PRoF Award abstract – Call 2018

ViviGate: Interactive digital day schedule to support people with dementia

1. Research Outline:

Acronym	ViviGate
Project name in English	Interactive digital day schedule to support people with dementia
Pitch (1 sentence)	ViviGate is developing an interactive, digital day schedule, in the form of a wall-mounted screen that provides structure and independence to a person with dementia and reassurance and flexibility to the caregiver.
Executive summary (max. 10 lines)	
ViviGate is the succession of a PiP-project[1], where we tackled the problem '*develop a product that helps people with dementia and their caretakers*'. The result is a prototype of a highly customizable, interactive digital day schedule in the form of a wall-mounted screen which displays time in an understandable way. It also shows a status of their caregiver, pictures of good memories and can receive and show messages. To encourage activity, our calendar suggests activities on empty time slots. Currently ViviGate is doing further research into the usability of different designs and testing those designs with the target group by executing weekly volunteering work at Hét Ontmoetingshuis[2]. Simultaneously we are developing a business plan and market strategy. [1] Product Innovation Project, an interdisciplinary project where eight to ten students with different backgrounds work together on an open industry-driven problem [2] A meeting point for people with early onset dementia	

2. Cause and context of the research:

During a PiP-project in the academic year 2016-2017, our team got the following assignment from RVO-Society:

"Develop a product that improves the daily lives of people with dementia and their caregivers."

During the project we discussed daily problems with people with dementia, caregivers and experts. After which we developed a prototype of a day schedule in co-creation with a group of five caregivers and in strong collaboration with Zorgcirkels Jongdementie.

In the current academic year three students of that team are continuing on the project partially in the context of different courses on the KU Leuven and partially in their spare time using different guidance processes like IusStart, Bryo, BaasBaas and Lcie. While keeping in touch with the target group by volunteering weekly in Hét Ontmoetingshuis.

Overview of courses:

- Honours program: development of the marketing strategy
    - One engineering student guided by Prof. Dr. Ir. Yolande Berbers and Prof. Dr. Ir. Dirk Cattrysse.
- Entrepreneurship and new business development: development of an operational business plan
    - A team of six students of whom two business engineering students, three business economics students and one student with an engineering background guided by Dr. Jonas Debrulle.
- Master's thesis: research in the usability of the product
    - One engineering student guided by Dr. Ir. Robin De Croon, Prof. Dr. Vero Vanden Abeele, Prof. Dr. Ir. Yolande Berbers.

3. Innovation results achieved:

Because of the close cooperation with people with dementia, caregivers and experts, we are able to develop a product that shows time in an understandable way.

We are currently testing out different designs. The most promising one displays the activities in an analog clock as shown in the Figure 1. Although people with dementia usually aren't able to read the exact time on such a clock, the intuitive mechanic behind it, makes their daily schedule interpretable. As the device also shows pictures and incoming messages, it is more than just a schedule. It is a portal for the people with dementia to interact with their

environment. On the one hand it encourages the usage of the day schedule, on the other hand it stimulates the communication between the person with dementia and his/her caregiver, children, grandchildren and other loved ones.

To give a sense of security we enable them to know where their caregiver is and allow their caregiver to send messages when they are for example in a traffic jam. Thereby their partner doesn't worry when they don't arrive in time.

Because the disease is different in every case and it evolves over time, it is possible to switch off some features and change the look, in this manner the customer can use the day schedule for a longer time.

