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Health Labs4Value

Czechia: Technical Solution upscaled thanks to the Pilot experience

Martina Lindorfer, ZSI

1. Executive summary

This report presents an innovative technical solution developed as part of the Health Labs 4 Value pilot project in the Czech Republic. The solution originated at the Living Lab at Regional Hospital Liberec, with the aim of improving care for patients with spinal cord injuries. The pilot project addressed issues such as fragmented support after hospital discharge, limited access to structured exercises, and a lack of digital tools for coordinating rehabilitation in hospital and at home. Thanks to international cooperation, a solution has been created and pilot-tested that addresses these specific healthcare needs.

The project demonstrated that this approach brings measurable improvements in key areas. From the perspective of patients and caregivers, it helps to reduce, and will hopefully one day eliminate, the information gap by providing patients, their caregivers and family members, as well as other healthcare professionals working with them, with one reliable source of information on exercises, prevention and contacts. Involving patients and their families in developing the tool led to greater engagement and a willingness to participate in its future development, as well as raising awareness of its existence. Qualitative evidence suggests that the solution boosts patient confidence and streamlines staff work. In future, it will simplify workflows for healthcare professionals by replacing fragmented paper leaflets with a unified multimedia tool. It also helps address the prevention of secondary complications after discharge, which is a major concern for staff and families alike.

The pilot project's collective impact goes beyond simply providing patients with spinal cord injuries with a digital tool. A reusable 'Living-Lab plan' has been created that any hospital department can use to develop its own digital solutions. The project therefore demonstrates a model of international cooperation in the development of new healthcare technologies that can be replicated. This successful collaborative model, which involves all stakeholders (the Quadruple Helix Group), can be supported and replicated in each new region or department of the Liberec hospital. This ensures that every new feature is co-designed rather than imposed and involves patients, clinical staff, a start-up and the university.

Beyond creating a single digital tool, the Czech pilot primarily validated a Living-Lab-based methodology for developing and scaling patient-centred innovations. The process itself, built on continuous co-creation, iterative prototyping and international knowledge exchange, proved to be the real innovation. By systematically engaging patients, clinicians, start-ups and researchers, the team has established a repeatable model for identifying care gaps and translating them into practical digital solutions that can be validated within real clinical environments. Therefore, the core outcome is not the tool itself, but the validated methodology that connects patients, clinicians, SMEs and academia in an iterative co-creation cycle. This approach can be applied to other hospital departments and countries to replicate the same improvements in care continuity, ensuring that innovation remains patient-driven and sustainable.

The solution has significant upscaling potential, and concrete plans have been made for its further expansion. In the short term (within 12 months), quantitative growth in the Czech Republic is planned by implementing the solution in the other national spinal unit and major rehabilitation centre. Medium-term goals (18–36 months) focus on institutional and functional expansion, with additional stakeholders, such as dietitians, psychologists, and community nurses, joining the project. In the long term (more than three years), the aim is to expand geographically to neighbouring countries. Scaling up will prioritise the institutionalisation of Living Lab routines, such as staff training, feedback loops and local super-users, to ensure that the process, as well as the tool, is maintained and adapted at each site.

This report documents a healthcare innovation and serves as a roadmap for the future development of collaborative technical solutions. It provides tangible proof that internationally developed, patient-centred methodologies can be highly successful, while also demonstrating clear pathways for broader implementation and a lasting impact on healthcare systems.

2. The technical solution based on the pilot experience

Brief overview on the background and context of the technical solution

Patients with spinal cord injuries (SCI) in the Czech Republic are often discharged from hospital with only paper leaflets and limited outpatient physiotherapy. There is little coordination between family carers and hospital staff. Focus group work conducted in Liberec revealed four key issues: fragmented post-discharge support; limited access to structured exercises; low digital literacy; and a lack of tools to connect ward routines with home-based rehabilitation. To address these issues, the Liberec Living Lab set out to co-create a modular digital solution (working title: Rovinka), developed through a structured and validated Living Lab methodology. The aim was to design a digital rehabilitation aid and, above all, to test and validate the Living Lab co-creation model as a systematic approach to improving continuity of care for SCI patients.
This methodology combines the principles of value-based healthcare and Quadruple Helix collaboration, uniting clinicians and staff from Regional Hospital Liberec (KNL), patients and their families, SME Mebster and the DEX Innovation Centre innovation hub. Together, they formed a permanent working structure, the Liberec Living Lab, which developed and validated a repeatable process for identifying user needs, co-designing solutions, testing them in real clinical settings and documenting the full innovation cycle for replication by other hospital departments or healthcare providers.

Step-by-step Living Lab co-creation process
The solution was developed using a structured Living Lab process that combined the principles of co-creation and value-based healthcare. This process was organised into four iterative steps to ensure continuous participation, learning and validation.

Step 1: Setting up the Quadruple Helix structure

A multidisciplinary team was formed comprising clinicians and hospital staff from the Liberec spinal unit and the other parts f the Liberec Regional Hospital, patients and carers, a technology partner (Mebster) and DEX Innovation Centre facilitators. Objectives, responsibilities and communication channels were shared to establish an open and balanced working environment.
Lesson learned: Early role clarification prevents delays and builds trust among partners.
Resources and time required: 2–3 months and 4–6 core participants, with regular (bi-weekly) meetings.

