



**SiforAGE: Deliverable D2.1**

**One Technology  
Experience Café  
organized in FRANCE**

**The SiforAGE Consortium**

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## 1. Executive Summary

SlforAGE -Social Innovation for Active and Healthy Ageing- project pursues to strengthen cooperation among the stakeholders working on active and healthy ageing. In this framework, the Work package 2 -Active participation of end-users in research activities- focuses on opening research activities to older people as final users and giving them the opportunity to directly speak with researchers and developers of assistive technologies. In particular through testing and giving their opinion about recent devices, solutions and products offered in the market for them.

Organised by CARINNA, the Champagne-Ardenne Research and Innovation Agency, with the support of the Living Lab ActivAgeing, the Technopole de l'Aube en Champagne and the Centre of prevention Les Arcades AGIR-ARCCO, the Technology Experience Café (TEC) in France comforts the great interest of older people and technology providers to meet and discuss new technologies related to active and healthy ageing. Also the TEC was organised within the partners of SlforAGE WP2, under the coordination of DFKI.

It gathered 6 technologies under development and 41 participants over two days on the 15<sup>th</sup> and 16<sup>th</sup> of October 2013 in Troyes, France. CARINNA chose to address two type of users: Direct and Indirect users. The direct user is the person that will use in real life the technology. The indirect user is a representative from another entity that may influence on the acquisition and/or use of the data collected (e.g. caregivers, helpers, health insurance, policy makers...). Over the two days, 3 sessions took place: 2 addressing direct users and 1 dedicated to indirect users.

The 6 technologies addressed health and social aspects of ageing. They addressed issues such as monitoring of vital signs, detection of frailty, consumer's trust and social interaction.

The analyses of the results revealed a significant positive effect of participation in the TEC in the intention to use technologies, perceived usefulness and self-efficacy. Participants rated their participation in the TEC in a very positive way regarding the different facets of participation in this experience. The technology providers were satisfied with the organisation of the TEC and are willing to apply for a new edition of the TEC. It is nonetheless difficult at this stage to analyse the impact in terms of technology configuration or modification following the TEC for the technologies evaluated.

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## 2. Introduction

### **CARINNA and health in a regional and European context**

CARINNA, the Champagne-Ardenne Research and Innovation Agency, has several mission among which the project engineering in the field of research and innovation and the support of the creation of young innovative enterprises (incubation).

CARINNA has been involved from the early stage of the development of the SlforAGE proposal that became in 2012 a project funded by the European Commission.

CARINNA, reflecting regional and national and European policies and priorities in the field of health, have conducted several studies in order to promote coherence of research and innovation activities in the Champagne-Ardenne region.

This has led to the creation of the Domomédecine consortium (in 2010) coordinated by CARINNA. On this basis, public and private entities have designed research projects which aim at a global experiment involving 10 000 patients. These patients will benefit from the development of the latest technologies to monitor their health conditions at home and consequently allowing them to live a longer and healthier life through better care.

CARINNA, due to its position as coordinator of public and private research, policy makers and civil society (mainly patients), fits perfectly within the objective of SlforAGE and in this case for Work package 2, the link between technology providers and older people.

### **Focus and motivation for the TEC**

CARINNA, linking its participation in SlforAGE with its role in the development of research project and support of innovative company creation, has designed the TEC as a meeting point between technologies under development and potential users. We believe that this type of meeting was of interest for SMEs and labs which may have then the possibility to exchange and interact with potential users over several days. The financial support from SlforAGE and discussion with the SlforAGE partners involved convinced us of this orientation.

Even if the targeted users were older people, the technology did not have to address specifically this population but had to be oriented towards a more autonomous and healthier life. This corresponds to the objective of SlforAGE by addressing in priority the older people but also the need to anticipate future demands of next generations. It also avoids considering older people as a specific category by including them in the process of technology development.

Regarding the objectives of the Work Package 2, identification of barriers in the use of technology, involving older people in the evaluation of technologies being developed through the TEC, is in line with easing access to technologies to a wider population.

In European context, involvement of civil society (user) in the development of technologies and ensuring a better access to services and products through technologies are the challenges addressed to strengthen the competitiveness of the European Union.

### **Stakeholders' involvement**

From the coordination of the Domomédecine initiative, several stakeholders were identified as relevant in the implementation of the Technology Experience Café (TEC).

The companies involved in the initiative but also the universities and research centres and the policy makers and representatives from civil society (patients, carers and relatives) were quickly informed of the TEC preparation after the launch of the SlforAGE project.

Namely:

- Troyes University of Technology and in particular its Living Lab ActivAgeing
- Centre de prévention les Arcades AGIR-ARCCO
- Technopole de l'Aube en Champagne

More information on these entities is provided in section 3.3.1.



### 3. Event Objectives

#### General objective

The TEC organized by CARINNA aimed at creating a place where technologies were discussed and tested by older people together with the developers of these technologies, in a friendly atmosphere.

Following the SlforAGE objectives, the TEC is a place where the cooperation between stakeholders involved in the value chain of ageing is strengthened and where mind and attitudes are influenced towards a more positive vision of ageing.

The TEC, as designed by CARINNA, opened research and innovation activities to older people and fostered exchanges between users and developers answering specifically the objective of Work package 2.

#### Specific objectives

- Introducing at least 5 technologies under development (the criteria “under development” is specific to CARINNA’s approach of the TEC)
- Involving more than 40 users (see below for specificities on target groups)
- Raise awareness of policy makers of these technological developments

These 3 specific objectives are in line with CARINNA’s role regarding research and innovation.

#### 3.1 Target groups

##### 3.1.1 Users

Specifically, two types of users were identified:

- Direct users: people that will use in real life the technology presented (the one which action will generate first and compulsory electronic data for future use/interpretation)
  - o Objective : 30 older people
- Indirect users: representatives from other entities that may influence on the acquisition and/or use of the data collected (e.g. caregivers, helpers, relatives, health insurance, policy makers...)
  - o Objective : up to 15 stakeholders

These two types of users were selected to reach our objectives of gathering the final users and stakeholders in a same place and allowed them to access technologies under development. This helped identifying potential needs and opportunities for answering the challenges of active and healthy ageing.

##### 3.1.2 Specificities of the target groups

The TEC involved 41 participants in total: 32 direct users and 9 indirect users.

Direct users were older people with a mean age of 72.37 (SD = 9.87) years. 61.3% were female, living independently in the community (96.8%) and mostly with a marital partner (59.4%) or by themselves (40.6%). 90.6% were retired from work and 3.1% employed full time. They hold in mean 12 years of education and 100% rated their health from good to excellent. 100% of the direct users answered that they used technologies in a habitual way in their daily living.

Indirect users were representatives that may influence the acquisition and/or use of the data collected (see Section 3.1.1) with a mean age of 47.38 (SD = 16.76). 55.6% were female, living independently in the community (97.7%) and mostly with a marital partner (33.3%) or with family or friends (33.3%). 66.7% were employed full time and 22.2% were retired from work. They hold in mean 20 years of

education and 100% rated their health from good to excellent. 100% of the direct users answered that they used technologies in a habitual way in their daily living.

## 3.2 Technologies

### 3.2.1 Selection procedure

April 2013: call of interest preparation

- Invitation of the members of the TEC Coordination committee (committee in charge of assessing the technology providers' proposal) with a sign confidentiality agreement
  - o TEC Coordination Committee is managed by CARINNA and composed of:
    - Representatives from regional stakeholder in the field of health (e.g. Health coordination entity)
    - Representatives from carers (e.g. Practitioners' organisation)
    - Representatives of families and helpers (e.g. Prevention centre for elderly)
    - Representatives of research organisation (e.g. University)
    - Representatives of SlforAGE (University of Pau)
- validation by the TEC Coordination Committee of the call documents
  - o Announce (see Annex 1.1)
  - o Proposal template
  - o Guide for proposals (see Annex 1.2)
  - o Participant charter (Rights and obligations of each participants including responsibilities for organizers and technology providers – see Annex 1.3)
  - o Definition of users

May 2013: launch of the call (dissemination of announcement on websites and social media such as Twitter and LinkedIn)

June 2013: deadline for technology proposals

July 2013: assessment of proposals

- assessment of the proposals received by the TEC Coordination Committee
- ethical assessment by University of Pau (SlforAGE partner)
- invitation to technology providers for clarifying some points and once clarified, validation of their participation

### 3.2.2 Technologies of the TEC

Following the results of the call, 5 technology providers were eligible (and 6 technologies in total were finally made available).

