**Scientific Methodologies for Advanced Research and Teaching through the Alliance of Alliances -SMART-A2**

**https://civis.eu/en/discover-civis/the-civis-alliance**

**List of participants (1 page)**

| **Participant No.** | **Participant organisation name** | **Country** |
| --- | --- | --- |
| **1**  **(Coordinator)** | NOVA UNIVERSITY OF LISBON-**NOVA** | PORTUGAL |
| **2** | UNIVERSITY OF BOLOGNA-**UNIBO** | ITALY |
| **3** | THE HEBREW UNIVERSITY OF JERUSALEM-**HUJI** | ISRAEL |
| **4** | STAB VIDA INVESTIGAÇÃO E SERVICOS EM  CIENCIAS BIOLOGICAS LDA-**STABV** | PORTUGAL |
| **5** | NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS-**UOA** | GREECE |
| **6** | EXELIXIS RESEARCH MANAGEMENT AND COMMUNICATION-**EXELISIS** | GREECE |
| **7** | UNIVERSITY OF CAMPINAS-**UNICAMP** | BRASIL |
| **8** | **YAGHMA** | NETHERLANDS |
| **9** | UNIVERSITY OF PERNAMBUCO-**UPE** | BRASIL |
| **10** | TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KNU-**KNU** | UKRAINE |
| **11** | UNIVERSITY OF HUELVA-**UHU** | SPAIN |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Page limit: 30 pages**

**1. Excellence** #@REL-EVA-RE@#

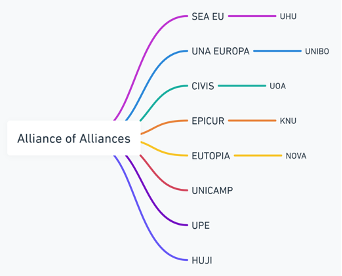
**1.1. Objectives** #@PRJ-OBJ-PO@#

[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—composed of leading institutions embedded within the major European University Alliances—aims to transform science education across Europe and Brazil. This transformation will move beyond traditional theory-based instruction toward practical, personalized, and digitally enhanced learning experiences. Our guiding vision is the 1Student–1Apparatus (1S1A) model, made possible through the integration of the Dr. Vida Education device—a compact, eco-friendly, multitask, LED-based tool costing under €1000 (<https://smartupdreducation.wixsite.com/welcome> password: SMART). Dr. Vida enables hands-on scientific experimentation and real-time data analysis directly at the individual level. Its embedded artificial intelligence (AI) provides instant feedback on experimental results, allowing for personalized learning paths that adapt to each student’s progress and needs. In fields like disciplines such as bioinformatics, chemistry, biochemistry, physics, biotechnology, engineering, and medicine., the integration of bioinformatics facilitates the analysis of complex datasets, supporting activities such as monitoring water contamination (e.g., mercury, arsenic) and conducting epidemiological investigations (e.g., lactase intolerance, sexually transmitted infections). Importantly, this methodology is also designed to reduce the workload and cognitive burden on teachers by decentralizing experimentation and enabling autonomous learning. Dr. Vida simplifies academic assessment by providing real-time insights into individual student progress, while simultaneously enhancing student competence through continuous, hands-on engagement with real-world scientific challenges. Crucially, Dr. Vida is battery-powered and portable, enabling science teaching outside traditional laboratories—in classrooms, remote fieldwork sites, and even students’ homes. This operational flexibility ensures that the 1S1A principle is fully achieved, democratizing access to scientific training. The device can also be deployed in under-resourced or remote areas to support health surveillance, such as identifying Zika virus or cytomegalovirus (CMV). Moreover, it is suitable for on-site diagnostics in maternity hospitals or pharmacies, and in emergency scenarios such as armed conflicts, it can function as a mobile PCR platform, detecting biological threats like Bacillus anthracis or Yersinia pestis with high sensitivity and specificity, using fluorescent probes. The project is rooted in the strategic framework of what we define as the “Alliance of Alliances”, leveraging five major European University Alliances funded by the European Universities Initiative. Together, these alliances represent 45 full member universities and 5 associated partners across 23 countries, providing a wide-reaching and well-established infrastructure for rapid scaling and collaboration. The project will involve the following alliances:

[**EUTOPIA: NOVA**](https://www.unl.pt/eutopia/) and University of Warwick (UK), Vrije Universiteit Brussel (Belgium), CY Cergy Paris Université (France), University of Gothenburg (Sweden), Pompeu Fabra University (Spain), Technische Universität Dresden (Germany), Ca’ Foscari University of Venice (Italy), Babeș-Bolyai University (Romania), and University of Ljubljana (Slovenia). [**EPICUR: KNU**](https://epicur.edu.eu/?utm_source=chatgpt.com) and University of Strasbourg (France, coordinator), Adam Mickiewicz University in Poznań (Poland), Albert-Ludwigs-Universität Freiburg (Germany), Aristotle University of Thessaloniki (Greece), University of Amsterdam (Netherlands), Karlsruher Institut für Technologie (Germany), University of Natural Resources and Life Sciences in Vienna (Austria), University of Haute-Alsace (France), and University of Southern Denmark (Denmark). [**CIVIS: UOA,**](https://civis.eu/) and The National and Kapodistrian University of Athens (UOA) is a full member of the CIVIS Alliance, alongside Université libre de Bruxelles (Belgium), Universidad Autónoma de Madrid (Spain), Aix-Marseille Université (France), Sapienza Università di Roma (Italy), Eberhard Karls Universität Tübingen (Germany), University of Glasgow (UK), University of Bucharest (Romania), and Stockholm University (Sweden). CIVIS also includes associated partner institutions such as the University of Lausanne (Switzerland), Université Hassan II de Casablanca (Morocco), University of the Witwatersrand (South Africa), and University of Chile (Chile). [**UNA Europa: UNIBO**](https://site.unibo.it/una-europa/en)and Freie Universität Berlin (Germany), KU Leuven (Belgium), Université Paris 1 Panthéon-Sorbonne (France), University of Edinburgh (UK), Jagiellonian University in Kraków (Poland), Universidad Complutense de Madrid (Spain), University of Helsinki (Finland), University College Dublin (Ireland), and the University of Zurich (Switzerland) as an associate partner. [**SEA-EU: UHU**](https://sea-eu.org/) and University of Cádiz (Spain, coordinator), University of Western Brittany (France), University of Gdańsk (Poland), University of Kiel (Germany), University of Split (Croatia), University of Malta (Malta), University of Algarve (Portugal), University of Naples Parthenope (Italy), and Nord University (Norway). 

To ensure wide and equitable implementation, the project will activate and expand the existing governance, mobility, and communication channels already in place among these alliances. These structures, created through years of EU-funded collaboration, will be utilized to co-develop and share open-source pedagogical resources, coordinate joint pilot deployments, and conduct transnational evaluation and benchmarking. Cross-alliance training and mobility: The project will explicitly foster training and mobility among all participating alliances, involving not only teachers, but also laboratory technicians, and non-academic staff (e.g., administrative, IT, and educational support teams). These staff exchanges and learning visits will be central to: (i) Sharing best practices in AI-enabled practical teaching, (ii) Co-developing interdisciplinary modules, (iii) Standardizing device operation and integration protocols, (iv) Building capacity in maintenance, digital platforms, and safety procedures. These activities will be coordinated through existing alliance structures such as EUTOPIA’s Connected Learning Communities, EPICUR’s Inter-University Campus, CIVIS's Thematic Hubs, SEA-EU’s shared academic programs, and UNA Europa’s Joint Innovative Formats. **Policy Alignment:** European & Brazilian Priorities: The project is fully aligned with the EIT HEI Initiative and several key policy frameworks in Europe and Brazil, addressing innovation, inclusion, and sustainability in higher education as follows: [**(i) European Green Deal:**](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en)Dr. Vida follows the analytical minimalism concept, minimizing environmental footprint while ensuring accurate scientific outcomes. This aligns with [Brazil’s Rede UniSustentável](https://redeunisustentavel.com.br/), the GreenMetric ranking, and Green Campus initiatives promoting sustainable operations in universities. [**(ii) EU Digital Education Action Plan (2021–2027):**](https://education.ec.europa.eu/focus-topics/digital-education/plan) Through AI and bioinformatics, Dr. Vida supports personalized and data-driven learning. This mirrors Brazil’s innovation in hybrid education led by [UNIVESP](https://univesp.br/) and the [Federal Institute of Ceará (IFCE)](https://ifce.edu.br/), which integrate sustainability and entrepreneurship in their digital learning ecosystems. **(ii)** [**European Skills Agenda:**](https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/european-skills-agenda_en) The project contributes to upskilling and reskilling efforts in digital and scientific domains, particularly in data literacy, laboratory autonomy, and problem-solving. **(iii)** [**EU Recommendation on Key Competences for Lifelong Learning:**](https://education.ec.europa.eu/focus-topics/improving-quality/key-competences) Dr. Vida enhances competences in digital literacy, science and technology, and entrepreneurship. This vision is echoed by Brazil’s [Porto Digital](https://www.portodigital.pt/), a thriving innovation hub that connects academia, startups, and public institutions to build capacity for digital transformation. **Impact and Reach:** By 2030, the project aims to implement Dr. Vida in at least 45 European HEIs and 20 global HEIs, including 10 universities in Brazil. Through innovation boot camps, international workshops, staff exchanges, and conference participation, the project will ensure the dissemination and long-term sustainability of its results via one start-up. These actions will be further reinforced by the NOVA-FCT-Bioscope network, which already organizes 13 international scientific conferences every two years (www.bioscopegroup.org/conferences), offering an ideal platform for showcasing outcomes, recruiting collaborators, and engaging external stakeholders. In summary, this initiative harnesses the collective intelligence, mobility infrastructure, and digital integration capacity of the “Alliance of Alliances” to revolutionize science education and foster lasting EU–Brazil cooperation in education, research, and innovation.

