

Towards an inclusive future

Impact and wider potential of information
and communication technologies

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COST219^{ter}



Accessibility for All
to Services and Terminals for
Next Generation Networks

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Foreword

Technological innovation has brought immense benefits to our society and economy. Information and communication technologies (ICT) now play a key role in all our daily lives, in our work, education, use of public services and in our homes. New possibilities emerge of products and services that are flexible, quick, adaptable to our preferences, reliable and robust.

Yet these same technological advances can present significant barriers to some of the very people able to benefit most from these services and, without the right support, can even add to the exclusion many people suffer. Key decisions made when designing and developing technological products and services will dictate whether some groups, like people with disabilities, will be able to use them or not.

About 15% of Europeans report difficulties performing daily life activities due to some form of disability. With the demographic change towards an ageing population, this figure will significantly increase in the coming years. Older people are often confronted with multiple minor disabilities which can prevent them from enjoying the benefits that technology offers. As a result, people with disabilities are one of the largest groups at risk of exclusion within the Information Society in Europe.

It is estimated that only 10% of persons over 65 years of age use internet compared with 65% of people aged between 16-24. This restricts their possibilities of buying cheaper products, booking trips on line or having access to relevant information, including social and health services. Furthermore, accessibility barriers in products and devices prevents older people and people with disabilities from fully enjoying digital TV, using mobile phones and accessing remote services having a direct impact in the quality of their daily lives.

Moreover, the employment rate of people with disabilities is 20% lower than the average population. Accessible technologies can play a key role in improving this situation, making the difference for individuals with disabilities between being unemployed and enjoying full employment between being a tax payer or recipient of social benefits.

The recent United Nations convention on the rights of people with disabilities clearly states that accessibility is a matter of human rights. In the 21st century, it will be increasingly difficult to conceive of achieving rights of access to education, employment health care and equal opportunities without ensuring accessible technology.

Technology penetrates ever more in our daily lives. It is crucial that we create solutions that are usable and accessible for everyone, regardless of their abilities. This is not just about meeting the needs of a small part of the population. In fact, evidence suggests that facilitating access to the information society for people with disabilities benefits many more people in the general population, for example as it drives innovation towards easier to use products and websites.

Last year, all Member States agreed on a declaration in Riga committing themselves to take concrete steps to build an Inclusive Information Society and setting clear targets for

the coming years. To achieve these objectives, it is important to make everyone aware that eAccessibility is a positive factor for the competitiveness of our industries. Technology is pointless unless it ultimately meets the needs of society. This must be fully reflected in the European policies for building the Information Society. eAccessibility is thus essential to achieving an inclusive society and key for the success of the i2010 initiative, A European Information Society for Growth and Employment.

European funding on research and development for accessible technologies and services is not the only precondition to building an information society for all. To ensure that everyone has the opportunity to benefit from these impressive technological advances, it is also essential to create a legal and economic environment in which these European socio-economic objectives can be achieved. The various factors that can contribute to the risk of exclusion are indeed often interrelated, like poverty, low level of education, unemployment, disability and old age. These need to be addressed in a consistent and coherent policy framework.

A truly inclusive Information Society must be socially and economically sustainable. For many years, accessibility efforts have been concentrated on removing existing barriers. But this is not enough. COST 219 activities have been pioneers in preventing eAccessibility problems by promoting a Design for All approach for telecommunication products and services.

This book addresses the accessibility of next generation ICT networks and services running on them. Some of the specific issues in this context are: how to ensure accessibility to new IP based communication solutions? What features do we need to build in next generation networks to ensure real time multimodal conversations? How to ensure the accessibility of emergency numbers? Next generation networks offer immense opportunities for having, besides voice, good quality real time video communication using sign language and text, including for example display in real time virtual Braille. This would open up new communication opportunities in particular for deaf-blind persons.

The time is ripe for addressing these issues, asking questions such as the ones above. This book will certainly contribute to the debate and stimulate the implementation of accessible solutions in next generation networks. I welcome this important contribution to the telecommunications field and to the construction of an Inclusive Information Society in Europe.



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1. Introduction

Patrick Roe

There is no question that over the last twenty years, since the inception of the original COST 219 Action, a considerable shift in attitude and awareness has occurred towards including people with disabilities and older people in all aspects of society.

From a situation of ignorance and overall lack of awareness, there is now a general acceptance at a political, societal and even to a certain extent at an industrial level that it is no longer acceptable to develop products and services that will exclude a substantial proportion of the population, including people with disabilities and older people.

