



6.3 CHINA GSM SEMINAR
BEIJING
26 - 28th SEPTEMBER 1994

6.3 - EXPERIENCES IN HONG KONG

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Presentation Overview

- Introduction
- Experiences To Date
 - Planning and Implementation
 - Operations and Management
 - Mobile Terminals
- Hong Kong Market
 - Hong Kong Market Overview
 - Competitive Environment
 - Success of GSM in Hong Kong

Presentation Overview

- Opportunities Ahead
 - Service Differentiation
 - Capacity Enhancement
 - Widespread Adoption of GSM
 - Extension Possibility
- Vision of Wireless Communication Services

Experiences To Date

- Planning and Implementation
- Operations and Management
- Mobile Terminals

Planning and Implementation

Difficulties Arising from Early Implementation

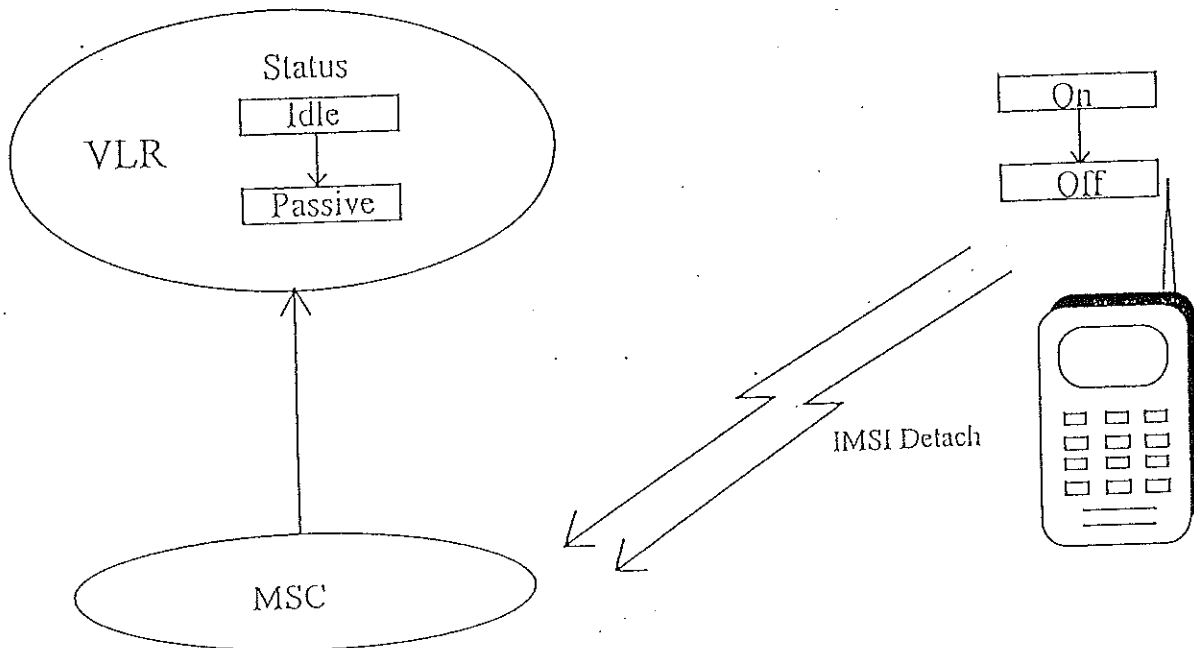
- More Advanced Radio Planning and Measurement Tools Needed
- Scarcity of Equipment for Enhancing Coverage
- Affected by Vendor Implementation Schedule
- Availability of C7 / ISUP for Interconnect to PSTN
 - R1 Signalling at First
 - C7 and R1 Together

