



Digital Innovation Hubs

P4 Medicine

D4.2

Sustainability plan

Project number: 101070719

DIHsP4_Medicine

Action plan to shape corridors among DIHs to foster innovation ecosystems and accelerate the deployment of the p4 medicine paradigm

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Synopsis:	The Sustainability Plan aims to describe the sustainability challenges faced by Digital Innovation Hubs, particularly those focused on digital health. It focuses on exploring and presenting different funding models to support the development and implementation of the joint action plan. These models are intended to support the continuity and impact of the plan beyond the life of the project and ensure that its objectives are achieved in a sustainable way.
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List of abbreviations

DIH	Digital Innovation Hub
EDIH	European Digital Innovation Hub
EHDS	European Health Data Space
EHR	Electronic health records
EISMEA	European Innovation Council and SMEs Executive Agency
EIT	European Institute of Innovation and Technology
EOI	Escuela de Organización Industrial
ESIF	European Structural and Investment Funds
EU	European Union
FI	Flagship initiative
JAP	Joint action plan
MMF	Multiannual financial framework
PADIH	Programa de Apoyo a los Centros de Innovación Digital
PPP	Public-Private partnership
RETECH	Recovery, Transformation and Resilience Plan, the Territorial Networks of Technological Specialisation
SME	Small and Medium Enterprise
STEM	Science, technology, engineering and mathematics
TEF	Testing and Experimentation Facilities

1. Introduction

Sustainability is not only a strategic goal, but a financial imperative for our project, which aims to transform digital health across Europe. It ensures that our initiatives continue to attract financial investment, influence policy developments, and have a positive impact on healthcare systems long after the project has been completed.

This document sets out our comprehensive strategy for ensure the long-term sustainability and financial viability of the Joint Action Plan.

Within the Joint Action Plan, we've pinpointed **three main strategic lines** for challenges we aim to tackle.

a) **Fostering Collaboration between Digital Health Ecosystems**

This strategic line will focus on strengthening collaboration within digital health ecosystems. We will develop networks and build partnerships among various stakeholders, such as doctors, startups, and research centres, to enhance knowledge exchange and innovation in healthcare. We plan to organize networking events, such as roundtables and pitch days, to encourage dialogue and collaboration. Additionally, we'll introduce training and internationalization programs to support new entrepreneurial talent and facilitate knowledge transfer across the EU. Our goal is to establish a systematic approach for global collaboration and innovation in digital health, contributing to the development of an accessible, universal, and sustainable digital health sector.

b) **Navigating Trust, Digital Health Literacy and Co-creation**

The reluctance of healthcare providers and patients to fully embrace digital innovations highlights the need for comprehensive training and the modernization of healthcare systems. Our strategy focuses on improving digital skills, fostering collaboration between startups and medical professionals, and creating a supportive environment for the adoption of new technologies. By tackling these barriers, we aim to facilitate a smoother transition towards a digital healthcare ecosystem that is accessible, efficient, and patient-centred.

c) **Access to Health Data**

Improving access to health data is a key challenge due to the fragmentation and diversity of data across various systems. Despite the adoption of Electronic Health Records (EHRs) in Europe, interoperability and standardization issues persist, hindering seamless data exchange. The European Commission has proposed initiatives like the European Health Data Space (EHDS) to address these challenges, aiming for better data sharing and integration. Digital Innovation Hubs (DIHs) play a crucial role in bridging the gap for SMEs and startups, facilitating access to data and supporting the development of health data ecosystems.

Under each strategic line we proposed two flagship initiatives that will strategically tackle the problems we have identified earlier:

- ❖ Strategic line 1 (SL1). **Fostering Collaboration between Digital Health Ecosystems**
 - Flagship initiative 1 (FI1). **Building a Network of DIHs for P4 Medicine**
 - Flagship initiative 2 (FI2). **European Catalogue of the DIHs' flagship services for Digital Health**

- ❖ **Strategic line 2 (SL2). Access to Health Data**
 - **Flagship initiative 3 (FI3). Interconnected DIHs that act as a regional contact point to give support on the EHDS.**
 - **Flagship initiative 4 (FI3). EDIHs for Health Data literacy: Education & Training**

- ❖ **Strategic line 3 (SL3). Navigating Trust, Digital Health literacy & Co-creation**
 - **Flagship initiative 5 (FI5). Building on Trust and Digital Health Literacy**
 - **Flagship initiative 6 (FI6). Establishing Hospital Co-creation Testing Services**

2. Perspectives and challenges DIHs face in sustainability

Digital Innovation Hubs (DIHs) are central to driving digital transformation across all industries, particularly through strategic initiatives to improve digital health ecosystems. The sustainability of DIHs depends on their ability to develop and implement strategies that address the multiple challenges of digitalization. The emphasis on long-term value creation and the exploitation of new commercial opportunities requires DIHs not only to engage in collaborative networks and leverage their diverse services, but also to continuously adapt their sustainability strategies. The evolution of DIHs, particularly the transition to European Digital Innovation Hubs (EDIHs), underlines the need for an integrated approach to service delivery, encompassing both for-profit and not-for-profit activities.

