MONUMENT

MOre NUrturing and More Empowerment Nested in Technology

With the support of the European Regional Development Fund

O5.1 Demos making existing assistive technology (TRL9) accessible - *Summarizing D2.1.1 - D2.1.4*

WITH THE SUPPORT OF THE EUROPEAN REGIONAL DEVELOPMENT FUND

Contents

Preface

To support informal caregivers of people living with dementia (PLWD) in caring for their loved ones, several technological applications exist today. These different technologies assist caregivers in one or sometimes multiple tasks associated with care, but research performed in work package O6.1 shows that these technologies are underused. Often, caregivers are unaware of the technology, or the application does not meet their specific needs. The aim of this work package was to make existing assistive technology accessible for informal caregivers and create awareness. First, this deliverable describes the process used to identify and select existing assistive technologies. Second, the deliverable describes which demonstrators were selected and offers an overview of these different technologies together with the main remarks for the technology providers.

Approach & Methodology

To determine which technologies are best suited to support informal caregivers of PLWD, a digital innovation management process developed by imec – called Innovatrix – was applied. The Innovatrix methodology is based on the concept of living labs and consists of an innovation framework combined with an iterative evaluation process. When discussing digital innovation, eight key elements should be considered:

- Stakeholders (e.g., caregivers): *who are we doing it for*
- Needs: *what is their pain*
- Current practices: *how are they coping with this pain*
- Value proposition: *what will we do differently*
- Solutions: *how will we do this*
- Key partners: *where do we need partners in the ecosystem*
- Value capture: *what's in it for us (money, data, awareness, community)*
- Barriers to adoption: *why won't our target group use technology*

The iterative process starts by mapping assumptions, (in)validating these assumptions through structured and unstructured interactions and iterating thoughts. This allows to test, learn, and pivot throughout the innovation process.

Transnational Innovatrix Learning Session (D2.1.1)

In 2021 a transnational Innovatrix learning session was organized to:

- Introduce the local pilots to the Innovatrix methodology.
- Onboard the local pilots to the digital Innovatrix tool and enable iterative follow-up.
- Coach the local partners to create a topic guide and involve informal carers for validation.
- Select appropriate demonstrators for the Odense house.

The digital tool was specifically used to support MONUMENT's local pilot partners to follow-up on the assumptions about informal carers and the selection of potential demonstrators for the different Odense houses throughout the iterative process. Every local pilot partner can access its own project page and update assumptions, but they can also view the project page of other local pilot partners for inspiration. An imec coach was available at fixed intervals throughout the process to provide support and feedback.

The Innovatrix framework was iteratively updated based on feedback from the local partners:

1. Integrate initial assumptions about the informal carers.
2. Need research: identifying and validating assumptions to the needs of the informal carers.
3. Problem solution fit: identifying appropriate demonstrators for the informal carers and validating assumptions regarding these demonstrators.

Via following links you can find the updated Innovatrix frameworks per Local Pilot Partner

- LP1 – City of Mechelen
- PP4 – Norfolk City Council
- PP5 – AFEJI Hauts-de-France

- PP11 – National Trust
- PP13 Walcheren

A topic guide to both interview informal caregivers as well as organize focus groups is of utmost importance in validating assumptions in a qualitative way. All local partners received a supporting manual and a training to create a topic guide. The imec coach helped to improve the topic guides and explained how conclusions can be deduced from the interviews or focus groups.

Selected technology providers (D2.1.2)

Using the Innovatrix method, each local pilot partner had to select two technologies that would be introduced and demonstrated to informal caregivers. A more detailed description of the selected technologies is provided below (See paragraph Selected Technologies per Local Pilot).

Demonstration sessions with informal caregivers (D2.1.3)

After selecting two technologies, the local pilot partners were asked to organize a session with informal caregivers to introduce and demonstrate the technologies. During those sessions, both structured and unstructured feedback was collected through a survey and informal conversations respectively. The insights from the demonstrations were shared with the other local pilot partners at the transnational evaluation session but also with the technology providers for further improvements.

Transnational Evaluation Session (D2.1.4)

At the UK partner meeting in Norwich (4th of October 2022) each local pilot partner was asked to present their selected technologies and share their insights and the feedback received from informal caregivers. During the presentations, the other consortium members reflected on the following questions:

- What did you learn from the other pilots?
- Main conclusions from the session?
- What would you do different in the future?
- What would you repeat in the future?
- Other remarks?

