Chapter 1: GSM’s Achievements

Section 1: Introduction

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1.1.1 Introduction to the Content of the Book

This book describes how global mobile communication was made. It is written for those who want or need to know how this was achieved e.g.:

- Young professionals who want to build their career on GSM and UMTS and need to understand the basics
- Strategic and technical planners who want to drive the future GSM and UMTS development
- Strategists who plan to repeat GSM’s success in the fourth generation
- Academics, who want to understand and analyse the development of GSM and UMTS;
- Activists in other large scale international communication projects who want to use experiences gained

But the book is also written for those about two thousand colleagues who participated in the work and want to have a record of the events or to have a more comprehensive image, of what happened in the different branches of the very big network of groups.

GSM is the system which started in Europe and was accepted by the world. It provides global mobile communication to:

- anybody: 500 million users from professionals to children in May 2001
- anywhere: 168 countries in all continents in May 2001
- any media: voice, messaging, data, multimedia

UMTS is built on the GSM footprint and plans to repeat the GSM success.

This book is focused on the pre-competitive sphere, the big co-operative effort, which enabled the huge market success world-wide. The clarification of the strategies, the strategic decisions on the broad avenues in service and system design and commercial concepts are described. This book provides an insight into the process of how this was achieved and when. In selected cases it shows the complexity of the process and the antagonism of the interests of the different parties and the consensus building process in detail. The output of the process is well documented in the technical specifications produced by the different groups. They can be retrieved from the Internet.¹

¹ www.ETSI.org, www.3GPP.org, www.gsmworld.org or www.umtsforum.org. The GSM phase 1 standard can be found on the attached CD ROM in folder A3, since it is not available from the Internet.
This book describes the building of the will and momentum to create a Pan-European system to end the market segmentation and barriers to growth. Principles were agreed. Advanced services’ requirements including international roaming were agreed. To fulfil these requirements an advanced new digital system was developed. The system provided for a competition of several operators in a country. Advanced low cost terminals were achieved by large markets and manufacturers competition. Advanced low cost infrastructure was enabled by large markets, multivendor concepts and manufacturers competition. All major decisions were made in time, even the most difficult ones. A far-reaching system evolution – even leading from second to third generation – was implemented. Manufacturers and operators promoted GSM in Europe and beyond. The world was invited to become a partner with equal rights in this process.

The book covers intensively the two phases which lead to the long-term strategic orientation of GSM and UMTS. There were protracted and deep controversial debates, which lead to a consensus:

- The debate about the concepts and the basic parameters of the GSM standard from the end of 1986 to mid-1987 showed that the Europeans could agree on one solution and meant business with GSM. It lead to the creation of a new more open organisation by moving all work from CEPT GSM to ETSI GSM opening the doors for manufacturers to participate with equal rights and the GSM MoU Group to participate as the operators’ club.
- The debate about the strategy, the concepts and the basic parameters of UMTS in 1996–1997 lead to a re-orientation of the UMTS concept and an agreement on its cornerstones within ETSI and with key players in North America and in Asia. This required also a new more open and more efficient organisation of the work in 3GPP, which allowed access with equal rights to non-European players.

In both cases a stable base and framework for the following phase of more detailed work was achieved.

The much more competitive situation in the market created by the licensing of several operators in a country did in principle not deteriorate the consensus building process, since the new players understood very quickly that a constructive co-operation in the pre-competitive sphere was the prerequisite of the success. These new players brought often more demanding requirements. This was essential for the vivid and fertile system evolution.

The founding documents of the GSM/UMTS system are the GSM/UMTS Technical Specifications and Standards and the Permanent Reference Documents (PRDs). The Technical Specifications contain the basic technical definitions: services, system architecture, selected interfaces and operation and maintenance functions, and test specifications. Some of these, which are needed for regulatory purposes, are converted into formal Standards. The Technical Specifications and Standards were elaborated by groups who varied over time: CEPT GSM, ETSI GSM and SMG, ANSI T1P1 and 3GPP. The PRDs cover commercial and operational aspects, e.g. service and commercial requirements, test specifications for roaming, security algorithms, protocols for the interchange of charging data for roammers. They were elaborated by working groups in the GSM MoU Group, later called GSM MoU Association and now GSM Association.

