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Monitoring Report – Pilot Action 1

A 2.2 Monitoring & Evaluation Report of the Implementation Process (Coordinator: PP2 GGZ)

D.2.2.3 Monitoring & Evaluation Report Pilot Action 1

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A SUMMARY

BACKGROUND AND OBJECTIVE:

Pilot Action 1 (PA1), implemented within the DigiCare4CE project, explored the adoption of digital tools in long-term care (LTC) facilities across Central Europe. The primary objective was to assess how digital documentation systems, communication platforms, and workflow optimization technologies could be integrated into LTC environments to support both operational efficiency and improve the quality care. The pilot focused on evaluating metrics such as user satisfaction, end-user experiences with using these new technologies, managerial perspectives or system performance in real-world care settings.

METHOD:

PA1 was carried out across three pilot sites: Austria (GGZ), Slovakia (TUKE), and Poland (RRDA). A mixed-methods evaluation was conducted, involving structured surveys and qualitative feedback from two key stakeholder groups - end-users (care staff) and managers. The collected data covered topics such as training, technical support, usability, workflow integration, and satisfaction. Cross-site analysis enabled the identification of shared patterns, enablers, and constraints.

RESULTS:

The implementation demonstrated the potential of digital technologies to streamline documentation, improve communication, and support care delivery. Managers across all sites reported high satisfaction, strong vendor collaboration, and perceived strategic benefits. End-users in Slovakia and Poland reported usability gains and improved workflows, while some Austrian respondents noted technical challenges and system instability during early rollout. Key success factors in PA1 included stakeholder involvement, tailored training, and institutional support. Constraints included variable digital literacy, inconsistent information dissemination and early technical limitations.

CONCLUSION:

PA 1 confirms that digital solutions, when co-developed with stakeholders and supported by strong implementation frameworks, can have the potential improve operational and care quality outcomes in LTC settings. Addressing usability barriers, strengthening support structures, and promoting digital readiness among staff will be critical to ensuring long-term adoption and impact.

KEYWORDS:

DigiCare4CE, digitalization, digital transformation, long-term care, technology implementation, innovation

B LIST OF ABBREVIATIONS

AI	Artificial intelligence
DC	Donum Corde
GDPR	General Data Protection Regulation
GQM	Goal-Question-Metric
GGZ	Geriatric Health Centres of the City of Graz
IoT	Internet of Things
IQR	Interquartile range
KPI	Key Performance Indicator
LDA	Latent Dirichlet Allocation
LTC	Long-term care
MS	Microsoft
MTTR	Mean time to repair
NLP	Natural language processing
PA1	Pilot Action 1
PA2	Pilot Action 2
PWA	Progressive Web App
RRDA	Rzeszow Regional Development Agency
TF-IDF	Term Frequency-Inverse Document Frequency
TUKE	Technical University of Kosice
VR	Virtual Reality

C INTRODUCTION

C1 Background

Demographic change

Demographic change is placing increasing pressure on the long-term care (LTC) sector, creating a dual challenge: An aging population is increasing the demand for care services, while the care sector also struggles with a shortage of skilled workers. The perception of care work as unattractive, compounded by factors such as low societal recognition, physically and mentally demanding tasks, shift work, and frequent overtime, exacerbates this problem. As a result, the gap between the need for care and the availability of skilled personnel continues to widen, highlighting the urgent need for solutions that enhance productivity without compromising the quality of care.

Opportunities and challenges of digitalization

Digital transformation holds significant potential to address these challenges, offering opportunities to improve both care quality and the working conditions of caregivers. By integrating digital tools into daily routines, LTC facilities can ease the burden on staff while enhancing patient outcomes. However, the pace of digitalization in LTC settings remains slow. Despite the increasing media attention surrounding technologies such as care robots and AI applications, the reality is different. Many facilities still rely on paper-based methods to record residents' health data, and communication with external healthcare providers often occurs via fax. Moreover, limited access to internet / wi-fi infrastructure further restricts digital progress. The barriers to digital innovation in LTC facilities are multifaceted. Another challenge is the lack of knowledge and digital skills among staff, which is compounded by time constraints and the inability to participate in extensive training programs due to caregiving duties. Organizational factors, such as unclear responsibilities for managing innovation and limited capacity for technological change, further complicate digitalization initiatives. Additionally, financial constraints and resistance to change within organizations, driven by both unfamiliarity and skepticism towards new technologies, contribute to slow adoption rates.

The DigiCare4CE project - digital transformation of long-term care facilities

Recognizing these challenges, the DigiCare4CE project was initiated to promote and support digital transformation in LTC facilities. The project aims to test new technologies across eight pilot actions in Central Europe, with a focus on identifying practical solutions that potentially enhance both care quality and workflow efficiency. Through these pilot actions, DigiCare4CE seeks to generate insights into how digital solutions can be effectively implemented in LTC facilities, fostering broader adoption across the region and contributing to a more sustainable and resilient care system.

The project includes two pilot actions which focused on different aspects of digital transformation in LTC facilities. In **Pilot Action 1, "The digital transformation of care management and delivery,"** partners tested digital management and information systems aimed at improving care operations and collaboration with external service providers. Each partner developed a pilot concept ranging from implementing digital documentation platforms to tools which facilitate the

sharing of residents' information among care teams, managers, and external professionals such as physicians and therapists. The solutions were tested in one or more care facilities cooperating with or operated by the respective partners, reviewed through a co-creation process, and adjusted as necessary based on feedback. A more detailed description of each initiative in PA1 can be found in the appendix (J2). In **Pilot Action 2, "The datafication of elderly care delivery based on environmental, wearable, and IoT solutions,"** partners tested smart devices such as sensors, emergency buttons, mobile applications, and virtual reality (VR) therapies. The pilot activities ranged from using monitoring devices for detecting falls and movement to exploring the therapeutic benefits of VR to train cognitive and physical skills in the elderly.

Monitoring and evaluation

A monitoring and evaluation process accompanied these pilot actions to systematically assess the effectiveness, challenges, and impact of the implemented digital solutions, ensuring that lessons learned could inform adjustments during the testing phase and contribute to the development of scalable joint solutions or further digitalization projects for LTC facilities in the future.

The following document presents the **monitoring and evaluation report** for pilot action 1. It provides an overview of the results of the implementation process and testing phase of the new technologies, incorporating perspectives from stakeholder groups, including end-users and LTC managers involved in the pilot actions.

C2 Objective

The monitoring and evaluation report serves as a comprehensive evaluation tool to assess the implementation and impact of the DigiCare4CE pilot actions. Its primary purpose is to ensure transparency, accountability, and data-driven decision-making in the digital transformation of LTC facilities. By systematically analysing the progress of the pilot initiatives, with all in all two rounds of questionnaires, this report identifies the successes and challenges encountered during the implementation of the digital solutions. It aims to highlight factors contributing to effective digital adoption while addressing barriers that may hinder optimal execution.

A key focus of this report is the evaluation of digital innovations from the perspectives of end-users, in our case caregivers, and management-level stakeholders, including facility administrators and decision-makers. By collecting data though questionnaires, the report analyses the implementation processes of the implemented solutions. The gathered insights support evidence-based decision-making, ensuring that digital transformation strategies align with the needs of care facilities while fostering continuous improvements.

Furthermore, the report facilitates knowledge transfer by documenting best practices and lessons learned, making them accessible to other institutions and stakeholders beyond the project consortium. This approach promotes scalability and encourages the wider adoption of successful digital transformation models in LTC settings. Additionally, the findings contribute to policy recommendations by providing empirical evidence that informs policymakers on the necessary steps to enhance digitalization efforts in elderly care. The overarching goal is to integrate digital innovation into strategic decision-making processes, ensuring long-term sustainability and a structured approach to digital readiness in care facilities.

D METHODOLOGY

D1 Data Collection

This section outlines the overall methodology employed for data collection and analysis across different pilot actions (PA1, PA2) and target groups, namely end-users and management. The primary objective was to establish a seamless and efficient data collection process, complemented by automated AI-driven analysis. This approach aimed to interpret both textual and numerical responses, extract key themes, assess sentiment, and track keyword usage, ultimately providing meaningful insights for evaluation and decision-making.

Technical implementation of data collection:

The technical execution of the data collection process was facilitated through Microsoft Forms, which served as the primary platform for designing and distributing the questionnaires. This tool was chosen for its ease of use, seamless integration with data processing systems, and ability to automate response collection.

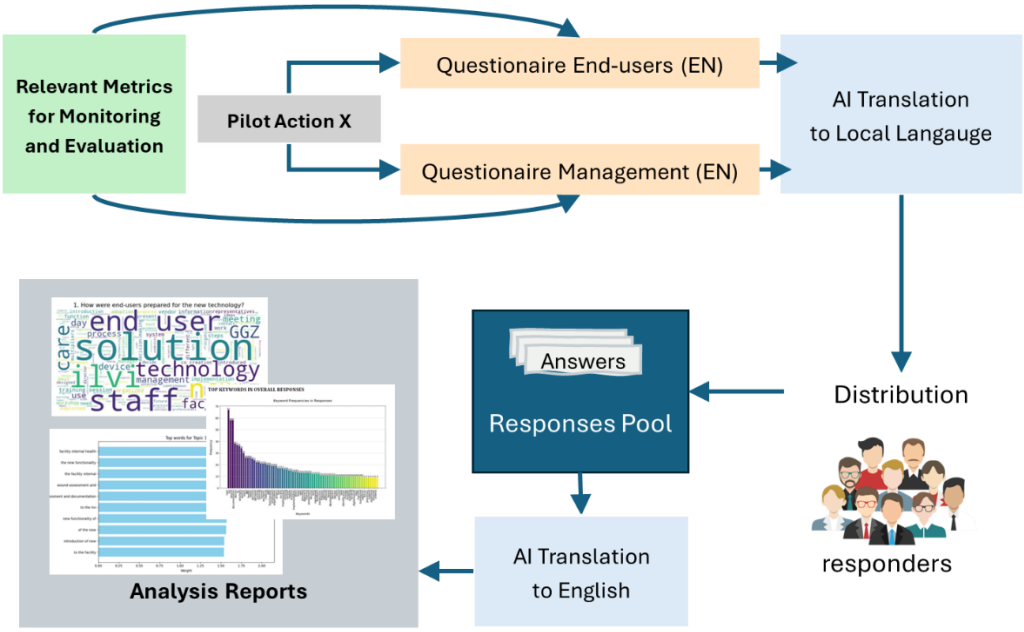

Figure 1. Technical implementation of data collection

To accommodate the linguistic diversity across different partner countries, the questionnaires were translated into the respective local languages before distribution. This ensured that respondents could provide their answers in their native language, thereby enhancing clarity, reducing potential misunderstandings, and improving response accuracy. The translated questionnaires were then disseminated to the target groups, including both end-users and management, through predefined communication channels.

Once responses were submitted, they were automatically collected and processed, ensuring a structured and efficient data aggregation workflow. Given that responses were provided in multiple languages — such as Polish, Italian, German etc. — AI-powered translation tools were

employed to automatically translate all responses into English. This step was essential for maintaining consistency and enabling a uniform analysis across all datasets, allowing for seamless cross-country comparisons and insights. The integration of AI-driven translation not only minimized manual intervention but also ensured a high degree of accuracy in interpretation. This approach streamlined the subsequent AI-assisted analysis process, which focused on extracting key themes, identifying sentiment trends, and analyzing keyword usage across different pilot actions and stakeholder groups.

Through this monitoring framework, the DigiCare4CE project establishes a systematic approach to assessing digital adoption in elderly care. The insights gained contribute to continuous improvement efforts, support evidence-based decision-making and enhance the innovation capacity of LTC facilities.

Data collection for the survey was conducted in two rounds, between July and September 2024 (round 1) and November and December 2024 (round 2).

D2 Questionnaire Design Approach

To ensure a structured and systematic approach to data collection, we adopted and customized the Goal-Question-Metric (GQM) framework, a well-established methodology commonly used to enhance and assess software quality. The GQM approach follows a goal-oriented paradigm, wherein specific goals are defined, relevant questions are formulated, and measurable metrics are established to evaluate outcomes effectively.

As part of the adaptation process, we first identified and defined the key metrics that are most relevant within the context of this project. These metrics served as the foundation for constructing targeted questions tailored to elicit meaningful responses from stakeholders. The metrics focus on both qualitative and quantitative aspects to provide a comprehensive assessment of digital transformation within the participating LTC facilities.

Figure 2. Key metrics in the DigiCare4CE pilot actions

Given that the relevance and interpretation of the questions in the metrics vary depending on the stakeholder's role, we classified participants into distinct groups—end-users and management—to ensure that the collected data accurately reflects the perspectives and experiences of each category.

By structuring the questionnaires in alignment with the GQM framework, we ensured that the data collection process remained focused, comprehensive, and aligned with the overarching project objectives. This structured approach not only facilitated the collection of high-quality responses but also enabled the automation of analysis steps through AI, allowing for efficient identification of trends, sentiment variations, and thematic patterns across different pilot actions and stakeholder groups.

Table 1. Metrics in the DigiCare4CE project: Categorized by pilot action and target group

Metrics	PA1	PA2	Target stakeholder
Clarity of Objectives and Goals	x	x	Management; End-users
Leadership and Management Support	x	x	End-users
Staff Training and Engagement	x	x	End-users
User-Friendliness of the System	x	x	End-users
Effective Change Management	x	x	Management
Integration with Existing Systems	x	x	Management
Vendor Support and Collaboration	x	x	Management; End-users
Data Protection Policy	x	x	Management
Data Security and Privacy Compliance	x	x	End-users
Resource Allocation and Budgeting	x	x	Management
Quality of Implementation Timeline	x	x	Management
Cost Efficiency	x	x	Management
System Uptime and Downtime	x	x	End-users
Mean Time to Repair (MTTR)	x	x	End-users
User Adoption Rate	x	x	Management
Workflow Efficiency	x	x	End-users
Trust (Data Accuracy and Integrity)	x	x	End-users
User Satisfaction	x	x	End-users
Scalability and Future Readiness	x	x	Management
Patient Satisfaction Scores		x	End-users

D3 Data analysis

The data analysis process was designed to automate the processing of stakeholders' responses. By implementing this automated system, the need for manual intervention was minimized, allowing for the seamless generation of structured PDF reports. These reports provided key insights through sentiment analysis, topic modelling, keyword extraction, and numerical data visualization. In addition to these response files, we used the GQM mapping to map specific questions to broader analytical categories.

The analysis process began with loading and preprocessing the data (as CSV files). Each CSV file was opened and sanitized to remove stray newline characters, unnecessary symbols, and irregular formatting. Column headers were standardized to eliminate extra digits or whitespace, ensuring consistency across datasets. Additionally, questions containing predominantly numeric responses, such as satisfaction ratings on a scale from 1 to 10, were automatically categorized separately from open-ended textual responses to facilitate tailored analysis.

To provide an initial overview, the system generated a summary of key findings. This summary included an overall sentiment distribution across textual responses, an average numeric rating (if applicable), and the top five most frequently used keywords derived from a keyword frequency count. Presenting these high-level insights upfront allowed for a quick understanding of major trends before diving into more detailed analyses.

By automating data collection and analysis, this system significantly streamlined the evaluation process, enabling efficient extraction of insights from diverse stakeholder responses. The combination of AI-powered sentiment analysis, keyword extraction, topic modelling, and numerical data visualization allowed for a comprehensive understanding of both qualitative and quantitative feedback. This structured approach ensured that findings were presented clearly and consistently across different pilot actions, facilitating informed decision-making.

Exploring Recurring Themes Through Topic Modelling

To gain deeper insights into the most frequent themes and patterns present in stakeholder feedback, the analysis process incorporated topic modelling, a machine learning technique designed to automatically identify topics within large sets of textual data. Specifically, the system utilized Latent Dirichlet Allocation (LDA), a widely used algorithm for topic discovery, which helps reveal the hidden thematic structures within text responses.

LDA operates by analyzing word co-occurrence patterns across multiple responses. Rather than simply identifying the most frequently used words, this method clusters words that tend to appear together within the same context, allowing for the extraction of meaningful topics. In this case, the system applied LDA to trigrams, which are sequences of three consecutive words commonly found in the dataset. Using trigrams instead of individual words or bigrams (two-word sequences) improved the accuracy of topic detection by preserving context. For example, while a single word like "quality" may appear in multiple topics, a trigram such as "service quality improvement" provides a more precise indicator of the underlying theme.

Once the LDA model identified topics, the system compiled a list of key terms associated with each topic, along with their relative importance within the dataset. This step was particularly useful in understanding which aspects of the pilot actions were most frequently discussed by stakeholders. For instance, a dominant topic in end-user responses might include words like "ease

of use," "interface design," and "user satisfaction," suggesting a recurring concern with usability. In contrast, management-level responses might emphasize phrases like "cost efficiency," "operational impact," and "long-term scalability," reflecting a different set of priorities.

To ensure clarity, the identified topics and their corresponding key words were summarized in the final report. The report provided an introductory explanation of topic modelling, describing how LDA was used to group related words into coherent themes. Additionally, it included a structured breakdown of these themes, listing the most significant topics along with example words or phrases from the dataset. This visualization helped quickly grasp the core discussions within the feedback, making it easier to identify patterns, concerns, and areas requiring further attention.

By leveraging LDA-based topic modelling, the analysis moved beyond simple keyword frequency counts and uncovered deeper, latent structures in the text. This approach enabled a more nuanced understanding of stakeholder perspectives, revealing insights that might not have been immediately apparent through traditional analysis methods.

Visualizing Word Usage Patterns Through Word Clouds

To enhance the interpretability of textual responses and provide an intuitive visual representation of frequently used words, the system generated two types of word clouds for each open-ended question. Word clouds are a popular data visualization technique that displays words in varying sizes based on their frequency of occurrence within a dataset. This approach allows for a quick, at-a-glance understanding of dominant terms and concepts emerging from stakeholder feedback.

The first type of visualization, the raw word cloud, included all words appearing in the responses, with the exception of basic stop words - common words such as "and," "the," "is," and "to," which do not contribute meaningful insights. This raw representation provided a broad overview of word frequency, showing which terms were most commonly mentioned by respondents. However, while useful for initial exploration, raw word clouds sometimes include high-frequency words that, while common, may not be particularly informative.

To address this limitation, the system also generated a refined word cloud, which applied Term Frequency-Inverse Document Frequency (TF-IDF) weighting to prioritize words that were contextually significant rather than merely frequent. TF-IDF is a well-established statistical method used to assess the importance of a word relative to the entire dataset. Words that appear frequently in a single response but are less common across the dataset receive a higher TF-IDF score, making them more prominent in the refined word cloud. This method helps filter out generic terms and highlights key phrases that are more specific and meaningful to the topic at hand.

By combining these two visual approaches, the system provided both a general overview (raw word cloud) and a focused, data-driven representation of significant terms (refined word cloud). This dual-layered approach allowed for a richer analysis of stakeholder language patterns, making it easier to identify recurring themes, concerns, and areas of emphasis.

Since numeric-based questions contained structured responses (such as satisfaction ratings or Likert-scale answers) rather than free-form text, they were excluded from the word cloud analysis. This ensured that the visualization remained relevant to qualitative feedback rather than being skewed by numerical data.

By leveraging both raw and refined word clouds, the system helped visually grasp key discussion points within the collected responses, making it easier to detect trends, frequently mentioned topics, and potential areas for further investigation.

Assessing Emotional Tone Through Sentiment Analysis

To evaluate the emotional tone of stakeholder feedback, the system implemented sentiment analysis, a natural language processing (NLP) technique designed to determine whether a given text expresses a positive, negative, or neutral sentiment. This step was particularly useful in gauging the general mood and attitude of respondents toward various aspects of the pilot actions.

The sentiment analysis process was powered by TextBlob, a widely used NLP library that assigns a sentiment polarity score to each textual response. This polarity score ranges from -1 to +1, where negative values indicate negative sentiment, positive values indicate positive sentiment, and values close to zero suggest neutral sentiment. To categorize responses, a threshold system was applied: any response with a polarity score above 0.05 was labelled as positive, while those below -0.05 were classified as negative. Responses falling between these thresholds were considered neutral, reflecting an absence of strong sentiment in either direction.

Once sentiment scores were assigned, the results were visualized using bar charts, making it easy to interpret sentiment distribution across different questions. These charts displayed the number of responses classified as positive, neutral, or negative for each open-ended question, providing an immediate sense of the prevailing attitudes expressed in the feedback. Additionally, a summary table was included to offer a quick reference, consolidating sentiment classifications across all questions into a structured format.

This analytical approach helped stakeholders identify patterns in emotional responses, detect areas where sentiment was particularly strong (either positive or negative), and recognize questions that elicited a more neutral stance from respondents. By systematically quantifying sentiment, the system transformed subjective textual feedback into actionable insights, enabling a clearer understanding of how stakeholders perceived different aspects of the project.

Visualizing Numeric Responses Through Boxplots

To effectively analyse and interpret numeric responses, such as satisfaction ratings or other scaled assessments, the system utilized boxplots to visualize the distribution of responses. Boxplots are a widely used statistical tool that provide a concise summary of key numerical measures, making it easier to identify patterns, trends, and outliers within the data.

Each boxplot displayed several critical statistical indicators, including the minimum, maximum, and average ratings given by respondents. Additionally, the plots illustrated the interquartile range (IQR), which highlights the spread of the middle 50% of responses, as well as any outliers—responses that were significantly higher or lower than the majority. This visualization helped in understanding how scores were distributed across different stakeholder groups, revealing whether responses were clustered around a central value or showed significant variability.

By using boxplots, the system provided a clear and interpretable representation of satisfaction levels and other quantitative measures. This approach allowed stakeholders to quickly assess how different groups perceived various aspects of the pilot actions, identifying areas of consensus or divergence in opinions. The ability to compare distributions across different respondent categories

(e.g., end-users vs. management) further enhanced the depth of analysis, enabling data-driven decision-making based on patterns in numeric feedback.

Keyword Frequency Analysis and Contextual Interpretation

As a final step in the analytical process, the system performed keyword frequency analysis to identify the most commonly used terms across all textual responses. This method provided insights into recurring themes and focal points within stakeholder feedback by quantifying word usage patterns. To ensure that only meaningful words were considered, common stop words - such as "the," "and," or "is"—were filtered out, allowing the analysis to focus on key terms that carried significant relevance to the discussion.

The frequency of each remaining keyword was calculated, and the results were visualized using bar charts to provide a clear overview of which words appeared most frequently. In addition to the graphical representation, a separate textual listing was generated to highlight words that exceeded a predefined occurrence threshold, such as appearing at least four times within the dataset. This approach helped pinpoint terms that were consistently mentioned across multiple responses, indicating their importance to respondents.

To add further depth to the analysis, the system also extracted example sentences for each high-frequency keyword. These contextual snippets illustrated how stakeholders used specific terms within their feedback, ensuring that words were not only counted but also interpreted within their intended meaning. By combining quantitative keyword frequency analysis with qualitative contextual interpretation, this step provided a well-rounded understanding of the most prominent discussion points and concerns raised by respondents.

E RESULTS

The number of responses of pilot action 1 partners is illustrated in the following table:

Table 2. Number of questionnaire responses

Project partner		Monitoring Round 1 (07-09/2024)		Monitoring Round 2 (11 - 12/2024)		In Total (07-12/2024)	
		End-users	*Management*	*End-users*	*Management*	*End-users*	*Management*
PP2	GGZ	3	3	14	5	**17**	**8**
PP5	TUKE	0	0	4	2	**4**	**2**
PP10	RRDA	5	2	4	3	**9**	**5**

E1 PP2 – Geriatric Health Care Care Centers of the City of Graz; Austria

In Austria, GGZ implemented a digital solution to enhance mobile care documentation by integrating two applications into the existing ilvi platform: a wound documentation app (imitoWound) and a document scanning tool. The goal was to reduce administrative burden, improve data accuracy, and streamline workflows by enabling point-of-care documentation and direct data transfer to hospital systems. These tools also aimed to improve care quality and operational efficiency while freeing up time for caregiving staff.

The pilot action took place at the Residential Nursing Home Peter Rosegger in Graz. The pilot action was planned and prepared from September 2023 to June 2024. The applications were then tested over a four-month period by nursing staff. End-users, care managers and administrative assistants at the facility were involved in the pilot, which was supported by GGZ's IT department and overseen by the research and development department (i.e. Albert Schweitzer Institute).

