Overview of Changing Telecom & Converged Services Scenario and Indian Context

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Objectives of the Presentation

To present a summary of the following:

- Paradigm shift from the Networks driven Telecom to that driven by Customers’ requirements
- Emerging Telecommunication Services, Technologies & Techniques
- Issues being addressed to accelerate the pace of Change
FAST CHANGING TELECOM PARADIGM

• Paradigm Shift from Operators & Network Centric Telecommunication to the one which is driven by services & customers’ requirements

• Voice, Internet & Video on same Subscriber line

• Unified Voice, Data & Broadcast Networks

• Single Subscriber Equipment capable of making and receiving Voice Data and Video Calls

• Evolution of innovative value added subscriber services
Role Players In Changing Telecom Scenario

- **USERS**
  - With Service Wish List (Mainly Urban)
  - With Social Needs (Mainly Rural)

- **CONTENT & APPLICATION DEVELOPERS**

- **Network Operators & Service Providers**

- **Infrastructure Providers**

- **Governments & Administrations for**
  - Policy
  - Social Role
  - Standards
  - Regulation
  - Spectrum & Resource Provisioning
  - Dispute Settlement
Major classes of Services

- **Fixed** - Based on
  - Copper
  - Optical Fibre
  - Wireless

- **Mobile** - Presently GSM and CDMA based
- **Narrow band**
  - Voice
  - Internet
  - Fax

- **BROAD BAND**
  - High speed Internet
  - Video
Types of Interactive Services

THREE MAJOR TYPES

• Relationship: Phone Call, E-Mail, Chat, Video Conference

• Information: Weather, Internet Search, Yellow pages, Movies, Games

• Transactions: e-Commerce, e-Business
Subscribers Wish List

➢ To be **virtually present** at interactive site to
  ❑ **Speak & Hear** interactively
  ❑ **See** as if present at the site and perhaps **feel**
  ❑ **Seek & Store** information for future use

➢ Affordable cost, Agreed Quality of Service
➢ Available **Everywhere, Always**
World-Wide Growth of Mobile and Internet

Reference Ms Lara Srivastava ITU

Users (millions) and penetration per 100 pop.
It is more mobile than fixed
Reference Ms Lara Srivastava ITU

Fixed and mobile lines (world, millions)

- **Fixed Lines**
- **Mobile**

1.33 billion mobile
1.21 billion fixed

Source: ITU
Is it Wireless or Optical Fibre or Both!

➢ When the Optical Fibres emerged with infinite Capacity and high Speed of Information Transport, the Engineers said the Wireless was dead.

➢ Then came again the wireless to allow mobility in the last mile but with bandwidth limitations.

➢ Some One Said

➢ Mother Optical Fibre will feed the Reborn Wireless Mobile Access.

➢ Efficient Spectrum management as well as Content Compression will let Bandwidth Problems cured.

➢ SPEED OF TELECOMMUNICATION WILL EQUAL SPEED OF LIGHT.
The “personalization” of the mobile

• Physical proximity: users are getting closer & closer to their mobiles, all times of the day

• Emotional Attachment: many can’t leave home without it. Its theft/loss often causes panic and disruption to daily life

• Fashion: mobile is quickly becoming an important daily accessory

• Identity: mobiles are playing an increasingly important role in creating/maintaining identity (through pictures, SMS messages etc...)
Convergence Scenario for Residences

- Members of the same household are **On-line** Simultaneously
  - Browsing Web
  - **Downloading Information**
  - Watching, Downloading & Recording Video on Demand
  - **Digital Video Broadcast**
  - Digital Audio Broadcast
Requirements of Business Users

Professional Business Services Including

- Multi-party Conferencing
- Instantaneous Database Access
- e-Commerce
- Knowledge Sharing
- Virtual Presence for Interactive Business
- Ubiquitous Virtual Office
Customer’s Willingness to Pay to be based upon

- Type of Service
- Quality of Service
- Customer’s personal priority

Independent of Distance !!
- Media for Information Access & Transport

- Copper Pairs From Exchange
- Cable TV Network
- Optical Fibres
- Radio (Wireless)
- Direct To Home via Satellite (DTH)
- Very Small Aperture Satellite (VSAT)
Trends Towards

- Futuristic Networks for adaptation to changing Customer Expectations
- Efficient Spectrum Management
- Mobility independent of technology and geographical boundaries
- Unified Customer Equipment & mobile handsets for all types of services
Network Sharing Merits & Issues

- Cost reduction through Optimized use of network resources
- Focus of investors on new Services and variety of Content
- More returns on Services
- New Content development in Local Languages
- Possible through franchising, mutual business model agreements.
- Disputes on revenue sharing and Quality of Service issues pin-pointing, blame game.
Multi-operator & Complex Services Environment Requires

- Clear Service Level Agreements between
  - Service Providers
  - Network Providers
  - Content Providers
  - Users

- Automated tools and relational database to facilitate the
  Regulators and legal agencies to ensure fair implementation of the agreements

Development is taking place in this area
Software based Network Management

- Optimized usage of Networks and Resources
- **Fault & Performance Management**
- Security Management for information privacy and Network protection
- **Financial Management for billing & revenue sharing**
- Quality of Service monitoring
- Service Level Agreements & execution
- **Operation Support Systems for efficient operation & maintenance of Network & Services**
Continued Need of Regulation, Standards to address the following Challenges of Multi Operator Environment

- Technological Challenges & Innovation
- Interconnectivity and Interoperability
- Appropriate Migration Scenarios to Next Generations
- Enhancing Performance and Lowering Costs
- Intellectual Property Rights, Security & Privacy
- Legal & Political Aspects, Fair Competition
Service Providers could generally overlook the following Factors to some extent:

- **Quality of Service** (to make more profit)
- **Efficient use of Spectrum**
- **Services to Remote and Sparsely Populated Areas**
- **Participate in social programs** like e-Education, e-Health and Community Communication

- **Tariff Caps** as mandated by the Regulator by providing such attractive looking technical features which may not justify very high prices.

However, Administrations, Regulators & Market Forces would balance it out in Customers favour.
India - Broad Statistics
(Indicative Figures Only)

- Fixed Telephones 45 million
- Mobile Telephones 39 million
- Internet connections (5.0 million) >15 million users
- No. of TVs 78 million
- No. of Cable TV connections 55 million
- Broadband Connections 0.4 million

ENTERTAINMENT & CABLE TV NETWORK MAY BECOME MAJOR BROADBAND DRIVERS IN INDIA
Challenges to be addressed in the Indian Scenario

- Unique Rural Scenario
- Low current Tele-density both in Urban and Rural Areas inspite of good growth
- Need for Spectrum re-farming & re-allocation
- Lack of Content in Local Languages
- Unstructured Cable TV Network
- Confidence on e-Commerce
- Lower Number of IPR Entities
- Network Security
- Bridging Digital Divide