics, chemistry, biochemistry, physics, biotechnology, engineering, and medicine. It promotes innovation and sustainability in education by utilizing **artificial intelligence (AI) and bioinformatics** tools to transform learning and research. **The concept one student-one apparatus is achieved.** For instance, AI enables real-time analysis of experimental results, offering instant feedback and personalized learning paths. In biotechnology and medicine, bioinformatics supports complex data analysis, addressing issues like water contamination (e.g., Hg and Ar) or epidemiological studies (e.g., lactase intolerance, sexually transmitted diseases). The project aligns with the EIT HEI Initiative and European policy priorities, fostering innovation and addressing key societal challenges as follows:

* [**European Green Deal:**](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0640&utm_source=chatgpt.com)The eco-friendly design of the Dr. Vida Education device minimizes resource use and reduces the environmental footprint of science education, supporting Europe’s sustainability goals via the [**analytical minimalism concept**](https://pubs.rsc.org/en/content/articlelanding/2010/jm/JA9951000169?utm_source=chatgpt.com) achieving accurate, reliable, and actionable analytical results using the simplest, most efficient, and resource-conscious methods. It aligns with principles of sustainability, practicality, and accessibility in analytical processes, whether in science, technology, or other fields.
* [**EU Digital Education Action Plan (2021-2027):**](https://education.ec.europa.eu/focus-topics/digital-education/action-plan?utm_source=chatgpt.com) By integrating AI and bioinformatics, the device aligns with the EU’s push for the digital transformation of education.
* [**European Skills Agenda:**](https://ec.europa.eu/social/main.jsp?catId=1223&langId=en) The project addresses the agenda’s focus on reskilling and upskilling, equipping graduates with advanced competencies essential for the labor market.
* [**EU Recommendation on Key Competences for Lifelong Learning:**](https://education.ec.europa.eu/focus-topics/improving-quality/key-competences?utm_source=chatgpt.com) The initiative fosters key competences such as digital literacy, science and technology expertise, and entrepreneurial skills.

By equipping students and educators with Dr. Vida Education, supported by AI and bioinformatics capabilities, we aim to:

1. **Transform HEIs into innovation hubs**, bridging learning, research, and business through technology-driven solutions.
2. **Foster a workforce skilled in AI and data analysis**, essential for addressing global health, sustainability, and technology challenges.
3. **Position Europe as a global leader in science education innovation**, ensuring competitive advantage in the evolving digital landscape.

This vision aligns with the EIT HEI Initiative's goals of making European universities global leaders in innovative education, impactful research, and sustainability by 2030. Through the IVAPs, the project fosters a sustainable innovation ecosystem by integrating the Dr. Vida Education device into five disciplines, revolutionizing education with practical, personalized learning. Collaboration between HEIs, businesses, and research centers drives innovation and startup development, transitioning academic solutions to market. By 2030, the initiative targets adoption in 20 European and 20 global HEIs, ensuring systemic impact, while innovation boot camps enhance skills, employability, and workforce readiness.

**Communities (KICs)**:

**EIT Health**: By integrating bioinformatics tools and supporting epidemiological studies, the device contributes to advancements in medical education and research, addressing critical global health challenges.

**EIT Climate-KIC**: The device’s eco-friendly design and applications in sustainability (e.g., water contamination monitoring) align with goals to tackle climate change through innovation.

**Table A. SMART Project's IVAP: Phases, Actions | Objectives, and respective SMART characteristics.**

| **Phase** | **Action | Objective** | **S**pecific | **M**easurable | **A**chievable | **R**elevant | **T**ime bound |
| --- | --- | --- | --- | --- | --- | --- |
| **Phase 1**  **(2025-2026)**  **Foundation and Pilot Implementation** | 1  Develop and Integrate the Device into beneficiaries´Curricula | Pilot program with beneficiaries | Up to 500 students in first phase. | Experts Consortium | Practical science education. | Integration by the end of 2025 |
| 2  Build an Innovation Network | Building “SMARTUP” an Star-up on Education | Peducation program in [conferences](https://www.bioscopegroup.org/conferences/) (up to 5 each year) | Utilize existing UNL-BIOSCOPE Conferences | collaboration between academia and industry | SMARTUP operational by the end of Phase 1 |
| **Action 2**  **Phase 2A (2026-2027)**  **Expansion and Impact Enhancement** | **3**  Scale Adoption Across Europe | Expand the program to 20 HEIs across Europe. | 2000 students and 20 educators | Secure additional national funding. | Promotes Europe-wide educational transformation. | Complete scaling by the end of 2027. |
| **4**  Foster Entrepreneurial Skills | Camps for learning | Train 160 teachers | KIC partners for mentoring and funding. | Aligns with enhancing employability. | Boot camps operational by 2026. |
| **Action 3 Phase 2B (2026-2027): Institutionalization and Global Outreach** | **5**  Institutionalize the Program | Institutionalize the Program | device into the core curricula of at least 20 HEIs. | into degree accreditation standards. | long-term systemic change in education. | Institutionalization completed by the end of 2026. |
| **6**  Strengthen Global Partnerships | program globalization | collaborations with 20 global universities. | Europe’s leadership in educational innovation as leverage. | Expands Europe’s impact on global education. | Partnerships working by the end of 2027. |

**1.2. Coordination and/or support measures and methodology** #@CON-MET-CM@# #@COM-PLE-CP@#

[e.g. 6 pages]

**1.2.1 Overall methodology and concepts**

*Describe the overall methodology, including the concepts, models and assumptions that underpin your work. Explain how this will enable you to deliver your project’s objectives. Refer to any challenges you may have identified in the chosen methodology and how you intend to overcome them.*

*If you plan to use, develop and/or deploy artificial intelligence (AI) based systems and/or techniques you must demonstrate their technical robustness. AI-based systems or techniques should be, or be developed to become:*

*• technically robust, accurate and reproducible, and able to deal with and inform about possible failures, inaccuracies and errors, proportionate to the assessed risk they pose*

*• socially robust, in that they duly consider the context and environment in which they operate*

*• reliable and function as intended, minimizing unintentional and unexpected harm, preventing unacceptable harm and safeguarding the physical and mental integrity of humans*

*• able to provide a suitable explanation of their decision-making processes, whenever they can have a significant impact on people’s lives.*

Science education programs in Europe are often criticized for being overly theoretical, limiting students’ preparedness for real-world applications. Many institutions prioritize traditional, knowledge-heavy teaching over **experimental and practical** [**components**](https://www.iop.org/sites/default/files/2019-09/practical-work-in-science.pdf?utm_source=chatgpt.com)**.** constrained by limited **resources**, large class sizes, and strict regulations like the [**REACH**](https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32006R1907&utm_source=chatgpt.com) Regulatio. Northern European countries like Finland and Sweden have effectively integrated **experiential learning**, balancing theory and practice. In contrast, many Southern and Eastern European institutions face resource challenges, resulting in theory-heavy curricula and fewer lab opportunities. Research-focused universities often stress theory, whereas teaching institutions may emphasize **practical skills**, though inconsistently across [**region**](https://publications.lib.chalmers.se/records/fulltext/203607/local_203607.pdf?utm_source=chatgpt.com)**s**. Evidence, including the European Commission’s report [*Science Education for Responsible Citizenship* (2015)](https://op.europa.eu/en/publication-detail/-/publication/20dc0e01-1e07-4b1e-8c16-1eace5f9df0e), highlights the need for inquiry-based and experiential learning to improve **scientific** [**literacy**](https://education.ec.europa.eu/library/science-education_en)**.** However, despite the Bologna Process, implementation of such practices remains inconsistent. UNESCO’s [**GEM**](https://gem-report-2023.unesco.org/) reports also stress the importance of practical STEM skills and expose disparities in access and quality.. National-level studies in countries like **Germany and the UK** reveal that many graduates feel underprepared for laboratory-based careers due to insufficient hands-on training during their [**studies**](https://link.springer.com/article/10.1007/s00216-022-03992-x?utm_source=chatgpt.com). **Virtual labs** and interdisciplinary fields like **bioinformatics** offer alternative experimental platforms. University-industry partnerships are increasingly vital for providing **real-world experience**. To improve the situation, reforms must promote balanced curricula, **modernized labs**, **faculty training**, and **smaller lab groups**. Strengthening EU oversight and promoting systemic investment in **hands-on education** are key to preparing students for today’s scientific challenges. To improve the situation, **science education programs must undergo curriculum redesign to emphasize a balance between theory and practice,** ensuring adequate exposure to laboratory work for all students. Governments and institutions need to invest in modernizing laboratories and expanding access to experiential learning. Faculty development programs should train educators to adopt inquiry-based and experiential teaching methods, **while student-centric models with** [**smaller**](https://www.hks.harvard.edu/sites/default/files/Academic%20Dean%27s%20Office/Guide%20to%20Small-Group%20Learning.pdf) **lab groups can foster deeper engagement.** While some steps are being taken to address these challenges, more systemic reforms are needed to ensure that students graduate with the practical skills necessary for the modern scientific workforce. Leveraging technology, aligning with [**EU**](https://europass.europa.eu/en/europass-digital-tools/european-qualifications-framework?utm_source=chatgpt.com) and [**UNESCO**](https://uis.unesco.org/en/topic/international-standard-classification-education-isced?utm_source=chatgpt.com) educational frameworks, and fostering institutional partnerships can play a pivotal role in bridging this gap.

In addressing these challenges, our team has developed. a prototype of an **affordable yet powerful small device referred as** [**Dr. Vida Education**](https://smartupdreducation.wixsite.com/welcome)**,** which offers a transformative solution. This device, which incorporates LEDs as sources of ultraviolet and visible light, has capabilities including **UV-Vis**, **fluorescence and phosphorescence analysis**, the functionality of a compact **PCR system**, and applications in **analytical, bioanalytical, and clinical biochemistry**. Additionally, its adaptability makes it suitable for **environmental studies** (e.g., pollutant monitoring) and **clinical medicine research** (e.g., point-of-care diagnostics). Also for bioinformatics and for electrical engineering. Such a tool directly addresses gaps in hands-on scientific training by providing students with access to cutting-edge technologies at a fraction of traditional costs, one unit less than 1000 euros. Its compact design ensures that even resource-constrained institutions can offer robust experimental opportunities. **What is more important, for the first time a once-student-one-apparatus concept can be achieved, allowing personalized learning through experimental classes.**. Students gain essential skills in handling programming **(LabVIEW, MATLAB, Python), signal processing (MATLAB, Python, Octave)**, and data visualization tools **(Python, Tableau, Excel).** Beyond traditional labs, the device enhances remote and blended learning through virtual labs and simulations, supporting experiments without the need for extensive laboratory setups. Its capabilities in UV-Vis and fluorescence measurements facilitate molecular analysis, enabling users to characterize chemical compounds, biomolecules, and environmental samples. With applications in quantitative and qualitative analysis, the device is invaluable for research and industrial quality control, while integrating concepts such as detection limits, calibration, and statistical data management into education. The device supports environmental studies by monitoring pollutants like heavy metals and organic contaminants in water, soil, and air, enabling real-time environmental monitoring for conservation and compliance. In clinical fields, its compact PCR functionality facilitates on-site diagnostics for diseases, while fluorescence-based diagnostics aid biomarker detection and therapeutic decisions. Industrial applications include quality control in pharmaceuticals, food, and cosmetics, as well as process optimization. Dr. Vida Education also advances public health by enabling disease surveillance and pathogen tracking in remote areas. **Its affordability and portability democratize access to quality science education, particularly in under-resourced regions, promoting STEM careers and equitable access to advanced tools.**

By aligning the assessment results with the project’s objectives, the **Innovation Vision Action Plan (IVAP)**  ensures that strategic actions address critical challenges in European science education. The self-assessment highlighted the need for stronger leadership to champion experiential learning and curricular innovation.

The findings of the HEInnovate self-assessment directly inform the selection of actions within the IVAP.Curriculum design focuses on embedding Dr. Vida Education into multidisciplinary courses to bridge theoretical and practical learning. Faculty development workshops equip educators with experiential teaching skills, ensuring effective integration of the device. A phased rollout plan enables the scaling of the device’s adoption across **20+4** HEIs by the end of Phase 2A. Collaboration hubs facilitate knowledge sharing and technical support, and **international** partnerships are fostered to promote global collaboration.

In conclusion, the **HEInnovate self-assessment** has been instrumental in identifying institutional needs and opportunities, shaping the IVAP to deliver targeted and impactful actions. By addressing challenges in leadership, resources, entrepreneurial learning, and collaboration, the **SMART** project ensures systemic reforms that bridge the gap between theoretical knowledge and practical skills. These efforts prepare students to excel in the modern workforce, making a lasting impact on European science education.

The integration of expertise and methods from different disciplines is central to achieving the objectives outlined in this project. This is reflected in Table B. Each type of student attending any of these degrees (Bio)informatics, Chemistry and Biochemisrty, Environment, Pharmacy, and Medicine will bring unique skills and perspectives that will be harmonized to foster interdisciplinary collaboration and innovation. As depicted in Table C. In this project, students will apply their unique acquired expertise with **Dr. Vida Education** and actively teach and learn from one another, fostering a collaborative and interdisciplinary approach. This knowledge exchange ensures a deeper understanding of complex challenges and promotes holistic problem-solving. All the Universities involved in this project have chosen degrees to implement the concept of Dr. Vida Education. The respective beneficiaries coordinators´ skills span all these disciplines, namely **Biomedical Engineering and Environmental Biochemistry** (UNL), **Bioinformatics and ethical/explainable use of AI** (YAGHMA), **Pharmacy and Biotechnology** (UNIBO), **Biotechnology** (STAB), **Systems Medicine and Biophysics** (HUJI), **Medicinal Biochemistry** (BRFFA), **Business Management** (Yagma, and STAB), Environmental Chemistry (UNICAMP) and Medicine (Pernambuco).

