Health2Innovation

WP 2: State-of-the-art analysis and Health2Innovation Training Course Structure

D2.3. Health2Innovation Training Course Structure

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Contents

List of tables

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Introduction

This document outlines the structure and assessment methodology of the Health2Innovation training course. Its purpose is to provide a comprehensive framework addressing the identified training needs, health innovation priorities, and learning outcomes as revealed from the research phase as presented on D2.1 (Annex 1). The document ensures alignment with existing reference frameworks such as EntreComp[1], DigComp[2], and GreenComp[3], serving as a guide for developing and implementing an asynchronous e-learning program that helps prepare students and recent graduates to engage in entrepreneurship opportunities within health-related sectors.

As a project, Health2Innovation brings together higher education institutions, incubators, vocational education training organizations, small- and medium-sized enterprises (SMEs), and tech experts from Cyprus, France, Greece, Ireland, Lithuania, Poland, Portugal, Romania, Spain, Sweden to exchange knowledge and best practices, co-design, and deliver a training course targeting currently enrolled students and/or graduates in Life Sciences, Medicine, Business, Engineering, or ICT-related studies. The initiative emphasizes hands-on experiences integral to learning, exemplified by components like a Health Innovation Bootcamp and Apprenticeship Programs in Sweden, Denmark, and France. These components are deemed crucial for bridging educational gaps and aligning learning outcomes with the labour market's evolving needs, thereby contributing significantly to the sector's sustainable and digital transition.

The Health2Innovation training course will be enhanced with advanced learning resources for real-world applications in the healthcare domain, ensuring a comprehensive training regime that equips new generations of entrepreneurs in the healthcare sector to lead and innovate.

Primary Objective and Overview of the Health2Innovation Training Course

The primary objective of the Health2Innovation training course is to foster an entrepreneurial outlook among students and graduates in the healthcare sector. This involves equipping them with the necessary knowledge and skills to identify, develop, and manage innovative opportunities within the healthcare industry.

[1] https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en
[2] https://joint-research-centre.ec.europa.eu/digcomp_en
[3] https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en

To achieve this overarching goal, the course focuses on enhancing key areas of knowledge and competence that are fundamental for aspiring entrepreneurs and innovators in healthcare. Partners and experts have identified the following components as crucial for guiding students towards relevant fields of innovation:

1. **Enhance Digital Proficiency**
    - The course focuses on developing capabilities in digital health technologies such as Electronic Health Records (EHRs), telemedicine, and artificial intelligence (AI) applications for diagnostics and patient management. This includes a strong emphasis on cybersecurity and data protection, reflecting a comprehensive approach to digital literacy and safety in healthcare contexts. These skills are essential for entrepreneurs to understand the technological landscape and leverage digital tools for innovation.
2. **Promote Sustainable Healthcare Practices**
    - The course emphasizes in integrating sustainability into healthcare operations. This involves training in green practices and promoting environmental consciousness within the healthcare sector to support sustainable development goals. Entrepreneurs equipped with knowledge of sustainable practices can develop innovative solutions that contribute to the long-term viability of healthcare systems.
3. **Develop Skills for Navigating European Health Policies and Competency Frameworks**
    - The Health2Innovation course ensures that the training aligns with European standards, including the integration with key frameworks like EntreComp, DigComp, and GreenComp. This alignment not only facilitates recognition across European countries, ensuring that the qualifications are relevant and valued, but also helps students develop critical skills and competencies. Understanding these frameworks equips entrepreneurs with the knowledge to navigate regulatory landscapes, ensuring that their solutions are compliant and scalable. This is essential for developing strategies that meet regulatory requirements and for the successful implementation and expansion of innovative health solutions across Europe.
4. **Foster Innovation and Entrepreneurship**
    - The course encourages a culture of innovation within healthcare by providing the skills necessary for entrepreneurship within the sector. This includes training on creating new business models and managing health-related projects. By fostering innovation, the

course aims to enable students to transform their ideas into viable healthcare solutions and startups.

5. **Support Interdisciplinary Collaboration and Continuous Learning**
    - The course promotes interdisciplinary learning and professional development to keep pace with technological and regulatory changes. This approach ensures that healthcare professionals can collaborate in lifelong learning as multidisciplinary teams effectively and stay updated with industry advancements. Entrepreneurs benefit from interdisciplinary skills by being able to integrate diverse perspectives into their innovation processes.

Identified Training Needs

The Health2Innovation project via extensive, multifaceted research, which took place in WP2, has identified crucial training needs, as seen in the D2.1 (Annex 1) across various European regions. This research underlines the urgency to bridge existing skills gaps within the healthcare sector. These needs are highlighted by specific requirements in digital literacy, cybersecurity, and the integration of sustainable practices in healthcare operations. The detailed analysis of the research findings revealed a broad spectrum of educational gaps that healthcare training programs must address to prepare students and graduates who aim to lead and innovate in an increasingly complex healthcare environment.

To address these gaps effectively, specific training needs have been identified as follows:

1. **Digital Literacy and Cybersecurity**
    - There is an essential need for enhanced digital literacy and robust cybersecurity training to navigate and manage digital health systems safely. This need is highlighted by several countries including Greece, Portugal, Cyprus, Romania, Lithuania, Sweden, France, and Spain, reflecting a widespread demand across Europe for strengthening these competencies in the healthcare sector.
2. **Hands-On Training with Digital Tools**
    - The lack of practical, hands-on training with digital tools is a critical gap identified in Lithuania, Poland, and Sweden. These countries emphasise the importance of simulation-based learning and practical labs to bridge the gap between theoretical

knowledge and practical application, ensuring that healthcare professionals are well-prepared for real-world challenges.

3. **Entrepreneurial and Business Skills**
    - Greece, Portugal, Spain, and Sweden have identified a gap in entrepreneurial education within healthcare training programs. There is a pressing need for comprehensive business skills development, ranging from foundational entrepreneurship courses to advanced modules on healthcare venture creation and financial planning to foster innovation within the healthcare sector.
4. **Adaptability and Continuous Learning**
    - The dynamic nature of the healthcare industry, particularly highlighted by Romania, Greece, and Cyprus, requires training programs to be adaptable and supportive of continuous professional development. This ensures that healthcare professionals can keep pace with rapid technological advancements and regulatory changes.
5. **Interdisciplinary and Soft Skills Development**
    - Advocated strongly by Sweden and Spain, there is a call for fostering interdisciplinary learning environments and developing essential soft skills such as communication, teamwork, and problem-solving. Integrating medical students with peers in IT, business, and engineering is particularly emphasised in Sweden to cultivate a holistic understanding of healthcare challenges.
6. **Regulatory and Compliance Training**
    - The increasing complexity of the healthcare regulations and medical device regulatory framework (MDR) necessitates comprehensive training covering legal implications and compliance, particularly with General Data Protection Regulation (GDPR). Lithuania, Romania, and France specifically point out the need for this kind of training, underscoring its importance for ensuring that healthcare professionals are well-versed in the legal aspects of their work.
7. **Integration of Digital Tools**
    - Spain and France have stressed the crucial need for improved integration of digital tools and cybersecurity skills within healthcare training programs. This integration is vital to manage patient data securely and comply with health regulations, ensuring that healthcare professionals are equipped to handle these aspects proficiently.

