



## Regional Action Plan for Hungary

### Part I – General information

Project: HELIUM - Health Innovation Experimental Landscape through Policy Improvement

Partner organisation:

- Semmelweis University Health Management Training Centre (PP6)
- ÁEEK National Healthcare Service Center (PP7)

Other partner organisations involved (if relevant): not relevant

Country: Hungary

NUTS2 region:

- Central Hungary (base of the partner organisations)
- whole country (indirect impact of the project)

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This action plan has been endorsed by the Managing Authority of the Economic Development and Innovation Operational Programme by a letter of Acknowledgment of Receipt dated 8<sup>th</sup> November 2018.

The Action Plan aims to impact:

- ✓ Investment for Growth and Jobs programme
- European Territorial Cooperation programme
- Other regional development policy instrument

Name of the policy instrument addressed: Economic Development and Innovation Operational Programme

In Hungary the highest amount of R&D expenditure is spent on pharmaceutical and medical products, and the 4th highest amount on human health services amongst economic sectors. In an overall EU level comparison Hungary however lags behind: on the Innovation Union Scoreboard Hungary is rated as moderate innovator. Public investment in R&I is only 57% of the EU average, coupled with huge geographical discrepancies: only ca. 1/3 of the R&D expenditure is spent in regions outside Central Hungary. These manifold challenges require targeted efforts – this is served by the national S3, which identifies “Healthy society & wellbeing” as a priority, based on the existing strengths in health innovation performance, and the urging societal needs posed by the ageing society.

EDIOP identifies the following weaknesses: centres of excellence with international recognition are missing due to the unsatisfactory quality and availability of R&D&I infrastructures, low intensity of connections among actors and with international networks, inadequate technology transfer mechanisms, and low demand for R&I results. The general environment for business support and the innovation ecosystem is underdeveloped resulting in the failure of many innovative ideas, start-ups and spinoffs.

EDIOP is the largest national SF programme of Hungary, allocating more than 8 billion Euro for improving the country’s competitiveness. It mainly targets less developed regions, but applying the relevant flexibility rules, also partly addresses Central Hungary. It creates synergies and complementarities among all other SF programmes of Hungary, incl. the Competitive Central Hungary regional OP. Priority Axis (PA) 2 is dedicated to improving research, technology and innovation via 1) strengthening R&I capacities and improving connectivity with international networks to increase participation in H2020 programme; 2) increasing R&D&I activity in businesses; and 3) improving strategic R&I networks and cooperation among innovative SMEs and research institutions. PA8 complements these measures with financial instruments to be made available to SMEs. Innovation support under PA2 and PA8 specifically targets smart specialisation sectors identified by the national S3, incl. the priority “Healthy society and wellbeing”, which promotes the widespread use of advanced health industry technologies in order to maintain and improve the general health condition of the society. EDIOP is identified as the key source for funding innovation in smart specialisation sectors, therefore it has to pay high attention to the specific characteristics of innovation systems in different fields. This action plan seeks to give support to EDIOP in identifying efficient measures in aid of addressing innovation in health.

## Part III – Details of the actions envisaged

### ACTION 1 – Innovation Hubs

#### 1. The background

Health economy is one of the biggest and fastest-growing growing sectors in the world. Global health care spend projected to reach \$8.7 trillion by 2020, while % of GDP spent on health care should also rise slightly, from an estimated 10.4 % in 2015 to 10.5 % in 2020. [2017 global health care sector outlook - Deloitte's yearly look<sup>1</sup>] These numbers show that health systems try to increase efficiency by improving outputs and controlling costs. New challenges emerged or got more significant nowadays, therefore, traditional care models are unlikely to cope with them in high-income and transition economies. Innovation is needed both in macro (system) and micro (organizational, product and service) level. EU regions are well aware of the need to increase sustainability of healthcare systems and recognise that tackling this societal challenge through innovation can also bring financial benefits and economic growth. Innovation holds promise to help reduce inefficiencies in health-care delivery, improve access, increase quality, and make medicine more personalized and precise in an era of increasing budget constraints. [Digital health nation: Israel's global big data innovation hub <sup>2</sup>] This is only true, however, if innovations fit the complex needs of the care system, thus can be implemented and translated into successful business models. Innovative ideas often fail due to bottlenecks in innovation systems to efficiently facilitate their scouting, creating, valorising and market uptake. Participating regions of INTERREG Europe HELIUM project identified health, wellbeing & life sciences as smart specialisation sectors with high innovation potential, which they are willing to promote with substantial amounts of public funds.

Semmelweis University (SU) and National Healthcare Service Center (AEEK) joined HELIUM project to increase the efficiency of public funding dedicated to health innovation. Regional Stakeholder Group (RSG) was set up to engage Hungarian stakeholders through a series of meetings. This offered the opportunity for identifying and draw the local situation (key challenges), as well as delivering the following suggestions (recommendations) with the objective to improve the selected Policy Instrument considering the transfer of key elements and learnings of good practises identified by HELIUM partnership.

Since its start HELIUM project has been focusing on finding good practices (GP) for boosting innovation in health economy by fostering and granting co-creation at INNOVATION HUBs and LIVING LABs. Hungarian partners (SU and AEEK) utilizing the learnings provided by HELIUM partnership found that there are unexplored opportunities in offering grants for co-creation at INNOVATION HUBs and LIVING LABs through EDIOP calls for proposals to the stakeholders of the Hungarian healthcare ecosystem. Hungarian partners look at INNOVATION HUBs as places and tools for professional-user led co-creation, while LIVING LABs are centres for individual-user led innovation. Supporting these forms can be implemented separately, but we believe that using both of them in a complex program can deliver even more increased efficiency at policy level.

The Action Plan, therefore, consists of two actions (Action 1 for Innovation Hubs and Action 2 for Living Labs), and we recommend to implement both actions.

