

A.2.1 Shaping the joint pilot actions

Joint implementation and evaluation methodology

Summary of study visits (2.1.3)





INTRODUCTION

As a support activity for the project partners, study visits were organised. These visits aimed to enable partners to benefit from the experience of facilities/organisations that have already implemented digitalisation measures in the field of long-term care. Study visits are a very effective tool for learning about examples of good practices in other countries. A study visit also offers the visited facility/organisation the opportunity to showcase its successes, explain obstacles and establish cross-border cooperation and networks. Within the DigiCare4CE project, 5 study visits were organized. Below is the summary mapping the best practices examples and digital solutions and tools identified by participants.

Study visit to Berlin (Germany): 9 - 10 April 2024

Introduction of study visit site with general information

The study visit included two sites: (1) DMEA and (2) Smart Living & Health Centre in Berlin.

Good practice examples - (1) DMEA

ImitoWound:

Description: ImitoWound is an app that calculates wound size immediately after a photo is taken, replacing the need for a wound ruler. It allows easy tracking of wound healing with a timeline review and offers documentation using pre-set options based on international standards. Compatible with Apple and Android devices, as well as desktops, the app is user-friendly and requires no further devices. It also features AI to identify wound tissues and will soon suggest treatment options. Wound documentation can be done directly at the patient's side and completed later on any device.

<https://imito.io/en/imitowound>

Relevance: The technology contributes to the digitalization of nursing documentation and workflows, relevant in the long-term care sectors. Especially, chronic wound management and thus its documentation is a time-consuming process. With the application, it could be possible to reduce time spent on measuring wounds and increase the quality of the documentation since it uses standardized masks to enter the data. Within DigiCare4CE this technology has potential, especially for pilot action 1. GGZ is interested in testing the solution in its associated nursing home.

Qumea:

Description: QUMEA is an advanced and comprehensive system for fall prevention and mobility monitoring in care institutions. Using a one-of-a-kind sensor and intelligent software, QUMEA continuously monitors the activity and mobility of every patient and automatically calls for help, depending on the individual needs of each patient. The system provides multi-level detection for early bed exit indications, stand-up detection from chairs and wheelchairs, and monitors restlessness, falls, and absence from bed. It also tracks patient activity, zone entry/exit, presence in the room, and bed occupancy, while offering pressure ulcer prevention through motion detection and mobilization recommendations.

<https://qumea.com/index.php/en/>

Relevance: This technology aids in fall prevention and the monitoring of critical behaviours, with the potential to detect risky situations early, prevent falls, reduce staff workload, and measure therapeutic outcomes. Given the prevalence of falls in geriatric settings like residential nursing homes, the technology



may be well-suited for testing or comparison with similar systems in DigiCare4CE's pilot action 2. It also is a best practice example, because it respects the privacy of residents. QUMEA supports a person-centred approach and commits to respectful patient care, as privacy is preserved with the way the technology is built on works, i.e. no cameras, microphones, and solely 3D radar technology.

CANCOM:

Description: CANCOM specializes in guiding and supporting clients through their digital transformation. They provide a range of services including ICT consulting, implementation of technology solutions, and managed services. Their expertise covers areas such as modern workplaces, networking, security, artificial intelligence, the Internet of Things (IoT), and cloud computing - one area of services is the healthcare sector. Additionally, CANCOM develops custom software and platforms to support new business models, focusing on comprehensive solutions from start to finish.

<https://www.cancom.at/branchen/healthcare>

Relevance: CANCOM is relevant to DigiCare4CE as an example of a provider with a comprehensive approach to digital transformation. Their expertise in healthcare projects shows their ability to address various needs within this sector. At the DMEA, CANCOM representatives emphasized their role in establishing essential IT infrastructure that enables long-term care facilities to adopt advanced solutions, such as fall detection sensors. Many such facilities face challenges due to outdated or inadequate infrastructure, which hinders their digital progress. CANCOM's experience in delivering both fundamental infrastructure and advanced technologies makes it a potential partner for advancing digital solutions in healthcare.

Good practice examples - (2) Smart Living & Health Center e.V.

Description: The SHLC itself can be seen as a good practice example which displays how to showcase and make technology accessible to the general public. It consists of two areas: One section is dedicated to showcasing living solutions for the elderly. A model apartment presents aids for supported and self-determined living. The second area hosts changing exhibitions and events on topics such as ageing, disability, care, family members, prevention, and more. These are aimed at those affected, their families, professionals, and other interested parties. The Smart Living & Health Center thus serves as a central contact and advisory point without sales opportunities for special life and health situations.

