NESTORE

D7.3 Report on End-User Improvements for prototypes

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Short Abstract

This report describes and discusses the findings arising from activities undertaken as part of task 7.3 . This phase of the research focused on co-design with end users in Delft, Milan and Barcelona in order to define the user requirements and improve the prototypes being developed for Nestore. The report outlines how the work was undertaken and sumariises the key findings in relation to the similarities and differences in requirements of older people across these sites.

Key Words

Co-design, user requirements, transferability.

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1 Co-design approach within NESTORE

Literature highlights that the reason for non-acceptance of health technologies is complex (Sligo et al. 2017, Standing et al. 2018, Bentley et al, 2014). The role of the NESTORE co-design is to better understand the broader physical and social environments in which services and technologies will operate and how they relate to the contexts of the end users' lives.

The methodological approach followed in NESTORE provides for users to be involved in the design of the solution throughout the project duration and permeates the work of all the work-packages. Partners + SHU (UK), FSIE (ES), MERID (IT) and PREVC (NL) adopt a method that draws on the value of 'thinking with things', as a means to build understanding of the factors end users identify as being important, in the design of digital health services and devices.

NESTORE is a technological innovation to enable individuals to engage in health promoting activities as they age. The innovation is conceptualised as a 'friend, a companion and coach' seeking to valorise the capabilities of the older person, to recognise and support them in maximising their abilities and to experience mental, physical and cognitive wellbeing. NESTORE is intended to promote choice, to educate, to signpost to opportunities, to connect individuals to community facilities and resources and to promote ongoing social connectedness throughout the life-course.

In order to develop such an innovation it is necessary to build understanding of what end users identify as being meaningful and the qualities and characteristics the technology needs to possess. Indeed, literature highlights that the reason for non-acceptance of health technologies is multilayred (Sligo et al 2017). The role of the design is to better understand the broader physical and social environments in which services and technologies will operate and how they relate to the contexts of the end users' lives.

Participatory methods are centred on the principle that participant engagement can provide value throughout research planning and implementation, yielding findings that directly reflect on a community's needs and perceptions. Participants are given an active role, allowing them to shape the direction and methods of the research itself. Multiple benefits are associated with the use of participatory methods in health and care settings, including developing collaborative and productive partnerships with participants, providing participants with a voice and harnessing participant engagement to stimulate positive change [6,7] and the design of better products.

Multiple levels of engagement are possible at various stages in this paradigm and these will change and develop as the project evolves [7]. Within NESTORE we adopt the definition of co-design, which is the creativity of designers and people, not trained in design, working together in the design development process [8]. Using the Design Council Double Diamond (Figure 1) as a framework, co-design in the early phase of the project utilizes methods to better understand and interrogate the requirements of the

product, the issues individuals are facing. Methods here are more open (thinking with things, critical artefacts) as the design process seeks to ask questions rather than offering solutions.
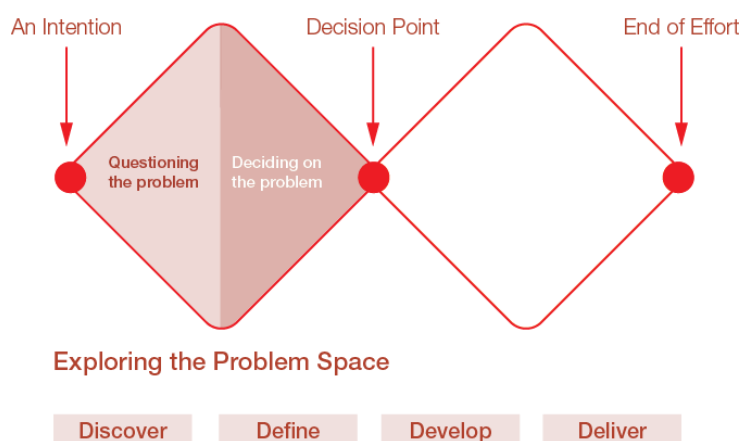

Figure 1 Design Council Double Diamond

Task one of work-package seven engaged with older people living in the United Kingdom to build understanding of existing interests, motivations for engagement and participation in health promoting activities and of factors that encourage or discourage engagement with the technology of NESTORE (see report 7.1). This phase was key for whilst a range of different technologies exist (including sensing technolgies which enable passive and active monitoring). Little is currently known in relation to how these technologies are perceived by end users and whether older people are willing to accept and make these innovations part of their lives.

1.1   Defining the popluation of NESTORE

Typical customers of NESTORE are people that are familiar with modern technologies, recently retired or about to retire. They have a social life that they want to continue after retirement and are in a reasonably good health. They remain users of NESTORE throughout the process of ageing. With age, NESTORE knows the person, becomes aware of possible degradation of functional capabilities and provides suggestions and services to compensate such shortcomings.