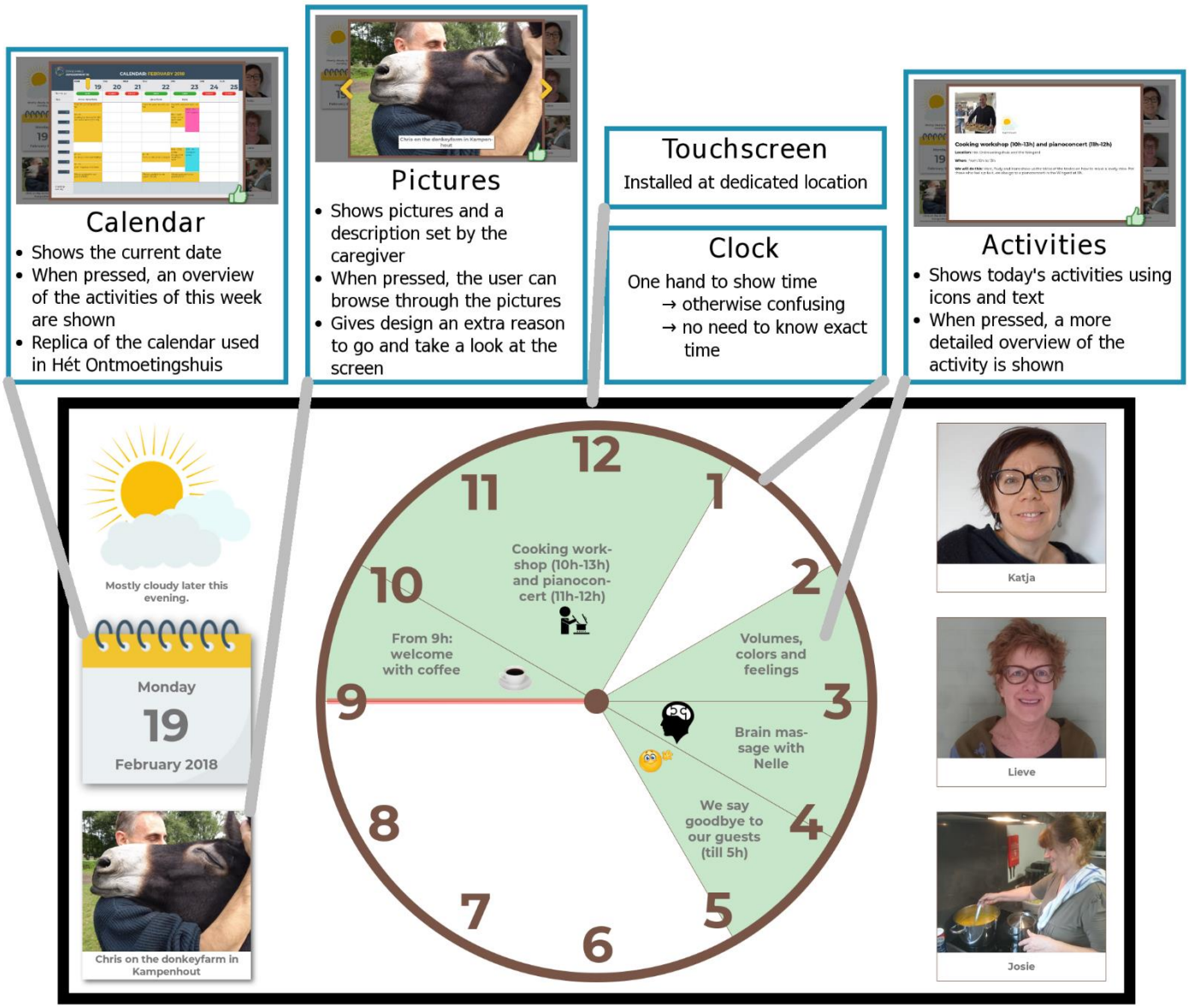

Figure 1: shows an English prototype of the day schedule as used in Hét Ontmoetingshuis

To encourage activity, our calendar suggests activities on empty time slots. These activities are carefully selected by the caregiver, who has an intimate knowledge about the capabilities and likings of the person with dementia and knows which activities are still suitable.

4. Link to the PRoF values:

Let's start with the roots of ViviGate. As told in the 'cause and context' section, our roots lie in a PiP project, interdisciplinary by its nature. In such a project the **design thinking methodology** (Figure 2) is used. A different name, but basically the same as the PRoF approach.