Below there is a summary of the lessons learnt in the area of SCOUTING, CREATING, VALORISING AND UPTAKE OF INNOVATION during the project implementation which were split into 3 main parts alongside the following issues: (1.1) Key challenges, (1.2) Recommendations and (1.3) Good practices. This constitutes the basis for the implementation of **ACTION 1** of our plan:

#### 1.1. KEY CHALLENGES:

The following key challenges were identified by AEEK and their stakeholders in the area of INNOVATION ECOSYSTEM – WITH SPECIAL FOCUS ON SCOUTING NEEDS AND CREATING INNOVATION

<sup>1</sup> <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-2017-health-care-outlook-infographic.pdf>

<sup>2</sup> [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)30876-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)30876-0/fulltext)

- 1.1.1. **At individual level:** Patients, families and people in general are not (or quite rarely) identified as key stakeholders and directly involved in the process of scouting their unmet or most pressing needs, interest and tensions or conflicts. Not all stakeholders are equally important, however, some of them exercises the most influence on Stakeholder Consumption Chains (or Value Chains). In health economy people are not considered to have the appropriate knowledge in technical and life sciences to be identified as key stakeholders in deed. However, their involvement in scouting their needs and co-creating innovative solutions to satisfy them, likely helps to “find opportunities for changing a prevailing consumption chain—perhaps eliminating some steps or adding others by applying a new technology”. [*How to Get Ecosystem Buy-In, Martin Ihriglan MacMillan, HBR MARCH–APRIL 2017*<sup>3</sup>]  
 Unfortunately not only industry or research players miss mapping stakeholders and assessing their role in the Stakeholder Consumption Chains, but policy makers and ESIF programme-planners and operators do so as well. Therefore, existing funding actions and calls do not foster and assist beneficiaries to involve patients and families.
- 1.1.2. **At social level:** Many populations (organized by morbidity, age, location or profession, etc.) has their communities appearing at the social media or shaping official form (e.g. association). They not only represent the common interest, needs and tensions of their membership, but may demonstrate their own interest as an independent entity. They are frequently involved to “seal” the result of a particular development process as they are able to block the validation or the market uptake of the outcome. However, they are rarely involved in the early stages of innovation, such as scouting the needs and creating the innovation, despite they can find, finance and provide experts with the necessary professional knowledge. Unfortunately policy makers and ESIF programme-planners and operators forget about their role in scouting and co-creation.
- 1.1.3. **At professional level:** Physicians, health professionals and care providers (public and private institutions) are acknowledged players of clinical trials, they may be involved in health technology assessment and validation, and working out new guidelines, methodologies, protocols. However, they are contacted as research or HEI staff or organizations. This is quite important on the one hand, but on the other hand they are not contacted as end-users/customers, who have needs, expectations and tensions. They’d be able to define “non-negotiables”, “differentiators” and “dissatisfiers” [4] if they were asked, motivated and trained to express their perspective (how they experience having their need satisfied). Considering that the lack of physicians and health professionals is one of the most urgent and long lasting problems in healthcare system, forthcoming innovations should find what are the needs professionals and institutions feel unmet and how the lack of satisfaction leads to the lack of staff. Innovation in health may deliver solution to a technical or technological problem, as well as to organizational, management and system dysfunctions. Therefore, policy makers and ESIF programme-planners and operators are facing the challenge of looking at professionals and institutions as independent or partner beneficiaries and/or vendors of eligible services not only in validating, but in scouting and creation phases of RDI activities.
- 1.1.4. **At public level:** Standardization, assessment, authorisation and regulation (of technology, methods, procedures, services, curricula and activities etc.) are important actions performed by public authorities. Without these activities success of innovation may be questioned, however, only some of them are taken in consideration when calls for proposals are designed. E.g. health technology assessment needs time and funding (at least temporarily). Unfortunately policy makers and ESIF programme-planners and operators have not paid too much attention to the time and financial resources required by health technology assessment if needed. Furthermore, policy makers and ESIF programme-planners and operators forget about the driving role of public. When identification of technical specification of goods or services is difficult or impossible due to the need for new solutions, public as leading procurer in most markets can open innovation procurement procedures (PPI, PCP). Unfortunately both sides (public procurers and vendors) are lacking experience, expertise, information and grit to prepare and open such a call for innovation tender or submit a bid (proposal).

<sup>3</sup> <https://hbr.org/2017/03/how-to-get-ecosystem-buy-in>

<sup>4</sup> <https://hbr.org/2017/03/how-to-get-ecosystem-buy-in>



- 1.1.5. **At integrated level:** Connecting individual, social, professional and public levels with other stakeholders, especially academia, research, HEI and business (industry, funding and investment) needs identifying common interests, common overarching goals and common grit to eliminate the obstacles to satisfy “non-negotiables”, “differentiators” and “dissatisfiers” of the co-operating partners or parties. Despite the text of EDIOP contains explicit reference to the importance of quadruple helix cooperation, no call for proposal have been dedicated to fostering or assisting such partnerships for scouting needs and/or co-creating innovation.
- 1.1.6. **At complex level:** Operational programmes are capped to a certain extend in order to avoid double financing. Fortunately meeting this important requirement do not exclude complex programming when interventions of one programme can be built on the results or impacts of another one. The success of innovative programmes in health sector has or likely have considerable, even disruptive effects on certain markets in health economy. For instance one-day surgery, or other ways of deinstitutionalisation, or integration of emergency and traumatology, as well as improving functions of national digital health system have received funding in HRDOP for developing infrastructure, equipment and methodology due to new technology. In the same time, results of these projects are going to create new needs for further innovation. This process opens new markets where dedicated funding actions – following the Pareto principle on the one hand and the intervention logic of the RIS3 and Industry 4.0 strategies on the other hand – may efficiently boost growth in health economy and generally. Unfortunately EDIOP have not followed these intervention of HRDOP yet, and have not opened calls dedicated to these sectors or markets.
- 1.1.7. **Risks and threats:** There are great opportunities in data and digital health economy, however, the threat of damages to reliable source and safe use of DATA, or the risk of abuse, violating privacy, ethical problems, lack of assessment and early implementation must be taken into consideration. Furthermore, early implementation is risk for other technology as well. Therefore, special knowledge regarding health technology and digital health would require specialized expertise to allocate and distribute funds dedicated to certain health industry innovation cooperation. Familiar solutions in the implementation setup were used in the Norway Grants and have been introduced in the occupational actions and the financial instruments of EDIOP.
- 1.1.8. **Towards a New Innovation Ecosystem:** There is a major paradigm shift in the European R&D and Innovation System. Policy makers and research community, as well as private investors and managers realized that user-centred, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings offer more effective and efficient way to define and put new products and services on the market. EU funding programmes and calls have been launched to promote user oriented stakeholder cooperation in R&D and innovation. EDIOP also declared to promote innovation and especially R&D activities delivering marketable inventions and products. It focuses on B2B, B2R&D and triple helix ways of cooperation, but unfortunately pays less or no attention to the complete stakeholder cooperation in the whole innovation process. In the project selection and granting practice of EDIOP neither the uptake and the valorisation of innovation, nor the user-centred co-creation and the scouting of needs have been given the necessary significance so far.. In this way pillars of the new innovation ecosystem (Living Labs and Innovation Hubs) have not got dedicated funding measures yet.