Generally, organizations engage in sustainability initiatives primarily for a variety of reasons (e.g. financial, internal and external improvement, market success and legitimacy). Evidence shows that adopting sustainability initiatives can benefit companies in a number of ways, including enhancing the organization's image, managing resources more efficiently, developing trust among stakeholders, fostering relationships with customers, suppliers and the community, improving competitive advantage, increasing productivity and profitability, lowering operating and production costs, reducing energy consumption and minimizing waste.

DIHs focusing on health sector strive to build a sustainable organization and network to contribute better and faster to regional, national or global development of healthcare by first identifying the needs and opportunities in their area of operation and then providing tailored and flexible transformation services in different timeframes.

The sustainability of DIHs is a multidimensional issue in which all aspects should be carefully considered. This means that DIHs need to think from the outset about how they can combine the different service areas and revenue streams in a way that is financially viable and also creates a credible business channel for customers.

Sustainability in DIHs is a complex interplay of creating a positive image of the organization, efficient resource management, stakeholder trust and promoting competitive advantage. Developing effective business models that support sustainable solutions and consider the broad service portfolio of DIHs is crucial to ensure their contribution to regional, national and global development.

Securing consistent funding is a major challenge for EDIHs, especially when the initial co-funding from Digital Europe is not available to all. In addition, not all DIHs benefit from stable national policy funding, further hampering their operational capacity. The limitation of national co-funding restricts the ability of EDIHs to offer services to SMEs from other countries, which is an obstacle to cross-border cooperation and the further dissemination of digital innovation services.

Building trust within the digital health ecosystem is crucial for the sustainability of the health specialized EDIH. Our Joint Action Plan (JAP) acknowledges the widespread scepticism towards digitalization and new technologies in healthcare, addressing it in the Strategic Line 3. An EDIH may struggle to implement the proposed actions and services of the JAP if the local healthcare

ecosystem is strongly disconnected or fragmented, or if there is a lack of understanding of the benefits of EDIHs. The implementation of the proposed measures and processes could therefore take longer than planned.

Mastering complex data protection regulations, especially in the context of strategic lines 2 and 3, requires DIHs to be strictly transparent about the data they collect and the data protection measures they take. A DIH's expertise in data protection is critical to navigating the digital health landscape. If a DIH identifies gaps in this area, it can partner with entities that specialize in privacy and security. This collaborative approach allows DIHs to expand their knowledge base and ensure they are compliant with strict privacy regulations while encouraging innovation within their services.

In summary, to effectively address their sustainability challenges, DIHs must not only enter into collaborative partnerships and leverage their diverse service portfolios, but also tailor the JAP) and sustainability strategies to their unique strengths and position within the ecosystem. Adapting these strategies to their specific context will enable DIHs to overcome funding, trust, and protection hurdles more efficiently, strengthening their central role in the digital health landscape and ensuring their lasting impact and sustainability on a broad scale.

3. Financial sustainability strategy

The initiatives, actions and strategies depicted in the JAP offer a practical guidance and comprehensive roadmaps for implementation by DIHs, innovation bodies from European innovation ecosystems and even public authorities involved in strengthening regional collaborative ecosystems. However, the general specific scope of the JAP is the digitalization of healthcare, the support to SMEs and startups of the sector and how EDIHs can facilitate such transformation. Taking this into consideration, the overriding priority when it comes to funding models that could be used to integrate the JAP is to ensure the sustainability of EDIHs in the medium and long term.

Although (E)DIHs across Europe have similar objectives regarding supporting startups, SMEs and/or public sector administrations in their digital transformations, their funding scheme varies very much from one hub to another.

Funding models

1. Public Funds

Public funding has played a crucial role in supporting the creation, operation, and growth of EDIHs at both EU and national/regional levels. By using public funding effectively and in collaboration with other stakeholders, EDIHs can maximise their impact and contribute to Europe's digital transformation agenda. Some of this funding may be specialised, targeting specific sectors, technologies or types of innovation that enable EDIHs to fulfil their specific mission and objectives.

1.1. European Union funding

European funding for the digital transition in healthcare supports initiatives aiming to promote innovation, research, cross-border collaboration and adoption of digital solutions to improve patient care, health outcomes and healthcare systems across the EU. Key topics on the spotlight are electronic health records, telemedicine, AI, digital literacy and education, as well as interoperability between healthcare systems and stakeholders.

The EU's current multiannual financial framework (MMF) covers the period from 2021-2027 with a series of sectoral programmes, such as Digital Europe Programme, Horizon Europe, EU4Health, or the European Structural and Investment Funds (ESIF), which the flagship initiatives and actions depicted in the JAP align with. When it comes to funding opportunities for the actions and projects carried out by EDIHs, the EU provides significant funding opportunities through various programmes and initiatives aimed at boosting digital innovation, competitiveness and economic growth across Europe.

- **Digital Europe Programme (DIGITAL)**, the first EU programme to accelerate Europe's digital recovery and transformation, is part of the next long-term EU budget for 2021-2027. The programme is fine-tuned to bridge the gap between research in digital

technologies and their deployment, and to bring research results to the market for the benefit of European citizens and businesses, especially SMEs.