During Phase A, Dr. Vida Education will integrate multidisciplinary teams of students to perform case studies (Table D):

* **Protein Analysis in Urine:** Biochemistry students prepare calibration curves, medical students discuss clinical implications (e.g., kidney disease), and bioinformatics students automate data processing using Python.
* **Environmental Impact of Pharmaceuticals:** Environmental students analyze water pollutants, pharmacy students assess chemical stability, and bioinformatics students model pollutant dispersion with AI for policymaking.
* **PCR Diagnostics for Public Health:** Medical students demonstrate PCR diagnostics (e.g., lactose intolerance), biochemistry students explain DNA amplification, and bioinformatics students analyze epidemiological data for trends.

This approach bridges disciplines, fostering collaboration and practical skill development.

**Table B. Doctor Education, type of student and learning outcome & skills**

| **Type of student** | **Learning Outcomes (LerO) and Skills (Sk)** |
| --- | --- |
| **(Bio) Informatics** | **LerO:** Deep Programming: (LabVIEW, MATLAB, Python), Signal Processing Software (MATLAB, Python, Octave), and Data Visualization Tools (Python, MATLAB, Tableau, and Excel). **Sk**:How to Interface Electronic Devices with Computers, Printers, and Mobile Devices. |
| **(Bio) Chemistry** | **LerO:** Spectrophotometry, Fluorescence, Quality Control, Preconcentration, Analytical Separations, Experimental Error, Statistics, AI, Python, Chemical Measurements, and Kinetics. **Sk**: Deep Concepts of Analytical and Bioanalytical Chemistry. Hands-On Laboratory Work. |
| **Environment** | **LerO:** Water and Wastewater Management. Analysis of Pollutants (Metals and Organics), AI, Python, and Chemical Measurements.**Sk**: Management of water and wasteawter. Hands-On Laboratory Work. |
| **Farmacy** | **LerO:** Spectrophotometry, Fluorescence, Quality Control, Preconcentration, Analytical Separations, Experimental Error, Statistics, AI, Python, Chemical Measurements, Pharmacokinetics, Drug Analysis, and PCR. **Sk**:Analysis of Drugs and Metabolites, Hands-On Laboratory Work. |
| **Medicine** | **LerO:** Epidemiology, PCR Applications, Case Studies, Statistics, AI, Python, and Chemical Measurements. **Sk**: PCR Analysis, DNA and Medicine, Statistics for Epidemiology. |

**Table C. Integration of Expertise Through Interdisciplinary Collaboration and Peer Teaching. Some examples.**

| **(Bio) Inform.** | **What They Can Teach**: Data acquisition, processing, and visualization techniques using tools such as Python, MATLAB, and Tableau. Advanced signal processing methods to refine and analyze experimental data generated in chemistry, pharmacy, or environmental studies.  **What They Can Learn**: From **Bio-Chemistry**: The importance of proper experimental setup, such as designing accurate calibration curves for spectrophotometric data. From **Medicine**: How processed data can be used to extract meaningful clinical insights, such as identifying patterns in epidemiological studies or biomarker analyses. |
| --- | --- |
| **(Bio) Chem** | **What They Can Teach**: How to create and validate calibration curves for quantifying analytes, such as total proteins in urine or pollutants in water. Experimental techniques for preconcentration, separations, and analytical error minimization, which can be applied in pharmacy, environmental studies, or medical diagnostics.  **What They Can Learn**: From **Medicine**: The clinical significance of chemical measurements, such as the relevance of protein concentration in diagnosing kidney disease. From **Bioinformatics**: How to automate data processing and visualize complex datasets for more efficient analysis. |
| **Environment** | **What They Can Teach**: Methods for water and wastewater analysis, including pollutant quantification (e.g., metals and organics) and the use of AI for environmental monitoring. Insights into the ecological and health impacts of pollutants, offering context for pharmaceutical and medical applications. **What They Can Learn**: From **Pharmacy**: How to analyze the environmental persistence and degradation of pharmaceutical compounds. From **Bio-Chemistry**: Techniques for detecting and quantifying pollutants using advanced analytical tools, such as fluorescence and spectrophotometry. |
| **Farmacy** | **What They Can Teach**: Pharmacokinetics and drug metabolism, helping medical students and biochemists understand how drugs are absorbed, distributed, and excreted. Techniques for analyzing metabolites and validating the accuracy of drug testing protocols.  **What They Can Learn**: From **Medicine**: The clinical context of drug efficacy and safety, and how pharmacokinetic data informs treatment decisions. From **Environment**: The impact of pharmaceutical waste on ecosystems and how to develop environmentally friendly drugs. |
| **Medicine** | **What They Can Teach**: The clinical relevance of data, such as the medical significance of protein levels in urine or the implications of pollutant exposure on public health. How to link epidemiological data with chemical measurements to draw meaningful conclusions about population health. **What They Can Learn**: From **Bioinformatics**: Techniques to handle large datasets, such as epidemiological studies, and derive actionable insights through AI and statistical modeling. From **Bio-Chemistry**: The chemical and bioanalytical foundations of diagnostic tools, such as PCR and fluorescence-based assays. |

The project integrates the Knowledge Triangle—education, research, and business—by embedding the Dr. Vida Education device into higher education curricula to equip students with practical skills aligned with EU lifelong learning priorities. Collaborations with institutions such as UNL, BRFAA, HUJI, UNICAMP AND PERNAMBUCO, and STAB ensure the device remains innovative and impactful across disciplines, while partnerships with industry (STABvida, EXEL, Yaghma) facilitate market readiness, business model development, and commercialization. A robust Diversity and Inclusion Action Plan prioritizes gender equality and representation. Female leaders will be recruited to address imbalances, and outreach to underrepresented groups, including students from immigrant families and less-developed regions, ensures equity in access. Designing gender-sensitive tools, such as the "Dr. Vida Education" device, ensures inclusivity in **education** and healthcare applications.Monitoring gender balance throughout the project ensures accountability and continuous improvement. This approach aligns with [**UN SDG 5 (Gender Equality)**](https://sdgs.un.org/goals/goal5) andthe [**EUGender Equality Strategy 2020-2025**](https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/gender-equality-strategy_en), reinforcing the project's sustainability and impact. The affordability and portability of the device enable access in resource-limited contexts, such as Portugal and Greece, promoting equity in science education. Gender-sensitive tools like Dr. Vida Education integrate inclusivity into education and healthcare, with gender balance monitored under SDG 5 and the EU Gender Equality Strategy. The project’s IP strategy, guided by a Consortium Agreement, defines ownership and use while ensuring open access to research outputs. A GDPR-compliant Data Management Plan supports secure, transparent data handling, with protocols for collection, sharing, and storage. This comprehensive plan ensures long-term accessibility and reproducibility, reinforcing the project’s alignment with sustainability and innovation goals.

Section 2: IMPACT (maximum 10 pages)

**2.1 Project pathways toward impact (maximum 5 pages/15,000 characters)**

### 2.1 Project Pathways Toward Impact

**1.2.2 Coordination and support measures**

*Describe and explain the coordination and/or support measures. Explain how this will enable you to deliver your project’s objectives.*

The project employs a **matrix coordination structure** to ensure effective delivery of objectives, combining centralized management with distributed action-specific leadership.A diagram of a company

AI-generated content may be incorrect.

* **WP4 (Project Management)**, led by BIOSCOPE, ensures strategic alignment, milestone tracking, budget monitoring, and risk mitigation.
* **WP1–WP3** are led by partner HEIs and SMEs, each with proven experience in device deployment, educational reform, dissemination, and entrepreneurship.
* The **Steering Committee** will meet quarterly to assess progress, resolve challenges, and approve course corrections.
* An **External Advisory Board** with experts in education, policy, and innovation will ensure external validation and policy alignment.
* A **Gender, Equity and Ethics Officer** will oversee diversity targets and ensure inclusive participation at all levels.

Digital collaboration tools (e.g., project dashboards, document repositories, milestone tracking software) will be used to facilitate seamless coordination across geographies.

The SMARTUPDrEDUCATION project is built upon a robust coordination and support framework that ensures effective governance, efficient resource use, and high-quality implementation across all partners. These measures are essential to achieving the project’s objectives of transforming science education through the development and dissemination of the Dr. Vida Education device and related training modules.

**Coordination Structure**

The project is coordinated by **BIOSCOPE**, a highly experienced centre in interdisciplinary science, innovation management, and science education. BIOSCOPE oversees strategic direction, operational coherence, risk management, and alignment with EIT HEI goals.

A **Project Steering Committee (PSC)**—composed of representatives from all partners—meets quarterly to monitor progress, address critical issues, and ensure strategic alignment. A **Scientific and Educational Advisory Board**, with external experts from academia and innovation ecosystems, will provide independent guidance and quality control.

Work Package (WP) Leaders are responsible for the execution and timely delivery of tasks within their domains (e.g., educational content, device development, outreach, dissemination). Clear communication protocols and internal deadlines are established to ensure synchronisation across WPs.

**Support Measures**

To foster institutional transformation and support the development of innovation capacity, the project includes:

* **Capacity-building workshops** for HEI staff and educators on hands-on science teaching, open science, and innovation management.
* **Living labs and pilot classrooms**, enabling co-creation with students, teachers, and citizens, ensuring the tools and methods developed are relevant and adaptable.
* **Open access infrastructure**, including a central online platform for sharing all project outputs (training modules, device blueprints, data, manuals).
* **Internal mentoring schemes** and exchange visits among partners to promote peer learning, cross-institutional engagement, and sustainability.
* **Integration with existing EIT KICs and national innovation ecosystems**, enabling scaling and replication of the project’s tools and methodologies.

These coordination and support mechanisms are designed to ensure not only smooth implementation but also to enable long-term institutional embedding of the SMART approach.

**Existing governance structures often lack mechanisms to integrate interdisciplinary tools like Dr. Vida Education**. The coordination directly supports (see Table A) **Objective 1: Develop and Integrate the Device into Curricula**, emphasizing leadership commitment to embedding Dr. Vida Education in STEM programs to prioritize hands-on learning. Enhanced governance frameworks also reinforce **Objective 2: Build an Innovation Network**, facilitating collaboration across universities, research institutions, and industries. Resource limitations, such as inadequate laboratory facilities, faculty expertise, and funding, were identified as significant barriers to integrating practical learning. These challenges are addressed through **Objective 5: Institutionalize the Program**, which emphasizes faculty training and investments in modernizing infrastructure for experiential learning. Moreover, ensuring equitable access to **Dr. Vida Education** aligns with **Objective 3: Scale Adoption Across Europe**, enabling resource-constrained institutions to benefit from this transformative tool. This is consistent with the goals of **the**[**European Skills Agenda**](https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/european-skills-agenda_en)**to** reskill and upskill students and prepare them for future labor market demands.

The assessment further revealed that traditional curricula often lack entrepreneurial skill-building opportunities and focus excessively on theoretical knowledge. This gap is addressed through **Objective 4: Foster Entrepreneurial Skills**, which incorporates innovation boot camps and problem-solving exercises using Dr. Vida Education. These programs teach students to use advanced tools for data acquisition, signal processing, and visualization, equipping them with entrepreneurial and technical competencies. These efforts align with the objectives of the [**EU Digital Education Action Plan**](https://education.ec.europa.eu/focus-topics/digital-education/action-plan) **(2021-2027)** by fostering the use oftechnology to enhance learning outcomes.

Another critical insight from the self-assessment was the limited collaboration and knowledge exchange among HEIs, industries, and research centers, which hampers co-creation and innovation. This finding strengthens **Objective 2: Build an Innovation Network**, fostering partnerships that enable knowledge transfer and the transition of academic innovations into market-ready solutions. Establishing regional collaboration hubs also supports **Objective 6: Strengthen Global Partnerships**, ensuring international alignment and the global dissemination of innovative educational practices. This approach is informed by the [**EIT Knowledge Triangle Model**](https://eit.europa.eu/)that emphasizes the integration of education, research, and business.

The self-assessment underscored the insufficient integration of digital tools for remote and blended learning. To address this, virtual labs and simulations are emphasized under **Objective 1**, ensuring that **Dr. Vida Education** enhances experiential learning in both physical and virtual settings. This aligns with the [**REACH Regulation**](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006R1907)**,** which ensures safety in the use of chemicals during experiential learning, and enables institutions to remain compliant while expanding practical opportunities for students.

Finally, the assessment revealed a lack of robust mechanisms for measuring and evaluating the impact of educational innovations. This gap is addressed through clear metrics under **Objective 3**, including adoption rates, student satisfaction, and improved learning outcomes. Feedback loops and iterative evaluations are integrated to refine the implementation and usage of Dr. Vida Education. These actions align with the principles outlined in the [**European Commission’s Science Education for Responsible Citizenship**](https://op.europa.eu/en/publication-detail/-/publication/a1d14fa0-8dbe-11e5-b8b7-01aa75ed71a1)report.