#### 3.2.2.1 Title / Name: ARPEGE – University of technology of Troyes

*Main sector/topic addressed:* health

*Short description:* ARPEGE is a set of instruments aiming at assessing a person physical frailty in 3 steps: assessing mobility, balance and hand prehension. It aims at detecting and/or monitoring the frailty of older people. There is no equivalent on the market today.

*Targeted market:* Prevention centre, medical centre, hospital, self-monitoring

*Interest in participating in the TEC:* feedback from user on the different instruments used for the evaluation.

*Requirements:* space for users to walk a few meters, wireless access.

### **3.2.2.2 Title / Name: “Mobile application evaluation” – DMD Santé**

*Main sector/topic addressed:* health

*Short description:* DMD Santé is providing an evaluation platform for mobile application and smart objects related to health. It aims at developing the market of applications and objects by developing consumers' trusts in their viability and liability.

*Targeted market:* all potential users of health-related applications and objects.

*Interest in participating in the TEC:* link with stakeholders, dissemination of new technologies to users.

*Requirements:* wireless access.

Note: during the TEC, DMD Santé has evaluated two mobile technologies.

### **3.2.2.3 Title / Name: “Sensor” – EELEO**

*Main sector/topic addressed:* health

*Short description:* EELEO is developing an innovative sensor for vital signs monitoring via wireless technologies. Innovation relies on the integration capacity and low-power consumption of the sensor.

*Targeted market:* healthcare sector

*Interest in participating in the TEC:* feedback from users on design and acceptability of the sensor.

*Requirements:* none.

### **3.2.2.4 Title / Name: “Robot” – NEOMA Business School**

*Main sector/topic addressed:* social

*Short description:* NEOMA Business School is evaluating the robot' applications that receives greater interest from the older people. It aims at encouraging user's cognitive and affective development. The robot is providing a new type of interaction compared to applications displayed through screens.

*Targeted market:* everyone but more specifically person that may presents risks of isolation.

*Interest in participating in the TEC:* feedback from users will allow the selection of relevant applications of the robot.

*Requirements:* table of sufficient size to allow movement of the robot.

### **3.2.2.5 Title / Name: “Social TV” – University of technology of Troyes**

*Main sector/topic addressed:* social

*Short description:* the technology makes use of smart TV to develop social interaction amongst a group of older people. It aims at fighting against older people isolation. The technology presented wants to make use of current and widely disseminated technologies to develop social interaction.

*Targeted market:* older people with limited possibilities to move from their home.

*Interest in participating in the TEC:* improving the ergonomics and functionalities of the tool.

*Requirements:* none.

## **3.3 Involved stakeholders**

### **3.3.1 Organizers**

#### **3.3.1.1 Name: Living Lab ActivAgeing**

*Type:* research and development centre

*Role/reason for involvement:* the Living Lab ActivAgeing is promoting co-conception of technologies with user involvement. The participation in the organisation of the TEC allows to develop the involvement of users in its projects.

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### **3.3.1.2 Name: Technopole de l'Aube en Champagne**

*Type: incubator / coaching entities for businesses*

*Role/reason for involvement:* the Technopole is used to host technology related events and promote technology development through company creation. Showcasing new technologies corresponds to its objectives.

### **3.3.1.3 Name: Prevention centre Les Arcades**

*Type: older people social and health prevention centre*

*Role/reason for involvement:* It is important to offer a diversity of actions to the members of the Centre targeting physical and mental health as well as social interaction.

## **3.3.2 Other stakeholders**

### **3.3.2.1 Name: Regional council of Champagne-Ardenne**

*Type: regional authority*

*Role/reason for involvement:* Support of projects in the field of research, innovation and health, and support to CARINNA's activities. The Regional council is a partner of the event.

### **3.3.2.2 Name: Innovact Centre**

*Type: incubator / coaching entities for businesses*

*Role/reason for involvement:* Interest in users' involvement linked to technologies

### **3.3.2.3 Name: Regional health agency**

*Type: Regulation of supply of health care.*

*Role/reason for involvement:* Interest to know the technologies under development that can respond to a new organization of healthcare.

### **3.3.2.4 Name: Regional association of families and helpers**

*Type: representatives of families and helpers*

*Role/reason for involvement:* Interest to identify support for helpers in the care and monitoring of the relatives as well as ensuring the respect of privacy and data confidentiality.

### **3.3.2.5 Name: SlforAGE partners**

*Type: University, Research Centres, Incubator*

*Role/reason for involvement:* Support to the implementation of the TEC (University of Pau, InvestorNet, DFKI, Basque Culinary Centre)

## 4. TEC preparation activities

### 4.1 The French TEC in the frame of the Work Package 2

The development of the concept of the first TEC event was done primarily by CARINNA, but with the active participation and contribution of the other partners of the Work package 2 (WP2). The general principles of organization, including objectives, scope, target groups, methods, etc. have been discussed by the WP2 partners in the course of two dedicated teleconferences. A special role in the event preparation played the WP2/WP8 meeting held in Copenhagen on the 23<sup>rd</sup> and 24<sup>th</sup> of May 2013. In the course of this meeting the following critical aspects were discussed and agreed upon:

- Size and composition of the target group
- Who are stakeholders in the context of the WP2 activities
- Management of ethical issues and IPR
- Principles and central methods of the user experience survey
- Various aspects related to local arrangements and dissemination.

Importantly, the partners agreed that as Technology Experience café is an innovative tool for enabling communication between Active and Healthy Ageing (AHA) technologies developers and their users with very modest experiences in organizing such kind of events, all conclusions, materials, agreements practical experiences stemming from the WP2 activities shall be properly documented, generalized and made available to the general public, above all to those parties who would like to replicate TEC approach outside the project framework. **The WP2 team believes that this experience will represent an important addition outcome of the SlforAGE project.** As a result, it was decided that the TEC experiences obtained throughout organizing all four TECs will be collected in a Blueprint Document. Such document was created and maintained by the WP2 team in the project wiki. Also, the textual version of the document is maintained.

More specifically, the roles of the WP2 partners in the TEC organized in France (TEC1) were as follows:

- CARINNA: event organizer, overall TEC1 design, contribution to the survey design, overall reporting on the TEC1.
- DFKI: coordination of preparatory activities, design and maintenance of the Blueprint document and the deliverable template, contribution to the discussions and observing the event.
- INVESTORNET: key contribution to the TEC design from the business prospective, supporting the organizers in communication, providing expertise on IPR issues, etc.
- ISCTE: overall design of the survey and processing of the collected data, contribution to the event report concerning the TEC results.
- COMMOTORINO: as a partner responsible for the TEC2 organization, COMMOTORINO provided feedback and comparative analysis, contribution to the TEC design.
- BCC: in its capacity as a project scientific coordinator, BCC provided observations, coordination and information exchange with other activities in the project.
- Other WP2 participants: through the participation in the discussions and meetings all partners involved in WP2 contributed with their country-specific opinions and experiences. This contribution allowed, for instance, generalizing the TEC concept and providing Europe-wide relevant recommendations integrated in the Blueprint document.

### 4.2 List of documents developed for the TEC

This list does not include the documents established for the call for interest. For these documents please refer to section 3.2 Technology.

#### 4.2.1 By CARINNA (by chronological order).

- Participant's charter (with the support and advice from University of Pau – see Annex 1.3)
- Publicity for selection of designer for TEC identity creation
- Website article on the TEC

- Invitation to member of the Centre de prevention Les Arcades
- Flyers (see Annex 1.4)
  - o It aims at inviting all relevant people to attend the TEC.
  - o The TEC is a free-access event but it requires registration.
- Logo
- Posters (see Annex 1.5)
  - o Used the day of the event to indicate the path towards the event
- Overall programme for technologies and users (scenario of sessions – for more information on session, please refer to the section below “Event structure”)
- Press release
- Invitation to journalists
- Individual programmes for participants
  - o Indicating the schedule for each technology experiment
- Individual programmes for technology providers
  - o Indicating the schedule for each user
- List of participants
- Signing list for attendance
- Stickers for participants (to make the correspondence between the participant and its programme, a series of stickers was given to the participant with only its “TEC ID”; the sticker is used in each Technology questionnaire after the testing – this ensure confidentiality on the questionnaire since no name but only the “TEC ID” is indicated)
- Checklist for:
  - o signature of :
    - participant’s charter
    - attendance list
  - o pre-questionnaire answers (participants had first to answer the pre-questionnaire to get access to the TEC – most of them have had the opportunity to answer it at home before the TEC)
- Badges (without names)
  - o For users
  - o For organizers
- Signalisation materials for guiding participants to the different rooms of technologies and leisure room
- (after the TEC) article in health specific magazine

#### **4.2.2 By ISCTE (with translation in French and pre-testing by CARINNA)**

- Questionnaires:
  - o Pre-questionnaire (to be filled in before the TEC – see Annex 2.1)
  - o Technology-related questionnaire (to be filled in after each technology experiment – see Annex 2.2)
  - o Post-questionnaire (to be filled in after the TEC – see Annex 2.3). There are two versions available: one for the target group and one for the control group. The control group consist of older people that are not participating in the TEC.