E1.1 End-Users

The analysis of responses of end-users related to the **clarity of objectives and communication** reveals a moderately critical tone. Satisfaction ratings ranged from 3 to 6 (see Figure 3), with most respondents choosing mid-range values (3–5). Feedback such as "gut" and "few" implies that while some information was shared, it may have lacked depth or consistency. One participant commented "not sufficient", pointing to a perceived gap in communication efforts from leadership. Overall, the findings suggest that while basic information was available, a more structured and proactive information strategy could have improved staff readiness.

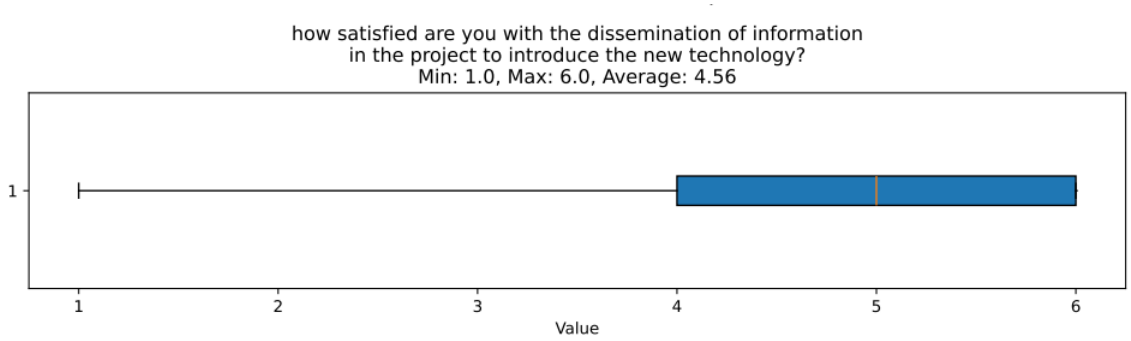

Figure 3. Clarity of Objectives and Goals (end-users, GGZ)

Feedback on **leadership and management support** was mixed (see Figure 4). Descriptions like "Yes is well received", "Everyone tries", and "good" or "very good" show that managerial engagement varied across respondents. Some felt supported, while others experienced more limited or informal involvement. This inconsistency may reflect differences in leadership styles or in how support was communicated across teams.

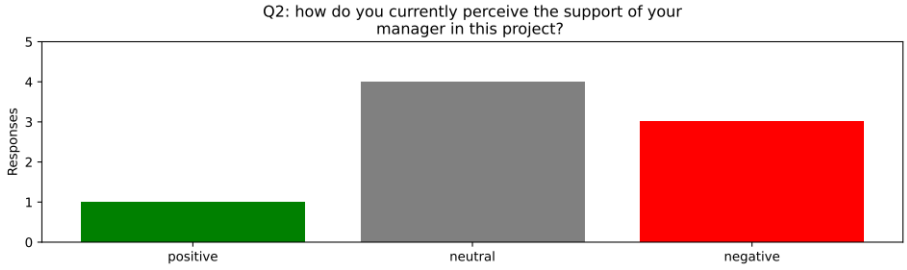

Figure 4. Leadership and Management Support (end-users, GGZ)

Regarding **staff training and engagement**, responses indicate that multiple formats were used to prepare employees (see Figure 5). Examples include "info-meeting", "good school enrollment and IT", and recurring sessions noted by "get training again and again." While this suggests a commitment to learning, the tone also reflects that some users found the experience challenging or lacking structure, as expressed in the comment "It is something new." The feedback points to a hands-on, iterative approach to training, which was positively perceived by end-users (see Figure 6).

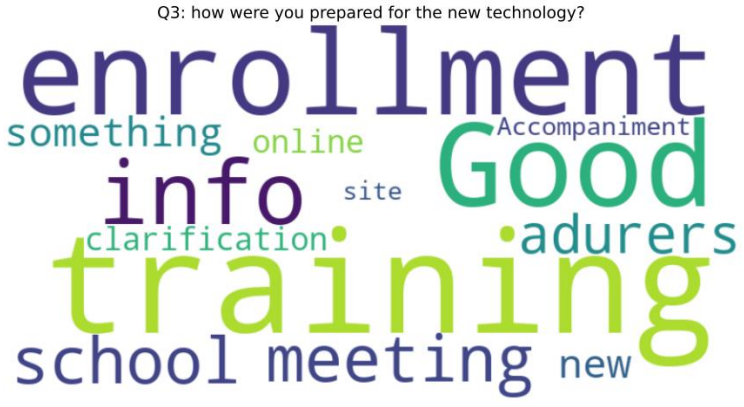

Figure 5. Staff Training and Engagement 1 (end-users, GGZ)

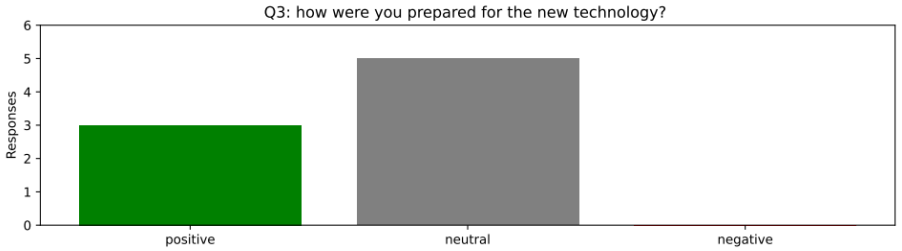

Figure 6. Staff Training and Engagement 2 (end-users, GGZ)

Opinions on **user-friendliness of the system** were more critical (see Figure 7 and 8). Users cited a number of technical difficulties, including comments like “works rarely”, “that it doesn’t work”, and “photos were not saved.” Additional concerns about registration issues and system slowness were common. Several respondents found the tool “very time-consuming” and “error prone”, particularly in early stages of use. These frustrations highlight usability barriers that could impact both adoption and effectiveness.

Figure 7. User-Friendliness of the System 1 (end-users, GGZ)

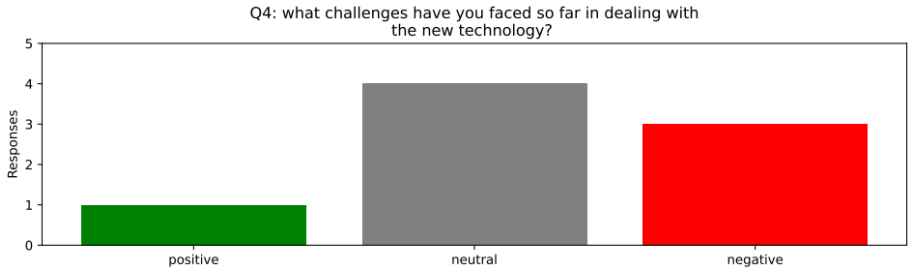

Figure 8. User-Friendliness of the System 2 (end-users, GGZ)

Perceptions of **vendor support and collaboration** were generally positive (see Figure 9). Users described their experiences as “alright”, “super”, and “very helpful talk.” The support primarily came from internal IT or project management teams, as reflected in the statement “We can pass on our problems to colleagues at any time.” However, no specific feedback was given about external vendor responsiveness, leaving a gap in understanding about the broader support ecosystem.

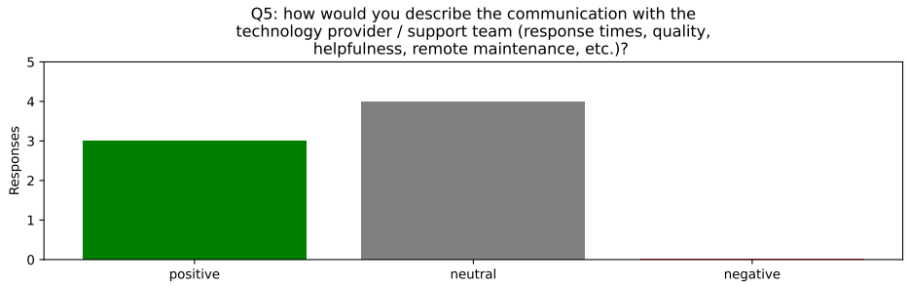

Figure 9. Vendor Support and Collaboration (end-users, GGZ)

When asked about the **data protection policy**, most users left the field blank. The only clear response referred to "all GDPR compliance measures fulfilled". This suggests that while institutional safeguards may exist, frontline staff are either unaware of them or not directly involved in data handling, pointing to a need for more visible communication about legal compliance and privacy protocols.

The **mean time to repair (MTTR)** after system failures was unclear, as many respondents did not answer or gave vague responses. Some noted delays such as "too long" or "longer (5–7 days)." One user emphasized that repeated failures disrupted daily routines, implying that technical issues were both frequent and burdensome. The absence of consistent experiences suggests a lack of transparency in support and maintenance procedures.

Feedback on **workflow efficiency** was mixed (see Figure 11). Users described the system as adding "significantly additional effort" or making work "very disabled." Phrases such as "lots of work instead of working" and "yes more time expenditure" indicate that, in its current form, the tool has not improved—but rather impeded—day-to-day operations. However, several respondents mentioned potential benefits and shared positive thoughts on the pilot, suggesting that the underlying concept may hold promise if usability improves (see Figure 10).

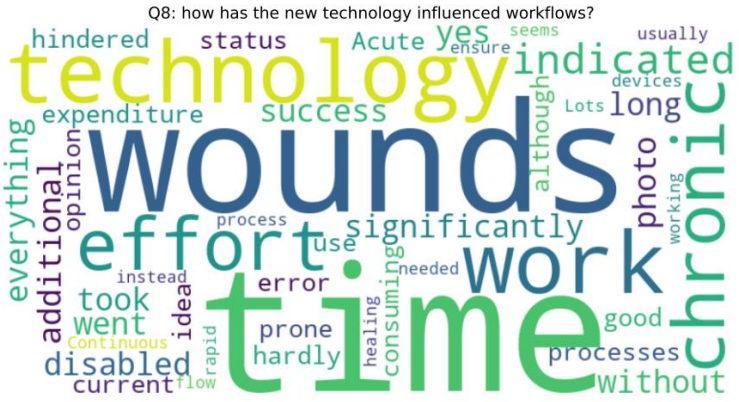

Figure 10. Workflow Efficiency 1 (end-users, GGZ)

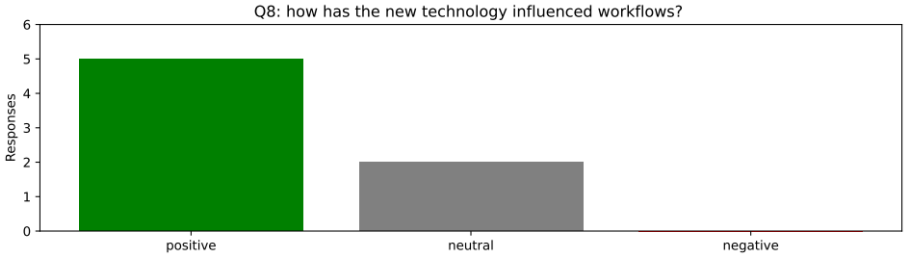

Figure 11. Workflow Efficiency (end-users, GGZ)

Trust in the system, measured through the lens of **data accuracy and integrity**, ranged from strong skepticism ("not at all", "no trust") to more positive but cautious feedback ("good") (see Figure 12). The responses indicate that trust is closely linked to technical reliability. Persistent malfunctions undermine confidence, while consistent performance is likely to foster a more positive outlook over time.

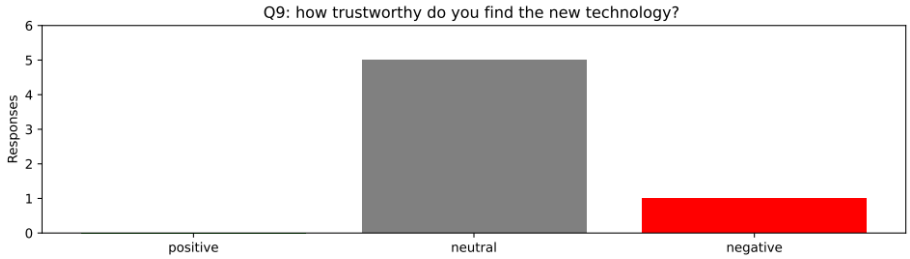

Figure 12. Trust, Data Accuracy and Integrity (end-users, GGZ)

User satisfaction appears relatively low. Most users criticized the tool's unreliability and the additional workload it imposed. Only one respondent rated it moderately high (score of 6). While the concept of the tool may have been appealing, execution issues seem to have negatively influenced user sentiment.

Views on **task completion time** varied, with estimates ranging from "5–15 minutes" to "far too much time." One participant described it as "not everything works," highlighting unpredictable delays and inefficiencies. Several users mentioned 10–15 minutes as a rough average, though many considered even this timeframe excessive given the context of care work.

Concerning **automated alerts and notifications**, users reported frequent false alarms and found them frustrating. Comments like "occurs more often" and "very annoying" were common (see Figure 13), and some noted that such alerts were irrelevant when the system itself was not functioning reliably. These issues compound user frustration and may affect long-term acceptance of the technology.

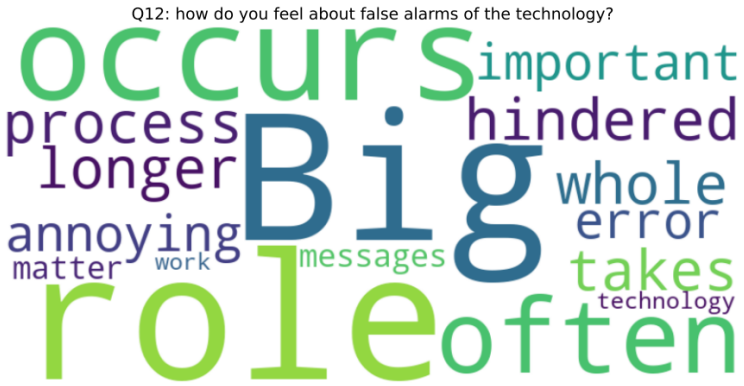

Figure 13. Automated Alerts & Notifications (end-users, GGZ)

In conclusion, while the implementation of the new technology showed promising aspects—particularly in terms of vendor support and initial training opportunities—several challenges remain. Technical usability issues, limited trust and inconsistent workflow benefits hindered overall satisfaction. Despite mixed responses, the generally constructive tone and willingness to

engage suggest that with targeted improvements in usability and system reliability, the solution could evolve into a valuable and more widely accepted tool within the LTC facility.

E1.2 Managers

The analysis of the managers' responses regarding the implementation of the new technology reveals an overall positive perception, particularly in terms of strategic alignment and future potential. Satisfaction with the **clarity of objectives and goals** was high, with respondents rating the information flow between 8 and 9 (see Figure 14). While some noted that direct experience with the new applications was still limited due to the early testing phase, others cited effective communication via project teams or training sessions. This indicates that the foundational information-sharing processes are functioning well at the managerial level.

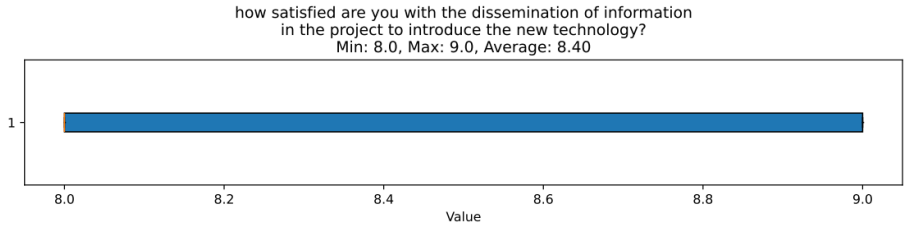

Figure 14. Clarity of Objectives and Goals (managers, GGZ)

Regarding **vendor support and collaboration**, direct interaction with the technology provider was limited, often managed indirectly through internal IT departments or restricted to initial training. This might also explain the rather neutral statements received in the survey (see Figure 15). Despite this, most managers described response times as quick and the support as adequate, though a few would have preferred more proactive updates to reduce confusion, particularly around user credentials or system changes.

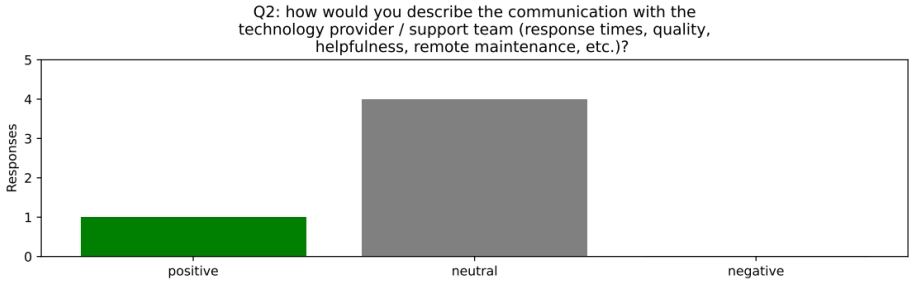

Figure 15. Vendor Support and Collaboration (managers, GGZ)

Data protection policy measures were consistently addressed and highlighted as a strength. All use cases emphasized anonymization practices (see Figure 16) - patient and staff names were excluded, and barcodes were used to identify users. No personal information was processed in the app during the test phase, ensuring compliance with legal and ethical standards and reinforcing trust in institutional safeguards.

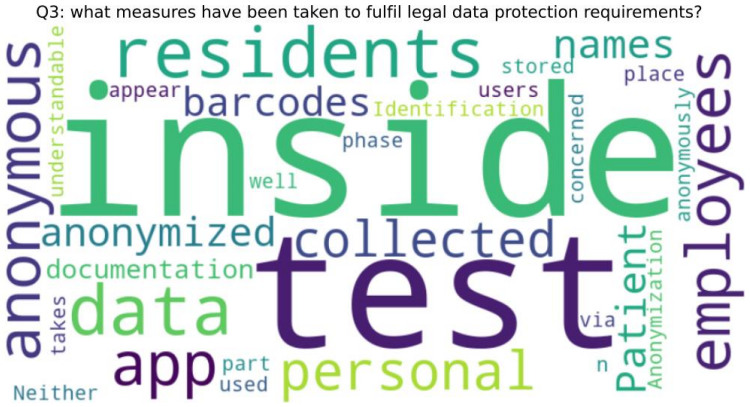

Figure 16. Data Protection Policy (managers, GGZ)

In terms of the **quality of the implementation timeline**, most managers reported that the pilot proceeded according to plan, with only minor deviations. One exception involved the postponement of an interface with the hospital information system due to technical constraints. However, the core implementation steps—device setup, system testing, and feedback collection—were successfully executed, reflecting a structured and responsive rollout.

Feedback on **workflow efficiency** was cautiously optimistic (see Figure 17). Although managers acknowledged that the system is still in a pilot phase, which currently results in duplicate documentation efforts, they also highlighted the potential of the tool to streamline tasks, particularly through automated wound measurements and better documentation quality once integration is complete. This dual perspective points to a transitional phase that, while temporarily burdensome, could lead to significant operational benefits.

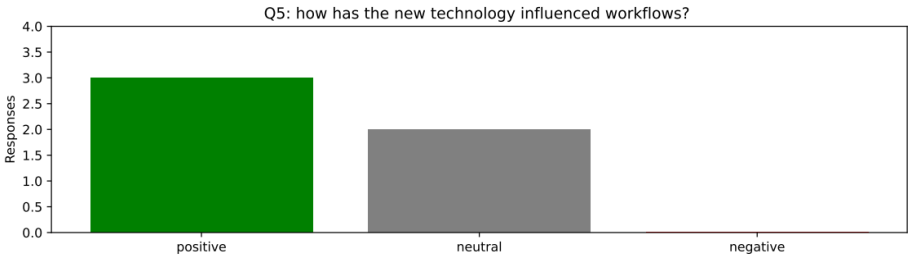

Figure 17. Workflow Efficiency (managers, GGZ)

Managers were also asked to assess the **scalability and future readiness** of the solution. Most recognized clear added value (see Figure 18 and 19), including improved photo documentation, higher data quality, and the prospect of more efficient workflows. However, they stressed the importance of key conditions: technical stability, dependable support, and a favorable cost-benefit ratio. These are seen as prerequisites for wider recommendation and long-term use.

Figure 18. Scalability and Future Readiness 1 (managers, GGZ)

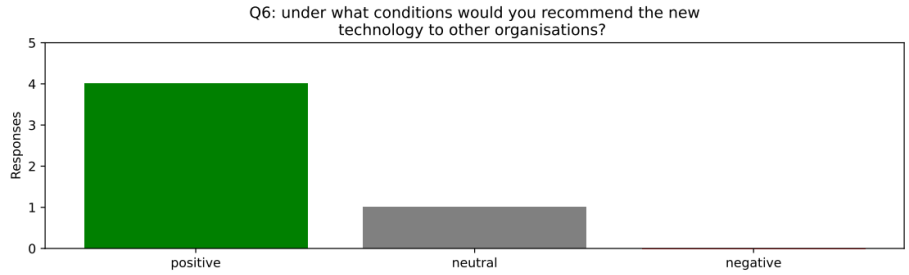

Figure 19. Scalability and Future Readiness 2 (managers, GGZ)

While **automated alerts and notifications** were not a central concern (see Figure 20), some respondents mentioned technical glitches—such as unrecognized measurement markers or expired user accounts—that impacted user motivation. These were generally resolved through remote support, though better issue prevention and system transparency could enhance user confidence during the testing phase.

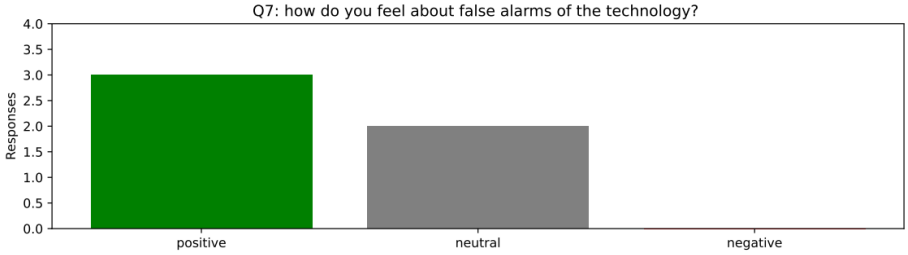

Figure 20. Automated Alerts & Notifications (managers, GGZ)

With respect to **system customization flexibility**, feedback indicated that major adaptations have yet to be made. Most facilities implemented the standard app setup, sometimes with minor anonymization configurations. More extensive tailoring, such as integration with hospital systems, was identified as a future step rather than a current feature, reflecting a deliberate focus on testing core functionality before scaling (see Figure 21).

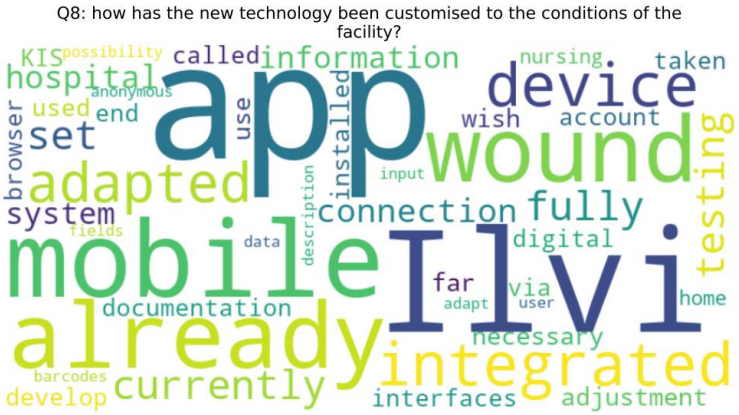

Figure 21. System Customization Flexibility (managers, GGZ)

Finally, **workforce satisfaction and retention** were addressed with cautious optimism. Managers observed moderate to high interest among staff, driven by the potential for improved care quality. Nonetheless, technical hurdles and added workload during the pilot phase temporarily limited enthusiasm. There is a shared expectation that satisfaction will increase once the technology becomes more reliable and contributes meaningfully to everyday care practices.

In conclusion, the managerial perspective on the pilot implementation is largely constructive. While some limitations were noted—particularly around technical integration, duplicate tasks, and customization—the general sentiment was forward-looking. Managers acknowledged both the challenges of the pilot environment and the system's long-term promise. With improved stability, proactive communication, and successful integration into care workflows, the solution is seen as a strong candidate for broader adoption within long-term care facilities.

E2 PP5 – Technical University of Kosice; Slovakia

In Slovakia, TUKE introduced a customized MS SharePoint-based system to fully digitalize internal processes previously handled manually on paper. This included features such as shared calendars, medication records, shift data, and digital notice boards. The goal was to enhance operational transparency, data accessibility, and communication efficiency. Developed collaboratively with staff input, the solution replaced paper workflows and established a scalable, user-friendly digital infrastructure for ongoing process optimization.

