MOBILE VALUE ADDED SERVICES

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Introduction

- Sizable increase in international internet bandwidth availability, both wired and wireless, in India over the last 5 years
- Local connectivity bandwidth has also seen appreciable growth over this period
- Most major towns have fiber optic cables from at least 4 telecommunication companies – each cable capable of giving almost 4 Tbps of bandwidth
- Most cables are redundant pairs, so available bandwidth is often double of this
- WiMAX, increase in number of base stations for mobiles and WiFi provide additional wireless bandwidth

Bandwidth Use

- Voice communications take very little bandwidth – between 4 and 12 Kbps per call

- Voice traffic would therefore not cause all the wired bandwidth to be used

- For example if all 25 million people in Mumbai were simultaneously talking on land line phones, they would still need only 0.25 Tbps of bandwidth as opposed to almost 30 Tbps available in Mumbai

Surplus Bandwidth

- Surplus of local bandwidth is indicated by the additional bandwidth being offered by telecommunication companies to consumers
- MTNL upgraded bandwidth from 256 Kbps to 2 Mbps without additional charge for all consumers
- BSNL upgraded from 256 Kbps to 2 Mbps and then to 8 Mbps
- Reliance, Airtel and other service providers have also increased the bandwidth available to consumers

Bandwidth Consumption

- The surplus bandwidth can be consumed by value-added-applications such as audio and video

- Such applications could be in the areas of education, surveillance, entertainment, etc.

- Business plans of telecommunication companies clearly indicate a move towards entertainment and education as high bandwidth video applications

ICT

Information and Communications Technology - or technologies (**ICT**) is an umbrella term that includes all technologies for the manipulation and communication of information.

The term is sometimes used in preference to **Information Technology** (**IT**), particularly in two communities: education and government[1].

Benefit of ICT

- ICT has also been defined as a non-conventional form of entertainment delivery
- Mobility of users has been identified as an important benefit of ICT use in entertainment delivery
- Television has been identified as the entertainment form that will benefit most from mobility imparted by ICT

Information and Communication Technologies (ICT): OECD / ISO / UN Definitions

- Computing Technologies
  - Computers (of all forms including main frames, mini computers, personal computers, laptops, palm tops and embedded computers)
  - Peripheral equipment like printers, scanners, digital cameras, modems, data converters
  - Storage devices and technologies such has hard disks, CDs, DVDs, Network Access Storage (NAS) devices, tape drives and so on
  - Connectivity techniques and associated equipment like dial-up, DSL, fiber, cable, satellite, WiMAX, WiFi, LAN, Bluetooth, Infrared and so on
  - Data formats like JPEG, MPEG and so on
- Telecommunication Technologies
  - Landline / Fixed telephones
  - Cellular phones and technologies of all types including GSM (2G), 2.5G, 3G, 3.5G, 4G across platforms like TDMA, CDMA, FDMA and so on
  - Wireless in Local Loop
  - Fixed Wireless
  - Satellites
- Transmission (Broadcast, Multicast, Unicast) Technologies
  - Radio including AM, FM, digital radio
  - Television sets and transmission techniques including analog and digital, satellite, cable, terrestrial and DTH and so on

ICT (contd.)

- This larger list of technologies can be pruned to get a shorter list that are more relevant to television delivery
- These technologies include:
  - Terrestrial, satellite, cable and direct-to-home broadcast television
  - Digital Video Broadcast – Terrestrial (DVB-T)
  - Integrated Services Digital Broadcast – Terrestrial (ISDB-T)
  - Advanced Television Systems Committee (ATSC)
  - Internet Protocol Television (IPTV)
  - WebTV
  - 3G Video Transmissions
  - Chinese Multimedia and Mobile Broadcast (CMMB)
  - Integrated Services Digital Broadcast – Handheld (ISDB-H)
  - MediaFLO
  - Digital Media Broadcast (DMB)
  - Digital Video Broadcast – Handheld (DVB-H)

ICT (contd.)