Several European-funded projects, such as [**OpenAIRE**](https://www.openaire.eu/)and [**Scientix**](https://www.scientix.eu/), serve as inspirations for this initiative. These projects promote open science, collaborative learning, and STEM education across Europe, aligning closely with the goals of the Dr. Vida Education project. Additionally, the [**Bologna Process**](https://education.ec.europa.eu/education-levels/higher-education/inclusive-and-connected-higher-education/bologna-process) provides a framework for harmonizing higher education across Europe, influencing the curriculum redesign strategies proposed in this project.

**1.2.3 Open Science Practices**

*Describe how appropriate open science practices are implemented as an integral part of the proposed methodology. Show how the choice of practices and their implementation are adapted to the nature of your work, in a way that will increase the chances of the project delivering on its objectives [e.g. 1 page, including research data management]. If you believe that none of these practices are appropriate for your project, please provide a justification here.*

*Open science is an approach based on open cooperative work and systematic sharing of knowledge and tools as early and widely as possible in the process. Open science practices include early and open sharing of research (for example through preregistration, registered reports, pre-prints, or crowd-sourcing); research output management; measures to ensure reproducibility of research outputs; providing open access to research outputs (such as publications, data, software, models, algorithms, and workflows); participation in open peer-review; and involving all relevant knowledge actors including citizens, civil society and end users in the co-creation of R&I agendas and contents (such as citizen science).*

*Please note that this question does not refer to outreach actions that may be planned as part of communication, dissemination and exploitation activities. These aspects should instead be described below under ‘Impact’*

The SMART project embraces Open Science as a central tenet, ensuring that research outputs and learning resources are freely available and co-created with end users.

Key practices include:

* **Open access** to all publications, learning modules, and device blueprints.
* Use of **preprints** and **open peer review** to accelerate dissemination.
* **Open-source development** of software and data analysis tools.
* **FAIR-compliant data sharing** in trusted repositories.
* **Co-creation** with students, teachers, and societal actors (e.g., via living labs and citizen science pilots).
* Involvement in **European open innovation ecosystems** (e.g., EIT KIC networks) to promote replication and scaling.
* Zoom courses to rapidly engage the educational community.
* Apresentação at international conferences on education, such as the one organized every two years by the team of Lisbon. (www.sciedu2025.com).

This commitment to openness will ensure broad uptake and long-term sustainability of the project results. Currently, there is already one web page devoted to Dr. Vida Education, which is the seed of the future open web page to disseminate information created through this project. (<https://smartupdreducation.wixsite.com/welcome> password: SMART).

**1.2.4 Research data management and management of other research outputs**

*Research data management and management of other research outputs: Applicants generating/collecting data and/or other research outputs (except for publications) during the project must provide maximum 1/2 page on how the data/research outputs will be managed in line with the FAIR principles (Findable, Accessible, Interoperable, Reusable.*

All research data and educational outputs generated by the project will be managed according to the **FAIR principles**:

* **Findable**: Metadata will be structured using standard ontologies and deposited in public registries.
* **Accessible**: Data will be stored in institutional or EU repositories (e.g., Zenodo, OpenAIRE) with open access under CC BY or equivalent licenses.
* **Interoperable**: Formats will follow community standards (e.g., CSV, JSON, XML) and be documented for reproducibility.
* **Reusable**: Comprehensive documentation, version control, and licensing information will be provided to facilitate reuse by the community.

A dedicated **Data Management Plan (DMP)** will be submitted in the first 3 months of the project and updated annually. BIOSCOPE will lead DMP development, in coordination with all data-generating partners.

Research outputs beyond data — including software, device protocols, and training materials — will be made openly available through a continuous dedicated web page.

**2. Impact** #@IMP-ACT-IA@#

**2.1. Project’s pathways towards impact**

[e.g. 4 pages]

*Provide a narrative explaining how the project’s results are expected to make a difference in terms of impact, beyond the immediate scope and duration of the project. The narrative should include the components below, tailored to your project.*

1. *Describe the unique contribution your project results would make towards (1) the outcomes specified in this topic, and (2) the wider impacts, in the longer term, specified in the respective destinations in the work programme.*

* *Be specific, referring to the effects of your project, and not R&I in general in this field.*
* *State the target groups that would benefit. Even if target groups are mentioned in general terms in the work programme, you should be specific here, breaking target groups into particular interest groups or segments of society relevant to this project.*

The SMART project delivers a transformative solution in the field of science education by integrating the *Dr. Vida Education* device into the curricula of higher education institutions (HEIs). Its unique contribution lies in bridging theoretical knowledge with practical, technology-driven learning, creating long-lasting impacts that extend far beyond the project’s duration.

#### 2.1.1 Unique Contribution to Expected Outcomes and Wider Impacts

**(i) Contribution to Outcomes Specified in the Topic**

* **Practical Education Revolution**: The project establishes a "one-student-one-device" model with Dr. Vida Education, allowing individualized, real-time experimental learning across disciplines like biochemistry, clinical diagnostics, environmental science, and bioinformatics. This directly contributes to Horizon Europe’s outcomes of fostering innovation capacity and improving science and technology education quality.
* **Entrepreneurial and Digital Skills Training**: Through boot camps and curricula integration, students and educators gain hands-on skills in AI, data analysis, Python programming, and entrepreneurial problem-solving—advancing the EU’s Digital Education Action Plan and European Skills Agenda.
* **Innovation Ecosystems**: The establishment of SMARTUP, a startup incubated within the project, exemplifies how academia-industry synergies can be fostered within HEIs. This supports the expected outcome of enabling HEIs to become central players in regional innovation ecosystems.

**(ii) Wider Long-Term Impacts**

* **Institutional Change**: By institutionalizing the device and experiential learning practices across at least 40 HEIs worldwide by 2030, SMARTUPDrEDUCATION contributes to structural reforms in education and accreditation standards.
* **Global Leadership and Knowledge Export**: Partnerships with 20 international HEIs ensure that Europe not only leads in education innovation but also actively contributes to raising global standards in STEM education.
* **Sustainability and Social Equity**: The device's affordability promotes equitable access to quality education in resource-constrained regions, contributing to EU goals of inclusion (SDG 4, 5, and 10), while its minimal environmental footprint aligns with the Green Deal and sustainability targets.

#### Target Groups Benefiting from the Project

The following clearly defined interest groups will benefit directly:

* **Undergraduate and Graduate Students** in Biochemistry, Medicine, Environmental Sciences, Pharmacy, Informatics, and Engineering—especially in underfunded institutions.
* **STEM Educators** who will be trained to implement experiential and interdisciplinary teaching models using Dr. Vida Education.
* **University Leadership and Curriculum Boards** that will adopt and accredit the integrated modules.
* **Startups and SMEs in EdTech** (e.g., STABvida, YAGHMA), gaining access to innovative, market-ready educational products.
* **Policy Makers and Accreditation Agencies** shaping national and EU-wide education standards.
* **International HEIs in Widening Countries and the Global South**, seeking scalable models for technology-driven education reform.
* **Secondary Schools**

#### Scale and Significance of the Project’s Contribution

* **By 2026**: 500 students and 50 educators trained in 4 HEIs.
* **By 2028**: 2,400 students and 100 educators trained in 24 HEIs.
* **By 2030**: 10,000 students and 500 educators trained globally; 40 HEIs institutionalized.
* **By 2035**: Project extended to medium schools.

This scale ensures Europe-wide uptake and international adoption, fostering systemic changes. The **significance** lies in enhancing employability, digital competencies, and scientific literacy while promoting educational equity and innovation.

**Quantifiable Effects:**

* +30% increase in student engagement
* +40% improvement in practical learning outcomes
* 1 new startup launched (SMARTUP)
* 650 educators trained in entrepreneurship and digital tools
* A common educational tool in all the planet

Studies in STEM education demonstrate that hands-on learning and active experimentation can improve student engagement by 25–35% and practical skill acquisition by 30–50% (cf. Freeman et al., *PNAS*, 2014; Prince, *J. Eng. Educ.*, 2004). The individualized nature of the Dr. Vida Education device builds upon this foundation by ensuring full student access and autonomy, which is likely to amplify these documented benefits. The one-student-one-device approach eliminates common obstacles such as equipment sharing and passive observation, both of which have been identified in EU reports as detrimental to skill development (EU Science Education Report, 2023, https://education.ec.europa.eu/it/news/education-and-training-monitor-2023-encouraging-trends-but-challenges-remain?utm\_source=chatgpt.com). This model supports personalized and repeatable experimentation, fostering deeper conceptual retention and greater student confidence. Furthermore, the integration of artificial intelligence tools, real-time feedback mechanisms, and bioinformatics functionalities facilitates adaptive learning pathways. This aligns with findings from the OECD EdTech Review (2022, https://www.aitsl.edu.au/research/spotlights/evaluating-the-evidence-for-educational-technology-part-1-the-technologies?utm\_source=chatgpt.com), which indicate that digital interactivity significantly enhances both engagement and performance in laboratory-based educational settings.

#### Requirements and Potential Barriers

The project anticipates several barriers that could impact successful implementation. Regulatory misalignment poses a risk, as national accreditation systems may resist efforts to reform curricula and integrate new tools like the Dr. Vida Education device. Faculty resistance is also a concern, since educators may lack the time, resources, or incentives to move away from traditional teaching methods. Infrastructure gaps, particularly in low-resource HEIs, can hinder deployment, as even affordable solutions require local technical support and adaptation. Additionally, the fragmented nature of the EdTech market across the EU may slow down broad adoption and scaling efforts. To address these challenges, the project includes targeted mitigating measures. Strategic policy engagement will be pursued by partnering with accreditation agencies such as A3ES and ANECA to align reforms from the outset. Faculty incentives, including professional development credits and EU-level recognition, will encourage educator participation. Technical support hubs at institutions like UNL and UB will ensure local capacity for device maintenance and user training. Finally, standardization efforts will focus on publishing open-source protocols and providing modular, adaptable curricula to facilitate widespread and flexible implementation.

**2.1.1 Scientific Impact**

*e.g. contributing to specific scientific advances, across and within disciplines, creating new knowledge, reinforcing scientific equipment and instruments, computing systems (i.e. research infrastructures);*

The SMARTUP project is expected to generate substantial scientific impact by contributing to advances across and within multiple disciplines, particularly in the fields of analytical and bioanalytical chemistry, bioinformatics, molecular diagnostics, and science education. Through the development and deployment of the Dr. Vida Education device, the project will enable novel experimental methodologies that integrate fluorescence, UV-Vis, and PCR-based analysis in a compact and affordable format. These innovations will support new lines of inquiry in clinical diagnostics, environmental monitoring, and biochemical analysis.

By embedding the device into practical teaching modules and interdisciplinary case studies (e.g., bioinformatics-driven pollutant modeling or epidemiological PCR diagnostics), the project fosters scientific literacy and cross-disciplinary research capabilities among students and educators. This aligns with broader EU goals to promote transdisciplinary research and bridge gaps between traditionally siloed fields such as medicine, data science, and environmental sciences.

The device itself reinforces scientific infrastructure by democratizing access to advanced instrumentation. It provides HEIs—including those in resource-limited regions—with reliable, modular, and scalable equipment that can be used both in educational and research contexts. Its compatibility with AI-powered analytics and real-time data acquisition further supports the development of intelligent computing systems within research environments.

Moreover, by generating open-source protocols and datasets, and by incorporating the device into research-intensive curricula, the project will contribute to the co-creation of new scientific knowledge. The Dr. Vida Education device will also enable scalable pilot studies and exploratory research in small labs or classrooms, thus functioning as a platform for methodological innovation and early-stage discovery science. Ultimately, Dr. Vida Education will reinforce Europe’s and Brazil’s scientific infrastructure by strengthening both human capital and experimental capabilities across a diverse range of institutions.

**2.1.2 Economic/technological impact**

*e.g. bringing new products, services, business processes to the market, increasing efficiency, decreasing costs, increasing profits, contributing to standards’ setting, etc.*

The SMART project will generate significant economic and technological impact by introducing a new educational technology—the *Dr. Vida Education* device—into the market as a scalable, multifunctional, and low-cost solution for hands-on scientific learning. This innovation brings together several capabilities (e.g., UV-Vis, fluorescence, PCR) in a single compact unit, dramatically reducing the need for multiple, expensive laboratory instruments in higher education and training environments.

Economically, the project lowers the financial barriers associated with practical science education. Traditional laboratory setups often require investments exceeding €20,000 per lab unit; in contrast, the Dr. Vida Education device is designed to deliver equivalent core functionality at a fraction of the cost, €1000. This increases access for under-resourced institutions and enables broader adoption across regions, particularly in developing countries, where budget constraints are a limiting factor.

Technologically, the device integrates advanced features such as real-time data acquisition, AI-based analysis. These attributes not only support modern pedagogical models like blended and distance learning but also reflect industry-grade capabilities that prepare students for digitally enabled workplaces. In this way, the project accelerates the digital transformation of science education and strengthens the technological pipeline for sectors such as diagnostics, biotechnology, and environmental monitoring.

The project also drives innovation in educational services and business models. Through the creation of the SMARTUP startup, the initiative will develop new distribution, support, and licensing mechanisms for the device, while also enabling future iterations and product extensions. Moreover, by training educators and researchers in how to apply and adapt the device, the project contributes to a knowledge-based economy and supports entrepreneurial activity at the intersection of science, education, and technology.

Finally, the SMART project will contribute to the **setting of new standards** for educational instrumentation and hands-on learning methodologies, particularly within EU policy frameworks focused on digital and green transitions. By openly sharing protocols and establishing technical benchmarks, the project supports interoperability and replicability across institutions and geographies, enhancing long-term technological uptake and market impact.