The solution was implemented in the ARCUS facility, the largest provider of care for seniors in eastern Slovakia. The goal of the project was to streamline processes in the facility and transition from paper and verbal organization of processes to the digital world, which brought much higher efficiency, quality and transparency to the processes. The analysis process began in March 2024 with subsequent implementation and testing of the solution from October 2024 to January 2025. The project involved employees of the ARCUS facility - social workers, healthcare professionals, and management.

E2.1 End-Users

The analysis of the end-user responses reveals a consistently positive perception of the new technology, especially with regard to its ease of use and integration into everyday work routines. Ratings for the **clarity of objectives and goals** were notably high, with all participants scoring between 9 and 10 (see Figure 22). Descriptions such as “very positive” reflect a strong sense of being well-informed, indicating that communication around the introduction of the system was clear and effective.

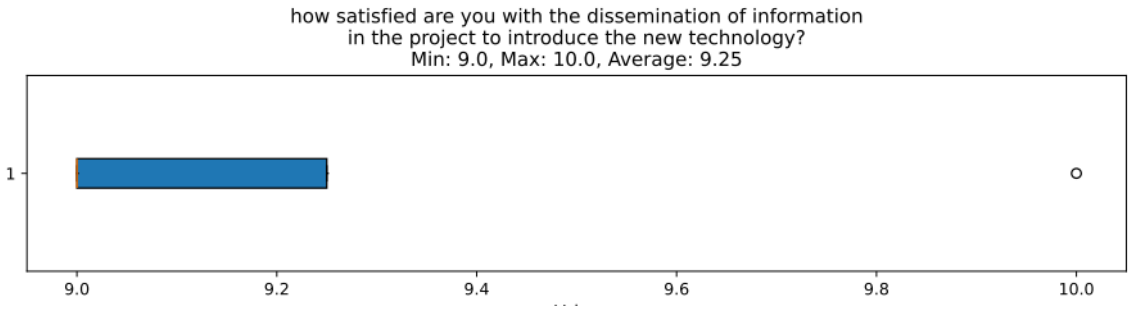

Figure 22. Clarity of Objectives & Goals (end-users, TUKE)

Feedback on **leadership and management support** was similarly favorable (see Figure 23). Participants described management as supportive and empowering, with statements like “it supports us” and “we have a free hand.” These responses suggest that managers were proactive and encouraging, helping facilitate a smooth and motivated adoption process among staff.

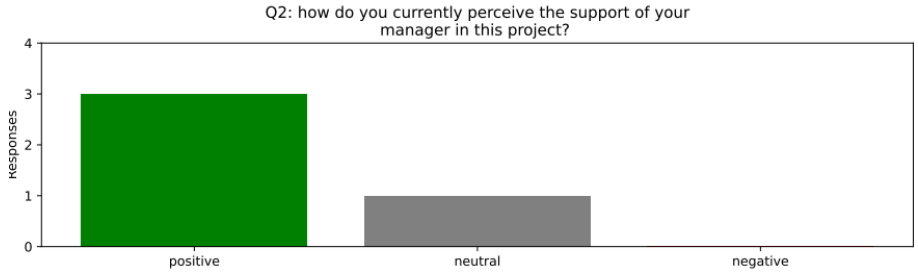

Figure 23. Leadership & Management Support (end-users, TUKE)

Experiences related to **staff training and engagement** varied slightly but remained mostly positive. One respondent acknowledged the need for repeated training due to the size of the team, while another emphasized being "ready to change." Most described the training as sufficient and ongoing, indicating that support mechanisms were in place, even if not yet fully standardized. This flexible and adaptive learning approach appears to have met the needs of most users (see Figure 24).

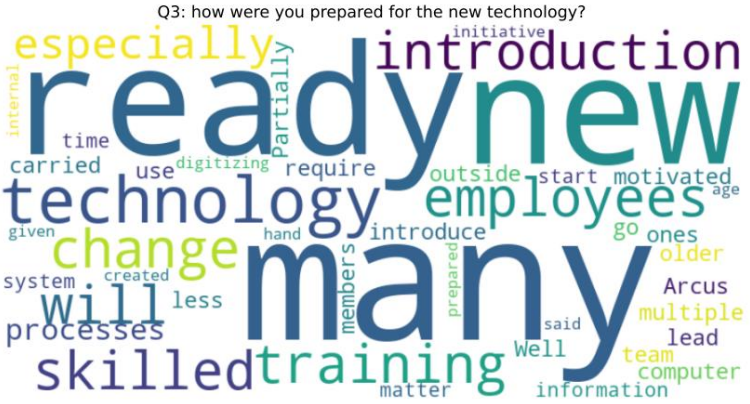

Figure 24. Staff Training & Engagement (end-users, TUKE)

With respect to **user-friendliness of the system**, respondents reported minimal difficulties. While some referenced a minor learning curve or manual configuration requirements, issues were resolved quickly with the support of the technical team. Overall, users described the experience as smooth, and challenges were not seen as barriers to daily use.

Feedback on **vendor support and collaboration** was positive (see Figure 26), albeit indirect. Most users did not interact with the technology provider directly but highlighted strong communication and responsiveness from the local implementation partner (TUKE), which is also visualized in Figure 25. Support was described as "fast and helpful," underscoring the effectiveness of the intermediary structure.

Figure 25. Vendor Support and Collaboration 1 (end-users, TUKE)

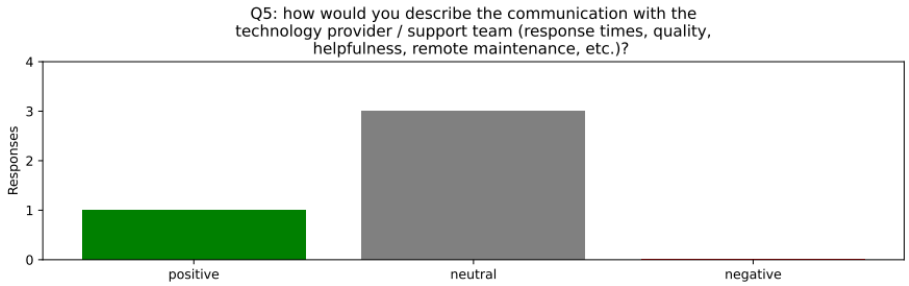

Figure 26. Vendor Support and Collaboration 2 (end-users, TUKE)

Perceptions of the **data protection policy** varied. Several respondents indicated that this topic did not concern them directly, potentially due to the nature of the pilot or the fact that compliance was managed externally. One comment highlighted a system feature for role-based access, indicating that safeguards were in place to ensure privacy.

When asked about **mean time to repair (MTTR)**, users consistently noted that they had not experienced any breakdowns or technical failures. Phrases like “does not concern us” suggest that the system has operated reliably so far, contributing to a positive overall user experience.

The tool’s impact on **workflow efficiency** was reported as highly beneficial, which is confirmed in Figure 28, showing positive responses from all end-users. Participants noted faster processes, reduced paperwork, and improved data handling (see Figure 27). Anticipated long-term benefits included smoother operations and better information access, especially once the solution becomes fully integrated.

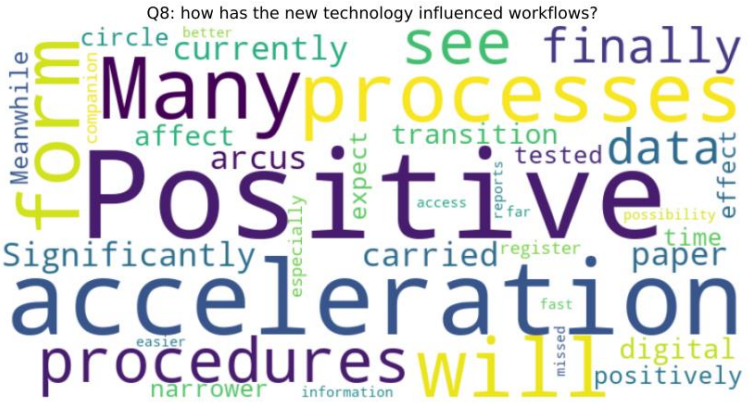

Figure 27. Workflow Efficiency 1 (end-users, TUKE)

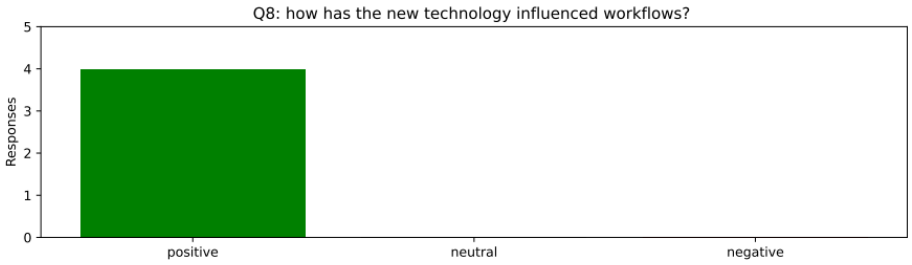

Figure 28. Workflow Efficiency 2 (end-users, TUKE)

Feedback on **trust in data accuracy and integrity** was also very encouraging. Users described the system as trustworthy and credible, citing its connection to well-known platforms like Microsoft. One respondent rated their trust level as "9 out of 10," while others referenced its international reliability, reinforcing a high level of confidence in the system (see Figure 29).

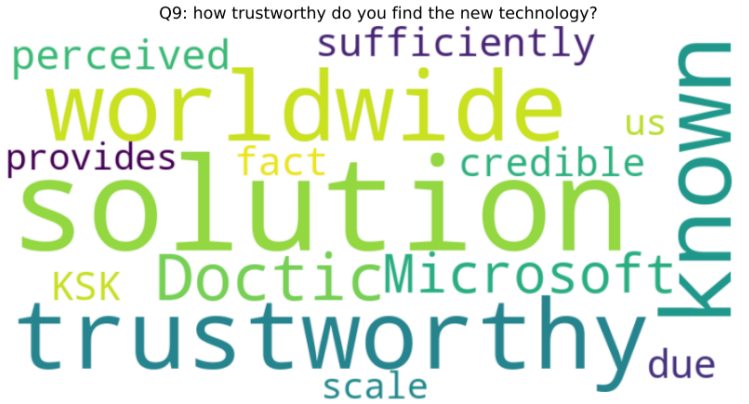

Figure 29. Trust, Data Accuracy and Integrity (end-users, TUKE)

User satisfaction was likewise strong, with ratings clustering between 8 and 10 which is demonstrated in Figure 30. Participants expressed appreciation for improved efficiency and workflow clarity, with only minor reservations related to initial training or setup. This reflects a generally enthusiastic reception of the technology among end-users.

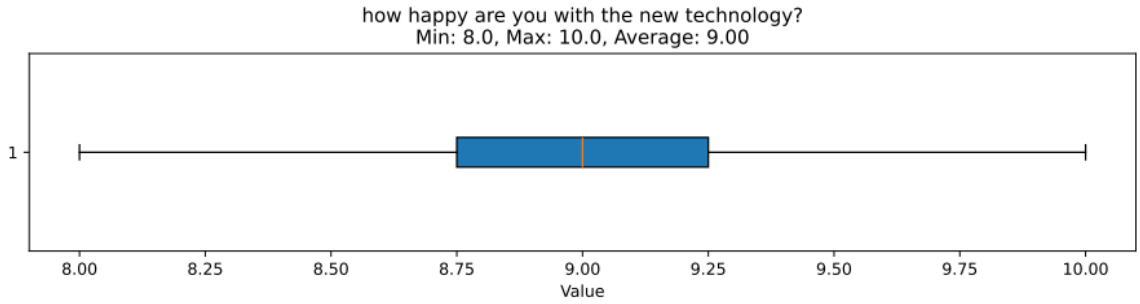

Figure 30. User Satisfaction (end-users, TUKE)

Responses regarding **task completion time** varied depending on context, also visualized in Figure 32 indicating mixed feedback in the sentiment analysis. While some found it hard to determine due to case-specific factors, others noted that data entry now takes "significantly less time than paper" (see Figure 31). This suggests the tool has already begun to streamline documentation efforts in a meaningful way.

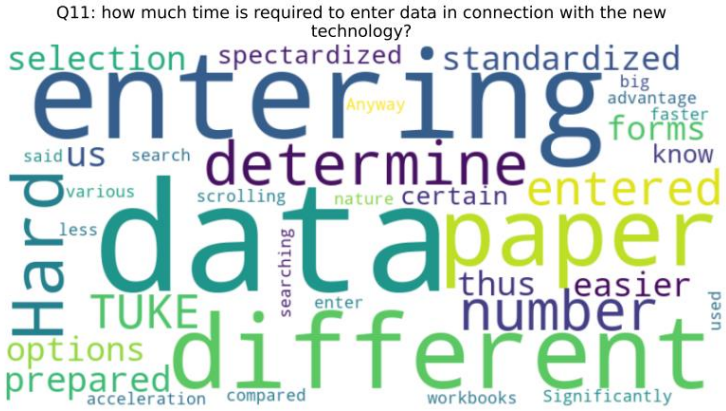

Figure 31. Task Completion Time 1 (end-users, TUKE)

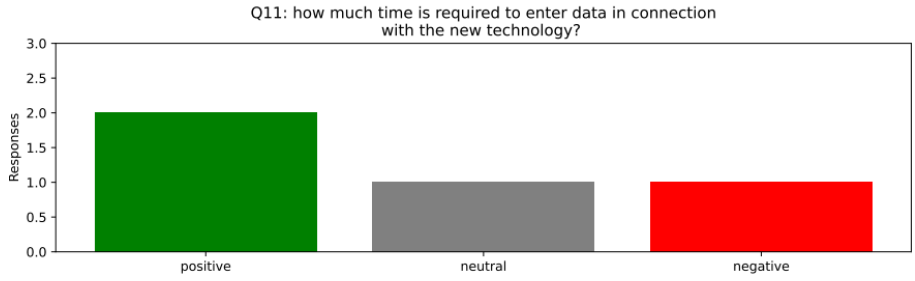

Figure 32. Task Completion Time 2 (end-users, TUKE)

No issues were reported concerning **automated alerts and notifications**. Most respondents either left the field blank or stated that the question "does not concern us," indicating that no false alarms or irrelevant system messages were encountered during the pilot phase.

In conclusion, the end-user feedback paints a highly encouraging picture of the pilot implementation. From clear communication and strong managerial support to minimal technical issues and high usability, the system appears to be well-received by those working with it directly. While some areas—such as training standardization or clarification of privacy measures—may benefit from further development, the positive sentiment, high satisfaction, and reported

improvements to workflow efficiency suggest that the technology is a valuable and scalable asset for LTC environments.

E2.2 Managers

The analysis of the managerial responses reflects a constructive and confident outlook on the implementation of the new technology. Satisfaction with the **clarity of objectives and goals** was high, with ratings of 8 and 9 (see Figure 33). Respondents cited solid collaboration with TUKE and described communication as effective. The ability to adapt the standardized SharePoint solution to local conditions was seen as a strength, contributing to a sense of alignment between project goals and on-the-ground implementation.

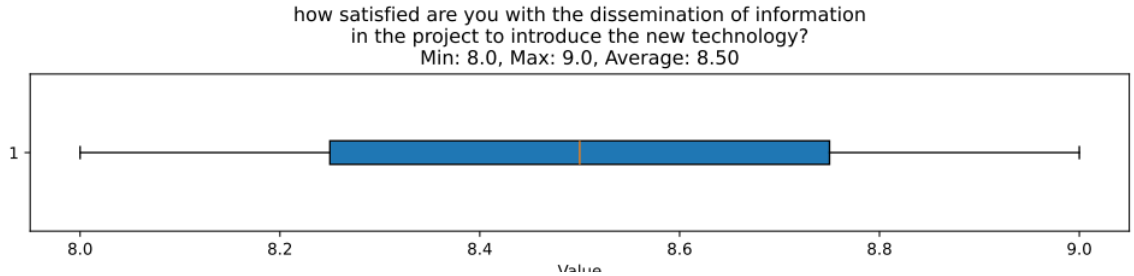

Figure 33. Clarity of Objectives & Goals (managers, TUKE)

Feedback on **vendor support and collaboration** was primarily framed through the role of TUKE as an intermediary. Direct contact with the product provider was deemed unnecessary, as the local university partner provided timely and effective adjustments. One respondent noted that internal communication structures (via KSK) were still being implemented, leaving some aspects of support unassessed. Overall, the current support model appears to be functioning adequately for the pilot stage (see Figure 34).

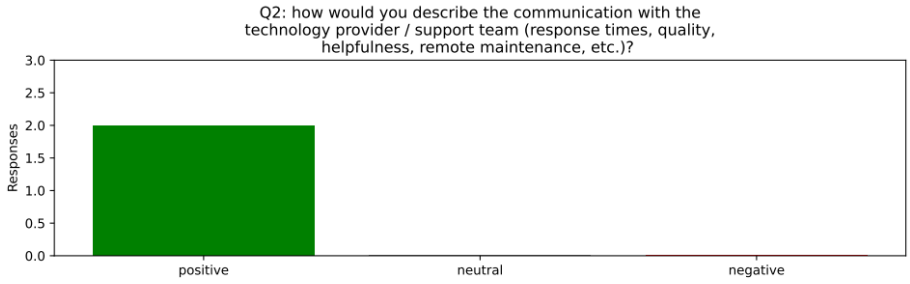

Figure 34. Vendor Support and Collaboration (managers, TUKE)

Responses on the **data protection policy** were limited in detail. One respondent noted that data protection did not concern the project directly, likely due to the system's structure or testing phase. The other implied that the standardized nature of SharePoint ensures compliance with relevant legal frameworks, although no specific data-handling protocols were outlined. These findings suggest that data protection is handled externally or institutionally, outside the scope of daily management involvement.

Concerning the **quality of the implementation timeline** (see Figure 35), both respondents reported that the project remained on track. One highlighted a shift from extending the existing IS Cygnus system to integrating SharePoint, due to functionality gaps in the former. No major

disruptions or deviations from the plan were observed, suggesting a controlled and goal-oriented rollout.

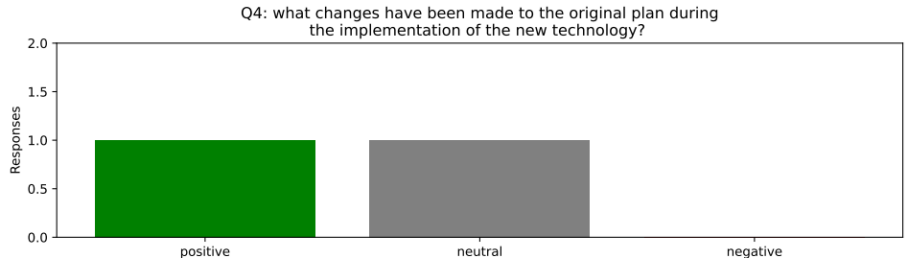

Figure 35. Quality of Implementation Timeline (managers, TUKE)

Views on **workflow efficiency** varied depending on project maturity. One site had not yet assessed the impact, as the system was still in early stages. The other respondent, however, observed a clear shift from paper-based documentation to digital workflows, which simplified routine tasks and improved transparency. This transition was described as a boost to overall efficiency, highlighting the system's value once operationalized (see Figure 36).

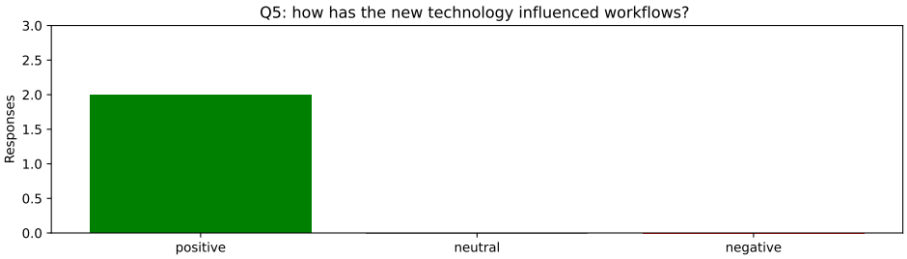

Figure 36. Workflow Efficiency (managers, TUKE)

In terms of **scalability and future readiness**, both respondents were optimistic. One expressed intent to promote the system as a "Best Practice" model if the pilot proves successful, while the other already voiced readiness to recommend the solution more broadly. This reflects growing confidence in SharePoint's adaptability and its alignment with broader digital transformation goals in long-term care.

No relevant issues were reported in connection to **automated alerts and notifications**. One respondent explicitly stated the topic "does not concern our project," and the other did not comment, suggesting that false alarms or system messages were not a concern during the current stage of implementation.

Regarding **system customization flexibility**, both respondents emphasized the adaptability of SharePoint. One outlined a planned "full adaptation" to local workflows, rights structures, and data displays, while the other described the platform's capacity for tailored configurations through its versatile settings (see Figure 37). These insights confirm that the system can be aligned with institutional needs as the project matures.

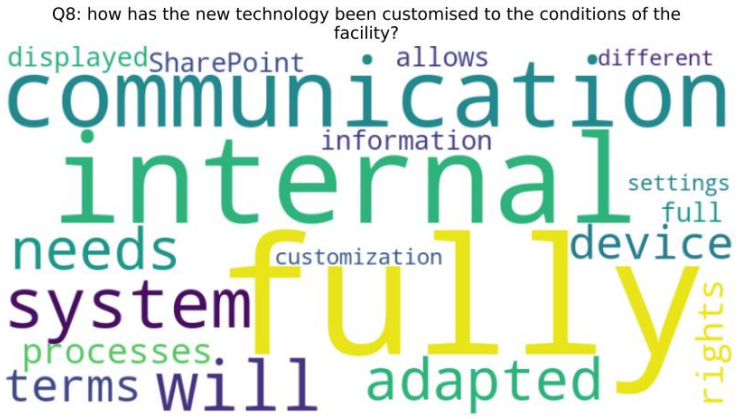

Figure 37. System Customization Flexibility (managers, TUKE)

Finally, feedback on **workforce satisfaction and retention** was cautiously positive (see Figure 39). One respondent noted it was still too early to fully assess staff sentiment, though initial engagement was strong. The second respondent reported high satisfaction among employees, with particular appreciation for the tool's intuitiveness. While some older staff encountered adjustment challenges, support from colleagues helped ease the transition, fostering broad acceptance (see Figure 38).

Figure 38. Workforce Satisfaction & Retention 1 (managers, TUKE)

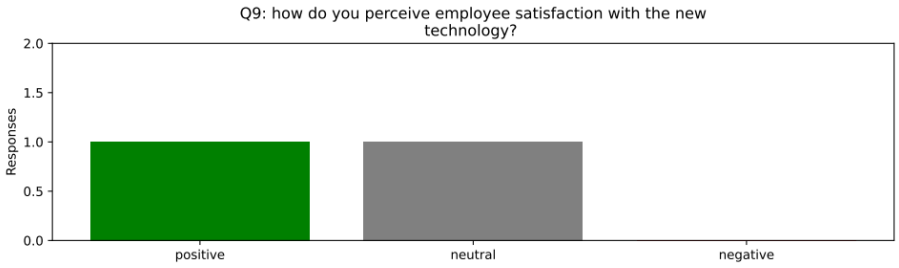

Figure 39. Workforce Satisfaction & Retention 2 (managers, TUKE)

In conclusion, the managerial perspective highlights a stable and adaptable rollout with early signs of success. While some responses were constrained by the project's early phase, there is clear evidence of effective communication, structured planning, and growing confidence in the system's potential. With continued customization, integration, and staff engagement, the technology is well-positioned for wider deployment across long-term care settings.

E3 PP10 – Rzeszow Regional Development Agency; Poland

In Poland, RRDA developed and implemented the DC Analytics web application at the Donum Corde Rehabilitation and Medical Care Center. The app was designed to digitalize the rehabilitation process by enabling real-time monitoring of patient outcomes, personalized care plans, and feedback collection. Aimed at improving data flow, care coordination, and decision-making, the solution supported interdisciplinary collaboration and gave both staff and patients better tools for managing and evaluating rehabilitation progress.

The system was implemented by the Rzeszow Regional Development Agency at the Donum Corde Rehabilitation and Medical Care Center - the facility provides comprehensive rehabilitation and 24-hour medical care for patients in various health conditions in inpatient and outpatient settings. The pilot initiative aimed to digitalize the rehabilitation sector by developing and implementing the DC analytics system. This system facilitates the collection of anonymized survey data and generates comprehensive reports to support managerial decision-making. The pilot began in January 2024 and ended in February 2025. Participants included Donum Corde management, physiotherapists, patients, the project team from RRDA, IT experts and external experts.

