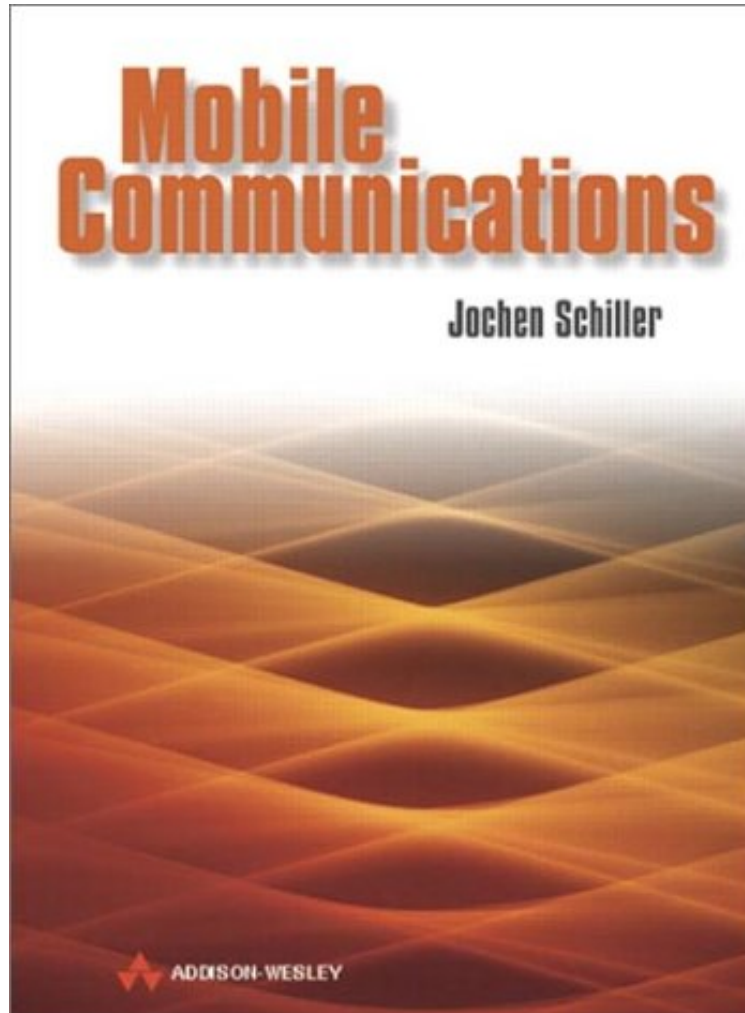


## Mobile Communications

*Jochen Schiller, Dr. Jochen Schiller*  
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**Jochen Schiller, Dr. Jochen Schiller : Mobile Communications** before purchasing it in order to gauge whether or not it would be worth my time, and all praised Mobile Communications:

1 of 1 people found the following review helpful. Great first book of mobile telecommunications! By A. ZAVALAI think this is the only book that presents you the whole perspective of mobile communications from a computer science point of view, it goes deep in details, but is not intended for Math people, most for computer people. This helps me a lot to understand the big perspective of a Mobile telephony carrier. 0 of 1 people found the following review helpful. Mobile communications By Omar A. Fernandez It's a completed and necessary material for graduated mobile communications course. Very easy to understand. 1 of 3 people found the following review helpful. The book I got wasn't this By Lonnie H. It looked nothing like the cover, the ISBN had a sticker over it. I couldn't peel off the sticker to look and see if it was the same book. The book printing was light on some pages and dark on others. I think this was a

knock off copy from the reseller.

This is a technical introduction to the current developments within Mobile communications. It allows the reader to assess new developments, how to harness new technologies and how to improve existing systems. Although it does not evangelise, it does allow readers to keep abreast of new technologies and current trends.