<https://smart-living-health.de/>

Relevance: The Smart Living & Health Center is pivotal for digitalization in long-term care because it serves as a practical showcase for digital aids in elderly living, offers educational events on relevant topics, and provides a neutral space for exploring and advising on new technologies. Demonstrating real-world applications and gathering user feedback, helps stakeholders understand and adopt digital solutions while promoting collaboration and best practices in the sector.

Relevance of the study visit for the Digicare4CE pilot action/s

The good practice examples demonstrated that successful digitalization projects are based on several key factors: user-friendliness, person-centred design, interoperability, and robust IT support. Additionally, the practical demonstration of advanced technologies and the provision of educational resources are crucial. The Smart Living & Health Centre's approach to showcasing and educating stakeholders about digital solutions offers a valuable framework for our pilot action. By creating similar environments for testing and feedback, we can effectively integrate new technologies into care processes, ensuring they address the needs of both caregivers and residents. The DMEA event also provided a valuable opportunity to expand our network in digital health. We plan to leverage these new contacts to seek expert advice throughout our pilot action, enhancing our project's implementation and success. Moreover, thanks to our participation at DMEA, we have been inspired by new trends and now we are more capable of developing solutions to better



face the future challenges and innovations we can expect according to the presented trends in European countries.

Study visit to Eichstetten am Kaiserstuhl and Freiburg im Breisgau (Germany): 12 - 13 June 2024

Introduction of study visit site with general information

The study visit included two sites: (1) **Marienhaus St. Johann e. V nursing home**, (2) **Gemeinde Eichstetten am Kaiserstuhl**.

Good practice examples

Connection to the local community

- (1) The St. Marienhaus nursing home is very connected with the local community and works intensively with the Seniorenbüro, an office for the elderly, which offers information, advice and support to help the elderly to be as independent as possible.
- (2) Gemeinde Eichstetten am Kaiserstuhl: This is a municipality where intergenerational support is in the hands of the citizens. The initiative started with the desire to help citizens who needed help to age in their home environment. They started from the needs of the elderly, who wanted to stay as long as possible in a familiar home environment, and from the realisation that professionals alone could not do everything, that there were too few of them and that they were too expensive. They set up the Eichstetten Citizens' Community, which establishes and implements structures and programmes to support citizens in need.

Relevance of the study visit for the DigiCare4CE pilot action/s

This study visit was relevant for the development of the DigiCare4CE Transnational Model which provides a clear and systematic framework for the digital transformation of long-term care facilities and defines the most important phases of this process. The most important part of the study visit was to build on what has been learned so far and to link the lessons learned to the integration of different services into the wider local environment within the context of integrated long-term care. Therefore, the following lessons were the most important for the further work on the DigiCare4CE model development: the importance of identifying and taking into account the needs of the diverse local population, good practices of the step-by-step process of diverse technologies and services implementation in the local environment, the importance of continuous involvement and networking with different stakeholders, offering diverse services in the local area (that there is something for everyone), connecting formal and informal carers, involving the volunteers, families and children (intergenerational aspect), make services and digital solutions financially accessible etc.

In addition, this study visit was a great opportunity to network with national and international experts in the field of long-term care. During the discussions on the challenges in the long-term care sector, we realised that all European countries face similar problems (lack of staff and finances in LTC, frequent unwillingness of staff to adapt to technological and other changes, etc.), so we shared good practices that are already showing positive results and worked together to find new solutions to common problems.



Study visit to Prague (Czechia): 13 June 2024

Introduction of study visit site with general information

The Czech Institute of Informatics, Robotics and Cybernetics (CIIRC CTU) is a university institute of the Czech Technical University in Prague (CTU). One of the main objectives of the CIIRC is to integrate information and cybernetic research and education at the CTU, building on the links to the out-of-city centres as well as on strong links with international research centres.

The CIIRC creates a research and pedagogical workplace in a scientific atmosphere, pleasant conditions for work and, in many areas, brings results at the world's top research level. The Institute opens its doors to experts from home and abroad who can become a part of the CIIRC CTU team or cooperate with it. A very significant part of the cooperation is also connected with other parts within CTU, but also with the Academy of Sciences of the Czech Republic, with the industry and similarly oriented foreign institutions. CIIRC aims to bridge the gap between academic research and industry applications, fostering collaboration to drive technological advancements and contribute to the development of smart systems and solutions.