2 Work Package seven: task three

2.1 Context.

The first phase of the research collected data from older people living in the United Kingdom through a series of workshops described in report 7.1. However NESTORE is an innovation that will be utilized by older people globally and it was therefore important to understand whether the views of older people in the UK could be transferred to populations in other locations of the project. The aim of task three in work-package seven was therefore to:

• Build understanding of the similarities/differences in requirements of older people in the pilot countries

• Test and understand the transferability of the methodology developed

It was anticipated that the process of engaging with older people in Spain, Milan and the Netherlands would additionally form a mechanism through which to recruit participants to the pilot study groups. Data collected across the workshops was collated in order to support the design and development of NESTORE.

2.2 Method

Between January 30th to March 15th 2018 Paul Chamberlain and Claire Craig, co-directors of Lab4Living, Sheffield Hallam University facilitated workshops with older people in the United Kingdom and co facilitated with NESTORE colleagues in Spain, Italy and the Netherlands.

- The dates and locations of the workshops were as follows:
- January 30th- 31st 2018: workshop with 10 older expert users, Sheffield Hallam University
- February 13th- 15th 2018 workshop with 4 older people, at the Seniornwltijn, Vlaardingen, Rotterdam, Netherlands
- February 19th – 22nd 2018: workshop with 4 older people at Oasi San Gerardo within the La Meridiana Facility, Monza Italy
- March 13th – 16th 2018: workshop with 9 older people at the UAB Universitat Autonoma de Barcelona
- Further workshops with older people in Delft were facilitated by Isabelle Kniestedt between February 13th-March 13th

The first workshop undertaken in the United Kingdom comprised of ten older people (figure 2) who formed part of the expert group for NESTORE (work package 7.2). Individuals were engaged in a process of identifying the main themes from the overall data collected during task 7.1 (see previous

report) and identifying the most important factors in relation to considerations and user requirements of NESTORE. Leonardo Angelini and Maurizio Caon technology leads from HESSO Fribourg were present during this workshop to engage with end users and build understanding.

Figure 2 workshop with expert users UK

The key themes important to consider in the development of NESTORE that emerged from the workshops conducted in the UK as part of task 7.1 were as follows;

Privacy, Empowerment, Fits my life, Personalisation, Cost, Freedom, Ergonomics, Reliability, Observation, Connectedness, Security, Infrastructure, Being social, engaging, Keeping active.

With the exception of the first workshop in the United Kingdom, each visit followed a common approach:

•   Description of the methods used by the Sheffield Team,

•   Opportunity for partners to participate in a workshop using the methods (as a way of modeling the approach) and validating the themes and findings identified through analysis from task 7.1

•   Opportunity to meet with partners to reflect on the experience and share insights and findings.

•   Ensure accurate translation of themes

Figure 3 meeting and briefing at TuDelt, Netherlands.

Figure 4 meeting and briefing with PoliMi, Italy

Figure 5 meeting and briefing with UAB, Spain

Each visit also included the opportunity to visit the broader environments where older people live, to meet with partners and to share reflections and findings from each country partner visit in order to communicate broader insights (and relate this to environments where the potential technological innovation might be used).

Figure 6 Meridiana, Monza, italy

Figure 7 Oasi San Gerardo within the La Meridiana Facility, Monza, Italy

Figure 8 Seniornwltijn, Vlaardingen, Rotterdam , Netherlands

3   Partner country user workshop

3.1   Design of workshop

A room was booked for each workshop that was set up with seating around a table and modest refreshments provided. Each workshop was facilitated by nominated members of the country partner NESTORE team (Carlo Standoli and colleague at PoliMi, Italy, Laura Fernandez and Antoni Casanovas at UAB, Spain, Isabelle Kniestedt and Stephen Lukosch at TuDelft, Netherlands). All took part in earlier briefing meetings with the SHU team prior to the workshop. Workshops were delivered in the local language and the SHU team were present and contributed to the workshop with translation support.

Each workshop started with introductions from the NESTORE team and the participants. Participants were introduced to the NESTORE project and the purpose and structure of the workshop. Facilitators carefully went through the consent forms with the participants which were signed accordingly. Each workshop was recorded through audio and photography and lasted approximately one and a half hours.

Participants engaged in the thinking through things method with exhibition in a box (as described in report 7.1) sharing their personal insights into what is meaningful in their lives and their opinions and relationships with technology. The second part of the workshop focused on the themes identified from the user workshops conducted in the UK. Participants were collectively asked to reflect on each of the themes and whether they agreed or disagreed with their validity in the context of what NESTORE should consider in its development and application. In addition, the participants were asked if there were any themes they felt were missing from the list.