**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**  **(2026-2027)**  **Foundation and Pilot Implementation** | 1  Develop and Integrate the Device into beneficiaries´Curricula | Pilot program with beneficiaries | At least 500 students in first phase. | Experts Consortium | Practical science education. | Integration by the end of 2026 |
| 2  Build an Innovation Network | Building “SMARTUP” an Star-up on Education | Education program in [conferences](https://www.bioscopegroup.org/conferences/) (at least 16 each year) | Utilize UNL-BIOSCOPE Conferences&expertise | collaboration between academia(s) and industry | SMARTUP Fully operational by the end of Phase 1 |
| **Action 2**  **Phase 2A (2028-2029)**  **Expansion and Impact Enhancement** | **3**  Scale Adoption Across European Alliances and Brazil | Expand the program to 20 HEIs across Europe/America/Asia. | At least 2000 students, staff and 20 educators | Secure additional national funding. | Promotes Europe-wide educational transformation. | Complete scaling by the end of 2029. |
| **4**  Foster EntrepreneuriAI Skills | Boot Camps for learning | Train at least 240 teachers and Staff | KIC partners for mentoring and funding. | Aligns with enhancing employability. | Boot camps operational by last semester 2028. |
| **Action 3 Phase 2B (2030-2031): Institutionalization and Global Outreach** | **5**  Institutionalize the Program | Institutionalize the Program | device into the core curricula of at least plus 40 HEIs.Europe/America/Asia. | into degree accreditation standards. | long-term systemic change in education. | Institutionalization completed by the end of 2029. |
| **6**  Strengthen Global Partnerships | program globalization | collaborations with at least 20 universities out of Europe. | 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 and Brazil 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) Regulation. 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. This trend is also observed in Brazil as São Paulo State remains the major hub for research and development in Brazil, accounting for approximately **46% of the country's GERD (Gross Expenditure on R&D)** and **66% of business R&D investment**. 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/a1d14fa0-8dbe-11e5-b8b7-01aa75ed71a1?utm_source=chatgpt.com), 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, yet weak as no real hands-on laboratory work is performed. To improve the situation, reforms must promote balanced curricula, **modernized labs**, **faculty training**, and [**smaller**](https://www.hks.harvard.edu/sites/default/files/Academic%20Dean%27s%20Office/Guide%20to%20Small-Group%20Learning.pdf) **lab groups, ideally just one student**. 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. 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. The optimization of 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 integrates UV and visible LEDs for excitation and supports measurements of both fluorescence and phosphorescence. In addition, Dr. Vida presents 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 applications. 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, which is remarkable for developing countries and remote areas. **What is more important, for the first time a one-student-one-apparatus concept can be achieved, allowing personalized learning through experimental classes in the theoretical classroom.** 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 and Brazilian 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+20** 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.

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 or Biochemistry, Environment, Pharmacy, Physics, electrical engineering 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 coordinators of the beneficiary institutions bring together a comprehensive and interdisciplinary skill set that spans all scientific and technological areas required for the project’s success. Institutions such as **NOVA, UHU, KNU, UPE, UNICAMP, UNIBO, UOA, and HUJI** contribute significantly across multiple disciplines, including **Environmental Chemistry and Biochemistry**, **Pharmacy and Biotechnology**, **Systems Medicine and Biophysics**, **Biomedical Engineering** and **Medicinal Biochemistry**, demonstrating their consolidated expertise in molecular sciences, health technologies, and biomedical research. I. The institutions **NOVA, UOA** and **YAGHMA** contribute essential capabilities in **Bioinformatics** and the **ethical and explainable use of artificial intelligence**, ensuring that the integration of digital technologies into education, diagnostics, and sustainability practices is both technically sound and socially responsible. Moreover, **YAGHMA**, **NOVA**, and **STABV** bring valuable experience in **Business Management and Innovation**, supporting the entrepreneurial and translational dimensions of the project, including scalability, sustainability, and engagement with industry and civil society. This well-distributed and thematically integrated expertise positions the consortium to address complex challenges at the interface of science, technology, education, and societal needs, while fostering impactful and sustainable innovation.

During Phase A, Dr. Vida Education will organize students into multidisciplinary teams to conduct case studies. Where such diversity of disciplines cannot be ensured, students will instead engage in tasks directly related to their field of expertise. **Selected Case Studies Using the Dr. Vida:**

**1. Protein Analysis in Urine** **Biochemistry students** prepare calibration curves to quantify urinary proteins; **medical students** discuss clinical implications for kidney disease, multiple myeloma, and neonatal CMA virus; **bioinformatics students** automate data analysis using Python.

**2. Environmental Impact of Pharmaceuticals** **Environmental students** detect pharmaceutical residues in water; **pharmacy students** assess chemical stability; **bioinformatics students** model pollutant dispersion using AI. Targets include **Hg**, **As**, and **bacterial contamination**.

**3. PCR Diagnostics for Public Health** **Medical students** demonstrate PCR diagnostics; **biochemistry students** explain DNA amplification; **bioinformatics students** analyze epidemiological data. Case: **lactose intolerance screening**.

**4. LED-Based Instrumentation** **Engineering and physics students** assemble and explain the Dr. Vida device; **science students** demonstrate its use in analytical labs, highlighting modularity and field applicability.

In the first year, **eight experimental practices** will be conducted. **Urine** will serve as the primary sample, using **simulated urine** for clinical applications. For large-scale data interpretation, **public datasets** will be used to train students in cohort analysis. For the **environmental module**, **fortified and real water samples**—especially from Brazil—will be analyzed for pharmaceutical and metal contaminants. **Saliva** will be used in **public health studies**, and **public repositories** will support learning where large datasets are needed. Additionally, a **dedicated research work package** will explore the **PCR functionalities** of the Dr. Vida device for the **identification of Zika virus and cytomegalovirus (CMV)**, supporting applications in **infectious disease diagnostics**.

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

**Table B. Doctor VIDA 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. Hands-On Laboratory Work. |
| **(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. Hands-On Laboratory Work. |
| **Physics and Electrical Engineering** | **LerO:** Electronic Components and Assembly. Epidemiology, PCR Applications, Case Studies, Statistics, AI, Python, and Chemical Measurements. **Sk**: PCR Analysis, DNA and Medicine, Statistics for Epidemiology,Spectrophotometry, Fluorescence, Quality Control, Preconcentration. Hands-On Laboratory Work. |

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

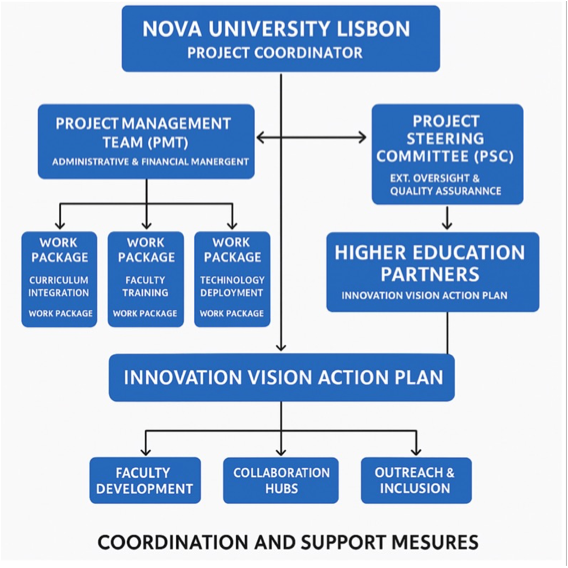
| **(Bio) Inform.** | **What They Can Teach**: Data acquisition, processing, and visualization techniques using tools such as Python, MATLAB, and Tableau. Advanced signal processing methods to refine and analyze experimental data generated in chemistry, pharmacy, or environmental studies. **What They 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. |
| **Physics and Electrical Engineering** | **What They Can Teach**: Design and optimization of sensing technologies and instrumentation, covering signal processing, microfluidics, and embedded systems, for biomedical and environmental applications; development of hardware and electronic platforms for diagnostic devices such as biosensors and wearable monitors; and modeling and simulation of physical systems, energy transfer, and material interactions in analytical tools.**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. **From medicine:** 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. |

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 among institutions such as UHU, NOVA, UOA, HUJI, UNICAMP, UPE, KNU and STABV ensure the device remains innovative and impactful across disciplines, while partnerships with industry, STABV and Yaghma, facilitate market readiness, business model development, and commercialization. Exelis ensures dissemination and communication. KNU maintains technological update of Dr. Vida education. The NOVA´s robust [Diversity and Inclusion Action Plan](https://www.unl.pt/en/noticias/nova/nova-university-lisbon-implements-gender-equality-plan/?utm_source=chatgpt.com) prioritizes gender equality and representation and will be implemented throughout the project. UHU, UNIBO, UPE and HUJI are led by females, NOVA is led by a non-binary person. Outreach to underrepresented groups, including students from immigrant backgrounds and less-developed regions, will help ensure equitable 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 or remote regions, such as Brazil, Ukraine, Portugal and Greece, promoting equity in science education. 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.