E3.1 End-Users

The responses from end-users reflect a broadly positive perception of the new technology's introduction, with particular appreciation for its usability, support structures, and impact on workflow efficiency. Feedback on the **clarity of objectives and goals** indicates high satisfaction, with ratings ranging from 7 to 10, displayed in Figure 40. Most users felt sufficiently informed to begin using the system, and the two highest scores suggest that the communication around implementation was not only adequate but well-received by many.

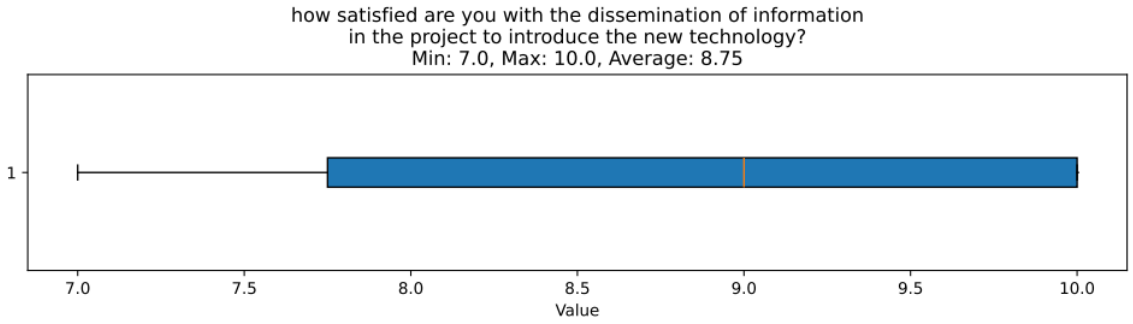

Figure 40. Clarity of Objectives & Goals (end-users, RRDA)

Perceptions of **leadership and management support** were mainly strong (see Figure 42). Users described their supervisors as engaged and encouraging, using phrases like "Receives full support" and "Support is full" (Figure 41). Only one respondent was slightly more neutral, stating "Optimally," which still implies functional support, even if not enthusiastically expressed. Overall, leadership appears to have played a constructive role in supporting adoption.

Figure 41. Leadership & Management Support 1 (end-users, RRDA)

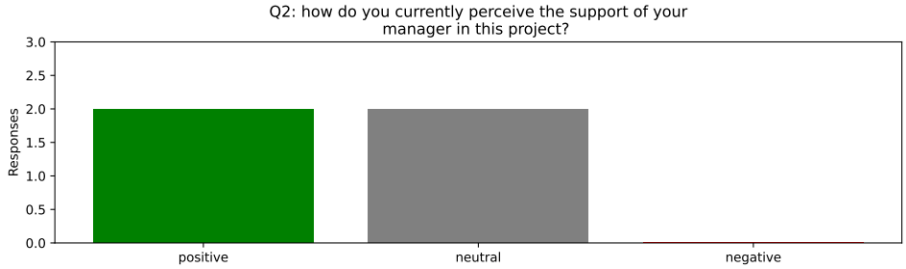

Figure 42. Leadership & Management Support 2 (end-users, RRDA)

All participants confirmed receiving **staff training**, though the format and depth varied. Some underwent formal training sessions, while others were prepared more informally or on-the-job (see Figure 43). Phrases such as "Before starting working with the application, I was trained" and "A training was conducted" suggest that training was a standard component of the rollout, contributing to users feeling generally ready to engage with the system.

Figure 43. Staff Training & Engagement (end-users, RRDA)

Feedback on **user-friendliness of the system** was mainly positive. Three out of four respondents reported no challenges, describing the interface as "intuitive" or stating that it "did not create any difficulties" (see Figure 44). One user referenced the "complexity" of completing a service, indicating that while the system is generally accessible, some components may still present a learning curve depending on use case.

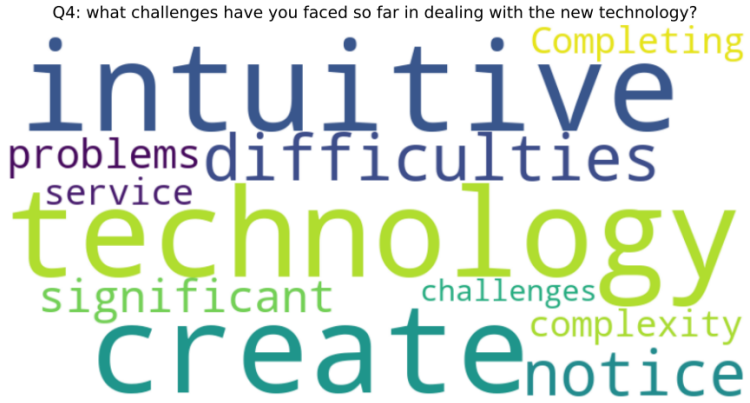

Figure 44. User-Friendliness of the System (end-users, RRDA)

Comments regarding **vendor support and collaboration** were similarly favorable. Support was described as "very efficient," with one respondent noting that their management handled communication with the supplier. Even those who did not directly interact with the vendor expressed satisfaction, with terms like "very fit" and "acceptable," pointing to reliable technical support channels (see Figure 45).

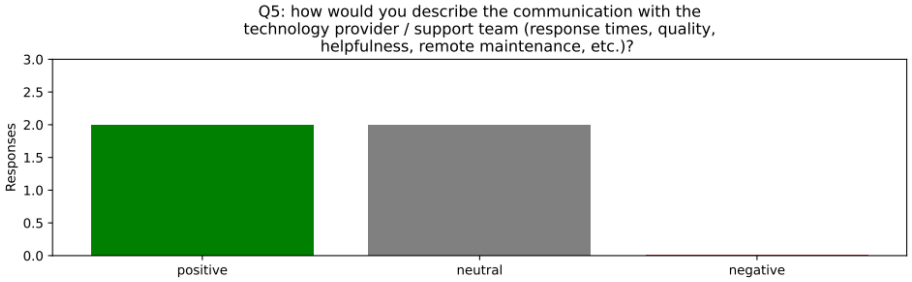

Figure 45. Vendor Support and Collaboration (end-users, RRDA)

On the topic of **data protection policy**, responses demonstrated awareness and alignment with legal requirements. Users cited national data protection laws and role-based access as foundational safeguards. Statements like "all personal and medical data were reserved and used only by medical staff" suggest a structured approach to maintaining confidentiality and institutional compliance.

In terms of **mean time to repair (MTTR)**, only one respondent reported a concrete timeframe, estimating 2–3 days to a week depending on complexity. Two others indicated no failures had occurred, and one left the field blank. This points to a relatively stable system with few interruptions, though repair times could be moderate when issues do arise.

The impact on **workflow efficiency** was universally described as positive. Respondents noted improvements in information flow, documentation speed, and task simplification. Comments such as "improved the work and efficiency of rehabilitation evaluation" and "It accelerates positively" highlight a tangible benefit in terms of daily operations and patient tracking (see Figure 46).

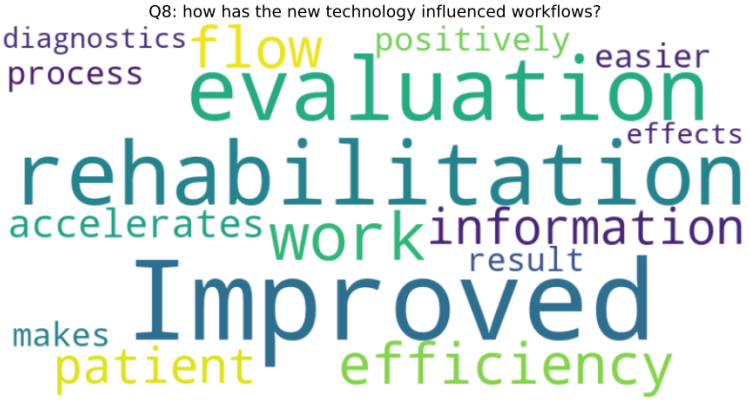

Figure 46. Workflow Efficiency (end-users, RRDA)

Reactions to **trust in data accuracy and integrity** were slightly mixed. Some respondents offered unqualified approval ("In my opinion, yes"), while others wrote "not" without elaboration, creating some ambiguity. Despite this, the overall tone of responses and the high user satisfaction scores suggest that trust in the technology is sufficient for daily use, though potentially not yet fully consolidated.

User satisfaction is demonstrated in Figure 47 and was rated between 7 and 10, with two participants assigning the highest score. Users cited increased efficiency and smoother workflows as contributing factors. Even the lower-rated responses were still generally positive, indicating overall enthusiasm and confidence in the tool.

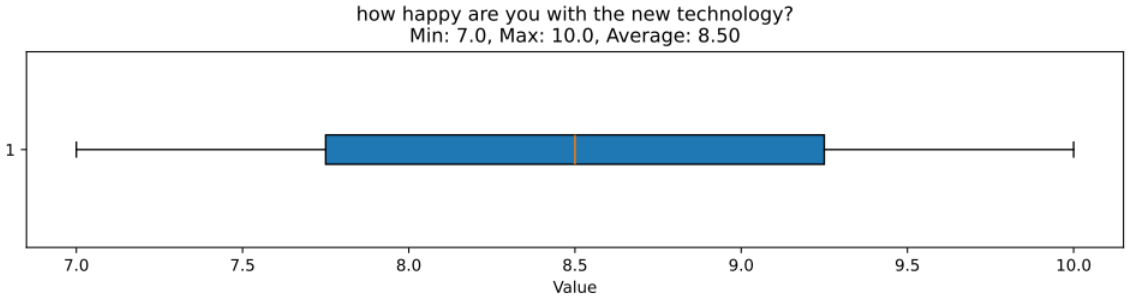

Figure 47. User Satisfaction (end-users, RRDA)

Estimates for **task completion time** varied. Most users indicated an average of around 10 minutes, while one reported 25–40 minutes, suggesting that complexity and context influence workload. A note referencing an "Error 500" hints at occasional system glitches (see Figure 48).

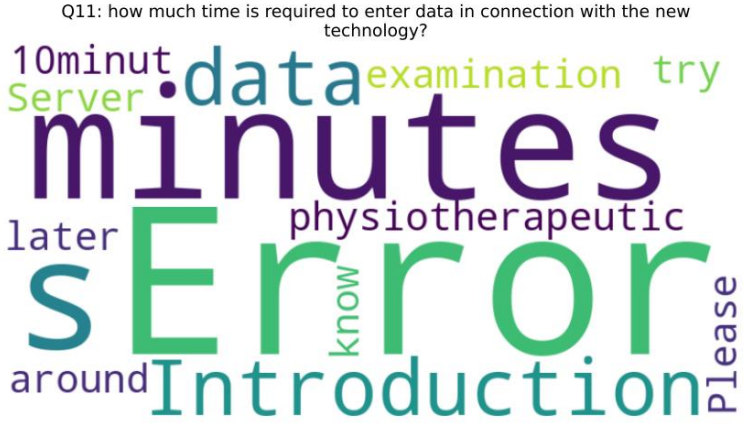

Figure 48. Task Completion Time (end-users, RRDA)

Finally, no major issues were reported regarding **automated alerts and notifications**. Most respondents left this field blank or wrote "not," while one explicitly stated that no error messages had been received. This suggests that false alarms have not been a notable issue for the current user group (see Figure 49).

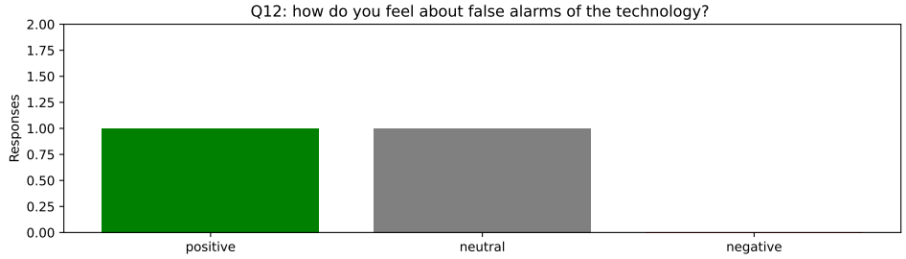

Figure 49. Automated Alerts & Notifications (end-users, RRDA)

In conclusion, end-users report a largely successful and positive experience with the new technology. Strong managerial support, effective training, and intuitive usability were key factors contributing to early acceptance. While minor concerns emerged around system complexity and trust, these were isolated and did not significantly affect overall satisfaction. The consistent praise for workflow improvements and general reliability suggests that the tool holds strong potential for continued and expanded use in long-term care environments.

E3.2 Managers

Managerial feedback on the implementation of the new technology is consistently positive, particularly with regard to communication quality, integration into workflows, and staff acceptance. Ratings for the **clarity of objectives and goals** were uniformly high, with all respondents assigning the highest possible score (10). Descriptions such as "satisfactory," "very good," and "very efficient" reflect a well-coordinated dissemination of information. Managers appreciated the accessibility and clarity of staff explanations, indicating that they felt well-informed throughout the introduction phase.

Perceptions of **vendor support and collaboration** were equally strong (see Figure 50). Respondents described communication with support staff as prompt and effective, with no misunderstandings. One participant highlighted the quality of contact as "very good," while others emphasized the timely and clear resolution of technical issues whenever assistance was needed. This responsiveness has contributed to a stable and productive implementation experience.

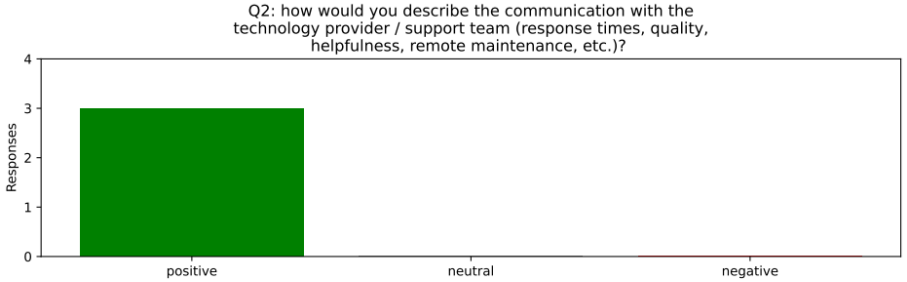

Figure 50. Clarity of Objectives & Goals (managers, RRDA)

Responses related to the **data protection policy** confirmed that compliance with legal standards was already embedded in institutional routines. Managers reported applying confidentiality practices "on a daily basis," with no additional cost or complexity incurred. All data handling

procedures were said to conform with existing regulatory frameworks, reinforcing trust in the system's ethical and legal alignment.

Regarding the **quality of the implementation timeline** (see Figure 51 and 52), some adjustments were reported. One respondent referred to early planning meetings where adaptations were made based on facility and staff needs. Another described the addition of an electronic survey format for patients. A third confirmed that implementation followed the original plan without major deviations. These insights point to a flexible yet well-managed rollout.

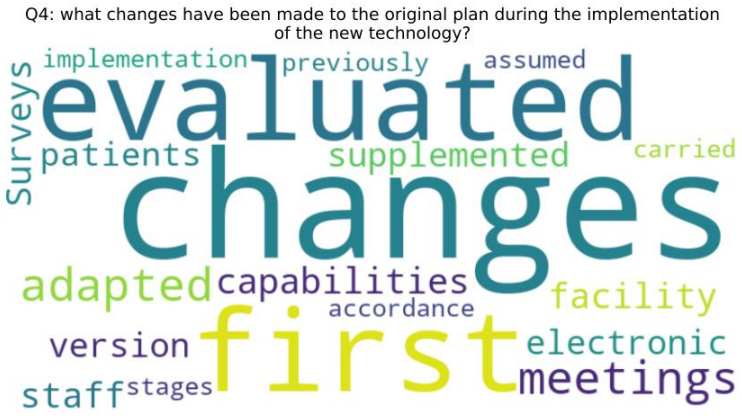

Figure 51. Quality of Implementation Timeline 1 (managers, RRDA)

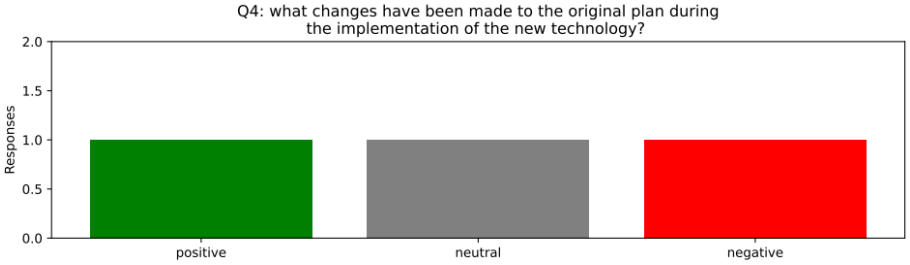

Figure 52. Quality of Implementation Timeline 2 (managers, RRDA)

All participants identified clear improvements in **workflow efficiency** (see Figure 53). One noted enhanced oversight of work quality and patient feedback mechanisms, while another described successful application integration into existing systems. A third emphasized faster patient assessments and easier data capture. Together, these responses reflect a meaningful streamlining of day-to-day operations and a positive impact on care delivery.

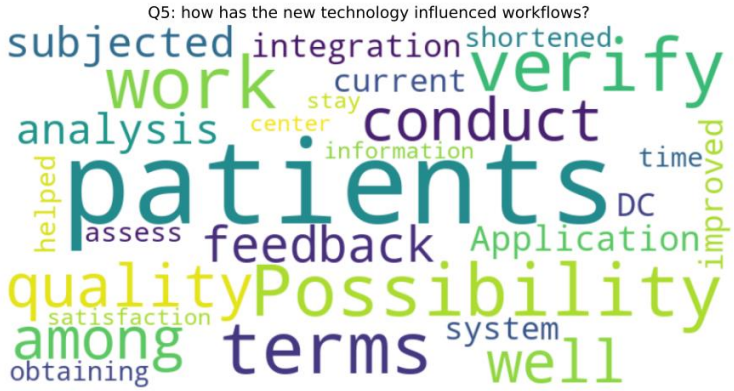

Figure 53. Workflow Efficiency (managers, RRDA)

On the subject of **scalability and future readiness**, managers identified several conditions for recommending the technology more broadly. Key factors included openness to innovation, leadership readiness to support digital change, and careful alignment with the existing capabilities of both staff and facility infrastructure. These conditions highlight the importance of organizational maturity and cultural readiness for technology-driven transformation. Generally, statements on potential scalability of the solution were mainly positive (see Figure 54).

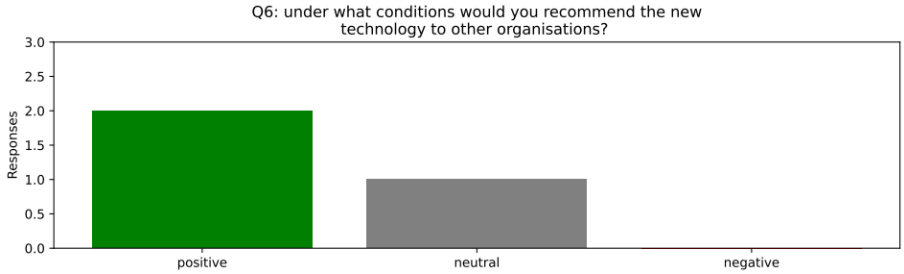

Figure 54. Scalability & Future Readiness (managers, RRDA)

No negative experiences were reported concerning **automated alerts and notifications**. One respondent stated that there had been "no errors (until now)," and none mentioned disruptions caused by system alerts. The lack of feedback on false alarms implies that these are either rare or not impactful at this stage of use.

In terms of **system customization flexibility**, all managers indicated that the technology had been tailored to their facility's operational and ethical context (see Figure 55). One implementation involved integration into physiotherapy documentation workflows, while another was specifically adapted to ensure patient data confidentiality. These adaptations demonstrate the solution's capacity to accommodate diverse healthcare settings.

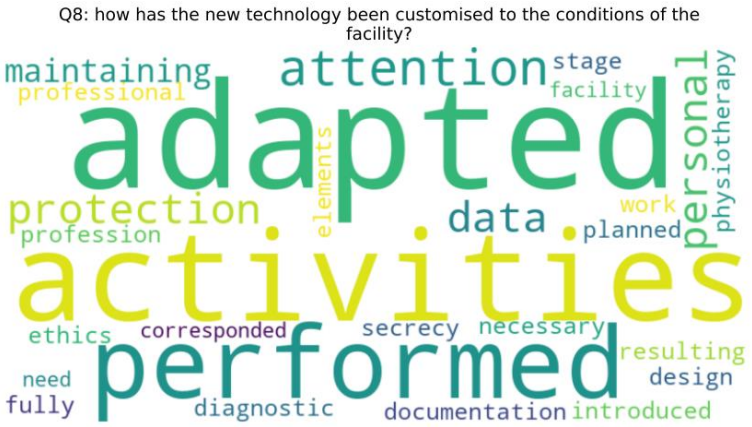

Figure 55. System Customization Flexibility (managers, RRDA)

Finally, impressions of **workforce satisfaction and retention** were positively rated by all participants, also demonstrated in Figure 56. Managers described staff as "very pleased," with comments noting that "the technology is simple and intuitive" and "data is entered on site." Employees appreciated the system's efficiency and ease of use, and once familiar with its features, showed a high level of engagement and acceptance in daily operations.

Figure 56. Workforce Satisfaction & Retention (managers, RRDA)

In conclusion, the managerial perspective underscores a highly successful and well-received implementation. The clarity of communication, efficient technical support, thoughtful customization, and early signs of workflow improvement contribute to a strong foundation for continued adoption. With high staff satisfaction and minimal disruptions, the technology appears well-positioned for long-term integration and potential scale-up across other long-term care environments.

F Discussion

The results of the monitoring and evaluation of Pilot Action 1 provide insights into the implementation of digital solutions in LTC facilities across Central Europe. The pilot action aimed to investigate the implementation of digital documentation, communication tools, and workflow optimization technologies in LTC facilities, as well as to assess their perception among two key stakeholder groups: end-users and managers. Overall, the project demonstrated potential for positive impact, while also highlighting key limitations and areas requiring further attention.

F1 Key results

The implementation of Pilot Action 1 demonstrated the potential of digital tools to enhance operational efficiency, documentation accuracy, and stakeholder communication in LTC settings. Across three pilot sites—Austria (GGZ), Slovakia (TUKE), and Poland (RRDA)—the tested technologies were tailored to specific institutional needs, ranging from mobile documentation systems to SharePoint-based process management and patient analytics platforms.

Across all sites, **management-level stakeholders consistently rated the clarity of project objectives, vendor collaboration, and support mechanisms highly**.

They recognized benefits in terms of improved transparency, streamlined workflows, and potential for strategic scalability. Notably, tools such as wound documentation apps and digital information systems were seen as promising solutions to reduce administrative burdens and enhance patient care quality, particularly when successfully integrated with existing infrastructures.

From the **end-user perspective**, satisfaction levels were more variable. While some users experienced clear benefits—particularly in the Slovak and Polish pilots, where digital systems replaced paper-based processes—others reported challenges. In Austria, several respondents described the technology as time-consuming or unreliable during early stages of implementation. Technical disruptions, such as login issues or unsaved data, were frequently mentioned barriers that affected user trust and satisfaction.

A cross-site synthesis revealed key enablers of successful implementation:

- **Active involvement of target groups** during development and testing,
- **Strong institutional support** and communication between stakeholders,
- **Tailored training and documentation**, especially in facilities with low digital maturity,
- **Continuous vendor support** and post-pilot integration planning.

At the same time, the most mentioned constraints included:

- **Insufficient customization** or system instability during the early testing phase,
- **Variable digital literacy** among end-users, requiring repeated support efforts,
- **Inconsistent information dissemination**, particularly among front-line staff.

Overall, while the digital solutions tested in Pilot Action 1 were positively received by management, sustained improvements in usability, responsiveness, and end-user engagement are critical to achieving broader uptake and institutional transformation.

F2 Limitations

While the monitoring process has generated insights, several limitations must be acknowledged in interpreting the results.

Firstly, there is a potential for **response bias** among participants, especially end-users. Although the evaluation and analysis of the responses were conducted centrally by external experts (IMC University of applied sciences Krems) and individual facilities did not receive access to raw data, some staff members may have been concerned that their responses could be traced back to them. This perceived lack of anonymity might have influenced their feedback, possibly leading to more cautious or favorable answers.