Priorities on Health Innovation

Identified Priorities

The Health2Innovation project performed extensive desk and field research along with experts' consultation *via* focus groups, which led to a detailed mapping of the current state of health innovation across Europe. This analysis revealed a series of strategic priorities that various European countries are focusing on to advance digital healthcare transformation. Here are the key health innovation priorities identified:

1. **Digital Health Infrastructure Development**
    - Countries like Lithuania are investing in robust digital health infrastructures that facilitate data sharing among healthcare providers, enhancing patient care coordination. This includes the adoption of Electronic Health Records (EHRs) and telemedicine supported by AI and Internet of Things (IoT) technologies.
2. **Cybersecurity and Data Protection**
    - With the increasing digitalisation of healthcare services, countries such as Cyprus and Spain emphasise the importance of cybersecurity and data protection. These countries are implementing advanced digital health systems that align with EU standards, focusing on secure data management to safeguard patient information.
3. **Interoperability and Data Management**
    - France is spearheading efforts to create a universal health data space that facilitates the sharing and analysis of health data across the country. This initiative is closely aligned with the European Health Data Space, aiming to improve research capabilities and personalise patient care.
4. **Telemedicine and Remote Care**
    - Portugal and Poland are extending healthcare services through telemedicine and digital health applications to rural areas. This effort promotes public-private partnerships and aligns with European health innovation directives, ensuring healthcare accessibility and efficiency.
5. **Training and Professional Development in Digital Skills**
    - Spain is enhancing its healthcare delivery through digital solutions like e-prescriptions and digital diagnostic tools. There is also a strong focus on ongoing education and professional

development in digital skills within the healthcare sector to keep pace with technological advancements.

6. **Sustainability in Healthcare**
    - Sweden integrates digital tools in routine patient care and invests in digital infrastructure that enables remote patient monitoring and telehealth. This approach not only advances digital health but also promotes environmental sustainability.

These priorities reflect a diverse yet united effort by European countries to transform healthcare through digital innovation. Each country tailors its approach to meet specific local needs while contributing to a collective European effort towards enhanced digital health. This comprehensive approach provides a rich contextual understanding that significantly contributes to the collective efforts in digital healthcare transformation across Europe.

National and European Initiatives

Digital health transformation is a crucial initiative supported by both international health organisations and the European Union, demonstrating a unified effort to enhance healthcare access and efficiency through digital technologies. The World Health Organization (WHO) advocates for universal health coverage through digital innovations as outlined in its Global Strategy on Digital Health 2020-2025[4]. Simultaneously, the European Union's Digital Single Market Strategy[5] aims to improve data interoperability and security across member states, facilitated by initiatives such as the European Health Data Space[6] Horizon Europe Cluster 1[7], especially Destinations 5 and 6[8].

National Initiatives

Each partner country participating in the research phase (Cyprus, France, Greece, Lithuania, Poland, Portugal, Romania, Spain, and Sweden) have been found to integrate these international and EU frameworks to suit their national conditions, thus enriching the European collective effort towards enhanced digital health.

[4] https://www.who.int/docs/default-source/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf
[5] https://ec.europa.eu/eurostat/cache/infographs/ict/bloc-4.html
[6] https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en
[7] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-1-health_en
[8] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/horizon-europe-work-programmes_en

In more detail, Portugal found focused on healthcare accessibility and efficiency through the adoption of Electronic Health Records (EHRs) and telemedicine, bolstered by the EU's Horizon Europe Program[9] which supports the integration of AI and IoT technologies.

Lithuania displayed an already established robust digital health infrastructure that supports data sharing among healthcare providers, improving patient care coordination. This includes targeted training programs for healthcare professionals reflecting the EU's DigComp

Greece shown focus on digital literacy among healthcare providers and integration of digital health strategies into national healthcare services in alignment with the Digital Europe Programme[10] and the EU4Health Framework for 2021-2027.[11]

Poland showed an extension in healthcare services through telemedicine and digital health applications to rural areas, which seemed to promote public-private partnerships that align with European health innovation directives.

Cyprus presented an already implemented advanced digital health system to streamline processes and enhance data management with a strong emphasis on cybersecurity and data protection, adhering to EU standards.

Spain found to have an enhanced healthcare delivery through digital health solutions like e-prescriptions and digital diagnostic tools and showed significant initiatives of encouragement toward ongoing education and professional development in digital skills within the healthcare sector.

Sweden presented an already developed system for digital health composed of integrated digital tools in routine patient care and several investments in digital infrastructure, initiatives that help enable remote patient monitoring and telehealth, aligning with its reputation for innovation and technology adoption in public health services.

[9] https://digital-strategy.ec.europa.eu/en/news/new-horizon-europe-funding-boosts-european-research-data-computing-and-ai-technologies

[10] https://digital-strategy.ec.europa.eu/en/activities/digital-programme

[11] https://health.ec.europa.eu/funding/eu4health-programme-2021-2027-vision-healthier-european-union_en#:~:text=EU4Health%20programme%202021%2D2027%20%E2%80%93%20a%20vision%20for%20a%20healthier%20European%20Union,-Page%20contents&text=The%20EU4Health%20programme%20was%20adopted,fragility%20of%20national%20health%20systems.

France had been a front-runner in adopting a national digital health strategy that included the creation of a universal health data space to facilitate the sharing and analysis of health data across the country. This initiative aims to improve research capabilities and personalise patient care, closely aligning with the goals of the European Health Data Space.

Romania demonstrated focus on upgrading its healthcare infrastructure to support digital transformation, emphasising the importance of digital literacy among healthcare professionals. The country is additionally working on integrating digital health records and telemedicine solutions across its healthcare system, funded in part by European structural funds aimed at reducing regional disparities in healthcare access.

European Initiatives

Across Europe, best practices include ensuring the interoperability of digital health systems, developing comprehensive training programs for healthcare providers, and leveraging public-private partnerships to innovate and implement digital health solutions effectively. This collective approach reflects a robust alignment between international goals and the health directives of the European Commission with the national strategies of partner countries. Each EU country tailors its approach to meet specific local needs, reflecting a diverse yet united effort in transforming healthcare through digital innovation across Europe. This comprehensive approach provides a rich contextual understanding that contributes significantly to the collective efforts in digital healthcare transformation.

