Implementing Assisted Living Technologies in a Dementia Context

A GO-TO-GUIDE FOR YOUR IMPLEMENTATION JOURNEY

HEALTH INNOVATION CENTRE OF SOUTHERN DENMARK

Interreg Deutschland - Danmark
EUROPEAN UNION
Demantec syddansk vækstforum
# Table of Contents

1. INTRODUCTION
2. ABOUT THE DEMANTEC PROJECT
4. THE SUCCESSFUL IMPLEMENTATION JOURNEY
6. TECHNOLOGIES AND TEST ENVIRONMENTS
8. TESTING TECHNOLOGIES
A journey of experiences and learnings
10. GO-TO-GUIDE FOR YOUR IMPLEMENTATION JOURNEY
   Visit the 7 phases
   Follow the road to success - best practice advice
Worldwide 47.5 million people are suffering from dementia, and every year there are 7.7 million new cases. The symptoms of dementia cause disabilities and dependencies, as these include impairments of thinking, memory, orientation, calculation, comprehension, language, learning capacity and judgement. That is why a degenerative disease such as dementia demands specialised, long-term and, in the end, 24 hour care.

We are looking into a future where assisting technologies will become key factor for the care sector in ensuring high-quality, effective care and quality of life for citizens.

In terms of the old-age dependency ratio, which compares the rate of the dependent older (>65 years) and younger (<14 years) people to the rate of labor-active (15-65 years) people, the latest prediction is that it will almost double in Europe in the next 35 years. Especially, the number of older people increases as 'baby boomers' enter into retirement and life expectancy is progressively extending due to e.g., advances in medicine, nutrition and technology. People will live longer but not necessarily healthier.

With old age and multi-morbidities often comes a heightened demand for people receiving long-term, specialised care that is tailored to their individual lives. Especially in dementia care, and nursing in general, our healthcare system is already experiencing a rising number of people needing specialised high-quality care, in parallel with a decreasing labor force.

Therefore, it is essential for the healthcare sector, especially nursing homes, to draw upon technologies to bridge the gap between the number of people in need of care and the number of carers available. These technologies need to be well fitted and adapted to the context in order to support high-quality specialised care and quality of life for citizens in the future.
Demantec

- A collaboration across borders and disciplines

Demantec is a Danish-German collaboration between two companies, healthcare professionals and research and education institutes. Demantec is a 3-year long project (2016-2019) funded by Interreg 5A Deutschland-Danmark with funds from the European Regional Development Fund and the Southern Danish Growth Forum. Below is an overview of the partners in Demantec. The partners’ competencies cover practical knowledge about the care sector, sensor technologies and digital platforms and research and innovation.

COMPETENCIES IN DENMARK

The Health Innovation Centre’s competencies in user-driven innovation are used in the implementation and test phase. Communication, analysis and competency development are supported as well.

Welfare Tech is a market-driven cluster for health and welfare technology in Denmark. Their skills are used in the communication and networking in Demantec.

Professionshøjskolen Absalon represents a research and education institute, amongst others, in the area of health care. They are responsible for the development of healthcare professionals’ competencies in Demantec.

IntelligentCARE is a company with focus on supportive technologies for people with dementia. In Demantec, IntelligentCARE’s sensor solution is tested in three nursing homes.

Life-Partners is a company which focuses on innovative eHealth technologies. In Demantec, Life-Partners’ communication and planning platform Life-Manager is tested in three nursing homes.

The Goal of the Demantec Project

To promote the implementation of assisted living technology solutions that support the care and empowerment of people suffering from dementia in Danish and German nursing homes, with the aim to improve the quality of life for people suffering from dementia, their relatives and care staff.
At the core of the Demantec project is the objective to promote the implementation of assisted living technology solutions that support the care and empowerment of people suffering from dementia in Danish and German nursing homes.

The many different assisted living technologies such as sensors, alarms and communication support systems have the potential to support e.g., residents in nursing homes to sustain a self-sufficient life for longer. Furthermore, these technologies can assist staff in the 24 hour care plan, and help them to fulfil their tasks more effectively. Technologies can further relieve staff from routine, physically and mentally demanding tasks and give them more time for supporting the residents in their everyday lives.

