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Health Labs4Value

Action plan of territorial Health Labs4Value - SLOVENIA

1. Executive summary

This action plan sets out a strategic framework for Slovenia's participation in the Health Labs4Value (HL4V) initiative from 2026 to 2029. The plan builds on the Slovenian Living Lab pilot experience carried out in Jesenice and Ljubljana, coordinated by the Chamber of Commerce and Industry of Slovenia – MedTech Slovenia and General Hospital Jesenice. The pilot focused on testing a digital rehabilitation solution for patients recovering from hand injuries, co-created with healthcare providers and patients, and evaluated through PROMs and PREMs.

The Slovenian Action Plan aims to strengthen patient-centred care, accelerate digital transformation, and promote value-based healthcare (VBHC) in Slovenia. Its objectives include:

- Embedding VBHC principles and Living Lab methodology into routine practice.
- Scaling up pilot-tested digital rehabilitation and related solutions.
- Strengthening stakeholder collaboration across healthcare providers, SMEs, academia, and policymakers.
- Developing sustainable models for innovation testing, validation, and commercialization.

Activities are structured to deliver measurable results by 2029, including the establishment of a permanent Living Lab structure under MedTech Slovenia, continuation of digital rehabilitation pilots for new patient groups, capacity building for professionals, and active participation in HL4V's transnational network.

2. Introduction

2.1. Brief overview of Health Labs4Value initiative

The Health Labs4Value initiative is aimed at improving healthcare systems across Central Europe through innovation, collaboration, and knowledge sharing.

Vision and mission: The initiative seeks to create an innovative and sustainable healthcare ecosystem across Central Europe by fostering collaboration among academia, healthcare providers, start-ups, industry leaders, and public institutions.

Geographical scope: The project encompasses six Central European countries: Austria, Czech Republic, Germany, Hungary, Poland and Slovenia.

Key approach: Health Labs4Value utilizes a "Living Labs" methodology, establishing decentralized hubs in each participating country for testing and validating healthcare innovations in real-world settings. These Living Labs are designed as user-centred, open innovation ecosystems, integrating research and innovation processes with the everyday lives of citizens. This allows for innovations to be developed and tested collaboratively, ensuring they are relevant, accessible, and meet the real-world needs of both healthcare providers and patients. By operating within diverse community settings, these Living Labs offer a flexible and adaptable approach to healthcare innovation, fostering rapid prototyping, user feedback integration, and the scaling of successful solutions.

2.2. Purpose and scope of the action plan

The Slovenian Action Plan defines the path towards embedding HL4V principles in the national healthcare ecosystem.

It focuses on strengthening patient-centred, digitally enabled care, scaling up tested innovations, and ensuring sustainability of the Slovenian Living Lab. The scope covers hospitals, outpatient centres, rehabilitation facilities, SMEs, start-ups, academia, and patient organisations.

3. Local context analysis

3.1. Current healthcare landscape

Slovenia has a universal health system financed predominantly through compulsory insurance contributions, administered by the Health Insurance Institute of Slovenia (HIIS). The network of hospitals, health centres, and rehabilitation providers ensures broad accessibility, but challenges remain in workforce shortages, ageing population, and rising prevalence of chronic diseases.

3.2. Key challenges and opportunities

Slovenia faces significant healthcare challenges, including:

- An aging population: Approximately 20.8% of Slovenia's population is aged 65 or older (Statistical Office Slovenia, 2023).
- Increasing healthcare costs: Healthcare expenditure reached 9.5% of GDP in 2022, a trend projected to rise (OECD, 2023).
- Limited digital healthcare integration and fragmented patient information exchange post-discharge, impacting rehabilitation outcomes.

Opportunities lie in addressing these challenges through Strong coverage system, well-educated workforce, increasing interest in digital health and VBHC, active SMEs in medtech and digital innovation, EU funding and HL4V collaboration.

3.3. SWOT analysis

A SWOT analysis for Slovenia, in the context of the Health Labs4Value initiative, is presented below:

Strengths:

- Robust healthcare infrastructure.
- Highly skilled healthcare workforce.
- Active EU healthcare innovation collaborations.
- Well-established stakeholder networks, including CCIS, healthcare institutions, SMEs, and academia.

Weaknesses:

- Bureaucratic delays in adopting new healthcare innovations.
- Insufficient digital integration.
- Limited continuity of patient care, especially post-discharge.
- Workforce shortages.
- Limited interoperability (different hospital and healthcare IT systems in Slovenia are not fully compatible, which prevents smooth data exchange - e.g. between hospitals, rehabilitation centres, and digital applications).
- Fragmented stakeholder collaboration (cooperation between key stakeholders - healthcare providers, policy-makers, insurers, SMEs, and patient organisations - is often project-based and lacks long-term coordination. This makes it difficult to scale up successful innovations beyond the pilot stage).