## 1.2. RECOMMENDATIONS:

- 1.2.1 Patients, families and people in general shall be identified as key stakeholders and directly involved in the process of scouting their unmet or most pressing needs, interest and tensions or conflicts. Industry, research and public players should be fostered to map stakeholders and assess their role in the Stakeholder Consumption Chains. Policy makers and ESIF programme-planners and operators are recommended to promote and grant beneficiaries to involve patients and families into co-creation.
- 1.2.2. Social level actors should be involved in the early stages of innovation, such as scouting the needs and creating the innovation. Policy makers and ESIF programme-planners and operators are

recommended to encourage them to enter, as well as other stakeholders to identify their role in scouting and co-creation.

- 1.2.3. Professional actors, such as physicians, health professionals and care providers (public and private institutions) should be involved in innovation projects as end-users/customers to scout their needs, expectations and tensions. They should be asked, motivated and trained to express their perspective, how they experience having their need satisfied, and cooperate with them to define their "non-negotiables", "differentiators" and "dissatisfiers". Policy makers and ESIF programme-planners and operators are recommended to look at professionals and institutions as independent or partner beneficiaries and/or vendors of eligible services not only in validating, but in scouting and creation phases of RDI activities.
- 1.2.4. Policy makers and ESIF programme-planners and operators are recommended to explore the driving role of public. When identification of technical specification of goods or services is difficult or impossible due to the need for new solutions, public as leading procurer in most markets can open innovation procurement procedures (PPI, PCP). Acknowledging that both sides (public procurers and vendors) are lacking experience, expertise, information and grit to prepare and open a call for innovation tender or submit a bid (proposal), we recommend to prepare one measure for public procurers and another one for bidders – especially for SMEs.  
In addition, taking into consideration that health technology assessment (HTA) requires time and financial resources, policy makers and ESIF programme-planners and operators are recommended to provide financial support for SMEs to prepare for HTA.
- 1.2.5. In line with the text of EDIOP, we recommend policy makers and ESIF programme-planners and operators to foster quadruple helix cooperation for scouting needs and/or co-creating innovation.
- 1.2.6. Policy makers and ESIF programme-planners and operators are recommended to explore the opportunities of the results achieved by innovative programmes in health sector. For instance development of one-day surgery, or other ways of deinstitutionalisation, and integration of emergency and traumatology, as well as improving functions of national digital health system have considerable impact on the market of new medical, digital and smart technology by creating new needs for further innovation. This process should be strengthened and fostered by funding actions dedicated for SMEs and their collaborating quadruple helix partners to co-create innovative products and services designed to scout and meet the new needs appearing at the emerging markets developed by health interventions.
- 1.2.7. Involvement of specialized organizations and/or centres is recommended to ensure proper allocation and distribution of funds dedicated to cooperation in health industry innovation in order to increase positive impacts of user-centred co-creation and diminish negative effects of early implementation or other risks of abuse, violating privacy, ethical problems, lack of assessment. Familiar solutions in the implementation setup were used in the Norway Grants and have been introduced in the occupational actions and the financial instruments of EDIOP.
- 1.2.8. Policy makers and ESIF programme-planners and operators are recommended to prepare dedicated funding measures for the main pillars of the new innovation ecosystem of user-centred co-creation, especially Living Labs and Innovation Hubs.

### 1.3. GOOD PRACTICES:

As part of the project implementation good practices (GPs) were collected, discussed and approved by HELIUM partnership. Hungarian partners selected relevant ones from the list of the collected GPs. Selected GPs were introduced and examined through staff exchange visits, and assessed in regional stakeholder meetings in Hungary if and how they are transferable. The final set of the GPs providing learnings to **Action 1** offer replicable elements and methods for involvement of end-users, especially professional carers into scouting needs and co-creating new technologies for health economy, and to a greater or lesser extent valorising and uptake of innovation.

New calls and projects may be initiated based on these elements and methods, however, they can be and must be applied and redesigned to fit the specific Hungarian legal, social, infrastructural, institutional and market conditions, existing quality and level of technological services etc.

The following Good Practices were selected for **Action 1**:

- Innovation Scouts – UK
- Alder Hey Innovation Hub – UK
- Resolve – PT

#### 1.3.1. Innovation Scouts – UK

It is a good practice of communities of practice that are reported to be a valuable method of knowledge transfer; allowing people in systems to share tacit aspects of a particular concern, problem or passion and who want to deepen knowledge by interacting on an ongoing basis (Wenger et al 2002). The Innovation Scouts are the first supported community of practice set up around the topic of innovation in the public sector in the UK. The Innovation Scout Programme has been up and running for 3 years and was developed in response to NHS England's 5 Year Forward Plan "creating the conditions and cultural change necessary for proven innovations to be adopted faster and more systematically through the NHS, and to deliver examples into practice for demonstrable patient and population benefit". Crucial stakeholders are NHS England, Health Education England, provider health care organisations (20 PHCOs, incl. Alder Hey Children's FT), Clinical Commissioning Groups (8 CCGs) and local authorities. The Innovation Scout gives an opportunity to begin to build a culture of innovation across health system. The scouts meetings are facilitated by the Innovation Agency, the AHSN for the North West Coast, and they come together to share experiences and learning in relation to 'putting innovation into practice. The scout role is voluntary and they come from a wide range of health and social care organisations and are nominated by their Chief Executive. She/he a member or have access to the Executive Team and she/he is motivated to bring about improvements to patient outcomes, cost effectiveness and patient experience through the use of new techniques, products or treatments. The role of an Innovation Scout is to encourage a culture of innovation within their organisation and to proactively promote and encourage adoption of evidence-based innovations, integrating it as a core process and embedding in staff behaviours. Each Scout attends a programme of training, development and support from the Innovation Agency and cascade information in their organisation. The Innovation Agency provides scouts with materials and access to events specifically aimed at creating an innovation culture. The Scouts proactively promote and encourage the adoption of evidence based innovations and early work was done to establish the 'values and behaviours' of the innovation scout community of practice. The Innovation Agency provide an opportunity for the scouts to showcase and promote proven innovations. The lessons learned from the process of developing this communities of practice is that a) there must be active facilitation of the group to maintain motivation, b) they must be allowed to self-manage and set direction for topics that interest members, and c) the community of practice requires a degree of management if it is to be used to support diffusion of innovations, this includes understanding needs and setting up collaborative work.

#### 1.3.2. Alder Hey Innovation Hub – UK

A good practice (GP) of creating a co-creation space in a hospital and utilizing it as an INNOVATION HUB for partners from industry and academia to work collaboratively with the hospital's patients and families, staff, HUB members and partners to scout, co-create and valorise innovative healthcare technologies enhancing patient care and potentially generate savings for both the hospital and the NHS (National Health Service) as a whole. The HUB was created and it is run by Alder Hey Children' Hospital (NHS Foundation Trust, Liverpool). Alder Hey is UK's first cognitive hospital committed to drive all stages of innovation, especially new technologies such as artificial intelligence, sensors and virtual reality will be instrumental in transforming patient care in the future. The HUB provides place and services to assist the uptake of innovation by market validation, fund/investment sourcing and product testing or evaluation. Training, open innovation, networking and partner brokerage events for partners and staff help to raise awareness of new opportunities and to provide platforms to encourage and support collaboration to identify problems, needs, ideas and possible solutions. In addition the HUB supports regional SMEs to work with the hospital and its partners to co-create innovative products and services through the ERDF funded Health Enterprise Hub programme, which supports SMEs wishing to develop their business within the health and care market. The Health Enterprise Hub is part of the Liverpool City Region Local Growth Hub managed by Liverpool City Region Local Enterprise Partnership (LEP). The lessons learned from this GP is that a) public hospitals backed by supporting polices and granting schemes of regional and national authorities, is able to be the



driver of sector specific innovation in technology and care solutions, b) the INNOVATION HUB is one of the main tools to build the new innovation ecosystem for user-centred co-creation, c) the HUB can assist in allocation of dedicated funding to SMEs and help investors and innovators co-develop new business, d) hospital staff can be empowered to take part in innovation, e) innovation is a pretty good tool to meet the most pressing challenges in healthcare such as long waiting and treatment times due to lack of staff or unaffordable expensive technology, or the problem of low performance quality due to outdated or missing equipment and infrastructure or professionals.

### 1.3.3. Resolve – PT

It is a good practice for a consistent and effective ignition program to promote seed projects and start-ups in the health sector, boosting the translation of innovative ideas into business ventures and value creation. RESOLVE targets the missing link in the inconsistency relating to obstacles in the transition from R&D results and existing or emerging technology to the creation of a compelling new market-driven business. The Program's vision is to overcome these obstacles, supporting the progress of knowledge from the laboratory bench to the point where it provides the basis of a commercially successful business. RESOLVE developed a toolbox to address obstacles to the valorisation of knowledge in healthcare /biomedical areas. The box contains the following tools: (1) Validation of Prototypes and Proofs-of-Concept; (2) End-users Forum; (3) Fast Track for Clinical Studies; (4) Team Building with MBAs; (5) Observatory of Open Innovation Platforms; (6) Licensing Contact List; (7) Meeting with Investors. In addition RESOLVE has selected seed and technology-based projects in the health sector of the Norte of Portugal to provide them targeted financial support. Beneficiaries get the support to use the RESOLVE Toolbox to achieve their valorisation goals in a shorter timeline. The RESOLVE Program accepts applications from researchers, entrepreneurs, R&D projects, technologies, seed projects or start-ups in the health sector, based or to be based in the Northern Region of Portugal. RESOLVE is funded by the ESIF regional operational programme Norte 2020. It is a health-oriented business-acceleration program based at i3S, a consortium headed by the University of Porto. It is designed to provide solutions and management tools to early stage projects and spin-offs in Health Sciences to transform innovative knowledge into business ventures and value creation. The aim of RESOLVE is to foster the transfer of knowledge, resulting in licensing patents or launching start-ups by teams of researchers and entrepreneurs involved in this area. The lessons learned from this GP is that a) valorisation goals, including fulfilling specific requirements of regulatory guidelines, can be achieved in a shorter timeline by dedicated financial and technical support, b) it's worth supporting delivery of solutions and management tools to early stage projects and start-ups in the health sector for the transformation of innovative knowledge into business ventures and value creation, c) allocation of ESIF resources can be the subject of a program proposal which can successfully deliver funds to SMEs to foster the transfer of knowledge, d) innovation in health technologies have to reduce the gap between the application conceived by the researcher/entrepreneur and the real needs experienced by the end-user.

## 2. ACTION 1

### Over-arching top-level goal of ACTION 1:

Improve efficiency and effectiveness of supporting health and healthcare related innovation by ESIF fund programmes.