During the visit, we could feel the enthusiasm not only from the lecturers but also from the students we met in the canteen. CIIRC serves as a broadly open cooperation platform enabling collaboration, exchange and knowledge transfer. CIIRC's vision is based on motivation to produce world-class results and raise a future generation of researchers of an international calibre.

Good practice examples

Automated Cardiotocogram analysis

Description: The computer analysis methodology helps prevent hypoxia (the lack of oxygen during the fetal development phase) based on measuring fetal heart rate. The idea is to make the evaluation of the heart rate easier for the doctors. Because there is a difference when fetal heart rate results being seen and interpreted by a doctor who has a short experience in the field and when they are evaluated by one who has a longer experience. It is this Cardiotocogram that helps with the evaluation of heart rates of those less experienced doctors. There were 800 records of heart rate as a basis for the system to teach and train it.

The speaker also mentioned that in Czech hospitals there is a problem in that they use computer programs containing and storing a lot of important data, but only very limited further work is done with these data for possible evaluation of other contexts.

Relevance: This technology can significantly improve maternal and child healthcare, a critical aspect of DigiCare4CE's mission to leverage digital solutions for better healthcare outcomes.

Utilization of Genetic Analysis: The Genomkit project

Description: The motivation for this project was an existing difference between people concerning drug metabolism. Drug metabolism depends on the genetic profile of individuals, and it is important to know the profile to prevent a risk of overdose. It was tested on the blood bead evaluated by sensors. This involves creating a personalized genetic profile card that can be used for tailored medical treatments and health recommendations.

Relevance: Personalized medicine is a key area in modern healthcare, and integrating genetic information into patient care aligns with DigiCare4CE's goal of providing customized digital healthcare solutions.



Exam-taking Trajectories: Distance Education

Description: It is a computer system based on the praxis used in The Open University in Great Britain. The system can identify students at risk of failing the training modules and set the stage for intervention. The system also monitors the time that a student spends on a website during the electronic exams/tests and mouse clicks. According to these results, a trainer/teacher can estimate whether the students need help with some topics. The system monitoring the digital activity on the website is also able to predict whether the student will be successful in the exam and recommend the documents/materials on which the student can focus more.

Novel Imaging Biomarkers for Early Alzheimer's Disease Detection

Description: Results of the research looking for a new non-invasive method of detecting Dementia - the traditional way is from spinal fluid. The result is that we can detect Dementia based on looking at so-called cholinergic pathways in the brain. Compared to the traditional way, this method is painless for the patient.

Relevance: Early detection of diseases is crucial for effective intervention. This project exemplifies how advanced imaging and data analysis can be used in preventive healthcare, a core principle of DigiCare4CE.

The Use of Pet Bots

Description: This session involves using robotic pets (Pet Bots) to provide companionship and therapeutic benefits, particularly for the elderly and those with cognitive impairments. It can be a dog, cat, seal, parrot, etc. The vision of the CIIRC developer is to teach and train Pet Bots to prevent danger, for example when older people go outside and leave a window open or a light on.

Relevance: Robotic companions can play a significant role in elderly care by providing emotional support and monitoring health indicators, which is in line with DigiCare4CE's focus on innovative care solutions for senior citizens.

Relevance of the study visit for the DigiCare4CE pilot action/s

CIIRC's automated fetal heart rate analysis and data integration offer real-time monitoring and seamless integration with healthcare systems, enhancing fall detection effectiveness. Personalization from the Genetics Card Project can tailor fall sensor settings based on individual profiles, improving user acceptance and data security. Learning analytics insights and advanced Alzheimer's detection techniques emphasize data-driven strategies and early intervention, crucial for proactive fall prevention. Integrating user-friendly features akin to Pet Bots ensures elderly acceptance and usability. These principles promise a more effective, user-centred fall prevention solution in our DigiCare4CE pilot action.

Study visit to Cingia de' Botti (Cremona): 24 June 2024

Introduction of study visit site with general information

Fondazione Elisabetta Germani - Centro sanitario assistenziale is located in Cingia De' Botti, a small village in the province of Cremona (Italy). It is a private legal entity, qualified as a non-profit organization (ONLUS). The foundation plays a crucial role in the network of personal services within territorial planning, offering qualified and proactive responses in the fields of geriatrics and disability.