Secondly, the relatively **low response rates** - particularly in the first monitoring round - limit the generalizability of the findings. The data collected reflects the specific project setting and focuses on certain persons rather than offering representative insights into the broader LTC sector. As such, the results should be viewed as a snapshot of the DigiCare4CE pilot environment rather than a comprehensive sector-wide evaluation. To strengthen the monitoring effort, two rounds of data collection were conducted, targeting end-users and management. This approach aimed to capture temporal developments and broaden participation across pilot sites. Overall, engagement increased in round 2 (see also table 1), particularly among end-users, with GGZ showing the highest participation (17 End-users, 8 Management in total), while TUKE had no activities in Round 1 due to changes in implementation timelines. A key limitation of the data in this report is the uneven distribution of responses, largely due to changes in internal scheduling shifts among partners, which led to delays or missed monitoring opportunities. This limits the consistency and comparability of the collected data across partners and rounds.

Thirdly, the monitoring process captures a **snapshot** in time and does **not account for long-term outcomes** or sustained impact of the implemented technologies. Important factors such as system adoption over time, changes in staff acceptance and satisfaction levels, or real cost-benefit developments were outside the monitoring and evaluation scope. Additionally, it needs to be mentioned that the monitoring process focused primarily on qualitative feedback. Objective performance data - such as error rates, actual time savings, or cost reductions - were not systematically collected or analyzed.

However, the chosen methodology of combining two rounds of mostly qualitative, survey-based data collection targeted at both end-users and managers, was selected to ensure flexibility and feasibility within the operational constraints of our associated LTC facilities. This approach allowed for context-sensitive insights while respecting staff time and workload. To address limitations such as low initial response rates and potential response bias, the evaluation was conducted centrally by an external academic partner to preserve neutrality and confidentiality. By implementing a second monitoring round, the project aimed to enhance participation, observe changes over time, and strengthen the robustness of the findings despite the uneven data distribution across sites. This iterative, stakeholder-informed approach reflects a practical balance between scientific objectives of the pilot actions and the realities of pilot implementation in dynamic care environments.

G Conclusion

The results of the monitoring and evaluation of PA1 offer valuable insights into the implementation of digital solutions in LTC facilities across Central Europe. The pilot set out to explore how digital documentation, communication platforms, and workflow optimization technologies could be integrated into LTC environments, and how these tools would be perceived by two central stakeholder groups: end-users and managers.

While managerial feedback was continuously positive - emphasizing strategic clarity, improved workflows, and vendor collaboration - end-user experiences varied depending on the maturity of the implementation and system stability. Success was most evident where users were actively involved, training was tailored, and institutional support was strong. However, technical challenges, inconsistent information flow, and varying digital literacy levels underscored the need for more robust onboarding and post-implementation support. Sustained investment in usability, staff engagement, and integration planning will be essential to scale these solutions effectively and realize their full impact within diverse care environments.

Building on these findings, the results of PA1 will serve as a foundational input for the development of practitioner-oriented guidance materials in Activity 2.5 within the DigiCare4CE project. The lessons learned will also inform transnational exchange, allowing best practices from individual pilots to be adapted and applied across different institutional and regional contexts.

H LIST OF TABLES

I LIST OF FIGURES

J APPENDIX

J1 Monitoring Questionnaire

Metrics	Questions for monitoring	PA1	Target group	Type
Clarity of Objectives & Goals	How satisfied are you with the dissemination of information in the project to introduce the new technology?	✓	*Management; End-users*	*Scale 1-10*
Leadership & Management Support	How do you currently perceive the support of your manager in this project?	✓	*End-users*	*Text*
Staff Training & Engagement	How were you prepared for the new technology?	✓	*End-users*	*Text*
User-Friendliness of the System	What challenges have you faced so far in dealing with the new technology?	✓	*End-users*	*Text*
Vendor Support and Collaboration	How would you describe the communication with the technology provider / support team (response times, quality, helpfulness, remote maintenance, etc.)?	✓	*Management; End-users*	*Text*
Data Protection Policy	What measures have been taken to fulfil legal data protection requirements?	✓	*Higher Management; Management; End-users*	*Text*
Quality of Implementation Timeline	What changes have been made to the original plan during the implementation of the new technology?	✓	*Higher Management; Management*	*Text*
Mean Time to Repair (MTTR):	How long did the repair take after a failure of the new technology?	✓	*End-users*	*Text*
Workflow Efficiency	How has the new technology influenced workflows?	✓	*Management; End-users*	*Text*
Trust (Data Accuracy and Integrity)	How trustworthy do you find the new technology?	✓	*End-users*	*Text*
User Satisfaction	How happy are you with the new technology?	✓	*End-users*	*Scale 1-10*
Scalability & Future Readiness	Under what conditions would you recommend the new technology to other organisations?	✓	*Higher Management; Management*	*Text*
Patient Satisfaction Scores	What feedback have you received from residents about the new technology?	×	*End-users*	*Text*
Task Completion Time	How much time is required to enter data in connection with the new technology?	✓	*End-users*	*Text*
Automated Alerts & Notifications	How do you feel about false alarms of the technology?	✓	*Management; End-users*	*Text*
System Customization Flexibility	How has the new technology been customised to the conditions of the facility?	✓	*Higher Management; Management*	*Text*
Workforce Satisfaction & Retention	How do you perceive employee satisfaction with the new technology?	✓	*Higher Management; Management*	*Text*

J2 Pilot Action Description PP2 GGZ

Territorial challenges and needs in the regions specifically addressed by the pilot action
The pilot action addresses challenges in Austria's LTC system, strained by an aging population and a shortage of health professionals. Digital transformation strategies highlight the potential of digital tools to bridge this gap. Research shows health professionals are more willing to adopt electronic documentation tools than technologies for social or emotional support, such as robotic assistants. Thus, digitalizing care documentation offers a promising start to easing administrative burdens in LTC. Effective documentation is vital for quality assurance and legal compliance, yet it remains time-intensive and error-prone, making innovation in this area a priority.
Main aim(s) of the pilot action and how it contributes to tackle the identified challenge(s)
The pilot action had the objective to integrate wound management and documentation applications into our mobile care documentation system. By streamlining workflows and empowering nursing staff to document directly at the point of care, the pilot aimed to reduce administrative burdens, enhance data accuracy, and increase operational efficiency. These improvements are designed to elevate care quality and free up more time for direct caregiving activities, benefiting both staff and residents.
Decision-making process
The decision-making process followed a co-creative approach to determine which technology to implement. Nursing staff expressed a desire to optimize wound management and enhance the mobile documentation system. To achieve this, we organized co-creation workshops and meetings involving the IT and research and development department, the LTC facility, including nursing staff. Interviews and meetings were conducted with GGZ managers to discuss strategic aspects of the pilot action and its value to the organization. Additionally, a delegation trip to Denmark provided insights into innovative healthcare technologies and their implementation processes.
Technical description of the pilot action (e.g. scope, main features, innovative elements etc.)
The pilot action enhanced the mobile care documentation solution, **ilvi**, by integrating two innovative digital applications: a wound documentation app and a document scanning app. **Ilvi** is an open platform supporting mobile app integration and seamless data exchange with hospital information systems. It connects mobile devices (e.g., smartphones) with medical products (e.g., blood pressure monitors, apps) to automate parameter collection and transfer data directly to residents' records. **Key features:** **Wound Documentation App (imitoWound):** This app enables nursing staff to log in and document detailed wound assessments. It includes a standardized interface for recording wound type,

location, duration, and healing progress. Using calibration markers and the device's camera, it automatically measures area, width, length, and depth. Additional fields capture wound status (e.g., infections, pain) and therapy measures (e.g., dressing changes). Tasks can be saved or delegated via a web platform, while a visual timeline tracks healing. Automated reports can be used for communication with physicians for treatment decisions.

Document Scanning App: This app allows staff to scan, annotate, and send documents directly to hospital information systems using the device's camera. It eliminates the need for multifunctional devices and manual file handling, streamlining workflows and ensuring immediate digital accessibility.

Implementation steps

The implementation process involved ongoing cooperation with the solution providers. The technical implementation included extending the current mobile documentation system ilvi with the two new applications. Ilvi is an open platform, which can integrate mobile apps and data exchange. It consists of a mobile device (similar to a smartphone) and in the background a software which is connected to medical products (e.g. blood pressure device, apps etc.), so parameters can be collected automatically and in the next step transferred to the hospital information system.

To support end-users in using the new apps, we conducted several hybrid-format training sessions and provided handbooks and informational materials. In cases of difficulties, the project team arranged on-site visits to monitor progress and offer support. Focus groups were organized to discuss the solutions and questionnaires were sent out to evaluate the implementation process. Our IT department supported in coordinating regular updates and cooperating with vendors to ensure smooth technical integration and ongoing improvements.

Involvement of target groups during pilot action development and/or implementation

Key target groups were actively engaged throughout the pilot action: Nursing staff tested the applications, offering feedback during the implementation phase. Care management supported staff on-site and acted as a communication bridge between care teams and the project managers. The IT department collaborated closely with vendors on system testing, customization, and technical implementation to align with facility requirements. Management received regular updates, ensuring alignment with organizational and strategic goals. Additionally, external experts and DigiCare4CE project partners, experienced in similar initiatives, provided insights to ensure a successful pilot action.

Cooperation dimension of the pilot action, i.e. joint development within the partnership and, if applicable, joint implementation

All pilot actions in DigiCare4CE followed a standardized implementation plan, with each partner contributing their expertise to ensure smooth execution. Peer review visits, including project partners and external experts, allowed to observe and provide feedback on each other's pilot sites. Regular project team and internal meetings ensured progress monitoring at our residential nursing home. Additionally, pilot action meetings with partners implementing similar solutions were held to exchange experiences and insights. This collaborative approach ensured alignment among interest groups and facilitated the successful integration of the new technologies.

Results - expected change and lasting effects in the territories generated specifically by the pilot action, its uptake by relevant organisations and benefits for target groups
The pilot action is expected to bring lasting effects by improving care documentation and streamlining workflows. Integrating a mobile wound documentation app enhances data accuracy, elevating the quality of wound assessments and treatment, while fostering better communication with external stakeholders, such as general practitioners, and improving therapy decisions for residents. Key requirements identified during the pilot phase provide a foundation for long-term adoption and scalability of digital wound documentation solutions across similar facilities. The mobile document scanner reduces administrative burdens by transferring data directly to the hospital information system, minimizing errors and saving staff time for care activities. The prompt availability of digital documents ensures more efficient workflows. The solutions have the potential of adoption across all GGZ departments (e.g. clinic) and by other care organizations within the region.
Ownership and durability of the pilot action after the project end, considering financial and institutional support including, if applicable, maintenance
GGZ established a development partnership with the provider of the mobile documentation solution, ilvi, prior to the pilot action, ensuring ongoing maintenance, regular updates, and gradual functional expansions. Supported by institutional and financial resources, the partnership secures sustainability of the solution within the organization. The document scanning application has been fully integrated into GGZ's operations, becoming a permanent component of its mobile documentation technology. While the wound documentation app will not be implemented for long-term use at this stage, the insights gained during testing will inform future enhancements and the development of similar solutions.
Transferability of the pilot action to other territories, sectors or target groups and planned measures for supporting such transfer
The pilot action is transferable to other care facilities within GGZ, across Austria, and internationally in regions facing similar administrative challenges. Solutions like the wound measurement app and document scanning tool can also be implemented in other settings, including mobile care services, enabling caregivers to enhance documentation efficiency on the go. To support transferability and adapt the solutions for wider adoption, GGZ actively shares insights gained from the pilot through internal knowledge exchange, collaborations with other institutions, publications and presentations in conferences.

J3 Pilot Action Description PP5 TUKE

Territorial challenges and needs in the regions specifically addressed by the pilot action
The pilot action addresses key challenges in Slovakia's LTC system related to the digitalization of processes. It is undeniable that the digitalization of processes brings many advantages, but many organizations in Slovakia still perform many processes outside of information systems and do not sufficiently utilize the potential that today's times bring. For this reason, in the pilot action we focused on the analysis of these processes and their comprehensive digitalization in a single solution.
Main aim(s) of the pilot action and how it contributes to tackle the identified challenge(s)
The main aim of the pilot action was to improve efficiency in the provision of healthcare in the LTC facilities. The main tool to achieve this goal was the digitalization of processes that were identified during the process analysis in the facility. Thanks to the digitalization of processes in the MS SharePoint environment, we managed to achieve increased efficiency (especially in internal communication and working with data), better transparency of data and documents, which led to higher work productivity and quality of care provision.
Decision-making process
The entire pilot was initiated by the staff, who themselves wanted to improve the processes in the facility. Thanks to the support of the facility management, a large number of employees were involved in the pilot project. Decisions were made together based on detailed analyses of the internal and external environment, which led to digitalization using the MS SharePoint platform. The scope of the digitized processes was also the result of consensus among the entire team.
Technical description of the pilot action (e.g. scope, main features, innovative elements etc.)

As part of the pilot action, the MS SharePoint solution was implemented. Complex configuration of its functionalities and features enabled: - record patient appointments, requests for the patient transports and share calendars - share documentation and information through a folder structure and announcements on an e-notice board - record data from day and night services, data on medications (ordering, receiving, preparation), etc. The whole solution reflects the requirements and needs of LTC facility, with the focus on user friendly design and easy to use application. Solution is interoperable and integrable, hence is open for the communication with other applications. Due to its extensive configurability, it is ready for further development and digitalization of other processes.
Implementation steps
At the very beginning, a detailed analysis of processes, i.e. the daily tasks of individual types of employees, was carried out, based on which we were able to understand the processes and identify weak points. This analysis resulted in a list of needs and requirements. Based on the results of the analysis, a survey of available solutions was carried out, from which the SharePoint solution was finally selected, on which all identified processes were conFigured. The solution was then tested with key users in order to debug and improve the solution, which was subsequently submitted for testing to the entire organization. After its testing, the solution was introduced into the organization's processes within the production operation.
Involvement of target groups during pilot action development and/or implementation
Key target groups were actively engaged throughout the pilot action. During the analysis phase we involved mostly management, social care and key healthcare professionals. During the implementation and testing phase, we involved also the other end users to give us the feedback to improve the configuration. At the end, all end users (all the nursing staff providing health care who will use the solution) were involved to undergo the trainings to be ready to use the solution. Additionally, external experts and DigiCare4CE project partners, experienced in similar initiatives, provided insights to ensure a successful pilot action.
Cooperation dimension of the pilot action, i.e. joint development within the partnership and, if applicable, joint implementation

The pilot activity was implemented by TUKE, which coordinated the entire pilot action. All pilot actions in DigiCare4CE followed a standardized implementation plan, with each partner contributing their expertise to ensure smooth execution. Peer review visits, including project partners and external experts, allowed to observe and provide feedback on each other's pilot sites. Regular project team and internal meetings ensured progress monitoring at our LTC facility. This collaborative approach ensured alignment among interest groups and facilitated the successful integration of the new technologies.
Results - expected change and lasting effects in the territories generated specifically by the pilot action, its uptake by relevant organisations and benefits for target groups
Expected results of the pilot action was to enhance efficiency in the internal processes of the LTC facility. This was reached through detailed analysis and implementation of the configurable solution, which will fully reflect on the needs of the LTC facility. The change happened as planned, the “paper” processes are now fully digitalized with very positive feedback from the nursing staff and management as well. Thanks to the pilot action, the data management and access to the data, information and documentation is now much easier and clear with many options for filtering and work with data. This makes process much easier, transparent and effective. The solution already proved its quality and benefits for the organization; hence the impact will be long lasting. Especially, when users will be more and more comfortable with the solution and new processes and the new features and processes will be carried out in this solution. Solution has a potential to be implemented in other LTC facilities, especially in Kosice region, as Kosice – Self Governing Region is open to grant access (free of charge) to MS SharePoint for all LTC facilities in its jurisdiction.
Ownership and durability of the pilot action after the project end, considering financial and institutional support including, if applicable, maintenance
The solution implemented within the pilot action will continue to be used also after the project ends, as it has proven to have a lot of benefits for the LTC facility. As Kosice Self-Governing Region granted access to the facility free of charge, its use does not require any financial support as long as Kosice Self-Governing Region provides Microsoft licences for all LTC facilities in its jurisdiction. Therefore, it can be expected, that also other LTC facilities in Kosice region will implement the same solution to enhance efficiency.
Transferability of the pilot action to other territories, sectors or target groups and planned measures for supporting such transfer

The pilot project is transferable to other LTC facilities within Slovakia facing similar administrative challenges. Especially in Eastern Slovakia in Kosice region, as Kosice Self-Governing Region is open to grant access to Microsoft SharePoint platform to all LTC facilities in its jurisdiction. This should eliminate financial costs for replication of the pilot action. In addition, detailed instruction for configuration and use of the implemented solution will be very helpful for other LTC facilities. In addition to everything, ARCUS itself will also share the results of pilot action with the aim of transferring best practices.

J4 Pilot Action Description PP10 RRDA

Territorial challenges and needs in the regions specifically addressed by the pilot action
LTC facilities in Poland face a number of challenges, especially with regard to digitization. The main problems are the lack of integrated data management systems, making it difficult to monitor patient progress and coordinate care. Documentation is still paper-based, causing delays, limited access to information. There is a lack of interoperability between facilities and medical entities, hindering effective data exchange and comprehensive patient care. There is a need for investment in IT infrastructure, training for staff to increase digital competency, and a change in attitudes toward the implementation of a new technology.
Main aim(s) of the pilot action and how it contributes to tackle the identified challenge(s)
The implementation of the DC Analytics App improves the flow of information by eliminating barriers related to paper documentation and fragmented data. It enables real-time monitoring of rehabilitation outcomes, provides quick access to key information, and supports decision-making based on reliable data. As a result, it improves the quality of care, increases the efficiency of patient therapy, and streamlines facility management, addressing the identified challenges in the area of digitization.
Decision-making process
Decisions on the type of technology were made following a series of working meetings and consultations. Key stakeholders analyzed the facility's digitization needs, identifying key challenges and opportunities to solve them through technology. These discussions led to the selection of an appropriate solution - a web application to support rehabilitation processes. Key stakeholders: management of Donum Corde (strategic decision-making and supervision), rehabilitation manager (functional requirements), physiotherapists (practical needs), IT team of RARR S.A. (application development, integration, training), and the RARR S.A. project team. (coordination and support).
Technical description of the pilot action (e.g. scope, main features, innovative elements etc.)

The **DC Analytics system** is a Progressive Web App (PWA) designed for seamless **installation on tablets and smartphones**. It integrates with the facility's existing infrastructure, ensuring secure access to stored data for authorized personnel. The system also **enables external review of anonymized patient surveys and generates comprehensive reports for managers.**

The pilot implementation focuses on the **digital transformation of the rehabilitation process**, by introducing key improvements such as:

- ✓ **Optimized care coordination** – streamlining information flow between rehabilitation teams and management, enhancing communication and decision-making.
- ✓ **Personalized rehabilitation plans** – enabling precise tracking of patient progress and treatment outcomes.
- ✓ **Enhanced patient engagement** – enabling patients to transparently monitor their rehabilitation progress.
- ✓ **Real-time feedback collection** – offering managers insight into patient satisfaction, quality of care, and the rehabilitation experience.
- ✓ **Data-driven service improvement** – facilitating informed decisions to elevate healthcare quality for patients with various dysfunctions.
- ✓ **Interdisciplinary collaboration** – enabling secure data exchange with other specialists (doctors, therapists).
- ✓ **Comprehensive monitoring** – improving data transparency, tracking rehabilitation effectiveness, and increasing satisfaction for both patients and staff.

Implementation steps

- **Needs Analysis**: Identification of areas requiring digital solutions.
- **Development**: Creation of the app prototype, with a modular architecture for future scalability.
- **Training**: Conducting training sessions for staff and providing an electronic user guide.
- **Testing** the prototype by users, (management staff and physiotherapists), analysis of feedback.
- **Final Integration**: Refining and integrating the tool with existing systems.
- **Monitoring**: Implementation of ongoing performance evaluations through KPIs indicators and feedback.

Involvement of target groups during pilot action development and/or implementation

Decisions on the type of technology were made following a series of working meetings and consultations. Key stakeholders analyzed the facility's digitization needs, identifying key challenges and opportunities to solve them through technology. These discussions led to the selection of an appropriate solution - a web application to support rehabilitation processes. Key stakeholders: Donum Corde management provided strategic direction, the rehabilitation manager outlined functional requirements, physiotherapists shared practical insights, and the IT team from RARR S.A. handled development, integration, and training. The RARR S.A. project team ensured smooth coordination and overall support.
Cooperation dimension of the pilot action, i.e. joint development within the partnership and, if applicable, joint implementation
As part of the pilot implementation, RRDA was supported by pilot coordinator and other partners. The implementation was based on an implementation plan that served as a guide, ensuring the step-by-step introduction of new technologies. A key element of the collaboration was the exchange of information and experiences among partners during regular meetings and monitoring visits, such as peer reviews. During these meetings, partners and external experts were able to share feedback and provide insights, which were crucial for the development of the pilots. Study visits served as an additional source of inspiration and practical guidance on implementing new technologies in LTC facilities.
Results - expected change and lasting effects in the territories generated specifically by the pilot action, its uptake by relevant organisations and benefits for target groups
Implementation of the pilot will contribute to lasting changes in the field of rehabilitation, such as better care coordination, effective monitoring of patient progress, and quick access to data. The DC Analytics will allow the facility to personalize rehabilitation plans and collect real-time patient feedback, which will improve the quality of care. Additionally, the App is flexible, it can be modified and tailored to the specific needs of each facility, allowing for wide implementation across various institutions. Other facilities adopting the system will gain a tool to optimize processes, improve communication, and effectively manage rehabilitation. Benefits for the target groups include improved rehabilitation quality, increased patient satisfaction, and enhanced staff efficiency due to easy access to medical documentation. The App will also serve as an inspiration for other institutions, demonstrating how digitalization can effectively enhance healthcare and improve its quality.
Ownership and durability of the pilot action after the project end, considering financial and institutional support including, if applicable, maintenance

DC Analytics was developed by an IT expert/RRDA in collaboration with DC management and staff to improve the rehabilitation process. The facility holds a perpetual, free license for the use and development of the application, including the ability to adapt its functionalities to future needs. The system has been integrated into the facility's infrastructure and requires only periodic updates. After the project ends technical support will be provided by the facility. Due to the positive reception, the facility plans to expand its use across the entire team and purchase additional equipment to enable full integration of information flow and enhance the management of the rehabilitation process.
Transferability of the pilot action to other territories, sectors or target groups and planned measures for supporting such transfer
The implementation of the DC Analytics pilot system is flexible and can be easily adopted by other facilities due to the ability to modify the application and tailor it to the specific needs of each organization. The transfer of this technology to other areas, sectors, and target groups can be supported through consulting assistance, knowledge exchange, and the experience gained during the pilot implementation, as well as expert IT support. Additionally, thanks to the positive results of the pilot, the system can serve as an inspiration for other facilities, demonstrating how digitalization improves rehabilitation management and enhances the quality of care.

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Evaluation Report – Pilot Action 1

A 2.2 Monitoring & Evaluation Report of the Implementation Process (Coordinator: PP2 GGZ)

D.2.2.3 Monitoring & Evaluation Report Pilot Action 1

V1 | April 2025

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A SUMMARY

BACKGROUND AND OBJECTIVE:

Long-term care (LTC) systems across Europe face growing challenges due to demographic change and a persistent shortage of skilled staff. The DigiCare4CE project responds to this situation by promoting digital transformation through two pilot actions. While Pilot Action 1 (PA1) focused on digital documentation systems, Pilot Action 2 (PA2) explored the integration of physical solution systems — such as sensors, VR tools, and AI-based monitoring — into LTC facilities. This report evaluates the planning, implementation, and outcomes of PA1 across three partner sites and seeks to answer the guiding research question: ***"Which factors influence the efficiency of the implementation process of information systems in long-term care facilities?"***

METHOD:

The evaluation followed a mixed-methods approach, combining qualitative and quantitative data sources: partner-specific implementation plans, peer review reports, standardized monitoring surveys for end-users and managers, as well as final output fact sheets and evaluation questionnaires. Data were analyzed using a thematic framework that captured planning processes, operational implementation, stakeholder experiences, retrospective reflections and sustainability strategies across the three pilots (GGZ, TUKE, RRDA). The report focuses primarily on the evaluation of PA1, but also integrates selected comparative findings from PA2 in the result synthesis.

