



INNOVATION & TECHNOLOGY IN TELECOM

By

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TDSAT SEMINAR KOLKATTA

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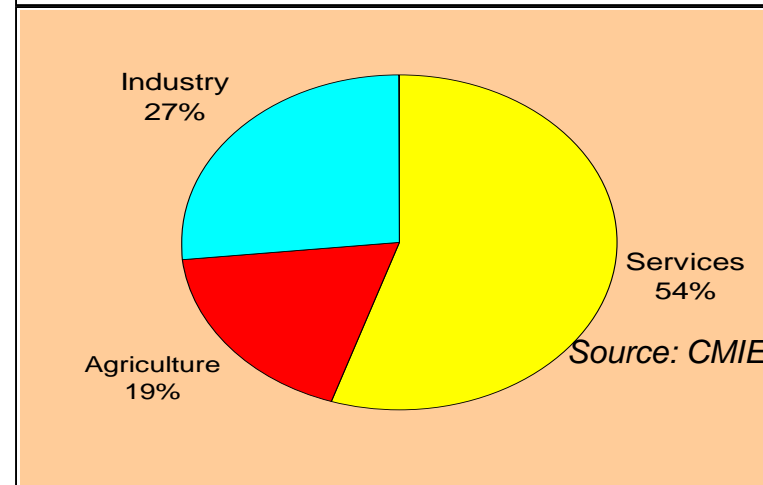
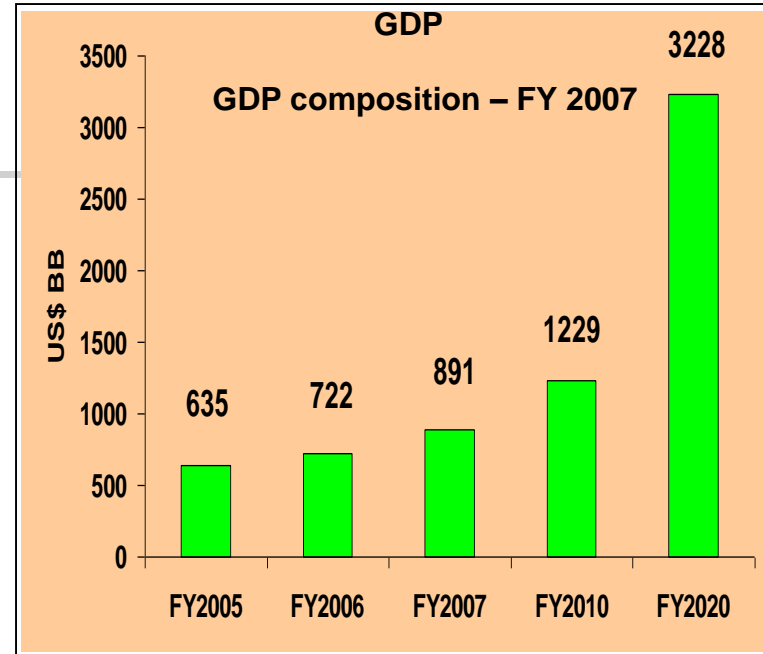
Agenda

- ❑ India as Fastest Growing Nation and status of telecom sector
- ❑ Innovations in Indian context
- ❑ Innovation in Technology
- ❑ Technology – Changing Lives of ordinary citizen
- ❑ Innovation ...what it means to ordinary citizen



Fastest Growing Nation

- GDP grew at 9.8% during 2007, aiming double digit growth
- Today India is a services superpower in the making. the 12th largest economy in world.
- Strong investment momentum
- Market capitalization up from USD 140 Bn in FY 2001 to > USD 1.58 Trn recently
- FDI on the rise - USD 7.6 Bn (06) and USD 19.4 Bn (07)
- FII investment - USD 6.5 Bn in 2006-07
- 140 + public traded companies with market cap > USD 1 Bn



By 2050, India projected GDP is US\$ 70 Trillion

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Indian Telecom

- **World's fastest Growing Telecom Market - 8 Million plus subscriber addition per month**
- **Third largest in the world after China and US- soon to overtake US**
- **264.8 Mn. Subscribers, Mobile 225.5 Mn., 153.3 Mn GSM tele-density 23.21 %**
- **Fastest sale of a million mobile phones – 1 Week**
- **World's cheapest mobile handset made in India – US\$17.2. Reliance plans web enabled phone at \$12.**
- **World's Most affordable color phone made in India – US\$27.42**
- **Internet Subscribers 9.27 Mn. Internet Mobile 31.30 Mn. Broadband 2.56 Mn.**



Indian Telecom.....