SUSTAINABLE IMPLEMENTATION IS TRICKY
Despite the above mentioned advantages of implementing assisted living technologies in nursing homes, these technologies have not yet become a part of everyday life in nursing homes, neither in Germany nor in Denmark.

Furthermore, far too often, the purchased technologies to not reach their full potential in terms of a sustainable implementation. There can be many reasons for this. However, one thing which has become clear during the Demantec project is that the introduction of a new technology in a complex setting such as that of a nursing home is quite complicated, and it can be quite tricky to achieve the desired sustainable implementation.

OPTIMAL IMPLEMENTATION JOURNEY
As part of the Demantec project two assisted living technologies were tested in three nursing homes across the German-Danish border. The companies’ introduction, installation and following test period of the technologies were observed and analysed closely with the purpose of extracting learnings and gathering knowledge on how to design the optimal implementation process, and on how to implement relevant assisted living technologies for people with dementia in nursing homes.

BEST PRACTICE ADVICE IN A GO-TO-GUIDE
The “Go-to-Guide” in this report is based on the experiences gathered during the Demantec project.

The guide focuses on the “implementation journey”; a journey which both companies and nursing homes need to join, in order to organise a successful and sustainable implementation plan for assisted living technologies.

“Preparation is key”
[Quote from project partner]
A nursing home with rooms for 20 residents. It is located in Tinglev, near the German border. The nursing home is divided into 3 units. There are 2 units with 6 residents and one unit with 8 residents.

A nursing home centrally located on the western side of Flensburg, right between Diako Hospital and St. Francis Hospital. The nursing home has 83 single rooms with corridor and wheelchair access. For couples, two rooms can be combined to one apartment.

A nursing home located in Techau near Lübeck. The nursing home has room for 95 residents, some live in single rooms and some live together on friendly terms.

Two Assisted Living Technologies

Life-Manager is an IT platform developed by the Danish company Life-Partners, which focuses on creating a network between care staff, residents and their families and help to optimise the communication and planning tasks across these three target groups. In the Demantec project, Life-Manager was applied to the nursing home context with the particular target groups consisting of care staff and relatives/families of residents with dementia.

Within the Demantec project, the platform mainly focused on the communication between care staff and the families, personal interests and activities at the nursing home as well as the residents’ life stories. The use of the platform should enable the target groups to get to know the residents’ past and present needs and interests in life, as well as improve the communication between members of staff and across the three target groups.

IntelligentCARE is owned by the Danish company IntelligentCARE which has developed a wireless intelligent call- and lock system for institutions, homecare and hospitals. In their development the company focuses on creating a user-friendly and reliable system of high quality. The system consists of different elements e.g., bed sensors, motion sensors, door locks and emergency calls (in forms of a necklace and bracelet).

Within the Demantec project, the use of the system is based on the idea that the care staff should receive an alarm, via emergency call and intelligent sensors, if a resident is at risk of falling, or wandering or is in other dangerous situations within the nursing home context. As an additional feature, IntelligentCARE is wireless and flexible in that different products can be combined and/ or moved, with regard to prevailing needs e.g., when new residents move in.

Three Test Environments

The three test environments in Demantec were three very different nursing homes; both in terms of culture, organisation and size. Their common denominator though was that they all accommodate residents with different degrees of dementia. The role of the three nursing homes was to test the two technologies from Life-Partners and IntelligentCARE and work closely with the process and test evaluators to ensure that all learnings and experiences were collected.

Health Innovation Centre of Southern Denmark

Process- and test evaluators in charge of qualitative and quantitative data collection, learning meetings, co-creation workshops and development of the Go-to-guide for implementation of assisted living technologies for people with dementia living in nursing homes.

Professionshøjskolen Absalon

Process- and test observers, following the test phase and the cooperation between partners to identify learnings.
A Journey of Learnings and Experiences - Testing two assisted living technologies in three nursing homes

In November 2017 one Danish and two German nursing homes opened their doors and invited two newly developed assisted living technologies into their daily life and routines; a test period of eight months had begun.