### General objective of ACTION 1:

Development of health economy by increasing efficiency of public funding dedicated to health and healthcare related innovation through providing ESIF granting schemes for improving co-creation and co-operation among key stakeholders in innovation hubs. It is noteworthy that it correlates with the relevant objectives of RIS3 and Industry 4.0 strategies although neither targeting nor seeking to impact them.

### Specific objectives of ACTION 1:

Hungarian HELIUM partners propose to transfer learnings, validated solutions, ready-to-replicate results of combined elements of the 3 good practices introduced above in order to:



- Promote and grant beneficiaries to involve patients and families into co-creation;
- Encourage social level actors to enter their role in scouting and co-creation, as well as foster other stakeholders to identify roles for social level actors in these stages of innovation;
- Health professionals and institutions become independent or partner beneficiaries and/or vendors of eligible services in innovation partnership projects;
- Explore the driving role of public, and support public procurers and private vendors to prepare for PCP/PPI;
- Provide financial support for SMEs to prepare for HTA;
- Foster quadruple helix cooperation for scouting needs and/or co-creating innovation;
- Dedicate funds to explore opportunities for new fields of innovation emerging by the delivering results in innovative projects in health sector funded by HRDOP or other relevant regional, national or international programmes;
- Involve specialized organizations and/or centres to ensure proper allocation of ESIF funds dedicated to health innovation;
- Prepare dedicated funding for main pillars of the new innovation ecosystem of user-centred co-creation, especially Innovation Hubs.

**Measures recommended to be implemented in ACTION 1:**

**SCENARIO 1**

Launching a new call in EDIOP PA2 R&D&I with the working title “improving co-operation among key stakeholders in innovation hubs to scout needs for co-creation, valorisation and stimulating uptake of innovative technology, services, methods and guidelines for personalised medicine and/or rehabilitation, disease prevention and health promotion”.

- 1) Project proposals should provide methodological, technological, professional and financial support to partners from industry, academia, public organisations, health professionals and institutions, patients and families in order to identify needs, interest and tensions or conflicts, as well as to define “non-negotiables”, “differentiators” and “dissatisfiers” of key stakeholders by organising quadruple helix cooperation, and
- 2) create conditions and cultural change necessary for proven innovations to be adopted faster and more systematically through the health system in Hungary, and to deliver examples into practice for demonstrable patient and population benefit, and
- 3) validate prototypes and proofs-of-concept, and provide fast track for clinical studies, support activities for the admission to health insurance funding and assist licensing, and
- 4) give support to innovation with direct relation to the electronic or digital health developments and/or help to seize the opportunities provided by the implementation of system-innovating health projects in the Human Resources Development Operational Programme 2014-2020 (HRDOP), and//or
- 5) provide assistance to public procurers to prepare innovation procurement procedures (PCP/PPI) and/or
- 6) improve capacities of seed projects or start-ups and innovative SMEs to be able to prepare and submit proposals to national or international innovation procurement tenders (PCP/PPI).

Approved projects are encouraged to prepare and implement study visits and staff exchange programs to collect and assess their own learnings from the good practices identified in Action 1, as well as design and execute pilots to test transferable elements of these GPs in Hungarian innovation hubs.

Considering that Central Hungary Region is not covered by the intervention area of EDIOP, launching complementary call for proposal financed by national funds are recommended.

**SCENARIO 2**

If the launch of the new call does not prove feasible then the alternate action is the modification of the selection criteria of relevant calls in PA1, PA2 PA3 and PA8 of EDIOP targeting innovation activities, capacities, competences and skills of SMEs. The recommended new selection criteria should foster:

- co-operation among key stakeholders in innovation hubs (10% of total scores);
- development activities related to projects that have been completed in the Human Resources Development Operational Programme (5% of total scores);
- validation of prototypes and proofs-of-concept and support activities for the admission to health insurance funding and assist licensing (5+5% of total scores);
- assistance to public procurers to prepare innovation procurement procedures (PCP/PPI) (5% of total scores);
- assistance to seed projects or start-ups and innovative SMEs to be able to prepare and submit proposals to national or international innovation procurement tenders (PCP/PPI) (5% of total scores).

Approved projects are encouraged to prepare and implement study visits and staff exchange programs to collect and assess their own learnings from the good practices identified in Action 1, as well as design and execute pilots to test transferable elements of these GPs in Hungarian innovation hubs.

### 3. Players involved

**ÁEEK, National Healthcare Service Center** is the initiator of the actions as an outcome of the HELIUM project. AEEK is a public institution established by the Government of Hungary and controlled by the Minister of State for Healthcare, Ministry of Human Resources. ÁEEK takes pro-active role pulling together other concerned players (stakeholders), managing the implementation of the action plan, organising meetings, events, delivering drafts of concept papers and collecting opinions and remarks of involved players.

**Semmelweis University Health Management Training Centre (HSMTC)** is a partner institution in carrying out the HELIUM project. HSMTC's goal is to assist to the development of health services in Hungary and on international level by generating better management knowledge and practice. Through the activities HSMTC would like to generate learning and development opportunities, new knowledge and new understanding for those who work on the improvement of health services and health services organizations.

**Ministry of Human Resources:** ÁEEK as a public organisation belongs to this Ministry. Therefore initiating actions related to EDIOP officially will be channelled through MHC. However, it does not mean that informal talks, workshops, events could not be organised by ÁEEK directly. The Ministry will be invited to take part in expert groups, workshops to provide remarks on the planned action.

**Ministry for Innovation and Technology:** development of health industry belongs to this Ministry as such they are responsible for defining and altering the thematic content of EDIOP calls. As such they are crucial player in realising the Action Plan. Therefore they will invited to all relevant event and workshops and their remarks will be taken into account.

**Ministry of Finance:** This Ministry runs the Managing Authority of EDIOP, which is implementing body of the new or altered calls under EDIOP PA2 (as well as PA1, PA3 and PA8). As such they are crucial player in realising the Action Plan. Therefore they will invited to all relevant event and workshops and their remarks will be taken into account.

**National Research, Development and Innovation Office (NRDIO, responsible body for S3):** NRDIO is responsible for the R&D&I policy in Hungary concerning design and implementation (with the exception of EU co-financed calls). Since the new/altered calls belong the R&D&I priority axis of EDIOP therefore their involvement may provide useful insights concerning the thematic content of the planned action.