**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.*

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.

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

* **WP4 (Project Management)**, led by BIOSCOPE, ensures strategic alignment, milestone and delivery 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, web-page) will be used to facilitate seamless coordination across geographies.

The Dr. Vida education 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 centrally coordinated by NOVA University Lisbon (NOVA), which oversees project governance, ensures compliance with EU regulations, and monitors progress across all work packages. A dedicated NOVA Project Management Team (PMT: Dr. J. L. Capelo, Dr. Hugo Santos, Dr. Carlos Lodeiro and Dr Elisabete Oliveira) plus an advisory PMT (Dr. M. Zoidakis, Dr. L. Mercolini, Dr. N. Kravchenco, Dr. T. Cartaxo.) will be responsible for administrative coordination, financial management, communication between partners, and risk mitigation strategies.

To decentralize implementation and foster ownership, each major activity—such as curriculum integration, faculty training, student mobility, technology deployment, and dissemination—is led by a designated Work Package Coordinator selected according to thematic expertise (WPCs: J. L. Capelo, M. Zoidakis, L. Mercolini, N. Kravchenko-Balasha, T. Cartaxo). These coordinators work in close collaboration with the PMT and ensure that activities are contextually adapted and regionally effective.

At the institutional level, each higher education institution (HEI) partner will develop and implement its own Innovation Vision Action Plan (IVAP), tailored to local academic structures and student needs. The IVAPs outline clear objectives, milestones, and success indicators to embed the “1 Student – 1 Apparatus” (1S1A) model into multidisciplinary education. Faculty development is a core support strategy: regular workshops will be conducted to train educators in the use of the Dr. Vida Education device, as well as in experiential teaching, digital pedagogy, and interdisciplinary project facilitation. These training sessions will enhance teaching quality and ensure long-term sustainability, will be recorded and made available via web page.

To facilitate collaboration and knowledge exchange, a network of collaboration hubs will be created (one for each conference the NOVA-BIOSCOPE GROUP organizes (A TOTAL OF 13), that will work as a seed, total of 13), serving as platforms for sharing technical resources, best practices, and pedagogical innovations. These hubs will also act as support centers for troubleshooting device implementation and as incubators for innovation-driven student projects.

Equity and inclusion are embedded in all coordination measures. The project will actively engage students from underrepresented backgrounds—including those from remote regions and immigrant families—through targeted outreach, inclusive pedagogical strategies, and continuous diversity monitoring. These efforts are guided by NOVA’s Gender Equality Plan and aligned with the EU Gender Equality Strategy 2020–2025 and Sustainable Development Goal 5.

Technical support will be provided to all partners to ensure the effective use of the Dr. Vida Education, including installation, calibration, data integration, and software use. GDPR-compliant training will also be offered on data collection, ethical AI integration, and secure data sharing, ensuring responsible digital practices.

A **Project Steering Committee (PSC)**, composed of representatives from all partner institutions (J. L. Capelo, T. Cartaxo, M. Arruda, M. Zoidakis, T. Garcia-Barrera, L. Mercolini, O. Sevsenko, N. Kravchenko-Balasha, O. Flores, Yagma, D. Raptis) will meet quarterly to monitor progress, address critical issues, and ensure strategic alignment across all work packages. This body will serve as the central governance mechanism, facilitating transparent decision-making and responsive coordination. To complement this structure, a **Scientific and Educational Advisory Board (SEAB)** will be established, comprising the following independent experts from academia, the innovation ecosystem, and relevant industries: Magdalena Biesaga, University of Warsaw (Poland), Manuel Miro, University of the Balearic Islands, Palma de Mallorca (Spain), Jacek Wisniewski, Max-Planck-Institute of Biochemistry (Germany), Michal Sharon, Weizmann Institute of Science (Israel), Pierre-Olivier Schmit, Bruker Company (Germany), Masaru Miyagi, Case Western Reserve University (USA). The SEAB will provide external oversight, offer strategic recommendations, and ensure scientific, pedagogical, and technical quality across project outcomes.

Together, these coordination and support measures provide a strong operational foundation to implement the project’s vision effectively, promote institutional transformation, and foster interdisciplinary, hands-on science education across Europe and beyond.

The coordination presented 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 innovation boot camps and problem-solving exercises using Dr. Vida Education foster entrepreneurial skills as described in Objective 4.

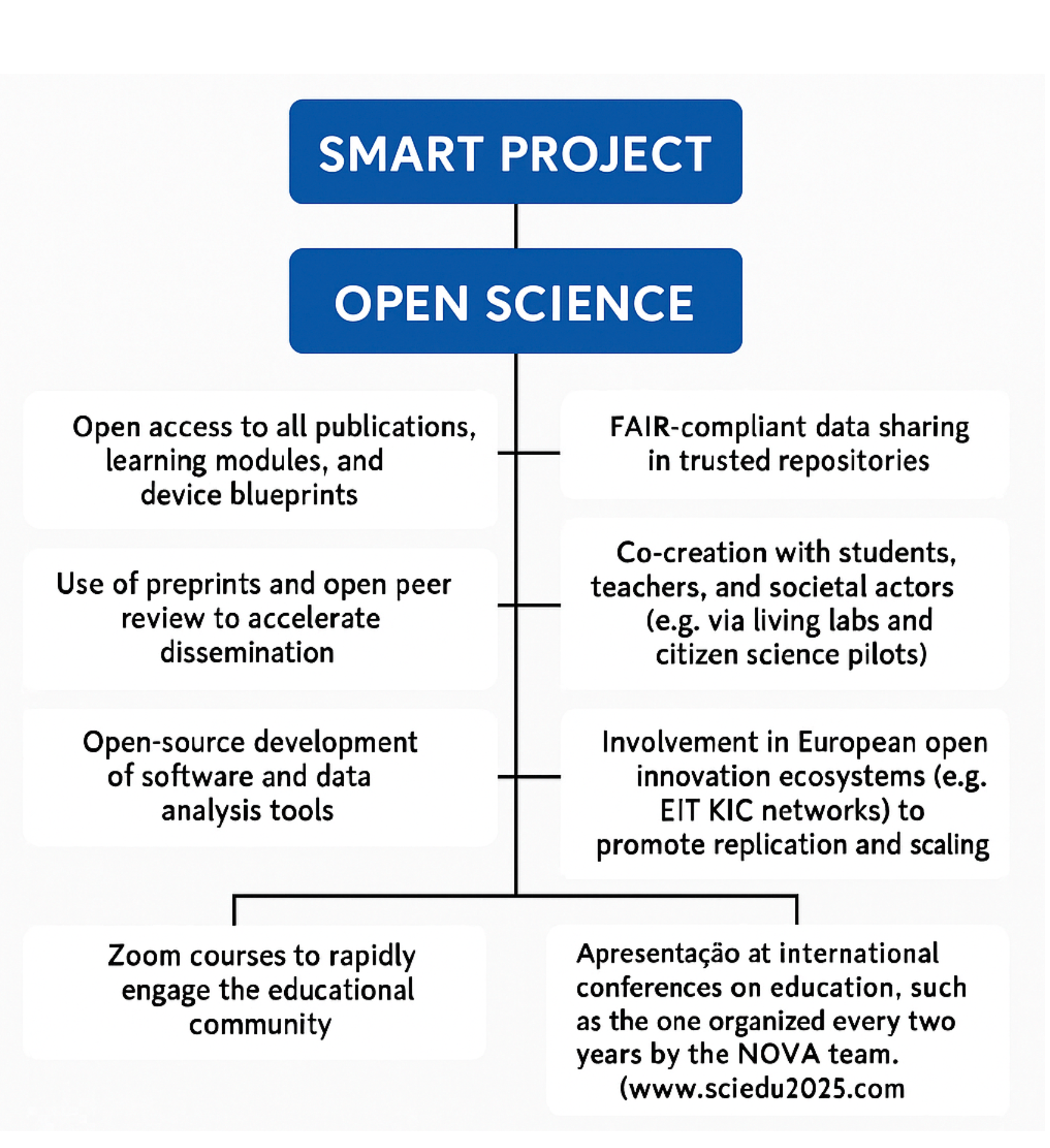
The coordination design ensures that students will use advanced tools for data acquisition, signal processing, and visualization, equipping them with entrepreneurial and technical competencies. These efforts align with the objectives of the [**EU Digital Education Action Plan**](https://education.ec.europa.eu/focus-topics/digital-education/action-plan) **(2021-2027)** by fostering the use oftechnology to enhance learning outcomes. This strengthens **Objective 2: Build an Innovation Network**, fostering partnerships that enable knowledge transfer and the transition of academic innovations into market-ready solutions and **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 coordination proposed will help to achieve metrics under **Objective 3**, including adoption rates, student satisfaction, and improved learning outcomes. 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.

