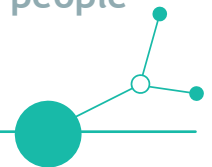


A3.2 - Regional Innovation plan

D 3.2.3 Innovation plans for long-term care facilities for older people

Rzeszow Regional Development Agency



Version 2
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Regional Innovation plan [Podkarpackie region]

1) Define and describe purpose for the innovation

Define a systematic innovation approach aligned with strategic goals and long-term success. Clearly outline the plan's intent to guide decisions, resource allocation, and stakeholder engagement. Please, consider the motivation for innovation and two frames of the innovation - ideal and realistic solution.

This innovation plan envisions a transition from isolated, ad hoc tool-based improvements to a coherent, measurable innovation program aimed at enhancing the quality of care, increasing the efficiency of caregiving activities, improving information flow among staff, and significantly reducing paper-based documentation.

Specifically, the plan includes the two-way integration and standardization of data between the DC Analytics - original application for rehabilitation sector, developed and implemented as part of the DigiCare4CE project, and the existing ERP system used at DONUM CORDE Center for Rehabilitation and Medical Care.

Through this integration, patient data, therapy schedules, and rehabilitation outcomes will be automatically synchronized between the systems, eliminating the need for manual data transfer and minimizing the risk of errors. Furthermore, the implementation of data standardization provides a solid foundation for the continued digital transformation of the facility increasing both organizational and technological flexibility, and facilitating future adoption of additional IT solutions supporting long-term care and rehabilitation processes.

In the past, actions were taken on an ad hoc basis - small improvements were introduced that worked locally but had no impact on the healthcare system as a whole. An example can be separate IT systems for rehabilitation and administration, which do not communicate with each other. In practice, this means double data entry, a lack of up-to-date patient information, and a higher risk of errors.

The new approach assumes a shift towards an integrated, consistent innovation program. The goal is not just the technology itself, but real improvements in:

- the quality of patient care (better access to data, faster decisions),
- the efficiency of teams (less paperwork, more time for working with patients),
- communication among staff (shared tools, the same information in the system).

Motivation: Aging societies, combined with the demographic decline observed in recent years, are expected to lead to serious staff shortages in care facilities in the near future. Without digitalization, this form of institutional care will be unable to meet the growing needs of the senior population. It is estimated that by 2035, the number of people aged 75 and older in the region will increase by 37%. Without digital transformation, the availability of physiotherapists will drop drastically, partly due to the increasing burden of documentation requirements.

Moreover, regulations are continuously tightening the standards for digital medical records, often under threat of financial penalties. For example, the e-Health (e-Zdrowie) system in Poland aims to streamline the management of medical documentation and enable more accurate patient diagnoses. In the coming years, the volume of data that must be submitted digitally to governing institutions (such as NHS) will continue to grow.

At the same time, the new generation of employees - Generation Z, raised in a fully digital world - will not thrive in an environment dominated by paper-based documentation. In parallel, technological progress is raising expectations among patients' families, who demand a modern

approach towards care and instant access to information about their loved ones' health status and therapy progress.

Ideal Solution: The ideal solution is a single, unified, integrated digital environment. In the rehabilitation sector, this would mean the creation of a unified platform for data storage that includes: the patient's medical records (with a list of conditions), therapy/treatment plans, data from IoT devices used in rehabilitation, rehabilitation outcomes, and health improvement forecasts – all accessible in real time.

Taking GDPR regulations into account, the optimal technological model would be an on-premises solution, operating within the facility's internal systems. The estimated implementation timeline is between 5 and 7 years and would involve several investment phases. The projected risk is high, primarily due to the complexity of the processes to be integrated, as well as limited staff competencies and readiness for large-scale transformation.

Nevertheless, the benefits are substantial – the creation of a complex, innovative, and personalized care system that responds to growing demands and is resilient to deepening challenges such as staff shortages. A direct benefit for the staff is the saving of many hours per year previously spent on documentation. Currently, the administrative workload related to a single patient can exceed one hour; with an integrated system, this time could be reduced to just several minutes.

It is important to note that the ideal solution serves as an inspiration and a strategic guide for future investments, offering space for innovative improvements as appropriate resources become available and the staff's digital maturity increases.