From the Back Cover The rapid growth and convergence of mobile communications has led to a need for new techniques and solutions and a demand for knowledgeable communication professionals who have a firm grasp of the background theory and technologies and who also understand the future trends and possibilities within the field. In this book Jochen Schiller draws on extensive experience to present an essential grounding in mobile communications, explaining current developments in industry and research and providing a detailed technical background to the area. The book covers all of the important aspects of mobile and wireless communications from the Internet to signals, access protocols and cellular systems, all presented in a clear and structured way, with a focus on the crucial area of digital data transfer. The early chapters give a concise overview of mobile communications applications, history and market, and provide a foundation in wireless communication, wireless transmission and Medium Access Control. The book goes on to devote a chapter to each of the 5 different groups of wireless network technologies: telecommunications systems, satellite systems, broadcast systems, wireless LAN and wireless ATM. The final chapters on the network layer and transport layer address problems and provide solutions using well-known Internet protocols such as TCP/IP within a mobile environment, concluding with a focus on WWW and Wireless Application Protocol (WAP). If you are a professional networking engineer or manager wanting to know how mobility will affect applications, security and networks, this book will be an invaluable resource. Mobile Communications will enable you to: recognise and understand the future trends in networking understand design decisions follow through paths of migration from fixed networks towards mixed fixed/mobile networks Features: easy access to specific topics through self-contained chapters quick reference and learning tools: summary of each chapter; signposted references to relevant standards, organizations and research work; end of chapter questions for self-testing/study; appendix of acronyms wide range of examples, applications scenarios and case studies accompanying web site contains up-to-date developments and links to related mobile and wireless communications sites, figures and PowerPoint slides covers digital systems such as CDMA, GSM, and DECT covers up-to-date technologies in all areas of mobile communications with extensive examples and special features: telecommunications (GSM and UMTS); broadcast (DAB); wireless LANs (IEEE 802.11, HIPERLAN and Bluetooth); wireless ATM (QoS) and Internet Protocols (IP and TCP) 0201398362B04062001 About the Author Jochen Schiller is an Assistant Professor in the fields of Computer Networks, specializing in Mobile Communications, at the University of Karlsruhe, Germany and Uppsala University, Sweden, and is an Associate Professor attached to the ...cole de technologie supErieure, UniversitE du QuEbec, Canada. His research includes work within several European projects and industry co-operations dealing with QoS provisioning for large-scale WWW servers. He also acts as a consultant for several companies in the networking and communication business. 0201398362AB04062001 Excerpt. Reprinted by permission. All rights reserved. Preface We are experiencing exponential growth rates in mobile communication systems, increasing mobility awareness in society, and deregulation of former monopolized markets. While traditional communication paradigms deal with fixed networks, mobility raises a new set of questions, techniques, and solutions. For many countries, mobile communication is the only solution due to the lack of an appropriate fixed communication infrastructure. The trends mentioned above create an ever-increasing demand for well-educated communication engineers who understand the developments and possibilities of mobile communication. What we see today is only the beginning. There are many new and exciting systems currently being developed in research labs. The future will see more and more mobile devices, the merging of classical voice and data transmission technologies, and the extension of today's Internet applications (e.g., the world wide web) onto mobile and wireless devices. New applications and new mobile networks will bring ubiquitous multimedia computing to the mass market; radios, personal digital assistants (PDAs), laptops and mobile phones will converge and many different functions will be available on one device. This book is an introduction to the field of mobile communications and focuses on digital data transfer. The book is intended for use by students of EE or CS in computer networking or communication classes, engineers working with fixed networks who want to see the future trends in networking, as well as managers who need a comprehensible overview in mobile communication. The reader requires a basic understanding of communication and a rough knowledge of the Internet or networking in general. While resources are available which focus on a particular technology, this book tries to cover many aspects of mobile communications from a computer science point of view. Furthermore, the book points out common properties of different technical solutions and shows the integration of services and applications well-known from fixed networks into networks supporting mobility of end systems and wireless access. If the reader is interested in more detailed information regarding a certain topic, he or she will find many pointers to research publications or related web sites. Teachers may find this book useful for a course which follows after a general data communication or computer networking class. The book can also replace parts of more general courses if it is used together with other

books covering fixed networks or aspects of high-speed networks. It should be straightforward to teach a mobile networking class using this book together with the course material provided online via the following link: <http://www.telematik.informatik.uni-karlsruhe.de/~schiller/> The material comprises all of the figures, over 370 slides in English and German as PDF and PowerPoint(tm) files, a list of all acronyms, and many links to related sites. Additionally, the questions included in the book can provide a good self-test for students. This book addresses people who want to know how mobile phone systems work, what technology will be next in satellite communication, and how mobility will influence applications, security, or networks. Engineers working in fixed networks can see paths of migration towards mixed fixed/mobile networks. The book follows a 'tall and thin' approach. It covers a whole course in mobile communication, from signals, access protocols, up to application requirements and security, and does not stress single topics to the neglect of others. It focuses on digital mobile communication systems, as the future belongs to digital systems such as CDMA, GSM, DECT, DAB. New and important topics in the higher layers of communication, like the wireless application protocol (WAP), are included. Chapter 1 introduces the field of mobile and wireless communication, presents a short history and challenges for research, and concludes with a market vision which shows the potential of mobile technology. Chapter 2 follows the classical layers of communication systems and explains the basics of wireless technology from a computer science point of view. Topics in this chapter are signal propagation, multiplexing, and modulation. Profound electrical engineering knowledge is not required, however it is necessary to comprehend the basic principles of wireless transmission to understand the design decisions of higher layer communication protocols and applications. Chapter 3 presents several media access schemes and motivates why the standard schemes from fixed networks fail if used in a wireless environment. Chapters 4-8 present different wireless communication systems and may be read in any order. All systems have in common that they involve wireless access to a network and that they can transfer arbitrary data between communication partners. Chapter 4 comprises global system for mobile communications (GSM) as today's most successful public mobile phone system, cordless phone technology, trunked radios, and the future development with universal mobile telecommunications system (UMTS). Satellite systems are covered in chapter 5, while chapter 6 discusses digital broadcast systems such as digital audio broadcasting (DAB) which can be one component of a larger communication system providing end-users with mass data. Wireless LANs as replacement for cabling inside buildings are presented in chapter 7. Examples are IEEE 802.11, HIPERLAN, and Bluetooth. Chapter 8 focuses on wireless ATM, i.e., the extension of the asynchronous transfer mode (ATM) technology into the wireless domain. A special feature of wireless ATM is the provisioning of quality of service (QOS), i.e., the system can give guarantees for, such as bandwidth or error rates. Chapter 9 mainly presents Mobile IP, the extension of the Internet protocol (IP) into the mobile domain. Ad hoc networks with their requirements for specific routing protocols are also covered. The subsequent layer, the transport layer, is covered in chapter 10. This chapter discusses several approaches of adapting the current transmission control protocol (TCP), which is well-known from the Internet, to the special requirements of mobile communication systems. Finally, chapter 11 presents the new wireless application protocol (WAP) standard that enables wireless and mobile devices to use the world wide web (www) from today's fixed Internet. The book is based on a course taught at the University of Karlsruhe. The course typically consists of 14 lectures of 90 minutes each. Over 150 students have already used the material compiled for this book, which, remember is available online. You are encouraged to send any comments regarding the book or course material to [schiller@computer.org](mailto:schiller@computer.org). Finally, I hope you enjoy reading the book and forgive me for simplifications I have used to avoid blurring the big picture of mobile communications. Many such details may change as research and standards evolve over time. 0201398362P04062001