- Conventional TV Technologies
  - Terrestrial, satellite, cable and direct-to-home broadcast television
  - Advanced Television Systems Committee (ATSC)

- TV Technologies That Cannot Offer Mobility
  - Digital Video Broadcast – Terrestrial (DVB-T)
  - Integrated Services Digital Broadcast – Terrestrial (ISDB-T)

- TV Technologies that Do Not Offer Multicast / Broadcast
  - WebTV

- TV Technologies With Low Market Influence for India
  - Chinese Multimedia and Mobile Broadcast (CMMB)
  - Integrated Services Digital Broadcast – Handheld (ISDB-H)
  - Digital Media Broadcast (DMB)
  - MediaFLO

- TV Technologies That Could Be Significant In The Future
  - Internet Protocol Television (IPTV)
  - 3G Video Transmission
  - Digital Video Broadcast – Handheld (DVB-H)

The Wireless Revolution

- **Mobile phones have become mobile platforms for delivering digital data, used for recording and downloading photos, video and music, Internet access, and transmitting payments.**

- **Businesses increasingly use wireless to cut costs, increase flexibility, and create new products and services.**

Cellular Generations

- 1G: Wireless technology (1979-1992)
- 2G: Digital wireless networks, primarily for voice communication; limited data transmission capability
- 2.5G: Interim step toward 3G, accommodates graphics
- 3G: High-speed; mobile; supports video and other rich media; always-on transmission for e-mail, Web browsing, instant messaging (2001-2005)
- 4G: Current generation

M Commerce Projections

- **Mobile commerce is expected to shoot up from $2 billion worldwide business in 2007 to $21 billion business in 2011**

- **Juniper Inc., suggests that mobile banking will cross 800 million by 2011**

- **India would have more than 740 million mobile connections by 2012**

- **Revenue from cellular services would exceed $37 billion**

Projections - contd

- According to the Cellular Operators Association of India (COAI), the mobile subscriber base in GSM and CDMA has grown from 88.48 million in January 2006 to 93 million (GSM 65.2 million, CDMA 27.82 million) in February. As per COAI, the GSM mobile industry holds 77 percent of the total mobile market in India and accounts for 74 percent of additions.

- Rising demand for handsets has led operators to offer services other than voice calls. Thus, the content or value-added services (VAS) market comprising music, wallpapers, ringtones and gaming is growing rapidly.

Projections - contd

- TRAI has put mobile sector revenues at around Rs 25,000 crore for FY05 comprising both voice and data services.

- These revenues have been growing at a compounded annual rate of 40 percent over the last five years.

- Revenues from VAS such as SMS, ringtones and ringback tones were about 10 percent of that recorded last year. *(Source: TRAI)*

Projections - contd

- According to Internet and Mobile Association of India (IAMAI), the mobile content market in the country for 2004-05 was worth Rs 558 crore and is expected to reach Rs 1,802 crore by 2007.

- According to a Nasscom report, the mobile game-development industry is a $100 million business in India, and is growing at 100 percent year-on-year

Content and Marketshare

Download Volumes in lakhs	2004-2005	2005-2006
SMS	5490	7320
Premium SMS	824	1098
Voice (in minutes)	3294	4392
Ringback Tones	206	275
GPRS	390	520

M Commerce Services

- **Information-based services: Instant messaging, e-mail, searching for a movie or restaurant using a cell phone or handheld PDA**

- **Transaction-based services: Purchasing stocks, concert tickets, music, or games; searching for the best price for an item using a cell phone and buying it in a physical store, mobile or on the Web**

Personalised services

- Personalized services: Services that anticipate what a customer wants based on that person's location or data profile, such as updated airline flight information or beaming coupons for nearby restaurants

M Commerce Applications

- **SMS-based applications**
- **Location-based applications**
- **Wireless access provided to existing B2C applications**
- **Supporting supply chain and B2B**
- **Existing wireless intra business and CRM applications enhanced**

Financial Applications

- **ICICI Bank**
  - Internet banking service
- **Standard Chart**
- **SBI**
  - Transfer money across the country
- **Citibank**
- **HDFC**
- **ING Vysya**
  - Premium payment by SMS

The Mobile Service Providers

- Tata Indicom
- Aircel
- Essar Cellphone
- Airtel
- BPL Mobile
- Escotel Mobile
- Hutch / Vodafone
- Oasis Cellular
- Orange
- Idea
- Ushaphone
- Dolphin
- Reliance Indiamobile
- RPG Cellular
- Spice

The Challenges

- Security

- Price per transaction

- Quality issues

• **RBI has decided to put m-payment services linked to banks on hold until the final guidelines are issued.**