Realistic Solution: A realistic solution involves enabling two-way exchange of selected types of data, such as patient information and indicators, therapy plans, or treatment outcomes. This is achieved using integration technologies based on open data exchange standards that leverage existing systems.

In the following phase, once the database is complete and both systems and end users are prepared, it will be possible to implement solutions based on artificial intelligence. The estimated implementation time is up to 12 months, with integration of functionalities carried out gradually at regular intervals.

The level of integration risk is moderate – the limited scope of standardized functionalities allows of quick learning from errors. The main benefit, that is automatic completion of documentation processes is immediately noticeable. The realistic solution builds trust and quickly demonstrates the value of the transformation process.

Stakeholder Engagement:

Different stakeholders involved in the digital integration process play distinct roles:

- **Management** is responsible for securing financial resources and serves as the primary sponsor of the initiative.
- **The Head of the Rehabilitation Department** sets priorities and selects the data to be integrated.
- **Physiotherapists (end users)** test new features of the integrated system and report any challenges encountered.
- **IT specialists** provide expertise and technical solutions, particularly in the areas of data processing and security.
- **Patients and their families** – as recipients of feedback on health and rehabilitation progress highlight unclear or low-quality areas that may go unnoticed from the staff's perspective.

Resource Allocation Principles:

1. The budget is pre-allocated to specific categories.
2. Each new function has a 21-day testing period; if it delivers no value to users, it is abandoned.
3. Expert time is reserved first, followed by the selection of appropriate tools.

Such a designed innovation plan minimizes the risk of implementing initiatives that lack real business value, while at the same time providing the facility with the space to introduce ambitious improvements when appropriate resources become available and the team reaches sufficient maturity. The realistic solution enables quick results and builds trust, whereas the ideal solution serves as a long-term strategic guidepost, indicating the direction of the facility's transformation.

2) Considered factors before a Innovation plan design

Review and integrate regional (and, if relevant, national) digital transformation policies, strategies, and guidelines. Focus on identifying regional priorities for LTC digital transformation, evaluating investment levels in care innovation, and recognizing the key elements for digital transformation as defined by policymakers. Evaluate impact on ecosystem, consider legal regulations and the need of processes transformation. Also identified bottlenecks and challenges.

Strategic Approach to LTC in the Future:

The Podkarpackie Voivodeship emphasizes the need for the digitalization of healthcare and care services in numerous strategies and strategic documents. The Region identifies digitalization as a key "equalizer of opportunities" for peripheral areas. Documents such as the *Podkarpackie Voivodeship Development Strategy 2030* and *European Funds for Podkarpackie 2021-2027* focus on the development of broadband infrastructure and public e-health services (e.g., the e-Health system). They also anticipate the implementation of interoperability projects between 2025 and 2027.

At the national level, strategic documents such as *E-Healthy Future 2021-2027* and the *Center for e-Health Program 2023-2027* promote the standardization of systems and interoperability of medical data. The development of electronic medical records and e-health services has been recognized as the foundation of digital transformation. The long-term care sector has been identified as an area requiring "urgent pathway projects."

Significant funds from the European Funds for Podkarpackie have been allocated to the digitalization of healthcare, including long-term care, co-financed by the ERDF and ESF+. At the national level, the European Social Fund+ supports the deinstitutionalization of long-term care, including the development of new forms of day care and the expansion of access to home care services.

Decision-Makers' Approach to Digital Transformation:

From the perspective of regional policymakers, effective digital transformation is built on several key pillars. First and foremost, investment in the digital competencies of staff and a shift in mindset—particularly among employees over the age of 50—are essential. Bridging the digital skills gap is a prerequisite for ensuring that further initiatives can be implemented efficiently and in a socially acceptable manner.

Another priority is data security and full compliance with GDPR regulations, regarded as a foundation rather than an optional component. The protection of medical data is crucial for building trust among patients and staff toward new digital solutions.

The next stage of transformation involves the development of online reporting tools and the integration of data in a manner consistent with information collected in other rehabilitation facilities. Particular emphasis is placed on the development of remote services, including tele-rehabilitation and remote therapy monitoring, which enhance accessibility of care and address challenges related to growing demographic needs and limited human resources.