#### **4.2.3 Other tools developed or provided by CARINNA (based on ISCTE advice):**

- Presentation of slides with positive attitudes towards technologies (including a time clock which was important for the participant in order to be on time at the room for the experience)
- Computers with internet access available during the TEC sessions for leisure time
- Crossword and other mind games magazine available during the TEC sessions for leisure time. These were used in order to create the conditions to make salient positive stereotypes of ageing. By inducing older people to do a task in which they are usually good at, our goal was that this feeling of self-efficacy could be transferred to facilitate the use of technologies in the TEC session.

### **4.3 User involvement (direct users)**

With the support of the Centre de prevention Les Arcades, a letter of invitation was sent in September to members of the Centre (only the members involved in its activities representing 91 persons) for a presentation meeting to be held in the Centre itself (place well known from these potential TEC participants).

The meeting was held in the Centre with three objectives:

- Introducing the TEC concept and general framework (SIforAGE presentation, TEC duration and conditions for participation)
- Disseminating and if possible answering the pre-questionnaire
- Registering participants

This has allowed covering approximately 70% of the capacity of each session. A journalist attended the event for a local newspaper. The article publication has allowed at least 1 additional registration.

A second meeting, two weeks later, was held at the Centre to inform other potential participants. Even if the older people had talked among them about the event, it was worth speaking again individually with those that were not at the first meeting to explain the TEC initiative and see if they could participate in one of the session.

During these two meetings, none of the participants was opposed to the participation at the TEC but some had to decline the invitation due to scheduling issues. Therefore, the majority of participants at these meetings have finally been the participants (direct users) at the TEC.

Phone calls were made by CARINNA during the last two weeks before the event with two objectives:

- to complete the few remaining free schedules of the sessions
- to confirm the participation of older people and to ensure that they had all necessary information to reach the TEC place

Finally, 31 direct users were involved in the TEC.

### **4.4 Other stakeholders' involvement (indirect users)**

CARINNA has invited its administrators/members to participate to one session of the TEC.

### **4.5 Publicity / Promotion**

- Article in local newspaper (published before the TEC)
- Dissemination of flyer through websites and social media
- Press release
- Invitation to journalist (mail and phone) for "attending" the TEC
  - o Articles published after the TEC (health related magazine, regional economic newspaper, local newspaper)

## 5. Event Organization

### 5.1 Event Structure

The event took place with 3 sessions over two days, gathering a maximum of 15 users per session.

#### 5.1.1 Technology testing

Timing for one technology experiment by one user:

- The user had 5 minutes to go to the experiment.
- 15 minutes were dedicated to technology demonstration and testing
- 10 minutes were then dedicated to the evaluation (answering the Technology questionnaire – see Annex 2.2)

#### 5.1.2 Planning of the two-day event

Day 1

<b>9 :00 – 9 :15 am</b>	Welcome of experts Coffee
<b>9 :15 – 10 :45 am</b>	Set-up and testing of technologies
<b>10 :45 – 11 :00 am</b>	Coffee break
<b>11 :00 – 12 :15 pm</b>	Set-up and testing of technologies Introduction by organisers and recommendations for the TEC implementation (concrete organisation and advice on positive attitude towards users)
<b>12 :15 – 1:45 pm</b>	Lunch
<b>1:45 – 2:00 pm</b>	Welcome of 1st group of (direct) users (including registration and consent form if not signed previously)
<b>2:00 – 5:00 pm</b>	1 <sup>st</sup> session with (direct) users Drinks were always available (hot or cold beverages: coffee!) In CARINNA's case: each user had its own planning which included a set of testing (usually 4). Therefore, none of the participants was doing exactly the same. At the meeting point (or leisure place), there were between 5 and 7 users that enjoyed non-technological activities (on a voluntary basis) while waiting for the next experiment. The planning had been specifically established for a session of 5 technologies (taking into account the requested time to make a testing and give feedback through a short questionnaire) and 15 users.
<b>5 :00 – 6 :00 pm</b>	Cakes and free time for exchange amongst organizers, technology providers and users. Dedicated minutes to officially thank all the participants to the session.

Day 2

<b>9 :00 – 9 :15 am</b>	Welcome of 2nd group of (direct) users (including registration and consent form if not signed previously)
<b>9 :15 – 12:15 pm</b>	2 <sup>nd</sup> session with (direct) users Drinks were always available (hot or cold beverages: coffee!) In CARINNA's case: same planning as 1 <sup>st</sup> session.



<b>12 :15 – 1:45 pm</b>	Lunch and free time for exchange amongst organizers, technology providers and users. Dedicated minutes to officially thank all the participants to the session.
<b>1:45 – 2:00 pm</b>	Welcome of 3 <sup>rd</sup> group of (indirect) users (including registration and consent form if not signed previously)
<b>2 :00 – 5:00 pm</b>	3 <sup>rd</sup> session with (indirect) users Drinks were always available (hot or cold beverages: coffee!) In CARINNA's case: same planning as 1 <sup>st</sup> session but due to a lower number of participants (10), individual programmes were adapted in order to allow more experiments per user.
<b>5 :15 – 6 :00 pm</b>	Cakes and free time for exchange amongst organizers, technology providers and users. Dedicated minutes to officially thank all the participants to the session.

## 5.2 Ethical / IPR issues

From the initial steps, the IPR issues have been seriously considered. It was a concern rose by the members of the Domomédecine initiative. In order to take it into account, a specific document was built based on the ethical advice of the Living Lab ActivAgeing and the University of Pau (ensuring its coherence with national and European). This document, the "Participant charter" (see Annex 1.3), explained and defined the rights and obligations of each participant (user, organizer, technology providers). It took into account mainly:

- The framework in which the TEC was taking place (e.g. SlforAGE and Work package 2)
- Confidentiality agreement (e.g. excluding information that may already be available publicly)
- The propriety and use of generated results from confidential information
- Costs and reimbursement (e.g. exclusion of liability of CARINNA)
- Risks and discomfort (e.g. identification of a contact whenever a difficulty may appear during the TEC)
- Specific engagement of the Technology provider (e.g. insurance regarding the use of its technology by older people)
- Liabilities (insurance from participant is their own)
- Data from user (e.g. guarantee of anonymous treatment of data)
- Resolution of conflict (e.g. applicable law)
- Authorisation for future contact
- Authorisation of photos and videos for dissemination purpose
- Date and signature of participant including

## 5.3 Infrastructure / Facilities

The TEC was host in the buildings of the Technopole de l'Aube en Champagne. The Living Lab ActivAgeing facilities were also integrated into these buildings.

5 rooms were required for the implementation of the TEC:

- The main room was dedicated to:
  - o welcoming participants
  - o "leisure" activities,
  - o coffee break and lunch.
- Another room hosted 2 technologies
- And the 3 remaining technologies had their own room.

The technology presented did not require extensive space. Whenever necessary, and especially the morning of Day 1, we validated with the technology providers the organisation of space and furniture in the allocated rooms for the evaluation. Contact already took place previously by phone to ensure that all specific needs would be correctly answered during the TEC.

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Electricity, chairs, table, wireless access were necessary and provided over the two days.

## 5.4 Venue

The buildings of the Technopole de l'Aube en Champagne are located in the surrounding of the main city of Troyes, in a town called Rosières-près-Troyes that belongs to the "Grand Troyes" conurbation. The place is known to the inhabitants but participants have been there few days before to ensure the correct location of the TEC. It is located next to the Troyes University of Technology and in an education and business area.

The local arrangements at the venue have been done in order to create a comfortable and friendly environment for the users and suitable for effective user experience evaluation. In particular, the following arrangements shall be mentioned:

- All rooms and respective directions inside and outside the venue were clearly marked to enable comfortable orientation of (older) participants
- The special helpdesk was organized with the personnel capable of providing any kind of assistance (e.g. filling in forms, giving explanations, showing directions, etc.)
- There was a sufficient number of supporting personnel in the social room observing the venue to detect those participants who got difficulties, bored or disoriented. The supporters proactively approached those who needed assistance. The goal was to give everyone a feeling that everybody is welcome, taken care of and not left behind.
- The room was equipped with the big screen, which provided real-time information on what is happening, guidance and useful information.
- As the design of the event implied waiting for experiments, there were measures aimed at reducing the stress of waiting: chess, puzzles, newspapers, journals were available; opportunities for chatting and communication between the participants and between the participants and technology providers & supporters were created.
- The catering facilities provided tea and coffee at any moment of the event. Additionally, the lunches were served the way enabling communication and comfortable opinion exchange. This kind of social atmosphere was critically important to the success of the event.
- At the end of each day all the organizers expressed appreciation to all participants for their contribution highlighting how important was their participation for the technology development. Small token of appreciation was presented to all participants.

