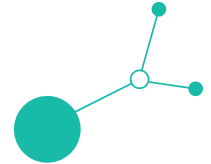


A.2.4 Joint peer reviews pilot actions

Summary report





The DigiCare4CE project aims to support long-term care (LTC) facilities in implementing new technologies across Central Europe. Through eight pilot actions, technologies in digital management, information systems, and smart devices such as sensors, wearables, and virtual reality are being tested in associated LTC facilities. To evaluate the progress, facilitate exchange and provide feedback on the implementation processes, the project includes transnational peer review visits. These peer reviews involve structured evaluations that promote collaborative learning. The primary goal of these peer reviews is to assess the current status of the pilot actions and provide recommendations for the remainder of the pilot action phase.

METHOD: From March to October 2024, eight peer review visits were conducted at pilot action sites. Peer reviewers, including project partners and external experts, visited the pilot projects, discussed ongoing progress with the pilot action teams, and engaged with local end-users and managers of the LTC facilities. They evaluated the pilot actions and provided key recommendations for further implementation. Data was collected using a standardized peer review reporting table (i.e. questionnaire) completed by all peer reviewers. The data analysis involved quantitative methods using Python, with results presented for instance in word clouds as well as sentiment and topic analyses for each pilot action. A frequency analysis of key recommendations was conducted separately for pilot actions 1 and 2, as well as for all pilot actions combined. To present the progress of each pilot, the data underwent qualitative content analysis, with results summarized based on predefined metrics.

RESULTS: The results of the peer review visits show that both pilot actions 1 and 2 have been progressing since project start. Most metrics for the pilot actions received positive and/or neutral feedback, as evidenced by the sentiment analysis. However, challenges and problems were also identified, varying among pilot actions and metrics. Key recommendations highlighted the necessity of ongoing training and support for end-users and a thorough evaluation for all of the eight pilot actions. Specific recommendations differed between pilot actions 1 and 2. For pilot action 1, the most frequently recommended aspects included further technological development (e.g., new features, integration of AI, development of interfaces), quality and risk management, and data security. For pilot action 2, recommendations focused more on co-creation, sustainability measures, and improved communication and collaboration with interest groups.

CONCLUSION: The peer review visits for the DigiCare4CE project provided insights into the progress and challenges and offered recommendations for the ongoing implementation of all eight pilot actions. The findings emphasize the necessity of tailored strategies and measures depending on the technology being implemented. The findings and recommendations from the peer review visits enable the refinement and adaptation of the pilot actions, which will continue until February 2025.

KEYWORDS: peer review, digitalization, digital transformation, LTC, technology implementation



A. INTRODUCTION

1. Background

Innovation in health care, more precisely the implementation of new technologies in LTC present substantial chances, but also challenges along the way. These challenges arise from various factors, including the complexity of integrating new systems into established care routines, the need for extensive training and adaptation among staff or the variability in digital literacy among caregivers and recipients etc. Additionally, financial constraints and resistance to change within organizations can hinder the adoption of new technologies. Ensuring that these innovations meet the diverse needs of LTC recipients while maintaining high standards of care adds further complexity to the process.

The project DigiCare4CE supports the testing of new technologies in LTC settings in eight pilot actions across Central Europe. In order to avoid the challenges mentioned above and increase the chances for a successful implementation of digital solutions, in the project's second year, transnational peer review visits were planned. Peer reviews are a cornerstone of quality assurance and improvement across various fields including healthcare, education, and research. Originating from academia, where experts evaluate the work of their colleagues to ensure rigor, validity, and relevance, the practice has expanded into diverse sectors, fostering accountability, transparency, and collaborative learning.

2. Objective

In our pilot actions, peer reviews aim to gain insights into the implementation process at each associated LTC facility. By examining the pilot actions together, professionals from various regions, countries, and organizations can share their expertise and experiences. The primary goal is to provide feedback on the previous implementation and preparation processes, offer advice on next steps, and identify further tasks to ensure high quality and detect potential challenges. Peer reviews help identify strengths, areas for improvement, and best practices through a systematic evaluation process of specific pilot actions.