Participants who engaged from Rotterdam were local residents who were regular visitors to the community centre where the workshop took place. In Barcelona the participants were from the University of the third age some of whom had engaged with UAB on previous occasions. The participants in Monza were slightly out of NESTORE target (80years +) however it was useful to explore their life styles, opinions, expectations and the role technology plays in their lives.

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Figure 9 User workshop Seniornwltijn, Vlaardingen Rotterdam, Netherlands

Figure 10 User workshop Oasi San Gerardo within the La Meridiana Facility,Monza, Italy

Figure 11 User workshop at UAB Barcelona, Spain

3.2 Discussions emerging from the workshops

The primary aim of the workshops was to focus on individual perspectives but participants also commented more generally about their peer groups.

Staying busy was frequently mentioned as important and meaningful, for instance through hobbies. Many of the participants described how they were involved with organisations and volunteer work. "There is quite a difference in people who have an extended network of people and those that do not in their general outlook on life and perceived enjoyment of it" (Rotterdam). Social contact was generally felt to be the main motivator for activities and "taking the first step" a barrier to these activities.

Some of the participants in Rotterdam discussed how they engaged in activities through the community centre the workshop was held at. They pointed out that "others that did not currently go there couldn't see themselves ending up there as it seems like a sad place". However for some, it was the only way to engage and to get them out of the house ("otherwise it's just another morning at home by yourself"). Participants in Rotterdam commented that things were getting less possible for older people, because less funding or less people organising things.

Participants generally start with a fairly positive outlook on technology, "amazing that it is possible", "Technology is great in many ways — it's made a lot of things easier" (Rotterdam), before also discussing the negatives of it. Technology was generally interpreted as digital but older participants (Monza) viewed technology more broadly, "a fridge, a coffee maker is technology". This group also discussed how despite the challenges of technology they were keen "to understand the process of something…getting involved in something so you can learn about it". However technology was generally associated with the 'computer', "other technology was a bit blurry".

In Rotterdam they described how technology is not great for "gezelligheid" (coziness or connectedness) — this is mentioned in relation to people not having time for each other anymore or "Whatsapping each other when in the same room"

All participants engaged in some form of digital technology some really enjoy understanding technology and how it works, others "just use it". Participants in Monza expressed how technology "can speed things up….as long as it updates itself", finding a route on a map for instance, but stated the importance of materiality and craft and a time for "slowness". " A paper map is more imaginative and creative"(Monza).

Many participants considered that social interaction over social media or technology that is not face-to-face is less good than talking to someone in person. Technology however can help people connect —

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one participant (Rotterdam) mentioned playing Pokemon Go with his grandchildren and becoming "one of them".

Participants across all workshops felt technology had to fit into their lives to optimise its use. They described how poor implementation of an idea could seriously damage the perceived potential of technological interventions. Equally however participants felt that they needed to fit their life to the technology because of a concern they might be left behind.

Data security was a recurring issue of concern across all workshops. Participants commented how systems can supposedly easily be hacked, and you can easily tell you are being watched (for instance in ads and collecting points in the local supermarket). Some participants just accepted it was just part of the technological world we live in. There were concerns expressed about instances of a lack of transparency when something/someone is being monitored.

Continued learning beyond retirement was a significant topic for discussion across all the workshops. This concerned a continuation of interests or learning of new skills for example, music, dance, craft and making, cooking. These were vehicles to support socialising and where fear of loneliness was frequently expressed as a concern. Getting to grips with technology in some way supported the notion of continued learning, "you can't just learn through looking at something you have to get really involved" (Monza).

Keeping active was not interpreted purely as physical exercise and motivation to support mental activity deemed as equally important.

Family was generally highlighted as the overwhelming most important and meaningful aspect of participants lives. Technology was viewed as a vehicle to support family engagement as a communication tool and through play (particularly through games). However participants felt physical, real time face to face interaction as well the tactility of traditional analogue games was sometimes lost in digital games. Computer games were described as 'cold games' (Monza). While gaming itself was seen as a positive activity, often the content of the games was not appropriate for older users (e.g. warfare, gambling). Gaming prompted discussion (Monza) about the importance of setting goals. This related not to just personal goals but supporting family members (e.g. grand children) achieve their goals.

Participants, and in particular the group from Monza, discussed a concern for the ethical dimension and sustainability of technology in terms of resource and rare minerals.

4 Emerging themes

4.1 Rotterdam, Netherlands

The themes that were considered most important were: freedom, empowerment and being social. Freedom brought the most discussion, as it encapsulates both the freedom technology brings and having the freedom to opt in and out of options that you may not want to use, which technology doesn't often provide. Also it was noted that if you don't opt in to the whole system, you are missing out somehow. Being social was also interpreted broadly. "It's great that you can share and Skype with someone halfway across the world and hear about things happening all around, but it's a different way of communicating than in person and not necessarily good". Loneliness in later life was discussed at length within the group and consequently the importance of being social.

