# 個人通訊系統
# PCS (Personal Communication System)

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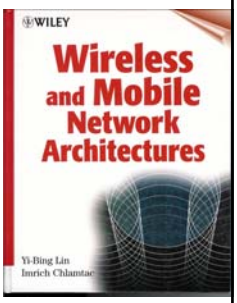
Sep. 2006

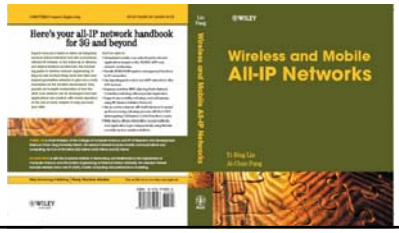


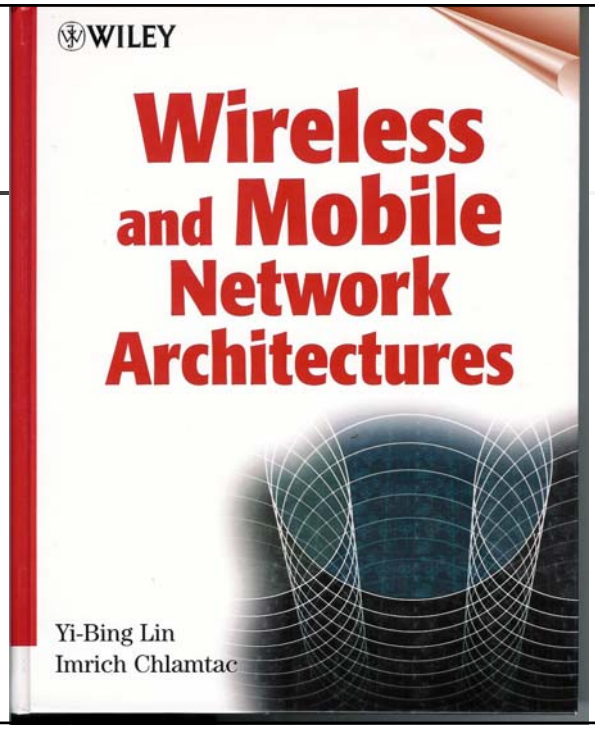
## PCS (Personal Communication System)

- **Wireless and Mobile Network Architecture**
  - Yi-Bing Lin and Imrich Chlamtac




- **Wireless and Mobile ALL-IP Networks**
  - Yi-Bing Lin and Ai-Chun Pang



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## Preface

- The evolution of radio and mobile core network technologies over the last two decades has enabled the development of ubiquitous **personal communications services** (PCS)
  - which can provide the mobile user with voice, data, and multimedia services at any time, any place, and in any format.

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## Preface

- PCS Network Management
- IS-41 Mobile Systems
- **GSM** Systems
- The Wireless Internet
- Other PCS Technologies



## PCS Network Management

- **Chapter 1**
  - describes the **PCS** technologies and their histories
    - AMPS, GSM, DAMPS, and IS-95 CDMA, and coreless/lower PCS systems
- **Chapter 2**
  - describes two aspects of **mobility** in a mobile telephony network
    - Handoff and roaming

## Cont.

- **Chapters 3** and **4**
  - Details of **handoff procedure**


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## IS-41 Mobile Systems

- Chapters 5 to 8 emphasize **IS-41**-based mobile systems
- IS-41 is an interim standard that allows **handoff** between BSs under control of different MSCs and allows roaming of a MS outside its home system


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## Cont.

- **Chapter 5**
  - descries the interactions between a mobile network and **public-switched telephone network**
    - Interface
    - Message routing
    - Mobility management
    - Call control



## Cont.

- **Chapter 6**
  - discussed **two applications** of IS-41
    - **Intersystem handoff**
    - **Authentication**

## Cont.

- **Chapter 7**
  - Describes network signaling for PACS, a **lower-tier PCS system** that utilize IS-41-like network management protocols
    - Basic call control, roaming, and handoff management



## Cont.

- **Chapter 8**
  - describes the Cellular Digital Packet Data (**CDPD**) aritecture/procotols
    - Some major features of the CDPD medium access control layer, mobile data link protocol layer, and network layer

## GSM Systems

- **Chapter 9**
  - provides an overview to the **GSM** system
    - Describing the GSM architecture, the location tracking, and call setup procedures, security, and data services.
- **Chapter 10**
  - addresses the software platform for GSM network signaling
    - Describe **GSM MAP** (Mobile Application Part) service framework and the MAP protocol



## Cont.

- **Chapter 11**
  - describes **GSM mobility management**
    - Basic location update, call origination, and call termination procedure
- **Chapter 12**
  - describes the point-to-point **short message service**

## Cont.

- **Chapter 13**
  - describes the **international roaming** in GSM
- **Chapter 14**
  - describes operations, administration, and maintenance (OA&M) aspects of GSM
    - Using call recording and HLR management as examples to illustrate GSM OA&M