Operations and Management

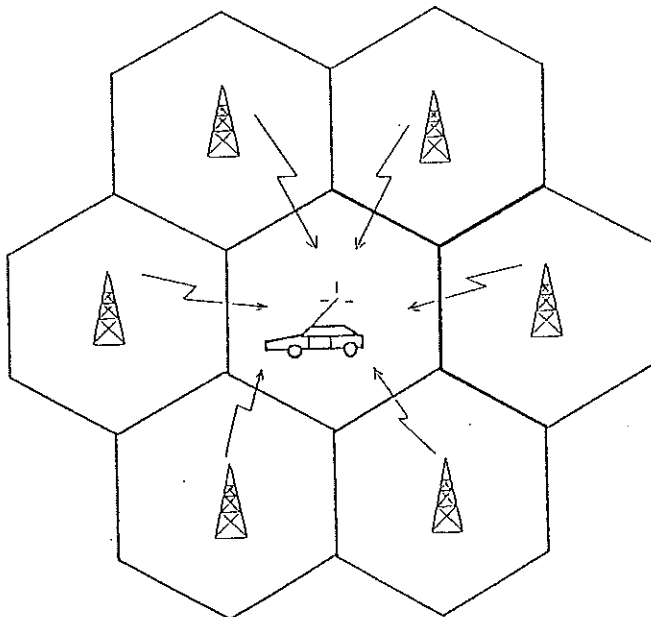
Need to Develop Extensive GSM Knowledge Base

- More Sophisticated Infrastructure
 - Remote Operation : Less Visits to Cell Sites
 - Higher Level of Expertise Required
- Cellular Functionalities Implemented Differently
 - IMSI Detach
 - Mobile-assisted Handover
 - Subscription in SIM Card

IMSI Detach



Mobile Assisted Handover



- BSC informs MS of its neighboring carrier frequencies.
- MS measures the signal strength and transmission quality of the neighboring carriers.
- These measurements are sent to BSC for decision.
- BSC informs MS of its new carrier if handover is required.

Operations and Management

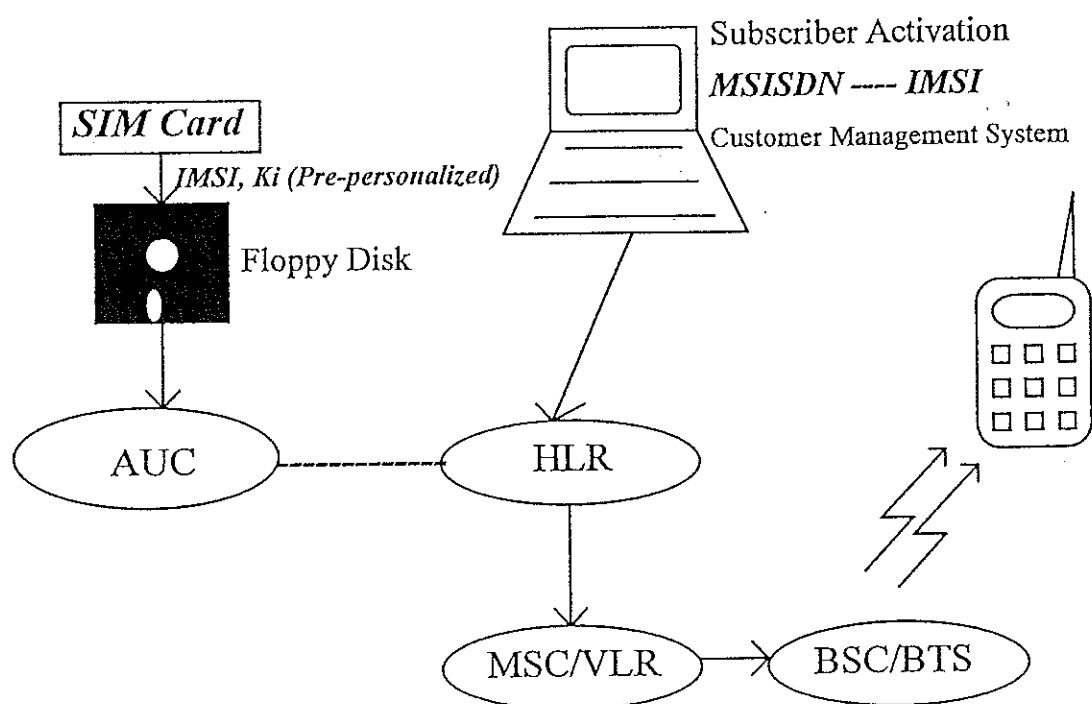
Network Management Tools

- More Network Management Systems Become Available
 - GSM Recommendations for Network Management (12.X Series) are Now Better Defined
 - Mostly Proprietary Solutions
 - Limited Choice