Creating such conditions at the venue of the TEC allowed building trust and spirit of cooperation between the users and technology providers. During the conclusive meeting all parties involved (older users, technology providers, organizers, other attending stakeholders) stated that such organization made possible effective and pleasant climate for user experience evaluation.

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## 6. User experience survey

Before we present the analyses it is important to refer that we analysed whether demographic factors influenced the results (gender, age, education level). We verified that none of these factors influenced significantly the outcomes.

### 6.1 Survey design

In order to evaluate the results of the TEC, two types of strategies were used:

- **Pre-post evaluation (n=22):** to evaluate the efficacy of the TEC for influencing attitudes and behaviours toward the use of technologies, we used a pre-post design.

Only direct users are included in the pre-post evaluation. All participants were asked to fill a questionnaire before (pre-questionnaire – see Annex 2.1) and after (post-questionnaire – see Annex 2.3) attending the TEC. The post questionnaire also included some questions addressing the reactions regarding the TEC. Only 22 of the 41 participants answered both the pre and the post questionnaire, hence results are based on this specific group. Analyses of the results showed that participants that answered both the pre and post questionnaire did not differ significantly from the ones that answered just the pre questionnaire.

Our initial goal was also to include a control group. However, due to the limited number of participants in this group (n=12), and the fact that they only answered the initial questionnaire, we decided to exclude this group from the analyses<sup>1</sup>.

- **Evaluation of the technologies during the TEC (n = 41):** participants were also asked to fill a brief questionnaire (see Annex 2.2) regarding each of the technological devices they tested.

For these evaluations results are presented taking into consideration the full sample of participants that participated in the TEC: direct + indirect users.

Also, it is important to emphasize that due to the reduced number of indirect users in the sample (n=9) it was not possible to present the analyses discriminated according to the “type of users”. Hence, results are presented including the direct and indirect users.

### 6.2 Questionnaires

Two questionnaires were created to evaluate attitudes and motivations regarding the use of technology (one for the pre-post evaluation and one for the evaluations of each technology during the TEC). These questionnaires shared a similar conceptual background, although the questionnaire used during the session was considerably smaller than the pre-post questionnaire.

The questionnaires were based on the **Technology Acceptance Model (TAM)** introduced by Davis (1986), which is one of the most widely accepted information technology (IT) models. This model theorizes that an individual's behaviour intention to use a system is determined by two beliefs:

- perceived usefulness, defined as the extent to which a person believes that using the system will enhance his or her performance, and
- perceived ease of use, defined as the extent to which a person believes that using the system will be free of effort.

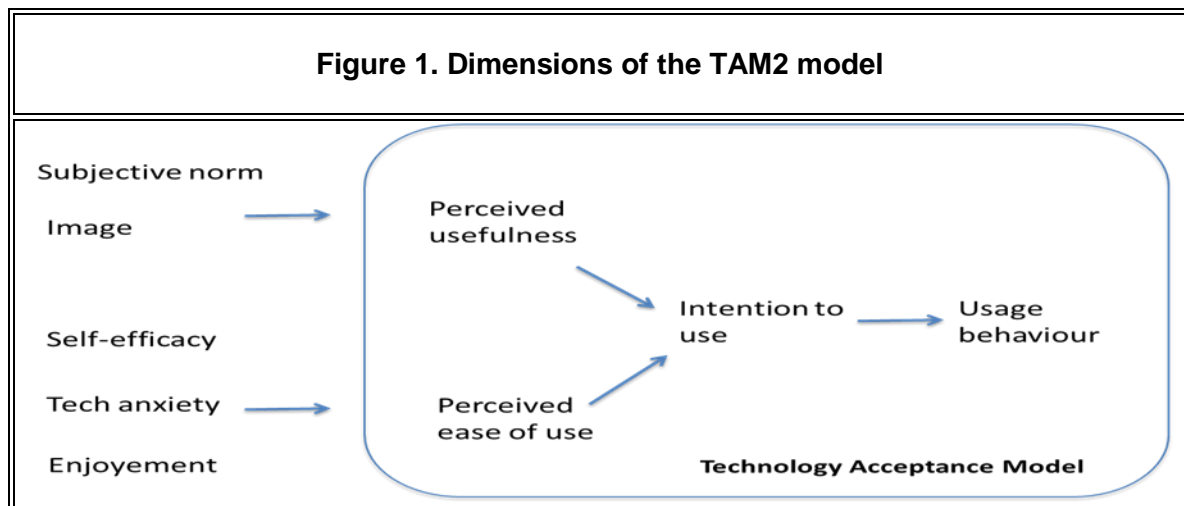
Recently TAM was theoretical extended by Venkatesh & Davis (2000), to explain perceived usefulness

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<sup>1</sup> There were some difficulties in finding enough older people to collaborate in the control group. Also, there were also some limitations in the number of older participants that answered both the pre and post questionnaire. We explain in more detail this issue in section 8.2.

and usage intentions in terms of social influence and cognitive instrumental processes. TAM-2 includes additional key determinants of TAM's perceived usefulness and usage intention constructs, and to understand how the effects of these determinants change with increasing user experience over time with the target system. These authors have developed an instrument to measure these variables. Later, a Modified version of TAM-2 was developed by Won et al. (2007) to evaluate the acceptance and characteristics of technologic products for the older users.

In this work, our goal was to use this instrument to measure usage intentions, exploring in particularly some of the key predictors of perceived usefulness and perceived ease of use (see Figure 1). Table 1 presents a brief definition of each factor included in this model.



Based on the literature review, we also included a measure of the stereotypic perceptions of older people and use of technology since this is identified as one of the main barriers to technology use by this age group. In fact, there is a stereotypical view that older adults are technologically inadequate. What is particularly insidious is that the negative sloping of human potential represented by ageism may well form the image that older people themselves internalize (Chaffin & Harlow, 2005). For example, being too old to learn to use computers is a belief held by many older people, even before attempting to use computers (Timmermann, 1998, in Broady, 2010).

In fact, the manner in which older people are viewed and treated can impact upon their acceptance and utilization of technology (Broady, 2010). The negative self-beliefs held by the older students may well be ascribed not solely to their poor performances (Hawthorn, 2007), but also to the negative stereotypical views held by their tutors, as well as the fact that the tutors expected them to learn new skills not commensurate with their existing skills and knowledge more rapidly than they were capable of doing (Broady, 2010). In order to measure the impact of ageing stereotypes we included some items measuring stereotype threat, stigma consciousness, stereotype content in general and specifically related with the use of technology by older people (see Table 1).

Finally, we also included some demographic questions and items evaluating previous experience with technological devices.

For the purposes of all statistical analyses we consider an effect significant if it is  $p < .05$

<b>Table 1. Variables measured in the questionnaire – psychometric qualities at the TEC</b>					
<b>Variables</b>		<b>Source</b>	<b>Pre questionnaire</b>	<b>Post questionnaire</b>	<b>During questionnaire*</b>
<b>Previous experience with technologies</b>	<b>Use of technologies</b> <i>refers to the frequency of use of technologies in daily life</i>	Original item	Q1.1.	Q1.1.	-
	<b>Frequency of use of different types of technologies</b> <i>refers to the frequency of use of specific technologies in daily life</i>	Adapted from Matlabi (2012); Hernandez-Encuentra et al. (2009); Patomella et al. (2011)	Q1.2.	Q1.2.	-
<b>TAM2</b>	<b>Intention to use technology/specific technology</b> <i>expressed tendencies to use technologies in daily living</i>	Adapted from Venkatesh (2000); Venkatesh & Davies (2000); Wong et al. (2007)	Q2.1.1; Q2.2.2  $r = .94^{**}$	Q2.1.1; Q2.2.2  $r = .97^{**}$	Q2.1; Q2.2
	<b>Ease of use of technologies/specific technology</b> <i>the extent in which the person believes that using the system will be free of effort</i>		Q2.1.3-Q2.1.5  $\alpha = .86$	Q2.1.3-Q2.1.5  $\alpha = .90$	Q2.3-Q2.5
	<b>Usefulness of technology/specific technology</b> <i>the extent to which a person believes that using the system will enhance his or her performance</i>		Q2.1.6-Q2.1.8  $\alpha = .83$	Q2.1.6-Q2.1.8  $\alpha = .83$	Q2.6-Q2.8
	<b>Subjective norm</b> <i>person's perception that most people who are important to him think that he should or should not perform the behaviour in question</i>		Q2.1.9-Q2.1.10  $r = .72^{**}$	Q2.1.9-Q1.1.10  $r = .83^{**}$	-