This is not to say that all issues have been resolved, far from it. For example, one of the aspects that still needs to be conveyed to all stakeholders is that embracing the Design for All principle is not a one off effort but an ongoing and permanent commitment over the longer term. However at least there is now a state of recognition that these issues have to be addressed and a realisation that if these complex issues are suitably handled with appropriate strategies and policies, there are exciting potential rewards to be gained. Indeed, with the well-publicised ageing of the population the issue of technology at the service of older people is seen as an opportunity and an integral part of future strategies in tackling the problem of how to keep people in their homes for as long as possible (chapter 3).

A crucial and recurring theme throughout the book is that it is vital to design products and services right from the beginning that can be used by the broadest possible section of the population (Design for All approach discussed in chapters 3, 4, 5, 6, and 7, for example).

The purpose of this book is to give the reader an overall picture of the current situation with the latest trends in products and services that can be used by as many people as possible including people with disabilities and older people (chapter 2). One example from section 2.3.2 will show how remote sign language interpretation using 3G telephony had a high take up when priced affordably. Other examples presented in chapter 2 include showing how new technologies can help with safe navigation (section 2.2.1) and how the potential of broadband can be fulfilled in providing useful new services (section 2.3.1). Some of the latest issues concerning relay services and text telephony are discussed in sections 2.3.3 and 2.4

There is also a presentation of the latest possibilities of using speech processing (section 2.2.2). This technology has been promising much for many years, and the reader will be able to assess the degree of maturity it has now reached whilst being able to appreciate the potential for using it in applications for people with disabilities.

Another very important emerging technology/area is that of Ambient Intelligence (Aml). The potential implications for all citizens are immense. In chapter 4, the reader will get an insight into the exciting new possibilities that Aml could offer people with disabilities and older people. The approach used has been to take the ISTAG (IST Advisory Group) scenarios (with some adaptations) and to analyse what would happen if people with disabilities were introduced into the scenarios. In this way, it has been possible to carry out a detailed analysis of some of the implications and possibilities of Aml for people with disabilities. This should help all potential users answer the question, "The Future is here, can I live with it?" Ethical issues related to Aml, which are of course of particular relevance to all disadvantaged groups, are discussed in section 4.3.

An important component in this gathering groundswell of awareness is the willingness of governments, both at national and EU level, to introduce new laws and/or regulation, backed up by standardisation, so as to ensure equal rights of all citizens in relation to access and use of technology.

A comprehensive review of the current situation is given in chapter 5, where the reader will be able to gather a clear idea of the available choices within the review of Framework Directives and the potential impact these decisions will have on people with disabilities. The EU is clearly at an important regulatory crossroads with the next few years being crucial in determining which is to be the future direction of regulation. This chapter indicates how the interest of disadvantaged users can be protected within this Framework Directives review without hampering innovation and investment.

An additional key issue raised in chapter 5 is that of certification, be it self-declaration certification, certification/accreditation of suppliers or third-party certification schemes. The various options and their implications are discussed leading on quite naturally to chapter 6 where an overview can be found of current trends in accessibility evaluation and what types of evaluation and usability assessment are currently being carried out by test houses. The reader will be able to gather information about a mobile phone evaluation toolkit developed within the framework of COST 219ter (section 6.3) which is a simple methodology for

assessing the accessibility of a mobile phone. The best time to use this toolkit would be while testing/checking other protocols and design issues. A case study from Portugal of how evaluation may change the design is also given in section 6.4.

Despite the growing awareness and increasing technological possibilities, offered for example by broadband, there is still widespread frustration that more truly accessible and usable products are not appearing on the market. To try and understand the reasons for this lack of products and services COST 219ter resolved to employ the Interactive Management (IM) methodology with the triggering question "Considering the availability of powerful broadband technologies and the development of relevant scenarios, what are the obstacles that prevent us from producing more practical applications?". The intriguing results and ensuing roadmap from of these two (IM) workshops are described in detail in chapter 7. Without revealing too much, it is possible to say that the process yielded some unexpected results. For example, the roadmap on page 293 shows that some very fundamental issues, such the difficulty in turning a statement of user needs into design requirements, still needs to be resolved in order for there to be more practical applications and products on the market.

This roadmap also highlights some of the challenges that still lie ahead on the road to inclusion. The momentum is surging ahead pushing all components of our society including, users, disability organisations, regulatory authorities, legislators, standardisation bodies, civil servants, governments and industry towards having to grapple with new issues and break new ground. There is no turning back now and by the end of this book, the reader should have a better appreciation of the point we have reached on this road towards a truly inclusive future.

Note from the Editor

Although the Members of COST 219ter are well aware of the WHO "International Classification of Disability, Functioning and Health (ICF)", the terminology used through out the book is not wholly consistent. This is partly for reasons of style but also partly reflects the various opinions and preferences of the authors, amongst whom no consensus was reached (and probably never will be) on what were the most acceptable terms to be used. The Editor decided to respect this variety of usage and hopes that no offence is taken by anyone.

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Patrick R.W. Roe

Editor