Step 2: Exploration and needs mapping
Through ward observations, interviews and focus groups with patients, their relatives and staff, the team identified significant gaps in post-discharge care. The absence of structured exercise plans and fragmented educational materials were among the challenges that were prioritised as key areas for improvement.
Lesson learned: On-site observation uncovers issues that surveys alone miss.
Resources and time required: 2 months; around 20–25 interviews led by 2–4 facilitators.

Step 3: Co-creation and development
Joint workshops turned these needs into tangible design ideas. The group tested early concepts and content directly on the ward, adjusting the materials, language and usability after each round of feedback. Developers continuously translated this input into functional updates.
Lesson learned: Rapid testing saves weeks of redevelopment and increases user confidence.
Resources and time required: Three to four months; one Living Lab facilitator, one developer and five to ten patient/staff testers per iteration.

Step 4: Validation and reflection
The near-final version was tested by clinicians and patients during daily rehabilitation sessions. Regular feedback loops confirmed that the solution was easy to understand, practical and safe to use. Any lessons learned were captured and shared with the international HL4V partnership to ensure methodological consistency across countries.
Lesson learned: Continuous testing ensures real-life usability and supports replication elsewhere.
Resources and time required: 1–2 months, including clinical staff and 5–10 patient participants, with weekly review sessions.

Pilot set-up and process

The Czech pilot was carried out at the Regional Hospital Liberec (KNL) within the Liberec Living Lab. It was designed as a structured co-creation process, combining research, design and testing within a real clinical setting. The Living Lab framework ensured that

all relevant stakeholders, including clinicians, the spinal unit staff, patients, caregivers, developers and innovation facilitators, were involved throughout the entire cycle.

The process unfolded as a sequence of interconnected phases

Exploration and needs analysis: More than twenty patients, relatives, and ward staff participated in interviews and focus groups, exploring post-discharge challenges and daily rehabilitation routines. Their feedback revealed the most pressing issues: a lack of structured guidance, fragmented educational materials and insufficient caregiver involvement.

Co-creation and development: A multidisciplinary team comprising clinicians, patients, a subject matter expert (SME) and a design expert (DEX) from an innovation hub met weekly to translate user needs into practical design elements. These meetings formed an ongoing exploration–development–testing loop that took place entirely within the spinal unit. Each version of the solution was discussed, adjusted, and retested until it met clinical safety standards and user expectations.

Validation and reflection: The outcomes of this process were shared regularly with the full HL4V partnership (Austria, Germany, Hungary, Poland, Slovenia and the Czech Republic) during monthly calls and project partners meetings. These exchanges helped to align the methodology across countries and confirmed that the Czech Living Lab process was consistent with the shared HL4V framework.

Usability testing and feedback integration: Standard usability walk-throughs confirmed that the concept was understandable and useful in both hospital and home settings. Feedback was systematically collected through observation sheets and discussion rounds and then integrated into subsequent design updates.

What the pilot delivered

The pilot demonstrated the full functionality of the Living Lab model, resulting in a validated digital solution and practical methodological assets that can be reused in other contexts.

- a clinically reviewed content library for spinal cord injury rehabilitation and prevention.

- A Living Lab orocess blueprint, captured in a shared workspace and documenting user stories, design decisions, and co-creation steps.

- A clickable Figma application offering personalised rehabilitation plans, video guidance and prevention reminders.

These outputs form a validated methodological and digital package that demonstrates how a structured Living Lab process can lead to measurable improvements in patient engagement, staff collaboration, and continuity of care.

Detailed description of the technical solution and its uptake

The Czech pilot resulted in the development of a validated Living Lab methodology and a digital solution called Rovinka, which was created within the Liberec Living Lab. The project demonstrated that a structured, participatory process can generate practical tools that strengthen continuity of care and empower patients and healthcare professionals alike.

Rovinka is a modular digital rehabilitation tool that was co-created and validated directly in a clinical environment. It was designed as both a technological product and as proof of the Living Lab co-creation approach, which systematically integrates patients, clinicians and hospital staff, and innovators into healthcare improvement processes.

Technical footprint: The application runs outside of hospital information systems (no HIS/EHR integration is required), adheres to standard GDPR procedures and utilises a shared repository for educational content, such as videos, checklists and caregiver tips. Role-based access is kept simple with patient, caregiver and clinician views, which eases onboarding and replication.

Objectives of the solution and methodology

The Liberec pilot pursued five interconnected objectives:

1) To provide systematic, evidence-based physiotherapy that continues seamlessly from the hospital ward to home care.

2) To prevent secondary complications, especially pressure ulcers, through video instruction and personalised reminders.

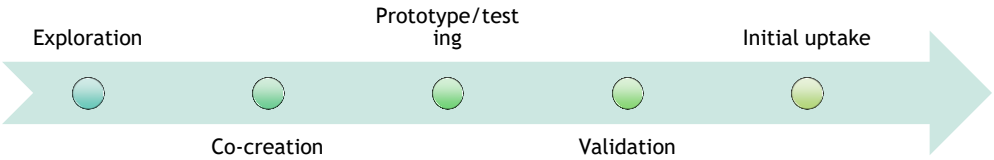
3) To create a shared information channel through which patients, caregivers and clinicians can monitor progress and provide mutual feedback.

4) To document all content and development steps openly, enabling other hospitals or rehabilitation centres to build on the experience.

Fourth, to apply value-based health care principles, focusing on patient-reported outcomes and experience rather than the number of services delivered.

These goals were achieved through a structured **Living Lab methodology, which allowed the hospital and its partners to jointly develop, test and validate a sustainable digital solution, and to build a replicable co-creation model for innovation in care**.