SIM Card Management

- Complexity Depends on Chosen Method of Activation and Distribution
- Additional Logistics in Managing Distribution

SIM Card Management



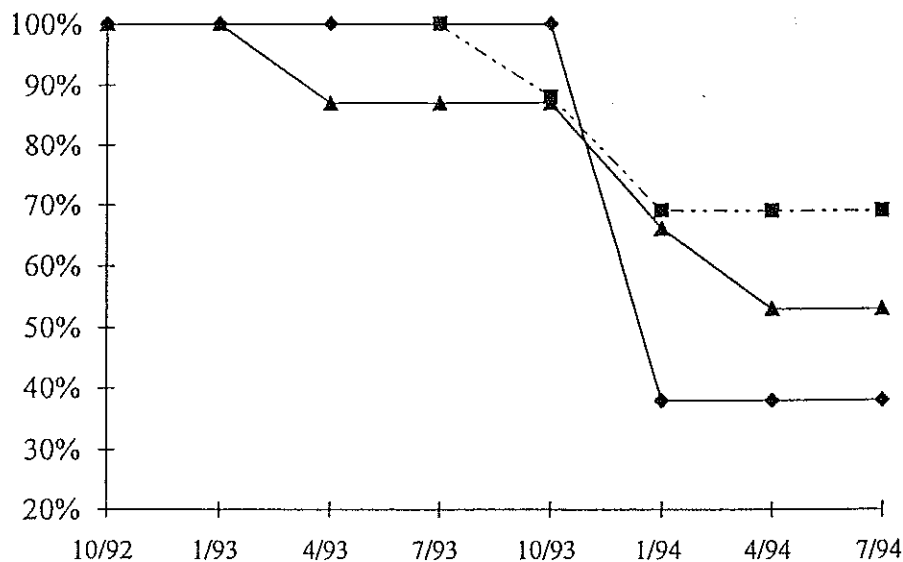
Mobile Terminals

Dramatic Improvement over the Past 18 Months

- Initially Limited Choice - Now Much Improved
- Supply Shortages
- Quality Control was Mixed
- Battery Life - Substantial Improvements
- Size and Weight - Now Matching Analogue
- Different Implementations by Manufacturers
 - Affect Perception of Network Performance
- Rapidly Falling Prices

Falling GSM Handset Prices

Price Trends for Three Manufacturers



Hong Kong Market

- Hong Kong Market Overview
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Hong Kong Market Overview

- Multiple Technologies
- Multiple Operators
- Similar Services
- Reaching Threshold of Mass Market