	<p><b>Image</b></p> <p><i>the degree to which use of innovation is perceived to enhance one's status in one's social system</i></p>		<p>Q2.1.11-Q2.1.12</p> <p><math>r = .36^*</math></p>	<p>Q2.1.11- Q2.1.12</p> <p><math>r = .51^*</math></p>	-
	<p><b>Self-efficacy</b></p> <p><i>one's beliefs about his/her ability to perform a certain task/job using technology</i></p>		<p>Q2.1.13-Q2.1.15</p> <p><math>\alpha = .76</math></p>	<p>Q2.1.13- Q2.1.15</p> <p><math>\alpha = .70</math></p>	-
	<p><b>Technological anxiety</b></p> <p><i>individual's apprehension or even fear when he/she is faced with the possibility to use technologies</i></p>		<p>Q2.16/Q2.1.20- Q2.1.22</p> <p><math>\alpha = .51</math></p>	<p>Q2.16/Q2.1.20- Q2.1.22</p> <p><math>\alpha = .70</math></p>	Q2.9/Q13- Q2.15
	<p><b>Enjoyment</b></p> <p><i>the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use</i></p>		<p>Q2.1.17-Q2.1.19</p> <p><math>\alpha = .97</math></p>	<p>Q2.1.17- Q2.1.19</p> <p><math>\alpha = .95</math></p>	Q2.10-Q2.12
<b>Stereotypes of old age and technologies</b>	<p><b>Stereotypic behaviours and technology</b></p> <p><i>the degree in which certain behaviours are perceived to be typically associated with different age groups</i></p>	Swift, Abrams & Marques (20013)	Q3	Q3	-
	<p><b>Stereotype threat</b></p> <p><i>anxiety or fear that one's performance could be affected by the stereotypic expectancies regarding one's age group</i></p>	Marx & Goff (2005)	<p>Q41-Q4.4</p> <p><math>\alpha = .80</math></p>	<p>Q41-Q4.4</p> <p><math>\alpha = .89</math></p>	Q3.1; Q3.2
	<p><b>Stigma consciousness</b></p> <p><i>awareness of the negative representations associated with the age group</i></p>	Brown & Pinnel (2003)	<p>Q4.5-Q4.7</p> <p><math>\alpha = .64</math></p>	<p>Q4.5-Q4.7</p> <p><math>\alpha = .73</math></p>	-

	<p><b>Stereotype content model</b></p> <p><i>the degree in which older people are typically perceived to be competent or warm</i></p>	Fiske et al. (2002)	Q5	Q5	-
	<p><b>Identification with old age</b></p> <p><i>the degree in which individual's believe that they belong to the age group and that this is important for their self-concept</i></p>	Abrams et al. (2006)	Q6 $\alpha = .80$	Q6 $\alpha = .84$	-
Reactions to the TEC	<p><b>Reactions to the TEC</b></p> <p><i>opinion regarding the TEC experience</i></p>	Adapted from Velada (2009)	-	Q7	-
Demographics	<p><b>Age, gender, place of living, people living with, work and leisure situation, education, habit to fill questionnaires</b></p>	Original items	-	-	-
<p>Note: the psychometric values of all the scales for each technology evaluated were appropriate and proximal of the pre-post results (more information available by contact with the authors)</p> <p><math>\alpha</math> = Chronbach alpha; <math>r</math> = Pearson correlation (based on TEC questionnaire results)</p> <p>* <math>p &lt; .05</math>, ** <math>p &lt; .01</math></p>					

### 6.3. TEC feedback

#### 6.3.1. Previous experience with technology

##### 6.3.1.1. Use of technology

100% of the participants in the TEC stated that they use technological devices in their daily living in the pre and post questionnaire.

### 6.3.1.2. Types of devices used

Table 2 presents a list of the technological devices TEC users referred to use in their daily living. Participants use in a regular basis different types of home appliances such as the remote control, TV, microwave and the dishwasher. It is also important that participants in the TEC also referred a frequent use of the desktop computer, the internet and the mobile phone.

There were no significant differences between the use of these devices before and after participation in the TEC.

<b>Table 2. Frequency of use of different type of devices regularly used by TEC users</b>				
(n = 41) (1 = never; 2 = a few times during the year; 3 = once a month; 4 = every week; 5 = everyday)				
Types of devices used	Before TEC			
	M	SD	95% CI	
			IL	SL
Remote control	4.83	0.84	4.66	5.07
TV	4.73	0.74	4.50	4.97
Microwave	4.32	1.35	3.89	4.74
Mobile phone	4.29	1.05	4.56	5.09
Dishwasher	4.23	8.39	1.54	6.91
Internet	4.10	1.41	3.65	4.55
Desktop computer	4.00	1.6	3.46	4.54
Laptop	3.50	1.93	2.83	4.17
Coffee maker	3.40	1.71	2.85	3.95
CD	2.83	1.13	2.46	3.19
Digital camera	2.75	1.26	2.35	3.15
Other	2.56	2.19	1.40	3.73
GPS	2.38	1.57	1.88	2.89
DVD	2.20	1.28	1.79	2.61
Assisted health devices	1.78	1.57	1.26	2.31
Emergency call systems	1.41	1.3	0.97	1.84

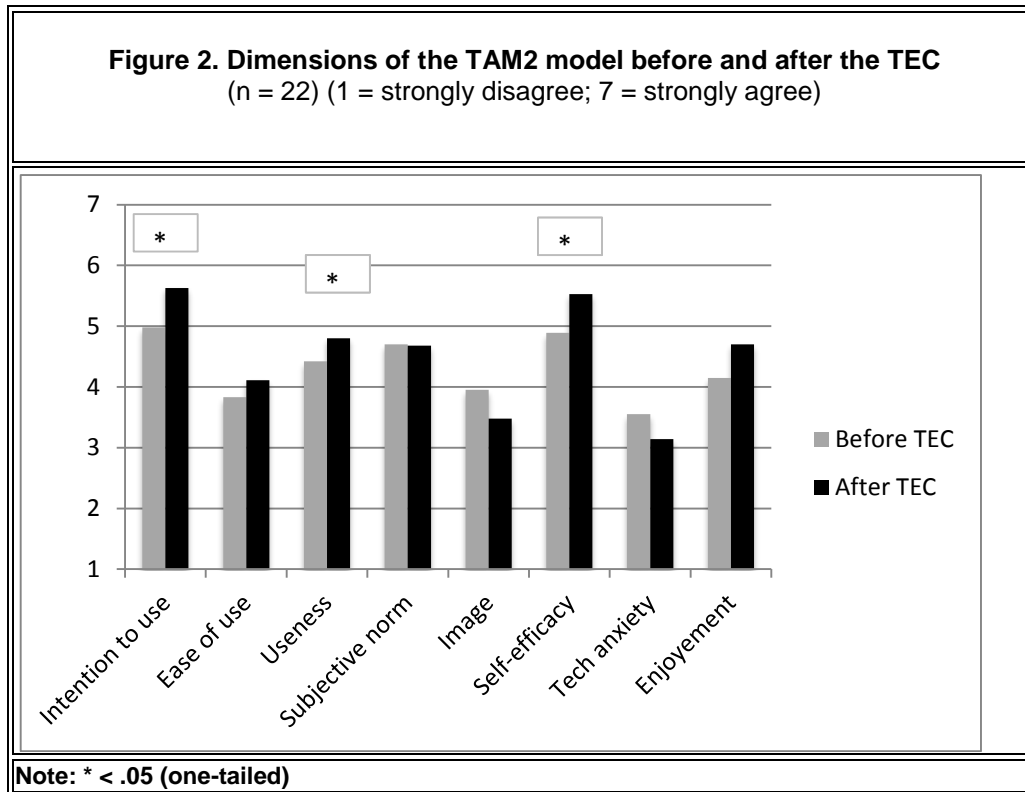
Note: M: Mean; SD: Standard deviation; CI: confidence interval; IL: inferior limit; SL: superior limit. Values presented in this table refers to answers in the pre-questionnaire



## 6.3.2. TAM2

### 6.3.2.1. Pre-post comparison

The analyses of the results revealed a significant positive effect of participation in the TEC in the intention to use technologies<sup>2</sup>, perceived usefulness<sup>3</sup> and self-efficacy<sup>4</sup>. The general pattern of results suggests that participants perceive the use of technologies as enjoyable and refer low levels of anxiety regarding its use (Figure 2).