Learning Outcomes

The Health2Innovation training course has meticulously defined learning outcomes that will ensure a holistic development of competencies required for modern healthcare professionals. The learning outcomes, crafted through a systematic process involving expert consultations and synthesis of relevant research findings, cater to diverse learner needs and are structured into four key categories: Skills, Competences, Knowledge, and Attitudes as depicted in Table 1.

Category	Learning Outcomes	Description
Skills	Technical Skills	Proficiency in using digital health tools and managing IoT devices.
	Cybersecurity Skills	Capabilities in protecting patient data and securing healthcare networks.
	Interpersonal Skills	Enhanced communication, teamwork, and conflict resolution within healthcare settings.
Competencies	Problem-Solving	Ability to analyse and solve health-related challenges using a multidisciplinary approach.
	Innovation and Entrepreneurship	Willingness and ability to develop new business models and managing health-related projects.
	Regulatory Competence	Ability to navigate the application of healthcare regulations.
Knowledge	Digital Health Systems	Insights into current and emerging technologies.
	Sustainable Practices	Knowledge of sustainable practices in healthcare.
	Healthcare Policy	Comprehension of national, European, and global policies affecting healthcare.

Attitudes	Ethical Responsibility	Commitment to ethical standards in healthcare.
	Continuous Learning	Embracing lifelong learning and adaptation to new technologies.
	Environmental Consciousness	Integration of green practices into healthcare operations.

Table 1 Defined learning outcomes

These learning outcomes are designed to reflect different levels of mastery according to the European Qualifications Framework[12] (EQF), which helps cater to a diverse learner base with varying prior experiences and skills.

Alignment with Reference Frameworks

The Health2Innovation training course aligns its learning outcomes with established reference frameworks to ensure relevance and recognition across Europe. The primary frameworks integrated into the course design include the European Entrepreneurship Competence Framework[13] (EntreComp), the European Digital Competence Framework[14] (DigComp), and the European Sustainability Competence Framework[15] (GreenComp).

By incorporating elements of EntreComp, the course aims to foster entrepreneurial skills, encouraging innovation and business creation within the healthcare sector. The digital literacy and cybersecurity competencies are aligned with DigComp, ensuring that learners acquire essential digital skills for the modern healthcare environment. Sustainable practices and environmental consciousness are integrated according to GreenComp, promoting green healthcare practices, and supporting sustainability goals.

These alignments will be further detailed when the path for the modules' creation is described, providing a clear mapping of learning outcomes to the respective modules. By aligning with these frameworks, the Health2Innovation training course ensures that its participants are well-prepared to

[12] https://europass.europa.eu/en/europass-digital-tools/european-qualifications-framework
[13] https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en
[14] https://joint-research-centre.ec.europa.eu/digcomp/digcomp-framework_en
[15] https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en

meet the current and future demands of the healthcare sector, equipped with a balanced set of skills, knowledge, competences, and attitudes.

Learning Content

Path to Module Development

Based on the learning outcomes derived from the research phase, all project partners collaborated to develop five pillars, adding relevant themes under each. They identified 24 themes aligned with the identified learning outcomes and reference frameworks (Tables 2, 3, 4) which were then consolidated into 12 comprehensive modules (Table 5). This structured approach ensures that the final modules are aligned with the identified needs, priorities, and learning outcomes.

Pillar	Module	Objectives	Key Topics
Digital Literacy for Healthcare	Cybersecurity	Equip healthcare professionals with essential cybersecurity skills.	Best practices for data protection, risk assessments, mitigation strategies.
	IoT for Healthcare	Ensure proficient use of IoT devices in healthcare settings.	Utilisation of IoT devices in monitoring and patient care, data collection and analysis.
	Digital Resources Management	Manage digital tools and content effectively in healthcare settings.	Techniques for efficient management of digital resources.
	Digital Outreach of Customers	Engage patients and the community effectively using digital platforms.	Strategies for digital patient engagement and community outreach.
Entrepreneurship in Healthcare	Leadership Skills	Develop leadership capabilities relevant to healthcare environments.	Strategies for leading healthcare teams and managing projects.
	Agile Project Management in healthcare	Apply different project management methodologies to healthcare projects.	Implementation of tailored practices in project management including

			waterfall, agile and hybrid approaches.
	Marketing	Tailor marketing strategies for the healthcare sector.	Development of healthcare-specific marketing strategies.
	Legislation and Regulatory Aspects	Navigate healthcare regulations and ensure compliance.	Understanding of healthcare-specific legislation and compliance requirements.
	Funding Opportunities	Identify and secure funding for healthcare ventures.	Strategies for identifying financial resources and securing funding.
	Business Planning and Tools	Plan and manage healthcare ventures effectively.	Comprehensive business planning, operational and strategic management.
	Ethics in Healthcare	Address ethical considerations in healthcare operations.	Ethical decision-making in healthcare business operations.
Sustainability in Healthcare	Green Skills	Implement sustainable practices in healthcare operations.	Techniques for incorporating sustainability into healthcare delivery.
	ESG Principles	Integrate ESG principles into healthcare operations.	Application of environmental, social, and governance criteria in healthcare.
	SDG Alignment	Align healthcare operations with Sustainable Development Goals.	Strategies for aligning healthcare practices with global SDGs.
	Circular Economy	Apply circular economy principles in healthcare.	Implementation of circular economy strategies to reduce waste and improve resource efficiency.
Advanced Solutions for Healthcare	Big Data Analytics	Leverage big data for improved healthcare outcomes.	Predictive analytics and decision support using big data.
	Biophotonics	Good understanding of fundamental principles of light interaction with	Application of light-based technologies in healthcare.

	biological systems and optical biosensors; Development of solutions (instruments, protocols, and procedures) for specific biomedical problems e.g. imaging and diagnostics);	
Electronic Medical Records (EMRs)	Effectively implement and utilise EMRs.	Strategies for effective implementation and use of EMRs.
Modelling, Simulation, Virtual, Mixed, and Augmented Reality (VR/MRAR)	Apply modelling and simulation of human neuromusculoskeletal dynamic systems, and VR/MR/AR technologies for projections, interaction, feedback	Dynamic system, modelling and simulation algorithms for biomedical related problems in the study of human movement, computer graphics, information visualization, 3D models.
Artificial Intelligence (AI) Tools	Principles of AI Technologies in Healthcare; Benefits, challenges and limitations of machine learning and deep learning; How AI affects patient care safety, quality, and research.	AI Fundamentals; AI in medical diagnosis, clinical decision making, patient management, personalised care, managing healthcare data; Machine Learning; Neural Networks; Challenges of for using AI in patient care;
Image Analytics	Fundamental concepts, methodologies, and algorithms in medical digital image processing and analysis; Knowledge and skills in techniques for enhancing digital images to improve their visual quality and	Advanced techniques for medical image analysis, interpretation, and extraction of meaningful information for informed medical decision making.

		interpretability; Reconstruction of 3D structures enabling visualization and analysis; principles of machine learning applied to image processing and analysis	
	Database Management and NGS Analysis	Manage data for personalised medicine.	Techniques for handling large-scale data and databases.
Product Development	Technical Specifications Development	Design and develop healthcare products with precise technical requirements.	Setting product specifications and ensuring technical compliance.
	Regulatory Pathway Navigation	Navigate the regulatory processes for healthcare products.	Managing regulatory requirements and processes across jurisdictions.