This programme is foreseen to support a network of EDIHs, with at least one hub per Member State to ensure regional coverage and opportunities across the EU territory. Following two restricted calls, the EC selected 151 EDIHs to fund 50% of their costs for the duration of the grant, which is 3 years with the possibility of extension for a further 4 years. The same amount (the remaining 50%) is required from the national budgets of the Member States, including possible regional co-financing and/or private sector contribution. This other 50% can be a combination of national funding, regional funding and/or private sector contribution. In this way, national or regional authorities can provide cash contributions to an EDIH, such as an annual payment to support the operation of the hub, as part of an existing ongoing grant or as part of a new grant received.

This funding scheme allows EDIHs to consolidate, act and provide a disruptive catalogue of services. It is therefore a good source of funding to support, in whole or in part, the six flagship initiatives and actions proposed in the JAP, should they be implemented by funded EDIHs.

In addition, below are some examples of calls identified in the 2023-2024 Work Programme that could provide additional funding for the implementation of the actions of different Flagship Initiatives.

Digital Europe Programme Call	Flagship Initiative
DIGITAL-2023-EDIH-04-ASSOCIATED: Network of European Digital Innovation Hubs – Associated Countries*	All FIs
DIGITAL-2024-CLOUD-AI-06-HEALTHRECORD: Demonstrating the in-service use of the European Electronic Health Record Exchange Format (EEHRxF) in healthcare settings*	FI3
DIGITAL-2024-CLOUD-DATA-06-HEALTHCARE-AI: Support for Health Data Access Bodies to foster efficient pathways for AI in healthcare*	FI3 & FI4
DIGITAL-ECCC-2024-DEPLOY-CYBER-06-COMPLIANCECRA: Tools for compliance with CRA requirements and obligations*	FI2

Table 1: Potential funding opportunities: Digital Europe Programme

- **Horizon Europe**, is the EU’s main funding programme until 2027 to support research and innovation through various Work Programmes that provide funding opportunities to foster collaboration and strengthen the impact of research and innovation in

*These are examples that serve to illustrate the types of EU calls and tenders that could potentially provide funding for the implementation of the flagship initiatives proposed in the JAP. In the future, upcoming multi-annual work programmes within this cluster should be reviewed to identify suitable ongoing calls for implementation.

developing, supporting and implementing EU policies while tackling global challenges. Next to the funding provided within the framework of the Digital Europe Programme the EC also allocated funding to EDIHs Horizon Europe to support collaborative research projects, innovation pilots and technology transfer initiatives. These funding means aim to support the establishment, operation, and scaling of EDIHs across Europe.

Two of the main Horizon Europe work programmes are: the so-called clusters, Pillar II, and European Innovation Ecosystems (EIE), Pillar III. Calls for proposals in these work programmes could cover the costs of the actions proposed in the JAP.

To support the digital transformation of healthcare and in the context of the latest Horizon Europe work programme of Cluster 1 "Health" (2023-2024), the following calls have been identified to cover the JAP flagship initiatives collectively or independently. These have the general objectives of fostering interregional innovation and cooperation with the aim of reducing the fragmentation of innovation ecosystems and providing national/regional support schemes for SMEs and start-ups that will strengthen EU innovation systems to address societal and economic challenges in the transition to a sustainable digital future. Some of these, specifically relate to the forthcoming implementation of the European Health Data Space (EHDS) and could serve as a funding instrument for the actions and services developed in *FI3. Interconnected DIHs that act as a regional contact point to give support on the EHDS* and *FI4. EDIHs for Health Data literacy: Education & Training*.

Horizon Europe Programme Call	Flagship Initiative
HORIZON-EIE-2024-CONNECT-02-02: Mutual learning and support scheme for national and regional innovation programmes*	FI1, FI2, FI3, FI4, FI5 & FI6
HORIZON-EIE-2024-CONNECT-02-01: Expanding Academia-Enterprise Collaborations*	FI1 & FI2
HORIZON-HLTH-2023-TOOL-05-09: Developing a Data Quality and Utility Label for the European Health Data Space*	FI3
HORIZON-HLTH-2023-IND-06-02: Expanding the European Electronic Health Record exchange Format to improve interoperability within the European Health Data Space*	FI3 & FI4
HORIZON-HLTH-2023-TOOL-05-04: Better integration and use of health-related real world and research data, including genomics, for improved clinical outcomes*	FI3 & FI4
HORIZON-HLTH-2023-IND-06-07: Development and harmonisation of methodologies for assessing digital health technologies in Europe*	FI4, FI5 & FI6

Table 2: Potential funding opportunities in Horizon Europe

*These are examples that serve to illustrate the types of EU calls and tenders that could potentially provide funding for the implementation of the flagship initiatives proposed in the JAP. In the future, upcoming multi-annual work programmes within this cluster should be reviewed to identify suitable ongoing calls for implementation.

- **Interregional Innovation Investments (I3)**, In the 2021-27 programming period, driven by the internationalization of innovation and building on the experience with the interregional pilots, the Commission proposed the Interregional Innovation Investment instrument under the European Regional Development Funds (ERDF). It aims to foster European value chains’ development through innovation ecosystems and strengthen the cooperation and synergies between various EU, national and regional funding instruments. Administered by the European Innovation Council and SMEs Executive Agency (EISMEA), the I3 instrument provides funding for mature joint innovation projects and supports stakeholders engaged in smart specialization to develop and implement such projects within value-chain investment portfolios, following a biannual work programme.

