

## From our past to our future

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From our past to our future:  
user interfaces over the lifespan

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# From Our Past to Our Future: User Interfaces Over the Lifespan

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**Panelists:** Alison Black IDEO, London, UK  
Roger Coleman DesignAge, Royal College of Art and Design, London, UK  
Sandra Edwards CHILDESIGN, East Hampton, New York, USA  
James L. Fozard NIA, Gerontology Research Center, Baltimore, USA  
David V. Keyson Philips Research Laboratories - IPO, Eindhoven, NL

## ABSTRACT

The design of user interfaces for consumer products and services for different generations of users presents problems which have been rarely addressed by the HCI community. How can designers meet the needs of senior citizens, the "elderboom" of the 2000's, if they themselves are of the computer game and "edutainment" generation? Or, how do we design for children, having passed childhood long ago, and with guidelines that are lagging behind technological development? The panel will address user interface design issues that concern the lifespan of people and products as they relate to the rapid change in our population distribution.

## INTRODUCTION

The explosive changes in age structure in the western world will put user interface designers in the position of designing for senior citizens whose experiences with advanced information, communication, and entertainment systems will be extremely diverse. Most human computer interaction research is devoted to applications for which the target users are known or can be reasonably well-defined. Distinctions can be made between different levels of expertise of users. Adaptive user interfaces aim at individual users and how they change or stabilize while using an application. In contrast, consumer products, whose computing power is rapidly increasing, have no explicitly defined users. Undoubtedly, users of these products do not expect to operate a computer system, they will be of all ages and their preferences, capabilities, and motivations will vary. User interface designers need to take these generational variables into account; needing to understand how to adapt and grow with users as they change over the lifespan. What are age related user needs and how do they evolve from childhood to senior citizenship? Designs which are flexible and thus grow with the users are not only desirable but reduce manufacturing costs.

The panelists will discuss these generational issues in user interface design, based on practical experience and fundamental research. Key issues to start the discussion are:

- User interface concepts are needed that support designs which can evolve with the user. Designers need to adopt a developmental view of user interface design.
- Transfer of system knowledge across products and over time needs to be supported. People have learned to rely on technology, which should not suddenly become obsolete or inaccessible because either they or the technology has changed.
- Motivational and cost-benefit aspects are usually taken for granted. They might, however, dramatically vary across different generations of users and provide the determinant factors in a take-it or leave-it approach to purchasing.

## PANELISTS STATEMENTS

**Alison Black**, head of human factors design at IDEO Product Development in London, UK.

As adult designers for children we face a double bind: we want to engage and stimulate our users, giving them access to the digital world; at the same time we want to protect them, avoid their alienation or corruption, and prevent uneven or arrested development. The CHI community, with its focus on the development of tools for work, has begun to examine the social impact of computing on work environments, and made progress in techniques to develop human- and community-centered solutions. By comparison, ensuring that interactions with computers have positive impact on development is a far less tractable problem. Every product developer must dream of the product that is fun, educates, and helps children build rewarding relationships with peers and parents!

Drawing on IDEO's experience in product development for people from the very old to the very young, I shall take the optimistic view that access through interaction is a way forward for us all. And drawing on parallels with 'traditional' toys and tools I shall illustrate some challenges and opportunities for interaction designers developing products that children will use.

- Designing for the massive range in capacity and experience - cognitive, physical and emotional - covered by

the umbrella term 'children'.

- Developing interactivity by all the senses - vision, hearing, touch, smell.
- Making interaction active, social, and reflective.

Recognizing that these challenges and opportunities represent an adult perspective, I shall discuss how we observe and evaluate children's wants and needs, and how their input can be reflected in the design of both children's and trans-generational products.

**Sandra Edwards**, is president of CHILDESIGN, New York, USA and a designer and design journalist

Children are the technologically-literate consumers of our age. Technology has irrevocably changed the way that children perceive, process and respond to their world. The best designs do not mimic technology, with 'look-alike' product, but rely on it. Children are ready for the real thing. Nowhere is this more evident than with computers. With them, we have forever altered the landscape of learning and of childhood, opening educational possibilities never before imagined. Unquestionable, computers offer a rare opportunity to integrate children's interests with an adult world. Yet, with no ergonomic standards available regarding children's specific user-interface needs, those interests are too often overlooked. Moreover, children, in general the "forgotten clients", are in the case of technology, also the invisible market. Today, children are often the important link between sophisticated product and the adult consumer, instructing a technophobic adult world on technology's usage, demystifying it in the process -- a fact most designers and manufacturers continue to ignore. It is the 2-year-old that operates the CD-player with ease, the 8-year-old who is often the only one in the house capable of programming the timer on the VCR. These are *the children of the information age* and the design professionals of tomorrow.

**David V. Keyson** is a Research Scientist at the Philips Research Laboratories - IPO, Eindhoven, NL.

Literature on general HCI design typically mentions the importance of considering age related factors in the design of user interfaces with the notion that accommodating the needs of the elderly in design typically facilitates the performance of all users. However, concepts and tools for creating flexible and custom designs from both the designer and user perspectives are lacking. Tools which can enable the user to rapidly customize an interface so as to maximize their current level of motoric and cognitive skills are needed. Such tools should be easy to use and built in a modular way using object oriented desing concepts.

**Roger Coleman** is Senior Research Fellow at the Royal College of Art, London, UK and director of DesignAge.

Designing for Our Future Selves: considering the needs of

older people leads to innovation and better design of consumer products. While world attention is focused on the desirability of population control and how best to achieve it, one inevitable consequence is rarely addressed - as populations approach stability they grow old. In Europe the average adult will be 50<sup>+</sup> by 2020. Adjusting to this change requires a fundamental reappraisal of how we design consumer products and, as products become increasingly intelligent and services information based, how we design interfaces. Considering the needs of older people not only improves the design of consumer products it can act as an important spur to innovation and the development of new products and services. Priority must be given to understanding and responding to the needs, aptitudes and aspirations of older people in the domestic and public environment, including transportation. The changing patterns of work, leisure and life-style which are emerging under the impact of the dramatic social changes brought about by population ageing need specific consideration. Background data and recent examples of new concepts and designs will be presented to demonstrate methods and strategies that can be deployed to address this issue.

**James L. Fozard** is the Associate Scientific director of the National Institute on Aging, Baltimore, USA

The rapid aging of the world's population at the present high rate is occurring for the first time in recorded history. At the same time the density and complexity of newly devised technologically based products for special and general consumer use is increasing faster than at any time in history. The net result is a much greater heterogeneity in the population or potential users of technologically based products than ever before.

The approach of young adults and children to new technology experienced by them for the first time will most likely be different from that of older adults of various ages who will be interpreting the technology in terms of their previous experience with what they perceive as similar technology. Unlearning may be as important to them as the new learning required for the new product. Previous experience, both good and bad, with technology will color their interest and confidence in new products.

These facts have implications for designers and producers. First, they need to use feedback from consumer to improve the usability of existing products. Second, they need to use a 'feed-forward' approach to consumers of various ages and backgrounds to determine the potential for new technologically based products. In the case of the elderly consumers, for example, there is a vast opportunity to develop products and services that accommodate the potential for new learning, social interaction, self fulfilling leisure activities, and work that go with older age and retirement. Third, the potential for adaptability of technology for changing needs over the lifespan should be considered where appropriate, e.g., flexibility in the design of housing and products for home and work.