3. Definition

A peer review is primarily described as a process used to judge the quality of academic papers. A peer review is the "*evaluation of scientific, academic, or professional work by others working in the same field*" ([Oxford Languages](#)). It involves the assessment of work by one or more individuals who possess similar competencies as the creators of the work (peers) ([National Cancer Institute Dictionary of Cancer Terms](#)). This process is crucial in ensuring the rigor, validity, and relevance of scholarly and professional outputs, fostering a culture of accountability and continuous improvement. Peer reviews help maintain high standards by providing an objective evaluation, identifying strengths, and suggesting areas for enhancement, thereby contributing significantly to the advancement of knowledge and practice within a field.

The process typically involves several stages:

- (1) Preparation/training of peer reviewers
- (2) On-site visits
- (3) Interview sessions
- (4) Comprehensive documentation (questionnaire / reporting template)



Peer reviews also facilitate the exchange of knowledge and experiences among stakeholders, fostering an environment of collaborative learning and continuous improvement. Involving various partners, such as project team members, associated strategic partners (ASPs), and local stakeholders, ensures that the evaluations are thorough and consider multiple perspectives. The resulting recommendations are intended to guide the ongoing implementation and refinement of pilot projects, contributing to the broader goals of the initiative.

1. Results of Pilot Action 1

1.1 Graz (GGZ)

The peer review visit to the Residential Nursing Home Peter Rosegger, part of the Geriatric Health Centres of the City of Graz (GGZ), took place on April 23rd, 2024, in Graz, Austria.



Figure 1. Peer Review Visit Graz, (GGZ)

Content of the pilot action

The focus of GGZ's pilot action is the extension of the current digital and mobile solution (ilvi) for nursing documentation with additional functionalities. Specifically, the GGZ implement a digital tool, such as an app, for digital wound measurement and document scanning using camera functionality. Currently, nursing documentation presents challenges related to time consumption and inefficiency, which can lead to potential errors. By extending the capabilities of ilvi, the GGZ aims to streamline the documentation process, allowing staff to document activities at the point of care. This approach is expected to reduce administrative burdens, free up more time for nursing activities, and increase the quality of documentation.

Key recommendations

The applications are considered as valuable tools for supporting care staff and organizational needs. The integration of technology to enhance wound management, coupled with training that emphasizes personal contact, indicates that management is making appropriate efforts to balance technology and human interaction. Overall, the system is seen as promising and well-conceived. The decision-making process was clearly communicated and involved staff at every stage. The solution does not require complex training, minimizing the time needed to adopt the ilvi system extension without disrupting staff workflow. Positive feedback has been also received regarding the implemented solution ilvi, with high acceptance among employees involved in the decision process. The solution shows potential to reduce the steps required in nursing documentation and meets the needs of the nursing staff.



During the visit in Graz, peer reviewers have also identified the following key recommendations to enhance the pilot action:

- Continuous development of technology: There should be the possibility to embed an AI engine for real-time suggestions and forecasts on wound treatment and the healing process. Solutions should be selected based on the availability of AI as an additional feature.
- Evaluation of technology: Employee and client satisfaction should be systematically measured and evaluated using a clearly defined framework. This process must include objective methods such as anonymized surveys to gauge satisfaction accurately. The application should also be assessed in terms of its alignment with objectives, diagnostic capabilities, and the efficiency of data collection, retrieval, and analysis. It is crucial to identify any unforeseen issues that may indicate suboptimal performance compared to previous systems. The changes brought by the technology should also be analysed, with attention given to cost implications and time savings for staff.
- Collaboration: Ongoing coordination with the manufacturer will be essential for timely updates and customization of the product.
- Training: Comprehensive and continuous training for employees is also vital to ensure effective utilization of the technology. Feedback on staff experiences with the technology should be reviewed, and adjustments made as necessary.
- Transferability: Guidelines and recommendations for the deployment of the technology in other facilities of the GGZ should be developed, as they could also benefit from it.
- Organizational factors (culture): To maintain a balance between technology and a personal approach, it is recommended that terminology in the ilvi wound management extension be aligned with a care-focused perspective, such as replacing "patient" with "resident." Additionally, while barcodes on wristbands provide a practical and secure method for getting access to the applications, they may depersonalize individuals by reducing them to numbers. Considering the emphasis on personal care within the facility, alternative identification methods should be explored. Options such as linking barcodes to rooms or beds rather than individuals, or using name tags, may better preserve personal identity while maintaining functionality. As new technology is introduced, it is also crucial to educate staff, especially younger members, on maintaining the personal touch that technology cannot replace. While technology enhances care, the human connection—the look, the smile, the gentle interaction—must remain a priority.
- Dignity: The current practice of linking individual identification to barcodes raises concerns about the necessity of residents wearing barcode wristbands, which may evoke a hospital-like atmosphere. While barcode identification is effective in preventing misidentification, even among residents with similar names, sex, and birthdates, it may inadvertently label or restrict individuals. To maintain a balance between security and personal dignity, it might be interesting exploring alternative or supplementary identification methods. Options such as facial recognition, pupil recognition, or fingerprint scanning should be considered to ensure secure identification without compromising the personal experience and comfort within the LTC facility.



