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Automatic creation of informative TV videos to be delivered through iTV: a system architecture

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Abstract

Nowadays most of societies are facing ageing phenomenon what makes the promotion of seniors' independence and autonomy a main issue. In this scope, one of the main factors that allow seniors to stay independent is their information level, which can be leveraged by an adequate use of Television, since this medium plays a crucial role as their key information source. In Portugal, seniors tend to spend about 5 hours per day watching TV. Thus, TV can promote the info-inclusion of seniors through the exhibition of informative contents about specific subjects enabling them to support daily decision-making processes. In this context, this article presents a system architecture to create automatically audio-visual content about public and social services and to deliver it through an interactive TV infrastructure. This paper aims to address the key aspects of the architecture and to discuss the issues that should be considered during its design. The paper also discusses the architecture test plan.

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Keywords: audiovisual content; television; automatic video creation; system architecture; seniors

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1. Introduction

Today, almost every country is being faced with an increasing longevity of adults which results in the growth of elderly inhabitants. Using Europe as an example, it's expected that in 2050 the elderly will make up 33% of the population. Specifically in Portugal the population has been strongly ageing in the last decades and nowadays 20,5% of the population is over 65 years old[1], being this trend likely to continue in the following years. According to the Portuguese National Statistics Institute, "since 2000, the number of old people is superior than the number of young people". Between 2004 and 2014, the demographic situation in Portugal translated into the increasing of people over 65 years old while the young people, below 15 years old, decreased[2]. This phenomenon leads to changes in society in order to give more attention to seniors' needs and wishes, due to their growing importance in the national demographic structure.

This tendency brings a lot of changes both at a personal and community level and creates new challenges to developers since modern technologies should also be focused in this aging group. So, the development of innovative and adequate technologies plays a key role in enabling independency as well as appropriate access to information relevant to the seniors from sources other than the caregivers. Even though information channels that cater to the needs of the seniors exist, most of them require direct searches or newsletter registrations. This puts the elderly in a disadvantaged position and may lead these citizens to social isolation and informational dependence on their formal and informal caregivers. Elderly people suffer from info-exclusion since most learning solutions are targeted to younger people. Adding this to the low literacy levels[3], seniors are constantly in an underprivileged situation to obtain adequate information regarding services, activities and social programs. Providing this population with appropriate means to access information in an independent manner can help in remaining active longer by promoting an active aging.

Portugal is one of the countries referred by the European e-Government Benchmark (2015) with high indicators of online public services provision to citizens[4]. It is praised for its high levels of digitalization (usability, ease of use, speed, etc.), but still has an average level regarding penetration of these services (dissemination, accessibility, among others). According to Silva (2016), the way social and public services' information is scattered, the demanded comprehension difficulty and low literacy levels observed in older people are all factors that lead the search and cognitive process to become a complex task[5]. This causes informational dependency experienced by the elderly concerning their caregivers' network[5]. This puts life quality at risk and thus the need to highlight the importance in implementing alternative ways to organize, present and offer needed information to older people, in order for them to become well informed beings and, consequently, be able to actively participate in their communities, leading to a healthy and active ageing[6]. It is important that people stay informed, especially the elderly, so it can be easier adapting their lifestyle to social and governmental norms, contributing for their autonomy and independence.

Developing and designing a product aimed to older users implies a greater concern to their necessities and age-related difficulties, especially when it comes to digital systems or interfaces.

Nowadays, the information flow shows some quality and accuracy fragilities because of how it is transmitted, the sources where they come from and the way people receive it. In this context, the project +TV4E (Interactive Television as a support to information broadcasting about social services for seniors) which uses the architecture proposed in this document has the main goal delivering of credible and truthful information to older people, without any distortion or errors and, simultaneously, facilitating access to social and public services by avoiding the need to search answers and information by themselves.

To address these problems, information needs to be delivered in such a way that seniors are already accustomed to or can learn with ease. Television is an excellent medium for elderly people since it is a device they are familiar with, minimizing any reluctance or difficulty in adopting new technologies[5,7]. Concerning this, developing a solution that combines the TV as a delivery medium and the ability to get information in several meaningful areas could represent a solution with potential to promote seniors' autonomy, wellbeing and quality of life.

Due to the project's target public being the Portuguese senior population, this study had into account that, along with the ageing process there are new difficulties and/or limitations that come naturally as people age, namely difficulties in accompanying technological advances. This research then aims to fill these information needs by identifying solutions that can minimize informational exclusion and older people's isolation through an Interactive TV (iTV) platform. So, the goal of this study is to plan a system architecture to automatically generate videos tailored to