Identified Bottlenecks and Challenges:

- The need for supplementary training on new technologies to address staff concerns.
- An insufficient number of devices required to deliver care and rehabilitation services – to be resolved through additional procurement by the facility.
- Lack of full integration between DC Analytics and the facility's system, resulting in only partial data exchange and interoperability.

Most of the risks do not come from the technology itself, but from the ecosystem itself, including competencies, procedures, legislation, and supply chains. Therefore, the innovation plan must project not only the standardization and exchange of data between systems, but also:

- the implementation of the FHIR standard as the foundation of interoperability,
- an open API policy to reduce the risk of vendor lock-in,
- a long-term cost analysis (for at least three years), particularly after the completion of grant-funded projects.

Potential Obstacles and Challenges That May Arise at Other Facilities:

- Low awareness among decision-makers and staff regarding medical data exchange standards, as well as incorrect data mapping,
- Insufficient digital competencies among staff (necessity to level digital literacy),
- The need to adapt existing digital infrastructure to the implemented technology,
- Data security - low levels of both data protection and data security awareness,
- Existing solutions used in long-term care facilities come from various vendors; there is a lack of a unified procedure vocabulary, and not all solutions apply data exchange standards such as HL7 (Health Level Seven - a set of international standards for medical data/records exchange, integration, sharing and recovery),
- Grants typically covering investment costs only, omitting its maintenance (e.g., SaaS license fees),
- System degradation caused by lack of funds for updates and support,
- Public procurement procedures as mandatory for purchases funded by grants significantly extend the documentation process and require hiring external experts, who are often focused solely on solutions provided by their partner companies,
- Use of external companies for creating procurement specifications may result in **vendor lock-in**, i.e. signing contracts with a single cloud or ERP system provider, or other system provider that prevents future migration and data standardization efforts.

The analysis shows that both the region and the country are creating favorable strategic and financial frameworks for the digital transformation of long-term care. However, the greatest challenges concern infrastructure, staff competencies, and the lack of unified data standards. Overcoming these obstacles is the only way to achieve true system interoperability and to build a cohesive care ecosystem resilient to growing demographic and workforce challenges.

3) Explore various levels of digitization, determine level of digitalization

Select the appropriate digital maturity level for your innovation—from Basic Digitization to Full Digital Transformation—and indicate the corresponding EU Technology Readiness Level (TRL).

Describe your choice in terms of:

- *Technology Adoption: Implementation of digital tools across the organization.*
- *Process Integration: How digital technologies are embedded in core workflows.*
- *Data Utilization: Use of data for decision-making and operational improvement.*
- *Innovation Capability: The organization's ability to drive digital innovation.*
- *Cultural Shift: The extent to which digital skills and mindsets are integrated into the culture.*

The rehabilitation sector is the least technologically advanced among all areas of healthcare when it comes to documenting treatment processes. The DC Analytics solution represents a breakthrough in this ecosystem. Its implementation enables comprehensive documentation of all aspects of the rehabilitation process, ensuring quick, complete, and easy access to information on the patient's condition and therapy progress. Moreover, in the event of a change in physiotherapist, it guarantees continuity of all rehabilitation activities. By facilitating patient satisfaction surveys, staff and management can effectively improve the quality of services provided at the facility.

The digital format of accessing and storing data streamlines the flow of information both at the staff-to-staff and staff-management level. Digitally generated reports can also be useful when internal (interdisciplinary) or external expert consultations are required.

Currently, the facility uses an ERP system that supports areas related to human resources, finance, and warehouse management but lacks functionalities typical of medical systems. In parallel, a proprietary rehabilitation system is used by physiotherapists for documenting rehabilitation performance, its progress and therapy outcomes. These two systems are only partially integrated, which results in the absence of automatic data exchange. As a consequence, some information must be manually transferred between systems, increasing workload and the risk of errors.

Digitalization Level Assessment:

1. **Technology Adoption** - Digital maturity level: *medium*. System fragmentation is present, but there is a strong technological foundation.

The facility uses two separate systems, each covering a different area of operations (administration vs. rehabilitation). IT infrastructure exists, but the systems lack interconnectivity.

2. **Process Integration** - Digital maturity level: *currently low*, with *potential for upgrade* after integration is implemented.

There is no automatic data synchronization. Processes are carried out separately in both systems. Future integration will enable a unified information flow between the care and rehabilitation departments.