Implementation and uptake phases



Exploration (≈2–3 months): Ward observations and over 30 interviews with patients, relatives and staff produced a ranked list of needs and initial sketches of the design.
Co-creation (≈2–3 months): Mixed stakeholder workshops involving the Liberec team
Prototype/testing (≈3–4 months): Rapid prototype iterations were usability-tested with patients and their caregivers. The feedback received drove two major UI simplifications and the addition of a caregiver view.
Validation (≈1–2 months): The Open Innovation Camp II involved 46 participants who stress-tested the near-final version, while clinical staff reviewed exercise and prevention routine.
Initial uptake (ongoing in short cycles): The spinal unit continues to use Rovinka in testing mode. Selected patients receive the tool and staff gather feedback. Minor content tweaks are then made.

Key actors and roles

The pilot was carried out by a multidisciplinary team:

- Clinicians and therapists from the Regional Hospital Liberec (KNL), who defined clinical content and ensured patient safety.
- DEX Innovation Centre, responsible for Living Lab facilitation, stakeholder coordination and methodological documentation.
- Mebster, the SME leading technical design and future development activities.
- The Technical University of Liberec, providing research and analytical support.
- Peer consultants from the Czech Paraplegic Association, contributing patient experience and feedback.

This consortium followed the HL4V Living Lab methodology, combining design thinking, rapid prototyping, qualitative evaluation and continuous reflection under real hospital conditions.

Co-creation across countries

The Czech solution was developed and validated within the Liberec Living Lab, but it evolved within the broader collaborative framework of the Health Labs4Value (HL4V) international project consortium. Thanks to the continuous exchange of information between project partners, both the Living Lab concept and the overall methodological approach were aligned across countries, making them transferable beyond the Liberec region and beyond the Czech context.

Throughout the project, the Liberec team regularly shared progress updates and insights with partners from other HL4V countries. This cooperation took place through joint workshops, monthly consortium calls, and several bilateral consultations. These interactions focused on methodological aspects, such as stakeholder engagement, evaluation of pilot activities, documentation standards, and sustainability planning, helping to harmonise the Living Lab approach among all participating regions.

The key features of this co-creation process were:

- Active international collaboration: Partners from several HL4V countries (Czech Republic, Slovakia, Poland, Hungary, Slovenia and Germany) exchanged experience and feedback throughout the development and validation of the solution.

- Structured and recurring communication: Transnational meetings and online sessions created a continuous feedback loop between local pilots and the overall project framework.

- Methodological consistency: Regular updates and peer reviews ensured that the Czech Living Lab followed the same co-creation logic as other HL4V pilots, aligning processes.

This process ensured that the final solution reflects shared European experience and demonstrates how locally implemented activities can remain connected to a common international methodology. Although the solution was developed and tested in Liberec, it represents the practical validation of the Health Labs4Value Living Lab framework and **provides a transferable model for patient-centred innovation in healthcare.**

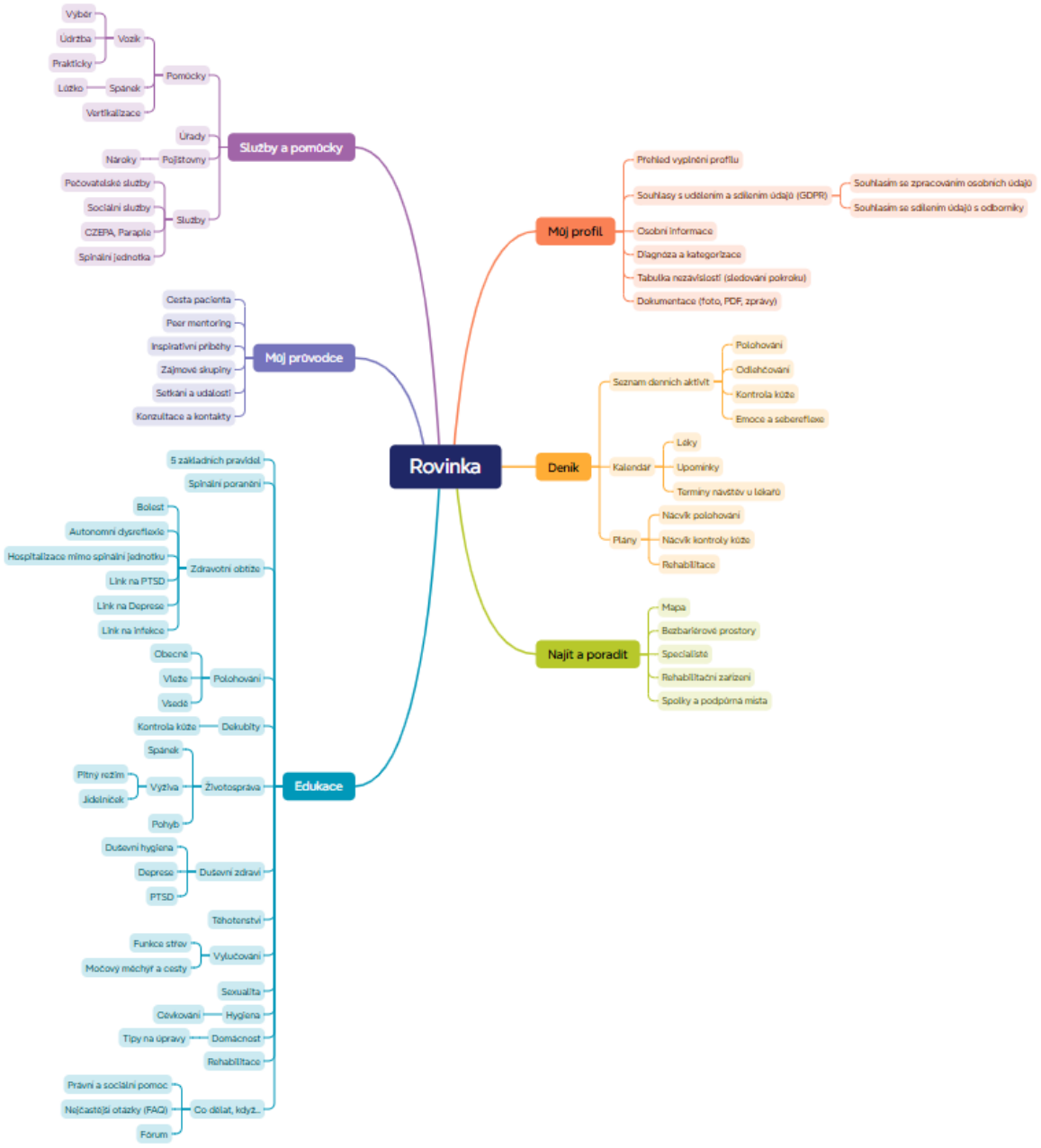
Rovinka is no longer just an idea in the pilot stage, it has begun to become part of everyday practice. The Living Lab partners, including the DEX Innovation Centre, Regional Hospital Liberec, and Mebster, continue to collaborate on its further application and on using the validated methodology to address new healthcare challenges. Interest from other Czech rehabilitation centres, hospitals and innovation centres confirms that the process developed in Liberec has real potential for broader adaptation and reuse.