Interregional Innovation Investments Call	Flagship initiative
I3-2023-CAP2b: Interregional Innovation Investments Instrument (I3) Capacity Building*	FI1, FI2, FI3, FI4, FI5, FI6

Table 3 Potential funding opportunities in Interregional Innovation Investment

This call aims to foster cooperation and interregional innovation between innovation ecosystems in less developed regions of the EU. Projects will experiment with new approaches to promote interregional innovation, in particular involving SMEs. The aim is to develop potential investments and business plans that will strengthen EU innovation systems to address societal and economic challenges in the transition to a sustainable, digital future.

- **EIT Health Flagship Call.** With the aim of contributing to some of the EU's top health priorities, EIT Health has launched the [Digital Transformation of Healthcare flagship](#), which focuses on the development and access to digital medical devices on the one hand, and on supporting the implementation of the EHDS by exploring the secondary use of health data. In general, it will focus on how patients, citizens and health professionals are educated to understand the importance and relevance of data sharing in informing and improving the continuum of healthcare. This funding programme could partially or totally cover the actions of *Flagship initiative 3. Interconnected DIHs that act as a regional contact point to give support on the EHDS and Flagship Initiative 4. EDIHs for Health Data literacy: Education & Training.*
- **Interreg**, is an interregional cooperation programme co-funded by the EU with the aim to reduce disparities in the levels of development, growth and quality of life in and across Europe’s regions.

*These are examples that serve to illustrate the types of EU calls and tenders that could potentially provide funding for the implementation of the flagship initiatives proposed in the JAP. In the future, upcoming multi-annual work programmes within this cluster should be reviewed to identify suitable ongoing calls for implementation.

Interreg's strategic focus on smart growth, green transition and social inclusion, combined with investment in digital and sustainable infrastructure, makes it a key driver for the proposed flagship initiatives. By promoting cross-border cooperation and ensuring the participation of neighboring countries in various programs, Interreg not only supports the specific development of health-related projects, but also contributes to the overarching goal of creating a more connected, competitive and cohesive Europe. This funding programme could partially or totally cover the actions of *Flagship initiative 3. Interconnected DIHs that act as a regional contact point to give support on the EHDS and Flagship Initiative 4. EDIHs for Health Data literacy: Education & Training. And Flagship initiative 5 (FI5). Building on Trust and Digital Health Literacy and Establishing Hospital Co-creation Testing Services (FI6).*

European funding and tenders opportunities are a very good financial tool to support the implementation and development of the various actions and innovation initiatives proposed in the JAP in a short and medium term. For the future implementation of the JAP, it is proposed to seek European public funding during the current and forthcoming Strategic Work Programmes, given the date of application.

1.2. National and Regional Funding

National governments and regional authorities play a crucial role in providing financial support for the creation and operation of innovation organisations, institutions and networks from European innovation ecosystems within their respective jurisdictions. In some cases, this type of funding represents the majority of the funding received by EDIHs, innovation clusters and organisations. It may come from government budgets, regional development funds, innovation programmes and other sources. In the case of EDIHs, national and regional funding mechanisms enable EDIHs to tailor their services and activities to the specific needs and priorities of local businesses, industries and research communities. For this reason, national and regional funding not only ensures project-specific short-term funding but can also provide long-term funding according to the needs and priorities of innovation agendas and health system needs in different EU regions. A national and/or regional funding model is therefore very relevant when it comes to finance medium and long-term projects, such as the Digital Europe Programme call for EDIHs, which is co-funded by the national governments of all Member States at 50% of the cost of the EDIH. In Spain, this has taken the form of a call for proposals called "Programa de Apoyo a los Centros de Innovación Digital (PADIH)" as part of the Recovery, Transformation and Resilience Plan, launched within the Ministry of Industry and Tourism and coordinated by the Escuela de Organización Industrial (EOI). In Romania, it is the Romanian Government through the Ministry of Investments and European Projects the managing authority for the Smart Growth, Digitization and Financial Instruments programme 2021-2017. These funding plans normally covers the structural costs and the services that EDIHs provide to users, which could be a funding model for the more transversal flagship initiatives depicted in the JAP, such as *FI1. Building a Network*

of DIHs for P4 Medicine and FI2. European Catalogue of the DIHs' flagship services for Digital Health.

Interestingly, the European DIH in Transilvania has submitted a proposal to the Romanian government, advocating the recognition of EDIHs as a national strategic initiative to increase the level of digital transformation of SMEs and public organisations. If approved by the government, Romanian EDIHs would be recognised as key entities in various funding programmes related to digital transformation and innovation, and consequently their services and actions would be eligible for funding. For example, in national funding calls supporting the acquisition of digital solutions and technologies by SMEs, EDIHs are authorised by the government to conduct technical audits to identify urgent digital needs. Each audit would have a specific eligible cost of up to EUR 5,000. This could guarantee funding for some actions proposed in the JAP in a mid term future, specially for those included in *FI2. European Catalogue of the DIHs' flagship services for Digital Health, FI3. Interconnected DIHs that act as regional contact points to give support on the EHDS and FI4. EDIHs for Health Data literacy: Education & Training*

In addition to national funding, EDIHs receive support from their regional government for the operation of the hub and for project development. For example, DIH-bio benefited from a two-year call project co-funded by both the Universidad Autónoma de Madrid and the regional government of la Comunidad de Madrid to establish and strengthen the consortium and develop the catalogue of services. Establishing and securing this co-financing model in the long term could be sufficient to implement some of the actions outlined in the JAP. In the North-West region of Romania, the Regional Development Agency coordinates a [regional programme](#) which has among its priorities the digital transformation and healthcare components and has a total budget of 1.43 billion EURO for the 2021-2027 period.