Table 2 Pillars, Modules, Objectives, and Key Topics

Pillar	Module	Alignment with Identified Needs	Alignment with Priorities	Alignment with Learning Outcomes
Digital Literacy for Healthcare	Cybersecurity	Addresses the need for enhanced digital security skills.	Supports the priority of secure data management in healthcare.	Develops competencies in cybersecurity, enhancing data protection skills.
	IoT for Healthcare	Fulfils the need for technical skills in managing IoT devices in healthcare.	Aligns with the innovation in patient monitoring and data utilisation.	Enhances technical skills and knowledge of IoT applications.
	Digital Resources Management	Meets the demand for efficient	Complements the priority of efficient	Builds knowledge and skills in digital

		management of digital healthcare resources.	healthcare service delivery.	resource management.
	Digital Outreach of Customers	Tackles the need for better patient engagement through digital platforms.	Supports the priority of improving patient communication and outreach.	Develops interpersonal skills and digital communication strategies.
Entrepreneurship in Healthcare	Leadership Skills	Responds to the demand for leadership development in healthcare settings.	Aligns with the need for effective project and team management.	Enhances leadership skills and competencies.
	Agile Project Management	Meets the growing need for agile methodologies in healthcare project management.	Supports the priority of adaptable and efficient project execution.	Develops competencies in agile project management.
	Marketing	Addresses the need for specialised marketing skills in the healthcare sector.	Aligns with the priority of effectively promoting healthcare services.	Builds knowledge and skills in healthcare marketing.
	Legislation and Regulatory Aspects	Meets the critical need for regulatory knowledge in healthcare.	Supports compliance with European and national healthcare regulations.	Enhances understanding of healthcare legislation and regulatory
	Funding Opportunities	Addresses the necessity for knowledge of funding mechanisms in	Supports the priority of securing sustainable funding for	Develops skills in identifying and securing funding.

		healthcare ventures.	healthcare innovations.	
	Business Planning and Tools	Aligns with the need for comprehensive business planning skills in healthcare.	Complements priorities in strategic healthcare management.	Enhances skills in business planning and operational management.
	Ethics in Healthcare	Addresses the importance of ethical considerations in healthcare business operations.	Supports the priority of maintaining high ethical standards in healthcare.	Cultivates a deep understanding of ethical issues and decision-making.
Sustainability in Healthcare	Green Skills	Meets the need for sustainable practice skills in healthcare.	Aligns with global and European sustainability goals.	Enhances knowledge and competencies in sustainable healthcare practices.
	ESG Principles	Fulfils the requirement for integrating ESG principles in healthcare operations.	Supports the priority of ethical and sustainable business practices.	Develops understanding and application of ESG principles.
	SDG Alignment	Addresses the alignment of healthcare operations with Sustainable Development Goals.	Complements the priority of global health and sustainability.	Builds knowledge and skills for SDG-aligned practices.
	Circular Economy	Meets the demand for circular economy practices in healthcare.	Supports sustainability and waste reduction priorities.	Enhances understanding of circular economy principles.

Advanced Solutions for Healthcare	Big Data Analytics	Addresses the need for data analytical skills in healthcare.	Aligns with the priority of data-driven decision-making in healthcare.	Develops competencies in big data analytics and its applications.
	Biophotonics	Fulfils the need for advanced solutions in medical imaging and diagnostics	Supports the priority of technological innovation in medical imaging and diagnostics.	Enhances technical skills and knowledge in the development of solutions (instruments, protocols, and procedures) for specific biomedical problems e.g. imaging and diagnostics)
	Modelling, Simulation, VR/MR/AR, AI Tools, Image Analytics	Meet diverse technological needs in healthcare.	Align with priorities in digital health and innovative tools for improved patient management, treatment planning.	Develop a broad range of technical competencies and advanced healthcare solutions.
	Database Management and NGS Analysis	Addresses the need for managing large-scale healthcare databases and genetic data.	Supports the priority of utilising advanced data management technologies in healthcare.	Enhances skills in handling and analysing large datasets, including Next Generation Sequencing (NGS) data.

Product Development	Technical Specifications Development	Addresses the need for precise product development skills.	Supports the priority of high-standard healthcare product innovation.	Enhances skills in developing technical specifications for healthcare products.
	Regulatory Pathway Navigation	Meets the critical need for navigating healthcare product regulations.	Aligns with the priority of regulatory compliance for healthcare products.	Develops competencies in understanding and managing regulatory pathways.

Table 3 Alignment of the of Health2Innovation Learning Content with identified needs, priorities, and learning outcomes.

Category	Learning Outcomes	EntreComp	DigComp	GreenComp
Skills	Technical Skills: Use of digital health tools, management of IoT devices.		Information and data literacy	
Cybersecurity Skills: Protecting patient data, securing healthcare networks		Safety		
Interpersonal Skills: Communication, teamwork, conflict resolution within healthcare settings.	Working with others	Communication and collaboration		
Competencies	Problem-Solving: Analysing and solving health-related challenges using a multidisciplinary approach.	Taking the initiative	Problem-solving	Systems thinking

Innovation and Entrepreneurship: Developing new business models, managing health-related projects.	Spotting opportunities, creativity			
Regulatory Competence: Understanding and applying healthcare regulations.			Political agency	
Knowledge	Digital Health Systems: Insights into current and emerging technologies.		Digital content creation	
Sustainable Practices: Knowledge of sustainable practices in healthcare.			Environmental response, sustainable work practices	
Healthcare Policy: Understanding of global, European, and national policies affecting healthcare.	Vision, ethical and sustainable thinking		Systems thinking, values and ethics	
Attitudes	Ethical Responsibility: Commitment to ethical standards in healthcare.			Ethics and responsibility

Continuous Learning: Embracing lifelong learning and adaptation to new technologies.	Learning through experience		Learning and self-development	
Environmental Consciousness: Integrating green practices into healthcare operations.			Environmental stewardship	

Table 4 Alignment of Health2Innovation Learning Outcomes with European Competence Frameworks.

Detailed Modules' Description

The Health2Innovation training course is structured into 12 modules (Table 5), each addressing specific competencies and skills, necessary for modern healthcare entrepreneurs. The modules provide a comprehensive and practical understanding of key areas in digital health, entrepreneurship, sustainability, and advanced healthcare technologies. The descriptions include the specific learning outcomes, European Qualification Framework (EQF) levels, and the total training hours associated with each module, ensuring a clear understanding of the expectations and objectives for participants.