**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 NOVA team. (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. NOVA will lead DMP development and the **PSC** will supervised it and submitted for approval to the **SEAB**, 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 (<https://smartupdreducation.wixsite.com/welcome> password: SMART)..

**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 revolutionizes science education by realizing the **one-student-one-apparatus** vision through the seamless integration of the **Dr. Vida Education device** into higher education curricula. This groundbreaking approach bridges the gap between theory and practice, embedding hands-on experimentation directly within theoretical instruction. Its unique contribution lies in fostering deep, technology-enhanced learning experiences that create enduring impacts well beyond the project's lifespan.

#### 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-apparatus" 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 Dr. Vida Education and experiential learning practices across at least 40 HEIs worldwide by 2030, thus contributing to structural reforms in education and accreditation standards.
* **Global Leadership and Knowledge Export**: Partnerships with 40 international HEIs ensure that Europe and Brazil not only co-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, Physics 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** adapting practical learning to Dr. Vida education.

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

* **By 2026**: 500 students and 16 educators trained in 8 HEIs.
* **By 2028**: 2,400 students and 100 educators trained in 12+8 HEIs.
* **By 2030**: 10,000 students and 500 educators trained globally; 32+8 HEIs institutionalized.
* **By 2035**: Project extended to medium schools. Expanded internationally via web-pages.

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)
* Up to 500 educators trained in entrepreneurship and digital tools
* A transversal educational tool in all educational systems.

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). 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), which indicate that digital interactivity significantly enhances both engagement and performance in laboratory-based educational settings.

**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, including remote areas and low income regions.

**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 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.

**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 by requiring microquantities, 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. It can be deployed in the field using batteries allowing in situ measurements.

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 development of a dedicated work package for **Zika virus** and **Cytomegalovirus (CMV)** surveillance will contribute to **reducing avoidable mortality** and support **evidence-based policymaking and public health decision-making** regarding these **endemic viruses** in both **Brazil and Europe**.

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 SMART project´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 16 educators** during the pilot phase (by 2026) in 8 HEIs.
* **2,400 students and 50 educators** in the expansion phase (by 2028) across 12+8 HEIs.
* **10,000 students and 500+ educators globally** by 2030 across **32+8 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 2035 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 **240 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’.



A primary 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 educational societies 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 500 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 the ones provided by the NOVA-BIOSCOPE group 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**. 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 Conferences Bioscopegroup 2026-2035 | Journal of integrated OMICS |
| 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 | Communications medicine |

**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. Physis and electrical engineers. Universities, medium schools. |
| 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.

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: facebook, 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 | 20 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**

To foster sustainable capacity-building and institutional integration of experiential STEM learning, the SMART Dr. VIDA project embeds a structured program of networking and training activities. These efforts are strategically aligned with the international calendar of the NOVA-Bioscope group, which hosts recurring conferences across Europe through 2026 to 2035 and beyond.

**Training Integration:** The project capitalizes on over six to seven annual international scientific conferences (up to 60 conferences in 10 years), <https://www.bioscopegroup.org/conferences/>, as real-world platforms for training a minimum of 300 educators in experiential pedagogy, digital tools, and inquiry-based learning (estimation of 5% of total conference attendees) . Educators are invited to co-develop and present educational innovations, supported by academic recognition mechanisms (certificates, credits, and EU-level visibility).

In addition to in-person training, the project implements a comprehensive **online training framework** hosted through the SMART Dr. VIDA website. This includes asynchronous modules, webinars, and virtual workshops on device usage, classroom integration, and assessment strategies. These resources ensure equitable access to training regardless of geographic location, promoting wide-scale adoption and institutional embedding. The web-based platform also supports continuous peer exchange, resource sharing, and tracking of certification progress.

**Networking for Impact and Visibility:** These conferences also serve as critical nodes for multi-level networking, enabling direct engagement with policy makers, institutional leaders, and EU education stakeholders. Through partnerships facilitated at these events, SMART Dr. VIDA ensures alignment with university and medium school needs and synergies with Horizon Europe and EIT KIC initiatives.

**Sustainability through Community and Exchange:** By anchoring the project’s activities within the NOVA-Bioscope group, network until 2035, SMART Dr. VIDA secures continuity for its community of practice beyond the formal funding period. This sustained engagement strengthens the project's institutionalization strategy and supports the international scaling of its educational model through the SMARTUP startup.

**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.*

The Smart Project 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 the SMART project 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. Furthermore Dr. Vida education will have a second line of utility by multiple tasks (health, environment) in widening and or remote areas. | *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 NOVA-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**, facebook 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 UOA (NKUA), Agricultural University of UOA (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), University of Porto (Portugal), University of KNU (Ukraine). | *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. Beyond educational transformation, the SMART Dr. VIDA project contributes directly to public health and environmental monitoring by enabling students and educators to conduct real-time, hands-on experiments using advanced sensing. Learners can explore water quality, air pollution, food safety, and microbial contamination, fostering environmental awareness and scientific literacy.  This second line of impact reinforces EU priorities in citizen science and sustainability by: 1.- Equipping schools with low-cost diagnostics to monitor local ecosystems and health risks. 2.-Engaging youth in STEM-driven problem-solving related to their immediate environment. 3.- Supporting data collection that can inform local governance or complement municipal monitoring programs. 4.- Promoting interdisciplinary learning between biology, chemistry, geography, and health education. By embedding these practices into curricula, SMART Dr. VIDA helps cultivate a generation of scientifically informed citizens actively contributing to healthier, more resilient communities. | *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. Development of new, fast, economic and green methods of analysis for health and environment issues. Development of a portable system (batteries) that can be deployed in the field. Uses in veterinarian sciences to control farm animal. **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** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | **Work Package 1:** **Foundation and Implementation (2026-2030)** | 1 | NOVA |  | 1 | 60 |
| 2 | **Workpackage: Expansion and Global Impact (2027-2031)** | 9 | UPE (Replacement UNIBO) |  | 12 | 60 |
| 3 | **Work Package 3: Dissemination, outreach and exploitation (2026-2030)** | 6 | EXELIXIS |  | 3 | 60 |
| 4 | **Work Package 4: Project Management (2026-2030)** | 1 | NOVA |  | 2 | 60 |
| 5 | **Workpackage 5 (Phase 2 A-2B). Scientific research. (2027-2030)** | 4 | STABV |  | 3 | 49 |

***PERT chart***

**Table 3.1b – Work package description**

| **Work Package number** | **1** |
| --- | --- |
| **Work Package title** | **Foundation and Pilot Implementation (2026-2027)** |
| **Objectives:**  WP1 focuses on **implementing the Dr. VIDA Education device into pilot curricula** across six participating academic institutions, engaging over 500 students and 18 teachers in five hands-on laboratory modules that integrate real-time data collection and analysis into STEM teaching (all beneficiaries). This rollout serves as a foundation for evaluating pedagogical effectiveness and institutional integration. Concurrently, the project initiates the **development of an advanced prototype** of the Dr. VIDA device (STABVida) featuring a **touchscreen interface** and **UV detection capabilities, in addition to a calibration system (KNU)**. This next-generation system is designed to expand experimental possibilities in health and environmental monitoring, while enhancing usability for both students and educators in field and classroom contexts. | |
| **T1.1 – Task title: Digital transformation of Dr. Vida and Green Lab Learning.  [Task duration M1-21] (Lead beneficiary**: NOVA; Contributing beneficiaries: ​​STAB VIDA, UNIBO, HUJI, UNICAMP, UPE, UOA, UHU, EXELISIS ,YAGHMA**)** | |
| **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 seven laboratory practices aligned with the principles of green 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: Kidney disease; (ii) total protein quantification in urine: myeloma disease; (iii) extraction and analysis of Hg in water, (iv) extraction and analysis of As in water; (v) extraction and analysis of bacteria in water; (vi) health in populations: intolerance to lactose; (vii) Zica virus in Urine; (viii) CMV in urine. These practices are intended to provide students and teachers with hands-on experience while promoting green responsible analytical methods. A significant checkpoint for this task is the finalized digital prototype of the device **(Milestone M1, Month 10)**. Deliverable 1.1 (Month 21) will contain: a description of the seven designed lab practices including all necessary statistical methods, an open-source software tool designed to guide students in using the Dr. Vida device and interpreting experimental data, and structured questionnaires aimed at evaluating students**. All institutions will teach each other their respective skills in the area. All will become multiple testers.** | |
| **T1.2 - Task title: Evaluating Learning Outcomes of Dr. Vida-Enabled Lab Activities Across Institutions [Task duration M1-27] (Lead beneficiary**: **YAGMA**, Contributing beneficiaries: ​​ UNIBO, HUJI, UNICAMP, UPE, UOA, UHU, 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 eight academic beneficiary institutions. Statistical analyses 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. **(Report on Learning Outcomes D.1.2 (Month 27), 4 semesters in 6 institutions)** | |
| **T1.3 – Task title: Creating SMARTUP start up to Lead in Educational Technology [Task duration M1-30] (Lead beneficiary: NOVA,**  Contributing beneficiaries: UNIBO, HUJI, UNICAMP, UPE, UOA, YAGMA**)** | |
| **Task 1.3:** The establishment of the SMARTUP startup, centred around the Dr. Vida Education device, **(D.1.3, Month 30 will present the startup activities)**, represents a transformative step toward modernizing science education. Aims to develop an innovative, scalable, and adaptable solution that promotes personalized learning, enhances student engagement, and integrates digital tools across multiple educational levels by integrating teacher´s interaction. 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 and learning among EU and Brazilian HEIs. Beyond 2030, the PhD and consortium partners will spearhead the global expansion of SMARTUP, utilizing opportunities such as the Europe-Mercosur treaty to reach broader educational markets and foster cross-continental collaboration. | |