The pilot leaves behind two tangible assets

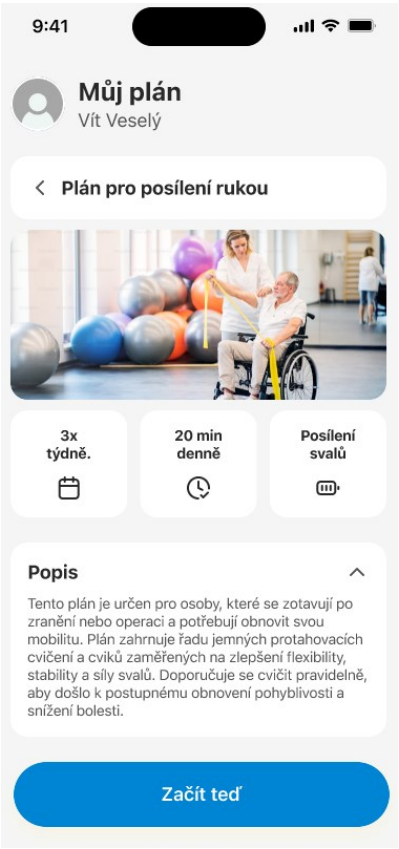
- A validated digital solution package (content library, documentation and design blueprint) that is ready for implementation and use in other settings.

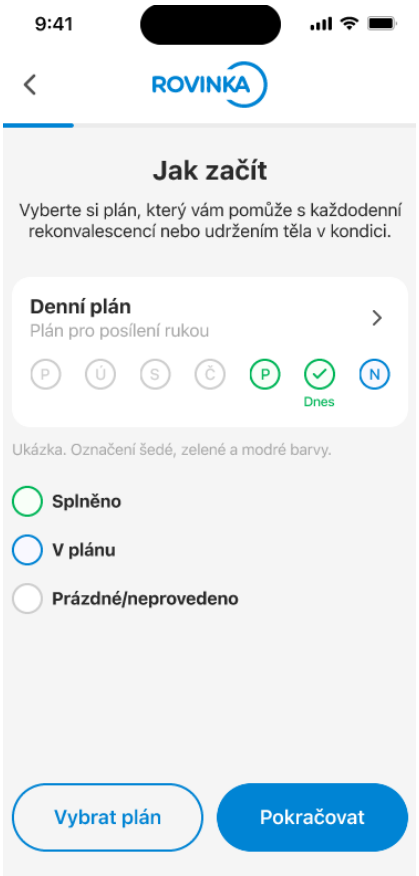
- **The second is a reusable Living Lab/Value-Based Health Care process model, which enables any hospital or department to replicate the co-creation cycle and adapt it to their own needs.**

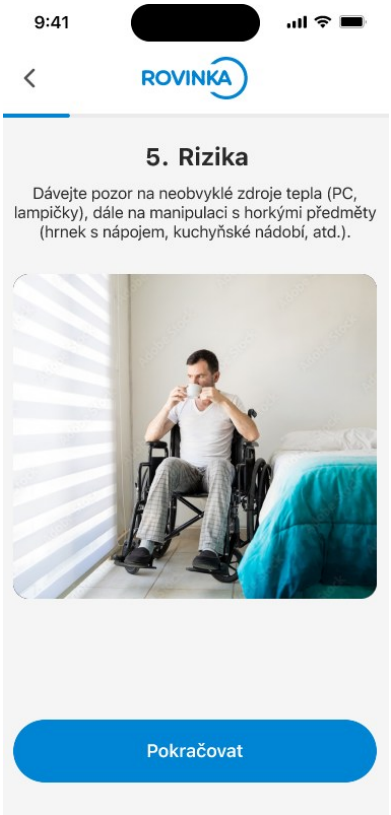
MIND MAP – structure of the digital solution