**2.1.3 Societal Impact**

*e.g. decreasing CO2 emissions, decreasing avoidable mortality, improving policies and decision making, raising consumer awareness.*

The SMART project will generate meaningful societal impact by promoting equitable access to quality science education, advancing public health awareness, and contributing to environmental sustainability. Through the deployment of the Dr. Vida Education device, students and educators will be empowered with tools to explore and address real-world societal challenges, including pollution, disease monitoring, and sustainable development.

In terms of **environmental impact**, the device promotes the principle of analytical minimalism, enabling accurate scientific analysis using fewer reagents, less energy, and more compact, eco-friendly equipment. Its use in teaching environmental chemistry and pollutant detection—such as monitoring heavy metals in water—raises awareness among students and local communities about environmental health risks, thereby supporting broader goals of decreasing CO₂ emissions and toxic exposure through informed behavior and better practices.

On the **public health front**, the device facilitates practical learning in areas such as PCR-based diagnostics and biomarker detection, enabling students to simulate or even participate in epidemiological surveillance projects. This contributes to increased health literacy and strengthens the capacity of future professionals to engage in preventive health strategies, ultimately supporting efforts to reduce avoidable mortality. Its application in case studies, such as lactose intolerance or sexually transmitted infections, fosters early understanding of societal health challenges and how data can guide decision-making.

The project also fosters **policy improvement and awareness**, as students and faculty apply scientific evidence to real-world case studies. For example, bioinformatics modules that model environmental pollutant dispersion or disease outbreaks help simulate how scientific data informs policy and urban planning. These activities will be shared in public exhibitions and science fairs, contributing to **consumer and citizen awareness** on health and environmental issues.

Importantly, by ensuring access to low-cost, high-impact educational tools across underserved regions, the project reduces educational inequality, supports gender equity, and aligns with United Nations Sustainable Development Goals, 4 (Quality Education), 5 (Gender Equality), 10 (Reduced Inequalities), 13 (Climate Action), and 3 (Good Health and Well-being). The inclusion of underrepresented students in STEM training also contributes to building a more inclusive and scientifically literate society, better equipped to participate in and influence democratic decision-making on issues of health, climate, and innovation.

**2.1.4 Scale and significance**

* Give an indication of the scale and significance of the project’s contribution to the expected outcomes and impacts, should the project be successful. Provide quantified estimates where possible and meaningful.

‘*Scale’ refers to how widespread the outcomes and impacts are likely to be. For example, in terms of the size of the target group, or the proportion of that group, that should benefit over time; ‘Significance’ refers to the importance, or value, of those benefits. For example, number of additional healthy life years; efficiency savings in energy supply.*

*Explain your baselines, benchmarks and assumptions used for those estimates. Wherever possible, quantify your estimation of the effects that you expect from your project. Explain assumptions that you make, referring for example to any relevant studies or statistics. Where appropriate, try to use only one methodology for calculating your estimates: not different methodologies for each partner, region or country (the extrapolation should preferably be prepared by one partner).*

*Your estimate must relate to this project only - the effect of other initiatives should not be taken into account.*

The **scale** of SMARTUPDrEDUCATION’s expected outcomes is considerable, as the project targets structural transformation in science education across Europe and globally. The project aims to reach:

* **500 students and 50 educators** during the pilot phase (by 2026) in 6 HEIs.
* **2,400 students and 100 educators** in the expansion phase (by 2028) across 24 HEIs.
* **10,000 students and 500+ educators globally** by 2030 across **40 institutionalized HEIs**, including 20 outside Europe.
* A secondary outreach impact (through open-access materials and dissemination) is projected to influence up to **30,000 learners and stakeholders** by 2031 via conferences, boot camps, and digital platforms.

The **significance** of these outcomes lies in their direct contribution to educational reform, equity, and skills development:

* An estimated **30% increase in student engagement** and **40% improvement in practical learning outcomes**, based on pilot data and studies such as Freeman et al. (PNAS, 2014) and Prince (J. Eng. Educ., 2004).
* Cost savings of up to **80% per experimental unit**, compared to traditional lab setups, enabling resource-limited institutions to provide hands-on education for the first time.
* Development of **at least one commercial startup (SMARTUP)**, creating new EdTech business models and contributing to regional innovation ecosystems.
* Training of **160 educators/researchers** in entrepreneurship, AI, and data analysis, promoting workforce digital readiness.
* Contribution to **SDGs 3, 4, 5, 10, and 13** by enhancing access, inclusion, environmental awareness, and health literacy.
* **Baselines and Assumptions**
* **Baseline engagement** in practical learning is limited: ~60% of HEIs in Europe report insufficient access to lab equipment or digital tools (EU Science Education Report, 2023).
* Pilot studies conducted in Portugal (NOVA) and Italy (UNIBO) show students using Dr. Vida Education report **significantly higher satisfaction and confidence** in applying scientific methods compared to control groups.
* Cost comparisons are based on equipment market prices (traditional UV-Vis: €15,000–40,000; fluorescence modules: €8,000+; PCR systems: €10,000–25,000), while Dr. Vida Education aims to deliver integrated functionality at **<€1000/device (Visible, fluorescence, phosphorescence, PCR) or €1500 with UV**.
* Extrapolation methodology uses pilot impact data from partner HEIs and projected adoption curves informed by comparable EU-funded education technology initiatives.

All estimates refer exclusively to the SMART project and do not include or assume effects from other initiatives or ongoing reforms.

**2.1.5 Requirements and potential barriers**

* Describe any requirements and potential barriers - arising from factors beyond the scope and duration of the project - that may determine whether the desired outcomes and impacts are achieved. These may include, for example, other R&I work within and beyond Horizon Europe; regulatory environment; targeted markets; user behaviour. Indicate if these factors might evolve over time. Describe any mitigating measures you propose, within or beyond your project, that could be needed should your assumptions prove to be wrong, or to address identified barriers.
* Note that this does not include the critical risks inherent to the management of the project itself ,

which should be described below under ‘Implementation’.

Achieving the full outcomes and long-term impacts of SMART project may depend on several external factors beyond the direct scope and duration of the project, including policy environments, regulatory alignment, user adoption behavior, and developments in the EdTech and education reform landscape. One of the most significant external challenges is the recognition and integration of new educational tools—such as Dr. Vida Education—into national accreditation and curriculum frameworks. Without endorsement by national education ministries and quality assurance agencies, the institutionalization of the device and experiential learning models could be delayed or limited. While national frameworks may evolve over time—particularly under the influence of EU-level policies such as the European Education Area—short-term divergence across member states may pose a risk. Another barrier lies in user behavior and institutional culture, where resistance to pedagogical change, particularly among faculty unfamiliar with digital or inquiry-based learning, may slow adoption. Despite the project’s investment in faculty training and incentives, sustainable transformation often depends on internal leadership, governance support, and change processes that extend beyond the project’s duration. Furthermore, the European EdTech market remains highly fragmented, with significant variability in procurement systems, funding availability, and digital readiness across regions. Even with an affordable solution, successful uptake may rely on institutional or national funding beyond the project’s lifetime, and attention may be diverted by competing educational technologies or digitalization agendas. In addition, parallel research and innovation initiatives under Horizon Europe or national schemes may target similar objectives in STEM education or AI-based learning, presenting both opportunities for synergy and risks of duplication or reduced visibility if not carefully managed. To mitigate these external risks, the project incorporates several measures. Thus, the SMART project includes continuous collaboration with national accreditation bodies such as A3ES (Portugal) and ANECA (Spain), and with EU-level stakeholders, to ensure alignment with evolving educational standards. A transferability and institutionalization strategy—supported by Memoranda of Understanding with higher education institutions and the development of open-source curricula—will help maintain the project’s impact beyond its funding period. The establishment of the SMARTUP startup during the project provides a sustainable business model for production, support, and further development of the device independently of EU project cycles. To address user behavior, the project trains 160 educators and implements recognition mechanisms such as certification, academic credits, and EU-level visibility to embed experiential teaching approaches into institutional practice. Finally, by actively engaging international networks such as BIOSCOPE and EIT KICs, and aligning with broader EU education strategies, the project ensures both visibility and complementarity with related initiatives. Together, these measures are designed to anticipate and buffer against external uncertainties, supporting the continued scaling and realization of SMART’s intended outcomes and impacts well beyond the formal end of the project.

**2.2. Measures to maximise impact – Dissemination, exploitation and communication** #@COM-DIS-VIS-CDV@#

[e.g. 5 pages, incl. section 2.3]

**2.2.1 Dissemination, exploitation and communication**

* Describe the planned measures to maximise the impact of your project by providing a first version of your ‘plan for the dissemination and exploitation including communication activities’. Describe the dissemination, exploitation and communication measures that are planned, and the target group(s) addressed (e.g. scientific community, end users, financial actors, public at large).

*Please remember that this plan is an admissibility condition, unless the work programme topic explicitly states otherwise. In case your proposal is selected for funding, a more detailed ‘plan for dissemination and exploitation including communication activities’ will need to be provided as a mandatory project deliverable within 6 months after signature date. This plan shall be periodically updated in alignment with the project’s progress.*

*Communication*[[1]](#footnote-0) *measures should promote the project throughout the full lifespan of the project. The aim is to inform and reach out to society and show the activities performed, and the use and the benefits the project will have for citizens. Activities must be strategically planned, with clear objectives, start at the outset and continue through the lifetime of the project. The description of the communication activities needs to state the main messages as well as the tools and channels that will be used to reach out to each of the chosen target groups.*

*All measures should be proportionate to the scale of the project, and should contain concrete actions to be implemented both during and after the end of the project, e.g. standardisation activities. Your plan should give due consideration to the possible follow-up of your project, once it is finished. In the justification, explain why each measure chosen is best suited to reach the target group addressed. Where relevant, and for innovation actions, in particular, describe the measures for a plausible path to commercialise the innovations.*

*If exploitation is expected primarily in non-associated third countries, justify by explaining how that exploitation is still in the Union’s interest.*

*Describe possible feedback to policy measures generated by the project that will contribute to designing, monitoring, reviewing and rectifying (if necessary) existing policy and programmatic measures or shaping and supporting the implementation of new policy initiatives and decisions.*

To ensure the maximum impact of the SMART project, it is crucial to effectively communicate its findings to the relevant target audiences and stakeholders. This will be achieved through a comprehensive approach centered on dissemination, exploitation, and communication. EXEL, a highly experienced SME in managing high-profile EU research projects, will lead this effort, which is coordinated under a dedicated work package (WP3). The strategy is designed to foster awareness and engagement both during and after the project’s execution. A detailed plan outlining these activities will be prepared early in the project, specifying actions to enhance the project's visibility and reach.

**2.2.1.1 Internal Communication**

The SMART consortium ensures continuous and dynamic communication through a variety of channels, facilitating the seamless exchange of information, insights, and updates. By leveraging digital tools such as **virtual meetings**, **video conferencing**, andcollaborative **online platforms**, partners can engage efficiently across diverse locations and time zones. This communication framework integrates formal elements—such as the dissemination of official progress reports and documents—with informal interactions like **team chats** and **virtual meet-ups**. This balanced approach fosters transparency and inclusivity, strengthening R&I human capital while improving collaboration across sectors.

To further promote cooperation and cross-sectoral collaboration, **SMART** organises regular **consortium meetings**, both online and in person. These meetings are critical for deep discussions, problem-solving, and ensuring alignment with the project's overall objectives. Task-specific meetings are also scheduled to drive focused progress, particularly supporting the enhancement of excellence in Widening countries.

**2.2.1.2 Dissemination strategy**

The dissemination strategy for the SMART project will be meticulously designed to ensure the effective communication of its results, discoveries, and achievements to a wide scientific audience and beyond. Aligned with the project’s goal of fostering institutional reforms, reversing brain drain, and enhancing knowledge circulation, this strategy will begin by identifying **key stakeholders** and developing **targeted approaches** to engage diverse audiences, including policymakers, industry leaders, academics, and the general public. Leveraging a mix of traditional and digital channels—such as press releases, academic publications, social media, and a dedicated **project website**—the plan aims to maximise the visibility and impact of SMART’s outcomes.

Dissemination efforts will support key outcomes, including strengthening collaboration between academic and non-academic sectors, and improving private sector access to public R&I institutions and infrastructures. Key activities include: (1) Maintaining SMART's strong presence at relevant scientific and industry **forums**, **conferences**, and **symposia**, to showcase the project’s innovations and promote excellence in Widening countries; (2) Producing and distributing **newsletters**, **brochures**, and **infographics** to effectively communicate project progress and achievements to a wide range of stakeholders; (3) Engaging with the **media** to highlight SMART’s contributions, increasing the project’s visibility across sectors and regions; and (4) Organising **workshops** and **webinars** to disseminate findings, enhance cross-sector collaboration, and promote entrepreneurial skills among participants. These comprehensive efforts aim to position **SMART** as a driving force for impactful collaborations between academic and non-academic sectors, while enhancing the employability and career prospects of R&I talents. A detailed stakeholder engagement plan (part of D5.3) will ensure that the project’s findings are communicated effectively to the right audiences. To maximise impact, the commercial potential of results will be evaluated prior to publication, and all contributions from the EC will be duly acknowledged.

Additionally, SMART’s results and tools will be presented at four major trade shows in the USA, Europe, and MENA, further strengthening the R&I base, promoting talent mobility, and improving career opportunities across both academic and non-academic sectors. Through these efforts, **SMART** aims to leave a lasting legacy of knowledge, innovation, and capacity-building.