1.2 Rzeszow (RRDA)

On May 22nd, 2024, a peer review visit was conducted at the Donum Corde Rehabilitation and Medical Care Centre in Budy Głogowskie near Rzeszow, Poland.



Figure 2. Peer Review Visit Rzeszow (RRDA)

Key recommendations

During the visit in Rzeszow, peer reviewers have identified the following key recommendations to enhance the implementation process within the pilot action:

- **Evaluation of technology:** The analyses of the pilot action should focus on medical and customized satisfaction data obtained within the pilot. Aggregate data from all clients should be analyzed, rather than focusing solely on individual cases, to reach general findings.
- **Adaptability:** Updates and changes should be incorporated based on the analysis of medical and customized satisfaction data.
- **Data security:** Data privacy and security should be prioritized by addressing concerns regarding the lack of anonymity in satisfaction surveys being used at Donum Corde. Measures to anonymize data should be implemented to ensure unbiased results and adhere to ethical standards. Switching from non-anonymized to anonymized customer questionnaires is recommended, as non-anonymized feedback tends to be less honest and more positive, potentially hiding actual problems and improvement opportunities.
- **Collaboration:** Cross-functional collaboration should be encouraged, as it can lead to innovative solutions that enhance the technology's durability. This involves fostering cooperation between different teams and disciplines to leverage diverse expertise and perspectives.
- **Co-creation:** Stakeholders should be engaged by identifying and involving all relevant parties affected by the technology implementation. This includes employees, management, and other key stakeholders. Effective engagement should be ensured so that everyone understands the change, its benefits, and their role in the process.
- **Communication and collaboration:** All stakeholders should be well-informed about the technology change, its benefits, and its impact. Clear and transparent communication should be maintained to foster trust and reduce anxiety and uncertainty among employees.
- **Training:** It is recommended that comprehensive training and ongoing support be provided to ensure users can effectively adopt and use the new technology. This should include online training, e-learning platforms, and hands-on workshops to facilitate a smooth transition. Special attention



should be given to employees with lower levels of digital literacy, as they could benefit from training and become more open to the implementation of new technologies in the future.

- **Risk and quality management:** It is recommended that potential risks associated with technology implementation be assessed and strategies developed to mitigate them. This should include addressing data security issues, integration challenges, and unforeseen technical problems. Additionally, post-implementation evaluation and feedback mechanisms should be included to identify areas for improvement, ensuring that technology continues to evolve to meet the organization's changing needs.
- **Sustainability:** It is recommended that long-term sustainability of the technology be ensured beyond the pilot phase. Clear plans for ongoing support and maintenance should be established, including collaboration with project managers and IT staff post-project conclusion. Contact persons should be identified to take over the application and regularly update and upgrade it.
- **Interoperability:** Interoperability should be enhanced by addressing the current lack of integration with existing IT infrastructure, particularly the medical documentation system. Interfaces should be developed to facilitate data exchange between systems, which can improve efficiency and reduce the risk of errors, such as double documentation.
- **Continuous development of technology:** The system's capabilities should be expanded to include advanced functionalities for analyzing population-based data, generating comprehensive statistics on rehabilitation progress, customer satisfaction, and other relevant metrics. This will provide insights for decision-making within the facility's management department. Currently, only patient-level reports can be generated; therefore, it is advised to enable the generation of Management Information System reports to support management decisions, structure patient outcomes reporting, and back up medical and financial claims for marketing purposes. Additionally, a process or contractual agreement should be established to ensure state-of-the-art cybersecurity, first and second-level support for Donum Corde and provisions for future necessary developments.
- **Technical support:** Development and IT support should be diversified to avoid reliance on a single individual. This can be achieved by building a dedicated team or outsourcing to ensure continuity in the IT support for the implementation and use of the new technology.