Module Number	Module Title	EQF Level	Learning Outcomes	Key Topics	ECTS Credits
1	Digital Literacy for Healthcare	4	Understand IoT for Healthcare, Manage Digital Resources, Data Management Proficiency	IoT for healthcare, Digital resources management, Data management	1
2	Digital Communication and Outreach	4	Develop foundational knowledge and practical skills in digital communication and outreach, focusing on customer engagement, social media platforms, digital marketing, SEO, and data visualization	Digital outreach of customers, social media competencies, SEO and digital marketing, Data visualization	1
3	Project Management in Healthcare	4-5	Understand the importance of project management in the healthcare sector and demonstrate the use of project	Project concept, characteristics, classification, roles and importance of project management in Healthcare, Project knowledge area	1

			management tools and methods	management, Project management methods	
4	Leadership	4	Understand and articulate the fundamental principles and theories of leadership, Demonstrate effective communication and interpersonal skills in a leadership context	Leadership skills	1
5	Healthcare Entrepreneurship	5-6	Identify the entrepreneurial competences, be aware of managerial roles, Understand the strategy for creating new businesses, develop a feasibility analysis, Develop, present and implement a business plan, manage tools and tactics for business, Identify ethical issues	Entrepreneurial skills and competencies for health entrepreneurs, Smart entrepreneurship for healthcare, Business planning and tools	1
6	Marketing in Healthcare	5-6	Understanding the fundamental principles of marketing and their application to the healthcare sector, Analyse current marketing trends and	Marketing, Market opportunities and real-world challenges, Development of new products in healthcare	1

			challenges, Develop and implement effective marketing strategies, evaluate effectiveness of marketing campaigns, Use digital tools and innovative techniques		
7	Sustainability in Healthcare	5	Provide a better understanding of sustainability and its impact on healthcare, explore sustainability in digital health startups, align healthcare practices with SDG, cover circular economy principles, acquire insights into ESG criteria, learn to integrate green skills into workplace	Introduction to sustainability, Sustainability in digital health startups/ventures, Align healthcare practices with SDG, Circular economy principles, ESG, Green skills	1
8	Advanced Healthcare Technologies	6-8	Demonstrate understanding of fundamental principles of light interaction with biological systems and optical biosensors; understand AI technologies in healthcare; apply techniques for	Biophotonics, Image analytics and AI technologies	1

			medical image analysis		
9	Immersive Technologies in Healthcare	6-8	Demonstrate understanding of the fundamental concepts of physics, apply principles of control theory, utilize simulation algorithms, conduct in-depth analysis of selected publications, Solve practical applications	Modelling, Simulation, Virtual, mixed, and augmented reality	1
10	Healthcare Information Security	4-5	Develop foundational knowledge and practical skills in Cybersecurity, Data protection, technical knowledge, Implementation of basic security practices and methodologies	Cybersecurity in digital health and care, Blockchain security in healthcare, Safe use of digital devices, Protecting and managing digital resources	1
11	Funding Opportunities	5	Focus on understanding the funding processes, identify relevant funding opportunities, understand eligibility criteria, Explore alternative funding sources	Understanding the funding process and writing a successful proposal, identify funding opportunities across EU, Comprehend the eligibility criteria, Alternative funding opportunities and schemes	1

12	Regulatory Compliance in Healthcare	4-5	Work with a regulatory strategy, Understand risk assessment in regulatory framework, Work with Quality Management System, Effect of regulatory strategy on product maintenance	Regulatory processes and frameworks for e-Health Solutions, Quality Management Systems, Risk Management, Regulatory Compliance	1

Table 5 Comprehensive Breakdown of Health2Innovation Training Modules

Training Approaches

The Health2Innovation training course incorporates effective training approaches to ensure comprehensive learning and skill development. These approaches are designed to address the diverse needs of learners and facilitate the acquisition of both theoretical knowledge and practical skills. By primarily offering an asynchronous learning format, the course ensures sustainability and usability beyond the project's completion. However, to integrate seamlessly into other curricula of Higher Education Institutions (HEIs) or educational organizations, synchronous training approaches are also suggested.

Asynchronous Learning Strategies

Asynchronous learning is a cornerstone of the Health2Innovation training course, allowing learners to access and engage with course materials at their own pace. This flexibility is essential for accommodating the varying schedules and commitments participants may have. Key components of the asynchronous learning strategy include:

1. **E-Learning Platform**

- A dedicated e-learning platform will be developed for the course, providing a centralized hub where learners can access all course materials, participate in discussions, and track their

progress. The platform will also handle assessments and certification, making the entire learning process seamless.

2. **High-Quality Video Content**

- Learners can watch and rewatch pre-recorded lectures and tutorial sessions to fully grasp complex topics. Videos help explain concepts and processes in an engaging way.

3. **Online Discussion Platforms**

- Learners can discuss course materials, ask questions, and share insights, fostering a collaborative learning environment through discussion forums.

4. **Interactive Quizzes**

- These provide immediate feedback, helping learners to gauge their understanding and identify areas for improvement through assessment quizzes.

As part of the asynchronous learning strategy, the course is structured into 12 self-paced learning modules, each focusing on specific topics within the broader curriculum. Each module includes:

1. **Introduction and Learning Objectives**

- Each module begins with an overview and clearly defined learning objectives, helping learners understand what they will achieve by the end of the module.

2. **Detailed Lessons**

- Covering the essential concepts, principles, and practices related to the module's topic.

3. **Engaging Activities**

- Such as drag-and-drop exercises, multiple-choice quizzes, and matching games to reinforce learning.

4. **Recap**

- A summary of the main points covered in the module to help consolidate learning.

To enhance engagement, the course employs a variety of interactive and multimedia content. This approach caters to different learning preferences and helps make complex information more accessible. Examples include:

1. **Videos and Visual Content**

- To explain concepts and processes in an engaging way. Dynamic visual content refers to animations or explainer videos that break down complex ideas into simpler visual representations.

2. **Interactive Infographics**

- Visual representations of data and information that learners can interact with to explore more details. For example, infographics that allow users to click on sections to get more information or animations that visually represent changes over time.

3. **Case Studies and Success Stories**

- Detailed case studies and success stories to provide practical insights and problem-solving skills directly applicable to professional roles. This includes in-depth analyses of real-world situations in the healthcare sector, illustrating the application of course concepts.

Synchronous Training Approaches

However, to integrate seamlessly into other curricula of Higher Education Institutions (HEIs) or educational organizations, synchronous training approaches are also suggested. These methods ensure interactive, real-time engagement and facilitate immediate feedback and support.