• **Information services like mobile alerts for debit/credit entry, balance enquiry will continue.**

Challenges - contd

- **Slow data transfer speeds on second-generation cellular networks, resulting in higher costs to customer**
  Slow speed of GPRS

- **Limited memory and power supplies**

- **Keyboards and screens on cell phones are still tiny and awkward to use.**

- **More Web sites need to be designed specifically for small wireless devices**

Challenges - contd

- Download & run software on mobile
- Risk of transactions not maturing due to poor networks
- Data may be available to system administrator of the machine on which WAP gateway is running
- Issues related to display of text & images on browsers
- Keyboards and screens on cell phones are still tiny and awkward to use.

Security Challenges

- **Confidentiality**

- **Authentication**

- **Message integrity**

- **Non-repudiation**

- **User authentication with PIN or password**
  Secure storage of confidential data

- **Operating system security**

Security Challenges – contd.

- **Network technology**
  - - Different security mechanisms for
  - different mobile network technologies
  - like 3G, 4G, GPRS, WCDMA

- **Network operator infrastructure**
  - - Users should be assured about correct
  charging, billing & security of the data

Security Challenges - contd

- **M-payment**

  - **Credit card**

- **M-commerce application**

  - **- Security assurance to customers, merchants and network operators**

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A Mobile OS

- An <u>operating system</u> for mobile <u>devices</u>. It is the <u>software</u> <u>platform</u> on top of which other programs, called <u>application</u> programs, can run on mobile devices such as <u>mobile phones</u>, <u>smartphones</u>, <u>PDAs</u>, and <u>handheld computers</u>

Mobile Operating Systems

- Mobile OS

- Palm OS

- win CE

- Symbian OS

- Google Android

- OSDL Mobile LINUX

- MXI

A Mobile Browser

- The mobile browser usually connects via a cellular network, or increasingly via Wireless LAN, using standard HTTP over TCP/IP and displays web pages written in HTML, XHTML Mobile Profile (WAP 2.0), or WML (which evolved from HDML). WML and HDML are stripped-down formats suitable for transmission across limited bandwidth, and wireless data connection called WAP. In Japan, DoCoMo defined the i-mode service based on i-mode HTML, which is an extension of Compact HTML (C-HTML), a simple subset of HTML.

Commercial Browsers

- Android (mobile phone platform) by Google (based on WebKit)
- BlackBerry Browser by Research in Motion (proprietary)
- Blazer by Palm, installed on all newer Palm Treos and PDAs (based on NetFront).
- Danger browser by Danger (proprietary), installed on all Danger-designed devices including the T-Mobile Sidekick.
- Embider by Infraware[4] (proprietary).
- Internet Explorer Mobile by Microsoft Inc. (browser engine history unknown).
- Iris Browser by Torch Mobile Inc. for Linux/Qt and Windows Mobile (based on WebKit).
- jB5 Mobile Browser by Jataayu Software, available on Symbian Series 60, Windows Mobile and Linux Platforms
- Symphony on MOTOMAGX by Motorola (based on WebKit).
- NetFront by ACCESS Co., Ltd. (proprietary).

Browsers - contd

- Nokia Series 40 Browser by Nokia (proprietary).
- Novarra nWeb (proprietary).
- Obigo Browser by Obigo AB (Sweden), 100% owned by Teleca AB (proprietary).
- Openwave Mobile Browser by Purple Labs (newly aquired from Openwave) (proprietary).
- Opera Mobile by Opera Software ASA (Norway). - Capable of reading HTML and reformat for small screens (proprietary).
- Picsel Browser by Picsel Techologies (Scotland) (proprietary).
- PlayStation Portable web browser by Sony (based on NetFront).
- Safari by Apple Inc on iPhone and iPod Touch (based on WebKit).
- Wapaka Browser Java micro-browser by Digital Airways.
- Web Browser for S60 by Nokia (based on WebKit).

A Mobile Database

- A **mobile database** is a database than can be connected to by a mobile computing device over a mobile network. The client and server have wireless connections. A cache is maintained to hold frequent data and transactions so that they are not lost due to connection failure.