After the presentations, imec (PP3) facilitated a discussion based on clustered and recurring topics. A more detailed summary is provided further in this document (see paragraph Main Takeaways from the Transnational Evaluation Session)

Selected Technologies per Local Pilot

This section offers an overview of the technologies selected by the local pilot (LP) or pilot partners (PP). Every technology is represented by an index card describing the technology itself, its aspects, and the way the technology contributes to independent living for PLWD.

City of Mechelen (LP1)

Technology 1: Nobi

Technology: Nobi	
Description of technology Nobi is a smart light that detects when PLWD fall and can connect/contact the informal caregiver. The light contains invisible sensors that watch over the health and wellbeing of the individual. The AI chip in the lamp can interpret the measurements. Visual sensors detect whether the person fell and got up or remained lying on the floor. When a fall incident is detected, Nobi can call the contact person so they can estimate the situation. Parameters such as temperature and humidity are constantly monitored.	Image of selected technology 
Details	
Aspects • Fall prevention and detection. • Fire alarm. By connecting the lamp to an application, the informal carers can monitor PLWD remotely and contact them in case of an emergency.	Contribution to independent living Falling is one of the main reasons why PLWD move to residential environments like a care facility. Nobi tries to avoid this in two ways: • **Fall prevention**: automatically illuminating the room when someone gets up at night, to guide the person safely to where they are heading and avoid falling because of limited vision. • **Fall detection:** fast detection of a fall, combined with a call system to notify a contact person. A quick intervention contributes to a speedy recovery.

	Contribution to independent living (continued) Additionally, the sensors that monitor the environment allow the lamp to execute commands such as lowering the shutters, air the room or instruct the patient to drink water. It also detects resident irregularities.
Finance	
Cost of technology €1200	Providing technology to informal caretakers • Demonstration • Try-out • Loan period • Tailor-made advice

Technology 2: Mantelzorger app

Technology: Mantelzorger App	
Description of technology The app joins all caregivers in one digital environment. Create a care group with your family, friends, neighbours, and acquaintances in a few simple steps and follow-up on care activities like who is going to that doctor's appointment, how are things going, who is bringing the groceries and monitor whether the medicines have been taken. The app offers many useful functions that support caregivers and patients in their routines and organization, leaving more room for quality time.	Image of selected technology  https://youtu.be/Nj-7NaGxXwg
Details	
Aspects The Mantelzorger app offers optimal support to caregivers to organize care: 1. **Overview** An overview page displays upcoming appointments, medications to be taken and state of mind.	Contribution to independent living The app and ecosystem are oriented to the **self-reliance of PLWD** and is focused on ease in coordination and cooperation, quick access and an overview of the current status, and offers administrative support.

Aspects (continued) Aspects (continued) 2. **Chat** Within the care group, caregiver(s) and requester can chat. 3. **Agenda** Here you can find all appointments together so everyone within the care group has insight. **4. Logbook** In the logbook all activities are registered so that group members can follow-up. 5. **Medicines** By using a handy assistant, the care group is supported with medicine use. **6. Allergies** Insight into the allergies of the patient.	
Finance	
Cost of technology Free and available for Android and IOS.	Providing technology to informal caretakers • Demonstration • Tailor-made advice • Create awareness about the app through conversations with caregivers

Norfolk City Council (PP4)

Technology 1: Anywhere Care Footprint

Technology: Anywhere Care Footprint	
Description of technology Footprint is a GPS tracker with SOS button and two-way communication option. It pinpoints the location of the wearer and provides two-way hands-free conversation through the built-in speaker. Footprint can be 'paired' with up to three mobiles or smartphones, to reassure family and the user. The user can call for help when needed. The family can keep an eye on the user and be alerted automatically when they leave a pre-defined (or geo-fenced) area. To call for help, the user holds down the button for three seconds until they hear a beep. Footprint sends a text to the mobiles or smartphones of the 'paired' family members, including a Google Maps link showing the GPS location. Footprint then calls the 'paired' family members one-by-one until someone responds.	Image of selected technology  Footprint
Details	
Aspects The GPS technology is designed to secure the **PLWD's safety**, for example if they get lost, they can trigger the alarm and alert the informal carer about their location. Also from the carer's point of view, when they lose the PLWD out of sight, for instance at a busy event, the carer can track down the PLWD and make sure they are OK.	Contribution to independent living Continued independence for PLWD based on home **sensors** and GPS trackers that also trigger **alerts** to inform the informal carer.