1.3 Kosice (TUKE)

On May 28th, 2024, a peer review visit took place in Kosice, Slovakia, involving the project partner TUKE and its associated LTC facility, ARCUS.

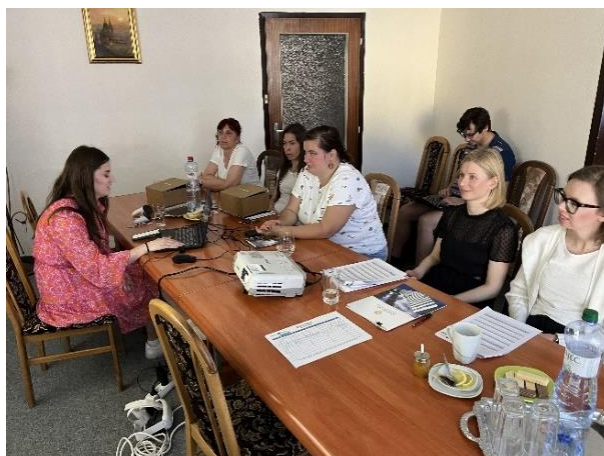


Figure 3. Peer Review Visit Kosice (TUKE)



Content of the pilot action

The pilot action focuses on implementing and optimizing the IS Cygnus information system for senior care facilities to improve care provision and client registration. It begins with assessing current needs to identify inefficiencies, followed by customizing the system to fit specific workflows. Comprehensive training will be provided for staff, and a phased rollout will allow for feedback and iterative improvements. Existing client data will be migrated and integrated with other systems, ensuring compliance and reliability through rigorous testing. Ongoing user support and feedback mechanisms will promote continuous improvement, ultimately enhancing operational efficiency and care quality for residents.

Key recommendations

During the visit in Kosice, peer reviewers have identified the following key recommendations to enhance the implementation process within the pilot action:

- **Sustainability:** To ensure the technology remains sustainable and scalable beyond the pilot phase, it is important to consider aspects like maintenance, updates, user support, and integration with existing systems. These factors will help maintain its effectiveness and relevance over time.
- **Evaluation of technology:** Comprehensive evaluations on pilot action impact and outcomes should be conducted, measuring key performance indicators such as efficiency gains, client satisfaction, staff engagement, and organizational effectiveness to demonstrate the value and success of the technology solution.
- **Training:** Training and support should be tailored to specific user needs and preferences. Additionally, ongoing education and support must be provided to facilitate smooth integration and adoption of technology into everyday workflows.
- **Quality and risk management:** Progress and feedback from end users should be monitored to identify areas for improvement, functionality enhancement, and optimization of the technology solution.
- **Data security:** Data privacy and security must be ensured even though no major risks are expected at this point of the pilot action.
- **Technical support:** Factors such as maintenance, updates, user support, and integration with existing systems should be considered to ensure continued effectiveness and relevance.
- **Interoperability:** Consideration should be given to factors such as maintenance, updates, user support, and integration with existing systems to ensure continued effectiveness and relevance.



2. Results of Pilot Action 2

2.1 Treviso (ISRAA)

The peer review visit of ISRAA to the Zalivani Institute took place on April 16th, 2024, in Treviso, Italy.



Figure 4. Peer Review Visit Treviso (ISRAA)

Content of the pilot action

During the pilot action, I.S.R.A.A. intends to further digitalize care processes at the Zalivani Institute, particularly focusing on enhanced care monitoring and data-driven decision-making. The implementation of remote surveillance during night shifts is aimed at providing more personalized care, optimizing staff distribution, and reducing night-time accidents. The ANCELIA digital solution will also be used to gather additional data, such as monitoring bed postures and behavioral agitation, to assist care home managers in making informed decisions.

Key recommendations

The peer reviewers came to the conclusion that the pilot action has been well prepared and implemented to date. A detailed analytical process was conducted before selecting the concrete solution, based on the identified factors. The implementation by the selected provider proceeded without major obstacles. The technology is ready for use by the staff members, who have been trained and will receive assistance from professionals throughout the entire pilot action period.

