

## Guest Editorial

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# Fundamental Changes in Society

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### 1. Introduction

In our times we have witnessed the tremendous change from an industrial age to the age of information and knowledge. Just the differences between the 1990s and the present are impressive. Science and technology were the basis for that development. Smaller and smaller computers with ever higher power are produced at breathtaking speed; wireless connections of various kinds enable us to connect to global networks and make use of services or exchange information and communicate and interact with other users. Not only that, but mobile networks allow us to do all of this on the move. ICT (Information and Communication Technology) and other new technologies like nanotechnology and biotechnologies provide new sensors for various applications. All these technological developments have left the laboratories and become part of everybody's daily life. A symbol for this age and its potential might be the Smartphone.

At the same time, many of the technologies, products, applications and networks are now globally available, and products and services flow between the different parts of the world. In Europe, integration progressed rapidly following the breakdown of the iron curtain. The former European Community, which originally consisted of only Western European countries, has expanded to become a real and enlarged European Union, with updated policies. As of January 2007, the population of the 27 European Union countries had

risen to an impressive 495 million. Thanks to improved health and living conditions, European society is gray-ing; societal demands and the market are changing. The workforce is getting older, new qualified staff are getting harder to find. Policy and social policy need to catch up with these developments. Each individual must strive for equal participation in society, irrespective of age, sex, disability, religion etc. ICT is seen as one of the key developments which can be used, alongside other measures, to support these processes. Overall, European policy and legislation has become increasingly important for the citizens of Europe. European Directives, and also Communications, benchmarking, funding schemes etc., influence national policy and legislation quite directly in different ways, and affect people's daily lives. The policies of different member states reflect these new realities in many ways. With regard to people with disabilities, this had already begun in many member states, with the introduction of new social legislation, before the acknowledgement of the UN Convention in 2006. However, the signature and conclusion of the UN convention by the European Union and its ratification by most member states has added further emphasis to this process, not only in Europe, but worldwide. Today, the situation of people with disabilities is considered in a bio-psycho-social model based on the World Health Organization's ICF (International Classification of Functioning, Disability and Health). Activities and participation are increasingly given attention, as well as the contextual factors which support or restrict them. The organizations representing people with disabilities insist that nothing can be decided for their membership without serious con-

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sultation – “nothing about us without us”. Indeed, in many places new legislation has been developed with the support of user organizations and representatives.

The field of assistive technology can of course not be considered in isolation from these developments. It has been included systematically as an environmental factor in the ICF, and new technologies have had a big influence on the AT sector. For example, every Smartphone provides the means for a powerful assistance device for communication, the remote control of appliances, orientation assistance, reading barcodes and text, digital storage for content and applications, text or voice input and output. And as a mainstream gadget, it is now perceived as a positive asset rather than a stigmatizing disability aid. Microcomputers are also being used to provide better solutions in prosthetic joints, hearing aids, AAC devices, wheelchair controls – basically all electronically controlled devices. On the other hand, the basic functions of hoists, wheelchairs, walking aids, aids for manipulation and care and hygiene have not been improved that much.

When it comes to the design paradigm, a great deal of focus has been placed on user centered design approaches – “nothing about us without us” – and the active participation of users with disabilities in all phases of a product lifecycle has been promoted. This idea also includes user centered supply and service concepts. The focus on users also leads on to the issue of the ageing population. One reaction has been the idea of introducing ‘gerontechnology’; in other words a special technology for older people. Today the idea of ‘design for all’ or ‘universal design’ represents the preferred thinking in this direction; a design that serves as many users as possible. A completely new type of option in AT has arisen with the online provision of products and services: open source, shareware and user society social networks are just some of the new approaches and new players. On the other hand both the industrial structure and the organization of services in the AT field appear to remain quite stable.