Finance	
Cost of technology The Anywhere Care GPS Footprint tracker has a cost of approximately £155 (incl. 12 months airtime), with an annual airtime cost of £60 per year.	Providing technology to informal caretakers The GPS Tracker technology would be loaned at zero cost, provided that the tracker will be returned once the PLWD has progressed into an advanced stage of dementia in which they live in an assisted environment like a care facility.

Technology 2: Beamer Tramper TWS

Technology: Beamer Tramper TWS	
Description of technology The TWS Scooter is designed as all-terrain vehicle, which will comfortably transport the user over just about every type of surface, up and down kerbs and across rough, uneven country tracks and even through snow, mud, and streams. The TWS Three Wheel Scooter is incredibly manoeuvrable, has very light and accurate steering with a range of handlebar settings, quick and responsive controls. The Tramper comes with a powerful and efficient electric motor, combined with a very strong chassis. Trampers are designed and built in the UK and can be personally tailored to your specific requirements custom to your disability or the tasks.	Image of selected technology 
Details	
Aspects As the disease progresses, the PLWD's ability to walk long distances reduces. Using an all-terrain scooter allows the PLWD and their informal carer to remain **active** and access the outdoors. Whether the user prefers a trike or a four-wheel scooter, the simple design of controls ensures user access to the complete range of vehicles	Contribution to independent living The all-terrain trike is road legal, which means it can be used on country trails and walks but also to **travel** to the local supermarkets Using the Beamer Tramper TWS allows PLWD to do longer walks with reduced incidence of tiredness.

Finance	
<u>Cost of technology</u> Tramper TWS Scooter starts at £5,860, with three color choices. It is possible to customise the design to suit your requirements, for example add walking stick holders and high back adjustable seating with arm rests. It is also possible to specify high output batteries, a faster axle (8mph) and chunky off-road tyres if required. https://www.tramper.co.uk/products/scooter	<u>Providing technology to informal caretakers</u> Two TWS Trikes are available at the Gressenhall Museum of Rural Life at Dereham, Norfolk. Museum visitors can book their Tramper free of charge and use the all-terrain scooters across the workhouse and farm. Feedback from users has been very positive and in each case the users have been able to travel further around the venue than originally anticipated. Notably, most of the users would want to use the Trampers again during their next visit. 

AFEJI Hauts-de-France (PP5)

Technology 1: The Viktor cushion by Fingertips

Technology: The Viktor cushion	
Description of technology Soft digital tablet connected to the television to facilitate elderly at home and their family and friends to recreate a social link. The Viktor cushion answers to three main objectives: • Prevention for healthy ageing • Reducing digital illiteracy • Fight against digital exclusion	Image of selected technology 
Details	
Aspects The Viktor cushion connects to the TV in the living room: the Viktor box is connected to the internet network and then to the HDMI socket on the TV. The relatives use the Viktor web application to send content to the PLWD's Viktor box (messages, photos, video calls, culture, entertainment, etc.). The Viktor cushion is used as a remote control to easily navigate the content on TV and enjoy.	Contribution to independent living • Fighting **against social exclusion** through connection with relatives: facilitates the maintenance at home • Giving access to cultural content, **entertainment**, leisure and adapted physical activity • Guaranteeing the **safety** of the PLWD
Finance	

Cost of technology
 	
In medical and social structures/ nursing homes:
• 2 subscription options:
  • Viktor Pack: subscription cost with monthly payment. First month €89.99 (registration fees) then €29.99 per month (subscription can be taken in charge by the structure or be paid by the resident)
  • Viktor Pack with TV: Subscription 29.99/month, 1st monthly payment of €159.99 then €29.99/month 24-month commitment
	Providing technology to informal caretakers
	
	No cost, freely available in the Odense House in Hautmont. This can be individually purchased in a later stage (subscription).
	