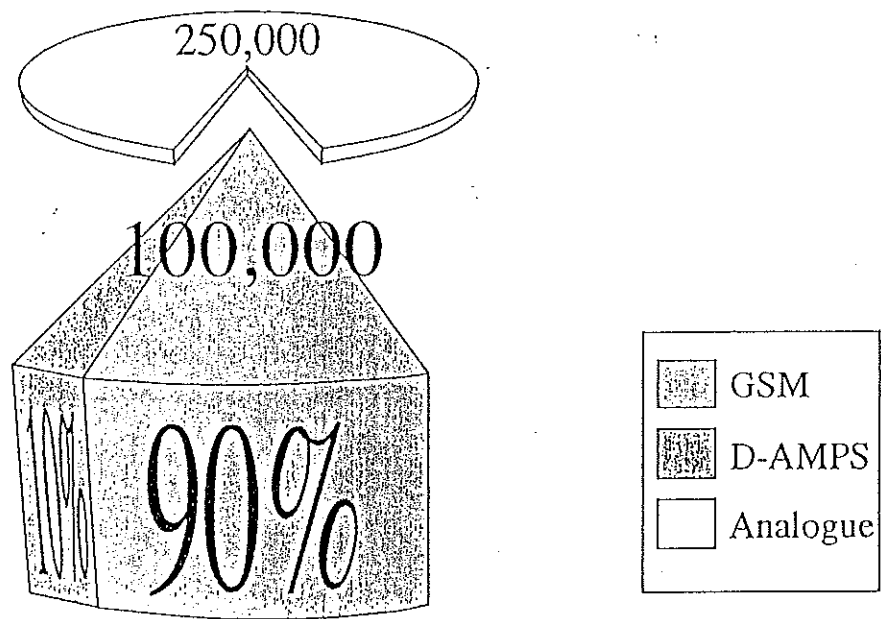
Competitive Environment

- 4 Cellular Operators
- 4 Analogue Systems
 - TACS 2
 - E-TACS 1
 - AMPS 1
- 5 Digital Systems
 - GSM 3
 - D-AMPS (IS - 54) 1
 - CDMA (N - CDMA) 1
- Proposed New Licences
 - 6 PCS (Personal Communication System) Licences
 - 4 PHS (Personal Handyphone System) Licences

Success of GSM in Hong Kong

- 2 Operational GSM Networks
- 1 Further GSM Network in 1995
- Striving for more Comprehensive Coverage than Analogue
- New Services Launched

Hong Kong Cellular Subscribers



June 1994 Subscribers: 350,000

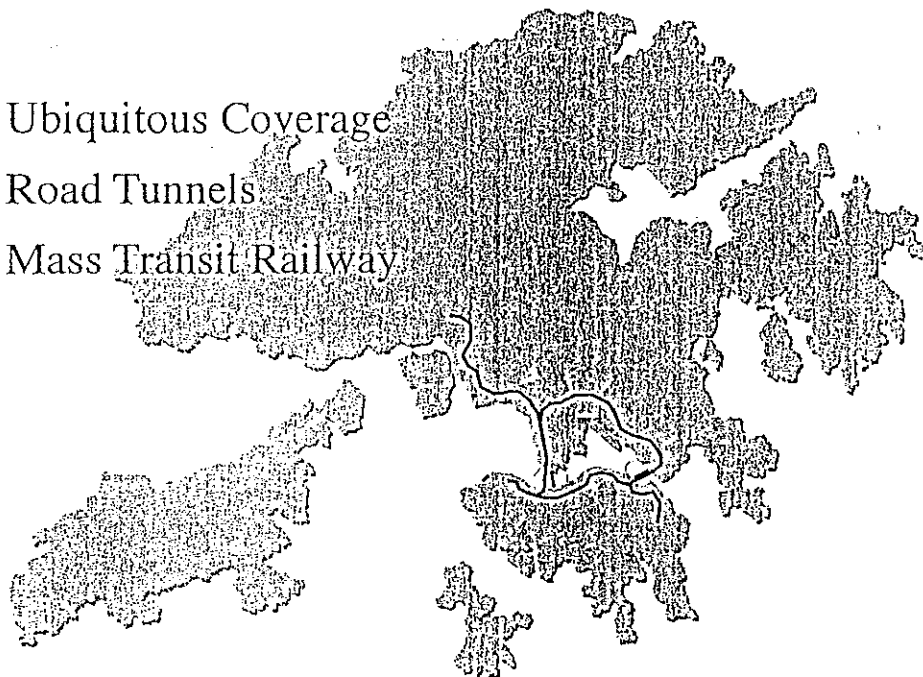
GSM

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Coverage

- Ubiquitous Coverage
- Road Tunnels
- Mass Transit Railway



GSM

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New Services

- Voice Mail with Automatic Callback
- Short Message Service - SMS
- Automatic International Roaming
- Fax Mail

Opportunities Ahead

- Service Differentiation
- Capacity Enhancement
- Widespread Adoption of GSM
- Extension Possibility

Service Differentiation

Voice Quality

- High Specification Codec
- Even Better Quality with New Speech Codec

Security and Privacy

- Unique Authentication Process to Protect Against Fraud
- Encryption of Radio Transmission
- AUC / EIR / CEIR