3. **Data Utilization** - Digital maturity level: *low*, with *potential for upgrade to high*, data is used for reporting and operational decision-making.

Rehabilitation data is currently used only locally, without the ability to generate global reports within the existing ERP system. Integration will enable the creation of consolidated reports and cross-sectional analyses.

4. **Innovation Capability** - Digital maturity level: *medium and increasing*.

The facility has implemented a rehabilitation system, indicating willingness to improve processes. The next step is integration with the ERP system. The project paves the way for further innovation (e.g., therapy outcome monitoring systems, AI-based data analysis).

5. **Cultural Shift** - Digital maturity level: *low to medium*, can be improved through team engagement and education.

Summary - Overall Level of Digitalization: *Medium*

Technology Readiness Level (TRL): *TRL-6 - Technology ready to be demonstrated in relevant operational environment.*

The project to integrate the ERP system with the rehabilitation DC Analytics system is not a full-scale digital transformation in the strict sense, but it represents an important step towards mature

interoperability. It serves as a bridge between an independent digital solution and fully integrated healthcare management within the facility.

Looking ahead, due to its development potential, the system may evolve into a fully integrated tool that further enhances rehabilitation activities. Potential development directions beyond ERP integration include:

- patient medical records including a list of medical conditions,
- therapy/treatment plans,
- data from IoT devices used in rehabilitation,
- rehabilitation outcomes and health improvement forecasts.

All of the above elements will enhance the resilience of the rehabilitation sector to future challenges and mark the first step toward fully integrated and standardized care. Ultimately, they will also drive a shift in mindset toward a smart, innovative approach in this sector.

4) Define and describe objectives (with dependencies and indicators) for the innovation (related to the purpose)

Set clear, SMART (specific, measurable, achievable, relevant, and time-bound—that) goals targeting outcomes like enhanced product features, improved client satisfaction, or cost reduction. Include defined KPIs and success criteria to track progress and resolve any conflicting aims early.

For each stage of the project, we have set measurable goals to track progress:

In the pilot phase:

- Are data being correctly synchronized between the systems?
- How do users evaluate the system (surveys/interviews)?
- How often do technical errors and failures occur?

In full implementation:

- How much time does the staff save thanks to the automation of documentation processes?
- How has the quality of reports and the availability of information changed?
- Has patient and family satisfaction increased?

An important point: we distinguish between two types of indicators: **technical** (related to system performance) and **human** (related to how staff use the system and its impact on patient experience). This approach enables a comprehensive evaluation of the project from both a technological and organizational perspective, and also allows for understanding its real impact on daily work.

The primary objective of the project is to ensure that data entered by physiotherapists into the rehabilitation system (e.g., schedules, therapy progress, exercise outcomes) is automatically and accurately transferred to the ERP system, which is used for patient data management, reporting, and planning. This will allow different departments (care, administration) to work with the same, consistent information, eliminating the risk of discrepancies.

Progress tracking method: Quarterly audits will be conducted by comparing data across both systems to identify errors, inconsistencies, or missing information. The goal is to achieve $\geq 99\%$ data consistency.

Currently, staff must manually re-enter data between systems or enter it twice, which increases workload and the risk of mistakes. Another objective is to reduce this burden by automating data

flow—e.g., once a visit is recorded in one system, the information automatically appears in the other.

Another objective is to provide physiotherapists with quick and easy access to up-to-date patient data—such as previous rehabilitation sessions results, information from the care system, and contact details—all in one place. This will facilitate therapy planning and improve continuity of care.

Progress tracking method: The number of clicks and the time required for physiotherapists to access data will be monitored (before and after implementation). A short survey may also be used with questions such as: “*Are the necessary details easily accessible?*” and “*Does access to data make your work easier?*”

An important aspect of the project is employee satisfaction with digital tools, reducing frustration caused by work duplication, and increasing the sense of control over data management and efficient use of time. This represents another key objective. The new system should be more intuitive and supportive—otherwise, success will be difficult to achieve.

Progress tracking method:

Every 6 months, staff satisfaction survey will be conducted, including questions about: ease of working with the system, level of administrative burden, and perceived usefulness of the data and tools.

The integration is also expected to have an indirect impact on the quality of patient service—for example, faster access to information, better preparation of therapy, and the ability to provide consistent reports to family members. The goal is to improve the experiences of patients and their relatives regarding the quality of care provided.