1. **Interactive Lectures and Live Demonstrations**
   - Live presentations by trainers, combined with opportunities for learners to ask questions and participate in discussions. Trainers can showcase practical applications of the course content, such as the use of digital health tools or IoT devices.
2. **Group Discussions and Collaborative Projects**
   - Facilitated by trainers to ensure productive discussions and effective teamwork. Course materials, including discussion prompts and collaborative tools, support these activities, allowing learners to engage deeply with the content and with each other.

3. **Case Studies and Problem-Based Learning**
    - Present learners with real-world scenarios and challenges. Trainers guide learners through analysing and solving these problems, applying theoretical knowledge from course content to practical situations.
4. **Role-Playing and Simulations**
    - Provide immersive learning experiences where learners can practice communication, leadership, and decision-making skills in simulated healthcare environments. Feedback sessions after these activities help learners reflect on their performance and identify areas for improvement.
5. **Guest Lectures**
    - Invited guest lecturers provide insights from industry professionals and thought leaders, thus, offering diverse perspectives and up-to-date information on current trends and challenges in healthcare innovation.
6. **Continuous Assessment and Feedback**
    - Continuous assessment through quizzes, assignments, and participation in discussions helps monitor learner progress. Self-assessment tools and regular feedback from trainers ensure that learners stay on track and thoroughly understand the material, supporting their ongoing development.

Assessment Methodology

The Health2Innovation training course employs a comprehensive assessment methodology designed to ensure learners achieve the desired competencies and skills in line with the course's focus areas. This methodology incorporates the EntreComp Framework for self-assessment, along with module-based assessments and certification exams.

Optional EntreComp Self-Assessment: Provided as a tool for learners to monitor their progress.

Module-Based Assessments: Conducted after the completion of each module through questions developed by the partnership.

Certification Exams: Course-oriented procedure where each participant/trainee can declare interest in specific modules and take exams for certification.

Optional EntreComp Self-Assessment

EntreComp Framework Adaptation

The EntreComp Framework provides a robust structure for evaluating entrepreneurial competencies. For the Health2Innovation course, we have tailored the framework to align with the specific modules and learning outcomes. The competencies are assessed at four proficiency levels[16]: Foundation, Intermediate, Advanced, and Expert, allowing for a clear progression of skill development.

Proficiency Levels

- **Foundation Level**

Learners begin to understand basic concepts and principles related to digital health and innovation. They apply basic concepts in familiar situations with external support.

- **Intermediate Level**

Learners experiment with applying concepts in new contexts and take initiative with increasing autonomy.

- **Advanced Level**

Learners enhance their skills, demonstrate consistent and proficient application, and take on leadership roles.

- **Expert Level**

Learners apply skills in complex contexts, leading and innovating with significant impact in their field.

Self-Assessment Methodology

Throughout the course, learners can optionally engage in optional self-assessment to monitor their progress and identify areas for improvement. This self-assessment aligns with the key competency

[16] https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework/competence-areas-and-learning-progress_en#:~:text=EntreComp%20associates%20a%20learning%20outcome,split%20into%20two%20sub%2Dlevels.

areas[17] of the EntreComp Framework, customized for the Health2Innovation modules. The self-assessment methodology[18] helps learners track their development across different proficiency levels as they progress through the course.

Competency Areas and Relevant Modules

Ideas and Opportunities

- Creativity: Developing innovative solutions in digital health technologies.
- Vision: Formulating strategic visions for the implementation of health innovations.
- Opportunity Identification: Identifying new opportunities in digital and green health sectors.

Resources

- Self-Awareness and Self-Efficacy: Reflecting on personal strengths and areas for improvement in the context of health innovation.
- Motivation and Perseverance: Staying committed to long-term health projects and innovations.
- Mobilising Resources: Gathering and managing resources needed for health innovation projects.

Into Action

- Taking the Initiative: Proactively initiating health projects and innovative solutions.
- Planning and Management: Effective management and planning of health-related projects.
- Working with Others: Collaborating with multidisciplinary teams in healthcare settings.
- Learning Through Experience: Leveraging practical experiences to drive innovation in healthcare.

The self-assessment methodology intends to help learners track their development across different proficiency levels (Foundation, Intermediate, Advanced, Expert) as they progress through the course. To facilitate this, an **EntreComp-Based Progress Tracking Table** has been developed (Table 6).

[17] https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework/competence-areas-and-learning-progress_en
[18] https://www.mdpi.com/2071-1050/14/5/2983

This table includes specific questions for each competency area, allowing learners to self-assess their competency levels at different stages and see their growth over time.

The following explanations describe how the self-assessment process is structured:

1. **Initial Self-Assessment**
- Conducted at the beginning of the course to establish a baseline.
2. **Mid-Course Self-Assessment**
- Conducted halfway through the course to monitor progress.
3. **Final Self-Assessment**
- Conducted at the end of the course to evaluate overall competency development.
4. **Proficiency Level Achieved**
- Based on the EntreComp proficiency levels (Foundation, Intermediate, Advanced, Expert).

Competency Area	Competency	Questions	Initial Self-Assessment	Mid-Course Self-Assessment	Final Self-Assessment	Proficiency Level Achieved
Digital Literacy for Healthcare	IoT for Healthcare	How proficient are you in using IoT devices in healthcare settings?	*Basic*	*Intermediate*	*Advanced*	*Intermediate*
Digital Resources Management	How effectively can you manage digital tools and content in healthcare settings?		*Basic*	*Intermediate*	*Advanced*	*Advanced*
Digital Communication and Outreach	Digital Outreach of Customers	How well can you engage patients and the community using digital platforms?				
Project Management in Healthcare	Project Management	How proficient are you in applying tailored methodologies to healthcare projects?				

Leadership	Leadership Skills	How capable are you of leading healthcare teams and managing projects?				
Healthcare Entrepreneurship	Business Planning and Tools	How effectively can you plan and manage healthcare ventures?				
Funding Opportunities	How proficient are you in identifying and securing funding for healthcare ventures?					
Marketing in Healthcare	Marketing	How effectively can you develop healthcare-specific marketing strategies?				
Sustainability in Healthcare	Green Skills	How proficient are you in implementing sustainable practices in healthcare operations?				
ESG Principles	How well can you integrate ESG principles into healthcare operations?					
SDG Alignment	How effectively can you align healthcare operations with Sustainable Development Goals (SDGs)?					