**National Health Insurance Fund Administration (NHIFA):** The core activity of the National Health Insurance Fund Administration includes functions relating to the management of the Health Insurance Fund, including funding and reimbursement accounting, the maintenance of records, keeping financial accounts and fulfilling reporting obligations. It carries out procedures relating to the social security assistance of pharmaceuticals and medical aids and the adoption of health technologies. Since the proposed actions target the development of health industry technologies, tools that would be admitted preferably for financing from the National Health Insurance Fund Administration therefore their involvement is very important in the upcoming tasks related the implementation of the Action Plan.

**National Institute of Pharmacy and Nutrition (OGYÉI):** OGYÉI prepares supportive materials for decision makers on all level in health care, prepares national and international publications, posters and presentations, conducts health economic research, initiates legislative changes in the field of health technology.

**Beneficiaries:** those institutions, who want to establish an Innovation Hub within their own organisation

**Stakeholders:** those for-profit or non-profit or public legal bodies and individuals, who need or offer new developments, new technologies or new services (they can be e.g. patients and patient organisations, professionals, hospitals, care organisations, SMEs, universities, researchers, multinational corporations, etc.) and regulators and authorities.

**Financing and monitoring institutions:** legal bodies on EU or state level, who provides the financial and legal framework for the safe implementation.

#### 4. Timeframe

We calculate with a 2-year-long timeframe for the implementation of the planned actions including the following activities (quantification of monitoring activities):

Implementation of the Action Plan (24 months starting from October 2018)

Preparatory activities (9 months starting from October 2018): further scrutiny of the underlying good practices. The MA gathers the detailed information it needs from the underlying good practices using the existing partner contacts of SE and AEEK from HELIUM. Furthermore, it ensures stakeholder involvement on the planned action. HU PPs in agreement with the MA elaborate the modus operandi of implementation.

Proactive Implementation phase (12 months starting from July 2019): Designing the new/modified call with intense involvement of key players through workshops of experts and launch of the new/modified call.

A series of implementation workshops begins in March 2019, with three rounds in total, subsequently in June and September/October. This will serve the purpose of making specifications to the calls, including the re-allocation of available sources, to be launched as an outcome of this Action Plan. Expected number of calls for Innovation Hubs is 1. Specification process will be concluded by November ready for announcement at the high-level political closing event of the HELIUM project. Factual launch of call is envisaged by December 2019, with one-month flexibility by January 2020 latest.

HU PPs will be the organisers and hosts of workshops, and in charge of the agenda and progress. Attendance will be limited to HU PPs, the MA and the Ministry for Innovation and Technology, with the latter in its capacity of being responsible for policy-making, i.e. catalyst of policy improvement.

Preparatory activities for the evaluation of the action will last 3 months preceding July 2020 with a view to the number and content of potential project proposals to be received under the call.

Evaluation of action (3 months starting from July 2020) carried out by the MA with support of HU PPs, building on first-hand experience and lessons learnt.

Dissemination activities (24 months starting from October 2018)

#### 5. Costs

No other costs are expected to incur when implementing Action 1 and monitoring the implementation of this Action Plan, other than those already included in the approved budget of Phase 2 for PP6 and PP7.

#### 6. Funding sources

The domestic instrument, EDIOP targeted by this Action Plan will be the financial source of potential project proposals selected for funding as a result of the call for Innovation Hubs under this action. Available amount

to be re-allocated in the relevant priority axes of the instrument will be determined throughout the series of implementation workshops.

## ACTION 2 –Living Labs

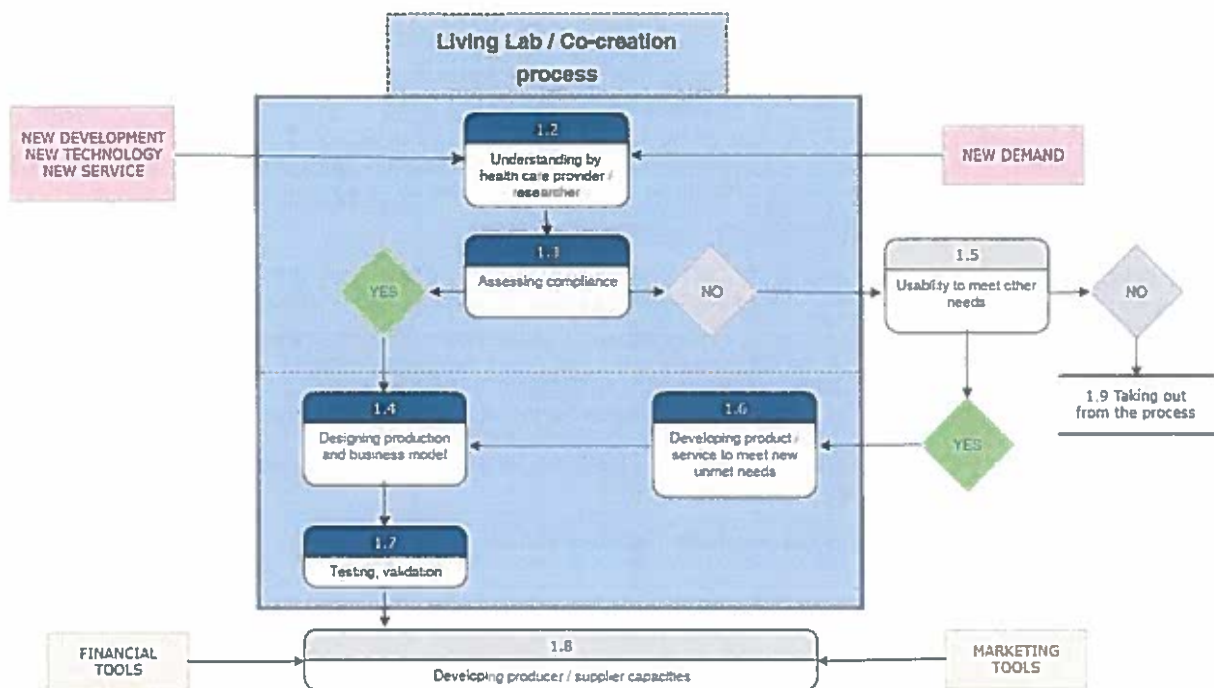
### 1. The background

The general description under section "Action 1- Background" is relevant for Action 2 as well, especially the key challenges listed.