The main purpose of testing the technologies was to gain experience with testing, assessment and implementation of assisted living technologies for people suffering from dementia in German and Danish nursing home contexts. The three nursing homes had very different starting points in terms of experience with assisted living technologies and technology in general. However, the test set-up was identical for all three nursing homes.

It began with an “implementation week”, consisting of an introduction and installation of the product as well as workshops with the staff and first training sessions in the use of the product, followed by an official test period.

THE BEGINNING OF TWO NEW LIVING LABS
The opportunities for development and change for both companies and nursing homes during the test period were plenty. As part of Demantec two living labs were initiated in the two German nursing homes.

Demantec gave two nursing homes the opportunity to test their living lab concept and development of new technology for people with dementia in collaboration with companies, civil society, and knowledge institutions. This was attempted through longer co-operation processes over six months, where Life-Partners’ and IntelligentCARE’s technologies were tested at the nursing homes. In this process the Danish nursing home Grønningen served as sparring partner at learning meetings and host for inspiration visit. Grønningen was already part of Aabenraa Municipality’s living lab strategy and had experience with open innovation and working with the living lab concept. The German nursing homes gained experiences with open innovation and working as a living lab.

The two Living Labs in Demantec were initiated based on The European Network of Living Labs (ENoLL) definition for living labs (ENoLL, 2017):

“Living Labs are defined as user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings.

Living Labs are both practice-driven organisations that facilitate and foster open, collaborative innovation, as well as real-life environments or arenas where both open innovation and user innovation processes can be studied and subject to experiments and where new solutions are developed.

Living Labs operate as intermediaries among citizens, research organisations, companies, cities and regions for joint value co-creation, rapid prototyping or validation to scale up innovation and businesses. Living Labs have common elements but multiple different implementations.” [ENoLL, 2017]

With the definition of living labs and the evaluation of the nursing homes’ living lab journeys, it is clear that the establishment of fully-developed living labs is a long-term process, in which not only new alliances must be established but also a cultural change must take place in order for innovation to have the best conditions.

The Living Labs initiated within Demantec were based in two nursing homes with limited experiences in the field of innovation and open innovation. Therefore, the goal for the living labs in the project period was to establish a good foundation for the journey towards a fully-developed living lab with Grønningen serving as sparring partner and inspiration for the two new living labs. The collaboration and experiences in living labs have been valuable to the partners in Demantec.

1. Companies gained inputs to focus their solutions toward the needs of nursing homes with people with dementia.
2. The nursing homes were challenged in their mindset and usual workflows and communication with their immediate environment.
3. The knowledge institutions acquired practical knowledge about operational and daily workflows.

THE TEST PERIOD IN DEMANTEC - A JOURNEY OF EXPERIENCES AND LEARNINGS
These experiences can be used as the basis for the continued expansion and development of two sustainable living labs that can co-develop relevant future technology and care for residents with dementia.

CO-CREATION WORKSHOPS - A MODEL FOR IDENTIFYING AND SHARING IMPORTANT LEARNINGS
During the test period the partners in Demantec frequently met to share insights and co-create analysis and results in a workshop format arranged by the Health Innovation Centre of Southern Denmark.

The purpose of bringing together nursing homes, companies and other partners in Demantec for workshops, throughout the entire test period, was to share knowledge and learnings gained during the test period and identify and debate the most important potentials and challenges that prevailed in the products used in the three contexts. The workshops were valuable in terms of creating a space for dialogue where the partners in Demantec could learn from each other, discuss experiences and observations during the test period and together, develop a best practice approach.

10
The Go-to-Guide is based on the experiences and learnings the Health Innovation Centre and partners have identified while testing and evaluating two assisted living technologies, namely Life-Manager and IntelligentCARE, in three nursing homes across the Danish-German border during an 8-month period.

The Go-to-Guide is based on the conceptualisation of implementation as a "journey" with 7 distinct phases, which both supplier (the company) and user (the nursing home) should join in order to achieve a successful implementation of assisted living technologies for people with dementia.

