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# Insights on older adults' attitudes and behavior through the participatory design of an online storytelling platform

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**Abstract.** While digital technology adoption by older adults rises constantly, the design of new technologies often overlooks the culture of the end users, which, in turn, has an impact on the acceptance and use by many of them. Based on the fact that technology adoption by this age group in Greece remains low, compared to the vast majority of the EU countries, our goal in this paper is to gain further insights into the user requirements of older adults as web 2.0 storytellers in order for designers to better address their needs. For this purpose, we implemented participatory design with five older adults in Greece over a twelve-week period, combined with an evolutionary prototyping approach, as we noticed during our sessions that our participants had a difficulty in envisioning and proposing novel technologies. In order to analyze and interpret the feedback that we collected during the design sessions, the digital storytelling sessions and the in-depth interviews, we made use of the Activity Theory, as well as age-related and self-presentation frameworks. Through probing our participants' usage and design preferences of the storytelling platform, we came up with a set of attributes and motives that seem to expound their online choices. Issues of loneliness and social inclusion, generativity and computer mediated communication, among others, have emerged. Additionally, differences and similarities with findings from other studies have been indicated.

**Keywords:** Older adults · Participatory design · Digital storytelling.

## 1 Introduction

The global population of older adults has doubled since 1980 and, as it seems, in 2050 the number of people aged 60 years or more will be twice as large as it is now. By then, it is estimated that Japan (42.4%), Spain (41.9%), Portugal (41.7%) and Greece (41.6%) will be the countries with the largest percentage of older citizens [35].

Older adults are one of the fastest growing groups of ICT users [1]. The elderly population is not homogeneous, but comprises of individuals with different characteristics, experiences, mental and physical states [25]. Contrary to the

preserved stereotype that ageing and new technology adoption do not get along, researchers argue that older adults are just a different kind of users compared to the younger ones, with different capabilities, handicaps, usage patterns and expectations from technology [2, 23, 25].

Stories and narratives are significant cultural means through which knowledge can be shared. The benefits of creating written or digital artifacts have an important effect on the individual’s well-being and the community. Through life stories people construct their identities, reflect their culture, and often help themselves maintain their mental health [27]. According to Paul Ricoeur [32], our narratives are interwoven with a social dimension and contribute to our efforts for understanding who we are. Also, Jerome Bruner [4], based on Jean-Paul Sartre’s arguments, emphasized that one’s life stories should be placed and interrelated within a community of other people’s narratives. Likewise, it seems that older adults can benefit from sharing digital stories in a variety of different ways, such as social engagement, motivation, and connectedness with younger generations [21].

Nowadays, research on digital technologies for storytelling, communication, and content sharing has been a significant field in HCI and CSCW (e.g., [3, 8, 36, 37]). However, ICT is not culturally neutral [33] and, notably, Greek older adults are almost the least connected to the Internet age group in the European Union [12]. Hence, it is a matter of importance for designers to focus on their distinct attributes and involve them further in the design process [15, 23]. In order to gain better insights into the needs and attitudes of Greek older adults as storytellers, in this article we describe a participatory design [19] combined with an evolutionary prototyping approach [30] for the creation of a web 2.0 storytelling platform.

## 2 Methodology

The research presented in this paper lasted twelve weeks and included five participants. It consisted of three phases: (1) exploratory sessions in order to examine participants’ needs and record their attitudes and preferences on digitally written narrations, (2) design and iterative refinements of the storytelling platform, and (3) implementation of the platform. In each phase, semi-structured in-depth interviews were conducted with the participants and, mainly during the second phase, short storytelling and design workshops were implemented. Our goal was to trigger further discussions and gain deeper insights into older adults’ feedback, concerning issues of usefulness, design and usability.

Participants were recruited by word-of-mouth. Initially, the design group included six older adults, three men and three women, but one woman withdrew before the second phase. All of them were healthy, had retired from work, lived in their houses with their spouses and their age ranged from 59 to 73 years old. In this article, they are referred to by a distinct abbreviation, which reflects the gender and the age of each participant (F59, F65, M66, M67, M73).

By exploring the platform specifications, our purpose is to broaden our knowledge regarding the experiences, attitudes, and preferences of the ageing population in Greece as digital storytellers, in order for designers to better address their needs as active technology users and citizens. Because of the restrictions that derived from the participants' shortage of spare time and the fact that they were geographically remote, the project sessions were conducted mostly individually with each older adult and included several iterations. The sessions of the project took place in their houses in order for them to feel more comfortable. Most of the participants never met each other. As we have previously mentioned, a participatory design methodology has been applied. During the initial exploratory sessions of our project we observed that they often struggled when trying to imagine possible technologies that do not exist. In order to overcome this difficulty, we decided to implement an evolutionary prototyping approach [30], as a grounded starting point during the participatory design sessions, in order to trigger and provoke further discussions.

