

EDITORIAL

The proliferation of computer-based systems and applications in every walk of life and the anticipated widespread use of emerging telematic services has introduced new dimensions to the issue of human-machine interaction, necessitating the design of high quality user interfaces accessible and usable by a diverse user population with different abilities, requirements and preferences. This user population at large, includes people with different cultural, educational, training and employment background, novice and experienced computer users, the very young and the elderly and people with different types of disabilities. Thus, it has become increasingly important to design human-machine interfaces, which not only support more efficient and effective user interaction, but also address the individual end user needs, requirements, skills and expectations, while exhibiting a wide range of 'intelligent' and 'cooperative' behaviour.

One of the domains of tele-informatics research and development, which has recently emerged, concerns the development of methodologies, tools, applications and services which support the socio-economic integration and independent living of people with disabilities. In particular, the potential of the emerging telematic network infrastructure, offers new possibilities for the socio-economic integration of people with disabilities and can be exploited to facilitate direct access to the general purpose telematic terminals, services and applications. Issues related to the human-computer interaction, i.e. rendering the user interface accessible and usable also by users with functional limitations are of considerable importance and relevance. Currently, the plethora of existing methodologies and development tools for producing the user interface of such services and applications do not directly address the broad range of issues related to their accessibility by the various categories of disabled people. Therefore, 'alternative' solutions for people with special needs have to be provided in order to support accessibility to the same computer-based systems and services and applications. Until now, these solutions were 'adaptations', i.e. ad hoc and intuitive modifications targeted to addressing a particular access problem for a particular user (group). However, novel architectures and schemes for the design and implementation of development tools, may facilitate the construction of User Interfaces of services and applications, which are 'inherently' accessible by all user categories.

More recent work is seeking to address such issues through activities based on the principles of 'design for all' and 'universal accessibility'. Emerging technological advances can be exploited to design systems and tools which refine and extend the current state of the art in interface design, and support the development of user-tailored and (technological) platform-independent interfaces. This implies the development of user interfaces which can utilise the broad range of lexical interaction technologies and benefit from user-adaptability at design time and/or system supported adaptation at run-time (i.e. adaptive behaviour) according to the particular end-user abilities, requirements and preferences.

Given the trend towards interaction-intensive paradigms for human-computer interaction, future developments in user interface technology are expected to offer more opportunities and more empowering solutions. The introduction of 3D graphics, 3D audio technology, interaction techniques based on alternative types of input (e.g. kinesthetic), as well as issues related to ergonomics and human factors evaluation, can significantly contribute to the enhancement of the current state of the art in user interfaces. For instance, virtual reality and 3D interaction techniques will influence the realisation of novel interaction metaphors, while multimodal interaction methods will be used to fulfill the diversity of requirements regarding the type and form of interaction. The

resulting interfaces may provide the user with a virtual space, which will enable more flexible and natural interaction, providing input and perceiving feedback by utilising proportionally all the available senses and communication channels, while optimising human and system resources.

Considerable knowledge and understanding of user abilities and requirements, as well as user tasks is required; additionally, expertise in methods for describing and integrating this knowledge in the user interface design process is also necessary (user modelling can play a crucial role in this respect). The incorporation of such knowledge and reasoning methods in user interface design can provide high - quality solutions for all user categories by, amongst others: [i] supporting user-adaptability and (technological) platform independence; [ii] automating the syntactic and lexical design of the user interface; and [iii] providing intelligent help facilities and cooperative services (e.g. interface agents). Current work on user- modifiable or user-tailorable environments (interfaces compatible with the available user communication channels), alternative interaction metaphors and on cooperative user interfaces can substantially influence the evolution of more 'intelligent' user interfaces and contribute to the fulfillment of the requirements of users with communication and interaction difficulties.

This ERCIM Workshop is organised against the background of recent European R&D activities which have analysed the requirements, identified the viability, and demonstrated the feasibility of constructing 'user interfaces for all', i.e. interfaces which address the individual user requirements of potentially all users. The required new strategies necessarily go much beyond the useful and practical, but short-term solutions offered by user interface 'adaptations', the method that has been predominant until now. It has been successfully argued that alternative, technologically more powerful and methodologically more systematic approaches are needed to tackle the problems of accessibility and quality of interaction *for all* potential users and in a holistic way.

This Workshop is a first attempt towards setting up a longer term activity within ERCIM, in the form of a Working Group. The Workshop has been organised in a very short time, and the call for papers, which came out in the middle of the summer, gave very little time to interested participants to prepare a paper for submission. Despite these difficult circumstances, the Workshop attracted considerable interest, not only across Europe, but also from USA, Canada, Japan, and China. Although for practical reasons, mainly related to the very short notice, much of this interest could not be translated to actual participation, a significant number of papers has been received, and was reviewed by the Programme Committee of the Workshop. In the end, 15 paper submissions have been accepted as long papers, and 3 as short papers. The Workshop features one invited speaker and 25 registered participants.

As Organising and Programme Committee Chair of this Workshop, I have the honourable task to thank all those who have contributed to the successful outcome of this Workshop.

The ERCIM Executive Committee for unanimously supporting the idea of this Workshop as well as the proposal for a Working Group in this field (Helsinki Meeting, 08/06/95); in particular, I would like to mention the encouragement and support of both the former and current Chairs, Prof Bob Hopgood (RAL) and Prof Christos Nikolaou (ICS-FORTH).

The Programme Committee members, for volunteering to participate, knowing in advance the hard work they would have to do under severe time constraints, but also for the excellent quality of work they have done during the review process.

Mr Charalampos Karagiannidis, the Secretary of the Workshop, for his hard work and dedication during the preparation stages.

I would also like to thank the Director of ICS-FORTH and currently Vice-Chair of the ERCIM Board of Directors, Prof Stelios Orphanoudakis, for his constant encouragement and support.

Finally, on behalf of the Programme Committee, I would like to thank each one of the Workshop participants, for their interest in this Workshop, and to extend a very warm welcome, hoping that they will find it rewarding.

The challenge lying in front of us is to plan a path that we can follow towards our set objectives, in the context of a proposed ERCIM Working Group. A series of activities can be discussed and planned at the end of the Workshop, and during the open meeting of the Programme Committee. These activities can bring closer together researchers and teams working in the different ERCIM organisations (but also beyond the ERCIM or European boundaries), who share common interests and aspirations, and would like to contribute to the endeavours towards making the 'Information Society' equally accessible to *all*.

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Organising and Programme Committee Chair
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