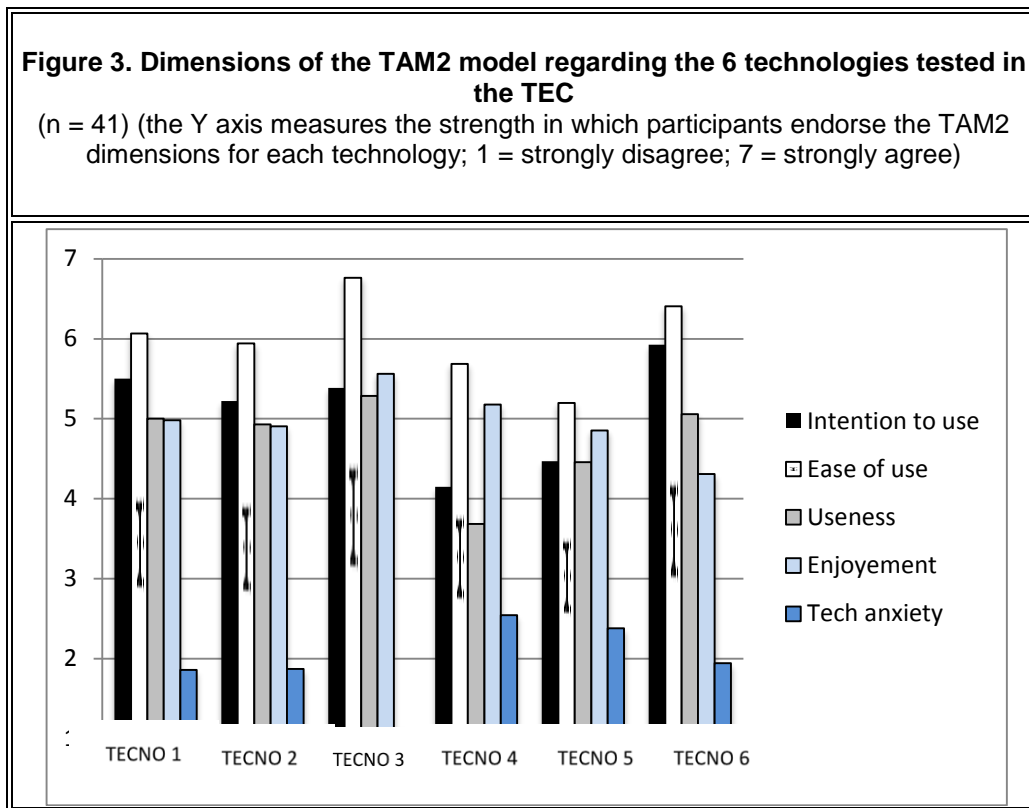
<sup>2</sup>  $t(21) = -1.92, p = .038$

<sup>3</sup>  $t(21) = -1.96, p < .064$  (albeit at marginal levels)

<sup>4</sup>  $t(21) = -2.05, p < .052$

### 6.3.2.2. Evaluation of the 6 different technological devices during the session

In this point, more than comparing the relative perceptions of the different technologies tested, we were particularly interested in the overall evaluation of the technologies. This analyses revealed a positive overall opinion with high intention to use, perceived ease, usefulness and enjoyment levels. Anxiety regarding the use of technologies was low in general (Figure 3).

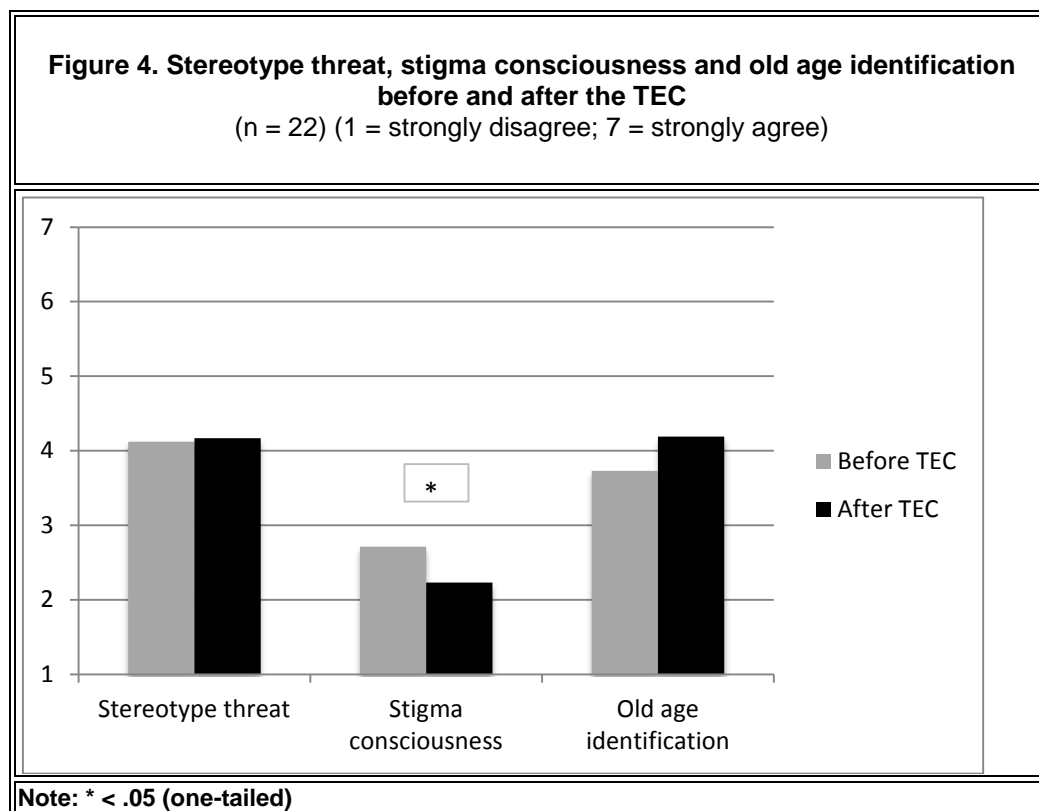


### 6.3.3. Stereotypes of old age and technologies

#### 6.3.3.1. Pre-post comparison

The analyses of the results showed that participants experienced medium levels of stereotype threat regarding the use of technologies and that they have had a low consciousness level of being stigmatized due to their age. Moreover, results also revealed a medium level of identification with the old age group.

Participation in the TEC had a marginal significant impact on the decrease of the consciousness of being stigmatized<sup>5</sup> (Figure 4).

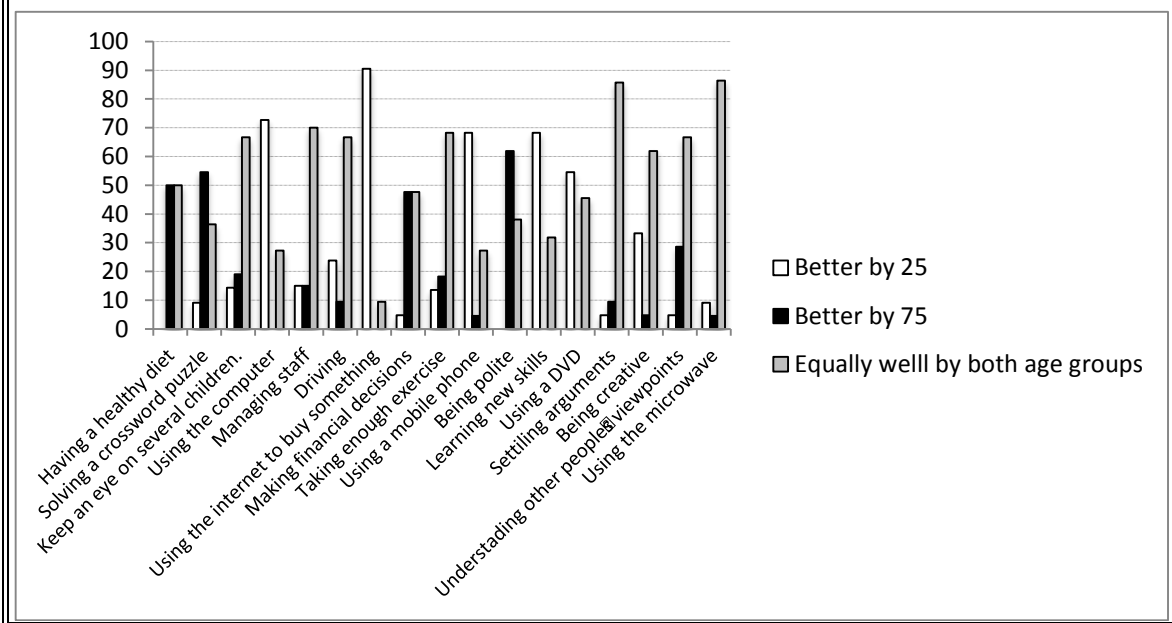


In the pre-post evaluation questionnaire we were also interested in evaluating whether the participation in the TEC could have a significant impact on the stereotypic perceptions of older people and use of technology. The analyses of the pre-questionnaire revealed that the participants associated the use of technologies is with the 25 year old group: using the computer (72.7%); using the internet to buy something (90.5%); using a mobile phone (68.2%). However, in some cases a significant percentage of participants also associated the use of specific technologic devices with both age groups: using a DVD (45.5%); using the microwave (86.4%).