- **Lowest tariff but highest profitability.**
- **Lowest Call Rates in the World at 2-3 US Cents, Declining ARPU, even then Rs 275 per month for GSM**
- **India ranks highest in Mobile monthly Minutes of Usages per subscriber in Asia Pacific Region and second to USA in the world....500 minutes per month**
- **Innovative approach of doing business at lowest operation costs.**
- **Innovative value added concepts...missed calls, rural applications, lowest prepaid charge of 2.5 cents.**



The Future...

- Electronic hardware market by 2015 USD 320 billion including production USD 150 billion and exports USD 21 billion.
- Telephone subscribers: 500 million by 2010
- PC sales: 25 million; installed base 65 million by 2010
- ITES & Software exports: USD 60 billion by 2010
- 40 million new internet connection; at least 50% broadband by 2010
- Nationwide TV broadcast to be digital by 2015 beginning 2010: significant opportunity for STB consumption & manufacturing
- Over USD10 bn investment in E-Governance and National ID Card by 2010

**2015: Total expected Market USD 320 bn;
Domestic production USD 155 bn**



Innovation

- Innovation is the key for survival as competition heats up in today's rapidly converging marketplace. Technology vendors need a constant stream of innovative new offerings in order to win and retain customers
- Innovations have historically revolved around enhancements in hardware. "when you look at the next generation of communications, it's not about which technology will rule, but which applications and content."

Paul Jacob, CEO Qualcomm



India is known for Innovation & Inventions

- Invention of Number system, Chess.
- Invention of concept of Zero by Aryabhata.
- Origination of Algebra, trigonometry and Calculus .
- World's first University established in Takshila in 700 BC
- Ayurveda, the oldest school of medicine in world, Chakras known as father consolidated this school 2500 years ago.

cont....



India is known for Innovation & Inventions....

- Value of “pi” first calculated by Indian Mathematician Budhayana.
- Pythagorean theorem concept explained by Budhayans long before European mathematicians.
- Anesthesia used as far back in ancient Indian medicine.
- Sushruta as father of surgery having done complicated surgeries 2600 years back.
- Sanskrit, according to Forbes magazine as most suitable language for computer software.
- Navigation art born in river Sindhu 5,000 years ago. Navigation word derived from Sanskrit word Navgatih.



UNLEASHING INDIA'S INNOVATION

- The World Bank report released in October, 2007 says “India can innovate to \$5 Trillion GDP”
- Present GDP of India is estimated at around 1 \$ Trillion (Rs 40 lac crores)
- The Indian economy is flourishing, and the demand for telecommunications services has outpaced the legacy wired telecommunication infrastructure.



Innovation in technology

- To a customer it means sudden hype and promise moon on earth and then quietly announcing new technology. Also lost up in jumble of words.
- Driving innovation are hunger for more data at higher speed, everyone wanting slice of other
 - 3GPP moving from GSM to UMTS, WCDMA, HSDPA, HSUPA, LTE
 - 3GPP2 moving CDMA to IS95A to 1X, EVDO, EVDO RevA, UMB
 - IEEE moving 802.11b/g to 802.16d, 802.16e(Wimax), 802.16m
 - Trials for 1GB and higher data rates also in process



Innovation in technology...

- Communications and broadcasting are converging together.
- TV can be used for internet and voice and likewise mobile can be used for anything.
- Terrestrial TV, cable TV, CAS and now DTH, further moving to digitalization.
- IPTV, Mobile TV going to change lives and the way we think traditionally.
- Indian Telecom most innovative....hello tones, Ring back tones, missed call, maximum music download, mobile in hand a fashion not elsewhere in world.



Innovation in technology...

- Today experts talk of open innovation centered around customer services and developed as inter operable platforms.
- The path to innovation.... E.g.. Apple computer to Home ,IPOD Digital Music player to I Phone-multimedia hand phone with camera, internet, music player, WIFI
- A group of Google, Intel, Dell, HP and Microsoft collectively formed the White Space Coalition and delivered to FCC two WIFI devices that operates in this spectrum without interfering with high-definition TV.