#### +

**Table 3.1b – Work package description**

| **Work Package number** | **2** |
| --- | --- |
| **Work Package title** | **Expansion and Global Impact (2027-2030)** |
| **Objectives:** The second phase scales the adoption of Dr. Vida Education approach to **extra 16** HEIs, targeting 2,000 students and 48 educators. Each beneficiary will engage in the project up to 2 national HEIs collaborators, targeting a minimum of 3 teachers and 125 students per HEI (a total of 2000 students, HEIs beneficiaries + 48 educators).  The final phase institutionalizes the Dr. Vida Education program across 20 HEIS from North and Central America, Africa and Asia. (See Table E)  Key activities include the following tasks: | |
| **T2.1 – Task title: 1st expansion. Expanding Dr. Vida education to further HEIS [Task duration M13-36] (Lead beneficiary: UPE** Contributing beneficiaries: NOVA, UNIBO, HUJI, STABV, UOA, EXELISIS, UNICAMP, YAGMA, KNU, UHU) | |
| **Task 2.1:** Engaging a total of 16 HEIs and a total of 48 educators and up to 2000 students. These educators will be trained in the laboratories of their respective national beneficiaries or via the internet. **(D.2.1,** M36 will present data on the application of Dr. Vida Education to 16 HEIs**). (See table E).** Each beneficiary engages 2 national HEIs. A significant checkpoint will be the agreement of 16 HEIs to implement the Dr. Vida Education approach (Milestone 2, Month 18) | |
| **T2.2 – Task title: Development of web based tools [Task duration M17-28] (Lead beneficiary, YAGMA,** Contributing beneficiaries: UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, UNICAMP, KNU, UHU, UPE**)** | |
| **Task 2.2:** Development of web-based tools in the **SMART Dr. VIDA EDUCATION** web page so the practices developed in work package one and the statistics results are available to the educational community world wide. (D2.2, Month 30, web page and tools available) | |
| **T2.3 - Task title: Learning Innovation Boots Camps [Task Duration: M17-53](Lead beneficiary: NOVA**, Contributing beneficiaries: UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, UNICAMP, YAGMA, KNU, UHU, UPE**)** | |
| **Task 2.3:** Launching innovation boot camps aims to train a minimum of 240 educators across Europe and South America from 2028 to 2030, with two boot camps annually by beneficiary institutions (48 in total, three days each, 5 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 (information developed in task 1.2), technology adoption (Dr. Vida implementation), and practical applications (The viii practices developed in task 1.1), thus fostering a network of educators as ambassadors for Dr. Vida Education. This ensures scalability and sustainability by embedding these tools into everyday teaching, bridging traditional and modern education for lasting impact. **(Boot Camps D.2.3, Month 42 (mid-term report), and D2.4 (final report), Month 60 will describe the implementation of the Boot Camps)** | |

| **T2.4 – Task title: 2nd Expansion. Expanding Dr. Vida to 20 HEIS from North America, Africa and Asia [Task Duration: M34-60] (Lead beneficiary:** UNIBO, Contributing beneficiaries: UNICAMP, NOVA, HUJI, STABV, UOA, YAGMA, KNU, UHU, UPE**)** |
| --- |
| Task 2.4 focuses on fostering teaching and learning innovation by embedding the device into core curricula and promoting active interchange of pedagogical practices among partner institutions. It emphasizes alignment with degree accreditation standards to ensure sustainability and meaningful institutional integration in 20 (at least 10 teachers per institution, minimum of 2000 students) new HEIs worldwide, advancing the dissemination of the Dr. Vida device and concept. Deliverables include collaborative curriculum integration plans, shared training resources, implementation data, accreditation documentation, and pilot results, all made publicly available on the project webpage to support transparency, peer learning, and broad educational engagement **(D2.4).** (See table E) |

**Table 3.1b – Work package description**

| **Work Package number** | **3** |
| --- | --- |
| **Work Package title** | **Dissemination, outreach and exploitation [2026-2030]** |
| **Objectives: to maximize the visibility, impact, and long-term value of the Dr. Vida Education.** | |
| **T3.1 – Task title: Dr. Vida education dissemination [Task duration: M1-60](Lead beneficiary:** EXELISIS, Contributing beneficiaries: NOVA, UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, YAGMA, KNU, UHU, UPE**)** | |
| **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 use 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: Communication strategy [Task duration: M1-60] (Lead beneficiary:** EXELISIS, Contributing beneficiaries: NOVA, UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, YAGMA, KNU, UHU, UPE**).** | |
| **Task 3.2: This task focuses on civil society (medium schools). 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 medium schools 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 teacher-focused brochure on screening, hands-on, 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. **(D3.2).** | |
| **T3.3 – Task title: Exploitation [Task duration: M1-60] (Lead beneficiary:** EXELISIS, Contributing beneficiaries: NOVA, UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, YAGMA, KNU, UHU, UPE**)** | |
| **Task 3.3: Exploitation.** 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 in national and European call for all partners will be undertaken. **(D3.3).** | |

**Table 3.1b – Work package description**

| **Work Package number** | **4** |
| --- | --- |
| **Work Package title** | **Project and IPR Management (2026-2030)** |
| **Objectives:**  This work package ensures efficient project coordination, IPR management, and integration of gender equality. | |
| **T4.1 – Task title: day-to-day management. [Task duration, M1-60] (Lead beneficiary: NOVA, Contributing beneficiaries:** UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, YAGMA, KNU, UHU, UPE**).** | |
| 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)**. | |
| **T4.2 - Task title: Following up on project meetings. [Task duration, M1-60] (Lead beneficiary:** NOVA, Contributing beneficiaries: UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, UNICAMP, YAGMA, KNU, UHU, UPE**).** | |
| 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.4.2).** | |
| **T4.3 – Task title: Consortium Agreement. [Task duration, M1-7] (Lead beneficiary:** NOVA, Contributing beneficiaries: UNICAMP, UNIBO, HUJI, STABV, UOA, EXELISIS, YAGMA, KNU, UHU, UPE**).** | |
| 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.4.3).** | |