	Financial aids accepted for this product:
	• CIR
	• APA
	• PCH
	• Mutuelles du soleil

Cost of technology (continued) - 3-month trial at €50 per month for live cultural programming then €120 per month for the structure - €5 for the Viktor Box in the bedroom for the residents if they don't have the Viktor cushion (provided by the professionals) At home: - Subscription cost with monthly payment. First month €89.99 (registration fees) then €29.99 per month - Viktor cushion with TV included: subscription 29.99/month, first monthly payment of €159.99 then €29.99/month 24-month commitment	

Technology 2: The Hypnos Mask by Dreaminzzz

Technology: Hypnos Mask	
Description of technology The hypnos mask is a self-hypnosis mask connected to a mobile application (tablet or smartphone). The mask offers 4 main therapeutic sessions: sleep, stress and anxiety, sport and children. These sessions support PLWD to sleep better, to relax, to manage stress, to work on an addiction or develop more potential, and reduce pain.	Image of selected technology 
Details	
Aspects • 90 hypnosis sessions* designed with therapists. • The mask synchronises the story to lights and vibrations. • Simple to use and fits easily into daily life.	Contribution to independent living • Therapeutic tool focusing on **wellbeing.** • Optimising physical and mental recovery. • Alleviating various physical symptoms.

Aspects (continued) *A session is a story recorded by a hypnosis practitioner. The sound is spatialised (in 3D) and atmospheres complete this story to make it immersive. The person chooses a session, puts on their headphones, the mask and undergoes the hypnotherapy. There are three main functions to the hypnos mask: - Hypnos - Sleep - Nap	Contribution to independent living (continued) For PLWD: • To sleep better (sleep rehabilitation) • Preventing night-time awakenings and mood disorders. • Counteracting memory disorders. • To manage stress and emotions. For informal carers: • To sleep better. • To manage stress and emotions. • To work on personal development: concentration, motivation, self-confidence. • Help the informal caregiver to reconnect with himself and to be able to be more serene with PLWD.
Finance	
Cost of technology The hypnos mask including the case and USB charger has a cost of €149. For that price, you have access to all hypnosis sessions and a subscription is needed to retrieve new content. Access to the application without the mask is also possible with a subscription of €8 per month.	Providing technology to informal caretakers No cost, freely available in the Odense House in Hautmont. The mask can be individually purchased in a later stage. With the Odense House license, it is possible to have free access to all sessions without the mask.

National Trust (PP11)

Technology 1: Magic Table

Technology: Magic Table	
Description of technology An interactive projector that helps the PLWD interact with other PLWD and caregivers through games.	Image of selected technology 
Details	
Aspects Communication and comfort for the PLWD.	Contribution to independent living Interactive lights stimulate relaxation and reminiscence. The goal is to achieve laughter and **joy** for PLWD and informal caregivers.
Finance	
Cost of technology Subscription model: hard- and software cost, including new games.	Providing technology to informal caretakers The magic table is available in the Odense House.

Technology 2: Pivotell – Pill dispenser

Technology: Pivotell – Pill dispenser	
Description of technology An automatic pill dispenser designed to empower the elderly and reduce the risks to themselves.	Image of selected technology 
Details	
Aspects The Pivotell Advance automatic pill dispenser has 28 sections to put medication, and only presents the right dose at the right time with the other medication locked in the dispenser. When it is time, the tray rotates to present a compartment with medication, an alarm sounds and a light is flashing. The user can tip the pills out, which cancels the alarm. The alarm can be programmed to ring for up to 5 hours. With 28 sections, and the possibility to program 24 alarms per day, the Pivotell Advance automatic pill dispenser can accomodate the most complicated medication regimes. **Safety** is secured through a self-locking shutter over the lid opening which prevents access to the medication tray outside alarm time. This avoids the risk of double dosing or forced movement of the medication tray by the user. App compatible with the jointly carers app is available.	Contribution to independent living Allows for the PLWD to take their **medication** without risk of overdosing and reducing the risk of them forgetting.
Finance	
Cost of technology Varying in price from £150-£200. Some accessories are much less.	Providing technology to informal caretakers Not provided but informal carers using the Pivotell pill dispenses are reassured the patient is self-medicating without any risks to themselves.