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Innovation in technology...

- RFID enabling retailers to deliver personalized shopping experience.
- Automobile manufacturers enhancing GPS, multimedia services on dashboard.



Where on earth you can find all this in one gadget and you can move around keeping it in your jacket pocket!



navigator



calculator



camera



mail



Music system



computer



PDA



phone



radio



directory



TV



video camera



video game



walkman



watch





and.....mind you we have not yet added in this list

Answering machine

Recording machine

Personal secretary

Personal massager

Card reader

Internet

Navigator

Photo Album

Music Album

Juke Box.....and what not to come!



Cell phone, Of course!



Welcome to the world of technology innovation!

and

ITS CHANGING LIVES OF ALL OF US



Fisherman



Checking best rates

Vegetable Vendor



“Mobile” Vendor

Textile Merchant



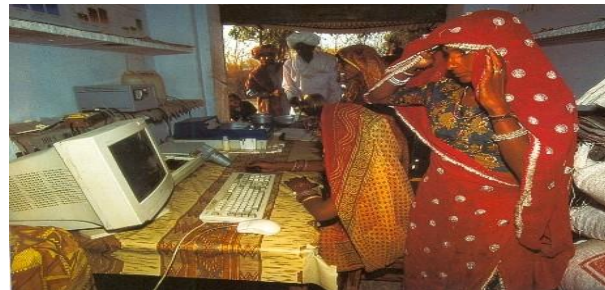
Rediscovering Life

Blind Students



Lapping up Mudras

Adult Education



I am in Queue

E-Medication



Matter of Heart



Where are we heading to...



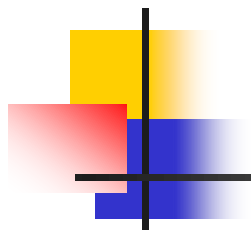
Youngest Website Designer of the World – is an Indian Boy!



Where is my cell phone mama..



I want to SMS to God that I have reached safely!

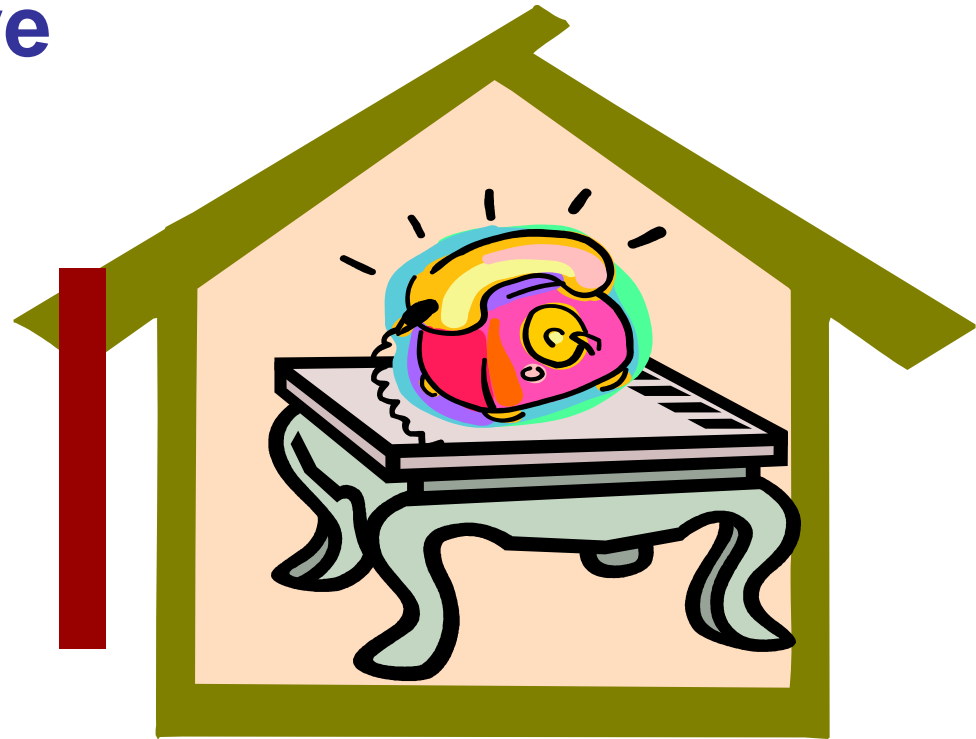


Innovation means.....