## Cont.

- **Chapter 15**
  - describes the **number portability**
    - A network function that allows a mobile subscriber to keep a "**unique**" telephone number when the person switches the mobile service provider
- **Chapter 16**
  - Elaborates on integration of voice over IP (**VoIP**) and GSM
    - iGSM (integrated system)

## Cont.

- **Chapter 17**
  - discusses the **prepaid** service
    - Wireless intelligent network, service node, hot billing, and handset-based approached are selected to be their prepaid service platforms
- **Chapter 18**
  - introduce the General Packet Radio Service (**GPRS**)
    - GPRS reuses the existing GSM infrastructure to provide end-to-end packet-switched services
    - Industrial solutions of the GPRS network components
    - GPRS charging
    - Development efforts from GSM to GPRS


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## The Wireless Internet

- **Chapter 19**
  - describes the **WAP**
    - The tool for the convergence of wireless data and the Internet
- **Chapter 20**
  - describes various types of PCS system **integration**
    - Discusses the implementation issues involved in the integration of PCS systems


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## Cont.

- **Chapter 21**
  - **explores the development of third-generation (3G) mobile networks**
    - Discuss the paradigm shifts in 3G networks
    - The two major 3G radio proposals
      - WCDMA and cdma2000
    - Improvement efforts on 3G core network
    - Quality-of-service issues
    - 3G handset issues
    - Several 3G trial systems




## Other PCS Technologies

- **Chapter 22**
  - introduce the **paging** systems
- **Chapter 23**
  - introduce the **wireless local loop** (WLL)
- **Chapter 24**
  - describes how mobile communication affects **enterprise** telephony

# Wireless and Mobile ALL-IP Networks

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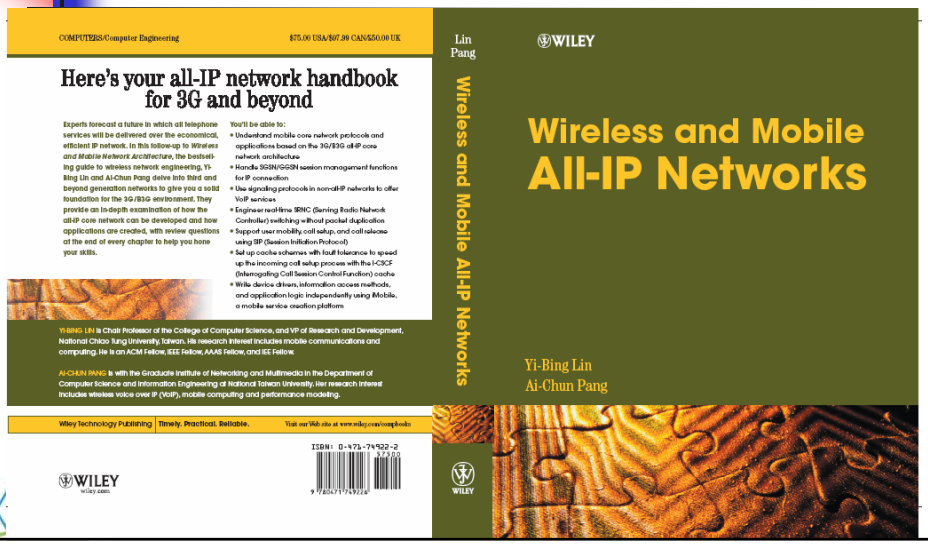
## Text Book



## Content

- **Chapter 1**
  - Short Message Service and IP Network Integration
- **Chapter 2**
  - Mobility Management for GPRS and UMTS
- **Chapter 3**
  - Session Management for Serving GPRS Support Node
- **Chapter 4**
  - Session Management for Gateway GPRS Support Node
- **Chapter 5**
  - Serving Radio Network Controller Relocation for UMTS




## Cont.

- **Chapter 6**
  - UMTS and cdma2000 Mobile Core Networks
- **Chapter 7**
  - UMTS Charging Protocol
- **Chapter 8**
  - Mobile All-IP Network Signaling
- **Chapter 9**
  - UMTS Security and Availability Issues

## Cont.

- **Chapter 10**
  - VoIP for the Non-All-IP Mobile Networks
- **Chapter 11**
  - Multicast for Mobile Multimedia Messaging Service
- **Chapter 12**
  - Session Initiation Protocol
- **Chapter 13**
  - Mobile Number Portability




## Cont.

- **Chapter 14**
  - Integration and WLAN and Cellular Networks
- **Chapter 15**
  - UMTS All-IP Network
- **Chapter 16**
  - Issues on IP Multimedia Core Network Subsystem
- **Chapter 17**
  - A Proxy-based Mobile Service Platform

## Score

- Each student has one oral presentation
  - **10**%
- Homeworks
  - **20**%
- Midterm and Final examinations
  - **35**% and **35**%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