Walcheren (PP13)

Technology 1: Oradio

Technology: Oradio	
Description of technology The Oradio is a music playback device. Shaped like a radio from the 1960's, and very easy to use. It uses pre-programmed playlists, classified by various genres. By touching the icon of a particular genre, the list starts playing. https://oradio.tech/	Image of selected technology 
Details	
Aspects Easy and intuitive interface	Contribution to independent living For PLWD • Increases independence and **confidence**. • Stimulates **relaxation**. • Recalls **memories**. For the Informal Caretaker • Can do its own activities or leave the house.
Finance	
Cost of technology €350 per Oradio	Providing technology to informal caretakers No cost for the informal caregivers. Odense House Walcheren lends out the device.

Technology 2: Google Nest + VoiceZorg

Technology: Google Nest + VoiceZorg	
Description of technology The **Google Nest Mini** is a widely available digital personal assistant. It is a smart speaker that works with voice command and is controlled via Google Home. You call the Google Nest by saying "Hey Google" followed by your question or command. Google Nest uses Google Assistant to execute commands and control other devices. It is possible to set daily routines – standard or personalised. For example, Google Nest can be used to give reminders to drink and eat lunch on time, take medication and keep track of appointments. **VoiceZorg** is an app for Interactive Care Assistance via Google Home. VoiceZorg via Google Home is a personal and intuitive way to assist home living remotely. Voice recordings, interactive reminders and personalised tips contribute to an enjoyable and active daily structure. These audio prompts can be fully customised with and for the client in any combination – practical reminders, personal messages, verbal guidance, and music playback. VoiceZorg's capabilities go beyond Google Nest's options, mainly because VoiceZorg responds to the message. It is possible to pre-set which carer to contact for a certain type of question. For example, questions about technology in the house ("the TV is broken") go to the eldest son, questions about shopping ("the milk is out") go to the youngest son and questions about medication ("I can't find my pills") go to the daughter.	Image of selected technology Google Nest:  VoiceZorg app: 
Details	
Aspects VoiceZorg contributes to the comfort, independence, and safety of people with dementia and supports informal carers to structure care in a reassuring way.	Contribution to independent living People with dementia are supported in their **daily structure**. Informal carers can rely on VoiceZorg for some caring tasks. The benefits of the Google Nest apply, supplemented by interactive care.

	Contribution to independent living (continued) Moreover, care can be divided between different informal carers: questions about medication can be forwarded to a different informal carer than questions about shopping. Another advantage of VoiceZorg is that multiple voices can be used and before an alarm is triggered, VoiceZorg plays a short piece of music to reduces the shock effect of "suddenly hearing a voice".
Finance	
Cost of technology The Google Nest is a consumer product. For less than €35, a Google Nest Mini can be purchased from all electronics shops.	Providing technology to informal caretakers VoiceZorg has a subscription structure. A private subscription is €14.50 per month. For institutions with multiple users, a different rate applies.

Main takeaways and feedback from demonstration sessions

Based on the demonstration sessions with informal caregivers, the local pilots were able to formulate key feedback to the vendors of assistive technologies. Per local pilot, the key feedback remarks are highlighted.

City of Mechelen (LP1)

Technology 1: Nobi

The aspects

- The fall detection ability of the Nobi lamp reassures informal cares when leaving the house, which supports their wellbeing.
- Interaction with PLWD via the lamp allows to assess the situation from a distance and react quickly.
- The ability to connect different side devices to remotely monitor vital functions is an added value and should be extended.

The cost

- The coast of the Nobi and Nobita is high for informal carers:
  - 1x Nobi = 999 euro
  - Nobita (small rooms) = 399 euro
  - 2x inputschakelingen = 58 euro
  - Installation = 89 euro

- Considering most of them live in old houses with separate rooms, leasing a set-up that covers all rooms already costs €116 a month.
- Transparency and honesty towards informal carers about set-up and costs – using examples for instance – is important.

The use

- Mainly used in a hospital or residential care environment.
- Easy remote monitoring
- Remote connection between PLWD and informal carer through communication system

To have it at home

- Registration of several people in the room.
- Using the admin application on a tablet.

Technology 2: Mantelzorger App

The aspects

- Organizing collaboration between informal caregivers and professional carers.

The use

- Clear and straightforward interface.
- Family caregivers experienced the app as complicated.
- No customized interface for PLWD.
- Too many steps to add something in the app.
- When you select a day in the app, the schedule of that day doesn't automatically open.

To have it at home

- Although the app is free and easy to use, family caregivers are reluctant to use digital technology to organize the daily structure.