Innovations also means changed lifestyles

Earlier We used to run inside the house, to receive the call





With Mobile innovation emergence

Now we run out side the house
for better coverage
in spite of big coverage
and technologies





Changed life style....

- Mobile invented for outdoor wireless coverage, yet 70% utilization in-house. Lots of in building solutions has been innovated and to come in near future.
- Traditionally we use to teach talk less, brief, keep shut....NOW TALK MORE
- Increased accessibility and reach...hours of wait for calls gone.
- Blue tooth and GPRS changing lives...no more address asking.
- From Radio to TV one channel ..eager wait for Chitrahaar...now hundreds of TV channels, plenty of music, pictures, video on every device....almost to the extent of irritating AND also non clarity on rates to pay AND even live Darshan (Shirdi, Golden Temple, Tirupati etc.)
- Multiple task being done simultaneously by us...talking, browsing, viewing etc.



Changes in life style....

- First we gave cell phone to child andnow ways and means to keep children away from MMS, prone films
- Earlier we used to send letters, greeting cards. Now SMS culture even though network jams on high load. Rs 175 crores new year SMS revenue.
- Earlier payments made & deliveries assured, failing which complaint redressed. Now pay for SMS whether received or not and no way to find out.
- Batteries problem. Earlier purchase and forget....now going out often with multiple varieties.



Legal puzzle...

- Entertainment Tax...payable at Cinema, Theatres, not paid for TV, internet entertainment, Mobile TV, Cable TV, CAS, DVD/CVD. Again payable by DTH WHY?
- Weights & Measures....we pay for exact quantity of goods, sweets without box...but mobile we pay fixed for call, SMS irrespective of actual use.
- MRP mentioned on all products....tempting SMS for polls...no rates indicated...forbearance.
- Broadband means 256 mbps, but customer pays and gets less.
- Airwaves nature's largest offering to mankind & free for Radio, Mikes, TV.....but paid for mobile
- Patent disputes...Qualcomm & Broadcom etc.



Legal puzzle...

- Spectrum...most talked word in public, everybody wants more yet goes on increasing subscribers. ...thanks to innovative technologies.
- Who owns mobile display space.....mobile manufacturers, content provider, service operator or CUSTOMER?
- Trans countries transactions...internet payments issues of Jurisdictions, acquisitions and mergers capital gains.
- On Internet/VOIP customer can call anywhere in world but not within India...restricted.
- International Card seller has to certify to use authorised ILD operator. No such condition for foreign operator.
- Foreigner can use foreign mobile in India on roaming, but Indian cannot use foreign SIM card within India.



New ways of doing business & swearing competition...

- Clearwire and Sprint in USA putting up Wimax network together.
- Three UK Media giants BBC, ITV & Channel 4 joining hands to launch Kangaroo (on demand content service)
- Video Community Websites(Goggle's You Tube) partnering with CBS, BBC, Universal Music, Sony Music, NBA, Sundance Channel etc.
- In India tariff of most operators changing almost similar times.

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Crucial blows to several services...

- Cinema Halls, theatres forced closures.
- Paging now extinct
- STD PCOs - dwindling revenues.
- Telex, Telegraph loosing out to emails.
- Jobs in Editing, photography, video recorders

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Concerns for public safety...

- Changing Skylines....we hardly see telecom towers in advanced countries....no guidelines in India.
- Radiations - Ultrasound, Invertors, X-ray, Mobile devices, Towers....BUT no advice on prevention or protection.
- Towers...safety guidelines non existent for safe use and regular verifications audit.
- Over exposure, Media cloning makes all channels look the same with everything on earth as BREAKING NEWS....tiring experience.
- Intrusion in privacy, data theft, increasing spam, virus, Email & SMS with wrong identity.
- Hello tunes and incriminating use in public places on several occasions irritating
- Increasing use by antisocial elements, sting operations.



ACKNOWLEDGEMENT RECEIPT OF THE SMS



THANK YOU MY CHILD
INNOVATE YOUR STAY!

GOD