Dorte Kusk, Head of Regional Development in the Region of Southern Denmark, said in 2010:

"Only 20 pct. of the challenges involved in implementing a new technology in the health care sector are about the actual product. 80 pct. of the challenges are problems with changing workflows and organisational structures."

The experiences and learnings from the test period in Demantec confirm that the most complex parts of implementing new technology has to do with management and organisation of the change, such as introducing new workflows and organisational structure. The best practice advice in the Go-to-Guide reflects these issues and offers guidance on how to approach them.
Go-to-Guide
- For test and implementation of assisted living technologies for people with dementia living in nursing homes

THE IMPLEMENTATION JOURNEY
The Go-to-Guide is developed in collaboration between the partners in Demantec. The co-creation workshops held during the test period generated recommendations for best practice on testing and implementing assisted living technologies in nursing homes in Denmark and Germany.

One of the key findings was that the foundation for a good implementation journey is value creation and user involvement. Users should be at the core of the implementation journey and involved as early as possible in order to create the best starting point for the new technology. During the test period in Demantec it became clear that a well-managed and collaborative implementation process is crucial, if the new technology is to provide all its potential positive effects for its users.

The test period also served as inspiration for the development of the different phases an implementation process should optimally consist of.

The Go-to-Guide consists of two parts:

THE 7 PHASES
The first part of the Go-to-Guide introduces “The 7 phases” of the implementation journey. Preparation is a key factor in the implementation process, and the 7 phases reflect this learning from Demantec.

The experiences from Demantec call for a thorough investigation of needs and an early dialogue between nursing home and company, in order to pre-test and adapt the technology to the needs and the workflows in the specific nursing home. Passing on the learnings from Demantec, the emphasis in this Go-to-Guide is on the preparatory phases before the physical implementation of the technology.

“An implementation process is iterative and consists of a series of learnings, evaluations and adjustments along the way - this requires time and prioritisation.”
[Quote from project partner]

THE ROAD TO SUCCESS
Followed by the 7 phases is “The road to success”. Here you will find best practice advice for companies and nursing homes about how to choose and implement an assisted living technology.

The best practice advice is directly inspired by the experiences and learnings gathered during the test and evaluation phases in the Demantec project.

The best practice advice on “The road to success” follows the 7 phases, and you will find recommendations on how to make the best of each phase and how to approach the challenges each phase represents.

“During the Demantec project it has become evident that establishing a good collaboration and taking the implementation journey together is essential for a good implementation process.”
[Quote from project partner]
Visit the 7 Phases
- And implement the right technology successfully

Let the Users Need Take the Lead
The Go-to-Guide presents 7 phases which are recommended to be visited to ensure a successful well-organised implementation journey.

A nursing home is both a home and a place of work, and as such it is a complex setting where numerous considerations and requirements have to be addressed when implementing a new technology. Because of this complex setting the implementation process has to be a collaborative journey between the company and the users (staff, residents etc.).

Working systematically through the 7 phases facilitates a process where the users’ needs come before the technology.

Assigning sufficient time for the preparatory phases before the pilot test is vital. In these phases the foundation for choosing the right technology is laid. When time is invested in exploring the users’ everyday lives in the nursing home, the users and their needs are prioritised and control the choice of technology.

The workshop phase and the pilot test encourage close collaboration between company and nursing home, building a relation from early on. Furthermore, these phases support early adaptation to the individual nursing home; something which will be of great value in the later phase 6 where the actual implementation happens.

Framework
Start with building a framework, this is the foundation for the implementation journey. Setting the overall goal and expectations in the team.

Here, the elements of value-based leadership can help, where value is made up of:
- a) value for staff
- b) value for the residents
- c) growth and
- d) economy.

Responsible coordinator:
Nursing home management

Other Participants:
Nursing home staff, Advisory board, Innovation experts.

Fieldwork
Conduct fieldwork to uncover needs and challenges in the nursing home context.

Needs might have been already identified but fieldwork can help to clarify and refine these.

Responsible coordinator:
Nursing home staff, fieldwork experts

Other Participants:
Companies, Nursing home management.

Workshop
Revisit your framework.

Look at the identified needs. Which technology providers/developers could offer the best approach to the identified need/problem?