Norfolk City Council (PP4)

Technology 2: The Hypnos Mask by Dreaminzzz

The aspects:

- Large comfort, easy to use.
- Does not get in the way and is easy to wear.

The use

- Informal carers see the benefits of autohypnosis as some of them are already familiar to yoga, sophrology.
- Some informal carers showed their willingness to test it again.

- Another informal carer was not really convinced about the benefits. This person was very energetic, and the mask didn't fit the needs.
- The possibility to use the mask without the application provides access to a larger number of people who don't feel comfortable with smartphones and for those who don't have it.
- The hypnos mask really puts you in the conditions of self-hypnosis, allows to be focus on the session

To have it at home:

- One informal carer bought two hypnos masks: one for himself and one for their loved one.

Technology 1: Anywhere Care Footprint

The aspects

- Creates reassurance of the PLWD's safety when they take a wander and makes locating them less stressful.
- Ease of mind and reduces anxiety.
- Reduces the need for constant supervision during restless periods.
- Gives extra help when locating a lost person.

The cost

- Supplied by Norfolk County Council to PLWD and their informal carers free of charge.
- Can you put a price of peace of mind?

The use

- Simple to use when lost. Push the SOS button and your carer is contacted.
- Google Maps link on the phone portal/app is very easy and quickly helps to locate the lost person.

To have it at home

- Wonderful to have and helpful when in the garden.
- Need time to get used to the technology and how it works.
- Has reduced my anxiety and worry about where the PLWD is located.

Technology 2: Beamer Tramper TWS

The aspects

- Helps with mobility, comfortable and easy to use.
- PLWD is becoming slower at walking and over shorter distances. Using the Tramper Trike will enable them to go out for walks with their informal carer.
- It gives PLWD the opportunity to explore and enjoy the outside world and socialise more. It improves confidence and pleasure.
- Gives a sense of freedom and inclusion.

The cost

- For informal carers and PLWD, the cost is the determining factor whether to buy or not.

- Being available free of charge to use around the Gressenhall site means they will use it when they visit.
- In general, it is too expensive.

The use

- Comfortable and easy to use.
- Simple controls take away the anxiety around using new technology.
- Continues to aid independence.

To have it at home

- Having a mobility scooter at home could be useful.
- Helps PLWD to continue train their dog.
- Cost is a negative factor.
- Not enough room at home to use a TWS Trike.

Afeji Hauts-de-France (PP5)

Technology 1: The Viktor cushion by Fingertips

The aspects

- An easy-to-use technology for people who are not familiar with digital tools.
- An attractive aspect making people wanting to use it: a good-looking shape, a soft touch, a flexible tablet.
- Easy to set-up at home.

The cost

- For informal carers and PLWD, the cost is expensive.

The use

- Easy to use, a friendly and accessible form for all.
- It would be interesting to have pedagogical content in the Viktor cushion's program.
- The Viktor cushion should propose calls for PLWD. They can only receive it from their loved ones.
- It only allows them to send alerts on the web application of their loved one.
- The lack of answer from the PLWD is perceived as problematic. It would be nice to include key words for easy response such as OK, I am fine, everything is OK.
- For people who don't have access to internet at home, the 4G key allows the connection without internet box.
- The Viktor cushion cannot connect while the TV is used.

To have it at home

- Although informal caregivers that use the cushion recommend it, not everyone is looking for this kind of solution and some are not ready to use it.
- The ability to test it at home before a purchase.

National Trust (PP11)

Technology 1: Magic Table

The aspects

- A holistic therapy for people living with cognitive challenges such as dementia.
- Improved care outcomes and individuals' wellbeing by keeping them socially and cognitively active.
- Magic Table supports a variety of activities with different purposes, such as the Happy Memories feature, which allows family members to share pictures with their loved ones and stimulates reminiscence - particularly benefitting individuals living with dementia.
- The programme has delivered a 98% improvement in social and physical wellbeing.

The cost

- Subscription cost depends on the options included in the Magic Table

The use

- Magic Table uses interactive light technology to project images onto a surface allowing those with care needs to listen to music, interact with pictures, and play games with each other.

To have it at home

- This is only available at Damsons/Odense House.