Opportunities:

- Strong potential for EU collaboration and funding.
- Increasing interest in digital and value-based health solutions.
- High potential impact on patient outcomes through innovative rehabilitation solutions.
- HL4V transnational collaboration, scaling of pilot-tested rehabilitation tools, VBHC adoption.

Threats:

- Resistance to technological change.
- Regulatory complexity and compliance issues, notably with MDR (Medical Device Regulation) and IVDR (In Vitro Diagnostic Regulation).
- Concerns around data security and privacy.
- Funding uncertainty, regulatory hurdles, resistance to change.

4. 4. Pilot experience (mandatory new chapter)

4.1. Brief summary of the pilot activity (1500 characters)

The Slovenian pilot, implemented under HL4V at General Hospital Jesenice and coordinated by MedTech Slovenia, focused on developing and testing a digital rehabilitation application for patients recovering from hand injuries. The solution provided personalized exercise programmes accessible at home, before and during physiotherapy, combined with guidance from healthcare professionals. Co-created with patients, clinicians, and SMEs, the pilot tested usability, integration into clinical workflows, and patient-reported outcomes. Around 40 patients participated, supported by multidisciplinary teams of physiotherapists, doctors, and digital health experts. The pilot was complemented by training workshops on VBHC principles and Living Lab methodology for healthcare professionals and SMEs.

4.2. Experience gained from the pilot activity (1000 characters)

The pilot confirmed the feasibility of using digital rehabilitation tools in everyday clinical practice. Patients reported improved motivation, faster recovery, and higher satisfaction when guided by digital support. Healthcare professionals valued the structured monitoring but highlighted the need for seamless integration into existing hospital IT systems. SMEs and start-ups benefited from structured validation and early patient feedback, while policymakers gained insights into regulatory and reimbursement gaps. The experience strengthened stakeholder trust and demonstrated the added value of co-creation and testing in real environments.

4.3. Impact of the pilot activity on the action plan (1000 characters)

The pilot directly shaped Slovenia’s Action Plan by prioritizing the continuation and expansion of digital rehabilitation solutions as a core activity. It demonstrated the importance of permanent Living Lab structures for scaling innovations. As a result, the Action Plan includes a dedicated activity for sustaining the Living Lab beyond HL4V, continuous testing of rehabilitation solutions for broader patient groups (stroke, orthopaedics, chronic care), and stronger links with VBHC evaluation (PROMs, PREMs). Lessons learned will be applied to ensure new solutions are co-created, tested, and commercialized sustainably.

5. Strategic objectives and priorities

5.1. Localised priorities based on regional needs

Slovenia's localized priorities, based on regional needs, include:

1. Establish a permanent Slovenian Living Lab coordinated by MedTech Slovenia, integrated into HL4V's transnational network.
2. Scale up digital rehabilitation solutions tested in the pilot to new patient groups.
3. Embed VBHC principles (PROMs/PREMs, outcome-based evaluation) into national healthcare practices.
4. Strengthen stakeholder collaboration with structured governance (steering group, quarterly meetings, annual workshops).
5. Develop financial sustainability model for the Living Lab (commercialization of services, EU/national funding).

5.2. Alignment with Health Labs4Value strategic objectives

Slovenia's priorities align with the Health Labs4Value strategic objectives, which include:

- Facilitating cross-sector and public-private collaboration.
- Advancing digital health solutions and streamlining technology adoption.
- Strengthening workforce capabilities.
- Expanding preventive healthcare and enhancing patient-centered care.
- Fostering regional and international innovation ecosystems.
- Promoting sustainability in healthcare.

6. Proposed activities and interventions

6.1. Activities to support the implementation of Priority 1

6.1.1. Activity 1: Establishing a Slovenian Living Lab

Description: Establish a **Living Lab as a service** under the Chamber of Commerce and Industry of Slovenia - MedTech Chamber with SBJ as an equal and key partner. This lab will serve as a platform for collaboration between healthcare providers, researchers, industry partners, and patients to test and validate new healthcare solutions.

Timeline and Milestones:

- 2026: Define the scope and governance structure of the Living Lab.
- 2026: Establish partnerships with key stakeholders.
- 2026: Launch the Living Lab and initiate pilot projects.
- Ongoing 2026 -- : Conduct regular meetings, monitor progress, and evaluate outcomes.

Resource Requirements:

- Human: Project manager (permanent), researchers, healthcare professionals, technical staff (according to needs).
- Financial: Funding for infrastructure, equipment, personnel, and operational costs.
- Technological: IT infrastructure, data management systems, and necessary software and hardware for telemedicine and other digital health solutions.