Develop the implementation plan in close cooperation with the company.

Responsible coordinator:
Nursing home, Workshop coordinator

Other Participants:
Project team, Companies, External advisors/innovation experts.

Pilot Test
Test the different solutions in a real-life context at the nursing home:
- Plan and test iteratively
- Small scale
- Conduct first training of staff in using the solution
- Observe interactions in the environment, the actual effect.

Make sure to include staff, collect feedback, plan and potentially adjust technology and try out new workflows

Responsible coordinator:
Companies, Nursing home management and staff

Other Participants:
Test experts
5. **TEST EVALUATION**
Reflect, if there is a fitting technology to match the need. Remember to refer back to the overall framework.

The company and nursing home make a plan for further collaboration.

**Responsible coordinator:** Nursing homes, users/residents, Project team

**Other Participants:** Companies, evaluation and implementation experts

---

6. **IMPLEMENTATION**
Set-up and install the solution/application.

Introduce and train the staff/users.

Follow the Implementation Plan (shared in workshop).

**Responsible coordinator:** Companies, Nursing home management

**Participants:** Nursing home staff, users/residents, Test and implementation experts

---

7. **FINAL EVALUATION**
Follow up and adjust as part of the iterative process. Remember to refer back to the overall framework.

Offer continuous support and training.

Be attentive to each users’/actors’ awareness points.

Discuss the specific applications and corresponding price list, both to roll out and scale up.

Previously agreed follow-up services and support is supplied.

**Responsible coordinator:** Nursing home, company

**Participants:** Evaluation and implementation experts

---

**Phase 5** ‘Test Evaluation’ is important because it enables the nursing home to reflect back on the overall framework and pilot test(s), and make an informed decision about which company, if any, is granted the final development and/or implementation of their solution. The nursing home and the chosen company, will then plan, their further collaboration in detail.

**Phase 6** ‘Implementation’ is important because it holds the actual product application, where the company adjusts, prepares and brings the solution into actual use. Staff and other users, such as residents, are introduced to the technology and trained in its intended use. As guidance during this phase, the nursing home and company refer back to the previously agreed implementation plan.

**Phase 7** ‘Final Evaluation’ is important because it enables the nursing home to reflect on the overall framework and the implementation. Together with the company, the nursing home evaluates whether any adaptations and investment of additional resources are necessary, in order to successfully secure a sustainable implementation journey.

---

**Fasten your seat belt and take the road to success**
Followed by the 7 phases the Go-to-Guide presents “The road to success”. Here you will find best practice advice for each of the 7 phases from both companies and nursing homes.

Whether you are a company or a nursing home we recommend that you read and consider them all, when planning your implementation journey.
**Follow the road to success with implementation**

1. **FRAMEWORK**
   - **PREPARING IS CARING**
     - When working across borders, make an effort to understand the financial and incentive structures, this will support a better understanding of the new context.
   - **TELL THE STORY WITH ALL ITS GLORY**
     - When communicating about your product, make sure you have a narrative that is meaningful to the users.
   - **LET THE USERS’ NEED TAKE THE LEAD**
     - The users’ need should always come before the technology. When you have spotted a need, then make sure to involve staff, because they are the experts.
   - **MAKE SURE IT FITS, BEFORE IT HITS**
     - Make sure that your technology can perform in the physical setting at the nursing home.
   - **MAKE IT OR BREAK IT**
     - Make sure to find the right match between the identified needs and the technology.
   - **NO REQUIREMENT OR EARLY TECHNOLOGY RETIREMENT**
     - Set up requirements for the company and the technology (e.g. legislation standards, support etc.).
   - **MAKE IT OR BREAK IT**
     - Make sure to test thoroughly before the implementation.
   - **NO HOKUS POCUS – ALL YOU NEED IS FOCUS**
     - Focus and limitations are important success criteria. Focus on a number of limited needs, instead of trying to cover them all with one technology.