For the analysis of the qualitative data, we implemented the Activity Theory (AT) framework. Since the late '80s, AT has been broadly used in HCI [6] and CSCW [9, 14] for analyzing the context and development of digital artifacts that support human activities. As AT focuses on the relationship between individuals, the community they participate in, and the tools they use, it has been also proposed as a valuable framework for understanding design and social initiatives within specific cultural contexts [34]. Thus, in our study, AT is a practical lens that could help us code and analyze older adults' online storytelling activities. The main elements of an activity are: the object, the tool, the community, the rules, the division of labor and the outcome [20], as well as the motives, which have been included in the object of the activity [10, 34].

### 3 Results

#### 3.1 Subject: The participants

The younger participant was F59. She had two adult children and was fluent with technology. She had a university degree, she was highly socialized and she had recently lost a relative that she admired. M73 and F65 were married to each other and had two adult children. Also, they both had a university degree, they were usually very busy and had low skills in ICT usage. M66 had graduated from Secondary Education, was extrovert, he did not have any children and could handle ICT at a medium level. M67 had rounded Primary Education, he was rather introvert, was at the novice level of ICT expertise and had two adult children, one of which was living in the same house with him and his wife.

#### 3.2 Object: Digitally written narrations

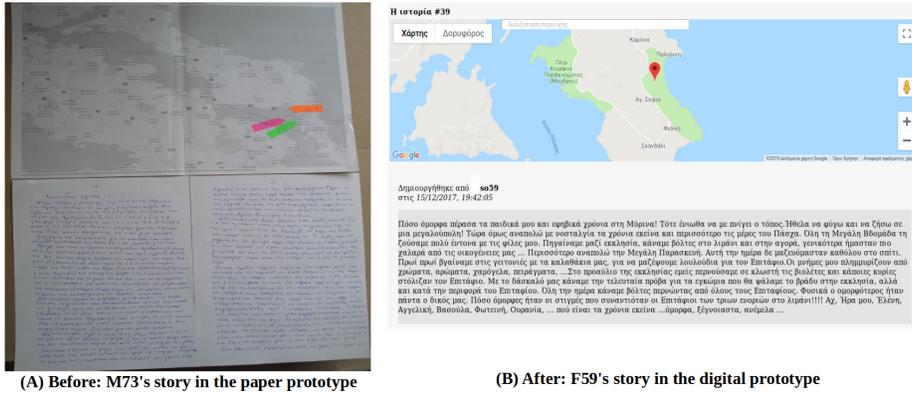
Ten stories were posted on the collective map of the prototype. The shortest story contained 75 words and the longest 936 words (mean=296.90, sd=246.68). The

main themes that emerged were (i) grief or remembrance of a deceased person (two stories: F59, F65), (ii) memories from childhood (four stories: F59, M66, M67, M73), (iii) having fun with friends during adulthood (two stories: F59, M66) and (iv) a personal achievement (two stories: M73, M66). The two most frequent feelings during the storytelling process were nostalgia and a tendency to provide guidance to the next generation. According to the responses of the participants, their motivation to post online narrations is due to their need for writing down their memories (M66, M67, M73) or in order for the descendants to know some historical facts about their family (F65, M67). As memory deficits come with age, some participants regarded that the digital platform can provide them a means for personal memory storage, which can be easily accessed and, in contrast to other tangible media, it cannot be lost or forgotten somewhere in the house (F59, M67). Furthermore, as this platform is on the web, a medium which is extensively used by younger generations, it was also regarded as a valuable tool for promoting their memories to young users (F59, M67). All participants also mentioned that people who try to confront their feelings of loneliness could benefit from the use of the platform, either to communicate directly with specific users through it or to share their own memories, express themselves, and be part of an anonymous ad hoc storytelling community.

