

Challenges of eliciting inclusive User Requirements for a collaborative XR platform

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ABSTRACT

This paper describes an iterative user-centered methodology designed to elicit user requirements for an eXtended Reality (XR) platform. The XR platform aims to be customizable and flexible, and is intended for use in different pedagogical contexts, instantiated by two pilot scenarios: a) XR training at airports addressed to fire brigade trainees and staff; b) XR experiences that integrate digital interactive storytelling addressed to visitors of informal learning Institutions, such as museums and cultural centers. The design is participatory, placing the users who will be using the platform and their needs at the center of the work, and involving them in all aspects of the process, from the outset. We present this approach and describe the challenges in combining and balancing user needs for different stakeholders.

CCS CONCEPTS

• Human Centered Computing • Human Computer Interaction

KEYWORDS

eXtended Reality, User-Centered Design, User Requirements, Training, Informal Learning

1 One platform for diverse needs

The BRIDGES project aims at “bridging” the gap between interactive technologies and industries, designing eXtended Reality (i.e. Virtual Reality, Augmented Reality and/or Mixed Reality) experiences that can be integrated in different real world pilot scenarios, namely training of firefighters (pilot 1) and informal education and recreation for visitors (pilot 2).

Making XR experiences more accessible to a variety of users is an open challenge [2, 5]. While both scenarios share pedagogical goals and demand a high-quality collaborative experience, the particular objectives differ. For the different contexts of the pilots, related design practices have been considered [9, 10, 11], however what is new here is the need to design a singleXR collaborative platform that fits diverse cases. The two pilots constitute two completely different contexts, goals and user profiles involved. The user group in pilot 1 comprises trainees who must use the platform as part of their obligatory regular training activity. The target user group is thus more homogeneous: mainly men in excellent physical condition, aged 25 to 55 that share the same profession and working environment, know each other, and will be revisiting the same experience over time. On the other hand, a group of users in a museum can be very diverse in age, motivations, interests, professions, level of interaction and participation, familiarity with technology,

abilities, or cultural background [13]. The goal of an experience in this context may also be less factual and more abstract [24][25]. Moreover, operational and equipment-related requirements, and visitor time constraints, in conjunction with the use of high-end technology, may pose additional challenges when designing for public spaces [28]. Designers of XR collaborative experiences must account for such issues to make the experience accessible by every user regardless of physical condition, height, technical expertise, etc.

2 Target groups and Personas

Eliciting inclusive requirements to cater to users’ needs requires getting to know the users, and understanding their goals, actions and context of interaction [1, 3]. We first crafted “personas” [4, 6, 7], i.e. fictional characters to describe the different real users of the XR experiences to be designed. Through online participatory activities and studying the profile and context of the potential users of the pilots, we developed 3 personas of firefighter trainers and trainees for pilot 1, and 6 personas of museum visitors and educators for pilot 2 (9 in total: 5 female/4 male, 6 adults /3 children aged 11 to 17, and one of them having mobility limitations).

These personas, combined with a participatory design approach has been key to the elicitation of user requirements. Involving users of various backgrounds, culture, abilities, age and gender in the elicitation of user requirements, widens the spectrum of XR user-centered and helps overcoming biases and generalized assumptions [14, 15, 17, 21], especially when it comes to embodying the users in the virtual environments [16, 17, 22].

As a result, we collected a total of almost 100 requirements and grouped them into categories such as pedagogical, experiential, technical, and operational, as well as general (applying to both pilots) and site-specific requirements. Each requirement has been given a priority of high/medium/low. Nevertheless, it is an ongoing endeavour that will continue throughout the iterative process of constructing an inclusive XR experience for all.

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