2. **FIELDWORK**
   - **ACKNOWLEDGE THAT YOU NEED KNOWLEDGE**
     - To really understand your users, you need to gain knowledge about their daily practices and workflows. Remember, there may be differences in workflows and tasks during the day, evening and the night shift. It is essential to acquire knowledge about users at all levels (residents, care staff, management, relatives etc.).
   - **LET THE USERS’ NEED TAKE THE LEAD**
     - The users’ need should always come before the technology. When you have spotted a need, then make sure to involve staff, because they are the experts.
   - **SHOW YOUR WORKFLOW**
     - Be open – invite the company into your reality and provide an introduction to workflows and your daily routines.
   - **LENTHEUSERS’NEEDTAKETHELEAD**
     - The users' need should always come before the technology. When you have spotted a need, then make sure to involve staff, because they are the experts.
   - **MAKE SURE IT FITS, BEFORE IT HITS**
     - Make sure that your technology can perform in the physical setting at the nursing home.
   - **TRY IT OUT, TO REDUCE DOUBT**
     - In order to become familiar with the technology in a safe setting, it is a must that users can try out the technology before the actual implementation. Clarify whether there is a need for one-on-one training or if training in groups is more suitable.
   - **START SMALL AND SHARE WITH ALL**
     - When implementing at several nursing homes (e.g. in a municipality), begin in one nursing home and invite the others for a demonstration to see how it is done, and what to expect.

3. **WORKSHOP**
   - **IT’S A SHAME, IF IT DOESN’T FIT THE TECHNICAL FRAME**
     - Find out how the technology fits into the technical framework of the nursing home, for example with W-Lan / Wifi.
   - **PREPARING IS CARING**
     - When working across borders, make an effort to understand the financial and incentive structures, this will support a better understanding of the new context.
   - **TELL THE STORY WITH ALL ITS GLORY**
     - When communicating about your product, make sure you have a narrative that is meaningful to the users.
   - **LET THE USERS’ NEED TAKE THE LEAD**
     - The users’ need should always come before the technology. When you have spotted a need, then make sure to involve staff, because they are the experts.
   - **MAKE SURE IT FITS, BEFORE IT HITS**
     - Make sure that your technology can perform in the physical setting at the nursing home.
   - **MAKE IT OR BREAK IT**
     - Make sure to find the right match between the identified needs and the technology.
   - **NO REQUIREMENT OR EARLY TECHNOLOGY RETIREMENT**
     - Set up requirements for the company and the technology (e.g. legislation standards, support etc.).
   - **MAKE IT OR BREAK IT**
     - Make sure to test thoroughly before the implementation.
   - **NO HOKUS POCUS – ALL YOU NEED IS FOCUS**
     - Focus and limitations are important success criteria. Focus on a number of limited needs, instead of trying to cover them all with one technology.

4. **PILOT TEST**
   - **MAKE SURE TO TEST AND DO YOUR BEST**
     - Use this phase before the actual implementation to ensure that the technology works as intended in the new context. Make sure to test thoroughly before the implementation.
   - **START SMALL AND SHARE WITH ALL**
     - When implementing at several nursing homes (e.g. in a municipality), begin in one nursing home and invite the others for a demonstration to see how it is done, and what to expect.
   - **TRY IT OUT, TO REDUCE DOUBT**
     - In order to become familiar with the technology in a safe setting, it is a must that users can try out the technology before the actual implementation. Clarify whether there is a need for one-on-one training or if training in groups is more suitable.
   - **DON’T WASTE TIME AND YOU WILL BE FINE**
     - Keep in mind that the staff has a high workload. Ensure that the workflow with the technology is not too time consuming and avoid too steep a learning curve in your training.
   - **KNOW WHO TO CONTACT WHEN PROBLEMS ARE STACKED**
     - Organise a pilot test in an isolated area to test the technology before implementing it full scale. It is easier to adjust and correct in a smaller area.
   - **CHOOSE YOUR TEAM AND CREATE SOME STEAM**
     - Make sure to choose the right people for the pilot test. This group should also provide representatives for a team of ambassadors.
FEEDBACK IS A GIFT
Please do not hesitate to contact us for feedback on this Go-to-Guide

Contact us:
Email sdsi@rsyd.dk or call +45 7663 1312 and ask for a direct reference to the Demantec project team
"The road to success is always under construction"