Progress tracking method:

Every six months, surveys will be conducted for patients and their families (or caregivers), including questions about communication, rehabilitation processes clarity, information accessibility, and overall satisfaction.

The final objective is to ensure that the entire system integration process complies with legal regulations, particularly in the areas of personal data protection (GDPR), medical documentation processing, interoperability standards, and cybersecurity protection.

Progress tracking method: Compliance audits will be carried out by the IT department, the Information Security Administrator, or an external auditor. The audits will review access logs, patient consent procedures, technical documentation, and compliance with e-health requirements.

Thanks to clearly defined objectives and associated monitoring methods, it will be possible not only to track the project’s outcomes in real time, but also to respond quickly to any issues and ensure lasting value for both the organization and the patients.

5) Define and describe development requirements and processes for the innovation

Describe the process for planning, designing, and deploying the innovation. Define clear milestones and scope, ensuring that digital innovations are smoothly integrated into existing workflows. Evaluate technology needs, assign key roles with specific responsibilities, and incorporate diverse stakeholder perspectives to preempt challenges. Define how the innovation will be realized, whether you want to use in-house development or you plan to use external developers.

To ensure the effective and safe implementation of digital innovations, we planned the process based on clearly defined stages, milestones, and roles, taking into account the perspectives of all key stakeholders.

Three approaches were considered in this context:

- developing a proprietary system from scratch (costly and time-consuming),
- purchasing an off-the-shelf solution (limited flexibility),
- combining existing solutions – which is the option that was chosen.

This third option:

- builds on what already works well,
- is cost-effective,
- can be implemented with current resources.

The project is carried out in stages. Each stage is tested and, if necessary, adjusted. Every change is documented. This approach minimizes risk and allows for responding to users' ongoing needs.

1. Joint Meeting of Management, Head of Rehabilitation, IT Department, and Administration

We define the main objective, success criteria, and a preliminary budget. This stage ensures a shared vision and a mandate for action. We map out a simple patient journey—from admission to rehabilitation completion marking points where data must still be re-entered manually. This highlights where integration will genuinely help and where intervention is unnecessary. We also analyze a list of risks (staffing, legal, financial) and prepare a mitigation plan of vulnerable areas.

Milestone M1: Documented project with objective, scope, and preliminary timeline.

2. Design - “How It Should Work” (Week 5-8)

Process workshops - small groups (therapists, administration) describe their ideal patient service workflow - they together shape the ideal solution.

Functional priorities - we define the indispensable minimum for the technology launch (e.g., three key data sets instead of “all at once”).

Technical resource assessment “what is checked”

- data exchange capabilities,
- number of available computers/tablets at workstations,
- capability of the ERP and rehabilitation systems support data exchange,
- staff capacity.

3. “Build or Buy?” Decision

- Purchase of a ready-made (“off-the-shelf”) solution, assess capabilities, integration.
- Build a custom in-house solution, define scope, resources, integration.
- Develop a data bridge via an external provider.
- Configuration, training, internal testing.

Milestone M2: Approved requirements specification and signed agreement with the external provider.

4. Prototype Development and Pilot Action (Week 9-20)

- One-way data bridge (from rehabilitation to ERP) in one department; verification of data transfer accuracy without manual corrections.
- Pilot implementation of two-way data exchange among testing group employees - verification of data consistency, entry time, and synchronization times.

Milestone M3: Decision: pilot action delivers expected value and risks are under control.

5. Roll-out - “Scaling Up” (Week 21-32)

- Onboarding additional staff and transitioning to electronic workflows
- Implementing a cascade training model - peer-to-peer learning / training
- Analysis of what went well and what needs improvement before the next phase
- On-site support - help desk available during the first week for newly onboarded staff

Milestone M4: all departments are working with the integrated solution; key performance indicators remain at target levels.

6. Stabilization and Improvement (Week 33-52)

- Monitoring of objectives
- Procedures update
- Project lessons learned

Milestone M5: Final acceptance report signed, development plan for the following year established.

