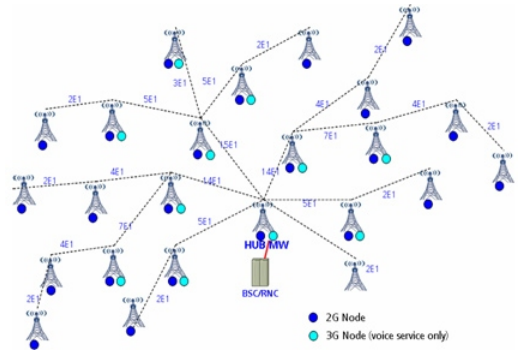


# Telecom



## Corporate Trainer's Profile

Corporate Trainers are having the experience of 4 to 12 years in development, working with TOP CMM level 5 companies (Project Leader /Project Manager) qualified from NIT/IIT/IIM and work exp in USA and UK.



## CMM (Capability Maturity Model) level Project Standard:-

The Capability Maturity Model (CMM) is a method for evaluating the maturity of organizations on a scale of 1 to 5. Get the Opportunities to work on Client Projects Of US/UK, which follow the all standard of CMM level 5 Company.

## Projects



NOKIA

SIEMENS

symbian

ALCATEL

spice



MOTOROLA

## **UMTS Introduction and IP Multimedia Services**

**Course Duration:** 5 Days

### **Training Course Description:**

Officially recognized standardization organizations have agreed to work collaboratively for the production of Third Generation Mobile System specifications, based on evolved GSM core networks and the radio access technologies that they support (i.e. Universal Terrestrial Radio Access (UTRA) both Frequency Division Duplex (FDD) and Time Division Duplex (TDD) modes. UTRA will support operation with high spectral efficiency and service quality in all the physical environments in which wireless and mobile communication take place. This course will explain in detail the design and procedures used over the air interface that has been selected to fulfill high flexibility requirements.

The IP Multi-Media Subsystem (IMS) is an IP multimedia and telephony core network. It is defined by 3GPP and 3GPP2 standards and organizations based on IETF Internet protocols. IMS is access independent as it supports IP to IP session over wireline IP, 802.11, 802.15, WiMAX, CDMA, GSM/EDGE/UMTS and other packet data applications. IMS permits and enhances real time, multimedia mobile services such as rich voice, video telephony, messaging, conferencing and push services by responding to the emerging trend to move toward a common, standardized subsystem. As data services proliferate and the value chain expands, current vertical application platforms are proving insufficient to meet operator needs. IMS represents a standardized, reusable platform providing a better way to experiment with, deploy, integrate, and expand consumer and enterprise voice and data services. This course provides an advanced technical overview of IMS. In this course we will discuss various advanced concepts that are integral to the development of IMS and all IP networks.

### **Course objectives**

After completing this course, students will be able to:

- Understand concepts behind All-IP Multimedia Networks
- Understand IMS architecture
- Explain IMS reference architecture
- Understand IMS session control, connection control and applications services
- Explore SIP and SDP extensions used in IMS
- Explain IMS services
- Understand IMS Security and QoS

### **UMTS includes the following modules:**

#### **Introduction**

- The Standardization Process
- IMT-2000 Requirements
- IMT-2000 Spectrum
- Bearer and Teleservices
- Evolution Path
- UMTS General Architecture

UTRAN Architecture & Radio Access Bearer

**CDMA Principles**

CDMA Principle  
Direct Sequence Spreading/ De-Spreading  
DS- Frequency Domain  
Cell Capacity Consideration  
Code Characteristics  
Code Classifications/ Generations  
Code Requirements

**CDMA Requirements**

Synchronization  
Power control  
Soft handover  
Rake receiver  
Antenna consideration  
Multi-user detection

**Radio Interface Protocol Architecture**

Access stratum & Non-access stratum  
Overall Protocol Structure  
Logical and Transport Channels  
Physical Channels  
Protocol Termination

**FDD Physical layer Implementation**

Code Requirements  
Uplink Physical Channels  
Downlink Physical Channels  
Transport to Physical Channels  
Frame Structure  
Multiplexing and coding  
Selected Codes  
Channel structures and Information Content  
Mobile synchronization  
Modulation  
Power Control  
Additional TDD Implementation Features

**TDD Physical Layer Implementation**

Frame Structure  
Burst Structures  
TDD specific spreading  
Synchronization Channels  
TDD specific operations