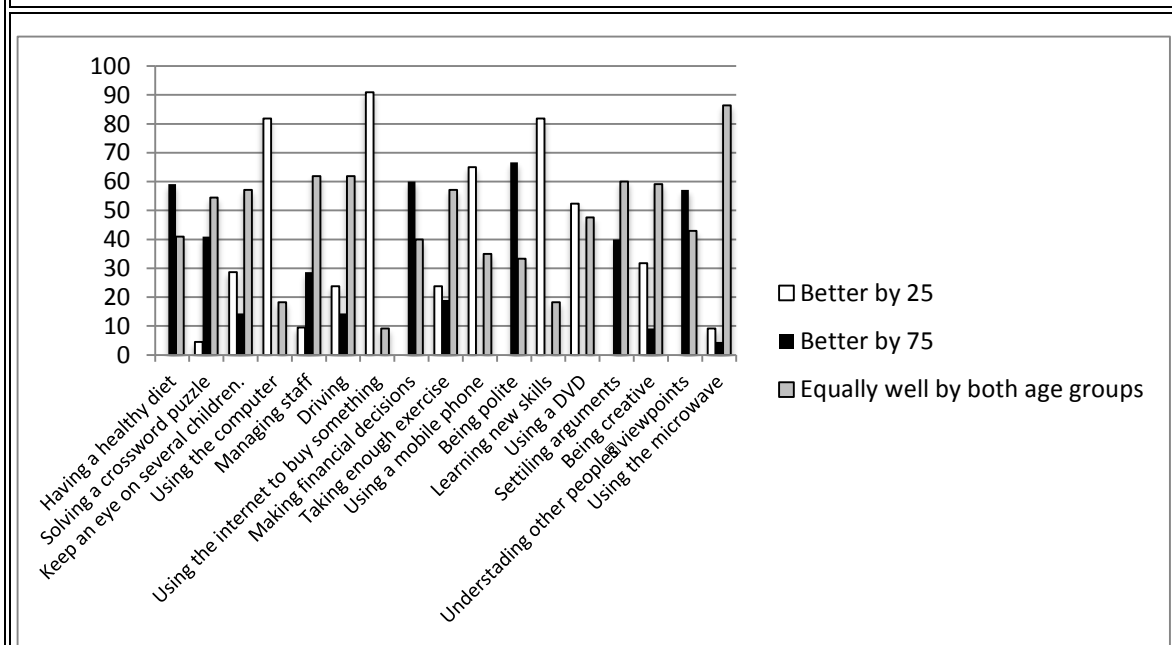
These stereotypic representations did not change in a significant way after participation in the TEC (Figure 5 and 6).

<sup>5</sup>  $t(21) = -1.90, p = .072$  (albeit at marginal levels)

**Figure 5. Behaviours associated with different age groups before the TEC**  
(n = 22)

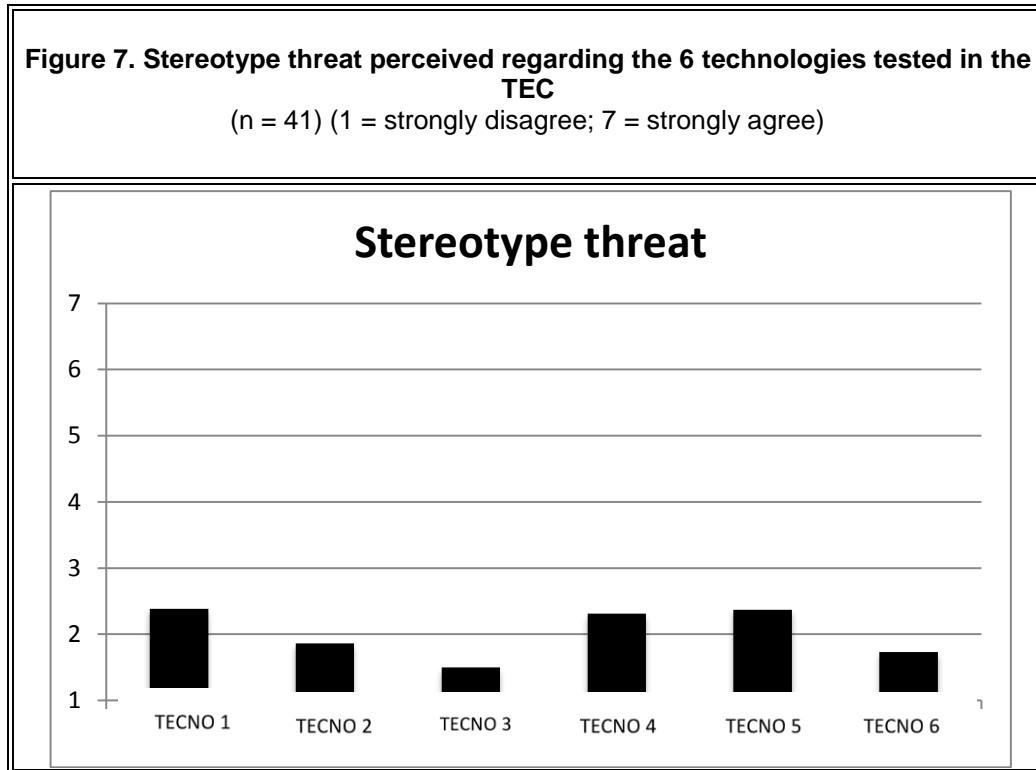


**Figure 6. Behaviours associated with different age groups after the TEC**  
(n = 22)



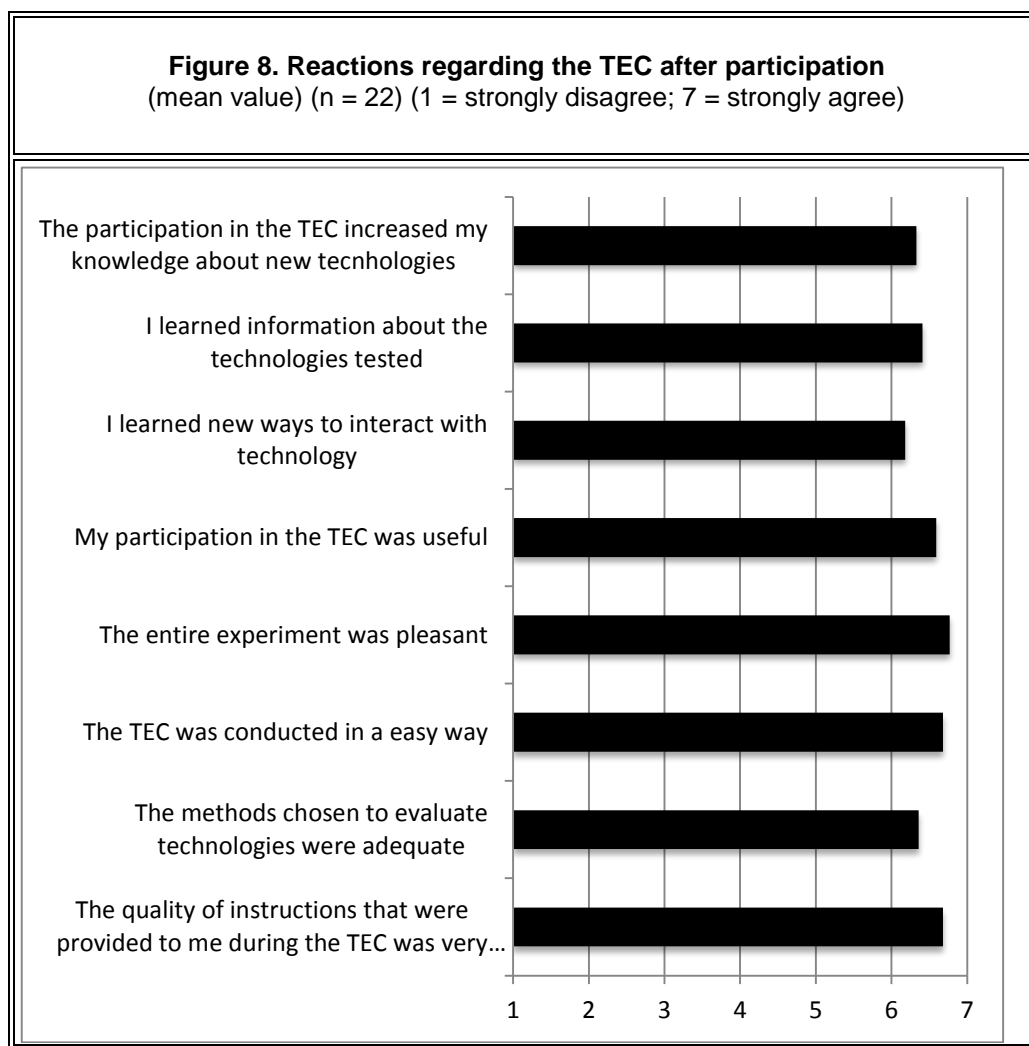
### 6.3.3.2. Evaluation of the stereotype threat related with the use of the 6 different technological devices during the session