During the visit in Treviso, peer reviewers have also identified the following key recommendations to enhance the implementation process within the pilot action:

- **Training:** A comprehensive and ongoing training program for end-users needs to be implemented throughout the pilot action, ensuring that users are well-prepared and continuously supported in utilizing the new technology effectively.
- **Quality and risk management:** Any potential challenges that arise during daily operations need to be addressed and taken care of in order to avoid a decrease of motivation in end-users.
- **Opportunity for feedback & Adaptability:** A feedback channel should be established to gather insights from end-users regarding their experience with the technology, facilitating timely adjustments and improvements.
- **Interoperability:** The integration of the new technology with the facility's electronic health record should be prioritized in order to avoid double documentation and sources of errors.



- **Data security:** Compliance with regulatory requirements, particularly concerning data protection and privacy, needs to be ensured throughout the entire testing phase. Especially, ethical concerns regarding the camera being used within the technology need to be taken in account seriously and checked again.
- **Communication and collaboration:** Proactive communication with stakeholders, including employees and family members, should be continuously conducted to address any ethical concerns associated with the new technology.
- **Ethics and values:** The solution should be adapted to address potential ethical challenges, such as integrating a light or acoustic signal when the camera is on if the solution is used in residential nursing units.

2.2 Raabs an der Thaya (NOELGA)

The peer review visit to the Nursing and Care Centre Raabs took place on April 24th, 2024, in Raabs a.d. Thaya, Austria.



Figure 5. Peer Review Visit Raabs (NOELGA)

Content of the pilot action

The DigiCare4CE pilot action will focus on advancing the digitalization of fall prevention and detection systems while testing the sensor system, cogvisAI. This initiative aims to enhance the alerting mechanisms, care documentation, and workflows, ultimately improving overall efficiency and effectiveness in these critical areas.

Key recommendations

The project is a good practice example in terms of installing, and testing a solution, with the technology provider being cooperative and proactive in resolving issues. The peer review visit left a very positive general impression. The positive feedback from the peer review visit underscores the critical role of collaboration between management and employees.

During the visit in Raabs, peer reviewers have also identified the following key recommendations to enhance the implementation process within the pilot action:

- **Use of Artificial Intelligence:** The use of analytics should be enhanced, and potential connections with AI for fall forecasting should be explored, especially in the context of further large-scale adoption in NOELGA's facilities.



- **Sustainability**: Sustainability measures should be prepared by considering what will occur after the pilot action to ensure continuity and lasting impact. The future use and purchase of technology have not yet been decided by the organization.
- **Decision-making process**: It is crucial to increase transparency in the criteria for selecting new technologies. Clearly communicate these criteria to both end-users and care management. Additionally, ensure that users are actively involved in the technology selection process. Address the current gap by making key decision factors, including ethical and legal considerations, known to all stakeholders. This approach will enhance engagement and satisfaction with the implemented solutions.
- **Co-creation**: To enhance the acceptance of new technology, it is recommended to adopt a co-creation approach by actively involving end-users in both the decision-making and development phases from the outset. This should be complemented by a systematic, step-by-step implementation process that includes direct and personal interactions with end-users. By valuing and incorporating employee input, the implementation process not only meets their needs but also boosts their satisfaction and streamlines their daily tasks.
- **Support of employees**: Staff experience in using the technology should be taken into consideration in case any changes are required. Employees who are open to innovation should be promoted, and success teams should be established to motivate others to embrace new technology. Support should be provided to employees to ensure they remain satisfied with the technology. The approach of considering factors beyond efficiency improvement for the successful digitalization of LTC facilities should be continued.
- **Organizational factors (strategy)**: It needs to be ensured that there is an alignment of the pilot action with the strategic goals of the organization.
- **Communication and collaboration**: It is recommended to integrate the feedback received into the monitoring process. This will help refine and enhance future projects within the facility. Additionally, maintain transparent communication with the facility's management by sharing all learning experiences. This approach will foster a culture of openness and collaboration, ultimately leading to more successful implementations.
- **Evaluation of technology**: It is essential for SMART goals and KPIs to be set and regularly evaluated. What is expected from the technology, including specific benefits for patients, usability, and staff efficiency, should be clearly outlined. Criteria to determine the success of the technology after the pilot period should be established, focusing on KPIs such as patient benefits, usability, and staff benefits. Analytics should be implemented to provide access to statistics on individual residents and the unit as a whole, offering objective data for care managers. Clear evaluation criteria should be created to assess the benefits of the technology implementation for the organization, with a focus on analyzing changes brought by the technology, such as cost savings and time saved by staff. Transparent communication of all findings and learning experiences with the management and relevant stakeholders should be ensured.
- **Training**: Sustained training sessions should be conducted to further familiarize employees with the new solution. Continuation in motivating employees for future implementation of innovative, digital tools should be ensured.
- **Transferability**: Guidelines and recommendations on how to implement the technology in another facility should be prepared.
- **Adaptability**: It is recommended to consider staff experience while working with the new technology. There should be the possibility to adapt the solution if required.