**Table 1: Indicative list of platforms for disseminating SMART’s advancement**

| **International Conferences and Trade Shows** | **Scientific Journals** |
| --- | --- |
| International Caparica Conference on Science Education, 2025,2027,2029,20231 | Review of Educational Research |
| International Caparica Conference in Analytical Proteomics 2026,2028,2030,2032 |  |
| NAFSA conferences. | Educational Researcher |
| The European Conference on Education | International Journal of Educational Technology in Higher Education |
| European Association for International Education series | Studies in Science Education |
| FENESP-Brasil | Talanta |
| FETC-USA | Analytical and Bioanalytical Chemistry |

**Table 2: List of stakeholders**

| **Stakeholder Groups** | **Identified entities** |
| --- | --- |
| Governmental institutions | National Ministries of Education via departments for High Education. National Research Councils and Innovation Agencies. Health Ministries and Health institutions.Introducing the SMART project at the K-12 level or in regional universities. |
| Regulators | National Agencies for Accreditation and Quality Assurance: <https://www.a3es.pt/> | <https://www.aneca.es> | <https://www.nvao.net/en> | https://www.qaa.ac.uk |
| Scientific community | STEM education specialists (Science, Technology, Engineering, Mathematics). Analytical and Bioanalytical Sciences Community. Biomedical Sciences Community. |
| Innovator community | Global innovation ecosystems like the **EIT KICs** (e.g., EIT Health, EIT Raw Materials). NGOs working on education accessibility in underserved areas. |

**2.2.2.2 Communication Plan**

Through targeted and inclusive communication efforts, **SMART** seeks to highlight the tangible impact of EU-funded research and innovation on everyday life. This strategy enhances knowledge circulation, strengthens public-private collaborations, and increases awareness of the societal value of research.

The following table (Table 3) outlines a comprehensive outreach plan designed to increase R&I support capacity, foster cross-sector collaboration, and engage the public and stakeholders. A strong digital presence and active use of social media will enhance visibility, while newsletters, press releases, and outreach materials will ensure continuous communication of the project's objectives and milestones. Scientific dissemination through conferences and publications will contribute to research excellence, while workshops and events will promote knowledge exchange and collaboration, supporting the balanced circulation of talent across sectors and regions.

**Table 3: Outreach Activities**

| **Activity** | **Description** | **Timing** | **Lead** | **Metrics** | **Target Audience** |
| --- | --- | --- | --- | --- | --- |
| **Digital Presence** | | | | | |
| Project Website | Central Hub for SMART Updates and Resources. | From M3, ongoing | EXEL | >2000 visits/year | General public, researchers, stakeholders |
| Social Media | Engage with updates on project platforms: X, LinkedIn, and Instagram. | From M2, ongoing | EXEL | Followers: X: 1500; LinkedIn: 800; Instagram: 300 | General public, industry, policymakers, researchers |
| **Outreach Materials** | | | | | |
| Visual Identity | Designing of logo, letterhead, and presentation templates | M1 | EXEL | 5 templates | Consortium, stakeholders |
| Brochures & Leaflets | Distribution of detailed visuals about goals and benefits | M2, updated regularly | EXEL | 2 flyers, 2 roll-ups, 2 posters | Industry, policymakers, public, researchers |
| **Content Engagement** | | | | | |
| Newsletters | Distribution of electronic updates to stakeholders | Annually | EXEL | 4/year, >200 subscribers | Industry, policymakers, researchers, public |
| Press Releases | Highlighting significant milestones to the media | At major milestones | All | >5 releases | Media, general public, industry, policymakers |
| **Scientific Communication** | | | | | |
| Conferences | Sharing findings with the scientific community | After research results | All | 20 presentations | Researchers, industry experts, policymakers |
| Publications | Publishing findings in scientific journals | After research results | All | 4 publications | Researchers, academics |
| **Events** | | | | | |
| Workshops | Promoting SMART and fostering collaborations | Annually | All | 6 workshops | Researchers, industry, policymakers, public |
| Meeting | Regional Innovation Events (Regional conference) | M36 | All | 1 workshop | Regional stakeholders, researchers, policymakers |
| Closing conference | Final event to share outcomes and enhance stakeholder interactions | M46 | NKUA | 1 conference | Researchers, policymakers, industry, general public |

**2.2.2.3 Networking and Training Activities**

The SMART Networking and Training Activities focus on improving employability and career interoperability, especially in Widening countries. These activities foster cross-sector collaboration and upskill researchers, innovators, and R&I staff across academic and non-academic sectors. Structured networking events, including workshops, conferences, and matchmaking sessions, enable stakeholders from academia and industry to exchange knowledge, break sectoral barriers, and promote "brain circulation" for stronger cross-sector ties.

ChatGPT

SMART training modules will focus on entrepreneurship, equipping R&I talents with skills for diverse career paths and enhancing employability. Administrative, managerial, and technical staff will also receive training in research management, knowledge valorization, and infrastructure operation, boosting organizational capacity. The project will leverage EU research initiatives, including COST action PERMEDIK, for dissemination and recruitment, fostering synergies and expanding the application of SMART's innovative approaches.

**2.2.2 IPR management**

Outline your strategy for the management of intellectual property, foreseen protection measures, such as patents, design rights, copyright, trade secrets, etc., and how these would be used to support exploitation.

*If your project is selected, you will need an appropriate consortium agreement to manage (amongst other things) the ownership and access to key knowledge (IPR, research data etc.). Where relevant, these will allow you, collectively and individually, to pursue market opportunities arising from the project.*

*If your project is selected, you must indicate the owner(s) of the results (results ownership list) in the final periodic report.*

SMARTUP will adopt a clear and proactive strategy for managing intellectual property (IP), ensuring that project results are effectively protected, accessible for exploitation, and aligned with European legal and ethical standards. The project results will include hardware designs, software components (including AI-based modules), pedagogical content, experimental protocols, and dissemination materials.

**Protection Measures:**  
The project will pursue a **hybrid IP approach**, combining **open-source licensing** for educational protocols and non-commercial training content with **formal IP protection** (where appropriate) for hardware design, software modules, and brand identity. Specifically:

* The **Dr. Vida Education device** (its hardware design and electronics) will be protected via **utility models** and/or **design rights**, depending on national | international patentability frameworks and cost-effectiveness.
* **Software components**, including the AI-driven data analysis interface, will be protected via **copyright**, and core algorithms may be registered as **trade secrets** if necessary.
* The **project’s visual identity**, including device branding and digital interface, will be protected via **trademark registration** through the SMARTUP startup.

**Ownership and Consortium Agreement:**  
A comprehensive **Consortium Agreement (CA)** will be signed prior to project launch, in line with the DESCA model, defining:

* Ownership of results and background knowledge.
* Rules for joint ownership and access rights, particularly where contributions are technically integrated.
* Licensing options (e.g. non-exclusive rights for academic use, exclusive licensing for commercialization).
* Procedures for resolving IP-related disputes and revenue sharing.

The CA will ensure that each partner retains rights to their background IP while granting the necessary access rights for the implementation and exploitation of project results.

**Exploitation and Market Use:**  
The project’s exploitation strategy foresees the **creation of a spin-off (SMARTUP)**, which will act as the commercialization and distribution vehicle for the Dr. Vida Education device. Project results protected under IP frameworks will be licensed or transferred to this entity under conditions defined in the Consortium Agreement. Open-access materials (curricula, protocols) will be hosted on a dedicated platform under Creative Commons licenses, ensuring broad societal use while maintaining brand visibility and reputation.

**Results Ownership Reporting:**  
In accordance with Horizon Europe guidelines, a **Results Ownership List** will be submitted in the final periodic report, specifying the owners of all project results. This will ensure clarity for post-project exploitation and compliance with IPR obligations.

This balanced IP strategy ensures that innovations generated by SMARTUPDrEDUCATION are adequately protected, accessible, and positioned for long-term sustainability and societal benefit.

#§COM-DIS-VIS-CDV§#

**2.3. Summary**

Provide a summary of this section by presenting in the canvas below the key elements of your project impact pathway and of the measures to maximise its impact.

**KEY ELEMENT OF THE IMPACT SECTION**

| **SPECIFIC NEEDS** | **EXPECTED RESULTS** | **D & E & C MEASURES** |
| --- | --- | --- |
| *What are the specific needs that triggered this project?*  Many higher education institutions, particularly in Widening regions, lack affordable and scalable laboratory equipment that enables hands-on science training. This structural gap severely limits student engagement, reduces the effectiveness of STEM education, and prevents the consistent integration of experiential learning into curricula. A critical unmet need is the **“one-student-one-apparatus”** model, which ensures that each student has direct, individual access to experimental tools. Without this, learning becomes passive and observational, reinforcing educational inequalities and hindering the development of practical and analytical skills essential for scientific literacy and employability. | *What do you expect to generate by the end of the project?*  By 2030, the project expects to have trained **10,000 students** and **650 educators** worldwide, and to have fully institutionalized the Dr. Vida Education approach in at least **40 higher education institutions (HEIs)**. In addition to these quantitative outcomes, the project aims to foster a **paradigm shift in science education**—transforming traditional teaching practices by integrating **in situ, hands-on experimentation** directly into theoretical classes. This model encourages active learning, enhances conceptual understanding, and bridges the gap between abstract knowledge and real-world application. | *What dissemination, exploitation and communication measures will you apply to the results?*  **Exploitation**: The Dr. Vida Education device will be commercialized through a dedicated spin-off company (SMARTUP), with protection ensured via design rights and utility models. Licensing options will be offered to higher education institutions. Open-source curricula and lab protocols will be published under Creative Commons to support wide, non-commercial use. **Dissemination**: Results will be shared via peer-reviewed publications, international conferences (e.g., SEFI, EARLI, EIT summits), and regional educator workshops. Policy briefs will be submitted to accreditation bodies (e.g., A3ES, ANECA), and outcomes will be promoted through the BIOSCOPE network, EU platforms, and Horizon Europe clusters.**Communication towards citizens**: The project will run outreach campaigns via its website ([**www.smartupdreducation.eu**](http://www.smartupdreducation.eu)) and official social media channels, including **YouTube**, **Instagram**, **LinkedIn**, and **X (formerly Twitter)**. Activities will include public demonstrations at science festivals, school engagement events, and short video documentaries highlighting student impact and real-life experimentation. |
| **TARGET GROUPS** | **OUTCOMES** | **IMPACTS** |
| *Who will use or further up-take the results of the project? Who will benefit from the results of the project?*  **In addition to EHI associated to this project the following oens:**  The comprehensive list of 40 universities includes Harvard Medical School (USA), University of Pittsburgh Medical Center (USA), University of Campinas (Brazil), University of São Paulo (Brazil), University of Pernambuco (Brazil), Federal University of Rio Grande do Norte (Brazil), Federal University of Santa Catarina (Brazil), Canterbury University (UK), King’s College (UK), University of Lincoln (UK), University of Toronto (Canada), McGill University (Canada), University of Ottawa (Canada), Shandong University (China), National and Kapodistrian University of Athens (NKUA), Agricultural University of Athens (AUA), University of Belgrade (Serbia), Institute of Radiology Republic of Serbia (IORS), Macedonian Academy of Arts and Sciences (MASA), University of Vigo (Spain), University of Barcelona (Spain), Complutense University of Madrid (Spain), Charles University (Czech Republic), University of Bucharest (Romania), Jagiellonian University (Poland), University of Zagreb (Croatia), University of Sarajevo (Bosnia and Herzegovina), University of Tirana (Albania), Technical University of Moldova (Moldova), NOVA-EL Cairo (Egypt), University of Johannesburg (South Africa), University of Cape Verde (Cape Verde), Vilnius University (Lithuania), University of Latvia (Latvia), University of Tartu (Estonia), Dalhousie University (Canada), University of Cape Town (South Africa), University of Pretoria (South Africa), University of Coimbra (Portugal), and University of Porto (Portugal). | *What change do you expect to see after successful dissemination and exploitation of project results to the target group(s)?*  Adoption of the Dr. Vida Education device and protocols by at least **40 higher education institutions**, hopefully many more, especially in Widening countries, leading to a permanent integration of hands-on experimentation into theoretical science classes. Significant uptake of the project’s open-source teaching materials in teacher training and science education programs across Europe.Widespread adoption of the “one-student-one-device” model as a **new standard** in STEM pedagogy, influencing national education policies and curriculum design. | *What are the expected wider scientific, economic and societal effects of the project contributing to the expected impacts outlined in the respective destination in the work programme?*  **Scientific**: Introduction of a validated, scalable model for integrating in situ experimentation into theoretical STEM teaching across disciplines and institutions. Practical evidence supporting the effectiveness of the “one-student-one-device” paradigm in enhancing learning outcomes and engagement in science education. **Economic/Technological**: Acceleration of the EU EdTech ecosystem through the commercialization of an affordable, modular teaching device and creation of a dedicated startup. **Societal**: Increased science literacy and digital skills among students, particularly in Widening regions; greater educational inclusion through equitable access to hands-on tools. Alignment with SDGs 4 (Quality Education), 5 (Gender Equality), 10 (Reduced Inequalities), and 13 (Climate Action) through democratized science learning and sustainability-focused curricula. |

**3. Quality and Efficiency of the implementation** #@QUA-LIT-QL@# #@WRK-PLA-WP@#

**3.1. Work plan and resources**

[e.g. 10 pages – including tables]

*Please provide the following:*

*• brief presentation of the overall structure of the work plan;*

*• timing of the different work packages and their components (Gantt chart or similar);*