The book provides in the rest of Chapter 1 key milestones and success statistics. It describes in Chapters 2–9 the GSM phases and the evolution towards UMTS built on GSM. Chapters 10–20 provide more details on technical aspects and working methods.
Chapter 21 deals with operators co-operation and the elaboration of the PRDs. Chapter 22 describes the world-wide acceptance of GSM and UMTS. Chapter 23 tries to explain from our point of view, which factors enabled this success which surpassed all expectations. A CD-ROM is attached to the book, which contains all reference documents mentioned in the footnotes of the different contributions.

The success of GSM and UMTS was created by the working together of a very large number of people in a network. The catalyst of this process was the co-operation of a smaller number of people in the pre-competitive sphere using different forums. All these colleagues created the technical system specifications for GSM and UMTS and the technical and commercial documents needed for the marketing and operation of GSM and UMTS with special emphasis on international roaming. All these people worked in a network. They shared visions and strategy. It was for all of them a privilege to have the opportunity to contribute to this “inner circle”.

The book is structured into contributions, which are written as named contributions by key players who played a long-term key role in the development of GSM and UMTS. The views expressed in the different contributions are those of the authors and do not necessarily reflect the views of their respective affiliation entities. There has been a lot of dialogue between all authors during the writing of the book. However, it was the intention to provide different views from different perspectives to the reader. We did not try to iron out all differences of opinion. The book shows how different personalities could work together like a big orchestra, create and play a great symphony. In selected cases the reader will find cross references by the editor in footnotes highlighting to key differences. It is a major achievement of this book that so many people – despite their loaded agenda took the time to report about their experiences and views.

It was a pleasure for me to act as editor of this book and work together with so many excellent colleagues to provide this record of events and our explanations. We are open to dialogue with our readers. Our CVs and e-mail addresses are provided in the attached CD ROM File G.

1.1.2 Practical Advice on how to use the Book

The content list is structured into chapters and sections containing the individual contributions written by named authors. A short CV and e-mail address of each author is provided in the attached CD ROM file G. All footnotes in a contribution are numbered locally.

The decision making plenary meetings changed over time from GSM (Groupe Spécial Mobil) to SMG (Special Mobile Group) to 3GPP TSG SA (Technical Specification Group Services and System Aspects). The Plenary meetings are numbered in sequence: GSM#1 to 32, SMG#1 to 32 and SA#1...

Similarly the subgroups reporting to the plenary changed their names. The group responsible for services was WP1 (Working Party), then GSM1, then SMG1 and finally TSG SA WG SA1. Equal developments had the radio groups using the number 2 and the network aspects group using the number 3. The data group started as IDEG and became GSM4 and SMG4.

Reference documents, which are relevant and often difficult to retrieve are provided on the attached CD-ROM. Reference documents are mentioned in footnotes in the sections. The
vast majority are temporary documents of the different standardisation groups. Their number contains a serial number and a year number. Often the format is SSS/YY (e.g. 123/87 = temporary document 123 of 1987). This was changed in later years to YY-SSS. The CD-ROM uses file names of uniform format with the year followed by the serial number for an easy automatic sorting. The CD-ROM provides the quoted reference documents and all Plenary Meeting Reports of the technical standardisation groups: CEPT, ETSI GSM and SMG and 3GPP. In addition key documents of other areas are provided e.g. the GSM Memorandum of Understanding and the UMTS Task Force report. Finally a folder F contains funny things and a video and some photographs. More details are given in the contents list of the CD-ROM in the file “Introduction”.

Several overview lists and descriptions are provided:

- Milestones: Chapter 1, Section 2
- Plenary Meeting Lists in Annex 1
- Technical groups and their evolution in Annex 2
- Chairpersons lists in Annex 3
- Key abbreviations in Annex 4

The current version of the complete **GSM and UMTS Specifications** can be found at the following website: www.3gpp.org. The GSM Phase 1 specifications of 1990/1 can be found on the attached CD-ROM in folder A3.