Expected Outcomes and Impact:

- Enhanced collaboration and knowledge sharing among stakeholders.
- Accelerated development and adoption of innovative healthcare solutions.
- Improved patient-centered care and health outcomes.

Key Performance Indicators (KPIs):

- Number of active Living Lab projects.
- Number of stakeholders involved in the Living Lab.
- Time from solution development to implementation.
- Patient satisfaction and health outcome improvements in Living Lab pilot projects.

6.1.2. Activity 2: Implementing Patient-Centered Care Initiatives

Description: Implement initiatives focused on patient-centered care within healthcare facilities. This includes improving communication, patient involvement in decision-making, and providing holistic care.

Timeline and Milestones:

- 2026 - 2027: Conduct workshops and training sessions for healthcare staff on patient-centered care principles.
- 2026 – 2027: Pilot patient-centered care initiatives in selected healthcare departments.
- 2026 - 2029-Ongoing: Evaluate pilot initiatives, refine strategies, and gradually expand implementation across facilities.

Resource Requirements:

- Human: Healthcare professionals, patient advocates, trainers.
- Financial: Funding for training programs, patient engagement activities, and necessary resources to support patient-centered care practices.
- Technological: Electronic health record (EHR) systems to support information sharing and patient access to records.

Expected Outcomes and Impact:

- Improved patient satisfaction and experience.
- Enhanced patient engagement in their care.
- Increased adherence to treatment plans.
- Better communication between healthcare providers and patients.

Key Performance Indicators (KPIs):

- Patient satisfaction scores.
- Patient feedback on communication and involvement in decision-making.
- Rates of patient engagement in care plans.
- Healthcare provider satisfaction with patient interaction.

6.2. Activities to support the implementation of Priority 2

6.2.1. Activity 1: Digital Health Infrastructure Development

Description: Upgrade digital infrastructure by improving diagnostic tools and integrating telemedicine services to improve healthcare access, especially in rural areas.

Timeline and Milestones:

- Assess current digital infrastructure and identify areas for improvement.
- Develop a plan for upgrading diagnostic tools and integrating telemedicine services.
- Implement the digital health infrastructure development plan.
- Monitor and evaluate the impact of digital health infrastructure improvements.

Resource Requirements:

- Human: IT specialists, healthcare professionals, project managers.
- Financial: Investment in hardware, software, and training for healthcare professionals.
- Technological: Upgraded diagnostic tools, telemedicine platforms, secure data storage and exchange systems.

Expected Outcomes and Impact:

- Improved access to healthcare services, particularly in rural areas.
- Increased efficiency and effectiveness of healthcare delivery.
- Enhanced patient engagement and satisfaction.

Key Performance Indicators (KPIs):

- Number of telemedicine consultations conducted.
- Adoption rate of digital diagnostic tools by healthcare professionals.
- Patient satisfaction with digital health services.
- Reduction in travel time and costs for patients in rural areas.

7. Collaboration and partnerships

7.1. Identification of key stakeholders

Key stakeholders include:

- Healthcare Providers (HCOs): SBJ
- Knowledge Providers (KPs): CCIS
- Small and Medium-sized Enterprises (SMEs) or Start-ups
- Research Institutions or Universities
- End-users or Family Representatives
- BSO: Chamber of Commerce and Industry of Slovenia - MedTech Chamber
- Policymakers and public institutions

7.2. Financial and Legal Framework

Initial Form: Cooperation agreement among stakeholders.

Governance: Coordinated by **CCIS-MedTech Slovenia** with quarterly steering committee meetings, bi-annual stakeholder workshops, and integration into HL4V transnational groups.

Long-term: Establish a permanent Living Lab within CCIS structures, ensuring financial sustainability via diversified funding streams (EU, government, private sector).

7.3. Roles and responsibilities

Healthcare Providers: Participate in Living Lab activities, implement patient-centered care initiatives, and adopt digital health solutions.

Knowledge Providers: Provide expertise and support for the development and implementation of innovative solutions.

SMEs and/or Start-ups: Develop and provide innovative healthcare technologies and solutions.

Research Institutions or Universities: Conduct research, evaluate outcomes, and provide evidence-based recommendations.