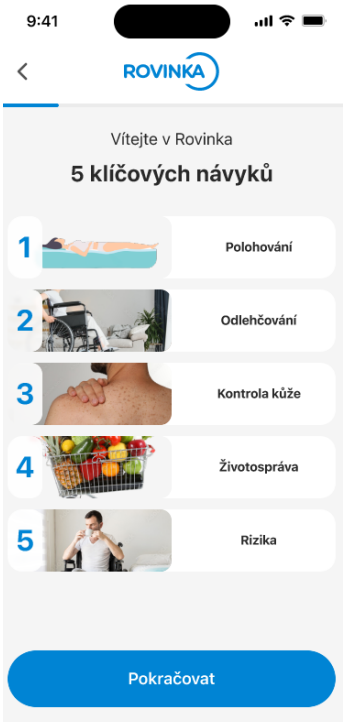


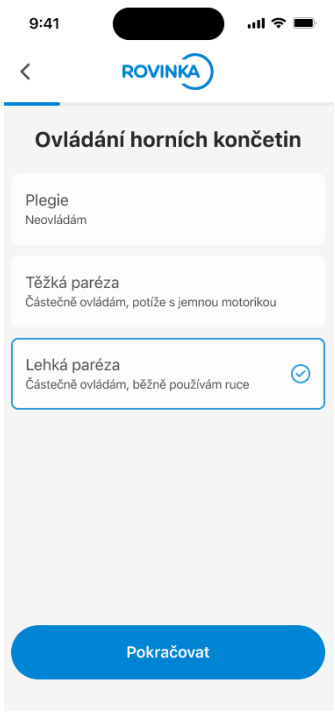
Examples from the application: daily plan, how to start, risks, physiotherapy plan, positioning, key habits, warnings.





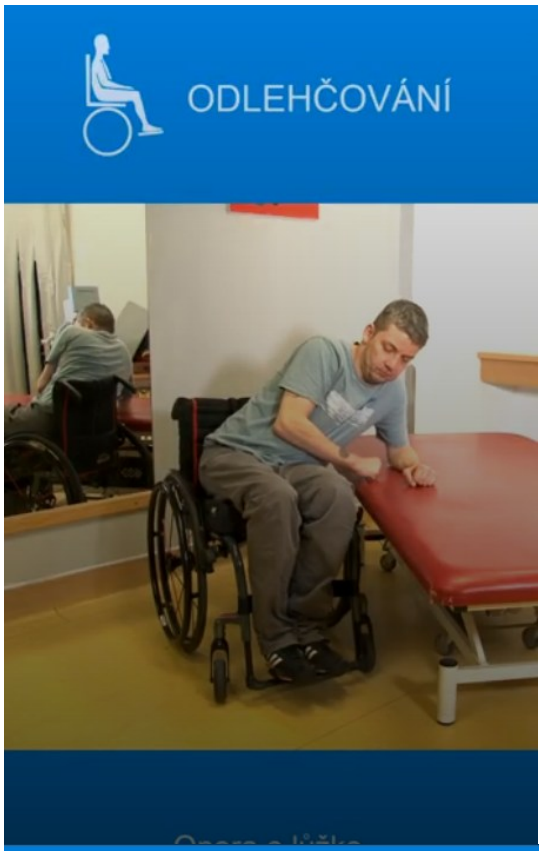






The following pages contain **samples from videos** that are the part of the application and were created directly at the spinal unit with local staff, peer workers and patients who agreed to the recording of video for these purposes.
The videos will be linked to the application. For now, they are stored in shared storage, and here we offer you a few samples. There are more videos, but these have undergone post-production.
Under each image, you will find a brief description of what the video is about.

These demonstrations show methods of getting on and off the wheelchair, as well as a demonstration of the wheelchair itself. Choosing the right wheelchair is crucial for patients with spinal injuries, which is why patients and spinal unit staff suggested creating a separate video on this topic.



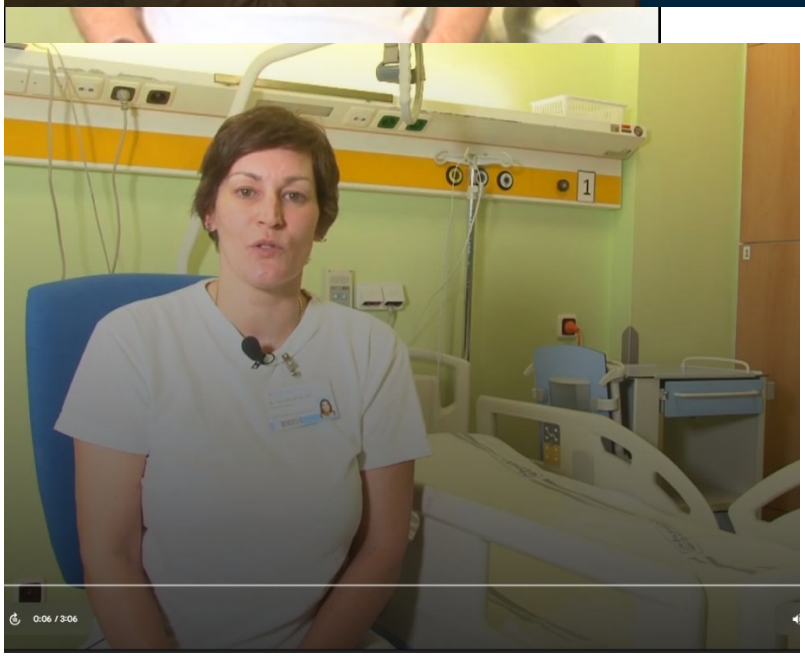
The following video excerpts deal with a very important topic related to rehabilitation: **"Offloading"**

Offloading reduces the load on the wheelchair user's body, improving their comfort and mobility.

