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Course Profile

Executive Briefing on Mobile Telephony

ETS311

Duration:

1 day

Objectives:

Provide a description of the mobile technologies available for voice and data in local and wide area networks.

Describe other wireless technologies such as wireless local loop and satellite communications.

Describe the key business issues and how these are influenced by the networking technologies described.

Who should attend:

Any executive requiring a greater understanding of the use of mobile communications in the business environment.

Prerequisites:

None.

Follow-on courses:

None.

Course style:

The course is presented as a mixture of explanation and discussion, with questions and contributions from delegates being especially welcome. The overview concludes with a discussion on key business issues.



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The Technical Background

This section describes the key technical concepts behind all forms of wireless communication, explaining why only certain parts of the spectrum can be used. The different types of multiple access are compared. Finally some of the key terms in cellular systems are explained.

The Electromagnet Spectrum and its Properties

- Radio
- Microwave
- Sub-millimetre
- Infra-red
- Light

Multiple Access

- Frequency Division
- Time Division
- Spread Spectrum
 - Code Division
 - Frequency Hopping
 - Orthogonal Frequency Division
- Polarisation Division

Cellular Systems

- Why are Cellular Systems used
- Base Stations
- Mobile Terminals
 - Power, Heat and Batteries
- Roaming
- Handover
- Location Methods

The Industry

The main players in the industry are described. The impact of different billing models on technology development is explained. The problems of frequency allocation, and their impact are described.

- Suppliers
- Operators
- Customers
- Regulators
- Billing Issues
- Standards Organisations
- Spectrum Allocation



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Mobile Voice Networks

A brief summary of the analogue technologies is followed by a more detailed description of the second-generation digital systems, especially GSM.

Analogue Cellular Systems

TACS and ETACS (UK)

NMT (Scandinavian)

AMPS (American)

Analogue Cordless Telephone

Second Generation Systems

Advantages and Disadvantages of Digital Transmission

Digitising Voice

Pulse Code Modulation

Linear Predictive Coding

The GSM System

Frequencies

Frequency Division and Time Division Multiple Access

Architecture

Air Interface

Roaming and Handover

Security

Signalling

Services

Other Systems

D-AMPS/ADC/IS-136 (American)

CDMAOne/IS-95 (American)

PDC (Japan)

Digital Cordless and Wireless PBX

DECT (Europe)

PHS (Japan)



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Wide Area Mobile Data Networks

This section describes second-generation data transmission, and explains the current status of third generation mobile telephony. The wireless applications are also described.

Second Generation Data Services

Data over GSM

High Speed Circuit Switched Data (HSCSD)
General Packet Radio System (GPRS)
Enhanced Data for Global Evolution (EDGE)
Billing Issues
Data over IS-136
 IS-136HS
Data over IS-95
 IS-95B
Data over PDC

Third Generation Systems

IMT-2000
Technologies
UMTS (Europe/Japan)
 3GPP
 WCDMA/UTRA
 UMTS Protocols
 CDMA2000 (America)
 3GPP2
 CDMA2000-1X
 CDMA2000EV-DO
 CDMA2000EV-DV
 CDMA2000-3X
UWC-136 (America)
TD-SCDMA (China)

Wireless Applications

WAP 1.1
I-Mode
WAP 2.0

Data Devices

Screens
Input
Voice Recognition
Operating Systems



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Wireless Local Loop

This is a brief description only as it is not a true mobile technology, but is included because it has much in common with the technology described in this overview.

Multichannel Multipoint Distribution Service (MMDS)

Local Multi-point Distribution Service (LMDS)

Satellite Systems

This is again a brief overview of satellite technology

Satellite Orbits and Services

Geostationary

Low Earth Orbit

Middle Earth Orbit

Satellite Voice Services

Satellite Data Services

Business Issues

The briefing will conclude with a discussion of the key business issues, and how they are impacted by the technology described.



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