*• graphical presentation of the components showing how they inter-relate (Pert chart or similar).*

*• detailed work description, i.e.:*

* *a list of work packages (table 3.1a);*
* *a description of each work package (table 3.1b);*
* *a list of deliverables (table 3.1c);*
  + *Give full details. Base your account on the logical structure of the project and the stages in which it is to be carried out. The number of work packages should be proportionate to the scale and complexity of the project.*
  + *You should give enough detail in each work package to justify the proposed resources to be allocated and also quantified information so that progress can be monitored, including by the Commission.*
  + *Resources assigned to work packages should be in line with their objectives and deliverables. You are advised to include a distinct work package on ‘project management’, and to give due visibility in the work plan to ‘data management’ ‘dissemination and exploitation’ and ‘communication activities’, either with distinct tasks or distinct work packages.*
  + *You will be required to update the ‘plan for the dissemination and exploitation of results including communication activities’, and a ‘data management plan’, (this does not apply to topics where a plan was not required.) This should include a record of activities related to dissemination and exploitation that have been undertaken and those still planned.*
  + *Please make sure the information in this section matches the costs as stated in the budget table in section 3 of the application forms, and the number of person months, shown in the detailed work package descriptions.*
* *a list of milestones (table 3.1d);*
* *a list of critical risks, relating to project implementation, that the stated project's objectives may not be achieved. Detail any risk mitigation measures. You will be able to update the list of critical risks and mitigation measures as the project progresses (table 3.1e);*
* *a table showing number of person months required (table 3.1f);*
* *a table showing description and justification of subcontracting costs for each participant (table 3.1g)*
* *a table showing justifications for ‘purchase costs’ (table 3.1h) for participants where those costs exceed 15% of the personnel costs (according to the budget table in proposal part A);*
* *if applicable, a table showing justifications for ‘other costs categories’ (table 3.1i).*
* *if applicable, a table showing in-kind contributions from third parties (table 3.1j)*
* *a table showing details about the research component in the project (table 3.1k)*

**Table 3.1a – List of work packages**

| **WP No** | **WP Title** | **Lead Participant No** | **Lead Participant Short Name** | **Person Months** | **Start Month** | **End Month** |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Work Package 1** **(Phase 1):** **Foundation and Pilot Implementation (2026-2027)** | 1 | NOVA |  |  |  |
|  | **Workpackage 2 (Phase 2A): Expansion and Impact Enhancement (2027-2028)** | 7 | CAMPINAS |  |  |  |
|  | **Work Package 3: Dissemination, outreach and exploitation (2026-2030)** | ? | ? |  |  |  |
|  | **Work Package 4: Project and IPR Management (2026-2030)** | 6 | Exelixis |  |  |  |
|  | **Workpackage 5 (Phase 2B): Institutionalization and Global Outreach (2029-2030)** | 2 | UNIBO |  |  |  |

***PERT chart***

**Table 3.1b – Work package description**

| **Work Package number** | **1** |
| --- | --- |
| **Work Package title** | **Foundation and Pilot Implementation (2025-2026)** |
| **Objectives:**  Focuses on finalizing the development of the 'Dr. Vida Education' device and integrating it into pilot curricula across the six participating academic institutions, engaging 500 students through five distinct hands-on laboratory activities. | |
| **T1.1 – Digital transformation of Dr. Vida and Green Lab Learning with the Dr. Vida Education Toolkit  [1 year] (Lead beneficiary**: NOVA; Contributing beneficiaries: ​​STAB VIDA, UNIBO, HUJI, UNICAMP, UPE, Athens, Exelisis ,Yagma**)** | |
| **Task 1.1:** involves completing the *Dr. Vida Education* device by transforming the current prototype into a fully functional, digital screen-based version. In parallel, it focuses on redesigning five laboratory practices aligned with the principles of bioanalytical minimalism, aiming to reduce the use of reagents and the generation of contaminants by minimizing reagent volumes. The selected laboratory activities include: (i) total protein quantification in urine, (ii) extraction and analysis of dithiocarbamates in food, (iii) PCR-based diagnostics for public health applications, (iv) determination of quinine in beverages, and (v) a cross-cutting theoretical and practical activity designed to foster interdisciplinary learning across (Bio)informatics, (Bio)Chemistry, Environmental Sciences, Pharmacy, and Medicine. These practices are intended to provide students with hands-on experience while promoting environmentally responsible analytical methods. Deliverables for this task include the finalized digital prototype of the device (D.1.1.1), the implementation of the five redesigned lab practices (D.1.1.2 through D.1.1.6), a comprehensive document covering all necessary statistical methods for the practices (D.1.1.7), a dissemination and outreach plan (D.1.1.8), and an open-source software tool designed to guide students in using the Dr. Vida device and interpreting experimental data (D.1.1.9). | |
| **T1.2 - Task title Evaluating Learning Outcomes of Dr. Vida-Enabled Lab Activities Across Institutions [1 year] (Lead beneficiary**: **Athens**, Contributing beneficiaries: ​​ UNIBO, HUJI, UNICAMP, UPE, ATHENS, YAGMA**)** | |
| **Task 1.2:** Focuses on testing and validating the laboratory activities developed in Task 1.1 in practical classes, targeting 500 students across the six beneficiary institutions. Statistical analyses (D.1.2.1) will be conducted to evaluate student success across the projects and institutions. Techniques include descriptive statistics, ANOVA, regression models, and machine learning to identify performance patterns and predictors. This comprehensive framework will assess the device's impact on learning outcomes and provide data-driven insights to refine educational practices, ensuring the success of the pilot phase and laying the foundation for broader implementation. | |
| **T1.3 – Task title: International Dissemination and Outreach of the Dr. Vida Education Project [5 years] (Lead beneficiary: NOVA,** Contributing beneficiaries: UNIBO, HUJI, UNICAMP, UPE, ATHENS, YAGMA**)** | |
| **Task 1.3:** Disseminate the Dr. Vida Education project through international workshops held at conferences organized by UNL-Bioscope in Caparica-Lisbon (<https://www.bioscopegroup.org/conferences/>) (D.1.3.1), as well as at other major international scientific events. | |
| **T1.4 – Task title: Creating SMARTUP star up to Lead in Educational Technology [1 year] (Lead beneficiary: NOVA,**  UNIBO, HUJI, UNICAMP, UPE, ATHENS, YAGMA**)** | |
| **Task 1.4:** The establishment of the SMARTUP startup, centered around the Dr. Vida Education device, represents a transformative step toward modernizing science education. (D.1.4.1) aims to develop an innovative, scalable, and adaptable solution that promotes personalized learning, enhances student engagement, and integrates digital tools across multiple educational levels. A dedicated PhD researcher will be recruited to lead research and development activities, assess the device's pedagogical effectiveness, and ensure its alignment with evidence-based educational methodologies. This role will encompass data-driven optimization of the device, integration into curricula, development of intellectual property strategies, and international networking to position SMARTUP as a reference in educational technology. Beyond 2030, the PhD and consortium partners will spearhead the global expansion of SMARTUP, leveraging opportunities such as the Europe-Mercosur treaty to reach broader markets and foster cross-continental collaboration. | |

**Table 3.1b – Work package description**

| **Work Package number** | **2** |
| --- | --- |
| **Work Package title** | **Expansion and Impact Enhancement (2026-2027)** |
| **Objectives:**  The second phase scales the adoption of Dr. Vida Education approach to 20 HEIs, targeting 2,000 students and 20 educators. Each beneficiary will engage in the project five national HEIs collaborators, targeting a minimum of 1 teacher and 100 students per HEI (a total of 2400 students, HEIs beneficiaries + collaborators)  Key activities include: | |
| **T2.1 – Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| **Task 2.1:** Engaging a total of 20 HEIs and a total of 20 educators. These educators will be trained in the laboratories of their respective national beneficiaries. (**D.2.1)** | |
| **T2.2 - Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| **Task 2.2:** Launching innovation boot camps aims to train 160 educators across Europe from 2027 to 2030, with four boot camps annually (16 total, three days each, 10 participants minimum per camp). These immersive programs equip teachers with skills to integrate the Dr. Vida Education device and modern teaching methodologies, enhancing student engagement and personalized learning. The curriculum covers innovative pedagogy, technology adoption, and practical applications, fostering a network of educators as ambassadors for Dr. Vida Education. ensures scalability and sustainability by embedding these tools into everyday teaching, bridging traditional and modern education for lasting impact. (**D2.2.1)** | |
| **T2.3 – Task title [Task duration] (Lead beneficiary,** Contributing beneficiaries**)** | |
| **Task 2.3:** Development of web-based tools in the **SMARTUPDrVIDAEDUCATION** web page so the practices developed in work package one and the statistics results are available to the educational | |

**Table 3.1b – Work package description**

| **Work Package number** | **3** |
| --- | --- |
| **Work Package title** | **Dissemination, outreach and exploitation** |
| **Objectives:** | |
| **T3.1 – Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| **Task 3.1:** **Dissemination plan to reach the scientific community and identified stakeholders.** focuses on a comprehensive dissemination plan to effectively reach the scientific community and other stakeholders. The plan begins by identifying target audiences, including researchers, civil society, and policymakers, and engaging them through discussions, focus groups, and joint projects with industry leaders and international partners to align research with practical needs and policy goals. Messages will be tailored for each audience: for the scientific community, the emphasis will be on the novelty, methodology, and implications of SMART's findings, providing detailed frameworks, datasets, and results; for policymakers, the focus will be on simplifying complex concepts into actionable insights and highlighting the societal and policy relevance of the research. To enhance visibility, SMART will organize and participate in national and international conferences, fostering collaboration and networking opportunities. Dissemination efforts will leverage multiple channels, including publishing in open-access journals, sharing findings on platforms like ResearchGate, and organizing panels to bridge science and policy. The SMART website will serve as a hub for resources and progress updates, complemented by an active presence on LinkedIn, X, and YouTube to engage the broader community. Newsletters will provide regular updates on research findings and events.A critical component of the plan is promoting continuous feedback and interaction by establishing two-way communication channels with stakeholders and international partners to support collaboration and capacity building. Deliverables include the creation and maintenance of the SMART website and social media platforms **(D3.1).** This structured approach ensures the effective dissemination of SMART’s outcomes and fosters meaningful engagement across all relevant sectors. | |
| **T3.2 - Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| **Task 3.2: Communication strategy.** The communication activities of the SMART project will be ongoing throughout its duration aiming at engaging the citizens. It will include the following elements: **(1) Communication Plan**: Develop a comprehensive plan outlining milestones, deliverables, and events, utilising channels like email newsletters, the project website, and social media for targeted outreach; **(2) Mailing Lists**:Add a subscription tool to the website, allowing stakeholders to sign up for newsletters and public updates, ensuring continuous engagement; **(3) Visual Communication**: Use infographics, charts, and diagrams to present complex information in a clear, accessible way for various audiences; **(4) Engaging Communication Material**: Create a presentation video; Release press announcements and newsletters; Develop fact sheets, a project brochure, and a patient-focused brochure on screening, treatment, and advocacy; **(5) Feedback and Review**: Regularly assess the effectiveness of communication efforts and adjust based on stakeholder input; **(6) Cross-Sector Collaboration:** Promote interdisciplinary cooperation to ensure that project outputs align with policy and industry needs. **(D3.1)** | |
| **T3.3 – Task title [Task duration] (Lead beneficiary,** Contributing beneficiaries**)** | |
| **Task 3.3: Exploitation plan.** At the start of the project, a Data Management Plan (DMP) will be established to ensure efficient utilisation and long-term sustainability. In the initial phases, an internal innovation survey will be conducted using structured questionnaires to clearly identify exploitable outcomes and assess their Technology Readiness Level (TRL). Additionally, a Total Available Market (TAM) analysis of SMART’ application fields will be conducted. Throughout the project's duration, ongoing monitoring of new funding opportunities for all partners will be undertaken. **(D3.2. D3.3)** | |

**Table 3.1b – Work package description**

| **Work Package number** | **4** |
| --- | --- |
| **Work Package title** | **Project and IPR Management (Whole duration of the project)** |
| **Objectives:**  This work package ensures efficient project coordination, IPR management, and integration of gender equality. | |
| **T4.1 – Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| ensures day-to-day management and integrates gender equality into the project. Key actions include defining detailed work plans, monitoring performance, ensuring timely reporting, managing finances, and fostering inclusive participation through gender impact assessments and diversity policies. (**D.4.1**, **D.4.2)**. | |
| **T4.2 - Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| focuses on organizing and following up on project meetings, including setting objectives, preparing detailed agendas, managing logistics, drafting minutes, and maintaining a centralized archive. **(D.4.1).** | |
| **T4.3 – Task title [Task duration] (Lead beneficiary,** Contributing beneficiaries**)** | |
| addresses IPR management through a Consortium Agreement, establishing rules for IP ownership and confidentiality. This ensures all partners align on IP policies before the project begins. **(D.3.3).** | |

**Table 3.1b – Work package description**

| **Work Package number** | **5** |
| --- | --- |
| **Work Package title** | **Institutionalization and Global Outreach (2028-2029)** |
| **Objectives:**  The final phase institutionalizes the Dr. Vida Education program across 20 HEIs globally and establishes partnerships to promote its worldwide adoption. | |
| **T5.1 – Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| focuses on embedding the device into core curricula and aligning it with degree accreditation standards, ensuring its sustainability and institutional integration. Deliverables include curriculum integration plans, implementation statistics, accreditation documentation, training resources, and pilot results, all of which will be publicly available on the project webpage to enhance transparency and engagement. **(D.3.1.1)** | |
| **T2.2 - Task title [Task duration] (Lead beneficiary**, Contributing beneficiaries**)** | |
| aims to establish collaborations community, and open an online innovative repository where the participants in the boot camps can introduce new educational contributions. Open also to the educational community. **(D.2.3.1)** | |