The aim is to enhance user comfort and minimise the risk of health complications, such as pressure ulcers.

It also facilitates the manipulation of the wheelchair and improves its manoeuvrability.

It also allows the user to be more independent and participate more actively in everyday life.



Repositioning is an integral part of a spinal patient's daily life.

This is another preventive measure against pressure ulcers. The pictures show the areas of the body at risk of pressure ulcers, and an occupational therapist talks about this issue.

There are photos form interviews with patients, activities, and meetings of the entire team.

Testing the application directly with the patient. (January 2025)

Open Innovation Camp II – Validation of needs (February 2025)

Open Innovation Camp II – Validation of needs (February 2025)

Regular meeting with the staff of the spinal unit at the hospital (April 2025)

Measurable results

The Liberec pilot was primarily designed to test and validate **the Living Lab methodology for developing patient-centred digital solutions rather than to generate quantitative clinical data**.
Consequently, the evaluation focused on qualitative, real-life indicators that were systematically collected within the Living Lab environment.
This approach allowed clinicians, hospital staff, patients, carers, researchers and company representatives to work together continuously, observe behavioural changes and reflect jointly on how the process itself improved communication, learning and continuity of care.

Data sources - To ensure robust and verifiable evidence, several complementary methods were employed throughout the pilot cycle. These methods were all embedded in the Living Lab routine.

- **Interviews and focus groups**: During the exploration phase, more than 30 structured interviews were conducted with patients, family caregivers and ward staff, followed by focus groups after discharge and during two Open Innovation Camps.

- **Core-group debrief meetings:** Regular debriefs were held at least once every four weeks with clinicians from the spinal unit, the DEX Innovation Centre and Mebster. Observations from clinical practice were logged and analysed, and the results were used to make direct design adjustments. This demonstrates how continuous feedback loops drive improvement within the Living Lab process.

- **Usability testing**: Several versions of the solution were tested with patients and caregivers in hospital and home environments. User feedback led to two significant simplifications of the interface and the creation of a caregiver view, **which confirmed the value of co-creation and evidence-based iteration.**

Main findings

The Living Lab pilot demonstrated that a structured approach to co-creation can directly enhance the quality and continuity of care for patients with spinal cord injuries.
These findings reflect the benefits of both the Rovinka solution and the collaborative process that shaped it.

1. **Strengthening prevention and patient awareness**

The risk of pressure ulcers was a recurring topic in almost every interview. Patients and their families often underestimated how quickly skin damage could develop after discharge. To address this challenge, Rovinka created short instructional videos featuring nurses and personalised reminder prompts.

During follow-up discussions, users reported that these reminders 'kept the topic in mind' and helped them to maintain regular offloading and exercise routines.

This outcome shows that co-created digital educational materials can effectively support patients in adhering to preventive care routines once they return home.

2. **Closing the information gap**

Both patients and caregivers emphasised that the solution provided a reliable, central source of information on exercises, prevention, and key contacts.
One participant explained: *'It contains useful information for both new and experienced wheelchair users. It helps us to stay organised and avoid unnecessary problems.'*
By bringing together a variety of materials on one accessible platform, the project eliminated the fragmented information that patients and families had previously experienced.

3. **Streamlining staff effort**

Hospital staff confirmed that the solution could replace fragmented paper materials with a unified multimedia script for patient education purposes.
As one physiotherapist noted: *'It's a way to preserve and share our experience so we can help patients more effectively.'* This improvement also demonstrates how the Living Lab process fosters staff ownership and continuous learning within clinical teams.

4. **Building engagement and collaboration capacity**

The pilot demonstrated that the Living Lab structure itself fosters motivation and openness to innovation.
Patients, families, clinicians and students were keen to participate in testing and refinement, describing the process as 'useful and inspiring'.
This engagement demonstrates that structured collaboration can strengthen the local innovation culture and ensure improvements are sustained beyond the lifetime of a single project.

Why these findings matter

Even without quantitative clinical indicators, the combination of interviews, focus groups, debrief meetings and usability testing produced verifiable qualitative evidence of impact. The Living Lab methodology proved to be an effective framework for gathering and utilising real user feedback to enhance care processes.

<u>Key demonstrated benefits include:</u>

- Increased patient confidence and self-management in rehabilitation.

- Reduced staff workload through harmonised educational materials.

- Strong stakeholder engagement and commitment to continuous improvement.

In summary, the Czech pilot provided measurable qualitative proof that a structured Living Lab approach can enhance patient empowerment, prevent secondary

complications, and improve staff efficiency, outcomes that can be replicated in other hospital environments using the same methodology.

3. Sustainability of the solution

Sustainability Strategy

The Regional Hospital Liberec owns and stewards the validated Living Lab methodology and optimised care processes. The digital application (Rovinka) is being developed further with Mebster acting as the technical partner. The hospital's Living Lab team is responsible for clinical governance, staff training and continuous feedback loops, while Mebster provides technical maintenance and incremental feature updates.