As part of the funds from the Spanish Government's Recovery, Transformation and Resilience Plan, the [Territorial Networks of Technological Specialisation](#) (RETECH) may be an interesting example to finance part of the JAP, especially those flagship initiatives that aim for collaboration among regions, such as *FI1. Building a Network of DIHs P4 Medicine, FI3. Interconnected DIHs that act as regional contact points to give support on the EHDS or FI4. EDIHs for Health Data literacy: Education & Training*. This funding project, with over 500 million EURO, aims to launch digital transformation projects throughout the Spanish territory jointly promoted by several regions, and to achieve a major economic and social impact through the involvement of industry, including SMEs and startups, and other institutional agents. RETECH lines of action are diverse, including digital health and personalized medicine as one of the key sectors for the success of the digital transformation.

In Romania, the National Health Programme for the period 2021-2027 identifies some priority areas of work in which the actions proposed in the JAP could fit, such as "Priority 5. Innovative approaches in medical research' and 'Priority 6. Digitisation of the medical system". For example, one action point is to support SMEs/large enterprises for innovative/advanced technologies for the clinical field, which may be something that the actions presented in *FI6. Establishing Hospital Co-creation Testing Services* could address with financial support from this source.

The Slovenian government offers a wide range of non-financial support for businesses, especially for potential entrepreneurs and SMEs in the healthcare sector. This support includes professional advice, consulting, mentoring, guidance, workshops, training, skills development, identification of new business opportunities and exchange of best practices. To facilitate the long-term implementation of the flagship initiatives, in particular *EDIHs for Health Data Literacy: Education and Training (FI4)*, and Flagship Initiative 5 (FI5), which focuses on *building trust and digital health literacy*, this support will be carefully organized throughout Slovenia through dedicated support environments and networks.

In addition, Slovenia is implementing a robust incentive mechanism for SMEs by offering low value vouchers to stimulate innovation and development. This includes a special voucher for prototypes and pilot projects, which serves as a financial instrument for SMEs. This voucher can be used directly to fund the *Hospital Co-Creation Testing Services developed under Flagship Initiative 6 (FI6)*, enabling SMEs to make a significant contribution to the further development of digital health solutions.

A relevant aspect of the JAP is the ability to engage the authorities in the implementation of the different flagship initiatives and actions outlined in the JAP in terms of regional strategic planning and funding of these actions. In the case of the Community of Madrid, collaboration with the Regional Ministry of Digitalisation ("Consejería de Digitalización") and its Directorate of Digital Health ("Dirección General de Salud Digital") will be crucial for the formulation of regional public funds that can support the different actions and flagship initiatives presented in the JAP. In France, funding opportunities launched by the Health Regional Agencies (Agences Régionales de Santé) include annual calls for projects to support digital literacy, training and the development and use of digital technologies in the healthcare sector in the regions of Auvergne Rhône-Alpes and Île de France. This provides an opportunity to explore for potential co-funding opportunities to sustain *FI4. EDIHs for Health Data literacy: Education & Training* and *FI5. Building on Trust and Digital Health Literacy*.

2. Public-Private Funding Partnerships

Public-Private partnerships (PPPs) facilitate collaboration between public sector entities, private companies, research organisations and other stakeholders to establish and operate EDIHs. In this format, public sector entities generally provide funding, regulatory support and access to public resources, while private partners contribute financial support, expertise technology and resources. PPPs enable EDIHs to leverage the strengths and capabilities of both public and private sector partners to drive digital innovation, technology adoption and economic development.

- **Membership fees:** some EDIHs, innovation clusters and networks, such as EIT Health or ECHAlliance, have adopted a membership-based funding model, whereby businesses, research organisations and other stakeholders pay membership fees to access the services, facilities and expertise offered by them. Thus, membership fees can provide a sustainable source of income to support the implementation costs of the JAP or part of it. Membership fees could be sufficient to support the operation and

sustainability of the actions involved in more transversal flagship initiatives, such as *FI 1. Building a Network of DIHs for P4 Medicine* and *FI2. European Catalogue of the DIHs' flagship service for Digital Health*. This funding model can also complement part of the budget needed for implementing the rest of the flagship initiatives.