## 2. HEART

In 1995 the results of the Horizontal European Activities in Rehabilitation Technology (HEART) study in Europe were published. At the time, the goal of the study itself was defined by the leaders of the Technology Initiative for Disabled and Elderly People (TIDE) unit of the European Commission. Studies performed in the first years of TIDE provided the background for

the HEART study. The 1990 TIDE Market Survey (TMS) collated the state of the art surrounding the Assistive Technology industry. In 1992–1993, the Consensus in Rehabilitation Technology in Europe (CORE) project tried to model this market, and identified several elements in the AT market and the communication difficulties between the market stakeholders, as well as shortcomings in international cooperation and the lack of guided and focused initiatives. In view of this situation, the TIDE office determined the six study lines of HEART, which were as follows: 1. Standards and Testing; 2. Assistive Technology Industry; 3. Service Delivery; 4. Legal and Economic factors; 5. Training; and 6. Research and Development. A consumer board with representatives from five European user organizations was set up. The study was conducted under the leadership of the Swedish Handicap Institute (now called the Swedish Institute of Assistive Technology) and was supported and executed by 21 institutes with expertise in the areas mentioned. Many of those institutes or their successors and leaders are still working in the field, and have now contributed, together with other experts, to this special issue. The information is based on the expertise of the authors and scientifically collected data, and also relies in part on interviews with and the expertise of additional persons and institutions.

## 3. The contents of this special issue

This special issue does not intend to write history as such, but its more important goals are the discovery of questions as yet unsolved, an attempt to explain what has been hampering the solutions, and raising a discussion for further future developments. All this in the knowledge that much has changed and that previously proposed solutions may not work anymore. We were given a recommendation to harmonize service delivery in Europe in the draft final Service Delivery report, (in order to improve market possibilities and bring quality/equality in rights at a common level); however, this recommendation was heavily criticized: “no interference in our system for delivering technology and services from Europe”. It is clear that nowadays, in an economically difficult situation, and with a greater number and variety of member states with their own accepted and established systems, that harmonization in the literal form is not the way to go. Let us at least have some discussion of this.

We have chosen papers for this issue which reflect the original lines of the HEART study. They are all

concerned with assistive technology and also the more recent aim of promoting technology which is better designed for the whole population in general. The first paper, *“Technology and Inclusion – past, present and foreseeable future”*, deals with the technological background: what did we have at the time of HEART, what has been researched and developed since then and what can we expect in the future. While all types of technologies were in focus at the time of the HEART, nowadays ICT is the main focus, because of the expectation that this is the technology which offers the most opportunities. The authors, an experienced group of professionals, have added a paragraph about their opinions and experience of the not optimally functioning innovation process.

After the technology itself, the next step is the way in which that technology is delivered to the client/advisor, buyer or user. Reaching the end user is of course the main focus of this phase. However, between the producer or sales company and this end user we often find that, in market terms, the social security system is the client, and the buyer is the financial department of the authority paying for the technology. In the paper *“Assistive Technology Industry”* a description is given of the various players in this field, with heavy emphasis on the networking which has been declared to be the most important factor, and the scattered market. Mainstreaming, as seen from the viewpoint of consumer products which are designed for all, has been a major development which can cause disputes at the level of reimbursement. Internationalization can be achieved simply with the purchase of a company, in any given foreign country, which can sell your product there. Local institutions and SMEs still have a very important role where the real markets take shape and innovations are taking place.

The next step – a core issue – is how the product is selected, tested, bought and paid for. The article *“The heart of the matter: Advances in European Assistive Technology Service delivery and recommendations for further improvement”* gives us a concise impression of the situation with regard to service delivery in European countries. Interesting conclusions are drawn which point to general measures to improve information and selection by end-users as well as expert-practitioners, a quality review system, and the role of reimbursement by new mechanisms: vouchers or personal budget systems.

We then move to the main process of developing new and better products: producing, selling and delivering them to end-users. Measures have been taken and a lot

of work has been done to improve the market with legal regulation and better information, both in standards and in the education of professionals working in this field.

Laws and policies are described in detail in the paper *“The legal and policy baseline: 25 years of eAccessibility policies and legislation in Europe”*. Interest in policy and legislation in this area began to increase in the 1980s. As technology and assistive technology is found in almost all areas and levels of our society, this paper is about a very important and broad aspect of society: equality, non-discrimination, work and employment, communication and self-support, as well as where possible, privacy protection, copyright issues and accessible e-services and more. The eEurope initiative and the UN Convention are the most important factors for the further development of the AT market. Finally we have great expectations for the public procurement regulations, as these have been proven to be effective in the USA.

An article on standardization, *“The role of standards for AT and Dfa equipment and services”* tells the story of standards in assistive technology and design for all. Standards are generally needed to control quality and for developing a better market. It will be most important to have those standards ready when the public procurement on accessibility is put in place. The inclusion of persons with disabilities in the standardization process is an interesting item and is promoted by the European Commission. It is worth having a debate as to whether this is the best solution for the future.