Circular Economy	How well can you apply circular economy principles in healthcare?					
Advanced Healthcare Technologies	Big Data Analytics	How proficient are you in leveraging big data for improved healthcare outcomes?				
Biophotonics	Knowledge of Biophotonics Principles; Application of Optical Properties; Understanding of Optical Biosensors; Laser Safety Knowledge	How well do you understand principles and safety aspects of optical biosensors, as well as the development of solutions?				
Image Analytics	Understanding of fundamental concepts, methodologies, and algorithms in digital image processing and analysis; Knowledge and skills in techniques for enhancing digital images to improve their visual quality and interpretability; Ability to restore degraded	How efficiently can you analyse, extract meaningful information, and interpret medical images to inform clinical decision making?				

	digital images using appropriate restoration algorithms, reducing noise and artifacts for better image quality; Analysis and interpretation of digital images using various image analysis techniques; Familiarity with object recognition methods and algorithms to identify and classify objects of interest within digital images; Knowledge of colour theory and techniques for processing colour images, including colour enhancement, colour correction, and colour-based analysis; Principles and algorithms for reconstructing 3D objects from two-					

	dimensional projections, enabling visualization and analysis of 3D structures ; Understand the basic principles of machine learning applied to image processing and analysis.					
AI Technologies	AI Fundamentals: Understand patterns, find similarities, identify correlations in large data sets with spatial and temporal components; basic knowledge in the fields of decision making, and machine learning	How well you understand AI in medical diagnosis, clinical decision making, patient management, personalised care, managing healthcare data; Machine Learning; Neural Networks; Challenges of for using AI in patient care;				
Immersive Technologies in Healthcare	Modelling and simulation of human neuromusculoskeletal dynamic systems , Virtual Mixed and Augmented Reality	How well can you understand, develop, and apply methods for modelling and simulation of human neuromusculoskeletal dynamic systems, and use VR/MR/AR				

		technologies for projections, interactions, and feedback?				
Healthcare Information Security	Cybersecurity	How well can you protect patient data and secure healthcare networks?				
Blockchain Security in Healthcare	How proficient are you in using blockchain technologies to secure healthcare data?					
Funding Opportunities	Securing Funding	How proficient are you in identifying and securing funding for healthcare projects?				
Regulatory Compliance in Healthcare	Regulatory Pathway Navigation	How well do you navigate the regulatory criteria for healthcare products?				
Are there any regulatory requirements for your product?						
Which are the key criteria for your product from an MDR perspective?						
Have you been able to establish a regulatory pathway for your product development?						

Table 6 EntreComp-Based Progress Tracking Table

This progress tracking table is a critical tool in the self-assessment methodology, ensuring that learners can comprehensively evaluate their skills and competencies in alignment with the course objectives and the EntreComp Framework. Table 7 clearly describes the proficiency levels and can be used along with Table 6 by participants to track their progress effectively.

Module Name	Basic Level	Intermediate Level	Advanced Level
Digital Literacy for Healthcare	Understand the basic functionalities of IoT devices in healthcare settings. Can manage simple digital resources and perform basic data management tasks.	Apply IoT devices effectively in different healthcare scenarios. Manages digital tools and content independently, optimizing their use in healthcare settings.	Lead the implementation of IoT solutions in healthcare environments. Develops and manages complex digital resources and data management strategies.
Digital Communication and Outreach	Understand the fundamentals of digital communication and outreach. Can engage patients using basic digital platforms.	Utilize digital communication tools effectively to engage patients and communities. Develops and implements digital marketing strategies.	Lead digital outreach initiatives, integrating advanced digital marketing and SEO techniques. Analyse and optimizes digital communication strategies for maximum impact.
Project Management in Healthcare	Understand basic project management concepts and tools. Can assist in managing small healthcare projects.	Manage healthcare projects using different project management methodologies. Applied project management tools and techniques effectively.	Lead complex healthcare projects, ensuring alignment with organizational goals. Optimize project management processes and methodologies for improved efficiency.
Leadership	Understand fundamental principles and theories of leadership. Demonstrate basic	Apply leadership principles to manage teams effectively. Enhance team performance through	Lead large teams and complex projects, driving strategic initiatives. Develop and mentor future

	communication and interpersonal skills.	effective leadership practices.	leaders within the organization.
Healthcare Entrepreneurship	Identify basic entrepreneurial opportunities in healthcare. Understand foundational business planning concepts.	Develop and presents detailed business plans for healthcare ventures. Manage healthcare projects and startups effectively.	Lead the creation and scaling of innovative healthcare businesses. Navigate complex business environments and regulatory landscapes.
Marketing in Healthcare	Understand fundamental marketing principles. Can assist in developing basic healthcare marketing strategies.	Develop and implements effective marketing strategies for healthcare services. Utilize digital marketing tools and techniques to reach target audiences.	Leads comprehensive marketing campaigns, integrating advanced analytics and strategies. Optimize marketing efforts for maximum ROI and impact.
Sustainability in Healthcare	Understand basic concepts of sustainability in healthcare. Can apply simple green practices in healthcare settings.	Integrate sustainability into healthcare operations effectively. Align healthcare practices with SDGs and ESG principles.	Lead sustainability initiatives, driving systemic change in healthcare operations. Develop and implements comprehensive sustainability strategies.
Advanced Healthcare Technologies	Understand fundamental principles of advanced healthcare technologies. Can utilize basic tools and techniques in biophotonics, AI, and image analytics.	Apply advanced technologies in practical healthcare scenarios. Develop solutions using AI, biophotonics, and image analytics.	Lead the integration and innovation of advanced healthcare technologies. Develop cutting-edge solutions and drives technological advancements in healthcare.
Immersive Technologies in Healthcare	Understand basic concepts of VR/MR/AR in healthcare. Can apply	Utilize VR/MR/AR technologies for effective healthcare training and	Lead the development and application of immersive technologies in

	simple simulation and modelling techniques.	applications. Develop and implement simulation-based solutions.	healthcare. Innovate and optimizes VR/MR/AR solutions for complex healthcare scenarios.
Healthcare Information Security	Understand basic cybersecurity principles and practices. Can apply simple data protection measures.	Manage healthcare information security effectively. Implement comprehensive cybersecurity strategies.	Lead healthcare information security initiatives. Develop and optimizes advanced cybersecurity solutions and protocols.
Funding Opportunities	Understand basic funding processes and eligibility criteria. Can identify simple funding opportunities.	Develop and submits detailed funding proposals. Navigate funding landscapes effectively to secure resources.	Lead the strategic acquisition of funding for healthcare projects. Develop comprehensive funding strategies and optimizes resource allocation.
Regulatory Compliance in Healthcare	Understand basic regulatory requirements and compliance principles. Can assist in meeting simple regulatory criteria.	Navigate complex regulatory environments effectively. Ensure comprehensive compliance with healthcare regulations.	Lead regulatory compliance initiatives, ensuring full adherence to standards. Develop and optimizes regulatory strategies for healthcare products and services.

Table 7 Proficiency Levels for Each Module

Module-Based Assessment

The Health2Innovation training program includes a structured assessment process after the completion of each module. This approach ensures that learners can evaluate their understanding and progress on a modular basis, reinforcing key concepts and identifying areas that may require further study.