Key Roles and Responsibilities

- **Management** - provides the budget, removes organizational barriers, and holds decision-making authority and strategic oversight.
- **Project Manager** - responsible for the schedule, risk management, communication, and acts as a liaison between the operational team and the IT department.
- **Process Leader (Rehabilitation)** - defines user needs, tests solutions, and possesses knowledge of physiotherapists’ daily work.
- **IT Lead** - oversees technical integration, coordinates with vendors, and ensures system stability.
- **Data Steward** - ensures data quality and compliance of technology with legal requirements (GDPR, NIS2), and is responsible for documentation and audits.
- **Change Manager** - organizes training, supports staff adaptation, and minimizes resistance to change.
- **Super-users** - local trainers who provide on-site support.

Stakeholder Perspectives and Challenge Prevention

- **Frontline staff** - *expectations:* less paperwork, ease of system use.
Preventive actions: UX testing, bedside training, practical user guides.
- **Accounting department** - *expectations:* automatic and accurate settlements.
Preventive actions: data mapping workshops, invoice pilot phase, verification of report accuracy.
- **Patients and families** - *expectations:* quick access to results and information.
Preventive actions: information meetings, leaflets explaining the system’s benefits and usage.
- **Regulators (NHF, GDPR authorities)** - *expectations:* compliance of reports and data security.
Preventive actions: regular reporting, internal and external audits.
- **Management** - *expectations:* smooth implementation of automation with no disruption to operations.
Preventive actions: goal achievement monitoring, quarterly reviews, and strategic reports.

Who develops and maintains the solution?

- **Integration core** (software connecting the systems) - development carried out by an external contractor.
- **System configuration and staff training** - conducted by an external contractor.
- **Ongoing technical support** - initially provided by the external contractor, later gradually taken over by the facility's internal resources.

Thanks to this well-structured process, the implementation of innovation takes place in a controlled manner, taking into account the needs of all stakeholders. This increases the likelihood of permanently embedding digital solutions into everyday workflows and genuinely improving the quality of patient care.

6) Define and describe implementation requirements and plan for the innovation

Deploy the innovation in manageable phases—from testing and pilot projects with care teams to a full-scale launch and review. Define goals, timelines, and resource allocations for each phase, and track progress using metrics like time-to-implementation, staff adoption rates, and cost efficiency.

Implementation Requirements and Innovation Deployment Plan - Integration of the DC Analytics Rehabilitation System with the ERP System

The innovation will be implemented in a controlled and phased manner. The plan foresees a progression from testing and pilot projects with limited staff involvement to full-scale deployment with regular performance evaluations. This staged approach minimizes the risk of failure, ensures better change management, and enables iterative improvements based on data gathered at each stage.

PHASE 0: PREPARATION AND DIAGNOSIS (Month 0-1)

The goal of this phase is to create a secure testing environment, define resources, and ensure organizational readiness.

Planned technical activities include the analysis of system requirements for both applications, assessment of the existing IT infrastructure, and the creation of a test environment. Organizational activities will involve meetings with all teams involved in the project: physiotherapists, the IT department, and administration.

The key resources for this phase include a project manager, data analyst, programme developer, and a representative of the physiotherapists.

Success indicators include a functioning testing environment, a confirmed data integration scope, and a timeline approved by management.

PHASE I: INTEGRATION PILOT (Month 2-3)

The goal is to test the basic integration functionality on a small scale—within one department and with a limited number of users.

Activities will include the implementation of the first data set, such as treatment schedules and patient identifiers. Data transmission tests from the rehabilitation system to the ERP system must be conducted.

A key element will be pilot training for a small team (2-3 physiotherapists + 1 administrative staff member), who will later serve as trainers for others. The final activity of the phase will be collecting feedback and error reports.

Resources required: 2 developers, 1 data analyst, 3 pilot staff members.

Success indicators: 90% or more of data transfers without errors, correct data matching, and documented issues and improvement suggestions.

PHASE II: EXPANSION (Month 4-6)

The goal is to expand the integration across the entire facility and include all key data types.

Planned activities include implementing the remaining data types (e.g., measurement results, clinical notes), training of all physiotherapists and administrative staff, introducing a support and issue-reporting system, defining its operating model, and initiating preliminary automation for report generation.

Resources required: 2 developers, 1 training coordinator (an internal staff member), 10-15 end users of the solution, and the IT department.

Success indicators: 95% or more of data integrated correctly, over 80% of users able to independently perform basic operations in the systems, and generation of the first reports from the systems.