Mobile databases

- **Microsoft SQL**
- *Sybase's SQL Anywhere*
- **SQL Anywhere Technologies**
- **Oracl***Borland's*
- *JDataStore* **e9i Lite**
- **Mobisnap**
- **Mobile database 1.25**

Mobile data base issues

- Type of information users want to access via mobile devices
- Testing of distributed M-commerce system
- Foe M-commerce databases are not designed for handling XML data & messages
- Data processing issues
- XML database engine built on top of any existing RDBMS Intensified use of query statistics
- Partitioning of large databases, stored in multiple mobile devices and view as single source
- Fine tune oracle to download on mobile

The Pilot

- Mobile Value Added Services

Context & Concerns

Literacy rates may have gone up, but several issues such as gender, infrastructure; societal, economical, political and sociological persist.

Education is the only tool for empowering the people of the country. For the deprived sections of the society education is the only route for their integration into the society

Concept and Change

Capacity-building in the space of national education continues to be constrained because of the limited availability of necessary Brik, mortar and manpower infrastructure. SNDT and TTSL wished to address these concerns and hence thought of this initiative.

Under the program, TTSL tied up with SNDT university thereby hitting two birds with a single stone. SNDT University caters to education and only women's education throughout the Country. It is the largest university in Asia in its category that caters to 100,000 regular students enrolled directly or through distance learning.

While e-learning has been the much touted methodology, it continues to remain the preserve of approx 15 million users with approx 5 million net users*, telephony with its 240 million users are nearly 80% net enabled.

(source:

http://news.bbc.co.uk/2/hi/south_asia/4735927.stm)

If the teledensity in the country today is estimated at 23/100,it would be fair to assume (statistically, at least) that one in every household carries a mobile phone. This makes for a large audience and one statistic that accounts for the lowest common denominator profile demographically.

Content and Activity:

- Under this model, the mobile phone undergoes a metamorphosis—from a device that allows you access to voice and text messaging, it transforms into one that helps you access accredited educational content, take mock tests on the move, regardless of geographies or physical constraints.

- Prior to this imparting education has experienced a challenge that is posed by the limited number of educational institutions, the limited and highly constrained infrastructure comprising of brick-n-mortar buildings.

- Under the scope of the activity we put forward a case for sourcing a large format server with a capacity of 1.5 Terrabyte from HP Labs. Through the medium of this server the content earlier locked in printed large inventory was unlocked in the electronic format.

□ There are expected to be several services in tele education available. One such is a pilot that has been developed by SNDT and M/s Tata Teleservices Ltd.

□ It showcases several services on a handset. All these can be accessed on any mobile with GPRS connectivity or on the site www.sndtmobedu.com:

Content on Mobile

- Examination results
- Competitive Tests
- CAT Like
- JEE Like
- GATE Like
- GK Like
- GMAT Like
- GRE Like
- SAT Like
- TOEFL Like
- Word List
- Thesaurus

Vedic Maths

- Subtraction
- Squares
- Multiplication
- Fractions
- Division

- Sports
- Quizzes
- Entertainment
- Quizzes
- Movies
- Audio
- Cookery
- Menu based items with Ingredients and Method of preparation
- Submit own Recipe

Essential Services

- Fire
- Ambulance
- Hospitals
- Mumbai Travel
- MTNL

- Blood Help
- Blood Bank
- Blood Inquiry
- Update Blood
- Volunteer Donor
- SBTC

- Police
- Pin Codes
- Career Guidance
- Class based Guidance

Future

- Entertainment as MVAS

- With the number of mobile users growing, there is a growing opportunity for content providers. In India, wireless operators, music and film companies, comics content developers, game developers and musicians are all entering the mobile content market for ringtones, gaming, mobile imagery and streaming audio and video. Some players in the content segment are Mauj, Indiagames, Hungama, Soundbuzz (music) and Coruscant Tec.

ICT Delivery of Entertainment

- Live events cannot be transmitted using ICT
- Where live events are telecast, they are clubbed with television
- Animation can be clubbed with films

Entertainment Forms That Can Benefit from ICT

1. Film
2. Music
3. Television

Types of Entertainment

1. Acting / Theatre
2. Animation
3. Circus
4. Computer gaming (Participative)
5. Conventions (Participative)
6. Dance
7. Film
8. Laser light shows
9. Music
10. Reading (Participative)
11. Revue
12. Sports
13. Television
14. Writing (Participative)

Thank You

Until we meet next