Technology 2: Pivotell – Pill Dispenser

The aspects

- Increased independence of people living with dementia benefits wellbeing of PLWD and informal caregivers
- The pill dispenser can be set at certain times and alerts the PLWD to take their medicine. Other sections are locked and ensure the patient takes the right medication and does not try to overdose in case they forget to take their pills.
- The dispenser can be used in combination with the pill popper, that removes plastic wrapping from medication which reduces waste and makes it easier for PLWD to take their medicine.

The use

- Pill popper makes it easy to remove wrapping from medication, especially for PLWD with mobility issues.
- Pill popper can be combined with the pill dispenser.
- Easier for PLWD to take their medication.
- Alarm coupled to the dispenser ensures PLWD don't forget to take their medication.
- Safety lock of pill dispenser prevents overdose or wrong medication intake.

To have it at home

- The Odense House has an informal partnership with Pivotell to trial their products such as the pill popper and automatic pill dispenser.

Walcheren (PP13)

Technology 1: Oradio

The aspects

- It is an alternative to a simple radio, but without advertising and with fixed music genres.
- The music is recognizable for many people and really evokes memories.
- It makes people active, and it is nice to hear sound in the background.

The cost

- Oradio is expensive.
- Price is not a determining factor in the purchase.

The use

- Easy to operate
- The voice was too soft, my partner didn't hear the instructions properly.

To have it at home

- If it becomes too difficult to work with a tablet, the Oradio would be a nice alternative to have.

Technology 2: Google Nest + VoiceZorg

The aspects

- For people living alone who can deal with it, VoiceZorg could be a solution that partly relieves informal carers by responding to the PLWD's questions.

The cost

- The Google Nest isn't expensive, and if VoiceZorg really adds value to the technology, it's worth the subscription.

The use

- It doesn't work in the Odense House.
- PLWD forgets to say "Hey Google" first.
- Too complicated.
- Informal carers don't see the added value.

To have it at home

- Change of habits, for example shift from paper calendar to digital technology. Not everyone is willing to change.
- Informal carer knows the appointments so no need for digital support.
- Maybe more convenient when there's no life partner.

Main takeaways from the Transnational Evaluation session

The discussions following the presentations on assisted technologies highlighted several important considerations:

Familiarization with technologies. It was emphasized by the different representatives that this session provided insights in available technologies on the market. Different technologies however are more suited for sub selections of persons living with dementia. We should consider the context of use and the maturity level of the PLWD to select/present an appropriate technology. The idea was suggested to define an assessment tool/conversation tool which can guide you in selecting appropriate and valuable technologies. Such a tool should take into consideration the needs of the PLWD, the digital skills, and the readiness and feasibility of technologies.

Niche market. An important remark is the limited size of the market for technologies specifically aimed at PLWD and its informal caregivers. Therefore, limited scalability can be obtained by vendors, which in turn limits vendors' likelihood to adapt and customize offerings specific to this segment. Thinking out-of-the-box and connecting broad-audience-like solutions (e.g., Google) with specific applications can be a work-around.

Testing and involving the informal caregiver. The group acknowledged the added value of testing with end-users in its familiar contexts-of-use. Next to focussing on PLWD, the informal caregiver also plays a vital role and should be involved in testing.

Ease of use and introduction strategy. It is a common adage to highlight the importance of keeping technology easy to use. In addition to simplicity, specific attention should be on the introduction strategy: it should fit into daily lives, and clear manuals or video's on how to use the technology should be provided.

Cost. An important and recurring topic stressed the need to reflect on cost. As a consortium we must be aware that a lot of these technologies – if not provided via the Odense House – are only available to middle class persons that can afford such technologies. Cost thus forms a huge barrier to maximize inclusiveness. As technology is often only relevant for a limited duration in time, depending on the stage and symptoms of dementia, the return on investment can be low and/or unpredictable. The Odense House can play a vital role as a trusted place to sell (at cost), rent or lend out technologies.

Ethical implications. A critique that arose is that we should consider the ethical implications of the presented and selected technologies, e.g., tracking of PLWD. Is the tracking of benefit for the PLWD or for the informal caregivers. This requires additional thought and guidelines. One potential solution would be to make the discussion on ethical implications of technology part of the care plan at the initial stages of dementia involving both the informal caregiver and the PLWD.

Case study: City of Mechelen (LP1) - the evolution towards a demonstration home.