The final paper in this section on structural measures and supportive actions deals with the qualification of professionals to give advice and support. The approach taken is to address education in health care and the technology professions: designers, testers and service providers. The article *“Twenty five years of Training and Education in ICT Design for All and Assistive Technology”*, describes efforts in this area. The conclusion is that, although a good many courses are created, in most countries it seems to be difficult to have such courses implemented in mainstream programs for designers and developers in engineering, building and urban planning.

The last part of this issue is devoted to a future in which we would like to see a well designed roadmap for achieving further implementation of technologies for the inclusion of all those with handicaps, either via ‘design for all’ measures or via intelligently designed assistive technologies. The article *“Towards a technology transfer roadmap from the Coordination Action in R&D in Accessible and Assistive ICT”* is a first step in

analyzing the difficulties and the underlying factors in technology transfer. The outcomes of such an exercise are heavily dependent on the expertise of the group performing the analysis, and we are glad that our contributors have such an imposing track record in the field of DfA and Assistive technology in ICT.

In the final article, the leader of the HEART consortium, Dr. Gunnar Fagerberg, has been asked to give a resume of his findings and a reflection on the conclusions of the papers in this special issue: “*From HEART to date*”.

Overall, the issue is intended to act as a stimulus to the discussion of future developments in this sector, based on the lessons learned since the first TIDE program. These papers do not pretend in any way to have already provided the solutions; they report and assess important elements in this field/market, and should be understood as an invitation to constructive discussion.

#### 4. Food for discussion

In this issue, several specialists have brought together a huge amount of information in order to provide us with their opinion on the developments in AT and DfA applications over the last twenty years. From this, the editors have selected the following list of questions/remarks/standpoints. They are all somewhat controversial and need to be discussed thoroughly. A first round of discussion is planned for the AAATE2011 conference.

1. Do you think that the HEART hot spots (user participation, job access, new care systems, growing percentages of elderly people – and their medical condition) – in our society have been sufficiently covered in assistive technology provision?
2. Do we need to pay more attention to the very different service provision schemes in the different European countries? Are there clear differences between the initial EU member states and the newly accessed ones? If so, what are the main differences?
3. The HEART study led to a number of important recommendations, and many of them have been discussed in this issue. Do you think we can talk about a successful uptake? In general or in specific fields? Did you feel a lack of information on any important recommendations? If so, which ones and what is the situation there?
4. The authors have explained the reasons why several HEART recommendations have been taken up or not. In your opinion, why did this happen? What are, from your standpoint, the important mechanisms that have led to real improvements?
5. The editors were sent the following statement during the compilation of this issue. “Blind people tell me that their situation as regards access to information is even worse today than it was 25 years ago.” This controversial statement originates from a representative of people with disabilities. Do you think it is true? If so, does it also apply to people with other disabilities? If you do not think it is true, why do some people experience or perceive the situation in this way?
6. In the contributions with an industrial component, the fact that we still do not have sufficient statistics about clients for AT and DfA solutions or the size of the market, both in general and for product classes, is stressed. Do you think that a European initiative where such statistical data are collected, e.g. in a collaboration between mainstream market specialists and AT/DfA specialists, should be promoted and funded?
7. In the European Union the tendency to harmonization (e.g. of legal actions) is clearly visible. Is harmonization at European level always the best solution to support people with disabilities and elderly people? Can benchmarking help here?
8. A completely new situation for persons with disabilities has evolved over the last decade: the provision of personal budgets and the resultant monetization of services that were previously free. What should be the role of these personal budgets and the ways in which they can be used to complement service delivery and integrate with mainstream technologies?
9. Many different educational programs for improving AT knowledge (and sometimes design for all principles) have been created, mostly as postgraduate level courses. But attempts to have these trainings embedded in mainstream master courses have had little success, despite the fact that there they would have the potential to reach a much wider audience. What prevents these courses from being taken up in mainstream education? Do we know the reasons and if so, what can be done about it?
10. Considering the broader issue of improving the life of persons with disabilities, how can we

move on from where we are now? What are the most urgent issues requiring action in the near future?

We hope that these issues, together with others which will be raised from the field, will lead to a constructive

discussion on common goals, joint action, European priorities, further research and development, improved networking etc. Please feel free to participate in this exchange process and help us to define and take the next steps.