RESULTS:

The results show that implementation efficiency was determined less by the specific technologies used and more by how well they were embedded into existing systems and supported by organizational structures. Successful pilots were marked by co-creative planning with staff, strong managerial engagement, and integration into familiar platforms. Usability, responsive training, and iterative feedback mechanisms emerged as key success factors. Barriers included lack of interoperability, limited digital readiness among staff, and infrastructure constraints. Despite contextual differences, shared enablers and common challenges were identified across all sites.

CONCLUSION:

Efficient implementation of information systems in LTC depends on the alignment between people, technology, and care processes. Digital tools must be simple, integrated, and purpose-driven. Success requires co-creation, role-sensitive training, leadership support, and the flexibility to adapt solutions over time. The pilots show that even modest technologies can generate substantial value when embedded into a culture of learning and change. Future implementation efforts should move beyond a focus on technology alone and emphasize strategic preparation, inclusive processes, and long-term system learning.

KEYWORDS: long-term care, digitalization, digital transformation, technology implementation, care documentation, information and management systems

B LIST OF ABBREVIATIONS

Abbreviation	Meaning
AI	Artificial Intelligence
ARCUS	ARCUS Špecializované zariadenie a zariadenie pre seniorov (Long-term care facility in Slovakia)
CVUT	Czech Technical University in Prague (Czech Republic)
DIT	Deggendorf Institute of Technology (Germany)
GGZ	Geriatric Health Centres of the City of Graz (Austria)
HIS	Hospital Information System
IoT	Internet of Things
IS CYGNUS	Information System CYGNUS (Slovakia)
ISRAA	Istituto per Servizi di Ricovero e Assistenza agli Anziani (Italy)
LTC	Long-Term Care
MS	Microsoft
NOELGA	Health Agency of Lower Austria (Austria)
PA1	Pilot Action 1
PA2	Pilot Action 2
PETBOT	Robotic Companion Device (developed by CVUT)
PP	Project Partner
PWA	Progressive Web App
RRDA	Rzeszow Regional Development Agency (Poland)
TUKE	Technical University of Košice (Slovakia)
VR	Virtual Reality
WHODAS 2.0	WHO Disability Assessment Schedule 2.0

C INTRODUCTION

C1 Background

Long-term care (LTC) systems across Central Europe are facing growing structural pressure due to demographic change. As populations age, the demand for professional care is rising sharply, while the availability of skilled care workers continues to decline. This dual dynamic creates an urgent need for innovative, sustainable solutions that can relieve staff, safeguard care quality and maintain dignity in aging.

Against this backdrop, the DigiCare4CE project was launched to support the digital transformation of long-term care services through the transnational exchange and testing of smart technologies. The project is built around two distinct but complementary Pilot Actions:

Pilot Action 1 (PA1) focused on the digitalization of care management and documentation processes. It explored how tools such as electronic health records, mobile documentation apps and digital coordination systems can reduce administrative burdens, improve internal workflows and facilitate communication with external healthcare actors.

Pilot Action 2 (PA2) shifted the focus from data systems to the integration of physical, environmental and Interne to things (IoT)-based technologies within care environments. Its aim was to investigate how tools like wearables, fall sensors, VR systems and smart emergency buttons could support care delivery, enhance resident safety and promote well-being — especially for those with physical or cognitive impairments.

This Evaluation Report specifically reflects on the **experiences, processes and outcomes of Pilot Action 1**, which was conducted in Austria (GGZ), Slovakia (TUKE), and Poland (RRDA). Each site implemented a customized approach to introducing digital information systems — such as mobile care documentation, wound management tools, and centralized information platforms — into their LTC environments.

The pilot actions were not only technically implemented but also accompanied by a structured and standardized implementation plan to ensure joint implementation and a monitoring and evaluation processes that captured feedback from **care staff**, **management** and the **project team**. This report synthesizes these results and reflects on the enabling factors and barriers in each case.

GGZ (Austria)

- **Goal:** Improve care documentation and streamline workflows in a nursing home setting.
- **Technology:** Integration of a mobile document scanner and a digital wound documentation app (*imitoWound*) into the existing care documentation platform (*ilvi*).

TUKE (Slovakia)

- **Goal:** Optimize internal coordination and administrative workflows in a long-term care facility.
- **Technology:** Custom Microsoft SharePoint solution for staff planning, documentation, communication, and reporting, tailored to the needs of the facility.

RRDA (Poland)

- **Goal:** Digitalize rehabilitation processes and integrate patient feedback into quality management.
- **Technology:** DC Analytics – a custom-developed Progressive Web App (PWA) for tracking functional recovery with the WHO Disability Assessment Schedule 2.0 (WHODAS 2.0), collecting resident satisfaction, and generating structured reports.

C2 Objective

These three pilots mentioned above form the foundation for the following evaluation report, which explores both their individual trajectories and cross-cutting themes. By understanding what worked, what challenged the process and how each pilot adapted to its context, this report aims to provide a consolidated view of which factors influence the efficiency of information and management systems as well as care applications in LTC facilities – and what steps are required to make this transformation successful and sustainable.

The primary objective of this Evaluation Report is to systematically assess the **implementation strategies, stakeholder experiences, and practical impacts** of Pilot Action 1, with a focus on identifying how digital technologies can be effectively introduced into long-term care facilities. The report aims to provide a structured, comparative analysis of **Pilot Action 1** within the DigiCare4CE project, which focused on the integration of digital information and management systems including care documentation.

This evaluation serves two main purposes:

1. **Descriptive:** To document how each pilot was carried out in practice, highlight any deviations from original implementation plans, and illustrate the dynamics of adjustment in response to contextual realities.
2. **Analytical:** To compare pilot experiences across different partners and derive transferable insights and recommendations that inform future efforts for digital transformation in the care sector.

This evaluation is guided by the overarching research framework of DigiCare4CE. At the project level, the central research question is: **„How should digital technology be implemented in long-term care facilities?“**

For **Pilot Action 1**, this is refined into the specific guiding question: **“Which factors influence the efficiency of the implementation process of information systems in long-term care facilities?”**

For **Pilot Action 2**, this is refined into the specific guiding question: **“What are the key steps in the integration of physical solution systems in long-term care facilities?”**

By answering this question, the report not only contributes to reflection and transnational learning but also forms an **evidence base for the development of practical implementation guidelines**, to be published separately as Practitioner Guides. These will support practitioners, facility managers and policymakers in navigating similar innovation processes.

D METHODOLOGY

D1 Data Collection

To ensure a comprehensive and multi-angled understanding of Pilot Action 1 implementation, the evaluation relied on a combination of **qualitative and quantitative data**, gathered over several project stages and from a diverse group of stakeholders of project partners implementing PA1 RRDA (Poland), TUKE (Slovakia) and GGZ (Austria).

The following data sources were utilized:

- **Implementation Plans:** These defined the technical setup, implementation steps objectives, stakeholder involvement, and anticipated outcomes for each pilot site.
- **Peer Review Findings:** Where available, insights from peer visits provided external validation of implementation quality.
- **Monitoring Report:** Structured questionnaire responses from end-users (care staff) and management, collected in two rounds (July–September 2024 and November–December 2024).
- **Pilot Action Output Fact Sheets:** Summarizing project progress, deviations, successes, and sustainability prospects in a standardized format.
- **Evaluation Questionnaire for Project Partners:** Structures feedback questionnaire completed by each project partner with reflections on the implementation process and main outcomes of the pilot actions.

By combining these sources, the evaluation was able to trace the **entire implementation lifecycle** — from conceptual planning to operational testing and post-implementation reflection — ensuring rich contextualization.

D1.1 Implementation Plans

Each partner submitted a detailed **Implementation Plan** at the outset of PA1. These documents provided structured information on:

- The **selected technology or system** (e.g. apps, information systems),
- **Objectives and expected outcomes**,
- **Timeline, stakeholder roles and training strategies**,
- **Technical** specifications, **ethical** considerations and **sustainability** plans.

The Implementation Plans served as a **baseline reference**, against which actual implementation progress could later be evaluated. They were authored by the **local project coordinators** and often co-developed with facility management.

D1.2 Peer Review Report

The **Joint Peer Review Report** compiled findings from a series of transnational site visits conducted in 2024. Peer reviewers — including representatives from other project partners and external experts — visited each pilot site to:

- Observe implementation status on site,

- Conduct structured interviews with care staff and management,
- Evaluate training, usability, integration and change management aspects.

Reviewers used a **standardized evaluation template**, which included metrics such as user engagement, data protection, interoperability, ethical handling and sustainability. The result is a cross-comparable, **externally validated dataset** that complements internal monitoring.

D1.3 Monitoring Report

The **Monitoring Report** is based on **two rounds of standardized questionnaires** that were distributed to two key stakeholder groups at each pilot site:

- **End-users** (typically care staff),
- **Management** (facility leadership and project leads).

Surveys were administered in local languages and covered multiple thematic areas such as:

- Usability of the system,
- Technical and organizational integration,
- Perceived impact on workflows and care quality,
- Ethical and data protection aspects,
- User confidence and satisfaction.

The responses were translated into English using Artificial Intelligence (AI)-supported tools and then analysed for both **content and sentiment**. This enabled a structured evaluation of how the technologies were experienced **from within the organizations themselves**.

D1.4 Pilot Output Documents (Fact Sheet & Evaluation Questionnaire)

Each partner submitted a **Pilot Action Output Fact Sheet and completed an evaluation questionnaire** (see appendix, chapter J) after implementation, using a standardized template developed within the project. These concise but informative summaries included:

- Territorial challenges and context,
- Main goals, activities and outcomes,
- Technical descriptions of the implemented solution,
- User involvement and training activities,
- Expected and observed outcomes,
- Sustainability and transferability considerations.

These documents served as a **final snapshot** of the pilot, written collaboratively by project teams and local stakeholders. They allowed for comparative analysis of **implementation depth, focus areas and follow-up plans** across regions.

D2 Data analysis

The analysis of Pilot Action 1 followed a **mixed-methods evaluation design**, aimed at capturing both the measurable impacts and the contextual nuances of implementing new technologies focused on information systems and care documentation in LTC facilities. This approach enabled a differentiated understanding of how digital tools were deployed, experienced and adapted across diverse institutional and regional settings.

The analytical framework was guided by the structural parameters and evaluation dimensions outlined in the project's Deliverable **D.2.1.2 "Toolbox for the Pilots"**, which provided standardized structure for assessing implementation progress, stakeholder engagement, technical fit and sustainability. These criteria were applied across all pilot sites to ensure methodological consistency and comparability.

The **Implementation Plans**, **Peer Review Reports** and **Pilot Output Fact Sheets as well as evaluation questionnaires** were analysed through a **qualitative content analysis**, using a thematic coding approach. This included the identification and comparison of:

- The **original planning and objectives** of the pilot,
- The **actual implementation** and any deviations encountered,
- The **monitoring results** based on management and end-user feedback
- The insights from **external peer reviews and pilot output fact sheets and evaluation questionnaires of project partners** and
- A concluding evaluation summary that reflects on strengths, challenges and key success factors.

Recurring themes such as co-creation, staff training, technical integration and organizational change management were identified and mapped across pilot partners to extract transferable patterns and region-specific challenges.

In particular, the peer review documentation — based on structured, externally led on-site assessments — provided a valuable layer of validation and triangulation for partner self-reports. The fact sheets further contributed concise contextual profiles that supported the interpretation of implementation depth and focus areas.

The **Monitoring Report**, derived from standardized questionnaires distributed to care staff (end-users) and management teams, served (besides qualitative data) also quantitative data. These surveys collected structured feedback on key implementation dimensions including:

- Usability and system intuitiveness,
- Reliability and responsiveness of technologies,
- Impact on daily workflows,
- Ethical and privacy concerns,
- Overall satisfaction and acceptance.

These techniques allowed for the systematic interpretation of diverse feedback, while also ensuring that both dominant narratives and outlier perspectives were represented in the evaluation.

In the final synthesis step, all findings were consolidated into **partner-specific analytical profiles**. These served as the basis for the structured presentation of results in this report. Each profile reflects not only the performance of a specific pilot, but also its embeddedness within a particular care context, institutional culture and implementation strategy. While computational tools supported parts of the analytical process,

the interpretation, comparison and presentation of results were further refined through **manual review and expert-based contextualization**, ensuring both methodological rigour and practical relevance.

This structured approach of analysing these documents allows not only for transparency in evaluating each pilot individually but also lays the foundation for a cross-comparison of experiences (see chapter E) and lessons learned across the partnership. These insights are crucial for identifying common success factors and barriers, as well as transferable strategies for future digital transformation efforts in long-term care settings.

E RESULTS OF PROJECT PARTNERS

This chapter presents the results of Pilot Action 1 as implemented by each project partner within the DigiCare4CE project. Given the diverse regional contexts, organizational structures and technological approaches across partners, the analysis has been structured on a **partner-by-partner basis** in the first step to enable a detailed and differentiated understanding of the implementation processes and outcomes.

E1.1 Pilot Action GGZ (Austria)

E1.1.1 BEFORE | Strategic Framing & Preparation

The Geriatric Health Centres of the City of Graz (GGZ) focused their Pilot Action on optimizing digital care documentation processes through an extension of the *ilvi* mobile platform in the Residential Nursing Home Peter Rosegger. Initially, the action was meant to explore technologies for fall prevention and disorientation detection in dementia patients. However, as these solutions had already been implemented at GGZ in recent years, and in light of an emerging need to improve nursing documentation efficiency, the pilot shifted its focus to documentation-related technologies.

The revised goals were to integrate a **digital wound documentation and measurement application** (*imitoWound*) and a **document scanning function** into *ilvi*. These functionalities aimed to support nurses in real-time documentation at the point of care, reduce administrative effort, and improve data accuracy for clinical and therapeutic decision-making. The overall aim was to streamline workflows, ensure a higher quality of documentation, and enhance communication with external stakeholders such as general practitioners.

Crucially, the pilot was shaped by a **deeply co-creative decision-making process**. Early in the design phase, the GGZ organized a series of structured engagement activities, including **a strategy trip to Denmark** to learn from international best practices. These were followed by **co-creation workshops with nursing staff and IT**, a series of structured interviews with management, and several **on-site visits at the residential care facility** to observe day-to-day documentation challenges. These steps led to a joint decision between IT, nursing, research, and leadership to focus on wound documentation and document scanning as the most promising use cases for implementation.

E1.1.2 DURING | Implementation & Operational Use

The document scanning functionality was successfully integrated into *ilvi* and directly connected to the hospital information system (HIS). It enabled staff to scan and transfer documents in real time, eliminating the need for multifunctional devices and reducing administrative load. In contrast, the wound documentation tool *imitoWound* faced several technical and practical hurdles and was not adopted for continued use beyond the pilot.

Challenges included **technical issues** (such as unstable login processes, limited image recognition accuracy, and difficulties with specific wound types), as well as a **lack of full integration** with the HIS, which forced staff to perform double documentation. This burden, combined with a learning curve for users with low digital literacy, affected acceptance and daily use. Despite these issues, the implementation process was carried out with careful planning, regular feedback loops, and strong coordination between care staff, IT support, and the project team.

The proactive response to challenges included hybrid training formats, regular site visits by IT and project leads, and technical support via close collaboration with vendors. While the *imitoWound* application showed

potential in theory, it could not be sustainably embedded into daily workflows. The document scanner, on the other hand, was swiftly adopted and has since become part of the standard documentation routine.

The pilot evaluation drew on two rounds of structured questionnaires (August and October 2024), focus groups with users and managers, and reflections from the internal fact sheet and implementation reports.

End-users largely praised the document scanner for its **practicality, intuitive interface**, and **time-saving benefits**. It reduced the number of documentation steps and seamlessly fit into existing care workflows. Satisfaction was high, and users highlighted the elimination of previously cumbersome scanning procedures.

In contrast, the **wound documentation app** received **mixed feedback**. Users appreciated the idea and visual tracking of wound healing, but faced technical difficulties such as login complications, poor app performance, and double documentation. The absence of an automated interface with the HIS added further burden. Although the wound measurement function was seen as promising when it worked correctly, users were often frustrated by its unreliability, the effort needed to capture usable photos, and the app's limited vocabulary for Austrian care settings.

Managers expressed optimism about the overall process, recognizing the alignment with GGZ's digitalization goals and the potential for improved documentation quality. However, they shared the staff's concerns about technical immaturity and emphasized that **true efficiency gains were only achieved with the document scanner**, not the wound documentation app. Both stakeholder groups recommended more compact, guided test phases and better integration in future implementations.

The peer review visit to the Peter Rosegger Residential Nursing Home validated many of the internal findings and praised the **methodical, participatory, and reflective implementation process** at GGZ. Reviewers highlighted the transparent decision-making structure and strong cross-departmental collaboration. They acknowledged the use of existing infrastructures such as *ilvi* as a forward-looking strategy and commended the detailed product analysis, vendor dialogue, and proactive change management.

However, the reviewers also echoed the need for more **technically mature solutions** and recommended prioritizing technologies with **strong interoperability, intuitive user experience, and AI capabilities**. The document scanning app was seen as a good example of a user-oriented and efficient solution. In contrast, *imitoWound* was seen as not yet suitable for the complex realities of LTC workflows. Suggestions included clearer interface concepts, simplified onboarding, and enhanced adaptability for local clinical needs.

E1.1.3 AFTER | Reflections & Answer to the Research Question

The GGZ pilot action demonstrates that successful digital transformation in long-term care depends on more than just technological innovation. It requires a carefully structured, collaborative, and context-sensitive process of implementation. While the document scanner showed how small, well-integrated solutions can generate immediate value, the experience with *imitoWound* revealed that even promising tools can fail to gain traction when usability and interoperability fall short.

The most important **lessons learned** were not only technical but procedural: involving the right people early, testing in manageable environments, and setting realistic expectations. Despite the setbacks with the wound documentation app, the pilot generated valuable institutional learning and created a framework for future implementations.

Key factors for efficient implementation derived from the pilot:

- **Co-creative and inclusive decision-making:** Efficiency is significantly enhanced when all key stakeholders — including nursing staff, IT, management, and R&D — are actively involved from the beginning. At GGZ, this was ensured through co-creation workshops, interviews, and a structured

decision meeting involving the executive board. The process also included on-site observations and a strategy trip to Denmark to study international best practices. This inclusive approach ensured that selected technologies reflected actual needs and gained early buy-in.

- **Integration with existing digital infrastructure:** Efficient implementation depends on building upon already established and functional systems. GGZ deliberately chose to integrate the new applications into their existing *ilvi* platform. The document scanner was fully embedded into existing workflows and HIS (hospital information system) integration, which minimized disruptions and ensured immediate added value.
- **Usability and technical maturity of the solution:** Solutions must be technically robust and intuitive to operate, especially given the limited digital literacy in care settings. The document scanner succeeded largely because of its simplicity. In contrast, *imitoWound* encountered major usability issues — from complex login procedures to unreliable image processing — which led to frustration and hindered adoption despite extensive training.
- **Training and continuous on-site support:** Efficient implementation requires a hands-on support strategy tailored to varying levels of digital competence. GGZ ensured frequent on-site presence of the IT and project teams, offered hybrid training formats, and maintained ongoing contact with vendors. This allowed rapid troubleshooting and strengthened trust among users.
- **Avoidance of double documentation and workflow alignment:** Efficiency breaks down when digital tools create redundancy rather than reduce effort. In the GGZ pilot, the lack of integration between *imitoWound* and the HIS led to double documentation, which nullified potential time savings and negatively impacted staff motivation. This highlights the need to **prioritize interoperability and workflow alignment from the outset**.
- **Targeted piloting with manageable scope:** Efficiency is supported when pilots are focused, time-bound, and involve small, motivated test groups. GGZ learned that broad pilots across entire teams led to overextension and limited feedback quality. More compact test phases with selected "multipliers" (e.g., wound specialists) were recommended to enable realistic testing under controlled conditions.

E1.2 Pilot Action TUKE (Slovakia)

E1.2.1 BEFORE | Strategic Framing & Preparation

The Technical University of Košice (TUKE), in cooperation with the Kosice Self-Governing Region and LTC ARCUS, initiated a digital transformation pilot aimed at optimizing internal communication, documentation, and organizational workflows within a long-term care (LTC) setting. The original plan focused on enhancing and further implementing IS CYGNUS, a system employed in LTC facilities for managing client data and documentation. However, following a detailed needs analysis and extensive stakeholder engagement, it was determined that IS CYGNUS could not adequately address the core operational inefficiencies faced by ARCUS.

As a result, the pilot was reoriented towards the implementation of a highly configurable Microsoft (MS) SharePoint-based solution. This platform offered a broader scope for customizing care processes, fostering cross-departmental collaboration, and ensuring alignment with the technological ecosystem supported by the Kosice Self-Governing Region. The main goal was to digitalize critical operational and administrative workflows to increase efficiency, ensure consistency, and improve communication within the facility and with external actors.

E1.2.2 DURING | Implementation & Operational Use

The actual implementation shifted significantly from the original plan. While IS CYGNUS was initially considered, it was ultimately replaced by Microsoft SharePoint due to its greater flexibility, user-friendliness, and full interoperability with existing Microsoft systems used in the region. TUKE and ARCUS jointly developed a solution tailored to the daily needs of staff, incorporating digitized workflows for client scheduling, medication tracking, staff coordination, and internal documentation processes.

Implementation was phased, beginning with deep process analyses, stakeholder workshops, and the creation of standardized workflows. Despite the initial disruption caused by changing the core system, TUKE's project team—with in-house Microsoft expertise—quickly configured the SharePoint environment and ensured all processes reflected the real needs of ARCUS.

Challenges primarily centered on user resistance, particularly from older staff with limited digital literacy. These were addressed through regular onsite workshops, simplified manuals, and tailored support. Training frequency was increased, and feedback loops were established to enable iterative adjustments. The project benefitted from the institutional backing of the region and strong cooperation between the university and the care facility.

The monitoring was conducted through structured questionnaires and iterative feedback loops. According to survey results, both end-users and managers expressed high levels of satisfaction with the SharePoint solution. Staff particularly appreciated the centralized data structure, intuitive interface, and reduction of paperwork. The integration of scheduling, medication tracking, and communication tools into one system was seen as a major efficiency gain.

Managers emphasized the increased transparency and traceability of internal processes. Reports were easier to generate, responsibilities were more clearly assigned, and internal communication improved. Basic users noted that, with training, the system became easy to use and supported their daily activities more effectively than prior methods.

A notable success was the inclusion of staff in testing and design, which significantly increased user acceptance. However, digital maturity varied, and additional training will be required to ensure long-term sustainability. Some suggestions for improvement included additional features like an online chat (which was implemented using the comment function) and ongoing feedback loops to capture evolving needs.

The peer review in Košice confirmed the strategic alignment and technical robustness of the pilot action. Reviewers commended the structured analysis of internal workflows, the strong collaboration between TUKE and ARCUS, and the shift towards a more versatile and scalable solution. TUKE was praised for adapting its original concept based on empirical needs assessments and demonstrating agility in response to technical constraints.

The fact sheet highlighted several innovative aspects of the solution, including digital calendars, automated medication tracking, and centralized communication boards. Reviewers emphasized the benefit of having solution ownership in-house (via TUKE) and acknowledged the potential for replication across the region due to the centralized license provision from the Kosice Self-Governing Region. However, the need for continued support in digital training was noted, as was the importance of monitoring the long-term impact on care quality.

E1.2.3 AFTER | Reflections & Answer to the Research Question

The TUKE pilot action demonstrated a highly adaptive and stakeholder-centered approach to digital transformation in long-term care. Through the strategic replacement of an initially inadequate solution (IS CYGNUS) with a more flexible and scalable SharePoint-based platform, the pilot addressed systemic inefficiencies in documentation and communication. The success of the implementation was largely due to

continuous dialogue between users and developers, robust technical support, and alignment with regional digital infrastructure strategies.

Key factors for efficient implementation derived from the pilot:

- **Needs-based technology selection:** Instead of enforcing pre-existing tools, TUKE based its decision on a thorough analysis of the LTC facility's real needs. SharePoint was chosen over IS CYGNUS for its superior adaptability and alignment with regional infrastructure.
- **Strong co-creation and stakeholder involvement:** The project was driven by a collaborative process between TUKE, ARCUS, and the Kosice Region. Staff were engaged in early analyses and testing, which led to better alignment and greater user buy-in.
- **Configurability and interoperability of the solution:** SharePoint allowed TUKE to tailor the platform's features—such as dashboards, calendars, and document templates—directly to staff needs. Its integration with Microsoft's existing systems facilitated rapid deployment and minimized onboarding effort.
- **Localized technical expertise and support:** TUKE's internal competence in Microsoft technologies allowed for rapid troubleshooting, agile adjustments, and smooth scaling. This minimized dependence on external vendors.
- **User training and iterative feedback loops:** Extensive training, clear manuals, and a proactive feedback system helped overcome digital resistance. Tailored approaches for basic and advanced users contributed to widespread adoption.
- **Replicability across institutions:** With licenses and technical support centralized at the regional level, the solution is now scalable across other LTC facilities. This systemic support enhanced the sustainability and efficiency of implementation.

