Preface

The Information Society is bringing about radical changes in the way people work and interact with each other and with information. In contrast to previous information processing paradigms, where the vast majority of computer-mediated tasks were business-oriented and executed by office workers using the personal computer in its various forms (i.e., initially alphanumeric terminals and later on graphical user interfaces), the Information Society signifies a growth not only in the range and scope of the tasks, but also in the way in which they are carried out and experienced. To address the resulting dimensions of diversity, the notion of universal access is critically important. Universal access implies the accessibility and usability of Information Society technologies by anyone, anywhere, anytime. Universal access aims to enable equitable access and active participation of potentially all citizens in existing and emerging computer-mediated human activities by developing universally accessible and usable products and services, which are capable of accommodating individual user requirements in different contexts of use and independently of location, target machine, or run-time environment. In the context of the emerging Information Society, universal access becomes predominantly an issue of design, pointing to the compelling need for devising systematic and cost-effective approaches to designing systems that accommodate the requirements of the widest possible range of end-users.

Recent developments have emphasized the need to consolidate progress by means of establishing a common vocabulary and a code of design practice, which addresses the specific challenges posed by universal access. IS4ALL is the acronym of the European Commission-funded Thematic Network (Working Group) "Information Society for All" (IST-1999-14101). IS4ALL is the first project that addresses in a systematic manner the task of consolidating and codifying available knowledge on universal access in the context of health telematics. The primary reason motivating the work of IS4ALL is the fact that universal access is a relatively new concept, frequently confused with more traditional approaches to accessibility. Secondly, it becomes increasingly obvious that prevailing conceptions (e.g., human-centered design), although useful, do not suffice to explicitly address universal access goals in the context of the Information Society. Thirdly, universal access is increasingly becoming a global quality attribute and a prominent factor of product/service differentiation in the public and private sectors. In this perspective, accessibility needs to be investigated beyond the traditional fields of inquiry (e.g., assistive technologies, landscapes, interior/exterior design, etc.) in the context of selected mainstream Information Society technologies and important application domains with significant impact on society as a whole, such as health, education and training, and public administration. There is, therefore, a genuine and compelling need to consolidate existing experiences into a body of knowledge, which can guide designers concerned with universal access through the various steps involved and provide concrete examples of good practice.

The domain of health telematics was selected in IS4ALL because it is a critical service sector, catering for the population at large, and at the same time involving a variety of diverse target user groups (e.g., doctors, nurses, administrators, patients).

These characteristics render it a complex domain, with an inherent diversity, and an ideal "testbed" for exemplifying the principles of universal access and assessing both the challenges and the opportunities in the context of the emerging Information Society. Such an objective entailed several challenges. Specifically, despite the increased research, academic and industrial interest in universal access in the recent past, the field requires further elaboration of the detailed knowledge necessary to practically apply universal access in the development of modern applications and services. The first and foremost evidence factor is the variety of conceptions about universal access. For instance, many researchers, typically in the field of assistive technologies, consider that universal access effectively entails a renewed interest in people with disabilities. From this perspective, it is claimed that an explicit focus on the needs and requirements of people with disabilities — who traditionally have been overlooked or underserved — will meet the objective of universal access. Others in mainstream sectors maintain that universal access is merely a matter of complying with existing principles and proven practices of user-centered design. On the other hand, others realize the need to improve prevalent user-centered design to encompass new methods of understanding user requirements and evaluating novel features of interactive software.

At the same time, previous research indicates that universal access in the context of Information Society applications and services comprises much more than incremental advances in each one of the dimensions implied by the above concepts. Indeed, it requires a better understanding of the users, which is a long-standing premise of user-centered design. However, users are no longer distinctly identifiable or easily studied. It also requires a better understanding of technology and use practices in a rapidly changing environment, but neither of these turns out to be an easy domain of study. The above considerations have motivated recent calls for revisiting existing theory, providing creative interpretation of design guidelines and establishing new engineering grounds, with the aim of extending the level and scope of current theory beyond keystrokes and task specifications to gain insight into novel computer-mediated human activities. This requires a retrospective on our experiences in the context of our expectations for the future of society and technology and a deep insight into the changes brought about by the radical pace of technological innovation, the modern and ubiquitous networking infrastructure and the proliferation of novel interactive devices. In addition, universal access cannot dismiss the changing execution contexts of tasks and the increasingly social nature of interaction.

IS4ALL has investigated the above in the context of health telematics, and has established bridges across various research communities, including usability engineering, human-computer interaction (HCI), assistive technologies, software engineering, software quality, industrial engineering, and the social sciences, in an effort to bring to the surface knowledge and best practices that can contribute to a better and more elaborate understanding of universal access. The application domain of health telematics was selected as a critical service sector in the emerging Information Society.

To achieve the intended objective, IS4ALL engaged in a data collection activity that aimed to unfold new requirements in health telematics and new or improved design processes and methods, which could be used to cater for the emerging requirements. The inquiry into health telematics was inspired by the scenario-based perspective into systems development and resulted in a rich set of representative

scenarios depicting alternative patterns of use of electronic patient records. To this effect, the project involved a wide range of health telematics representatives working on health telematics research and development, everyday professional health telematics practices, regional health telematics networks, and end-users.

As for the methods, the project devised a common definition of what constitutes a 'method' and a 'process' of design. To this effect, a common template was compiled according to which all methods should be consistently described in terms of key features, such as the problem being addressed, the instruments and devices used, the process for using the device(s), inherent method assumptions, and method outcomes. This effort brought together, in a common format, knowledge (frequently tacit), that was previously hidden in practices of different design and engineering communities.

These methods, once consolidated, were validated and refined in the context of designated health telematics scenarios to assess relevance, practicality, and added value. The intention was to convey an insight into how each of the methods could be used in a practical design setting, as well as how each could be tailored to different organizational practices. The resulting experience and critical appraisal of the methods indicated the need to improve the method base with a view to establishing new design techniques to address unmet challenges.

This volume reports the most representative efforts of the IS4ALL consortium towards establishing a validated code of universal access practice. Although the book does not claim exhaustive analysis of relevant methods, it is worth noting that the methods presented share not only a common heritage, but also a common set of characteristics, aside from being oriented to interactive software design. First, they all are scenario driven, with the scenarios serving as an "engine" for directing and focusing the methods' activities. Second, the methods focus on documenting the rationale behind the design decisions made. In this way, the rationale serves as a knowledge base for existing and future decisions. Third, they all involve stakeholders so that multiple views of universal access quality are elicited, prioritized, and embodied in the systems being considered. Fourth, the methods can be tailored to the requirements and internal codes of practice of an enterprise or research group to ensure maximum benefit. Finally, the methods are compatible in the sense that a consultant, a quality assurance group, or a research team can select a specific portfolio of methods to guide their development process.

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