## **Layer 2 Protocols**

- Medium Access Control (MAC) Protocol
- Radio Link Control (RLC) Protocol
- Packet Data Convergence Protocol (PDCP) protocol
- Radio Interface for Broadcast/Multicast Services

## **Radio Resource Control (RRC) Protocol**

- RRC Architecture
- RRC Protocol State
- Broadcast of information
- RRC connection management
- Radio Bearer management
- RRC connection mobility functions
- Power control
- Ciphering and Integrity

## **Mobile Procedures**

- Mobility Management states and transitions
- UMTS identities
- Procedures in Idle mode (location updates, cell selection/ re-selection)
- Circuit-switched call set-up
- Packet-switched context activation and context preservation
- Data transfer initialization
- Measurement reporting
- Soft-handover procedure

## **IMS Business Aspects**

- Market opportunities
- The IP Multimedia Subsystem (IMS) is the 3GPP and 3GPP2
- IMS market trends
- IMS in GSM, CDMA, WiFi and PSTN based networks
- Business case and challenges for IMS
- Delivering value added services enabled by IMS
- Mobile content & delivery
- Push To Services
- Converged Voice Services
- Multimedia Messaging
- Conferencing Messaging
- Response Services
- Service roaming

## **What is IMS?**

- What is a service?
- What is an application?
- Mobile services
- Mobile services by media
- Mobile services by application

IMS elements  
SIP protocol for session control  
SIP-based Servers for session control, security and routing  
HSS (extension of HLR)  
Service elements and functions  
CAMEL  
IMS resource and media control elements  
Signalling and transport interworking elements  
Session Control in the IMS  
Media Encoding  
Media Transport  
The Instant Messaging Service in the IMS  
Push-To-Talk  
AAA in the IMS  
Security in the IMS  
Policy in the IMS  
Quality of Service in the IMS

### **Architecture of UMTS IP Multimedia Subsystem (IMS)**

Reference architecture  
Application layer  
Service control layer  
Media layer  
Interfaces and Protocols  
CSCF, HSS, MGCF, and MGW  
P-CSCF, I-CSCF and S-CSCF  
BGCF/MGCF  
IMS-MGW  
MRFC/MRFP  
SCIM, OSA-SCS, IM-SSFAAddressing  
Scenarios in UMTS and CDMA2000 IMS  
Registration  
Call origination and termination  
Roaming and Handovers  
Supplementary Services  
Session renegotiation  
IPv6 in UMTS IMS  
External Services (VHE, OSA)  
Service Architecture  
Protocols (SIP+, CAMEL)  
All-IP UTRAN  
Interworking with PSTN and UMTS/CDMA2000 IMS  
Legacy Wireless networks

### **IMS scenarios**

Registration  
Call origination and termination  
Charging implications

- Security
- Privacy implications
- Regulatory aspects
- Roaming and handovers
- Quality of service
- Subscription requirements
- Supplementary services

**Trainer's Profile :**

Amit Kumar Dubey:

**PROFILE**

Amit Kumar Dubey is working as a Project Manager in Telecom Division at Miracle Corporate Solutions Pvt. Ltd, India. He holds B.Tech in Electronics and Communication and M.Tech from Indian Institute of Technology, Kharagpur in the Telecommunications area. He has got his first patent on a project by National Semiconductors USA, on "Development of an ASIC for spreading code generation in UMTS Mobiles", at IIT Kharagpur. Initially he worked in Samsung India Software Operation Bangalore as a Software Engineer on various Mobile Applications and GSM/GPRS/UMTS protocol stacks. His expertise includes implementation of Audio/Video (MPEG4, H.263, AAC, AMR, and MP3) codec, DSP Algorithms and Computer Networks. He has also worked in various countries Spain/France/South-Korea with Vodafone and South Korea Telecom for various software deliveries of Z200 and Z200i mobile handsets. He has filed two more patents on his name; one is on synchronization techniques in MC-CDMA while other is on proposing an efficient image coding standard. He has also co-authored a book named "Development Guide for 3G Mobile Applications". Amit has more than 8 years of industrial and research experience including IIT Kharagpur, Samsung Electronics, Vodafone, and Miracle. He has been actively participating in different designing and development activities (WinCE, Symbian) including work group meetings and workshops. He is an editor of various International Journals on Computer Science and Information Technology. He has also served as a Visiting Lecturer in various companies and corporate world. His current thrust is on system-on-chip (SOC) and embedded solutions for mobile terminals and other multimedia communication appliances used across various networks.

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