4.2 Monza, Italy

Maintaining activity, freedom, cost and reliability were highlighted as important themes. Keeping active was widely discussed as important but should be considered against the fact that this group had an older profile than other participants engaged in the project and physical mobility was a challenge for them. Cost was an issue of concern to ensure NESTORE was accessible and available to users. How users would access NESTORE (as a product or service) was queried. Reliability was discussed within the context of sustainability of the NESTORE system set against future technological developments and software upgrades. Understanding how NESTORE works to maximise its value was also a factor in the reliability of its use. Much discussion revolved around the fact that NESTORE should provide the freedom to engage with and access a range of activities but offered users the freedom of choice.

This group did identify and suggest two additional themes, politics and research. Politics was mentioned in the context of access to NESTORE and who would determine who would be able to use it. Research was highlighted as important to underpin its development to ensure it had validity.

4.3 Barcelona, Spain

Participants identified empowerment, cost and being connected as important themes. Being connected was interpreted as both access to digital services as well as the importance of being connected to people. The cost of NESTORE as a product or service was felt to be critical in terms of uptake. Not simply the cost of its use but its ultimate value to the user. This group were active (University of third age) and continued learning was an important part of their lives. Consequently empowering users was identified as an important of NESTORE.

5 Conclusions and recomendations

5.1 Summary

The objective of conducting user workshops in the Netherlands, Italy and Spain was to identify if the findings from the workshops in the UK aligned with communities in other countries. Themes arising from the workshops in the UK identified 15 themes that were deemed to be important factors in the development and use of NESTORE. These themes were presented to participant in the partner countries to identify whether the themes were relevant, if there were any missing and whether they might be impacted by local history, culture and environment.

All the themes identified were discussed in detail at each of the workshops in Netherlands, Italy and Spain and deemed as important features that NESTORE should consider in its development. Participants in each of the workshops found it challenging when asked to select the three most important themes however all attempted to prioritise themes they felt critical for consideration in the development of NESTORE. Through discussion at each workshop it became evident many of the themes could be interpreted in multiple ways (e.g. freedom, being connected) and in addition many themes were inter related (e.g. privacy/security, personalisation/fits my life). Only two additional themes were suggested by the participants (Monza) that concerned the Politics of how NESTORE might be appropriated (distributed through current health systems and regulations) and Research to underpin NETORE and ensure it has a degree of validity.

The task (7.3) has highlighted the importance of defining the target age of NESTORE users: it was agreed to be close to the retiring age. Workshop in UK were implemented with participants 55years + in order to establish requirements and desiderata of the elderly of tomorrow. The aim of NESTORE is to engage people and sustain motivation and while technology will be adopted (and potentially developed) for a single user, workshops have highlighted the importance of the social aspects of life and consequently NESTORE must address multi user activities/services: (for example social activities, games etc). The family unit came across as an overwhelmingly important aspect of what determines a meaningful life.

The workshops highlighted and confirmed aspects of life that people determine as important and meaningful. Participants across countries discussed their relation with and opportunities and concerns relating to technology. There were no significant cultural differences however climate and environment should be carefully considered in how it might impact on lifestyles. The workshops were conducted during the winter period with extreme cold weather in UK and NL in contrast with mild pleasant weather in Italy and Spain. This has significant bearing on the ability for people to engage in outdoor activities.

The cost of accessing and using NESTORE to support a healthy lifestyle was a feature of discussion at many of the workshops. Preliminary research in Italy showed that currently the

optimal/expected/acceptable price should be about 29€/months for a flat rate service, hardware included as renting option.

Another important aspect of NESTORE will need to relate to data privacy and security. Users are increasingly aware and concerned about their personal data and NESTORE needs to embed high levels of security and allow users to determine what data is shared and with whom. The EU GDPR regulations can provide NESTORE with some pointers relating to this.

NESTORE, like any technological platform for continuous use, requires a strong motivation. The system has to gain trust from the user set within their complex diverse lives. Therefore the system has to be personalised to match user interests/expectations. There was much discussion on how we might define personalisation and how 'it fits my life' considering 'my life might change'. In conclusion NESTORE must provide levels of options and user choice is critical to empower them.

NESTORE should start from the wellness point of view to identify the best personal pathways. The NESTORE coach can suggest different pathway option among which the user can choose his/her preferred one as starting point of the NESTORE coach.

NESTORE users will need a modest competence and interest in technology however workshop participants expressed great frustration in learning new things (related to technology) that quickly become out dated and obsolete through software upgrades and technological advancements.

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