2.3 Kosice (EGTC)

On May 28th, 2024, the peer review visit of EGTC with its associated LTC facilities VIA LUX and ARCUS took place in Kosice, Slovakia.



Figure 6. Peer review visit Kosice (EGTC)

Content of the pilot action

The pilot action of EGTC introduces virtual reality (VR) therapy and a health monitoring device in its associated LTC facilities. The VR setup, with a headset and interactive app, helps seniors engage in cognitive and motor skill exercises through immersive environments like forests and beaches. The monitoring device (SOS button), requested by local seniors, tracks health metrics such as heart rate and sleep quality, and includes an SOS button for emergencies. Together, these technologies aim to improve therapy, safety, and overall quality of life for the elderly.

Key recommendations

Peer reviewers have responded positively to the pilot action. The introduction of new therapeutic methods for patients with various impairments also holds potential to enhance the facility's reputation and impact.

During the visit in Kosice, peer reviewers have identified the following key recommendations to enhance the implementation process within the pilot action:

- **Sustainability:** To promote sustainability and scalability of the technology beyond the pilot phase, factors such as maintenance, updates, user support, and integration with existing systems should be taken into consideration to ensure continued effectiveness and relevance.
- **Evaluation of Technology:** Comprehensive evaluations on pilot action impact and outcomes should be conducted, measuring key performance indicators such as efficiency gains, client satisfaction, staff engagement, and organizational effectiveness to demonstrate the value and success of the technology solution.
- **Communication and collaboration:** Staff motivation to use the technology should be maintained by demonstrating the benefits of new technology, supporting patients (those who cannot use technology independently) by staff, and providing training for new employees.
- **Training:** Staff motivation to use the technology should be maintained by demonstrating the benefits of new technology, supporting patients (those who cannot use technology independently) by staff, and providing training for new employees.



2.4 Prague (CVUT)

On July 26th 2024, a peer review visit was conducted at the Gerontology Centre (GC) Prague 8, located in Prague, Czech Republic.



Figure 7. Peer Review Visit Prague (CVUT)

Content of the pilot action

The effectiveness of monitoring health and behaviour changes, cognitive activities, and interaction with technology is being assessed through the DigiCare4CE pilot action. The pilot action involves a modular system with three main subsystems: a sensor system, cognitive games, and a social petbot, all developed by CIIRC CTU.

- **Sensor System:** Designed for both private homes and LTC facilities, the sensor system aims to support independent living through simple, cost-effective smart home devices that monitor behaviour patterns over time, integrating standard and custom sensors.
- **Cognitive Games:** These tasks, adaptable across devices, aim to promote cognitive and motor skills, memory, and manual dexterity. They are highly interactive, accessible via voice guidance, customizable, and enable remote progress monitoring and assessment.
- **Social Petbot:** The petbot acts as a robotic companion that aims to reduce caregiver workload, and to support cognitive and movement health and to delay the need for institutional care, aiming to improve overall well-being in home settings.

Key recommendations

Peer reviewers agree that CVUT is developing an interesting solution that could support people's independence and ageing in place. The willingness to conduct co-design sessions with key stakeholders in the next project phases is appreciated, as their involvement is essential for developing a solution that is accepted and targeted to people's needs.

During the visit in Prag, peer reviewers have identified the following key recommendations to enhance the implementation process within the pilot action:

- **Co-creation:** A co-creation process involving seniors should be initiated to ensure their feedback is integrated into the solution effectively. Engaging seniors in this way is essential for creating a product that truly meets their needs and preferences. While this co-creation has not yet begun, it is crucial to prioritize it moving forward. Involving seniors in the development process will not only enhance the usability and relevance of the solution but also empower them by giving them a voice in shaping the technology that will impact their lives.