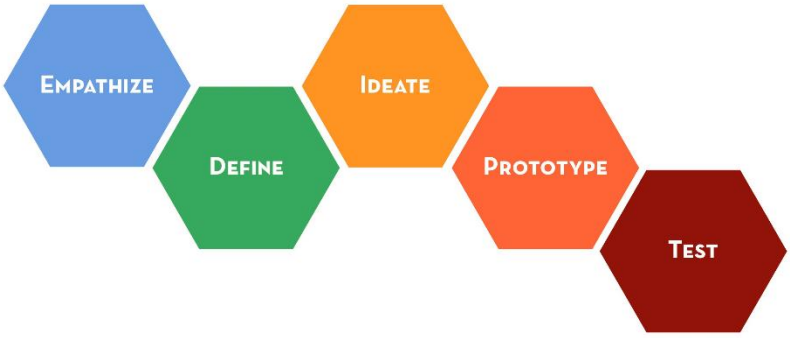

Figure 2: Design thinking methodology

From the offset, we went out and **really got to know the community we were to develop something for**. In this empathizing phase we talked to organizations like the Alzheimerliga, Dementielab and so on, we talked to experts like prof. dr. Mathieu Vandenbulcke and had the chance to go on housecalls with occupational therapists from his team. This all was very insightful. However, the most important relationship we built was the one with Hét Ontmoetingshuis (Figure 3). A place where people with early onset dementia and their caregivers come together to engage in social activities and find support with one another. By doing volunteering work there, we were able to get a good grasp on possible problems we could tackle in the time available and most importantly, do so in way that would be **supported by the end user**. This made it clear for us that a good solution would be **non-stigmatizing**, something that **engages them in a positive way** and would be **nonrestrictive**. We also wanted to make something that would keep them **activated and living at home as long as possible**. After having a clearer definition of possible problems, we did **extensive brainstorms** (Figure 4) with techniques we learned during a creativity thinking workshop from PiP. Personality profiles were made, endless amounts of post-its consumed and a lot of pondering was done with soothing music playing in the background. Eventually in co-creation with the caregivers, we developed a prototype of a digital day scheduler for people with dementia. We wanted to provide a sense of time to them, so we adjusted the representation of it. We wanted to make them active again, so we added activity suggestion. We wanted to provide incentive to use the product and lower the

intergenerational boundary, so we added a family photo album. We wanted to provide flexibility for the caregiver, so we made it adaptable from a distance. Every one of these decisions was based on input from caregivers given during biweekly meetings in the rapid prototyping phase. At the end of the PiP project we had a strong concept of what our product should be. This is where PiP ended and ViviGate really started.

Figure 3: Homecooked lunch at Hét Ontmoetingshuis

Figure 4: One of many brainstorms

Now with ViviGate, our core team has filtered down to two civil engineering students and one industrial engineering student with specializations in computers science, mathematics and electromechanical design. However, this doesn't mean that our interdisciplinary approach has softened. If anything, we are trying to broaden it. With IusStart, a track at KU Leuven where law students work closely with startups to provide legal advice, we have gained new valuable insights. We are also working closely with Lcie, the innovation community of the KU Leuven to have necessary entrepreneurial coaching. To keep a business perspective, a student of our team has recruited 5 business engineering and business economics students under a course to develop the business plan. This business plan should align with **our vision** to **get the product in an ethical and durable way to where it's needed**, in people's homes and thus keeping them active longer. However, the most important connection remains the one with the industry. We have broadened our contacts with 'het expertise

centrum dementie' and strengthened the bond with Hét Ontmoetingshuis. Our product is now being tested and developed in close collaboration with them. This because we believe that **our strength is our interdisciplinary approach and our user centered design**.

5. Applicable IPR rules:

- Copyright on the designs and code
- Trademark on the logo and company name (currently under development)

6. Information on the partners:

During our PiP project we worked with a long list of organizations, experts and caregivers to get a grasp of the environment we were working in. This has now filtered down to the following partners that remained in our support network or joined later.

- RVO-Society:
  An organization created in the memory of the founder of IMEC, Roger Van Overstraeten, whose goal is to bridge the gap between education and science for children. They were our PiP sponsors and are still a strong supporter to this day.
  (Website: https://www.rvo-society.be/)
- Lcie:
  Lcie (Leuven Community for Innovation driven Entrepreneurship) is the one stop shop for students, researchers, professors and alumni of the KU Leuven who have questions related to entrepreneurial skills and entrepreneurship. They are the organization supporting PiP and also host an incubator for startups where we are now a member.
  (Website: http://lcie.be/)
- Zorgcirkels Jongdementie:
  Zorgcirkels Jongdementie exists of 8 care circles:
  1. Strong primary care
  2. Care support
  3. Hét Ontmoetingshuis
  4. Daycare center
  5. Cohabiting
  6. Buddysystem
  7. Education
  8. Encounter

  With these 8 care circles people with early onset dementia are supported through their daily lives. Our research is currently being conducted in close collaboration with Hét Ontmoetingshuis.
  (Website: http://www.zorgcirkelsjongdementie.be/)

- Bryo:
  Bright and Young (Bryo) is a project from VOKA providing an entrepreneurial network, coaching and expertise to young entrepreneurs. ViviGate is Bryo member frequently visiting their workshops and events.
  (Website: http://www.bryo.be/)
- IusStart:
  IusStart is an Lcie track where law students can do part of their master thesis consulting startups at the KU Leuven. ViviGate is currently one of those startups. They are providing us with valuable information regarding company structure, branding and contracts.
  (Website: http://iusstart.lcie.be/)
- d-lab:
  Het Dementielab (d-Lab) supports people with dementia both in a homecare and residential care context. Together with the family of people with dementia and professional caregivers they make low technological designs to help them in their daily lives and support their care. They also document homemade solutions as to help others see those creative ideas. Thanks to their expertise, they are a great help in making important design choices.
  (Website: http://dementielab.be/)
- Expertisecentrum dementie:
  'Het expertisecentrum dementie' (dementia expert center) is an organization across Flanders that bundles and facilities the flow of knowledge related to dementia. They are an important partner in reaching out to other institutions, gaining insight and broadening our network.
  (Website: http://www.dementie.be/)

Addendum: Contact information

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