- **Service fees:** While membership fees typically cover benefits and services such as networking and collaboration opportunities, access to funding and investment opportunities, additional service fees may be charged for more concrete and specific actions such as training programmes or support for innovation and technology development. This service fee may vary depending on several factors, including the scope of services provided, the level of membership and the financial model adopted by the institution that may implement the JAP. These service fees may be structured as part of the annual membership fee or charged on a per service basis. This type of funding can be used to cover concrete actions as for example those depicted in *FI3. Interconnected DIHs that act as a regional contact point to give support on the EHDS*, *FI4. EDIHs for Health Data literacy: Education & Training* and *FI6. Establishing Hospital Co-creation Testing Services*.
- **Project funding:** project-based initiatives funded by public grants, private investment or a combination of both such as collaborative research projects, innovation pilots, demonstration projects and technology transfer initiatives are a good mean of getting funding for the implementation of the JAP. In addition to the economic contribution, project funding can enable EDIHs or other organisations willing to implement the JAP to build partnerships, expand their networks and attract additional funding and investment to support their long-term sustainability and growth. An example of this, is the [Innovative Health Initiative](#), an EU public-private partnership funding for health research and innovation projects that address public health needs, improve patient's lives and boost the competitiveness of Europe's health industries.

3. Private Funds

When it comes to funding innovation projects and organisations such as EDIHs, private funding complements public funding sources and provides access to additional resources, expertise and networks. Partnerships with private investors, companies and industry stakeholders can increase the impact of healthcare innovation projects and initiatives, contributing to the advancement of Europe's digital economy and the well-being of society.

- **Industry contributions:** Industry partners, including large companies, SMEs and start-ups, can provide funding and resources to support the implementation of the JAP, either by funding the implementation of the whole JAP or specific actions. Industry contributions can take the form of financial support, in-kind contributions, access to technology and expertise, and collaboration on research and development projects. The EDIHs-led ecosystem is composed of stakeholders from the quadruple helix of innovation, including industry partners, providing a suitable environment for the

implementation of the initiatives outlined in the JAP with industry contribution.

- In Slovenia, the DIGI-SI EDIH has introduced a mixed funding model for its services. Fifty percent of the funding comes from the EDIH Digital Europe grant, another 25 percent is provided by the local government, and the remaining quarter is co-financed by the companies using the EDIH services. This mixed funding approach helps to focus on companies that are willing to pay something for the services and support their digital transformation efforts while at the same it ensures a diversified financial base and supports the sustainability and wide reach of the EDIH services.
- **Venture capital and investment:** EDIHs attract investment from venture capital firms, angel investors and other sources of private investment within their ecosystem to support the development and scaling of innovative digital solutions and start-ups. This funding model can indirectly contribute to the sustainability of FI2. European Catalogue of DIHs' Flagship Services for Digital Health and FI5. Building trust and digital health literacy by directly supporting start-ups to scale.

In Slovenia, the establishment of the Vesna Venture Capital Fund represents a significant step towards accelerating innovation in the field of **P4 medicine**, underlined by the fund's strategic focus on deep-tech technologies. The €50 million aim to promote the development and market introduction of scientific and technological excellence in a variety of sectors such as artificial intelligence, robotics, energy, **healthcare**, biomaterials and cybersecurity.

In addition, the first European fund dedicated to digital health, based in Spain and promoted by [CRB Inverbio SGEIC](#), a Spanish private venture capital management company specialised in investing in innovative early-stage start-ups in the biotech, medtech and digital health sectors, with a target of €40 million to be raised from both Spanish and European private investors and public funds from the Spanish and EU governments. This fund will focus on investing in projects across all European regions in three verticals: 1) artificial intelligence applied to health for digital diagnostics, 2) digital therapeutics as alternatives to traditional drugs, and 3) digital platforms for virtual health and health data integration. This type of funding, in principle, tends to focus on investing in early-stage start-ups that are already approaching the commercial stage. Thus, some of the actions of the JAP could be implemented by start-ups that could access such funding.

4. Expanding the scope through non-financial sustainability considerations

4.1. Partnership and collaboration frameworks

As stated in the JAP, there are several strategic initiatives which are of interest to the DIHsP4_Medicine’s sustainability, such as: EDIH Network, European Institute of Innovation and Technology (EIT), Enterprise Europe Network, ECH Alliance – Global Health Connector and Testing and Experimentation Facilities (TEFs). Such existing initiatives can contribute to the development of the SLs proposed in the JAP and also to improve the activities by offering complementarity in dedicated collaborations with potential of gathering advantages towards DIHsP4_Medicine actors and the representatives of each initiative. For example, through the JAP, the partners foresee a very strong connection with the EDIH network and its thematic group of Digital Healthcare because of its complementarity, involvement of the EDIHs with similar mission and objectives.

Targeted initiative	Short description	Alignment with FIs
European Digital Innovatin Hubs Network – EDIH Network	DIH Network comprises 151 funded EDIHs and 76 EDIHs were awarded with a Seal of Excellence, out of which 95 are working or target beneficiaries from Health care sector. This bring an important opportunity for the DIHsP4_Medicine to attract collaborators and members of its network.	ALL FIs
European Institute of Innovation and Technology - EIT	The European Institute of Innovation and Technology is an independent body of the European Union, intended to strengthen Europe's ability to innovate. Through EIT Digital and EIT Health, specific collaborations of mutual gains can be initiated. For example, joint delivery of courses/training on latest technologies which can be used within the healthcare sector, as well as working on collaborative innovative projects.	FI1, FI4, FI5
Enterprise Europe Network – EEN	EEN comprises over 450 organizations acting as local/regional contact points in more than 40 countries. It manages Europe's largest online database of business opportunities and, since 2008, has facilitated activities such as networking, matchmaking and business cooperation. Thus,	FI1, FI2,