**Table 3.1b – Work package description**

| **Work Package number** | **5** |
| --- | --- |
| **Work Package title** | **Scientific research. (2026-2030)** |
| **Objectives: (i) Use of Dr VIDA out of the educational branch.** Development of new primers specific for CMV and ZIKA viruses ensures high technical performance, rapid turnaround time, and reduced cost per test.This approach represents a strategic commercial opportunity to expand neonatal screening by enabling the early detection of CMV at scale. Furthermore, it will allow accurate molecular diagnostics to be brought to previously inaccessible settings, including regions with limited laboratory infrastructure, thereby contributing directly to reducing avoidable mortality and strengthening public health policies. **(ii) Design of a quality control and calibration system for the Dr. Vida device.** | |
| **T5.1 – Task title Development of new primers specific for CMV and ZIKA [Task duration: M4-15] (Lead beneficiary:** STABV, Contributing beneficiaries: NOVA, UNICAMP, UPE**)** | |
| Design and in silico validation of primers for CMV and ZIKA, followed by laboratory synthesis and experimental optimization using the Dr. Vida qLAMP platform. Includes sensitivity/specificity testing, validation with clinical samples, and AI-based optimization of primer performance. (D6.1). | |
| **T5.2 - Task title: Implementation of ISO 13485-compliant QMS and Mapping of regulatory requirements. and Mapping of national regulatory requirements. [Task duration: M13-24](Lead beneficiary:** STABV Contributing beneficiaries: NOVA, UNICAMP, NOVA, HUJI, STABV, UOA, YAGMA, KNU, UHU, UPE**).**) | |
| Design and internal rollout of a QMS framework aligned with ISO 13485. Includes training, SOP development, and internal audits. Ensures that all research and validation tasks conform to regulatory standards. Regulatory requirement mapping across EU, USA, and Brazil. Production of a comparative matrix, definition of market  entry routes (CE, FDA, ANVISA), and early engagement with regulatory bodies.  **(D6.2.1, D6.2.2).** | |
| **T5.3 – Task title: Analytical validation. [Task duration: M16-38]. (Lead beneficiary: STABV. Contributing beneficiaries:** NOVA, UNICAMP, NOVA, HUJI, UOA, YAGMA, KNU, UHU, UPE**).** | |
| Execution of analytical validation (sensitivity, specificity, reproducibility) and multicenter clinical evaluation with real patient samples for both CMV and ZIKA targets. **(D6.3).** | |
| **T5.4 – Task title: Preparation of technical documentation and Regulatory submission and market readiness. [Task duration: M39-50]. (Lead beneficiary: STABV. Contributing beneficiaries:** NOVA, UNICAMP, NOVA, HUJI, UOA, YAGMA, KNU, UHU, UPE**).** | |
| Compilation of Design History File, Risk Management File, and Technical File in compliance with ISO 14971 and IEC 62366. Supports regulatory submissions.Finalization of CE marking dossier, FDA 510(k)/De Novo submission, and ANVISA registration. Coordination of pre-commercial launch activities. **(D6.4.1, D6.4.2).** | |
| **T5.5 – Task title: Development of calibration algorithms and internal QC materials and Prototype integration of calibration system into Dr. Vida platform. [Task duration: M13-36]. (Lead beneficiary:** KNU, **Contributing beneficiaries: STABV,** NOVA, UNICAMP, NOVA, HUJI, UOA, YAGMA, UHU, UPE**).** | |
| Development of algorithmic calibration protocols using digital standards and reference materials. Design of synthetic QC templates for CMV and ZIKA to ensure reproducibility of qLAMP results across devices and sites. Hardware and software integration of calibration module into the device. Testing of automatic calibration routines under laboratory conditions. **(D6.5.1, D6.5.2).** | |
| **T5.6 – Task title: Multicenter validation of calibration system and Final calibration guidelines and SOPs. [Task duration: M30-47]. (Lead beneficiary:** KNU, **Contributing beneficiaries:** STABV,NOVA, UNICAMP, NOVA, HUJI, UOA, YAGMA, UHU, UPE**).** | |
| Deployment of prototype calibration-enabled Dr. Vida devices in academic beneficiaries. Evaluation of reproducibility, stability, and robustness of calibration across environments. Assessment of inter-laboratory comparability and calibration performance. Compilation of calibration protocols, QC material specifications, and SOPs for integration into the device manual and regulatory documentation. **(D.6.6.1, D6.6.2).** | |

***Gantt chart***

#### ​​

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

Da: includes deliverables 1.1 to 1.9. Db: Includes deliverables 1.10 to 1.11. D.1.3: dates conferences NOVA-Bioscope. D2.2: Boot camps. D4.1 Reporting every 6 months. D.4.2 Project meetings.

| **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 **myeloma and kidney disease (synthetic urine, large metadata for Myeloma and Kidney diseases applications). 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. Core manuscripts: <https://doi.org/10.1016/j.jhazmat.2024.136107>. <https://doi.org/10.1186/s12859-015-0752-4>. Developers: UPE, HUJI and YAGMA. Testers: UNIBO, UPE, UNICAMP, KNU, UHU, NOVA, STABV, and UOA. Biostatistics: UOA |
| --- |
| **Fluorescence.** Using organic probes, Hg and As will be determined in fortified water samples, and students will be introduced to toxicology, environmental issues, and healthcare topics related to drinking water and wastewater. The same technique will be applied to highlight the importance of bacterial detection and the classification of bacteria as Gram-positive or Gram-negative. This will also introduce students to the One Health approach and the topic of antibiotic resistance.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. Core manuscript: <https://doi.org/10.1016/j.jhazmat.2024.136107>. Developers: UHU, UNICAMP, UNIBO and YAGMA. Testers: UPE, KNU, UHU, HUJI, NOVA, STABV and UOA. Biostatistics: UOA |
| **PCR Diagnostics for Public Health: Lactose Intolerance, CMA/ZICA virus determination.** 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. Core manuscripts: <https://doi.org/10.1093/jalm/jfad052>; <https://doi.org/10.1007/s00253-023-12771-2>; <https://doi.org/10.1186/s41182-020-00274-z> Developers: NOVA, STAB VIDA, and YAGMA. Testers: UPE, KNU, UHU, HUJI, NOVA STAB, and UOA. Biostatistics: UOA |

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

| The comprehensive list of 40 universities includes: core 8 HEIS (Academic beneficiaries) : Nova University of Lisbon, University of Bologna; Hebrew University of Jerusalem; University of Campinas; University of KNU; University of Huelva; University of Pernambuco; University of Athens-UOA. **Future Partners (1st expansion):** 16 universities (Europe+South America): University of São Paulo (Brazil), Federal University of Rio de Janeiro – UFRJ (Brazil), Federal University of Minas Gerais – UFMG (Brazil), São Paulo State University – UNESP (Brazil), Federal University of Rio Grande do Sul – UFRGS (Brazil), Federal University of Santa Catarina – UFSC (Brazil), Federal University of Paraná – UFPR (Brazil), University of Brasília – UnB (Brazil), Canterbury University (UK), King’s College (UK), University of Lincoln (UK),National and Kapodistrian University of UOA (NKUA), 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). **(2 expansion)** 20 Universities: Harvard Medical School (USA), University of Pittsburgh Medical Center (USA), University of Toronto (Canada), University of Ottawa (Canada), Shandong University (China), 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), NOVA-EL Cairo (Egypt), University of Johannesburg (South Africa), University of Cape Verde (Cape Verde), Vilnius University (Lithuania), University of Tartu (Estonia), University of Cape Town (South Africa), University of Pretoria (South Africa), University of Coimbra (Portugal), and University of Porto (Portugal). |
| --- |
|
|
|

**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 | STABV | DEM | SEN | 15 |
| D.1.1.2 | Total protein quantification in urine: Kidney disease. | Biomedicine: Colorimetric Analysis for health studies | 1 | UOA | R | PU | 15 |
| D.1.1.3 | Total protein quantification in urine: Myeloma disease. | Biomedicine: Colorimetric Analysis for health studies | 1 | HUJI | R | PU | 15 |
| D1.1.4 | CMA virus assessment in new born | Biomedicine: Like-PCR analysis | 1 | UNL | R | PU | 15 |
| D.1.1.5 | Determination of toxic metals in water: Hg | Environmental: Fluorimetric Analysis for  toxic metal contaminants. | 1 | UNICAMP | R | PU | 15 |
| D.1.1.6 | Determination of toxic metals in water: As | Environmental: Fluorimetric Analysis for  toxic metal contaminants. | 1 | UHU | R | PU | 15 |
| D.1.1.7 | Bacterial determination in water | Health/Environment: Fluorimetric Analysis for bacterial determination | 1 | UNIBO | R | PU | 15 |
| D.1.1.8 | PCR Diagnostics for Public Health | Epidemiological studies in health:  lactose resistance via PCR. | 1 | UPE | R | PU | 15 |
| D.1.1.9 | Mounting a Dr. Vida Education device | Physics/electrical engineering | 1 | KNU | R | SEN | 15 |
| D.1.1.10 | Statistical methods for the practices | All branches | 1 | UOA | R | PU | 21 |
| D.1.1.11 | Self-learning | Software to discuss the data, results  and data interpretation | 1 | EXELISIS | R | PU | 21 |
| D.1.1.12 | Learning Assessment for D.1.1.2 to D.1.9 | structured questionnaires aimed at  evaluating students | 1 | EXELISIS | R | PU | 21 |
| D.1.2. | testing and validating | practical classes, targeting 500 students | 1 | UOA | R | PU | 27 |
| D.1.3 | Presenting the educational startup SMARTUP | SMARTUP Startup to support the project | 1 | UNL | R | SEN | 30 |
| D.2.1 | 1st expansion. | 48 educators trained at NOVA-BIOSCOPE conferences for the Dr. Vida Education device, hands-on works and statistics. 2000 students. + 16 HEIS | 2 | UNICAMP | DEM | PU | 36 |
| D.2.2 | Development of web-based tools | Tools related to the experimental practices. | 2 | YAGHMA | DEC | PU | 30 Multiple deliveries See Gantt Chart |
| D.2.3 | 48 innovation boots camps. | Camps where educators can acquire hands on the Dr. Vida Education. | 2 | NOVA | DEM | PU | Multiple deliveries See Gantt Chart |
| D.2.4 | 2nd expansion | 200 educators trained at NOVA-BIOSCOPE conferences for the Dr. Vida Education device, hands-on works and statistics. 2000 students. + 20 HEIS | 2 | UNIBO | DEM | PU | 60 |
| D.3.1 | SMART website & social media | Facebook, X, Instagram, Linquedin | 3 | EXELISIS | DEC | PU | 6 |
| D3.2 | FAIR communication Plan | FAIR communication Plan | 3 | UNL | FAIR | PU | 7 |
| D3.3 | Exploitation plan, including initial DMP | Yearly Exploitation plan, including initial DMP | 3 | EXEL | DMP AND  EXPLOITATION PLAN | SEN | 8 |
| D4.1.1 | Project  meetings | Yearly Agenda and minutes of project meetings | 4 | NOVA | R | PU | Multiple deliveries See Gantt Chart |
| D4.1.2 | Equality  Reports | Yearly Gender equality report. | 4 | NOVA | R | PU | Multiple deliveries See Gantt Chart |
| D4.2. | Project following up | Annual reports on following up the project. |  | NOVA | R | PU | Multiple deliveries See Gantt Chart |
| D4.3. | Consortium agreement | Consortium agreement | 6 | NOVA | R | SEN | Consortium signed |
| D5.1 | CMV and ZICA new primers | Report on primer design, optimization, and performance data | 6 | STABV | R | EUC | 15 |
| D5.2.1 | QMS Document | QMS documentation and training logs | 6 | STABV | R | EUC | 23 |
| D5.2.2 | Mapping and Strategic roadmap | Regulatory requirement mapping report and strategic roadmap | 6 | NOVA | R | EUC | 24 |
| D5.3 | Validation report | Analytical and clinical validation report | 6 | NOVA | R | EUC | 38 |
| D5.4.1 | Technical Documentation | Complete technical documentation package | 6 | STABV | R | EUC | 49 |
| D5.4.2 | Submission of files | Regulatory submission files and commercial readiness report | 6 | STABV | R | EUC | 50 |
| D5.5.1 | Quality control | Development of calibration algorithms and internal QC materials. | 6 | KNU | R | EUC | 24 |
| D5.5.2 | Prototype integration | Final calibration guidelines and SOPs (Month 36) | 6 | STABV | DEM | PU | 36 |
| D5.6.1 | Multicent validation | Multicenter validation of calibration system. | 6 | KNU | R | PU | 41 |
| D5.6.2 | Final calibration guidelines | Final Calibration guidelines | 6 | KNU | R | PU | 47 |