The lack of the "Quadruple Helix – (QH)" type of cooperation among universities/researchers, industry, government and end-users, or its infrequency or low level unfortunately weakens the chances of achieving, "scouting", "creating", "upgrading", "interpreting" innovation at the highest practicable level. This hinders the development and limits the application of healthcare technologies and services aimed to improve operation of the care system and boosting competitiveness of the health industry. In case of the end-users it is necessary to differentiate certain group of users: 1) the person receiving care, and his/her family and employer; 2) the care provider institutions; 3) professionals who work in healthcare; 4) financiers of care

To achieve the desired outcomes, most importantly better healthcare delivery, the coordinated, networked cooperation of the above mentioned key participants and stakeholders is a key condition. To achieve the level of co-creation we realised, that the Living lab model can be a beneficial solution.

The Living Lab process is described in the figure below:



Good Practices / institutions carrying out Living Labs and lessons learned:

→ LiCalab:

LiCalab supports businesses and organisations in the health and welfare sector by testing and validating their innovation with the end users, in their own working and living environment. (<https://www.licalab.be/en>)

During the staff exchange we gained useful information about the set up and operation of a Living Lab. The study visit allowed us to get to know with some important stakeholders of LiCalab



(e.g. Thomas More - Campus Turnhout, Turnhout City) and some projects which work closely together with LiCalab.

Some of the main messages / experiences we received during our visit:

- in order to be sustainable, a business model should be already elaborated at the start
- at least 2-3 staff member is necessary in order to start the activities within the Living Lab, however a business developer, a researcher and a communication / coordination expert should be employed later
- a local / regional / state government support is important
- a Living Lab should work hard on its visibility
- matchmaking event / stakeholders group meetings are necessary to build a network

→ Brainport Development / Slimmer Leven:

Brainport Development is focusing on top technology especially in the field of health innovation; furthermore it is acting as innovation agency in health related programs.

Slimmer Leven is an innovation network in active and healthy ageing and implements tasks like project initiation, development of business models and alternative financing, connecting stakeholders, etc.

Some of the main messages / experiences we received during our visit:

- a good way to be sustainable in a very short time is to have partners from the academic (university in a close distance) and the private (world-wide known multinational company in the neighborhood) sector
- project based work methodology is fundamental

→ ENOLL (European Network of Living Labs):

The European Network of Living Labs (ENoLL) is the international federation of benchmarked Living Labs in Europe and worldwide, working as a nonprofit organisation. Founded in November 2006 under the auspices of the Finnish European Presidency, the network has grown in 'waves' up to this day. Its main objective is to spread out the learnings know-how established and collected about the operation of Living Labs.

In the framework of its activity ENOLL organises a conference on a yearly base in order to promote Living Lab Good Practices, to build network among their stakeholders and to give opportunity to researchers in order to reports on their scientific works / papers about LL related themes (innovation, science).

The Hungarian HELIUM partners participated at the conference in 2017 (Krakow) and 2018 (Geneva). Both conferences focused on the scientific approach and gave enough methodological input which could be used when establishing a LL and its operational framework.

Some of the main messages / experiences we received during our visits:

- the role of a Living Lab is to be a facilitator between supply and demand
- the end users needs to be motivated enough to actively take part in the innovation process (motivation can be increased through tied products / services)
- there is no real Living Lab methodology, only best practices are available (this field is still open for researches)

**2. Action 2**

Main goal of ACTION 2: Improve efficiency and effectiveness of supporting health and healthcare related innovation by ESIF fund programmes.

General objective of ACTION 2: Development of health economy by increasing efficiency of public funding dedicated to health and healthcare related innovation through providing ESIF granting schemes for improving co-creation and co-operation among key stakeholders via creation of living labs. It is noteworthy

that it correlates with the relevant objectives of RIS3 and Industry 4.0 strategies although neither targeting nor seeking to impact them.

#### Specific objectives of ACTION 2:

Living Lab definition: A living lab is a user-centered, open-innovation ecosystem, often operating in a territorial context (e.g. city, agglomeration, region), integrating concurrent research and innovation processes within a public-private-people partnership. For a detailed process description see graph above (Background - Action 2).

Hungarian HELIUM partners propose to transfer learnings, validated solutions, ready-to-replicate results of combined elements of the above mentioned 3 good practices in order to:

- promote and grant beneficiaries to involve relevant stakeholders from the private and public spheres into co-creation process;
- encourage social level actors to enter their role in scouting and co-creation, as well as foster other stakeholders to identify roles for social level actors in these stages of innovation;
- health professionals and institutions become independent or partner beneficiaries and/or vendors of eligible services in innovation partnership projects;
- explore the driving role of public, and support public procurers and private vendors to prepare for PCP/PPi;
- provide financial support for SMEs;
- foster quadruple helix cooperation for scouting needs and/or co-creating innovation;
- dedicate funds to explore opportunities for new fields of innovation emerging by the delivering results in innovative projects in health sector funded by HRDOP or other relevant regional, national or international programmes;
- involve specialized organizations and/or centres to ensure proper allocation of ESIF funds dedicated to health innovation;
- prepare dedicated funding for main pillars of the new innovation ecosystem of user-centred co-creation, especially Living Labs.