Personal Numbering

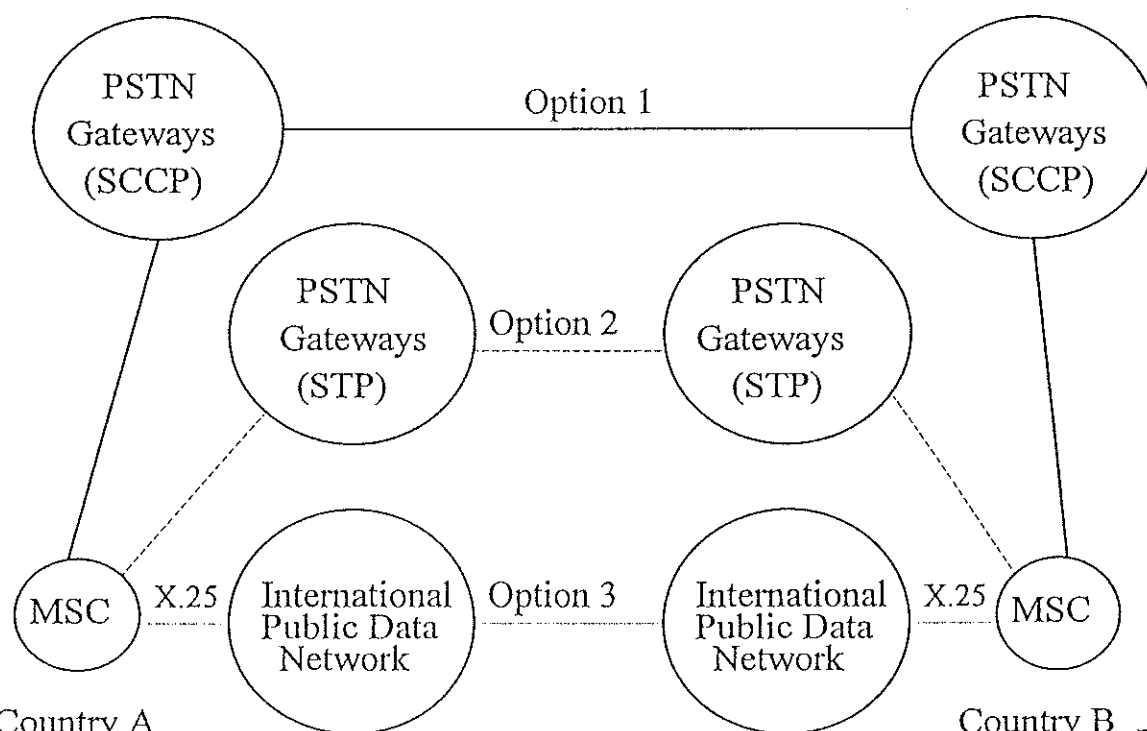
- Introduction of Personal Numbering Concept Through SIM Cards

Service Differentiation

International Roaming

- Technical Issues
 - STP and SCCP at PSTN Gateways
 - X.25 International Public Data Network for non-SCCP Network
- Customer and Commercial Issues
 - Customer Demand
 - Control of Credit
 - Routing of Calls

Roaming - Network Options



GSM

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Service Differentiation

Short Message Service

- Message Store and Forward Capability
- Platform for Further Value Added Services
- Flexibility Allows Network Differentiation

GSM

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Capacity Enhancement

- Half Rate Codec
- Hierarchical Cell Structure

Widespread Adoption of GSM

- Growing Momentum
 - Whole of Europe
 - The Middle East
 - The Indian Sub-continent
 - South East Asia
 - Australasia
- Now Proven Technology Undergoing Further Advanced Developments
- More Manufacturers Entering GSM's Global Market

Widespread Adoption of GSM

- Falling Infrastructure Prices
- Mobile Terminals
 - Greater Choice and Better Prices

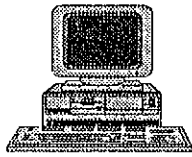
Extension Possibility

- Extension to 1.8 GHz Band - DCS 1800 / DECT

Vision of Wireless Communications Services



Voice



Data

MSISDN
90183838

Single Number



Anywhere



Anytime

GSM
Interoperable
Interconnected
Transparent

GSM

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