PHASE III: PRODUCTION DEPLOYMENT AND MONITORING (Month 7-12)

The goal is a full production deployment, user support, and performance evaluation.

Planned activities include regular generation and validation of reports, staff satisfaction surveys and analysis of system usage data, monthly status meetings and error reviews, as well as the improvement of processes and functionalities based on user feedback.

Resources required: entire operational team, technical support, and management.

Success indicators include reduction in manual work, full data consistency, staff onboarding and satisfaction, and completion of all required reports.

LONG-TERM MONITORING

Activities in this phase include monitoring the impact of integration on data quality, staff workload, and management decisions; compliance audits with legal regulations and data protection standards; update and further development of the integration based on experience; and regular cybersecurity testing.

The implementation follows a "small steps" approach (pilot → full deployment), which enables flexible adaptation to user needs and reduces implementation risk. Each phase includes clearly defined actions, responsibilities, indicators, and resources, allowing for effective change management.

We applied a step-by-step approach:

1. Start with one department and one team.
2. After testing - gradually roll it out across the entire facility.

Communicating successes: After each stage, we share the results with the whole team - what works and what's coming next. This builds trust and keeps staff engaged.

Taking ownership: The external team (integrators) is responsible for the initial rollout, but over time our internal IT staff will take over. That's why from the very beginning we plan for:

- training,
- preparing documentation,
- appointing responsible staff members.

7) Define and describe reflection (testing, validation, verification) requirements and plan for the innovation

Regularly assess the process to address challenges such as technical issues, resistance, or resource limits. Schedule checkpoints to review progress and, based on clear criteria like unmet KPIs or negative feedback, decide when to adjust or revisit earlier steps.

The implementation of a technological innovation, such as the integration of the rehabilitation system with the ERP, does not end with the mere launch of the functionality. Equally important, if not more so, is the continuous evaluation process, which helps identify and resolve potential technical, organizational, or user acceptance issues. For this reason, a comprehensive reflection plan has been developed, to be carried out throughout the entire lifecycle of the project.

The first step will be thorough testing of individual integration functions within the testing environment. During this phase, developers and the analytics team will work together to verify that the transferred data (e.g., treatment schedules or therapy results) reaches the ERP system in the correct structure, without errors, and in a timely manner. The purpose of these tests is to ensure that the solution performs as intended before being fully released.

When the system starts being used by a selected group of physiotherapists and administrative staff as part of the pilot phase, so-called user testing will begin. The goal here is to assess how users perceive the new functionality—whether they can use it effectively, whether the interface is intuitive, and whether they see value in the new way of working. This feedback will be collected through both surveys and direct conversations with participants.

Particular attention will be given to data quality; we want to ensure that the same information is available in both the rehabilitation system and the ERP, with no discrepancies. For this reason, data consistency checks will be conducted at specific points in the project after the pilot phase, after full implementation, and at the end of the first year of operation.

A key element of the reflection process will be **checkpoints** scheduled every few months. These will be moments when the project team meets to verify whether everything is proceeding according to plan and whether the defined indicators (e.g., system performance, error rates, staff satisfaction levels) are being met. If any of the indicators such as technical issues or negative staff feedback fall outside the expected range, the team will decide on improvement action. This may include fixing bugs, simplifying the interface, or even reverting to a previous version of the solution if the new one proves unacceptable.

Every observation and test result will be documented; we want to maintain a clear picture of what is working well and what needs improvement. **Monthly retrospective meetings** during which the team will reflect on the implementation experience are also planned. The project team will jointly answer questions like: What went well? What was surprising? What can we improve in the next phase?

To summarize, the reflection on the new technology implementation process is not a useless add-on but an integral part of the project. Thanks to this, the system will not only function correctly but will also be genuinely useful and accepted by those who use it every day.

In the final stage, other systems and software used for the same purpose - such as older, so-called “legacy” solutions (paper treatment cards, local Excel files) - should be phased out in a controlled way. The phase-out should follow these steps:

- first, test the new solutions,

- then roll them out on a larger scale,
- finally, switch off the outdated systems.

This approach ensures continuity of work and data security, while at the same time modernizing the facility's operations.