	members of DIHsP4_Medicine network, can act as an EEN regional contact point to deliver such services towards its clients. Additionally, part of the costs for these services can be covered through the European funding dedicated for the EEN program.	
ECH Alliance – Global Health Connector	This is the largest global network of healthcare actors, with over 1000 members present in 78 countries, the initiative promoted collaborations which can contribute to the P4 paradigm in medicine and a better health care system. Collaboration with this initiative first of all can ensure a strong database of clients and potential collaborators on a global scale. Various types of collaborations can be considered, as it has various types of stakeholders.	F11, F12, F14, F15
Testing and Experimentation Facilities (TEFs)	TEFs mission is to support AI developers to bring trustworthy AI to the market more efficiently, and facilitate its uptake in Europe. TEFs are specialised large-scale reference sites open to all technology providers across Europe to test and experiment at scale state-of-the art AI solutions, including both soft-and hardware products and services, e.g. robots, in real-world environments. DIHsP4_Medicine aims for a collaboration with TEF-Health which will provide standards for certification and quality control to facilitate market access for trustworthy AI, ensuring easy and streamlined evaluation. This connection will allow the members of DIHsP4_Medicine to contribute to the innovation process and development of new technological products.	F12, F13, F14, F16
EuroHPC JU	The European High-Performance Computing Joint Undertaking (EuroHPC JU) is a public-private partnership in High Performance Computing (HPC), enabling the pooling of European Union-level resources with the resources of participating EU Member States and participating associated states of the Horizon Europe and Digital Europe programmes, as well as private stakeholders. Collaboration with EuroHPC will allow the clients of	F13, F14, F16

	DIHsP4_Medicine, innovating clients to have access to computing power for experimentation and will allow rapid prototyping of new technology in the healthcare field.	
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Table 4 Potential partnership and collaboration networks

Collaboration with these initiatives in a strategical and constant approach, can ensure scalability and replicability of the actions aimed through the JAP and its FIs, so that the success stories can be promoted and attract more clients and actors involved in each of these. Setting-up of strategic collaboration with these initiatives will also add another layer of validation, in the eyes of the beneficiaries of the JAP, who already interacted with these initiatives. For example, clients with previous experience in interaction with EEN contact points, can see in a positive way the collaboration with members of DIHsP4_Medicine, if they offer similar services. Or a strategic partnership with EuroHPC JU, will provide more credibility to the DIHsP4_Medicine, adding to its portfolio more opportunities.

Last but not least, most of these initiatives have validated their added value to the ecosystem and industry in the long-term period and can be reliable partners. These initiatives have also secured a stable revenue of funding for its activity and can offer their services free of charge to the users of the DIHsP4_Medicine.

4.2. Capacity building, knowledge sharing and stakeholder engagement

The actions defined in the JAP enhances digital health capabilities across various expertise by using targeted educational initiatives and frameworks for co-creation in three flagship initiatives. In particular, *FI4 - EDIHs for Health Data Literacy* and *FI5 - Building on Trust and Digital Health Literacy* focus on developing comprehensive education and training programs. These programs aim to improve stakeholders' understanding of health data management, digital health technologies and related ethical considerations. In addition, by *establishing co-creation testing services for hospitals in FI6*, JAP is fostering an environment where healthcare professionals, SMEs and patients innovate together and directly apply and improve their digital health skills in practice. Through these measures, the JAP ensures that a wide range of stakeholders are able to navigate and contribute to the evolving digital health landscape on P4 medicine.

To ensure stakeholder engagement, it's crucial to clearly articulate the specific benefits for each group involved. Healthcare professionals, already burdened by their demanding roles and the need for constant medical progress, must see a clear benefit in participating in the activities described in the flagship initiatives. By executing the actions, it has to be clear how these initiatives can improve their practice, contribute to their professional development or improve patient outcomes to secure their commitment.

Partnerships with healthcare educational institutions, such as medical schools and specialized health IT programs on STEM faculties can significantly expand the ecosystem's engagement and innovation capacity and secure its sustainability beyond a project's timeline. These partnerships can facilitate the integration of current digital health trends and innovations into the curriculum and ensure that future healthcare professionals are well versed in digital health applications. In addition, collaboration with organizations that coordinate physician licensure can help align digital health initiatives with continuing professional education requirements to ensure that practicing health professionals remain current in digital health literacy and application.

In Slovenia, DIH Healthwise has partnered with the Medical Chamber of Slovenia and registered the Digital Health Ljubljana 2024 conference as continuing medical education event. Participating physicians thus received credits for maintaining their license by actively participating in the conference, which strengthened interest and collaboration among medical professionals. (The conference program theme has been innovation and implementation of new technologies across the P4 paradigm.)

The sustainability and success of the actions outlined in the JAP, depend on DIH engaging the various stakeholders not only as beneficiaries but as integral partners in the journey. By fostering a culture of trust and collaborative innovation, we can ensure that the JAP's initiatives have an impact well beyond their lifespan and embed sustainable practices and knowledge into the digital health ecosystem.