E1.3 Pilot Action RRDA (Poland)

E1.3.1 BEFORE | Strategic Framing & Preparation

The Rzeszow Regional Development Agency (RRDA), together with the Donum Corde Centre for Rehabilitation and Medical Care, implemented a digital transformation pilot aiming to improve the rehabilitation process by replacing the paper-based system with a custom-designed digital platform. The tool, known as **DC Analytics**, was developed using Progressive Web App (PWA) technology and embedded into the facility's existing IT infrastructure.

Before the intervention, Donum Corde lacked any form of electronic system for documenting and tracking rehabilitation procedures. Staff had to rely on handwritten records, which were not always accessible to other team members in the event of absence or handovers. In response, the pilot introduced a solution to digitally capture functional rehabilitation progress (based on the WHODAS 2.0 model), patient satisfaction with their stay, and structured feedback from physiotherapists. The system was designed to be installed on tablets or phones and made accessible via a secure server to all authorized users within the care team and management.

The development and planning process was characterized by a high degree of co-creation. Decisions regarding system design and required functionalities were based on regular consultations with physiotherapists, management, and IT specialists. This collaborative approach ensured that the implemented tool directly addressed real needs within the rehabilitation unit.

E1.3.2 DURING | Implementation & Operational Use

The implementation process was structured in iterative steps, beginning with a needs assessment, followed by prototype development, user testing, and two rounds of training sessions. DC Analytics was tested in real-life rehabilitation settings by physiotherapists and managers, who evaluated the app's usability, integration into workflows, and technical performance. Feedback from these stages directly informed refinements to the system.

Overall, the solution was successfully introduced and integrated into the daily operations of the rehabilitation team. Staff described the application as intuitive and functionally useful. It allowed for real-time documentation of patient progress, facilitated report generation, and improved coordination between care providers. Integration into Donum Corde's infrastructure was achieved through a VMware virtual machine setup and a PocketBase back-end, with LDAP-based login mechanisms to ensure secure access.

Minor challenges emerged during the implementation phase. These included initial issues with system integration, a limited number of available tablets, and some difficulties among elderly patients completing surveys without assistance. These were addressed through close collaboration between the facility's IT expert and the RRDA project team. The limited number of mobile devices remained a bottleneck, restricting simultaneous usage among physiotherapists and slightly slowing down the rollout.

Despite these obstacles, the overall implementation process was deemed smooth and effective by both users and management. The application is now a core component of the rehabilitation process at Donum Corde, with plans for full deployment and expansion already underway.

Monitoring data collected through internal evaluations, feedback questionnaires, and structured assessments indicated a high level of user satisfaction and measurable efficiency gains. Physiotherapists reported improvements in workflow structure, faster access to patient data, and easier reporting processes. The application reduced the need for paper-based tracking, streamlined communication within the care team, and improved the organization of rehabilitation data.

Managers emphasized the strategic value of the tool, particularly its ability to centralize data collection and produce standardized reports. These features facilitated better decision-making and allowed for more precise planning and quality control in the rehabilitation department. The app's capability to collect real-time feedback from patients added another layer of transparency and accountability to care delivery.

Patients themselves responded positively to the tool. The opportunity to provide direct feedback on their care experience—previously not available—was generally welcomed. Survey responses revealed that elderly residents appreciated having their opinions heard and documented digitally. In cases where patients were unable to complete the digital forms independently, physiotherapists supported them directly.

Quantitative indicators confirmed that the tool achieved its intended objectives: staff and resident satisfaction averaged 9 out of 10, and the system was successfully adopted by the rehabilitation team with minimal training needs. Management reported greater oversight of care processes and anticipated that the solution would support quality improvement initiatives beyond the project period.

The peer review conducted at Donum Corde in May 2024 confirmed that RRDA's approach was both strategic and user-centered. Reviewers highlighted the strong alignment between the tool's functionalities and the actual operational needs of the facility. They praised the participatory development model, the intuitive interface of DC Analytics, and the effective deployment within an existing digital ecosystem.

Particular strengths identified included the ability of the tool to digitize previously fragmented data flows, the staff's rapid adoption of the system, and the high motivation of the rehabilitation team. The fact that the application was developed in-house was seen as a major asset, allowing quick adjustments and deep contextual integration.

Nonetheless, reviewers pointed out some challenges and areas for improvement. First, the application lacked interoperability with the broader medical documentation software used in the facility, leading to some redundancy. Second, patient satisfaction surveys were not anonymized, which could potentially bias responses and reduce the depth of critical feedback. Finally, the system relied heavily on a single IT expert for development and maintenance, raising questions about long-term scalability and technical sustainability.

Recommendations from the peer review team included introducing anonymization for patient questionnaires, enhancing the app's analytical functions (e.g., management dashboards), formalizing maintenance structures, and expanding training for staff with lower digital competence. These suggestions were well received by RRDA and are already being considered for the next development cycle.

E1.3.3 AFTER | Reflections & Answer to the Research Question

By developing an in-house, PWA-based solution (DC Analytics) that directly responded to the specific needs of the rehabilitation department at Donum Corde, the pilot replaced fragmented, paper-based workflows with a digital, centralized system. The successful implementation was driven by strong staff engagement, continuous collaboration between project management, IT, and care staff, and a focus on intuitive usability and real-time data access. Despite infrastructural limitations such as a lack of full interoperability and limited device availability, the pilot effectively improved documentation practices, empowered both staff and patients, and laid the foundation for future expansion and scaling of digital processes within the facility.

Key factors for efficient implementation derived from the pilot:

- **User-centered co-creation process:** The system was developed in close collaboration with physiotherapists, management, and IT staff. Weekly consultation meetings ensured that practical needs were translated into functional features, promoting early buy-in and relevance.
- **Tailored technology aligned with institutional workflows**: DC Analytics was not an off-the-shelf product but a custom-built tool, developed specifically for the needs of Donum Corde's rehabilitation department. Its architecture (Vue, PocketBase, PWA) allowed seamless integration into the existing IT environment via a VMware setup.
- **Intuitive design with low training requirements**: The user interface was rated as highly intuitive. Staff required only minimal training and rated usability with 9/10. This allowed for fast adoption and reduced the burden of change management.
- **On-site technical support and rapid troubleshooting**: The implementation benefited from continuous support by RRDA's IT expert, who was closely involved in both development and operational rollout. Issues were resolved promptly, which minimized disruptions.
- **Real-time data capture and reporting**: The system allowed staff to track rehabilitation outcomes directly on tablets, generate patient reports, and access data across the care team. Managers appreciated the enhanced transparency and strategic value of the reports.
- **Empowerment of residents through digital feedback**: Elderly residents were able to express their satisfaction with rehabilitation services and overall care quality using integrated surveys. This participation increased engagement and supported a person-centered care approach.
- **Scalability and long-term sustainability**: Plans are in place to roll out the system across the entire rehabilitation team, invest in additional tablets, and develop new features such as diet and medication monitoring. This strategic vision supports continuity beyond the pilot phase.

F Cross-Partner Evaluation

The three Pilot Action 1 implementations across Austria (GGZ), Slovakia (TUKE), and Poland (RRDA) each addressed the overarching goal of improving long-term care (LTC) processes through the introduction of digital information and management systems. While all pilots operated within a common evaluation framework and used shared tools for monitoring and reflection, they differed in terms of technological focus, care setting, institutional structure, and implementation logic. These variations provide valuable insight into how digital documentation and coordination tools can be effectively introduced into LTC — and under which conditions implementation processes prove most efficient.

The following cross-partner evaluation synthesizes shared enablers and challenges, highlights key differences, and identifies transferable success factors. It contributes directly to answering the PA1 research question: **"Which factors influence the efficiency of the implementation process of information systems in long-term care facilities?"**

The matrix (Table 1) below offers a comparative overview of the three Pilot Action 1 implementations in DigiCare4CE. It summarizes key aspects—strategy, technology, successes, challenges, integration level, and support—to highlight common patterns and context-specific differences in the implementation of digital information systems in long-term care.

Table 1. Comparison of key aspects of pilots in PA1

	Implementation Strategy	Technology Focus	Successes	Challenges	Integration Level	Level of Support
GGZ (Austria)	Co-creative planning, early staff involvement	Mobile documentation (scanner & wound app)	Scanner app integrated into workflows; co-creative approach	Wound app usability issues, double documentation	Partial (scanner into HIS; wound app failed)	Hybrid formats, vendor collaboration
TUKE (Slovakia)	Adaptive pivot from IS CYGNUS to SharePoint	Modular platform for internal workflows (SharePoint)	High user acceptance, strong technical integration	Digital literacy gaps, need for ongoing training	Full integration into regional digital infrastructure	Workshops, manuals, iterative adjustments
RRDA (Poland)	In-house development with iterative feedback	Custom PWA for rehabilitation tracking	High satisfaction from staff and patients, real-time data use	Limited devices, lack of system interoperability	Standalone solution with potential for scaling	On-site IT support, tailored user onboarding

F1.1.1 Technology Focus and Use Cases

Each pilot focused on a distinct digital application area:

- **GGZ** implemented two documentation tools: a document scanner (successfully adopted) and a wound documentation app (ultimately not retained). Their goal was to optimize care documentation at the point of care using mobile technologies integrated with existing systems.
- **TUKE** replaced a legacy documentation system (IS CYGNUS) with a customized MS SharePoint solution. The aim was to support internal workflows and communication through a modular digital collaboration platform.
- **RRDA** developed an entirely new system (DC Analytics) for digitally recording rehabilitation progress and patient satisfaction. This platform was purpose-built to digitize paper-based workflows within a rehabilitation setting.

While the GGZ and RRDA solutions were centered around mobile point-of-care documentation, TUKE's SharePoint environment emphasized back-office coordination and information sharing. These use cases reflect different organizational entry points for digital transformation in LTC — either through direct care interfaces or through administrative workflows.

F1.1.2 Implementation Strategies and Adaptation

Across all pilots, implementation strategies were marked by adaptive planning and responsiveness to real-world constraints. However, different approaches to stakeholder involvement, technology selection, and piloting scope significantly shaped outcomes:

- **GGZ** followed a highly co-creative approach during the planning phase, including international benchmarking, on-site observations, and structured decision-making. This early engagement ensured alignment with staff needs, but also revealed that technologies must be technically mature and well-integrated to succeed in daily routines. The scanner app was well received; the wound app failed due to lack of integration and usability barriers.
- **TUKE** demonstrated strong adaptive capacity by completely redirecting its pilot from a pre-existing system (IS CYGNUS) to a SharePoint-based alternative. Staff were actively involved in analysis, design, and testing, leading to a high level of acceptance and quick operational uptake. Technical expertise within TUKE and close collaboration with ARCUS were central to success.
- **RRDA** pursued a deeply participatory, user-driven development approach. By designing DC Analytics in-house, the pilot team ensured a perfect fit for existing workflows. Feedback loops and internal testing phases enabled iterative improvement, while on-site IT capacity allowed for rapid troubleshooting.

All pilots encountered technical or infrastructural challenges (e.g., lack of devices at RRDA, double documentation at GGZ, digital literacy gaps at TUKE), but those that combined flexibility with localized support mechanisms adapted more successfully.

F1.1.3 Stakeholder Feedback

Surveys and interviews across all pilots highlighted that usability, integration into daily routines, and responsiveness to feedback are key drivers of acceptance:

- **Staff at GGZ** clearly favored the document scanning app for its simplicity and integration, but rejected the wound tool due to poor user experience and redundant documentation tasks.
- **TUKE's system** was described as intuitive and helpful, especially after user-specific adjustments and process-based training. Management praised the transparency and structure it brought to documentation and planning.
- **RRDA's app** achieved high ratings from both physiotherapists and residents. It reduced documentation time, improved report generation, and enabled real-time patient feedback.

In all three pilots, **management feedback aligned with user perspectives**, affirming that tools that deliver visible operational benefits and are embedded in workflows gain faster and broader acceptance. Importantly, all pilots emphasized the need for clear internal communication, tailored training, and gradual rollout strategies.

The peer reviews provided critical external validation and revealed common strategic strengths and areas for improvement from project partners and external experts:

- **Strengths across pilots included:**
  - Clear alignment of digital tools with actual care needs,
  - High levels of organizational commitment,
  - Responsive adaptation to unforeseen challenges,
  - Consistent ethical compliance and respect for data privacy.
- **Recurring improvement areas:**
  - Limited or absent system interoperability (GGZ's wound app, RRDA's standalone tool),
  - Underdeveloped anonymization or data feedback mechanisms (RRDA),
  - Varying levels of technical maturity among tested solutions (GGZ).

Peer reviewers across all sites recommended further investment in cross-system integration, formalized maintenance and support structures, and broader digital capacity building among staff.

F1.1.4 Shared Enablers and Common Challenges

The comparative evaluation of the three pilots reveals a set of recurring success factors and implementation barriers that influenced the efficiency and acceptance of digital information systems in long-term care. While each pilot followed its own institutional logic and technological focus, cross-cutting themes emerged that provide deeper insight into the dynamics of digital transformation in care settings.

☑ **Shared Enablers**

- **Co-creative planning and early staff involvement:**

  All three pilots emphasized stakeholder inclusion in the early planning and design phases, ensuring that the implemented solutions were aligned with actual workflows, priorities, and user capacities. GGZ initiated its pilot with co-creation workshops, a strategy visit to Denmark, and iterative consultations with IT and care teams, ensuring institutional buy-in from the outset. TUKE redefined its approach through collaborative needs assessment and structured workflow mapping involving both management and frontline staff. RRDA relied on weekly feedback meetings with physiotherapists, co-defined feature sets, and bottom-up development cycles. This participatory approach fostered not only relevance and usability but also higher identification of staff with the solution, lowering resistance during implementation.

- **Integration with existing platforms and workflows:**

  The successful pilots built on existing digital ecosystems rather than introducing isolated tools. GGZ's document scanning feature was embedded into the ilvi platform and directly linked to the hospital information system (HIS), allowing for seamless use in routine documentation. TUKE's SharePoint environment was fully aligned with the Microsoft-based infrastructure of the Kosice Self-Governing Region, ensuring compatibility and reducing onboarding time.Integration enhanced adoption by minimizing workflow disruptions and avoiding duplication of tasks—a key factor especially in resource-constrained care environments.

- **Clear communication and responsive support structures:**

  Across all pilots, transparent internal communication and responsive technical support were essential to maintaining momentum and staff motivation.GGZ provided hybrid training and regular site visits by the IT and project leads. TUKE offered hands-on workshops and adjusted training intensity based on digital confidence levels.RRDA maintained on-site IT availability throughout the

pilot and responded to user feedback in near real time. These support structures helped address anxieties, encouraged continued usage, and facilitated troubleshooting without interrupting care processes.

- **Modular, scalable, and low-threshold technology designs**:

  Solutions that were flexible in their architecture and usable with minimal technical prerequisites proved especially effective. TUKE's SharePoint-based platform allowed for progressive scaling of functions (from scheduling to medication tracking) and required no specialized hardware. RRDA's DC Analytics, designed as a lightweight PWA, ran on standard tablets and smartphones, with a simple interface tailored to physiotherapists and patients alike. Such designs lowered the barrier to entry and enabled incremental integration, which is critical in care environments with mixed levels of digital maturity and infrastructure readiness.

⚠ **Common Challenges**

- **Lack of interoperability with broader HIS infrastructure**:

  While internal workflows benefited from digitization, both GGZ's wound documentation app (*imitoWound*) and RRDA's DC Analytics system remained **functionally siloed**, lacking interfaces with broader clinical or administrative systems. In GGZ's case, the inability to automatically feed wound data into the HIS led to redundant documentation and ultimately contributed to the app's rejection. At RRDA, DC Analytics operated as a standalone system, limiting data exchange and integration into multidisciplinary care planning. These gaps not only increased workload but also hindered the strategic alignment of digital tools with organizational knowledge flows.

- **Technical immaturity of selected tools**:

  The wound documentation tool at GGZ suffered from low usability, unstable performance, and insufficient error tolerance. Frequent login issues, unreliable image processing, and a lack of system vocabulary for Austrian care terminology made it unsuitable for daily practice. Its failure to integrate with existing data flows further undermined its acceptance, despite initial conceptual support. This case underscores the risk of deploying tools in care settings that are not fully validated under real-world conditions.

- **Equipment limitations or resource gaps**:

  Infrastructure constraints presented a barrier, particularly in terms of device availability and resource distribution. RRDA reported a shortage of tablets, limiting the number of users able to access DC Analytics simultaneously. GGZ staff had to perform double documentation during testing due to lack of system integration, increasing workload and frustration. These challenges highlight the importance of aligning hardware investment and process design in parallel during implementation.

- **Digital literacy disparities among staff**:

  Differences in baseline digital competence significantly impacted training needs and uptake. TUKE encountered resistance from older staff unfamiliar with digital workflows, which required targeted instructional formats and repeated coaching. GGZ's staff faced a learning curve with the wound documentation tool, which proved particularly challenging in low-threshold environments such as nursing homes. A differentiated, role-specific training strategy is essential to bridge such gaps and avoid creating new inequalities within care teams.

These patterns demonstrate that **efficiency in implementation is not solely determined by the tool itself, but by how well the tool fits into the organizational and human environment it is introduced into**.

G DISCUSSION

G1 Answer of the Research Question - Pilot Action 1

Based on the findings presented in the previous chapters, the following section provides a structured answer to the central research question of Pilot Action 1: ***Which factors influence the efficiency of the implementation process of information systems in long-term care facilities?***

Implementation as a Socio-Technical Process

The evaluation of Pilot Action 1 within the DigiCare4CE project shows that the efficient implementation of digital information systems in long-term care (LTC) facilities is not merely a technical or administrative task, but a complex and iterative process shaped by organizational culture, technological alignment, and human dynamics. While the specific technologies, institutional settings and use cases varied, the cross-case analysis reveals a number of decisive factors that, in combination, determine whether implementation efforts lead to sustainable integration or face resistance and fragmentation.

Participatory Planning and Staff Engagement

A first essential factor influencing implementation efficiency is the degree of participatory planning and early involvement of those who will later use the system. When care professionals, IT staff, and managers are engaged in identifying needs, selecting appropriate technologies, and shaping the implementation strategy, the resulting system is more likely to align with actual workflows and be perceived as useful rather than imposed. Co-creative processes, such as structured interviews, on-site observations, and collaborative workshops, contribute to a shared sense of ownership and relevance. Direct engagement with end-users, not only via management, but through hands-on discussion formats and feedback loops, emerged as particularly effective.

This was clearly demonstrated in one pilot, where weekly interdisciplinary team meetings between care professionals, project staff, and IT developers served as the main driver of iterative system development. In another case, strategic visits to model regions, followed by co-creation sessions with staff, laid the foundation for selecting the right technology path. Importantly, partners emphasized that explaining the nature of the project as a **pilot**—with open-ended results and room for testing—was key in managing staff expectations and preventing early frustration.

Workflow and System Integration

Closely linked to this is the importance of ensuring that new technologies integrate seamlessly into existing organizational systems and routines. Efficiency gains are only realized when digital tools support, rather than disrupt, established processes. When technologies are designed to extend already used platforms or replicate familiar work patterns in digital form, they are easier to adopt and more readily accepted by staff.

One facility demonstrated this by building its solution directly into a Microsoft-based IT environment already in use, which enabled care teams to continue using familiar tools while benefiting from new features. In contrast, a separate documentation app piloted elsewhere failed to gain traction due to its lack of integration with the hospital information system—resulting in duplicate documentation and declining staff motivation. These examples underline that integration is not only a technical task but a functional one: technologies must “fit” into the procedural and temporal logic of daily care.

Usability and Technical Maturity

Equally important is the usability and technical maturity of the systems deployed. Tools that are stable, intuitive, and well-aligned with the digital competencies of the user base can be introduced more quickly and with less training overhead. In practice, this means prioritizing simplicity over feature richness and ensuring that systems function reliably under real-life conditions.

In one case, a mobile scanning tool was accepted immediately because it delivered clear benefits, required minimal training, and integrated seamlessly into staff routines. By contrast, a wound documentation tool—though conceptually promising—was abandoned because of persistent login problems, limited photo quality, and failure to integrate with clinical systems. Elsewhere, a rehabilitation tracking app was positively received largely due to its intuitive interface and its ability to generate useful reports with minimal effort. These cases confirm that usability is not a side condition, but a core requirement for implementation efficiency.

Training and Responsive Support

Another key element is the implementation of structured and responsive support mechanisms. Efficient implementation requires more than initial training—it depends on ongoing, adaptive forms of support that are tailored to different user roles and evolving levels of digital literacy.

One successful approach involved onsite training in small groups, followed by a "multiplier" model where experienced staff supported peers. Another pilot ensured continuous support through an internal IT lead who resolved issues immediately and adapted features based on user suggestions. Yet another site scheduled vendor visits and training refreshers at regular intervals. These varied formats—classroom sessions, in-practice coaching, simplified manuals, and peer support—proved especially effective in reducing anxiety, enhancing confidence, and reinforcing the utility of the new system in everyday care.

Modularity and Scalability of Solutions

Furthermore, the scalability and modularity of the chosen systems play a crucial role. Technologies that allow for gradual expansion, adaptation to new workflows, or the integration of additional modules enable a stepwise rollout and reduce the complexity of organizational change.

One facility initially launched its tool for a narrow use case (e.g. rehabilitation feedback) and later expanded to broader reporting and quality management functions. Another introduced basic SharePoint functionalities first and incrementally configured new workflows based on staff input. These modular designs created space for iterative learning, minimized disruption, and allowed the organization to respond flexibly to shifting needs. In contrast, pilots that attempted to deploy feature-rich solutions from the start encountered more resistance and longer onboarding times.

Digital Readiness and Staff Diversity

A recurrent challenge in all pilots was the heterogeneity of digital readiness among staff. Differences in familiarity with digital tools—particularly across age groups, job roles, and levels of experience—can significantly slow down implementation and lead to unequal participation.

In one setting, digital champions were identified among staff and engaged as peer trainers, while more digitally hesitant colleagues received step-by-step guidance. In another pilot, the training plan was explicitly tailored to accommodate part-time workers and staff with limited exposure to technology. These experiences show that inclusive training strategies and a learning-oriented change culture are essential to maintaining engagement and ensuring equity during digital transitions.

Feedback and Iterative Refinement

Projects that embedded structured feedback mechanisms into the implementation process were able to respond more flexibly to emerging problems and continuously improve system fit. Feedback loops, whether through formal evaluation rounds, informal exchanges, or digital surveys, enabled project teams to adjust training, modify interfaces, and refine documentation practices in real time.

In one case, physiotherapists were invited to weekly testing reviews to suggest concrete changes to the interface or data fields. Another facility collected structured input from users in two monitoring rounds, which informed improvements to workflows and support services. Beyond improving the system, these

practices also strengthened staff ownership and demonstrated that their input was valued, which in turn increased motivation and trust in the innovation process.

Leadership, Communication, and Change Culture

Emerging as an additional and essential dimension is the role of leadership commitment and communication culture. Implementation was found to be more efficient in facilities where top management actively supported the process, communicated a clear vision for digitalization, and created space for discussion and experimentation.

One pilot benefited from strong executive endorsement and regular reporting formats between care leadership and the IT team, ensuring transparency and consistent messaging. In another case, the lack of visible leadership engagement slowed down momentum and created uncertainty about long-term goals. Across all cases, it became evident that staff acceptance was significantly higher when the digital initiative was framed as a strategic investment in quality—not just a technical upgrade.

Efficiency as Alignment

Taken together, these findings suggest that the efficiency of implementing information systems in long-term care facilities is not defined by the speed or scope of deployment alone. Rather, it emerges from the alignment of technology, process, and people—guided by principles of co-creation, simplicity, adaptability, and support. Efficient implementation is ultimately a socio-technical achievement: it requires not only functioning software and adequate infrastructure, but also a shared vision, mutual trust, and a sustained investment in the digital capacity of care institutions.