As a technical partner - Mebster handles all source code, servers and security patches. The hospital's IT department simply applies its established GDPR routines and ensures that future software updates do not disrupt ward workflows. Educational content, such as videos, prevention checklists and caregiver tips, is stored in a shared repository. Clinicians can update this material without affecting the core software.

Further development is already planned within Mebster's grant and investment pipeline. The company has experience of securing Czech and EU innovation funds and has incorporated Rovinka into its strategic roadmap. Upcoming calls (e.g. TA ČR, OP TAK) are earmarked for feature expansion and broader system integration. The spinal unit Living Lab continues to serve as an active test bed, offering a ready-made user environment and patient cohort for each new funding bid.

Key lessons learned

1. **Patient-centred care only works when patients are true partners**

Once we involved SCI patients and their families in every design decision, they became much more engaged, and the content became much clearer. However, as every patient is different, we will never treat a single comment as gospel; instead, we will continue to listen, cross-check and refine until a change benefits the majority of users without making the tool too complicated.
Future releases will therefore maintain the principle of 'one patient, one vote' and include a bedside tutorial with the app to give users confidence from day one.
This experience confirmed that structured co-creation, as promoted by the Living Lab methodology, is feasible in hospital settings and creates a stronger sense of ownership and sustainability among patients.

2. **Less is more**

Rather than asking, 'What else can we add?', the team started asking, 'Does this reduce complications or confusion?' This approach led us to remove several unnecessary screens and focus on pressure-ulcer prevention and simple exercise tracking.

All future upgrades will undergo the same testing process: first, we establish whether there is a measurable benefit; then, we consider additional features.
This outcome-oriented approach has now been integrated into the hospital's Living Lab framework and serves as a model for evaluating any future digital innovations.

3. **Co-creation shortens the road**

Rapid, mixed-stakeholder sprints helped us to identify problems early on, saving weeks of redevelopment work. We will maintain the same rhythm of exploration, testing and refinement because this approach keeps momentum high and complications to a minimum.
Experience has shown that the Living Lab process provides an efficient, repeatable structure for digital health innovation. Its flexibility and simplicity mean it can be transferred to other hospital departments or care pathways.

4. Upscaling of the Technical Solution

General goal and strategy for upscaling

The Liberec pilot demonstrated that a patient-centred Living Lab approach can help patients with spinal cord injuries maintain a structured physiotherapy routine from hospital to home.
Therefore, the focus of the upscaling process is not only on expanding access to the new solution, but also on replicating the validated Living Lab methodology that enabled its creation.
The aim is to increase impact by transferring knowledge, empowering patients and replicating processes, and embedding co-creation as standard practice in healthcare improvement.

This is how we can / plan to achieve it

1. Follow the full SCI pathway, rather than just one facility - Upscaling starts inside the Czech care trajectory: acute spinal unit → rehabilitation clinic → home → annual check-ups. At each stage, we conducted brief, structured interviews to track progress and identify new barriers, feeding this information straight into our digital solution updates. This ensures the content remains in every real-world setting where patients need it.
2. Treat the Liberec Living Lab as an open hub - The spinal unit will remain the 'test kitchen' where new ideas are prototyped in short cycles. However, neighbouring hospitals and rehabilitation centres can also contribute without establishing full innovation departments. They will receive the process information and outputs through regular meetings and participation in joint activities and visits.
3. Make the most of the university bridge - Our partnership with the Technical University of Liberec increases capacity: students document patient journeys for their theses, while health management researchers evaluate outcomes. This academic loop deepens the evidence base and trains the next generation of motivated digital health students and researchers.

Concrete goals and measures for upscaling

Rovinka is a new digital solution containing field-tested content, workflows, and design files that were developed during the Czech Living Lab pilot. The next logical step in the Czech Republic is to increase access to the programme by rolling it out in the three remaining spinal units and major rehabilitation centres, thereby making it available to many more SCI patients.

Upscaling paths
Short term (12 months): quantitative
We will finalise the Czech content, provide training to ward teams in the other national spinal centres, and incorporate Rovinka into their discharge checklists. Mebster will use its existing peer network contacts to introduce the tool at patient meetings and through social media groups so that families and GPs hear about it.

Mid-term (18–36 months) – institutional and functional:
As the user base grows, new stakeholders will join in, such as dietitians, psychologists, and community nurses, who will contribute extra modules. The Living Lab template that we tested in Liberec will be offered to other hospital departments as a quick way to co-create digital aids for different conditions, turning the spinal unit's innovation corner into a small, multi-topic hospital hub.

Long term (3+ years) – geographic
Once the Czech rollout is running smoothly, the same bundle can be localised for neighbouring countries. As the interface is icon-led and the content sits in a separate layer, a translator can replace the Czech text with Slovak, German or Romanian text, for example, without altering the core code. Mebster handles regulatory alignment, while local rehabilitation institutes pilot the tool under their own data protection rules.

Why is this feasible?

Funding routes have been mapped out, including national innovation calls (TA CR, OP TAK) for further development, small onboarding fees from clinics and in-kind staff time from partner hospitals.
Feature growth is modular: after physiotherapy and pressure-ulcer prevention come optional extras such as a peer-support chat room or GP-friendly progress reports, which are activated only where they are useful.
The Quadruple Helix model, which proved effective in Liberec, can be replicated in each new location. This model involves patients, clinicians, researchers and innovation facilitators working together.
As the structure and methodology of the solution are modular, each new site can adapt it to its own context while preserving the validated **Living Lab principles of co-creation and continuous improvement**.