4.3. Intellectual property management

For projects under *Flagship Initiative 6: Establishing hospital co-creation testing services*, intellectual property management is critical to ensure that innovations developed through collaboration are protected and fairly allocated. A clear intellectual property framework will be established, setting out the rights and obligations of all stakeholders, including hospitals, healthcare professionals, SMEs and patients involved in prototyping projects. This framework will facilitate the transparent exchange of ideas and technologies while protecting the rights of inventors, promoting the commercialization of successful prototypes and ensuring a fair distribution of benefits among stakeholders.

5. Risk management and contingency planning

Incorporating an effective risk management framework into the JAP sustainability plan not only serves to anticipate and mitigate potential setbacks, but also significantly increases the viability and overall success of the plan. By systematically addressing risks such as data privacy, regulatory compliance and resource allocation, we strengthen the resilience of our flagship initiatives. This strategic foresight will ensure that the JAP remains agile, adaptable and forward-looking, creating a solid foundation for achieving its ambitious goals in promoting collaboration, improving digital health literacy and ensuring accessible health data, thereby ensuring the long-term impact and viability of the plan.

The section outlines several key risks for the JAP implementation, detailing the likelihood and severity of each, alongside the strategic lines involved and proposed risk mitigation measures categorized into preventive and corrective measures. They aim to ensure the JAP’s resilience and adaptability to potential challenges.

Description of risk [level of likelihood]: Low/Medium/High)	Strategic lines involved	Proposed risk-mitigation measures ([P] preventive measures, [C] Corrective measures
Insufficient stakeholder engagement [L:M]	SL1, SL3	[P] The JAP includes targeted communication strategies, such as personalized outreach and engagement activities, to ensure relevance and appeal. [C] Re-evaluate and adjust engagement strategies based on feedback to better meet stakeholder needs and interests.
JAP defined actions do not provide meaningful results [L:M]	ALL	[P]The JAP actions involve monitoring and evaluation steps that will be continuously refined. The JAP will also be validated for relevance and impact through stakeholder consultations (validation in WP4) before taking into action. [C] If participants in the validation phase do not provide significant conclusions, additional stakeholders will be involved to generate more data.
Health data privacy and security risks [L:M]	SL 2	[P] The strategic line actions involves educating SMEs on ethical and secure ways to access and utilize data within the EHDS for research and innovation development. Training programs will be developed to improve understanding of data protection laws, emphasizing the responsible use of health data, and navigating EHDS's frameworks. [C] Providing access to a toolkit or resource center with guidelines, best practices, and technical support for secure data handling within the EHDS framework.
EU or national regulatory changes in digital health	SL2 and SL3	[P] a regulatory watch team will ensure the JAP stays aligned with the latest health data regulations, crucial for

		<p>maintaining compliance and trust in the P4 medicine paradigm</p> <p>[C] workshop materials and curricula are regularly revised in response to new regulatory insights, ensuring all training and dissemination activities reflect current standards</p>
JAP funding shortfalls [L:H]	ALL	<p>[P] diversifying funding sources—exploring EU grants, private investments, and public-private partnerships—and developing a contingency budget allowing for flexibility and resilience in the face of unexpected funding challenges.</p> <p>[C] reassessing and streamlining project expenditures to focus on high-impact activities can ensure the most efficient use of available resources.</p>
Lack of expertise [L:H]	SL2, SL3	<p>[P] building a robust network of experts and internal training will ensure a steady flow of skilled professionals into the digital health field.</p> <p>[C] Contracting external consultants, establish partnerships with academic institutions and professional associations to create a talent exchange program that can offer temporary assignments or project-based collaborations, providing immediate access to specialized expertise in digital health.</p>
Barriers to reach the target stakeholders [L:M]	SL1, SL3	<p>[P] DIHs have a deep knowledge of the key actors in their region and have a high capacity to engage them in dialogue.</p> <p>[C] If some of the partners have difficulties in reaching one of the target groups in their territory, the other partners will make an additional effort to reinforce contact with such entities located in their respective regions.</p>

Table 5: Risks and mitigation plans

6. Conclusion

In this sustainability plan, we have set out a comprehensive strategy to ensure the long-term sustainability and impact of our joint action plan to accelerate P4 medicine and digital health transformation in Europe. Our plan highlights the central role of Digital Innovation Hubs in fostering collaboration, improving digital health literacy and facilitating access to health data. As we move forward, the adaptability of DIHs to the evolving digital landscape, combined with our focus on collaborative partnerships and innovative funding models, will be critical. The document outlines a variety of available funding modules, including European Union programs such as Digital Europe and Horizon Europe, national and regional funds, and public-private partnerships.

An (E)DIH should tailor its funding strategy to its specific needs and the availability of resources in its region. This plan presents a wide range of national programs and innovative ideas and provides (E)DIHs with the flexibility to identify and use the most appropriate resources. By customizing their funding approach, (E)DIHs can ensure that they are optimally supporting their P4 medicine and digital health transformation initiatives, thereby increasing their sustainability and impact within their respective ecosystems.

Realizing the transformative potential of P4 medicine will require a concerted effort and shared vision from all healthcare stakeholders, from policy makers to healthcare providers and patients. DIHs must commit to harnessing these collective efforts and innovative strategies to not only sustain but also amplify the impact of digital health initiatives and ensure that they contribute significantly to the advancement of healthcare in Europe and beyond.