#### Measures / scenarios recommended to be implemented in ACTION 2:

The purposes of the project proposal are as listed below:

- in order to reduce risks and support the sustainability for the products/services which are created during the innovation process, is it worth to involve the key players in the development process, e.g. the end users
- the open innovation is based on a conscious approach which allows access to external knowledge and opinion to help the developer's own innovation activity
- the Living Lab is a spatial agglomeration, ecosystem of the innovation process and guarantees an opportunity for the businesses to make and develop a product/service in order to meet the needs of the customers
- the goal is the marketability of the innovative product/service
- Living Lab is a virtual and/or physical space functioning as a laboratory wherein the developers and designers can monitor people's behavior and reactions to everyday life situations

Approved projects are encouraged to prepare and implement study visits and staff exchange programs also to collect and assess their own learnings from the good practices identified in Action 2, as well as design and execute pilots to test transferable elements of these GPs in Hungarian or foreign Living Labs.

Considering that Central Hungary Region is not covered by the intervention area of EDIOP, launching complementary call for proposal financed by national funds are recommended.

### 3. Players involved

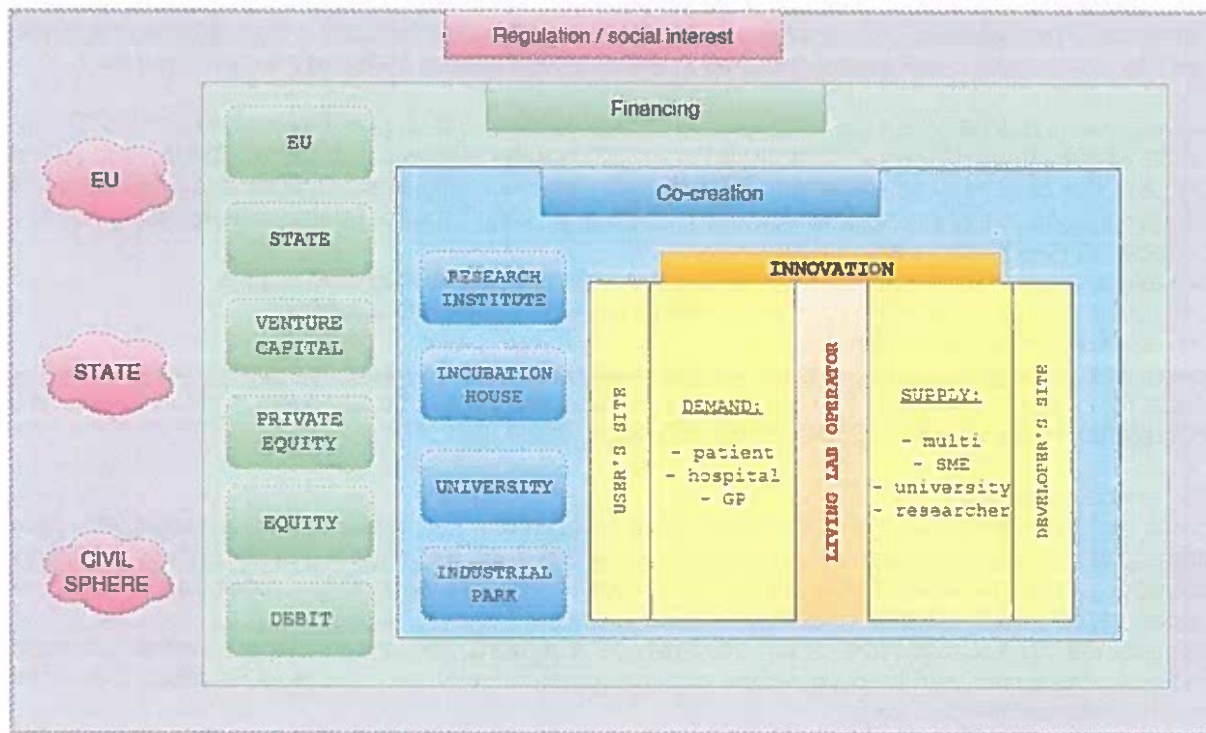
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**Financing and monitoring institutions:** legal bodies on EU or state level, who provides the financial and legal framework for the safe implementation

See the figure below:

**Living Lab / Co-creation participants**



**4. Timeframe**

In parallel with the planned implementation of Action 1, it is as follows:

Implementation of the Action Plan (24 months starting from October 2018)

Preparatory activities (9 months starting from October 2018): further scrutiny of the underlying good practices. The MA gathers the detailed information it needs from the underlying good practices using the existing partner contacts of SE and AEEK from HELIUM. Furthermore, it ensures stakeholder involvement on the planned action. HU PPs in agreement with the MA elaborate the modus operandi of implementation.

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Evaluation of action (3 months starting from July 2020) carried out by the MA with support of HU PPs, building on first-hand experience and lessons learnt.

Dissemination activities (24 months)

**5. Costs**

No other costs are expected to incur when implementing Action 1 and monitoring the implementation of this Action Plan, other than those already included in the approved budget of Phase 2 for PP6 and PP7.

However, it is understood from the GP LiCalab (during the staff exchange in February/March 2018) that a minimum of 300'000 EUR budget is necessary on a 2-3 year-period basis in order to establish a successful Living Lab. The necessary activities/ components to be deemed eligible expenditure should be staff costs and training. In case there is no available infrastructure (building / room), renting or purchasing has to be also included in the budget plan.

Above the costs linked to the implementation the following cost items should be eligible:

- equipment, closely related to the successful execution of project activities
- marketing / dissemination

As soon as the Living Lab has been set up, the sustainability can be only provided if further grants are available for incubation projects. The above are parameters needed to be taken into account when making specifications to the call to be launched under this action of the plan.

**6. Funding sources**

It should be taken into account, that the sustainable creation of a Living Lab is a very innovative process, testing, validating, and error scenarios are foreseen, therefore the very strict regulations of the EU financial mechanism can be considered only partly. We propose to involve also private funding or other funding sources where no administrative constraints exist.

As regards the EU sources more possibilities can be examined. In Hungary we propose to amend the Economic Development and Innovation Operational Programme and the Integrated Territorial Investments Operative Programme accordingly.

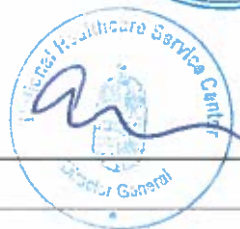
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