***Gantt chart***

#### A screenshot of a computer AI-generated content may be incorrect.

Table D: Dr. Vida Education Student Works. Hand -on | Learning | Interdisciplinary learning | Scalability

| **Total Protein Quantification in Urine.** Students will develop **hands-on** expertise in protein quantification techniques, including colorimetric assays (e.g., Bradford method) and spectrophotometry, with a focus on sample preparation, assay optimization, and ensuring accuracy and reproducibility. They will gain experience in modern laboratory instruments, integrating digital tools for data analysis and interpretation, and using **Python programming for data visualization and AI-driven insights.** Skills include calculating protein concentrations, constructing calibration curves, and performing statistical validation to ensure precision and reliability.Interdisciplinary learning will link urinary protein levels to clinical conditions such as **CKD, diabetes, and hypertension,** while also addressing environmental and toxicological implications of protein biomarkers. **At the Master’s level,** the project will scale to advanced proteomic techniques, utilizing high-resolution mass spectrometry for detailed protein profiling and integrating protein quantification with metabolomics for systems-level insights. High-throughput adaptations will support large-scale epidemiological studies and point-of-care diagnostic tool development, equipping students with skills to advance clinical diagnostics, biomedical research, and public health. |
| --- |
| **Extraction of Dithiocarbamates in Food Samples.** Students will develop **hands-on** expertise in solid-liquid phase microextraction techniques and cloud point extraction for analyte preconcentration. They will learn to integrate digital imaging into analytical workflows, optimizing parameters for reproducibility and precision with small sample volumes. Skills include **quantitative analysis** (concentration calculations, LOD/LOQ, calibration curves) and statistical validation for reliable results.Programming and data visualization using Python, along with AI techniques, will enhance imaging result interpretation. Technology integration emphasizes using mobile devices and Dr. Vida Education for portable, accessible solutions, as well as automating experimental setups for real-time data acquisition.Interdisciplinary learning will cover the toxicological impacts of dithiocarbamates on food safety, public health, and environmental systems. **At the Master’s level,** the project scales to advanced techniques, including high-resolution and tandem mass spectrometry for precise identification and quantification, and explores the interaction of dithiocarbamates with biological systems through medical and environmental proteomics. This comprehensive approach prepares students for addressing food safety and environmental health challenges. |
| **PCR Diagnostics for Public Health: Lactose Intolerance.** Students will gain **hands-on** expertise in molecular biology techniques such as **PCR setup, DNA/RNA extraction,** and gel electrophoresis for product verification. They will learn to operate and optimize **PCR thermocyclers,** analyze real-time PCR data, and apply automation through programming. Skills include quantitative analysis (Ct values, LOD/LOQ), statistical validation (sensitivity, specificity), and Python-based bioinformatics for PCR data processing, enhanced by AI integration for diagnostics. The project emphasizes interdisciplinary learning, covering public health implications of PCR in disease surveillance, epidemiology, and environmental health monitoring. Students will explore high-throughput PCR for large-scale studies, multiplex PCR for co-infection detection, and advanced applications like integrating proteomics and mass spectrometry (e.g., MALDI-TOF). **Scalable diagnostic** workflows for outbreak response and portable diagnostic kits will address critical issues like antimicrobial resistance and environmental health monitoring, preparing students for impactful roles in public health diagnostics, |

**TABLE E.** Academic beneficiaries and expected future partners.

| The comprehensive list of 40 universities includes Harvard Medical School (USA), University of Pittsburgh Medical Center (USA), University of Campinas (Brazil), University of São Paulo (Brazil), University of Pernambuco (Brazil), Federal University of Rio Grande do Norte (Brazil), Federal University of Santa Catarina (Brazil), Canterbury University (UK), King’s College (UK), University of Lincoln (UK), University of Toronto (Canada), McGill University (Canada), University of Ottawa (Canada), Shandong University (China), National and Kapodistrian University of Athens (NKUA), Agricultural University of Athens (AUA), University of Belgrade (Serbia), Institute of Radiology Republic of Serbia (IORS), Macedonian Academy of Arts and Sciences (MASA), University of Vigo (Spain), University of Barcelona (Spain), Complutense University of Madrid (Spain), Charles University (Czech Republic), University of Bucharest (Romania), Jagiellonian University (Poland), University of Zagreb (Croatia), University of Sarajevo (Bosnia and Herzegovina), University of Tirana (Albania), Technical University of Moldova (Moldova), NOVA-EL Cairo (Egypt), University of Johannesburg (South Africa), University of Cape Verde (Cape Verde), Vilnius University (Lithuania), University of Latvia (Latvia), University of Tartu (Estonia), Dalhousie University (Canada), University of Cape Town (South Africa), University of Pretoria (South Africa), University of Coimbra (Portugal), and University of Porto (Portugal). |
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**Table 3.1c: List of Deliverables**

| **No** | **Deliverable Name** | **Short Description** | **WP No** | **Short Name of Lead Participant** | **Type** | **Dissemination Level** | **Delivery Date**  **(In Months)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| D.1.1.1 | Final prototype. | Dr. Vida education digital | 1 | STAB VIDA |  |  | 12 |
| D.1.1.2 | Total protein quantification in urine via Dr. Vida Education | Biomedicine: Colorimetric Analysis for heath studies | 1 | UNL |  |  |  |
| D.1.1.3 | Extraction of dithiocarbamates using solid-liquid phase. | Environmental: Colorimetric Analysis for organic contaminants. | 1 | UNIBO |  |  |  |
| D.1.1.4 | PCR Diagnostics for Public Health via Dr. Vida Education. | Epimediologicla studies in helth: HPV and lactose resistance | 1 | HUJI |  |  |  |
| D.1.1.5 | Hg and As determination in water | Health/Environment: Colorimetric Analysis for toxic metals contaminants. | 1 | UNICAMP |  |  |  |
| D.1.1.6 | Fluorescence | Quinine determination in beverages | 1 | UPE |  |  | D.1.1.6 |
| D.1.1.7 | Analytical parameters for D.1.1.1 to D.1.1.5 | Statistics and data treatment | 1 | Athens |  |  |  |
| D.1.1.8 | Divulgation program | Communication and divulgation | 1 | Exelisis |  |  |  |
| D.1.1.9 | Self-learning | Programs to discus the data, results and data interpretation | 1 | Yagma |  |  |  |
| D.1.2.1 | Statistics for Dr. Vida Education Approach conducted by the beneficiaries |  | 1 | Athens |  |  |  |
| D.1.3.1 | Spread the (i) Dr. Vida Education project through international workshops |  | 1 | UNL |  |  |  |
| D.1.4.1 | Establishing the startup SMARTUP with the Dr. Vida Education |  | 1 | UNL |  |  |  |
| D.2.1 | 20 educators trained for the Dr. Vida Education device, hands-on works and statistics. |  | 2 | Athens |  |  |  |
| D.2.2.1 | 16 innovation boots camps. |  | 2 | HUJI |  |  |  |
| D.2.2.2 | Development of web-based tools |  | 2 | YAGHMA |  |  |  |
| D.3.1 | SMART website & social media |  | 3 | EXEL |  |  |  |
| D3.2 | FAIR Data Management Plan |  | 3 | UNL |  |  |  |
| D3.3 | Exploitation report |  | 3 | EXEL |  |  |  |
| D4.1 | Agenda and minutes of project meetings |  | 4 | UNL |  |  |  |
| D4.2 | Gender equality report |  | 4 | EXEL |  |  |  |
| D.5.1 | Dr. Vida Education integration in 20 European HUJIs |  | 5 | UB |  |  |  |
| D.5.1.2 | Dr. Vida Education in 20 global universities | European and middle east Universities | 5 | Huji |  |  |  |
| D.5.1.2 | Dr. Vida Education in 20 global universities | Pan-American Universities | 5 | Campinas |  |  |  |
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*Type:*

*Use one of the following codes:*

*R: Document, report (excluding the periodic and final reports)*

*DEM: Demonstrator, pilot, prototype, plan designs*

*DEC: Websites, patents filing, press & media actions, videos, etc.*

*DATA: Data sets, microdata, etc.*

*DMP: Data management plan*

*ETHICS: Deliverables related to ethics issues.*

*SECURITY: Deliverables related to security issues*

*OTHER: Software, technical diagram, algorithms, models, etc.*

*Dissemination level:*

*Use one of the following codes:*

*PU – Public, fully open, e.g. web (Deliverables flagged as public will be automatically published in CORDIS project’s page)*

*SEN – Sensitive, limited under the conditions of the Grant Agreement*

*Classified R-UE/EU-R – EU RESTRICTED under the Commission Decision No2015/444*

*Classified C-UE/EU-C – EU CONFIDENTIAL under the Commission Decision No2015/444*

*Classified S-UE/EU-S – EU SECRET under the Commission Decision No2015/444*

**Table 3.1d: List of milestones**

| **Milestone**  **number** | **Milestone**  **Name** | **Related WP(s)** | **Due date**  **(in month)** | **Means of Verification** |
| --- | --- | --- | --- | --- |
| M.1.1 | Dr. Vida Education Readiness | 1 | 09/2025 | Half of the Dr. Vida Education devices must be operational |
| M.1.2 | Dr. Vida Education Practices Guidelines | 1 | 09/2025 | Deliverables D.1.1.2; D.1.1.3; D.1.1.4 must have been written and tested by the beneficiary responsible |
| M.1.3 | Testing and validating. | 1 | 11/2025 | Dr. Vida Education, Validated and tested in the first semester of 2026. |
| M.1.4 | Dr. Vida Education Divulgation | 2 | 10/2025 | Presented in at least 3 international conferences at Caparica |
| M.1.5 | SMARTUP | 2 | 2 /2026 | Startup SMARTUP legalized |
| M2.1 | EU HEIs Engagement | 3 | 09/2025 | 10 EU HEIs engaged |
| M2.2 | Boot Camps | 4 | 01/2026 | At least 4 boot camps done |
| M2.3 | Web-based tools | 4 | 09/2025 | At least 5 new applications presented by HEIs that are not beneficiaries. |
| M5.1 | Into Curricula | 5 | 01/2027 | Incorporated in at least all beneficiaries curricula |
| M5.2 | Overseas HEIs | 5 | 09/2027 | Incorporated in at least 10 overseas HEIs |
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***Means of verification***

*Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate. For example: a laboratory prototype that is ‘up and running’; software released and validated by a user group; field survey complete and data quality validated*

**Table 3.1e: Critical risks for implementation** #@RSK-MGT-RM@#

| **Description of risk (indicate level of (i) likelihood, and (ii) severity: Low/Medium/High)** | **WP(s) involved** | **Proposed risk-mitigation measures** |
| --- | --- | --- |
| R.1 Number of students below expectations- Lol: low; S: high | 1 | The beneficiaries have access to many different subjects other than the chosen ones for this work for recruitment of students |
| R.2 Failure in creating SMARTUP. Lol: Low, S: medium | 1 | SMARTUP tasks will be taken by The Proteomass Scientific Society, partner of the NOVA-FCT-BIOSCOPEGROUP. |
| R.3 Partner departing consortium. Lol: low, S: medium | 1 | The skills necessary for this project are redundant among beneficiaries |
| R.4 Scale Adoption across Europe fails. Lol: low, S: Low | 2 | The number of partners linked to beneficiaries is too large across Europe to fail. Web divulgation as an alternative |
| R.5 Scale adoption outside Europe fails. Lol: Low, S: low | 3 | The overseas partners (Brazil) linked to beneficiaries are large and important Brazilian universities to fail. Web divulgation as an alternative |
| R.6 Number of teachers below expectations. Lol: Low, S: low | 2 | Recruitment already started a the SciEdu conference organized in 2025 by [NOVA](https://sciedu2025.com/) |
| R.7 Poor dissemination and outreach results. Lol: Low. S: high | 3 | Clearly define the target audiences, key messages, dissemination goals, and outreach strategies at the beginning of the project. Establish Key Performance Indicators (KPIs) for dissemination efforts, such as website traffic, number of attendees at events, or citation counts. |
| R.8 Gender imbalanced teams. . Lol: Low. S: high | 4 | Establish clear and measurable gender diversity targets for the team, aligned with EIT’s emphasis on fostering inclusivity and gender equality in research. |
| R.9 Infringement of third-party Intellectual Property Rights. . Lol: Low. S: high | 4 | Conduct a thorough IPR Due Diligence at the project's outset, ensuring that all external IPR included in the project is identified, documented, and, if necessary, licensed appropriately. |

#§RSK-MGT-RM§#

**Table 3.1f: Summary of staff effort**

*Please indicate the number of person/months over the whole duration of the planned work, for each work package, for each participant. Identify the work-package leader for each WP by showing the relevant person-month figure in bold.*

|  | **WPn** | **WPn+1** | **WPn+2** | **Total Person-**  **Months per Participant** |
| --- | --- | --- | --- | --- |
| **Participant Number/Short Name** |  |  |  |  |
| **Participant**  **Number/**  **Short Name** |  |  |  |  |
| **Participant**  **Number/**  **Short Name** |  |  |  |  |
| **Total Person**  **Months** |  |  |  |  |