G2 Answer of the Research Question - Pilot Action 2

The following section provides a structured answer to the research question of Pilot Action 2: ***What are the key steps in the integration of physical solution systems in long-term care facilities?*** (further details see "Monitoring & Evaluation Report of Pilot Action 2", contact: PP8 NOELGA)

The evaluation of five pilot actions across Central European long-term care facilities in PA2 — each testing a physical solution system tailored to local needs — has yielded a broad range of insights into the conditions under which such technologies can be successfully introduced and sustained. Despite contextual differences, a number of **recurring strategic, organizational and ethical factors** emerged across all pilots. These factors not only determined implementation success, but also shaped the long-term acceptance, usability and impact of the solutions.

The integration of physical technologies in LTC is not a purely technical process. Rather, it is a complex socio-technical transformation that depends on aligning technology with human needs, organizational capacities and systemic frameworks. The following dimensions represent the core components of effective integration, drawn from cross-case evidence:

Needs-based Technology Selection

Integration begins with identifying and clearly defining the specific needs and challenges in the care environment — be it fall prevention, documentation burden, cognitive decline, or emotional isolation. Successful pilots (e.g. ISRAA, NOELGA, EGTC) grounded their technology choice in daily care realities, ensuring relevance and contextual fit from the outset.

Participatory Planning and Co-Creation

Involving end-users early — particularly frontline care workers — in the selection, design, or at least testing phase is crucial. Projects like CVUT and DIT showed that co-creation fosters ownership, reduces skepticism

and increases acceptance. Conversely, top-down approaches with little user input (e.g. NOELGA) required more effort during rollout to build trust and engagement.

Training and Capacity Building

Structured, hands-on training programs (e.g. simulations at ISRAA, staged onboarding at CVUT) were key enablers of successful implementation. Training should be role-specific, continuous and include follow-up support to address uncertainties, especially for less digitally literate staff.

Transparent Communication and Ethics

The integration of physical systems must be grounded in clear, transparent communication with residents, families and staff. Trust is further enhanced when ethical principles, especially around privacy and data protection, are respected and actively communicated — as seen in ISRAA's and NOELGA's pilots.

Technical Flexibility and Adaptation

Technologies that are modular, low-threshold and adaptable — such as PETBOT, Hello Mirror and VR tools — proved easier to embed into daily routines. Conversely, complex systems requiring IT integration or organizational restructuring faced higher entry barriers and risks of resistance.

Workflow Integration

True integration requires embedding the technology into existing care routines and decision-making processes, not treating it as a parallel system. ISRAA's dashboard-based alert management and DIT's co-use of the Hello Mirror in activity planning illustrate how well-aligned use can enhance care without overburdening staff.

Cross-Functional Coordination

Pilot actions that included multiple levels of stakeholders — management, staff, tech providers, residents — achieved better alignment and implementation quality. EGTC and ISRAA especially benefited from ongoing stakeholder dialogue and cross-functional decision-making.

Evaluation and Feedback Loops

A culture of ongoing monitoring, reflection and adjustment was visible in the most successful pilots. CVUT's iterative pilot design and ISRAA's regular staff feedback sessions enabled continuous improvement and deeper learning, allowing issues to be addressed before they became barriers.

Sustainability Planning

Ensuring the long-term use of physical systems requires not only technical durability, but also ownership structures, maintenance strategies and scaling plans. EGTC and ISRAA already committed to keeping the systems in place, while others highlighted the need for policy and funding support for broader adoption.

The integration of physical solution systems in long-term care is successful when it is **context-sensitive, user-driven, ethically sound and strategically supported**. It thrives on **collaboration across sectors**, clarity in communication and adaptability in execution. Technology alone does not transform care; rather, it is the way technology is introduced, interpreted and embedded that determines its value and sustainability.

These findings offer a roadmap not only for future pilots, but for wider digital transformation processes in LTC across Europe — anchored in dignity, practicality and long-term vision.

G3 Answer of the Research Question - Project level

The following section brings together the insights from both Pilot Action 1 and Pilot Action 2 to answer the overarching research question of the DigiCare4CE project: **"How should digital technology be implemented in long-term care facilities?"**

Drawing on practical experiences from eight pilot implementations across Central Europe, this chapter synthesizes key insights into how digital technologies should be effectively implemented in long-term care facilities.

Digital Transformation as a Context-Driven Process

The DigiCare4CE project illustrates that the implementation of digital technologies in long-term care (LTC) settings is not a matter of simply installing tools—it is a multidimensional change process embedded in specific care cultures, routines, and organizational structures. The evaluation of Pilot Action 1 (focusing on digital information and management systems such as documentation tools, planning platforms, and rehabilitation monitoring) and Pilot Action 2 (focusing on IoT and sensor-based technologies for safety, stimulation, and autonomy) has shown that successful implementation depends on the alignment between human needs, technological fit, and organizational readiness.

The project revealed that each care facility required a tailored approach. For example, while GGZ (PA1) focused on integrating lightweight tools like a mobile document scanner into an existing system (ilvi), ISRAA (PA2) implemented an advanced AI-based behavior monitoring system requiring infrastructure adaptations, staff role clarification, and a well-managed ethical communication strategy. For instance at RRDA (Poland), the newly developed DC Analytics app was also directly aligned with daily workflows of physiotherapists and replaced inefficient paper-based rehabilitation documentation, ensuring relevance from day one. In addition, at EGTC Via Carpatia (Slovakia), the team tailored the cognitive virtual reality (VR) therapy and emergency system to the specific needs of older residents in rural care settings, embedding it in regular care routines with personalized activation plans.

The pilots confirmed that technologies can only generate value when they respond to clearly identified needs and are operationally embedded—rather than simply deployed.

Co-Creation, Participation, and Shared Ownership

Across both pilot actions, **early and consistent involvement of staff** in the design, selection, and testing of technologies was a critical success factor. GGZ involved care staff, IT, and executive management in an intensive preparatory phase, including on-site observation of care workflows, strategic benchmarking trips (e.g. to Denmark), and structured co-creation workshops. These efforts resulted in the identification of two clearly needed tools—of which the scanner was rapidly adopted due to alignment with daily practice. At ISRAA (PA2), staff were consulted during the development and configuration of the ANCELIA sensor system. Their input shaped decisions on camera placement, notification thresholds, and resident communication. Similarly, at NOELGA (PA2), a phased co-design process involving care professionals, management, and external specialists led to the introduction of personalized sensor-based emergency protocols and an accessible dashboard interface. Another best practice was derived from TUKE (PA1) – the project team completely reoriented its pilot based on user feedback, replacing IS CYGNUS with a SharePoint solution designed together with administrative and nursing staff.

In contrast, pilots that skipped or minimized participatory design - such as in early phases of CVUT (PA2)—encountered slower uptake, unclear expectations, and resistance from staff unsure about the purpose and function of the new technologies. The DigiCare4CE experience shows that **co-creation is not an add-on but a prerequisite** for successful implementation.

Usability, Simplicity and Perceived Benefit

Efficient implementation depends not only on the quality of the system but on how **understandable, intuitive, and obviously useful** it is for its users. In both pilot actions, tools that were visually clear, technically stable, and functionally focused were better received.

For example DC Analytics, developed by RRDA (PA1), required minimal explanation, ran on mobile devices, and directly supported physiotherapists in their daily rehabilitation planning. It replaced inefficient paper forms, reduced workload, and made resident feedback visible - leading to widespread and sustained use. Similarly, the Hello Mirror by DIT (PA2) combined cognitive training, entertainment, and physiotherapeutic exercises in one user-friendly interface. Staff noted that the device required little supervision, was popular with residents, and could be flexibly integrated into group and one-on-one settings.

In contrast, imitoWound (GGZ, PA1) failed to meet usability expectations due to login difficulties, camera alignment issues, and lack of interoperability - despite staff buy-in during the planning phase. These examples highlight the importance of **immediate functional benefit and interface clarity** in fostering adoption, especially in time-sensitive care settings.

Integration into Existing Systems and Workflows

Pilots showed that **technologies should not add complexity but simplify existing processes**. Solutions that built on existing infrastructures (e.g. ilvi at GGZ, Microsoft 365 at TUKE) or mimicked familiar work patterns had a clear advantage. TUKE (PA1) used SharePoint to digitalize and streamline task management, medication routines, and documentation - without disrupting staff habits. The system was embedded in the facility's existing IT environment, minimizing friction. GGZ's document scanner was integrated into the HIS and used daily within ilvi, the already existing documentation tool. ISRAA (PA2) aligned its AI-based alert system with existing staff workflows and documented procedures, ensuring that alerts were not experienced as interference but as support. In contrast, CVUT's robotic companion PETBOT remained partly unused due to unclear role definition and lack of integration into care routines. **System integration emerged as a technical and procedural requirement**—without it, even promising tools risk irrelevance.

Training as an Ongoing and Role-Specific Process

Implementation success also depended on **how training was delivered and maintained**. TUKE (PA1) offered personalized onboarding with support materials tailored to different staff roles. DIT (PA2) used training videos, workshops, and scenario-based sessions that emphasized real-life use cases of the Hello Mirror. ISRAA (PA2) invested in multi-level training for management, care teams, and external IT staff—recognizing that sensor-based systems affect workflows across all levels. ISRAA also offered short video tutorials and quick-reference cards for each staff role, allowing flexible repetition and supporting learning across multiple shifts.

RRDA (PA1) provided continuous IT support via an internal staff member who adapted DC Analytics based on therapist feedback. This combination of availability, flexibility, and adaptation proved crucial, especially in facilities with limited IT literacy.

Best practices included:

- **Peer training** (e.g. "train the trainer" approach at GGZ and TUKE),
- **Hands-on sessions** using real devices before rollout (ISRAA, NOELGA),
- And **training refreshers** after the first weeks of active use (DIT, RRDA).

Training was most effective when understood not as a fixed event but as a **scaffolded learning process**.

Leadership, Communication, and Strategic Framing

The role of **institutional leadership and communication culture** emerged as a key enabler of implementation efficiency. Facilities where management clearly endorsed the digital solution,

communicated its purpose, and aligned it with broader strategic goals (e.g. ISRAA, GGZ, TUKE) reported stronger staff engagement. In contrast, lack of visible leadership or unclear responsibilities slowed down momentum. Moreover, regular communication - through meetings, internal newsletters, or informal updates - helped to anchor the innovation in the daily narrative of the care team. The pilots suggest that leadership is not only about decision-making, but also about **consistent internal messaging and symbolic support** for change.

Iterative Learning and Feedback Culture

Implementation processes that remained **open to adaptation and feedback from different perspectives** developed stronger user commitment and were more successful over time. RRDA used weekly staff input to refine DC Analytics. NOELGA collected quantitative and qualitative feedback through structured staff debriefings. ISRAA revised alert protocols based on night-shift staff feedback, reducing unnecessary system triggers. CVUT used structured resident interviews to assess PETBOT reception and modified content and placement accordingly—though uptake remained limited, user feedback shaped iterations.

Even pilots with initially hesitant users reported increased motivation after visible adjustments were made. The **perception that staff voices shape the system** proved to be a major driver of engagement. Iterative, feedback-responsive processes reduced the pressure to "get it right from the start" and instead built collective ownership. The practical experiences from the pilots show that implementation should be approached not as a fixed rollout, but as a dynamic learning cycle—allowing the system to evolve with its users. This iterative logic also helps to maintain motivation and reinforce the value of the innovation.

Ethical Awareness and Transparency

Particularly in PA2, where sensor technologies and AI systems were tested, **ethical concerns such as data privacy, surveillance, and informed consent** played a prominent role. Successful pilots like ISRAA and NOELGA addressed these issues proactively by engaging residents and families in explanatory sessions, offering opt-out choices, and ensuring that data flows were transparent and secure. NOELGA for instance implemented a multi-stage resident consent process for fall sensors, including simplified materials, individual opt-outs, and transparent communication with families. This ethical framing was not just a compliance requirement but contributed significantly to building trust and acceptance.

The DigiCare4CE project demonstrates that the implementation of digital technology in LTC should not be viewed as a matter of equipment procurement or IT deployment alone. Rather, it must be approached as a **socio-technical process** that unfolds across organizational layers and evolves over time. It depends on careful alignment between human practices and digital infrastructures, guided by simplicity, transparency, and shared purpose.

Digital tools succeed not because of their technical features alone, but because of **how they are introduced, communicated, embedded, and refined**. Where this is done well, even modest solutions can improve documentation quality, coordination, safety, and care experience.

G4 Future Perspectives and Recommendations

The experiences gathered across the three Pilot Action 1 sites demonstrate that the implementation of digital information systems in long-term care is a transformative process that reaches far beyond the deployment of software. It touches the **core of organizational functioning**, professional identities, and the logic of care work. Consequently, future digitalization efforts in this domain should be guided by a strategic understanding of implementation as a **cultural, structural, and communicative shift**.

Digital transformation in LTC is only effective when it is people-centered, context-aware, and operationally embedded. Systems must not only be technically functional, but also meaningful and useful to those who work with them on a daily basis. Based on the lessons of Pilot Action 1, the following reflections offer guidance for future implementations:

- **Co-creation must go beyond consultation.**

  Implementation succeeds when care professionals are not merely informed, but actively co-shaping the technology from the outset. Involving end-users in identifying needs, evaluating potential tools, testing prototypes, and defining success indicators fosters ownership and ensures relevance. Early-stage engagement creates alignment between institutional strategy and frontline realities.

- **Digital tools must serve existing care processes - not replace or replicate them.**

  Future systems should be selected or developed with a clear link to the care context. Features that support, structure, or simplify documentation, communication, and coordination are more likely to be sustained than tools that require major behavioral or procedural change. Whenever possible, integration into existing platforms and workflows should be prioritized to avoid parallel systems and redundant tasks.

- **Simple, stable, and scalable solutions outperform technically sophisticated but complex tools.**

  Systems that are intuitive, quick to learn, and robust under everyday conditions are more readily accepted. In low-resource or high-stress environments like LTC, technical simplicity is not a limitation but an advantage. Stepwise modular deployment allows organizations to build competencies gradually and scale as confidence grows.

- **Training is not a one-off event but an ongoing process.**

  Implementation teams should plan for diverse training formats—blended learning, peer support, just-in-time coaching—and ensure that all staff groups are supported according to their experience, role, and digital comfort level. Training should also include wider digital literacy, not just tool-specific skills.

- **Digitalization efforts should be embedded in broader change strategies.**

  Technology implementation is more successful when framed as part of a long-term vision of organizational development. Strong leadership commitment, clearly defined responsibilities, and continuous communication of purpose help create a climate in which change is possible and welcomed. Leaders should also model openness to experimentation and feedback.

- **Implementation requires dedicated time, capacity, and support.**

  Staff must be given the space to test, reflect, and adapt. This includes ensuring protected time for training and experimentation, providing immediate technical support, and responding quickly to emerging problems. Understaffed or overstretched teams are unlikely to benefit from new systems unless additional resources are made available.

- **Evaluation and feedback must be built into the implementation cycle.**

Pilots that embedded feedback mechanisms—from quick user surveys to structured interviews—were more agile and adaptive. Future projects should combine qualitative and quantitative feedback to understand both system performance and user experience. This approach not only improves technology fit but also strengthens motivation by showing that staff input leads to tangible improvements.

Building on these reflections, several strategic recommendations can be formulated for policymakers, project leads, technology developers, and care institutions:

- **Mandate and fund participatory design processes.**

  Co-creation should be a formal requirement in publicly supported implementation projects. Funding calls should incentivize early user engagement and iterative testing phases.

- **Develop centralized support structures at regional or national level.**

  Many care facilities lack the internal expertise to manage implementation independently. Regional hubs could provide technical assistance, training resources, vendor negotiation support, and evaluation templates.

- **Link funding to sustainability and integration plans.**

  Projects should only be funded if they include clear strategies for post-pilot sustainability, including interface development, maintenance contracts, staff onboarding, and alignment with existing infrastructure.

- **Promote interoperability and standardization.**

  Solutions should meet technical and semantic standards to ensure compatibility across systems. National digital health strategies should define minimal requirements for data integration and security in LTC contexts.

- **Support digital literacy across all staff levels.**

  Future programs must invest in cross-role upskilling. This includes not only front-line workers but also middle management, administrative personnel, and new staff. Digital confidence is essential for scaling.

- **Encourage transparent communication and visible leadership engagement.**

  Digital implementation benefits from strong, visible leadership that communicates the value of the change, listens to concerns, and encourages experimentation.

H LIMITATIONS

The evaluation of Pilot Action 1 in the DigiCare4CE project provides important insights into the implementation of digital information systems in long-term care facilities. However, several limitations must be acknowledged that affect the scope, comparability, and generalizability of the findings. These limitations relate both to the methodological design of the evaluation and to contextual factors inherent to the pilot settings.

One core limitation lies in the significant **contextual diversity** across the three pilot sites. The participating facilities differed substantially in terms of size, organizational culture, IT infrastructure, care focus, and strategic priorities. Moreover, the digital tools implemented varied widely in purpose, complexity, and technological maturity—from mobile apps and SharePoint-based platforms to fully customized solutions. While this diversity enriches the empirical basis and provides a multi-faceted view of implementation processes, it also limits the ability to draw general conclusions about specific technology types or pathways. The heterogeneity of local conditions reduces the comparability of results and requires careful contextual interpretation.

In addition, the evaluation captures the implementation processes within a relatively **short observation window**. All pilots were assessed in the immediate or shortly post-pilot phase, which means that the long-term effects, sustainability of use, and institutional embedding of the digital systems could not be fully observed. Critical questions—such as whether systems continue to be used six or twelve months after the pilot, how they evolve within routine operations, or what measurable outcomes they achieve in terms of care quality and efficiency—remain open. As a result, the evaluation reflects primarily the introduction and early usage phase, not the full life cycle of digital adoption.

Another limitation arises from **variations in the availability and completeness of evaluation data**. While a common framework and set of tools were used across the pilots, the depth and richness of information differed depending on the partner's internal documentation practices and evaluation capacities. In some cases, user feedback within the monitoring process was only available to a limited extent, or qualitative responses lacked detail. This asymmetry affects the balance of the analysis and may have led to underrepresentation of certain perspectives or effects.

It should also be acknowledged that a large proportion of the findings is based on **self-reported data** from project teams, facility managers, and care professionals involved in the implementation. Although these sources are essential for understanding internal dynamics and user perceptions, they are also subject to potential bias—particularly given that many of the reporting stakeholders were directly involved in the project's success. While peer reviews provided an additional external perspective, a fully independent validation of implementation outcomes was not foreseen in the project design.

Moreover, the voices of **residents**—the primary recipients of care and indirect beneficiaries of digital systems—were **only partially included in the evaluation**. Although some pilots conducted resident satisfaction surveys or informal interviews, these perspectives were neither collected systematically nor analyzed comparatively. This represents a relevant gap, as the implementation of digital information systems can affect not only workflow and documentation but also resident experience, communication, and person-centeredness.

Finally, the pilots took place within **broader organizational and systemic contexts** that could not be fully controlled. Factors such as procurement processes, workforce availability, financial constraints, vendor responsiveness, and national regulations shaped the pace and scope of implementation in ways that were not always predictable or transparent. These **external influences** must be considered when interpreting the feasibility and effectiveness of the approaches tested.

In conclusion, while the evaluation offers meaningful insights into the factors that influence the efficient implementation of information systems in long-term care, its conclusions should be understood as grounded

in specific, situated experiences rather than universally generalizable findings. Future projects would benefit from longer observation periods, more systematic data collection across stakeholder groups, independent validation of outcomes, and stronger inclusion of resident perspectives. Addressing these limitations would not only enhance the robustness of future evaluations but also deepen the understanding of what drives sustainable and meaningful digital transformation in care settings.

I CONCLUSION

The digital transformation of long-term care is no longer a question of technical feasibility, but of strategic readiness and institutional commitment. The pilots of PA1 show that even small, well-integrated systems can produce significant benefits when supported by a thoughtful process. However, digital tools alone will not change care practice. What matters is how these tools are introduced, supported, and aligned with the ethos of care.

Future implementation projects should focus not only on technology deployment, but more on system learning, staff empowerment, and iterative adaptation. Through this shift in perspective, the digitalization of care can become not just a technical upgrade, but a meaningful evolution of how care is coordinated, documented, and delivered in everyday practice.

J APPENDIX

J1 Pilot Action Output Factsheet

OUTPUT FACTSHEET						
Project index number		**Acronym**				
Output type *("x" to be included)*	**Strategy/ action plan**		**Pilot action**	x	**Solution**	
Output number (O.xx)		**Output title**				
If the output target is > 1 in the AF, please specify the output(s) described in the factsheet						
Output delivery date						
Project website						
Summary description of the output *Please present the output by addressing the following topics.*						
Territorial challenges and needs in the regions specifically addressed by the output (max. 700 characters)						
Main aim(s) of the output and how it contributes to tackle the identified challenge(s) (max. 500 characters)						
Technical description of the output (e.g. scope, main features, innovative elements etc.) (max. 1500 characters)						
Involvement of target groups during output development and/or implementation (max. 700 characters)						
Cooperation dimension of the output, i.e. joint development within the partnership and, if applicable, joint implementation (see output indicator definitions in chapter I.3.3 and Annex 2 of the programme manual) (max. 700 characters)						

Results - expected change and lasting effects in the territories generated specifically by the output, its uptake by relevant organisations and benefits for target groups (max. 1000 characters)
Ownership and durability of the output after the project end, considering financial and institutional support including, if applicable, maintenance (max. 700 characters)
Transferability of the output to other territories, sectors or target groups and planned measures for supporting such transfer (max. 700 characters)

J2 Evaluation Questionnaire for project partners

Topic	**POST-IMPLEMENTATION ASSESSMENT**
Task 20	Conduct a post-implementation assessment and compare it to the pre-implementation process. Identify challenges, areas of success and recommendations/learnings for further improvement and future technology enhancements. Please answer the evaluation questions below.
Deadline	31.01.2024

Aim of the Pilot Action	
Pre-implementation	*Post-implementation*
Have there been any changes to your pilot action?	

Technological Implementation
How effective was the digital technology during the test phase?
What challenges arose during the introduction of the digital technology? How were these challenges addressed or solved?

Was the technology regularly maintained or updated? If so, were there any issues encountered?

Cooperation and feedback from the end-user's perspective
How close was the collaboration between the technology providers, the project management and the care home during the integration process?
How much did the end-users like the solution (1 to 10)?

1	2	3	4	5	6	7	8	9	10

Would end-users like to continue using the solution (1 to 10)?

1	2	3	4	5	6	7	8	9	10

What did the end-users like the best about the solution?
Was there something they found problematic or missing?
Do they have any suggestions for the future?

Where there any other people involved in the testing of the solution beside solution end-users (older people, family members, health-care professionals, etc.)? **If yes, which feedback did you receive from them:**
How much did ------ like the solution (1 to 10)?
Would ------ like to continue using the solution (1 to 10)?
What did the ------like the best about the solution?
Was there something they found problematic or missing?
Do they have any suggestions for the future?

Internal analyses
What results did you gain from your pilot action? Please refer to any internal analyses or surveys that have not yet been collected via the monitoring questionnaire.

Long-term perspective
Would you consider continuing the use of this technology after the pilot phase? Why (not)?
If the technology were to remain in use, what adaptations or improvements would you suggest to enhance its effectiveness?
Do you believe this technology could have a lasting positive impact on the quality of care in your facility? Why (not)?

Overall evaluation

How satisfied are you overall with your pilot action (process) and the technology used? Please explain the reasons for your rating.

1	2	3	4	5	6	7	8	9	10

How much would you say you reached the goals, you've defined in the preparatory phase as part of the goal setting (Implementation plan, chapter 4)?

Write down the name of the goal, how much you reached that goal on the scale from 1 to 10 and why did you choose that grade:

Name of the strategic / operative goal	How much did you reach it from 1 to 10?	Reasoning:

What factors contributed positively to the efficiency of the implementation process?

What factors hindered or slowed down the implementation process?

Are there any specific suggestions for improving the implementation process or the technology itself?

Which aspects of the pilot action would you emphasize as particularly positive?

Which aspects of the pilot action would you emphasize as particularly challenging or negative?
What recommendations would you make for future implementations of similar technologies in long-term care facilities?
What are the next steps after the piloting phase? How will the results of the pilot action be utilized?

Note on the document:
All documents used for the analysis - such as the implementation plans, peer review reports, output fact sheets, and monitoring reports - are available as separate project deliverables and have therefore not been included in the appendix.

This report was prepared with the support of AI-assisted tools (GPT-4 by OpenAI). Artificial intelligence was used to support structured text development, language refinement, and synthesis of complex project data. Full responsibility for the selection, verification, and approval of all content rests with the project team.