After completing each module, learners will be prompted to take an assessment questionnaire available on the e-learning platform. This questionnaire will consist of a set of questions designed to evaluate their comprehension and application of the module's content. The process includes:

1. **Notification**

Learners receive a notification to access the assessment questionnaire through the e-learning platform.

2. **Assessment Questions**

The questionnaire includes multiple-choice and true/false questions for automated evaluation and immediate feedback. These questions will be designed to reflect varying levels of difficulty to appropriately assess learners' understanding and progression. The specific design and structure of these questions, including any potential hierarchy of difficulty, will be defined during the module development phase to ensure they accurately assess the competencies targeted by each module.

3. **Feedback**

Explanations for correct and incorrect answers to reinforce learning.

4. **Progress Tracking**

Results are recorded and displayed in the learner's progress tracking dashboard, helping learners track their progress and identify learning patterns.

5. **Issuing of Attendance certificate**

Each assessment is mapped to the specific competencies and learning outcomes of the module, ensuring alignment with the overall course objectives.

Certification Exam

At the end of the course, learners will undertake a final certification exam to validate their knowledge regarding all the course content. The certification exam is developed based on the guidelines provided in the Health2Innovation D2.2 Qualification Scheme document (Annex 2).

Qualification System

The Health2Innovation training course incorporates a detailed qualification system designed to recognize and certify the skills and competencies acquired by learners. This system aligns with European standards, ensuring the qualifications are relevant and valued across various educational and professional contexts.

Overview

The qualification system of the Health2Innovation training course is built on the following key components:

1. Certification Framework
    - Ensures the validation and certification of knowledge, skills, and competencies gained by participants.
2. Accreditation
    - Ensuring that the course and its certifications are recognized by relevant educational and professional bodies.

Certification Framework

UNICERT S.A. will develop the certification framework for the project participants' gained knowledge, competencies, and skills as well as the certification process. The certification will be accepted on the market because it will be made using a final method of accreditation that is recognized by the EU and is in line with the rules and procedures of the national accreditation bodies of E.A. countries and states (European Cooperation for Accreditation).

Methodology: Development of Certification Scheme

The certification scheme development follows a structured methodology to ensure thorough validation and recognition of the acquired competencies. Key steps include:

1. **Application for New Schemes**: Submission of detailed applications for new certification schemes.
2. **Application Review**: Thorough review of the proposed schemes by the Quality Management Department of UNICERT S.A.
3. **Development of Certification Scheme Regulations**: Creating a comprehensive set of guidelines governing the certification process, including eligibility criteria, examination procedures, and criteria for successful certification.
4. **Syllabus Development**: Outlining specific topics, skills, and knowledge areas to be covered in the certification exams.
5. **Criteria and Methods of Certification**: The assessment of examinees includes theoretical certification exams designed to evaluate the participants' knowledge and skills.

6. **Selection of Exam Questions**: Systematic selection of exam questions to ensure a balanced evaluation of competencies.
7. **Scoring and Duration**: The certification examination platform awards points for correct answers, with a defined validity period for certifications.
8. **Recertification**: Process for renewing certification after its validity period expires, ensuring ongoing competency in the certified area.

Accreditation

The Health2Innovation training course seeks accreditation from relevant educational and professional bodies to ensure the qualifications are widely recognized and valued. This process involves:

- **Alignment with EU Standards**: The certification process is aligned with European standards and the European Qualifications Framework (EQF).
- **Accreditation by National Bodies**: The certification will be accredited by national accreditation bodies of E.A. countries and states, ensuring compliance with national and EU regulations.

The qualification system of the Health2Innovation training course is designed to provide flexible, recognized, and valuable certifications that support learners' academic and professional growth. By integrating a robust certification framework and seeking accreditation, the course ensures that participants can effectively demonstrate their skills and competencies in the healthcare innovation sector.

Micro-Credentials and ECTS Credits

The Health2Innovation training course is designed to offer both micro-credentials and ECTS credits, enhancing the flexibility and recognition of the skills and competencies acquired by learners.

Micro-Credentials

Micro-credentials provide a flexible way to recognize the acquisition of specific skills and competencies. Each module in the Health2Innovation training course is designed to provide micro-credentials upon successful completion. These micro-credentials are digitally certified and can be shared on professional networks, enhancing learners' employability and visibility.

Each micro-credential corresponds to a specific module or set of skills within the course. Upon successful completion of module assessments, digital badges are issued to learners. These micro-credentials are designed to allow learners to accumulate them towards larger qualifications or certifications. This system enables learners to build a comprehensive portfolio of skills that can be recognized across various educational and professional contexts.

ECTS Credits

The Health2Innovation training course integrates ECTS credits (Table 7) to facilitate recognition and transferability across European higher education institutions. ECTS credits are awarded based on the workload and learning outcomes of each module, ensuring that the course aligns with European standards for higher education

Module Number	Module Name	ECTS Credits
1	Digital Literacy for Healthcare	1
2	Digital Communication and Outreach	1
3	Project Management in Healthcare	1
4	Leadership	1
5	Healthcare Entrepreneurship	1
6	Marketing in Healthcare	1
7	Sustainability in Healthcare	1
8	Advanced Healthcare Technologies	2
9	Immersive Technologies in Healthcare	1
10	Healthcare Information Security	1
11	Funding Opportunities	1
12	Regulatory Compliance in Healthcare	n/a

Table 8 ECTS Credits Allocation for Health2Innovation Modules

Conclusion

The Health2Innovation training course represents a significant advancement in healthcare education and entrepreneurship. By addressing the identified training needs and aligning with key European competence frameworks, the course equips students and graduates with the necessary skills, knowledge, and competencies to thrive in the evolving healthcare landscape.

Through its comprehensive curriculum, which includes modules on digital proficiency, sustainable healthcare practices, regulatory navigation, innovation, interdisciplinary collaboration, project management, healthcare marketing, information security, funding opportunities, advanced healthcare technologies, and immersive technologies, the course fosters a new generation of healthcare entrepreneurs. The collaborative effort involving higher education institutions, vocational training organizations, SMEs, and tech experts from various European countries has resulted in the structure of a robust training program to be developed that supports the sustainable and digital transition of the healthcare sector. The Health2Innovation course is poised to significantly impact the entrepreneurial capabilities of its participants, thereby contributing to the overall advancement of the healthcare industry.

Upon successful completion of the course, participants will receive certification that is recognized across European countries. This certification not only validates their newly acquired skills and knowledge but also enhances their professional credibility in the healthcare sector. The Health2Innovation training course sets a high standard for healthcare education, ensuring that graduates are well-prepared to lead and innovate, driving forward the sustainable transformation of the healthcare sector.

Annexes

Deliverable 2.1

Deliverable 2.2