Preface

Internet Protocol (IP) Multimedia Subsystem, better known as "IMS", is based on the specification of Session Initiation Protocol (SIP) as standardized by Internet Engineering Task Force (IETF). But SIP as a protocol is only one part of it. IMS is more than just a protocol; it is an architecture for the convergence of data, speech, fixed and mobile networks and is based on a wide range of protocols, most of which have been developed by IETF. IMS combines and enhances them to allow real-time services on top of Universal Mobile Telecommunications System (UMTS) packet-switched domain.

This book was written to provide a detailed insight into what IMS is – i.e., its concepts, architecture, service and protocols. Its intended audience ranges from marketing managers, research engineers, development and test engineers to university students. The book is written in a manner that allows readers to choose the level of knowledge they need and the depth of understanding of IMS they desire to achieve. The book is also very well suited as a reference.

The first few chapters in Part I provide a detailed overview of the system architecture and the entities that, when combined, are necessary to provide IMS. These chapters also present the reference points (interfaces) between these entities and introduces the protocols assigned to these interfaces.

As with every communication system, IMS is built on concepts that offer basic and advanced services to its users. Security is a concept that is required by any communication architecture. In this book we describe security threats and the models used to secure communications in IMS. IMS security, along with concepts such as registration, session establishment, charging and service provisioning, are explained in Chapter 3.

Since both wireless and wireline networks are involved in IMS architecture, IMS becomes an inexpensive medium for Fixed to Mobile Convergence (FMC). Chapter 3 also describes FMC, its benefits and importance.

In IMS, services are not limited to audio, but also include presence, messaging, Push to talk over Cellular, conferencing and group management. In Part II of this book, we introduce some of these advanced services in IMS, including call flows. This part proves that the convergence of services and networks is not a myth, but will have real added value for the user.

SIP and SDP are two of the main building blocks within IMS and their usage gets complemented by a large number of important extensions. Part III goes step by step

through an example IMS registration and session establishment at the protocol level, detailing the procedures taken at every entity.

The final part of the book, Part IV, describes the protocols used within IMS in more detail, paying special attention to signalling as well as security protocols. This part of the book shows how different protocols are built up, how they work and why they are applied within IMS.

Third Generation Partnership Project (3GPP) and IETF have worked together during recent years in an amazing way to bring about IMS and the protocols used by it. We, the authors, have had the chance to participate in many technical discussions regarding the architecture and protocols and are still very active in further discussions on the ever-improving protocols and communication systems. Some of these discussions, which often can be described as debates or negotiations, frequently take a long time to conclude and even more frequently do not result in an agreement or consensus on the technical solutions. We want to thank all the people in these standardization bodies as well as those in our own company who have come up with ideas, have shown great patience and have worked hard to standardize this communication system of the future called IMS.