Encouraged by the MONUMENT project, City of Mechelen (LP1) started working on assistive technology in home environments (deliverables and outputs linked to WP2). Informal caregivers were surveyed as part of the prototype development and the selection of existing technology (TRL9). The individual needs of the informal caregivers were identified through in-depth interviews, focus groups and an online survey. In addition, the City of Mechelen interrogated our partners, experts in dementia, home care and other aids like occupational therapists, as they have a broader view of the challenges faced by informal carers of people with dementia.

It was noted that technology should not interfere too much with daily life. Informal carers are unlikely to choose a technology that they cannot install themselves or that requires a makeover of your house. A quick implementation with easy handling is important for both the informal carer and the person with dementia.

The need for digital solutions among informal carers seems low. This may be due to their age but also because they are not aware of the available technological support. A spontaneous introduction of assistive technology within a home setting could provide an answer and is one of the main objectives of this project.

The City of Mechelen did not limit themselves to two technologies within the scope of this project but expanded their offer with several 'smaller' technologies such as the interactive cat, OER music player, a phone with photo buttons, simple remote control, KOMP, BBrain Family, Spotter GPS watch and tracker. The drop-in center was transformed into a demonstration house.

Since June, the City of Mechelen has also been using knowledge on assistive technology during one-to-one counselling sessions with informal carers. These are conversations on request where informal caregivers can receive information and advice about dementia, and a demonstration of a potentially useful technology. In addition, the City of Mechelen started offering the possibility of testing the technology in their own context before deciding to purchase.

Since September, the City of Mechelen has successfully introduced technology in 15 consultations. Everyone showed interest in the demonstrated technology and experienced the added value. Nine informal carers proceeded purchasing the product.

The demonstration house and the demonstrations organized by the City of Mechelen succeeded in increased the knowledge and awareness about available assistive technologies among informal caregivers. Furthermore, the consultations helped to inform the carers about the applicability of digital technologies and lowered the threshold to use them thanks to the try-out sessions. Preliminary results indicate that the combination of information and demonstration accelerates the adoption of technological solutions in home care.

Summary and conclusions

This deliverable gives an overview of the process of selecting, demonstrating, and evaluating existing assistive technologies and their ability to meet the needs of informal caregivers of PLWD. We applied the Innovatrix methodology which provides an innovation framework combined with an iterative evaluation process. This approach proved effective among the pilot partners in following up on the assumptions about informal carers and the selection of potential demonstrators. The concept introduced by the City of Mechelen (Lead Partner 1) to use the Odense House as a demonstration home where informal caregivers can test assistive technology prior to lending or buying it is interesting to explore. As always, considerations must be taken into account and feedback regarding ease of use, cost, and willingness to implement, should be shared with the vendors of the technologies. In summary, the process described in this deliverable acknowledges the importance of involving a subset of end users – both the informal caregivers and PLWD – in selection and evaluation of existing assistive technologies before offering them to a wider audience (via a brochure, via demonstrations or as a lend-out concept).

Addendum

Table 1: Table providing an overview of the selected technologies, number of PLWD and informal carers involved in the demonstration sessions and testing, and the number of end users that are willing to implement or effectively implemented the tested technology.

Information			Demonstration Session		Testing		Willingness to Implement	
Partner Code	**Partner Name**	**Selected Technology**	**# PLWD**	**# Informal carers**	**# Users testing in Odense House**	**# Users testing at home**	**# Users indicating willingness to implement**	**# Users implementing tech after testing**
LP1	City of Mechelen	Nobi	3	15	15	0	2	1
LP1	City of Mechelen	Mantelzorger App	0	6	0	0	0	0
PP4	Norfolk City Council	Anywhere Care Footprint	3	6	6	3	4	3
PP4	Norfolk City Council	Beamer Tramper TWS	5	5	10	5	1	1
PP5	AFEJI	Viktor Pillow	3	4	10	0	0	0
PP5	AFEJI	Hypnos Mask	3	5	17	1	2	1
PP11	The National Trust	Magic Table	4	4	4	4	0	0
PP11	The National Trust	Pivotell - Pill dispenser	2	2	0	0	2	2
PP13	WVO Zorg	Oradio	7	7	20	2	3	0
PP13	WVO Zorg	Google Nest Mini = VoiceZorg	8	8	20	0	0	0
			38	**62**	**102**	**15**	**14**	**8**