7.4. Mechanisms for collaboration

To facilitate effective cooperation and achieve the goals of the Health Labs4Value initiative, the following mechanisms for collaboration will be employed:

- **Living Labs:** Establishing and utilizing Living Labs as platforms for co-creation, testing, and validation of healthcare solutions.
- **Cross-sector partnerships**: Fostering collaboration among healthcare providers (HCOs), knowledge providers (KPs), small and medium-sized enterprises (SMEs), research institutions, patient organizations, and public authorities. This multi-stakeholder engagement is crucial for driving innovation and ensuring that solutions meet the diverse needs of the healthcare ecosystem.
- **Knowledge-sharing platforms**: Developing and utilizing digital platforms for sharing best practices, research findings, and project outcomes. These platforms will facilitate the dissemination of information and promote the adoption of successful strategies and innovations.
- **Joint workshops and training**: Conducting collaborative training sessions to enhance workforce capabilities and promote the adoption of new technologies and patient-centered care practices. These initiatives will ensure that healthcare professionals have the skills and knowledge necessary to implement innovative solutions effectively.
- **International cooperation**: Participating in transnational cooperation frameworks (transnational network of health living labs) to exchange experiences, learn from best practices in other countries, and develop common tools and procedures. This will help to leverage a broader pool of knowledge and resources, and to ensure the development of solutions that are applicable across different healthcare systems.

8. Risk assessment and mitigation strategies

Key risks for the Slovenian Action Plan include potential funding gaps, regulatory uncertainties, resistance from healthcare professionals to adopting new practices, and limited engagement of SMEs in innovation activities. To address these challenges, the plan foresees a blended funding strategy combining national and EU sources, proactive dialogue with regulators at an early stage, continuous training and communication to build professional acceptance, and targeted incentives to strengthen SME participation.

Risk	Probability of occurrence	Mitigation strategy
Slow adoption of digital health solutions by healthcare professionals	Medium	- Conduct training and workshops to demonstrate the benefits of digital health solutions. Provide ongoing technical support and address concerns about usability. Involve healthcare professionals in the development and testing of digital tools.
Data security and privacy breaches	Medium	- Implement robust data security measures, including encryption and access controls. Ensure compliance with GDPR and other relevant regulations. Conduct regular security audits and risk assessments. Develop clear data governance policies and procedures.
Insufficient funding for Living Lab activities	Medium	- Diversify funding sources by seeking grants, public funding, and private investment. Develop a detailed budget and financial sustainability plan. Demonstrate the value and impact of Living Lab projects to potential funders.
Lack of engagement from key stakeholders	Low	- Establish clear communication channels and engage stakeholders early in the process. Organize regular meetings and workshops to foster collaboration. Clearly define roles and responsibilities for each stakeholder. Showcase the benefits of participation for each stakeholder group.

Regulatory hurdles delaying implementation	Medium	- Engage with regulatory bodies early to understand requirements and address concerns. Ensure that all projects comply with relevant regulations and standards. Advocate for regulatory changes that support innovation in healthcare.
Resistance to change within healthcare organizations	Medium	- Involve key opinion leaders and champions of change within healthcare organizations. Communicate the benefits of innovation and change for patients and healthcare providers. Provide support and resources for organizations to adapt to new processes and technologies.
Technical difficulties or system failures	Medium	- Invest in reliable and robust IT infrastructure. Develop contingency plans for system failures and data recovery. Provide technical support and training to users of new technologies.
Difficulty in measuring the impact of interventions	Medium	- Develop clear and measurable KPIs aligned with project objectives. Implement a robust monitoring and evaluation framework. Collect baseline data and track progress over time.

9. Monitoring, Evaluation, and Sustainability

The monitoring and evaluation (M&E) framework provides the backbone for ensuring that the Slovenian Action Plan delivers tangible results and remains aligned with the overall HL4V objectives. It combines quantitative and qualitative indicators to track progress in establishing the Living Lab, expanding pilot activities, building professional capacities, and supporting SMEs. The framework also integrates patient-reported outcomes and experiences (PROMs and PREMs) as key measures of value-based healthcare. Clear responsibilities are assigned to MedTech Slovenia and partner healthcare providers, while annual reporting to HL4V guarantees transparency, comparability, and opportunities for continuous improvement.

In addition, the framework foresees:

- Bi-annual evaluations based on VBHC metrics and patient-centred outcomes.
- Continuous stakeholder engagement to enable iterative improvements and co-created adjustments.
- Policy recommendations drawn from monitoring results to support the adoption and scaling of healthcare innovations in Slovenia.

Indicators:

- Establishment of Living Lab (2026).
- Number of new rehabilitation pilots launched (≥2 by 2029).
- Number of professionals trained in VBHC (≥200 by 2029).
- Patient satisfaction scores (≥80% positive by 2029).
- Number of SMEs supported (≥10 by 2029).

Baseline: Current PROMs/PREMs from pilot, national data on rehabilitation.

Responsibility: MedTech Slovenia and healthcare providers.

Reporting: Annual progress reports to HL4V.

This monitoring and evaluation framework will not only track progress but also provide evidence for timely adjustments, ensuring that activities remain relevant and effective. By systematically capturing outcomes, lessons learned, and stakeholder feedback, it will support the long-term sustainability and scaling of the Slovenian Living Lab beyond the HL4V project.