The foundation offers a wide range of social and healthcare services. It has a long-term care facility for older people, a specialized Alzheimer's unit, a daycare centre for older people, and a facility for disabled people. Moreover, it offers also home care services and health care services such as outpatient clinics, and rehabilitation services both on-site and at home.



The Elisabetta Germani Foundation is committed to addressing challenges such as staff shortages and the growing demand for quality services. In this context, technology is conceived as a means to improve the quality of life for those assisted and the well-being of professionals. The foundation's strategies include redefining operational models with a focus on relationships and communication. By integrating digital tools, the organization aims to reduce procedural times, allowing staff to concentrate more on care and on the relationships with users. The actions implemented include the adoption of new technologies complemented by continuous training of the staff, focusing on responsibility, motivation, and active listening, to create a safer and more rewarding work environment. Additionally, the foundation has adopted a green policy, leveraging innovation and technology to save energy and utilize renewable energy sources.

Good practice examples

Fondazione E. Germani has been implemented the ANCELIA solution since 2021. The solution is the one that will be used in ISRAA pilot site. Over the years, they have tested the solution in their long-term care facility in three different care units, where older people with Alzheimer, or older people with particular health conditions are living.

ANCELIA is a solution based on advanced Artificial Intelligence algorithms designed to improve the work of healthcare professionals and managers. ANCELIA makes it possible to improve care activities by extending quality care to more users, without additional effort and to exploit the hidden value of data to optimise decision-making processes and increase the resources available to each manager. The system consists of several components, first of all, an optical sensor, integrated with the AI system, which automatically collects information on the condition of each resident, facilitating the work of operators and managers. The second component is the operator app, which receives real-time notifications on a smartphone or tablet whenever the resident requires direct and targeted intervention by the operator. The third component is the manager app, which compiles reports on the assistance provided and the condition of the resident, to better manage the facility, basing every decision on objective data.

Fondazione E. Germani also introduced the computerized pharmaceutical cabinet, which allows the preparation of drug therapy in reduced times compared to traditional methods, reducing the risk of errors with a double check. It also allows formal carers to have more time to dedicate to each resident.

Relevance of the study visit for the DigiCare4CE pilot action/s

The study visit was useful in sharing best practices and insights regarding the use of ANCELIA solution. One of the key takeaways was the opportunity to exchange experiences about integrating this technology into daily workflows. By observing how others have successfully navigated this process, we gained a clearer understanding of the critical steps required for a smooth transition.

Additionally, the visit facilitated discussions about common challenges encountered during the implementation process. Understanding these difficulties helps us anticipate potential obstacles and find strategies to mitigate them. Another interesting aspect of the visit was learning about the forthcoming software update, which promises enhanced functionalities. These new features are expected to significantly improve the management of work, offering improved data analytics tools. However, the discussions extended beyond the technology itself. We also explored the organizational changes necessary to foster a culture of innovation.

In summary, the good practices observed during the visit are highly transferable to our pilot action's further development. By incorporating these insights, we can better manage the introduction of new technology, and address potential challenges proactively.



Study visit to Nürnberg: 25 July 2024

Introduction of study visit site with general information

In the Nuremberg Center (Pflegepraxiszentrum - PPZ), new care technologies are tested and scientifically evaluated in various facilities. They analyse, systematically consider and evaluate ethical, legal, social, economic, and practical aspects of care and technical aspects of technology (ELSI+), both in the selection of test products and in the development of the test concept. Six facilities in the Nuremberg metropolitan region have joined forces for the PPZ-Nuremberg under the coordination of the municipal care facility NürnbergStift to make the integration of future technologies into care gentler for patients and care staff and more efficient overall. To this end, innovative care technologies are being tested in the facilities operated by Diakonie Neuendettelsau, NürnbergStift and Klinikum Nürnberg for their practical suitability, acceptance by care staff and patients, and benefits in real-life operation.

Good practice examples

One good practice is engaging more institutions in the evaluation, testing, and adoption of innovative technologies. The combination of the LTC facility, university, and think tank creates a valuable opportunity for recruiting new technologies. From a daily work perspective, we highly appreciate the practice of client engagement in the utilization of technologies and the emphasis on a smooth and safe workflow for the employees. These approaches are powerfully relevant to our purposes and inspiring for our further development.

Relevance of the study visit for the DigiCare4CE pilot action/s

The presented devices and approaches benefit our developers, who can gain more feedback and compare the technologies they develop with those they currently use in the facility. Further, we can use the obtained information to design innovation plans and incorporate the presented approaches as examples to better present concepts within innovation.