Connect! Developing Rural Perspectives

Lara Srivastava
ITU New Initiatives Programme

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The views expressed in this presentation are those of the author and do not necessarily reflect the opinions of the ITU or its membership. Lara Srivastava can be contacted at lara.srivastava@itu.int
a planet for communicating:
more talking, less eating?

Relative Growth in Service Sectors from 1990-2003

Source: OECD

Communications
Health
Education
Housing, water, electricity, and gas
Recreation and culture
Transport
Alcohol, tobacco, narcotics
Restaurants and hotels
Furnishings, house equipment and maintenance
Food, non-alcoholic beverages
Clothing and footwear

Source: OECD
more talking... even on the move!

Source: ITU

1.75 billion mobile!

1.19 billion fixed

Fixed Lines
Mobile

and especially here in ASIA

1998

Percentage of world's mobile subscribers by region (Jan 1998)

- Oceania: 2%
- Africa: 1%
- Europe: 28%
- Americas: 33%
- Asia: 36%

2005

Percentage of world's mobile subscribers by region (Jan 2005)

- Oceania: 1%
- Africa: 4%
- Europe: 33%
- Americas: 21%
- Asia: 41%
developing world catches up – differences down to 4X in 2004

**Fixed telephone lines per 100 inhabitants**

The digital divide in 1994: 11 times more

The digital divide in 2004: 4 times more

**Mobile telephone subscribers per 100 inhabitants**

The digital divide in 1994: 27 times more

The digital divide in 2004: 4 times more
catching up...
but not across the board
still, connecting rural areas everywhere remains a challenge

- both in the developed and the developing world
- both in areas with low population density (like Canada) and high density (like India)
- typically plagued with high costs of deployment
  - how to stimulate investment?
- topography (e.g. rough terrain) a key hurdle
  - how to reach the hard-to-reach?
wireless does offer a low-cost solution

Cost per Mile of Connectivity Infrastructure

<table>
<thead>
<tr>
<th>Type</th>
<th>USD per Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial Wireless</td>
<td>$4,433</td>
</tr>
<tr>
<td>Wireless Towers</td>
<td>$11,083</td>
</tr>
<tr>
<td>Copper Cable</td>
<td>$22,750</td>
</tr>
<tr>
<td>Coaxial Cable</td>
<td>$29,250</td>
</tr>
<tr>
<td>Optical Fiber</td>
<td>$40,625</td>
</tr>
<tr>
<td>Gas</td>
<td>$134,583</td>
</tr>
<tr>
<td>Electricity</td>
<td>$232,604</td>
</tr>
<tr>
<td>Waterway</td>
<td>$300,625</td>
</tr>
</tbody>
</table>
| Roadway           | $847,917     

Source: Industry Canada
the potential of mobile wireless for developing countries

• Developing countries have seen the greatest impact of mobile communications on access to basic telecommunication services

• Cellular networks can be built faster than fixed-lines networks and can cover geographically challenging areas

• Mobile services have served to boost competition, and prepaid models have opened access to mobile cellular for those who would otherwise not qualify for telephone subscription plans
In Africa, mobile has served to bridge the divide.


Telephone subscribers per 100 inhabitants, Africa 1995-2004

Source: International Telecommunication Union
China has become the world’s largest market

Mobile Phone Subscribers and Fixed Lines in China (000s)

- **2004**: 334,824 (25.2%)
  - Mobile: 312,443
  - Fixed: 214,400
- **2003**: 269,000 (20.3%)
  - Mobile: 263,000
  - Fixed: 145,000
- **2002**: 206,005 (15.7%)
  - Mobile: 214,400
  - Fixed: 117,005
- **2001**: 145,000 (11.1%)
  - Mobile: 180,500
  - Fixed: 88,000
- **2000**: 85,260 (6.6%)
  - Mobile: 144,000
  - Fixed: 69,260
- **1999**: 43,296 (3.4%)
  - Mobile: 108,715
  - Fixed: 59,519
- **1998**: 23,863 (1.9%)
  - Mobile: 87,421
  - Fixed: 43,000

Source: ITU, MII
mobile teledensity also leads in India...

