Technology for Ubiquitous Telecom Services

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The theme for this edition, *Technology for Ubiquitous Telecom Services*, is very timely for a conference at the end of this decade, that has seen an amazing technological revolution triggered by a number of factors, mainly: (a) the spread of liberalisation and deregulation of telecommunications, pushed by the political, social, and economic pressure to break monopolies that would hinder the development and uptake of new services at reasonable cost for the users; (b) the appearance of new actors in telecommunications and the reconfiguration of traditional operators, to meet new business opportunities in telecommunications and to cope with fierce competition arising from liberalisation and deregulation; (c) a dramatic lowering of time-to-market requirements and of life-cycle of products and services; (d) the surprising growth rate of mobile systems and services, pushed by the strong market response to technologies allowing users to access voice, data, and multimedia services while away from their homes and offices (personal mobility) and while on the move (terminal mobility); (e) the exponential spread of the Internet, providing at first a user-friendly and affordable technology for accessing information services, and now extending its coverage also to multimedia and real-time communications services; (f) the creation of an electronic market place, where trading and commerce can be carried out over the 'global information highway'; and (g) the emergence of Internet-derivative concepts such as the Intranet, a closed and secure domain to serve internal needs of corporate companies of any size and any geographical distribution, and nomadic computing, the ability for customers to have their full information environment available from anywhere, at any time, with no limitations in functionality.

Associated with the phenomena described above, some important technical consequences can be observed. The provision of ubiquitous services, at least in the short-medium term, calls for a federation of networks of several technologies with an impressive amount of interworking, at different levels of functionality, between telecommunications, information technology, and broadcasting systems. In the long term, optimal provision of ubiquitous services could be assured by the convergence of today's many different architectures (IN, TMN, NMF, TINA, and DAVIC, just to limit the range of examples) towards one "super" service architecture. However, the dramatic lowering of time-to-market requirements and life-cycles of products and services implies the need for advanced technologies enabling rapid development, deployment, and maintenance of software. In addition, the functional complexity of the global, world wide information system resulting from the federation of so many different administrative and technological domains raises concerns about the end-to-

end quality of service that users can expect, experience, and afford. Another factor is that the roaming of users across administrative boundaries and their ability to log on from virtually anywhere to access their preferred services imposes dramatic constraints on security. Electronic trading has also to stand on firm security provisions, allowing trusted transactions to happen and survive malicious attacks. These issues are by no means exhaustive, and are only a sample of the topics approached in this volume.

The book gathers forty contributions, provided by a range of authors with wide representation of industrial and academic environments, from many countries around the globe. Most papers express results coming from high-level co-operative international effort, within sponsored programmes, and have therefore an added value in terms of wide consensus around the solutions presented. Other papers are the exquisite result of research carried out by teams limited in numbers or by single scientists and may contain the germs of innovative break through solutions. The papers have been grouped into theme sections, with the convenience and the limits of any classification scheme:

- Electronic commerce
- Agent technology and applications
- Architectures
- Mobility
- Service management
- Network management
- Quality of service
- Security
- Service creation
- Platforms
- Gateways to CORBA

Each section starts with an opening article placing the theme and the papers in context. The order given above, different from the actual sequence in the book (mainly aligned to the schedule of sessions in the conference), underlies an ideal road-map for readers interested in approaching all papers: (a) start with the sections *Electronic commerce* and *Agent technology and applications* to appreciate the technological trends with a direct impact on end users or most fashionable for applications designers; (b) go to the sections *Architectures*, *Mobility*, *Service management,* and *Network management* to understand how current network technologies are competing or converging towards ubiquitous service provision; (c) study the papers in sections *Quality of service* and *Security* to acquire awareness of the challenging constraints to be met by any candidate solution for future-proof service and application provision; and (d) look at the software enabling technologies, in terms of methodologies and processes to be used (*Service creation*), of advanced distributed software models and execution environments (*Platforms*) and of migration from telecommunications-specific software solutions to general-purpose software solutions (*Gateways to CORBA*).

We hope you will enjoy reading the book and will find useful suggestions to help you make progress with relevant work as well as interesting stimuli for further research.

April 1998 The Editors

Acknowledgements

This volume could not exist without the authors of the papers. Over 80 papers were contributed. Unfortunately, many proposed papers could not be included but the authors of these papers are thanked for their efforts.

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