### 3.3 Tool: The web 2.0 platform

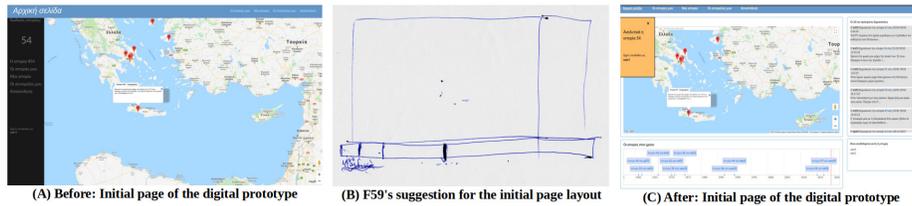
Based on features and guidelines for older adults' software, which derived from other studies (e.g. [2, 23, 31]), as well as the feedback during the interviews and the workshops (Figure 1A), we constructed a basic digital prototype of the storytelling platform (Figure 1B, Figure 2A). Its main functions were (a) a collective map containing all story pointers (Figure 2A), (b) the page with the full narrative of each story, which could also include the viewers' public comments (Figure 1B), (c) the input/edit form that each user could type a new narration or make changes to an existing one, and (d) the private discussions area, where each user could have private chats with others.

In the iterations which followed, the participants decided to focus mainly on the initial page and sketched the main areas and functions that they would like to include (Figure 2B). The most basic suggestions included: (1) The initial page should also include a timeline with the stories, as well as an informative list of the stories that were recently posted. (2) An awareness tool in order for each user to know who else is online. (3) The implementation of cheerful colors (F59, F65) in the interface and removal of bouncing elements (M66). (4) The platform should be properly adjusted to different screen sizes and devices (mainly for tablets and desktop or laptop computers). (5) The storytellers of each narration should have the option to make their stories private or public to other viewers. (6) The storyteller of each narration should have the option to allow or deny receiving public comments or private messages from other users. (7) All platform users should be anonymous. The participants would like to use the application both indoors, e.g. in their living room, and outdoors, e.g. on the beach during the



**Fig. 1.** A paper storytelling prototype made during workshops (A) and its implementation in the digital platform (B).

summer (F59) or in the boat while fishing (M73). A screenshot of the initial page of the final prototype can be seen in Figure 2C.



**Fig. 2.** The evolution of the initial page in the course of the participatory design sessions.

### 3.4 Community: The narrators and the audience

According to the participants’ responses, the community of the storytelling activity comprises of two major groups: the users of the platform and the desirable audience. As no one of the users ever communicated digitally with the others, although they could, the community of the platform reflects mostly the notion of the imagined audience [24] in our study. In general, as the majority of the storytellers (F59, F65, M66, M73) preferred being part of small intimate storytelling communities, they suggested that the platform should have a small number of users, ranging from five (F65, M73) to fifteen (F59). Also, one of the main arguments for keeping a small audience was that they were anxious of receiving offensive messages on their stories (F65, M66, M73). Apart from the potential

negative incoming messages, they were also uneasy about posting their narrations on a platform with unfamiliar users, although they did not explicitly admit it. However, they were mostly in favor of people reading their narrations, mainly younger generations, and they regarded that most of their stories were life lessons that could help others. When our discussions focused on the preferred audience of their digital stories, they all mentioned their closest friends and, mainly, those who had been mentioned in their narrations. Notably, M66 also mentioned that he would like, somehow, a particular story from his childhood to be also accessed by his mother, who had passed away many years ago.

### **3.5 Rules: The implicit regulation of the web 2.0 platform**

Most of the participants (F59, F65, M66, M73) were almost anxious of receiving unpleasant comments by other users, although no one changed the platform settings to avoid interactions with others. The fact that they did not write any public comment or private message themselves to others' stories was not just a matter of reciprocity. After deeper discussions and examinations of their beliefs, we discovered that the phrase 'write a comment' that we used in the corresponding field of the prototype was responsible, at some extent, for their negative attitudes on communicating with other narrators. According to their point of view, the Greek translation of the word 'comment' meant mostly 'criticism', which had a negative meaning. When we used the phrase 'leave a message', instead of 'write a comment', their attitudes changed. Finally, the most essential rule that emerged from our discussions considered mainly netiquette issues.

### **3.6 Division of labor: The task that each storyteller has to perform**

The prototype was initially designed in order for users to post their narrations independently from other users' operations, if they wished to act individually. However, some of the interviewees thought about having their stories co-written or edited by their friends, as platform users, who might have something to add to the digital narration. Eventually, after further discussions, they concluded that they preferred to write and edit their stories by themselves and if any viewer wished to make changes to a specific story, he/she should write a message to the narrator and ask for it.