*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** |
| --- | --- | --- | --- | --- |
| M1.a | Dr. Vida Education  Readiness | 1 | M1.a: 09 | 1/3 of the Dr. Vida Education devices must be Operational (100/304; 08/2026). |
| M1.b | Dr. Vida Education  Practices Guidelines | 1 | M1.b: 12 | Half Deliverables D.1.1.2 to D1.1.9 must have been written and tested by the beneficiary responsible. (10/2026) |
| M1.2 | Testing and validating. | 1 | M1.2: 15 | Half Dr. Vida Education experimental works, validated and tested within all the institutions and with up to 250 students (6/2027) |
| M.1.3.1  M.3.1.2 | SMARTUP | 1 | M1.3.1: 21  M1.3.2: 44 | Check points to account the number of presentations at international conferences, including (but not limited to) NOVA-BioscopeGroup conferences (57 till 2025). Total of 127. (57+2 a year \* 5 years\* 7EHIs) |
| M1.3 | SMARTUP | 1 | M1.3: 22 | Startup SMARTUP legalized (10/2027) |
| M2.1 | EU HEIs Engagement | 2 | M2.1: 24 | At least 8 new HEIs enrolled (03/2028) |
| M2.2 | Web-based tools | 2 | M2.3: 23 | First versions of D1.1.1 to D1.1.11Available in the web page. (01/2028) |
| M2.3 | Boot Camps | 2 | M2.2: 42 | Al least 30 boots camps done 06/2029 |
| M2.4 | 2nd Expansion | 2 | M2.4: 46 | At least 10 new EHIs |
| M3.1.1 to M3.1.4 | Dissemination | 3 | M3.1.1:  M3.1.2:  M3.1.3:  M3.1.4: | Number of news items published through social media and press channels, and total number of social media visitors/reach. |
| M3.2.1 to M3.2.6 | Communication Strategy | 3 | M3.2.1: 08  M3.2.2: 10  M3.2.3: 13  M3.2.4: 15  M3.2.5: 23  M3.2.6: 33 M3.2.7: 45  M3.2.8: 51 | For a 5-year project, Task 3.2 will start with M3.2.1 – approval of the communication plan by 8/2026, followed by M3.2.2 – launch of the mailing list subscription system on the website by 10/2026. M3.2.3 – initial visual and communication materials, including brochures, infographics, and the first press release, will be released by 1/2027. M3.2.4: An annual review of communication effectiveness will take place in 3/2027, with M3.2.6 – a more in-depth mid-term review in 9/2028- to adjust the strategy for the remaining period. M3.2.5 and M3.2.7 cross-sector collaboration events, involving policy, industry, and civil society stakeholders. The task will conclude with M3.2.8 – a final communication impact assessment evaluating all outreach and engagement results against the original targets. |
| M3.3.1 to M3.3.6 | Exploitation plan. | 3 | M3.3.1: 03  M3.3.2: 06  M3.3.3: 09  M3.3.4: 18  M3.3.5: 30  M3.3.6: 48 | Task 3.3 will start with M3.3.1 – Establishment and approval of the Data Management Plan (DMP) by 3/2026, followed by M3.3.2 – completion of the internal innovation survey and TRL assessment of all identified outcomes by 6/2026. M3.3.3 – completion of the Total Available Market (TAM) analysis for SMART’s application fields will be achieved by 9/2026. M3.3.4 – first exploitation monitoring report, including an update on funding opportunities for all partners, will be delivered by 6/2027. M3.3.5 – mid-term review of the exploitation strategy, incorporating updated TRL levels and market insights, will be conducted by 6/2028. The task will conclude with M3.3.6 – final exploitation strategy and sustainability plan, including a list of secured follow-up funding opportunities, by 12/2029. |
| M4.1.1 to M4.1.4 | Day-to-day management | 4 | M4.1.1: 03 M4.1.2: 11  M4.1.3: 29  M4.1.4: 57 | M4.1.1 –– *Project management framework established.* Detailed work plans, management protocols, financial guidelines, and gender equality integration strategy approved by all partners. 03/2026 M4.1.2 – *First annual review completed* – Year 1 performance and financial reports delivered to all partners; gender impact assessment completed. 12/2026 M4.1.3 – *Mid-term review* – Comprehensive progress evaluation, risk assessment, and update of management procedures for Years 3–5. 06/2028 M4.1.4 – *Final management report* – Consolidated financial, administrative, and gender equality impact results submitted with final project documentation. 09/2030 |
| M4.2.1 to M4.2.3 | Follow-up on project meetings | 4 | M4.2.1: 05 M4.2.2: 10, 22, 34, 46, 56  M4.2.3: 58 | M4.2.1 – *Kick-off meeting held and documented* – Agendas, minutes, and action items archived in centralized repository. 01/2026 M4.2.2 – *Annual general assembly meetings completed* – Minutes, decisions, and follow-up action plans finalized for each year (2026–2030). 12/2026, 12/2027, 12/2028, 12/2029, 09/2030 M4.2.3 – *Final project meeting organized* – Concluding discussion of results, lessons learned, and next steps beyond project lifetime. 09/2030 |
| M4.3.1 | Consortium Agreement | 4 | M4.3.1: 02 | M4.3.1 – *Draft Consortium Agreement circulated* – All partners review and comment on IPR, confidentiality, and governance clauses. 02/2026 |
| M5.1.1 to M5.1.5 | Institutionalization and Global Outreach | 5 | M5.1.1: 30  M5.1.2: 36  M5.1.3: 40  M5.1.4: 44  M5.1.5: 49 | M5.1.1 – Target HEIs selected, agreements formalized, and regional coordinators appointed 06/2028 M5.1.2 – Curriculum integration frameworks and accreditation alignment guidelines finalized 03/2029 M5.1.3 – First batch of Dr. Vida devices delivered, training sessions completed, and pilot implementations launched 9/2029 M5.1.4 – All 20 HEIs fully integrated into curricula, with accreditation documentation submitted and publicly available online 02/2030 M5.1.5 – Final outreach report including implementation statistics, training resources, and pilot outcomes published on project webpage 09/2030 |
| M5.2 | Public Service | 5 | M5.2: 34 | M5.2: repositories implemented ready for international up-load of material. (Month 42). |
| *M6.1 to M6.5* | Research (i): CMV and Zica Virus | 6 | M6.1: 09  M6.2: 21  M6.3: 27  M6.4: 39  M6.5: 42 | M6.1: QMS system implemented and operational (Month 9). M6.2: Primer validation completed for both CMV and ZIKA (Month 21). M6.3: Clinical evaluation initiated at multicenter sites (Month 27). M6.4: Technical documentation finalized (Month 39). M6.5: Regulatory submissions completed (Month 42) |
| *M6.6 to M6.9* | Research (ii): Design of a quality control and calibration system for the Dr. Vida device. | 6 | M6.6: 20  M6.7: 24  M6.8: 33  M6.9: 39 | M6.6: Calibration algorithms and QC templates developed (Month 20). M6.7: Prototype calibration module integrated into Dr. Vida (Month 24). M6.8: Multicenter calibration validation completed (Month 33). M6.9: Final calibration SOPs and guidelines approved (Month 39) |

