

# Discovering Older Adults' User Perspectives on Undefined TV Applications

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## Abstract

This paper highlights some of the challenges associated with obtaining valid and useful input from older adults in the early design of usable, accessible and acceptable DTV applications. As such, we argue innovative methods are vital in order to achieve truly user-oriented design.

## 1. Introduction

HCI has evolved into what is now described as a “boundless domain” (Barnard et al. 2000, p. 223). Consequently, new opportunities exist that require a shift in thinking about users, tasks and system design and the subsequently limiting ‘engineering’ methods applied. In particular, the focus towards aspects of the computer workstation and user-interaction in relation to job performance and organizational structure at work, including clearly defined goals and conceptual models encapsulated within the ‘desktop’ metaphor, which are primarily designed to support the completion of predetermined and highly delineated tasks. As a result, ‘HCI’ must re-think many of its ‘work-place’ oriented assumptions and premises to satisfactorily address the emerging issues of ‘Human-TV-Interaction’, which reside more in the context of ‘leisure’, than ‘work’.

Significantly, many older users may not have the same models of understanding, learning and motivation with regard to ICTs as younger adults. Experimental studies by Decampo Rama (2001) indicate that younger generations have a prior advantage in their competency to interpret and understand software style devices compared to older adults, who have not ‘grown up’ with the equivalent experience of digital technologies and the knowledge that comes with it.

Further, for older adults it is argued that the perceived value of a new technology is based on apparent practical utility, rather than just novelty or originality (Coughlin 2007). According to Coughlin (2007) non-adoption is often based on the grounds that the technology in question fails to provide compelling reasons to buy, rather than because of ‘technophobia’ *per se*. In particular, it has been noted that compared to younger people, older adults

are far less trusting of the promised impact of new technology, in the absence of direct experience. Consequently, it is argued that designers have to adopt a language of ‘simplicity’ to stimulate trust amongst older users (as older consumers); given their experiences and life histories can differ greatly from younger generations (Coughlin 2007).

Taken together, this emphasises the importance of establishing a ‘common ground’ between older participants and researchers/designers from the earliest stages of requirements gathering, and also the importance of re-examining suitable participatory design practices to ensure the empowerment of end users in the user-centred design process (e.g. see Muller 2003). Building on collaborative and cooperative methods to explore the ‘design space’ and gather reliable and useful feedback from appropriate users, it remains highly contested how to better adapt the design process to bridge the conceptual gap between, ill-defined technologies (and their potential functions) suitable to this age group, and, the people (target users) who lack the experience and prior knowledge to easily identify, understand and discuss the potential of such systems when presented to them (see Fig. 1).

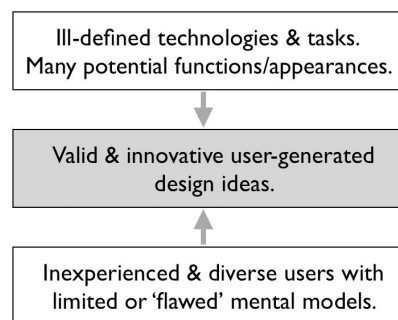


Figure 1. Populating the grey box requires innovative methods to gain useful insights on emerging technology from the perspective of ‘naïve’ older users.

## 2. Related work

Researchers in domains such as applied cognitive psychology, HCI, software/interface design and computer science, at the School of Computing, University of Dundee have worked on a number of

DTV related projects, from the development of an avatar-based prompting system for people affected by the early to mid-stages of Alzheimer's, to measuring cognitive abilities and the affects they have on the usability/accessibility of digital television, challenging the current concept of design for the elderly and the erroneous view that older adults are an homogeneous population. Related to this work, have been a series of studies investigating the requirements of a DTV based communication system, addressing both the issues of collaborating with older adults who are unaccustomed to new forms of digital technology, and associated methods which will maximise their input, particularly in the early stages of the user-centred design process.

Although not an exhaustive list, such work has included:

- Interactive theatre and the use of professional actors to demonstrate scenarios of applications in use, focusing on the acceptability and demonstration of these activities.
- Creative paper prototyping, discussion and brainstorming sessions focusing on user-generated ideas by allowing participants to draw and talk about their interpretation of the communication system.
- Structured experiments to relate 'standard' cognitive measurements to the ability (and difficulty) in using 'traditional' DTV interfaces, and relating this to more subjective, qualitative user feedback.

These studies have fed into the development of ongoing research into innovative DTV interface development, exploring more 'tangible' means of manipulating on-screen objects and navigating through an 'information space' (avoiding the tendency for crude and dreary designs typically seen in many 'accessibility' developments). Evaluated positively by older adults, these interfaces have explored the efficacy of 'continuity', investigating more intuitive methods to help older adults keep track of their navigational behavior, using animated graphics and 'transitions' to perceptually link properties of the real-world, with 2D objects and navigational paths.

### 3. Conclusion

As a whole, these studies highlight the issues of designing for leisure, entertainment and domestic situations, and an older and very diverse target user group, where mental models drawn from technologies like the conventional telephone are

more likely to be the basis of 'understanding' than perhaps more relevant digital technologies. For example, how do you develop a new DTV communication application for somebody who's only comparable analogy is a handheld device physically attached to the television, in which they expect to 'dial' the person they want to contact. Although, through designing such a system, it could be argued that such individuals would recognize the limitations of their ideas, it is bridging, from the outset, between what is unfamiliar and unknown, to what is truly understood (i.e. compared to merely agreeing with the 'expert' researcher) that remains such a challenge in early requirements gathering.

Beyond the over-simplistic view that limiting functionality will lead to better design for older adults, new models of interaction are required that can actually help develop self-belief and self-confidence in new technology, helping to dispel the continuing myth that older people do not, will not, or cannot use digital technology. This also requires a shift in thinking away from implementing accessibility features for poorly designed and inappropriate interfaces for DTV (e.g. use of larger text or buttons etc.) to new approaches that better 'fit' the cognitive abilities and more general 'life experiences' of older adults. These issues are particularly pressing given the rapid technological and commercial developments in this area including the convergence of varied digital technologies (particularly 'TV' and 'PC'). Unless this change of perspective occurs soon, 'accessible' design for DTV will be consigned to playing 'catch up' with the mainstream, as has been the case for 'accessible' computers over recent decades.

### References

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