### **3.7 Outcome: The results of the storytelling process**

At the end of the digital storytelling workshops, besides the final collection of their personal memories, participants had also three significant outcomes from the process. First, having their stories online created a liberating feeling of security to many narrators (F59, F65, M66, M73), that their selected memories will not be forgotten or perished. Second, the features of the storytelling platform, such as the common map, the narrations, the list with the most recent posts, and the ability to send messages to other users provided them with a sense of

community, despite the fact that they never communicated with each other as we have previously mentioned. Third, they discovered how much they enjoyed writing down their most valuable memories, which was something that the majority had never tried in the past. Notably, M66 continued the digital storytelling process on his own after the end of the project.

## 4 Discussion

### 4.1 General observations

Our participants experienced a clear difficulty in envisioning and proposing possible technologies that could meet their needs [23], regardless of their level of proficiency in using ICT. However, the implementation of the evolutionary prototyping approach [30] acted as a catalyst during the participatory design sessions and helped our participants overcome their initial struggle.

Similar to other studies [22, 29], older adults regarded memory recording as a useful tool to resist oblivion, as well as to communicate their memories to young users [22]. The feeling of security that some narrators had after they had posted their stories online was associated not only with the perceived endurance of the web as a file storage medium, according to their point of view, but also with their previous experiences with other media, especially paper, which can be put in places that will be later forgotten. The desirable audience, as well as the themes of their recorded narrations, was not limited to their friends, relatives or strangers, but also included beloved persons who had passed away [18]. Notably, the two stories that were about deceased persons were written by the female users, while the stories concerning personal achievements were posted by male users.

Unlike the use of social media by other older adults [2], our participants did not make any public comments or send private messages to other authors. Although similar behavior has been observed in other studies (e.g. [17, 29]), in our case the main reason for not commenting seems to be related to their deep concern upon issues regarding offensive online actions. Additionally, our storytellers preferred not having their personal stories edited by others [29]. Also, they enjoyed having their stories posted on a common storytelling area and they wanted to have awareness upon the online presence of other users, which also varies among different cultures [26]. All these findings draw a profile of an average user with a mixture of preferences regarding online behavior.

### 4.2 Online performance vs online exhibition

Based on Ervin Goffman's [13] notion upon presentation of the self, Bernie Hogan [16] distinguished users' activities in online social media into two categories: performances and exhibitions. The former includes real time interactions such as online chats, whereas the latter mainly considers the online presentation of artifacts, such as status updates in social networking sites, picture uploads, or even

previous synchronous performances that have become asynchronous artifacts. All presentation activities require two parts: the actor/presenter and the audience that monitors the actor. Under this scope, it seems that our participants used the platform only as an exhibition tool as they just posted their personal memories. Although they read others' memories, they never sent any private or public message. This also seems to be in contrast to other older adults' online behavior [2]. The participants' views, that presenting one's personal memories to an anonymous audience could also help the narrator confront social isolation and feelings of loneliness, reminds us of a similar study on facebook users, according to which feelings of loneliness were reduced when they posted status updates, whether they had feedback from their audience or not [7].

### 4.3 Generativity vs socioemotional selectivity theory

According to the interviewees, all of the stories posted on the platform had also an implicit function as life lessons or advice to others, especially for younger generations and family. Due to generativity, a term used in Erik Erikson's theory of human development, individuals often have a need to act creatively and productively in a way that others can benefit from it, targeting mainly to the next generation [11]. However, the majority preferred the platform to include only five to fifteen users, which seems to contradict, in practice, the aforementioned issue of generativity. This online behavior resembles older adults' attitudes in the real world: On the one hand studies upon generativity (e.g. [28]) have revealed that there is often a decline after midlife and, on the other hand, according to socioemotional selectivity theory [5], contrary to younger adults, older adults usually prefer a small range of social partners, focusing mainly on selected, emotionally meaningful, social relationships.

## 5 Conclusion

During the last decade, a variety of digital technologies focused on older adults have been designed and implemented. However, despite the fact that ICT should not be considered as culturally neutral [33], there still seems to be an implicit notion of 'one size fits all' [34]. In this article we made an attempt to highlight Greek older adults' distinct insights on ICT usage as storytellers and digital content producers through a participatory design approach. We were based on a variety of studies, theories and frameworks for analyzing, comparing and interpreting their attitudes, motives and online behavior, which are partly differentiated from the outcomes found in other studies. Among others, issues regarding loneliness, generativity, computer mediated communication and preservation of personal memories have been discussed. It is evident that due to the small sample size of our study, we cannot generalize our findings. Nevertheless, they could be used as a prompt for future work in order for designers to engage further with this group of users as digital narrators. Besides, promoting the benefits for older adults derived from using storytelling technologies is advantageous not only for themselves but also for the broader community.

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