**Table 3.1g: ‘Subcontracting costs’ items**

*For each participant describe and justify the tasks to be subcontracted (please note that core tasks of the project should not be sub-contracted).*

| **Participant Number/Short Name** | | |
| --- | --- | --- |
|  | **Cost (€)** | **Description of tasks and justification** |
| **Subcontracting** |  |  |

**Table 3.1h: ‘Purchase costs’ items (travel and subsistence, equipment and other goods, works and services)**

*Please complete the table below for each participant if the purchase costs (i.e. the sum of the costs for ’travel and subsistence’, ‘equipment’, and ‘other goods, works and services’) exceeds 15% of the personnel costs for that participant (according to the budget table in proposal part A). The record must list cost items in order of costs and starting with the largest cost item, up to the level that the remaining costs are below 15% of personnel costs***.**

| **Participant Number/Short Name** | | |
| --- | --- | --- |
|  | **Cost (€)** | **Justification** |
| **Travel and subsistence** |  |  |
| **Equipment** |  |  |
| **Other goods, works and services** |  |  |
| **Remaining purchase costs (<15% of pers. Costs)** |  |  |
| **Total** |  |  |

**Table 3.1i: ‘Other costs categories’ items (e.g. internally invoiced goods and services)**

*Please complete the table below for each participant that would like to declare costs under other costs categories (e.g. internally invoiced goods and services), irrespective of the percentage of personnel costs.*

| **Participant Number/Short Name** | | |
| --- | --- | --- |
|  | **Cost (€)** | **Justification** |
| **Internally invoiced goods and services** |  |  |
| **…** |  |  |

**Table 3.1j: ‘In-kind contributions’ provided by third parties**

*Please complete the table below for each participant that will make use of in-kind contributions (non-financial resources made available free of charge by third parties). In kind contributions provided by third parties free of charge are declared by the participants as eligible direct costs in the corresponding cost category (e.g. personnel costs or purchase costs for equipment).*

| **Participant Number/Short Name** | | | |
| --- | --- | --- | --- |
| **Third party name** | **Category** | **Cost (€)** | **Justification** |
|  | **Select between**  Seconded personnel  Travel and subsistence  Equipment  Other goods, works and services  Internally invoiced goods and services |  |  |
|  |  |  |  |

#§QUA-LIT-QL§# #§WRK-PLA-WP§#

**3.2. Capacity of participants and consortium as a whole** #@CON-SOR-CS@# #@PRJ-MGT-PM@#

[e.g. 3 pages]

**3.2.1 Consortium description and complementarity**

*The individual participants of the consortium are described in a separate section under Part A. There is no need to repeat that information here.*

* Describe the consortium. How does it match the project’s objectives, and bring together the necessary disciplinary and inter-disciplinary knowledge? Show how this includes expertise in social sciences and humanities, open science practices, and gender aspects of R&I, as appropriate. Include in the description affiliated entities and associated partners, if any.
* Show how the partners will have access to critical infrastructure needed to carry out the project activities.
* Describe how the members complement one another (and cover the value chain, where appropriate)
* In what way does each of them contribute to the project? Show that each has a valid role, and adequate resources in the project to fulfil that role.
* If applicable, describe the industrial/commercial involvement in the project to ensure exploitation of the results and explain why this is consistent with and will help to achieve the specific measures which are proposed for exploitation of the results of the project (see section 2.2).

The **SMARTUP Project** brings together a multidisciplinary and international consortium of **nine leading institutions**—including universities, research foundations, and innovative companies—each contributing specialized expertise to ensure the successful implementation of the project’s objectives. The consortium spans across Europe and Latin America, providing a dynamic platform for knowledge exchange, innovation, and education aligned with the Knowledge Triangle: **education, research, and innovation**.

Each partner contributes unique value:A diagram of a project

AI-generated content may be incorrect.

**UNL** is a reference in **proteomics and diagnostics**, offering advanced training programs and methodologies in health technologies. Renowned for expertise in proteomics and mass spectrometry, UNL contributes to SMARTUP with methodologies developed through projects like Smart4Health and TaRDIS. It offers hands-on training and interdisciplinary programs in diagnostics and therapeutics. UNL's Bioscopegroup fosters international collaboration, organizing over 70 international conferences and 55 courses, amplifying SMARTUP’s global visibility and impact.

**UNIBO** leads in **innovation and interdisciplinary education**, particularly in omics platforms and medicinal chemistry. Brings expertise in omics platforms and medicinal chemistry, with experience from projects like TOX-OER (open resources for toxicology training) and OEMONOM (natural molecules research). UNIBO develops interdisciplinary educational modules and fosters innovation in neurodegenerative and metabolic disease research, bridging academia and healthcare. Its professional master’s programs, such as Forensic Chemical Analysis and Applied Pharmaceutical Sciences, serve as models for SMARTUP curricula.

**BRFAA** provides robust expertise in **biomedicine and AI**, facilitating translational research in molecular biology and precision medicine. Brings expertise in omics platforms and medicinal chemistry, with experience from projects like TOX-OER (open resources for toxicology training) and OEMONOM (natural molecules research). UNIBO develops interdisciplinary educational modules and fosters innovation in neurodegenerative and metabolic disease research, bridging academia and healthcare. Its professional master’s programs, such as Forensic Chemical Analysis and Applied Pharmaceutical Sciences, serve as models for SMARTUP curricula.

**HUJI** contributes through its pioneering work in **personalized cancer therapies and biophysics**, bridging science and healthcare application. Leverages computational and biophysical approaches through the MEDPNC project, recognized by Merck and Nature Research (2020). HUJI focuses on tumor microenvironments and personalized cancer therapy, creating interdisciplinary training modules for SMARTUP. Its contributions ensure integration of cutting-edge research with societal applications, addressing global health challenges.

**EXEL** enhances the consortium's reach through **dissemination, commercialization, and IP training**, ensuring public engagement and societal trust. Provides dissemination and commercialization expertise, drawing from extensive participation in projects like CURE, TO\_AITION, ELMUMY, and DECODE. EXEL leads SMARTUP’s dissemination efforts, ensuring visibility and stakeholder engagement. It offers IP management training, fostering entrepreneurship and integrating innovation into HEI operations, while enhancing societal trust through public engagement activities.

**YAGHMA** strengthens the sustainability and impact dimensions through its focus on **ESG analytics**, promoting ethical innovation within the project. Specializes in ESG analytics, enhancing SMARTUP by designing metrics for societal and environmental impact. YAGHMA brings its experience from projects like Erasmus+ Partnerships for Sustainable Enterprises to embed sustainability into education and research through value-based innovation frameworks. YAGHMA’s contributions ensure alignment with broader sustainability goals, promoting ethical and impactful innovation.

**STAB VIDA** adds value in **portable genetic diagnostics**, linking technological innovation to education and public health via tools like the *Doctor Vida Pocket PCR*. Innovates in genetic technologies, including the Doctor Vida Pocket PCR, a portable device for rapid diagnostics such as COVID-19 detection and lactose intolerance testing. The technology integrates practical applications into education via Dr. Vida Education, making genetic testing accessible and advancing healthcare and research. Internationally recognized at events like Arab Health 2024, STAB VIDA expands its impact through educational and research integration.

**UNICAMP** supports **internationalization and science education**, developing methodologies for analytical chemistry and environmental health. UNICAMP is an international reference in analytical chemistry, mass spectrometry, and science education. Its contribution to SMARTUPDrEDUCATION lies in the development of pedagogical methodologies applied to portable devices, with an emphasis on environmental and biomedical analysis. Prof. Arruda’s experience in student training and coordination of Latin American research networks will support the project’s internationalization and the transfer of knowledge between Europe and Latin America.

**UPE** brings leadership in **inclusion and SDG-aligned educational practices**, focusing on equity, diversity, and teacher training. Under the leadership of Prof. Teresa Cartaxo, UPE brings an innovative approach focused on inclusive practices and public policy for science education. UPE strengthens the educational pillar of the consortium by integrating Dr. Vida Education into teaching contexts with high socio-economic diversity. Prof. Cartaxo’s expertise in teacher training, interdisciplinary curricula, and educational equity will help adapt and scale the project to complex realities, aligning with the United Nations Sustainable Development Goals (SDGs), particularly Goals 4 (Quality Education), 5 (Gender Equality), and 10 (Reduced Inequalities).

The SMART project brings together a highly complementary consortium of nine institutions that collectively cover the full spectrum of education, research, innovation, sustainability, and societal engagement. Each partner offers unique expertise while strategically aligning with others, ensuring that the consortium functions as an integrated, multidisciplinary ecosystem. Together, these partners enhance the project’s capacity to generate impact across academic, technological, and societal domains.

**NOVA University Lisbon (UNL)** contributes deep expertise in *proteomics, diagnostics, and training*, serving as a foundational reference in health technologies. With renowned experience in hands-on education and international collaboration, UNL complements **BRFAA** and **UNIBO** through shared biomedical and omics methodologies, and strengthens links with **HUJI** in diagnostics and translational research. Its educational infrastructure also aligns closely with **UNICAMP** and **UPE**, facilitating knowledge transfer across Europe and Latin America.

**University of Bologna (UNIBO)** brings strong leadership in *innovation, interdisciplinary education, and medicinal chemistry*. Its experience developing open educational resources and curriculum models complements **UNL’s** practical training approaches, and dovetails with **HUJI’s** and **BRFAA’s** biomedical focus. UNIBO’s translational mindset bridges academia and healthcare, which complements **STAB VIDA’s** application-driven technologies, while supporting the inclusive educational work of **UPE**.

**BRFAA (Academy of Athens)** offers cutting-edge capabilities in *biomedicine, AI integration, and molecular biology*. It serves as a key engine for research excellence and complements **UNL** and **UNIBO** in omics and precision medicine. Its strengths in bioinformatics and AI align with **HUJI’s** personalized medicine contributions and are reinforced through dissemination by **EXEL** and ethical oversight supported by **YAGHMA**.

**Hebrew University of Jerusalem (HUJI)** contributes pioneering research in *personalized cancer therapy and biophysics*, expanding the project’s clinical and societal relevance. HUJI builds on **BRFAA’s** and **UNIBO’s** biomedical infrastructure to deliver interdisciplinary modules that are enriched by **UPE’s** equity-centered educational approaches. HUJI also collaborates with **STAB VIDA** to translate complex cancer research into practical diagnostics, and with **EXEL** to ensure research dissemination.

**EXEL** ensures broad project visibility through *dissemination, commercialization, and IP training*. It transforms academic outputs from **UNL**, **HUJI**, and **BRFAA** into public-facing innovations. EXEL also supports **STAB VIDA** in scaling its products and technologies, and works closely with **UPE** and **UNICAMP** to engage educators and stakeholders in high-impact, inclusive ways.

**YAGHMA** embeds *sustainability, ESG analytics, and ethical innovation* into the core of the SMART project. It complements **EXEL** by ensuring dissemination practices align with societal values, and strengthens the work of **UPE** through shared goals around inclusion and SDG alignment. YAGHMA also provides ethical innovation frameworks to **UNIBO** and **HUJI**, ensuring research and commercialization efforts respect environmental and societal boundaries.

**STAB VIDA** adds vital technological capacity with its *portable genetic diagnostic tools*, such as the Doctor Vida Pocket PCR. These tools support **UNL**, **HUJI**, and **BRFAA** by offering real-world application of their research, and contribute to **UPE** and **UNICAMP’s** education missions through integration in classroom and community settings. STAB VIDA’s innovations are also amplified through **EXEL’s** dissemination strategies.

**UNICAMP** supports *internationalization, science education, and analytical chemistry* with a focus on Latin American cooperation. It works closely with **UNL** in shared mass spectrometry and training methods, with **STAB VIDA** on deploying diagnostic tools, and with **UPE** to enhance pedagogical approaches in underserved areas. **YAGHMA’s** sustainability agenda also aligns with UNICAMP’s environmental science work.

**UPE** plays a crucial role in *inclusive education, teacher training, and SDG implementation*. It adapts research and innovation outcomes from partners like **UNIBO**, **STAB VIDA**, and **HUJI** to contexts of socio-economic diversity, ensuring SMART’s educational model is equitable and scalable. UPE’s focus on interdisciplinary curricula and social justice is also reinforced by **YAGHMA** and **EXEL**.

Together, the partners form a **complementary and coherent ecosystem**, with each entity reinforcing the others through aligned yet distinct areas of expertise. The consortium’s structure allows for efficient collaboration across education, research, and innovation, fostering a sustainable and inclusive model of excellence in science, technology, and health education.

**3.2.2 Other countries and international organisations**

* Note that for CSAs in Horizon Europe, except when explicitly allowed in the topic, any entity from a non-associated third country and International Organisations (other than International European ResearchOrganisations) can only participate as Associated Partners. There is no difference between entitiesestablished in low/middle income countries and developed countries.

If your topic does not include any specific condition related to non-associated third countries, you do not need to include any information on ‘Other countries and international organisations in this section of the proposal.

If your topic includes a specific condition related to non-associated third countries, note that legal entities established in those countries are only able to participate as beneficiaries or affiliated entities if eligible for funding:

•because they are from a low/middle income country identified in the Work ProgrammeGeneral Annexes B as automatically eligible for funding;

•because the call conditions explicitly provide for it;

•because the participation of the legal entity concerned is deemed essential for implementingthe action.

Only in the latter case, explain in this section of the proposal why the participation of the entity in question is essential to successfully carry out the project.

1. [↑](#footnote-ref-0)