- Organizational factors (time management): Pilot testing of the solution with a defined timeframe within the DigiCare4CE project should be conducted. Currently, there is no time plan for the pilot test (only within the dissertation of a research assistant of CVUT).
- Collaboration: The collaboration of CVUT with the Gerontology Center, built up over the years, should be highlighted and promoted in the long-term as it allows for a fruitful exchange between the parties.
- Involvement of experts: Experts in cognitive sciences with experience in developing cognitive exercises for older people and those with dementia should be consulted, especially if the aim is to use these games to train people with dementia and/or assess their performances over time.
- Economical dimension: Securing sufficient funding for the further development of these solutions is essential. The business model should also be reconsidered, as a monthly fee of 100 Euros for the petbot is unlikely to be accepted by the target group.

2.5 Bad Kötzing (DIT)

On October 11th, 2024, a peer review visit at the BRK Bad Kötzing in Germany was conducted.



Figure 8. Peer Review Visit Bad Kötzing (DIT)

Content of the pilot action

The pilot action of DIT focuses on testing a tool designed to help older adults maintain their physical and mental fitness while reducing the burden on caregivers. Known as the health mirror, this device resembles a traditional mirror but features a touch screen that allows users to access various applications, including exercises for strengthening, mental fitness, fall prevention, reality orientation, memory enhancement, and music therapy. The health mirror enables nursing home residents to engage in orthopaedic and neurological exercises at their own pace, making it intuitive and easy to use. Its portable design allows it to be used throughout the facility, including in the rooms of bedridden residents. Care staff and residents can collaboratively choose applications, and residents can also use it independently. The objective is to promote the quality of life of residents and activate them, even during peak hours, weekends, or holidays.

Key recommendations

The product being developed locally in Bavaria has fostered positive feedback by peer reviewers. Involvement of staff and caregivers was crucial for a successful transition and positive reception of the health mirror. The technology is serving its purpose well as part of client activation programs, helping to engage clients effectively.



During the visit in Bad Kötzing, peer reviewers have identified the several key recommendations to enhance the implementation process of the health mirror in the pilot action:

- Continuous development of technology: The pilot action team at DIT should prioritize further refining and enhancing the content of the technology to better align with the specific needs and interests of the residents. This could involve creating more personalized, interactive, and targeted content, such as customized physical exercises for residents with mobility issues or cognitive stimulation games for those with memory impairments. For example, if a large portion of residents enjoys music therapy, the team could develop additional modules that integrate familiar songs or guided relaxation sessions tailored to different preferences.
- Evaluation of technology: It is vital to continuously evaluate the technology's effectiveness and integration into daily care routines, emphasizing the need for measurable impacts on both staff and clients. What is important is to find ways of measuring the impact on both residents and staff such as the level of activation in residents. Proper evaluation methods help to see whether the health mirror serves its intended purpose. KPIs should be carefully analysed to track the usage patterns of the health mirror's content. For instance, monitoring which exercises, games, or features are used most frequently can provide valuable insights into the preferences and needs of the residents. This data-driven approach will allow for more informed decisions regarding future updates.
- Economical dimension: Peer reviewers recommend expanding the use of this technology to create competition, which could drive down costs. Additionally, proving the technology's contribution to care will be key for further adoption and expansion (e.g. in further BRK facilities).
- Sustainability: Emphasize sustainability during both planning and implementation, ensuring it remains a core focus. What is questionable is whether the current motivation and enthusiasm for the technology will be also constant in the future. Therefore, the piloting facility needs to find ways to keep the technology interesting for both end-users and residents to enable positive long-term effects of the implementation.
- Transferability: The BRK umbrella organization comprises many (long-term) care facilities in Germany. Therefore, the piloting team could use the cooperation to also disseminate the best practices within the pilot action and learning experiences to other BRK facilities, encouraging them to adopt similar technologies. This will help expand the impact of the pilot.
- Analysis of external influences: For future projects focusing on digital transformation in healthcare facilities, it is strongly recommended that the DIT allocates sufficient additional time in the initial planning phases. This proactive approach would help to prevent disruptive, last-minute changes in technology selection or thematic focus (as it was in this pilot action) as the project progresses. Early-stage, thorough assessments of external factors – particularly political and regulatory developments, such as changes to telematics infrastructure at the national level, should be conducted to understand their potential impact on project implementation and technological feasibility.
- Communication and collaboration: It is recommended to maintain strong and regular communication with (care) management, who appear open to innovation, to ensure smoother implementation and adaptation of the technology. In-person meetings seem to be the most effective format for fostering deeper engagement, providing opportunities for real-time feedback, and addressing potential concerns or challenges promptly.