Checkpoints:

- Month 3 (end of pilot)
- Month 6 (full data implementation)
- Month 9 (report generation assessment)
- Month 12 (final evaluation)

Evaluation criteria (KPIs & feedback):

- Data consistency between systems $\geq 99\%$
- Reduction of manual documentation time $\geq 80\%$
- Staff satisfaction $\geq 85\%$ (semi-annual survey)

Such a planned evaluation process ensures that the implementation will not only be technically sound but also accepted by the staff and will genuinely improve the quality of the facility's operations.

8) Define and describe delivery and sustainability requirements and plan for the innovation

Ensure the innovation is viable and scalable by planning for ongoing development, maintenance, and regular evaluations. Use both tangible outcomes (e.g., improved data use and reduced workload) and intangible benefits (e.g., increased client satisfaction) to guide future enhancements.

The long-term success of a technological innovation does not depend solely on its implementation but also on how it is maintained, developed, and supported in the following years. Therefore, it is crucial to design a model for system maintenance and development that is sustainable, cost-effective, and aligned with the institution's priorities.

The adopted model assumes the installation and maintenance of the integration system directly on the facility's servers (the so-called **on-premises model**). This model was chosen due to the nature of the data processed in the system—medical and sensitive information, which must be stored and managed in compliance with strict data protection regulations (e.g., GDPR).

This solution allows the institution to maintain **full control over the databases and system components**. It reduces the risk of vendor lock-in, i.e., dependence on a single external provider. It also avoids long-term costs associated with licensing SaaS (Software as a Service) solutions, which are currently rising and difficult to predict over time. If necessary, the system can be maintained by an external integrator operating under a local SLA agreement.

The **implementation and maintenance** of the innovation will be financed from the institution's operational budget, with a cost amortization plan considered for the long term. At the same time, the plan includes actively seeking additional funding from regional innovation and digitization support programs—such as **European Union funds, provincial programs**, or resources from institutions supporting the long-term care sector.

After the completion of the core integration, **further development** of the system is planned toward an "ideal model." This includes full **bidirectional data exchange** between the rehabilitation system and ERP, complete **automation of report generation**, and integration with additional data sources (e.g., monitoring devices or nursing documentation).

The system has been designed to **enable further development and adaptation** to new needs. The solutions used are compliant with open industry standards for the exchange and storage of medical

data—such as **HL7 (Health Level Seven)**, **DICOM (Digital Imaging and Communications in Medicine)**, and **IHE (Integrating the Healthcare Enterprise)**.

Thanks to this, the integration can be **expanded in the future** to include other systems (e.g., national registries, hospital systems, e-health platforms) **without the need for a complete overhaul**.

As part of the maintenance model, **procedures ensuring business continuity** have been planned, such as regular **disaster recovery tests**, automated **data backups**, and thorough **documentation of security procedures**. This means that even in the event of a failure, patient data and system functionalities can be restored **without compromising the quality of services provided**.

We test three aspects: technical performance (does the system work), functionality (are the data correct), and usability (is the staff satisfied).

The entire review process is overseen by the project manager, supported by IT specialists as well as representatives from rehabilitation and care.

If something doesn't work, we apply a so-called rollback - returning to the previous, stable version. For example: if a new feature creates more problems than benefits, we revert to the earlier solution and fix the issues before moving forward.

In addition to direct technological outcomes, the project will also bring a number of important **intangible benefits**:

- **Increased staff satisfaction**, due to a reduction in repetitive, manual tasks and better access to information,
- **Improved patient and family experience**, through greater consistency of information, easier reporting of therapy progress, and more transparency in the facility's operations,
- **Strengthening the institution's image** as a modern and development-oriented player in the long-term care sector,
- **Laying the groundwork for future digital transformation projects.**

For the innovation to work in the long term, it must be:

- **maintained by our own team** (not an external vendor),
- **based on open standards** (e.g., HL7, DICOM), which prevents dependency on a single provider,
- **funded through both the operational budget and external sources** (e.g., regional programs).

Planned actions that must be undertaken as part of maintaining the innovation:

- training technical staff and end users,
- regular technical and organizational reviews,
- creating internal "ambassadors" - staff members who support their colleagues,
- conducting regular satisfaction surveys among patients and staff.

In conclusion, the developed maintenance and development model ensures not only the **sustainability of the technological solution** but also its **strategic alignment with the mission, vision, and development plan** of the facility.