Participants revealed an overall low level of perceived threat regarding the 6 technologies tested in the TEC (Figure 7).



### 6.3.4. Reactions to the TEC

Participants rated their participation in the TEC in a very positive way regarding the different facets of participation in this experience (see Figure 7 for a detailed description of this opinion) (Figure 8).



When asked about their collaboration in TECs in an open manner, participants considered it very useful, interesting and enjoyable. Some of them even showed their availability and interest in participating in similar future studies (Table 3).

<b>Table 3. Qualitative evaluation regarding the TEC after participation</b> (n = 14)
It was very useful (n=7)
It was very interesting (n=6)
It was very enjoyable (n=6)
I'm available and interested in participating in similar studies in the future (n=3)

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## **7. Resources employed for the TEC**

### **7.1 Personnel**

Within CARINNA, one project manager, the International affairs manager, was appointed for the implementation of the TEC. He was supported by the Head of Health Department which ensured the coordination with regional actors in the field. Also the Communication manager and Director of CARINNA participated in this work.

The total implementation requires approximately 0.35 Full Time Equivalent (FTE) at CARINNA's level.

It should be taken into account that during the two days of the TEC, CARINNA was supported by 5 others SlforAGE partners. This implication, as well as the one from the co-organisers (e.g. Living Lab ActiAgeing, Technopole de l'Aube en Champagne, Centre de prevention Les Arcades) is not included in the above mentioned estimation.

Also the TEC has been designed and discussed in the different phases of its elaboration with the partners of SlforAGE during meeting (23<sup>rd</sup> of May 2013) and phone conferences (4<sup>th</sup> of February, 28<sup>th</sup> of March 2013) and bilaterally with UPPA for the call for interest and ISCTE-IUL for the elaboration and analysis of the questionnaires.

On the elaboration of the questionnaire and analysis of results, ISCTE evaluate its involvement at 0.12 FTE.

### **7.2 Publicity**

Approximately 1500€ were spent on advertising materials (from logo design to token of appreciation).

### **7.3 Other costs**

Rooms for the experiment were made freely available by the Technopole de l'Aube en Champagne and the Living Lab ActiAgeing. They also freely provided the wireless access and other compulsory requirements such as electricity, chairs, tables...

Several missions to Troyes were necessary for the successful implementation of the TEC.

Catering: approximately 2500€ were spent to cover the two days of the event.

Other costs linked to overheads are also used (e.g. invitation letters).

CARINNA is mainly supported in its overall activities by the Regional council of Champagne-Ardenne, European Regional Development Fund, French State and other stakeholders.

## 8. Impact Assessment

### 8.1 Perception / acceptance of technologies by older people

The evaluation of the TEC revealed the following pattern of results:

- Participants in the TEC were regular users of technologies both regarding digital devices (computers, mobile phone) but also home appliances
- Participation in the TEC was perceived as a very useful and positive experience
- Participants revealed low levels of anxiety regarding the use of technologies and low levels of influence by ageing stereotypes
- Participation in the TEC led to an increase in the intention to use and perceived usefulness and self-efficacy regarding the use of technologies in the future
- All 6 technologies tested were evaluated in a positive way

### 8.2 Major barriers / enablers

Main limitations of the evaluation results:

- There were some limitations regarding the sample of participants. First of all, it is important to emphasize that participants for the TEC were older people that volunteered for this activity. In this sense, this is a clear convenience sample with people that hold possibly already positive attitudes toward technology use. Hence, the results presented in this reported are not representative of the views of older people in general. Moreover, only 22 of the 41 participants actually answered both the pre and post questionnaire. This limits the result analyses to a smaller sample of participants. Finally, it is also important to note that in spite of all our efforts it was difficult to get answers from older people composing the control group. Main reasons was the fact that since these people were not directly involved in the TEC they did not feel that they ought to contribute to the study. In the next TEC it would be very important to emphasize the importance of this group to research in “older people and the use of technology” to get adherence of older individuals to this study, even if they don't take an active part in the TEC. If older people believe that they are contributing to research in this topic they might answer the questionnaires even if they only collaborate in the control group.
- The impossibility of analysing the control group limits the conclusions of the efficacy of the TEC in the sense that it is not possible to verify the possible influence of confounding effects (other types of experiences that participants in the TEC might have had and influenced their attitudes toward technologies)
- The fact that participants in the TEC already had a high level of experience with technologies in their daily life does not allow a generalization of these results to other groups of older people less experienced. It would be very important to test this methodology in older people less familiar with technological devices. In fact, many of the barriers that we encounter in the literature for older people's lack of interest in the use of technological devices refer to this second group of people.

### 8.3 Benefits for the technology providers

The technology providers evaluated the TEC has a positive and very positive experience. They were satisfied with the organisation of the TEC based on a quality survey. Amongst other results:

- All providers were satisfied with the experimental conditions offered by the Living Lab ActivAgeing and the Technopole de l'Aube
- The given timeframe had allowed the technology providers to evaluate different aspects of user interaction with their technology
- The number of experiment is evaluated as sufficient
- The participants did not fully corresponds to their targeted market (since some technology addressed a more general audience)
- All providers are willing to apply for a new edition of the TEC.



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## 8.4 Conclusion

The TEC has been a success for all parties involved: users, technology providers and organisers. It has allowed, in a friendly atmosphere, older people to test, evaluate and comment on a diversity of technologies while technology providers had the opportunity to collect live feedback from potential users. In the frame of SIforAGE, the analysis of this first TEC shows a positive attitude of older people towards technologies. Nonetheless, this needs to be confirmed through the organisation of other TECs in the frame of the Work package 2.

The feedback based on the analysis and through informal ways is very positive and the users remembered the TEC as a fun and great experience. The technology providers are also satisfied with the outcomes and willing to repeat the experience. For the organisers, the goal has been achieved by gathering more than 40 users and more than 5 technologies in a same place for evaluating and enjoying innovations.

The objective for SIforAGE partners and CARINNA is now to capitalise on this first experience to support the partners involved in the Work package 2 to implement their own TEC and study the possibility to implement similar approach within other sectors and audiences. CARINNA plans to contact both users and technology providers to present the result and identify the impact of the TEC.

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## 10. Annexes

### 10.1 Annex 1. Documents developed at the even preparation stage

1. *Annex 1.1 Announcement of the call for interest targeting technology providers, French: TEC-Annonce-20130531.pdf*
2. *Annex 1.2 Guidelines for technology providers to answer the call for interest, French: TEC-Guide fournisseur-20130530.pdf*
3. *Annex 1.3 Charter of participants (rights and obligations of TEC participants), French: TEC-Charte du participant-20130618.pdf*
4. *Annex 1.4 Flyer for recruiting participants, French: TEC-Flyer-201308\_40x60cm\_v7.2\_bassedef.pdf*
5. *Annex 1.5 Poster of the TEC (for signalisation purpose), French: TEC-Poster-201308\_40x60cm\_v11\_natif.pdf*

### 10.2 Annex 2. Documents for the user experience survey

1. *Annex 2.1 Questionnaire to be answered before the TEC, French: QuestionnaireTEC\_Pre-pos\_20130919.doc*
2. *Annex 2.2 Questionnaire to be answered during the TEC, French: QuestionnaireTEC\_forthesession.pdf*
3. *Annex 2.3 Questionnaire to be answered after the TEC, French: QuestionnaireTEC\_Pos\_20131014.doc*