Metro Teledensity (December 2005)

- Circle A: mobile has overtaken fixed throughout
- Circle B: mobile has overtaken fixed, except Kerala
- Circle C: mobile has overtaken fixed, except North East
… which has one of the fastest-growing mobile markets

- Between 1995-2001, number of new mobile subs each month: 
  \( \sim 0.05 \) to \( 0.1 \) m/month
- But after initiatives taken by the regulator, this increased to 2 million/month
- In 2005, the first 9 months saw increase of 26 m subs, i.e. average of 3 m/month
- And new subscribers during December 2005 = \( \sim 4.5 \) million!
- At 76 million subscribers, TRAI says that monthly mobile growth rates have reached those of even China!
success stories
In the region: Grameen Phone

- Bangladesh – 80% live in rural villages and never used a phone
- Grameen Project enabled mobile services availability to over 40’000/68’000 villages
- Mobile public call offices managed by “village phone ladies”
- Sustainable model and has been exported to other countries
Nepal Wireless Networking Project

- Wi-Fi technology bringing connectivity to remote villages
- Nearest ISP at Pokhara, so villagers used Wi-Fi & TV dishes to relay connectivity
Daknet Project: “convergence” of transport and telecom

- Uses transport infrastructure together with wireless broadband
- Mobile Access Point (MAP) is mounted on, and powered by, a vehicle
- Store & forward system has moved from pilot projects to a government initiative

Source: First Mile Solutions
beyond infrastructure
Beyond infrastructure: The power of mobile

• Reflection of human identity
  – Individual, cultural and religious …

• Builds social and human capital
  – The tailor
  – The farmer

• Fosters small businesses

• SMS and literacy

• SMS and citizenship
Phenomenal SMS growth in the developing world, e.g. China

and in 2005: over 300 billion SMS messages!
Beyond messaging: potential of mobile internet

- Internet access using small portable devices
  - Even through 2.5G networks
- mobiles typically cost less than large PCs
  - More easily available to low-income populations, esp. through pre-paid
- Higher-speed 3G and HSPDA offer enhanced information access
  - Video-conferencing can allow for applications enhancing quality of life, e.g. delivery of healthcare
Access is not everything! it is part of a whole

- infrastructure itself does not suffice
- once information access is set up, mechanisms must be put into place to capitalize on its availability, through: education, education & more education
- in particular, training for women & children should be prioritized
The power of education, but also of partnership

- awareness that market mechanisms do not suffice to connect rural villages
- private sector investment is to be encouraged
- entrepreneurship should be fostered
- regulatory initiatives and governmental incentives should be present to support both large-scale private investors and small-scale entrepreneurs
key enablers

- low-cost solutions, not only for infrastructure but also for end-user devices
- literacy/educational initiatives
- promotion of relevant local content
- micro-financing
- public-private dialogue and collaboration
looking to the future
Looking to the future – converging towards ubiquity

- New “always-on” ubiquity of technology
  - Ubiquitous networks and technological convergence
- In particular, growth of radio ID tags and sensors, creating an “Internet of Things”
  - Imagine tags tracking inventory and ensuring the safety and delivery of pharmaceuticals
  - Imagine “smart” wireless bricks ensuring that the structural integrity of buildings can be monitored;
  - Imagine medical facilities and care to underserved areas without requiring the need for travel
- India must keep up to date with these developments, and understand which to foster in the short, medium and long-term.
India empowered
India has many strengths: regulation

- Introduction of the CPP system (thereby lowering the cost of first-time mobile ownership)
- The facilitation of intra-circle mergers
- Introduction of a tech-neutral unified licensing regime
India has many other strengths

**Tradition and culture**
- sublime fusion of the West & East
- steeped in tradition while remaining progressive
- adapt and adopt

**Heterodoxy and open dialogue**
- “the argumentative Indian” (Amartya Sen)

**People power**
- Highly qualified upper class and diaspora
- Large skilled hi-tech workforce
- Large population of technology-enthralled teenagers… (~35% under age 15)
The country’s “new charkha” - Connectivity?

- Individual empowerment
- The wheel of knowledge
  - Weaving human capital
- Linking villages and villagers to each other
  - Through a common goal
- Dignity and self-fulfillment
  - Each village matters
  - Each villager matters
“An entirely new system of thought is needed, a system based on attention to **people**, and not primarily attention to **goods**”

- E.F. Schumacher
thank you!
lara.srivastava@itu.int

connect
me too!