Resource Requirements for upscaling

Rather than a purely technical rollout, the solution can be scaled efficiently using a 'process replication' approach.

Each new hospital or rehabilitation unit requires only:

- a small interdisciplinary coordination group comprising a clinician, therapist, IT contact and patient representative,
- access to methodological materials and training resources,
- and a few dedicated feedback sessions with end users.

Day-to-day operations remain unchanged. Introducing Rovinka simply involves adding a short onboarding session for patients and a quarterly review meeting for staff. All other processes fit within existing care routines and quality improvement activities.

Next steps and commitments

Evidence for uptake and upscale (RCR104)

To ensure the continued cooperation and wider use of the validated approach, several follow-up activities are currently being prepared.

Action plan - This action plan will set out specific steps for expanding functionalities, adapting educational content for new diagnostic groups and engaging with additional partners, such as regional rehabilitation centres and physiotherapy associations.
The plan will also include short evaluation loops to capture lessons learned from each implementation step.

A letter of commitment is currently being drafted between the Regional Hospital Liberec, partner rehabilitation institutes and the Czech Paraplegic Association.
These documents will formalise collaboration and support the dissemination of the Living Lab methodology and the Rovinka solution beyond the Liberec region.

International collaboration and knowledge sharing - The hospital and the DEX Innovation Centre are preparing to share their methodological experience with HL4V network partners and other international Living Lab initiatives.
Cross-border exchanges will focus on aligning evaluation methods and exploring opportunities for replication within similar healthcare settings in Central Europe.

These steps confirm that Rovinka and its Living Lab methodology will continue to be maintained as a living, collaborative framework — one that will expand its reach through formal partnerships and knowledge exchange rather than a large-scale commercial rollout.

Resources and requirements

The main objective of the upscaling phase is not to replicate a single digital tool, but rather to expand upon the Living Lab approach that facilitated its development.
The Liberec Living Lab has demonstrated that engaging patients, clinicians, and innovation partners in brief, well-structured co-creation cycles **can result in tangible enhancements to healthcare**.
The next step is to integrate this process into standard hospital practice and share it with other departments and regional healthcare facilities.

Human requirements and partnerships

In order to replicate the Living Lab approach, each participating hospital requires a small coordination group comprising, ideally, a clinician, a physiotherapist or a nurse educator, an IT contact and a patient representative.
This team will lead local co-creation workshops, collect feedback, and ensure that improvements respond to real needs.
The Liberec team will provide support or bring the best practise examples (also lessons learned) for setting up new Living Labs, while the DEX Innovation Centre will support the documentation process and ensure alignment with the tested methodology.
The Technical University of Liberec and HL4V partners from Slovenia, Hungary, Germany and Poland will continue to share their experiences to ensure that methods and results remain comparable across countries.

Operational changes

Setting up a Living Lab does not (necessary) require the creation of a new department.
This approach can be integrated into existing hospital routines, particularly those related to quality improvement, rehabilitation, and patient engagement.
In Liberec, this way of working is spreading to other departments, such as rehabilitation and chronic care, and several regional facilities have expressed an interest in implementing the same structure.
This gradual, peer-to-peer approach helps Living Lab principles to take could root naturally across the Czech healthcare system.

Technical aspects

As the Living Lab is a methodology rather than a software platform, there is no need for it to be integrated with hospital IT systems.
The lightweight tools used, such as shared online workspaces, templates and evaluation forms. are easy to adapt.
All documentation and materials are securely stored in a collaborative digital repository, enabling hospitals to reuse and update them independently.

Financial aspects

Scaling up the Living Lab approach is cost-effective, and people driven.
The main investment required is **staff time**, which can be covered within normal hospital budgets.
Occasional mentoring or training sessions may be co-funded through national innovation programmes (TA ČR, OP TAK), or through joint European activities or under the HL4V framework.

Relying on existing staff, shared materials and structured collaboration means the Living Lab approach remains affordable, adaptable and sustainable, providing a practical framework for continuous innovation that any hospital or regional health facility can adopt.

5. Conclusions

The Liberec pilot demonstrated that the Living Lab approach can transform the way hospitals approach innovation.
By involving patients, clinicians and partners in a clear, step-by-step process, the team created a functioning digital tool and a repeatable method for designing improved care.

In the short term, *Rovinka* will remain on the Liberec spinal ward while the team and Mebster finalise the first production version, record more exercise videos, and continue testing new updates with the same patients and clinicians who helped develop it.
By the middle of next year, it is expected that more Czech spinal units and rehabilitation centre will have a 'starter pack' comprising the app, a short user guide and a onboarding script for staff.
This will be the real test: a simple nationwide rollout that treats *Rovinka* as the standard discharge tool for patients with spinal cord injuries and demonstrates that a Living Lab team can disseminate good practice without bureaucracy.

In the longer term, the focus will shift to sharing the solution and the method beyond borders.
As all patient materials are stored separately from the app's technical core, hospitals in neighbouring countries will be able to easily translate and adapt them to their own regulations. Future versions may include peer-support chat, tele-rehab check-ins, or links to national e-health systems, while always maintaining a balance between data protection and real clinical value.

Three simple principles have remained constant throughout the project: keep the patient voice at the centre, grow the knowledge before the software and combine public funding with small service fees to stay financially stable. The Living Lab in Liberec in Czech Republic is now both a place and a method, proving that healthcare innovation can be people-focused and practical.