- **Adaptability:**
Currently, the health mirror offers a range of exercises, games, and content, but to ensure its long-term use and effectiveness, it is important to develop clear use cases and identify optimal scenarios for its application. Tailoring the mirror's content to the specific needs, preferences, and daily routines of the residents is essential to keep them engaged and motivated to interact with the technology. A critical factor in this process is ensuring the mirror is adaptable for residents with specific needs, such as those who are immobile or in wheelchairs, which would enhance its usability and relevance. At present, the technology does not fully accommodate these accessibility requirements, but addressing this should be a priority, especially when considering future purchases or expanding the use of similar products. Additionally, it may be worth exploring alternative technologies, such as health tables or other interactive tools, that might better suit certain age-related or mobility-specific needs, ensuring that the chosen solutions effectively support the diverse population within the facility.
- **Decision-Making Process & Co-Creation:** Involve end-users and residents in the decision-making process from the start, ensuring their needs and preferences are reflected in the technology's design (e.g., display size, font, legibility). Due to time constraints and a change in the thematic focus of the pilot action, this was not fully implemented during the pilot, but it should be prioritized in future projects.
- **Training & support for end-users:** Provide targeted training on using the health mirror, even if it is intuitive and has a high usability. These sessions can also serve as opportunities to collect user feedback for future development. Explore also their potential uses of the mirror, such as for occupational health management which might have a positive health impact on employees as well.
- **Technical support:** Stay informed about the continuous updates provided by the vendor, and actively request regular feedback and briefings to ensure you are aware of the latest developments.
- **Organizational factors (time management):** For future pilots, it is important to allocate sufficient time in advance for planning and avoid delays or mid-project changes. Another aspect, that peer reviewers reflected on is the fact that on one hand, the broader use can enhance social and activation activities for clients, but on the other it cannot be considered a complete solution for digital transformation in healthcare.



Among the most prominent key recommendations within the peer reviews were the following:

1. **Training and Support for End-Users:** This emerged as a crucial recommendation across all pilot actions, underscoring the necessity of implementing comprehensive training programs to facilitate the effective adoption and utilization of new technologies. Such initiatives should prioritize practical applications relevant to daily workflows, enabling users to engage meaningfully with the innovations.
2. **Evaluation of Technology:** This was identified as a critical component, highlighting the need for systematic assessments of the impact of these technologies on key performance indicators (KPIs). This includes evaluating user satisfaction, time and cost efficiency, and overall workflow outcomes to substantiate the benefits of technology integration in LTC settings.
3. **Co-Creation:** The concept of co-creation was deemed essential, advocating for a collaborative approach that actively involves end-users and stakeholders in the selection, planning, development, implementation, and testing of technological solutions. This collaboration ensures that the developed technologies align closely with the specific needs of the users.
4. **Sustainability Measures:** The establishment of sustainability measures was emphasized, underlining the importance of strategies that support the long-term viability and effectiveness of these technologies beyond the project duration. Ensuring that solutions remain relevant and adaptable is vital for their sustained success in enhancing care delivery.

Notable differences were observed in the focus of recommendations for the two pilot actions. For projects part of Pilot Action 1, it is especially crucial to prioritize the further development of information systems, quality and risk management, and data security aspects in the upcoming months. In contrast, Pilot Action 2 should particularly emphasize co-creation, sustainability measures, and ongoing communication and collaboration.

In conclusion, the peer review visits not only documented the progress made within the DigiCare4CE project but also yielded valuable insights that will guide the ongoing development and sustainability of innovative solutions in LTC facilities across Central Europe. The identified key recommendations are accessible to all project partners, providing a framework for further refinement and improvement of the pilot actions before their conclusion in February 2025.