***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. |
| R.10 Delays in procurement and delivery of Dr. Vida devices Medium Medium | 5 | Establish procurement timelines early and include buffer periods. Identify multiple suppliers to ensure continuity |
| R.11 Technical malfunction or underperformance of Dr. Vida devices in pilot HEIs Low High | 5 | Conduct pre-deployment quality assurance testing; provide on-site/remote technical support; maintain spare units for rapid replacement |
| R.12 Difficulty aligning curricula with accreditation requirements in target countries Medium Medium | 5 | Engage with accreditation bodies early; adapt training materials to local standards; involve local academic leaders in integration |
| R.R.13 Low engagement from partner HEIs in institutionalization phase Low Medium | 5 | Maintain regular communication with HEI coordinators; provide incentives for engagement; showcase success stories |
| R.14 Data privacy or GDPR compliance breach during student/teacher data collection Low High | 3,4 | Implement GDPR-compliant protocols; train staff on privacy regulations; appoint a Data Protection Officer |

#§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 **twelve** 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, Latin America, and Eastern Europe, providing a dynamic platform for knowledge exchange, innovation, and education aligned with the Knowledge Triangle: education, research, and innovation.

Each partner contributes unique value:

**NOVA University Lisbon (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.

**University of Bologna (UNIBO)** leads in innovation and interdisciplinary education, particularly in omics platforms and medicinal chemistry. It 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.

**University of UOA (UOA)** provides robust expertise in biomedicine and AI, facilitating translational research in molecular biology and precision medicine. It brings complementary biomedical capacity to the consortium and helps connect omics-based discoveries to healthcare applications.

**Hebrew University of Jerusalem (HUJI)** contributes through its pioneering work in personalized cancer therapies and biophysics, bridging science and healthcare application. Leveraging 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.

**Universidade de Huelva (UHU)** strengthens the consortium’s capacity in environmental sciences, analytical chemistry, and innovative teaching methodologies. With expertise in sustainability, environmental monitoring, and science communication, **UHU** integrates Dr. Vida Education into curricula aimed at addressing environmental and social challenges. It also fosters collaboration between European and Latin American partners, enhancing cultural and academic exchange.

**Taras Shevchenko National University of KNU (KNU)** adds expertise in advanced molecular biology, environmental monitoring, and interdisciplinary science education. With a strong tradition in international cooperation and STEM teacher training, **KNU** supports the adaptation of Dr. Vida Education materials for Eastern European curricula. It also provides links to regional research networks, expanding SMARTUP’s geographical reach and fostering capacity building in countries undergoing educational modernization.

**EXELISIS (EXEL)** enhances the consortium's reach through dissemination, commercialization, and IP training, ensuring public engagement and societal trust. It 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. Specializing in ESG analytics, **YAGHMA** enhances 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.

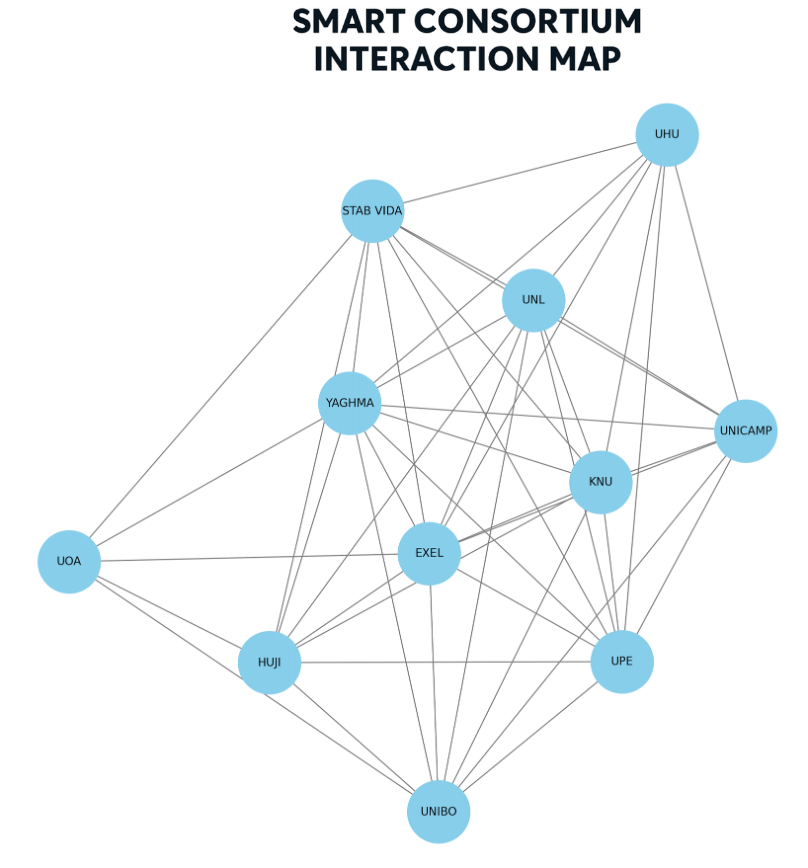
**STAB VIDA** adds value in portable genetic diagnostics, linking technological innovation to education and public health via tools like the Doctor Vida Pocket PCR. Innovating in genetic technologies, including the Doctor Vida Pocket PCR, a portable device for rapid diagnostics such as COVID-19 detection and lactose intolerance testing, **STAB VIDA** integrates practical applications into education via Dr. Vida Education, making genetic testing accessible and advancing healthcare and research.

**University of Campinas (UNICAMP)** supports internationalization and science education, developing methodologies for analytical chemistry and environmental health. An international reference in analytical chemistry, mass spectrometry, and science education, **UNICAMP** contributes to SMARTUPDrEDUCATION with pedagogical methodologies applied to portable devices, with emphasis on environmental and biomedical analysis. Professor Marco Aurélio Zezzi Arruda’s experience in student training and coordination of Latin American research networks will support the project’s internationalization and strengthen knowledge transfer between Europe and Latin America.

**University of Pernambuco (UPE)** brings leadership in inclusion and SDG-aligned educational practices, focusing on equity, diversity, and teacher training. Under the leadership of Professor 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. Professor 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 twelve 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 **UNIBO**, and **UOA** through shared biomedical and omics methodologies, and strengthens links with **HUJI** in diagnostics and translational research. Its educational infrastructure also aligns closely with **UNICAMP**, **UHU**, **KNU**, and **UPE**, facilitating knowledge transfer across Europe, Eastern 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, **KNU**’s, and **UOA**’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**, **UHU**, and **UNICAMP**.

**University of Athens (UOA)** 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 **UOA**’s, **NOVA**’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.

**Universidad de Huelva (UHU)** reinforces the project’s sustainability and environmental science dimensions. It supports partners like **UNL**, **UNICAMP**, and **UPE** by integrating sustainability-oriented educational resources and environmental monitoring expertise, while linking scientific research to community engagement. Its metabolomics expertise complements the NOVA´s and UOA´s expertise in Proteomics.

**Taras Shevchenko National University of KNU (KNU)** extends the consortium’s geographical and cultural reach in Eastern Europe. It works with **UHU**, **UNL**, and **UPE** to adapt Dr. Vida Education materials for regional curricula, while contributing molecular biology and environmental science expertise to **UNICAMP** and **STAB VIDA** in cross-continental research and teaching collaborations.

**EXELISIS (EXEL)** ensures broad project visibility through dissemination, commercialization, and IP training. It transforms academic outputs from **UNL**, **HUJI**, and **UOA**into public-facing innovations. **EXEL** also supports **STAB VIDA** in scaling its products and technologies, and works closely with **UPE**, **UNICAMP**, **KNU**, and **UHU** 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**, **UNICAMP**, **UHU**, and **KNU** 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, entrepreneurial and bussines capacity with its portable genetic diagnostic tools, such as the Doctor Vida Pocket PCR. These tools support **UNL**, **HUJI**, **KNU**, and **UOA**by offering real-world application of their research and contribute to **UPE**, **UNICAMP**, and **UHU**’s education missions through integration in classroom and community settings. **STAB VIDA**’s innovations are also amplified through **EXEL**’s dissemination strategies.

**University of Campinas (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**, **UHU**, and **KNU** to enhance pedagogical approaches in diverse contexts. **YAGHMA**’s sustainability agenda also aligns with **UNICAMP**’s environmental science work.

**University of Pernambuco (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**, **HUJI**, **UHU**, and **KNU** 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 entities established 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)