Trends in Telecom Development Globally:
A Perspective from Washington

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Overview

• The Case for ICT Sector Development
• The Case for Wireless
• Some Principles & Best Practices
• The Digital Freedom Initiative
• Going Forward
I. Case for ICT Development in the Global Economy

• ICT Capabilities and Skills – or their lack --- help determine a nation’s:
  – ability to compete
  – its economic growth, and
  – its standard of living

• USA – 40% of U.S. productivity growth between 1995-2002 attributed to ICT (12/03)

• China - ICT growth has generated 6% of Gross Domestic Product (GDP) growth (1/04)
Yet Many Countries Lack ICT Access

- **Africa**
  - 75 people per 1 telephone
  - Sub-Sahara - total capacity used to connect to Internet < that used by Luxembourg

- **Asia**
  - 60% of population has no communications

- **New ITU “Digital Access Index” Tracking**
  - Countries are high, upper, medium and low.
  - 55 countries are “low” out of 178
U.S. Government Goals for ICT Access

3 Key Principles

• Domestic policies - encourage investment in research and innovation
  – privatization of ICT services supply
  – introduction of competitive supply models
• Governments, private sector - invest in human capacity-building
• Intellectual property of innovators, content producers, and consumers - protect
UN World Summit on the Information Society (WSIS)

• “First Phase” of WSIS December 2003
• Over 175 nations agreed on:
  – the pressing need for universal ICT access and the widespread infrastructure on which it is founded
  – connecting all villages, schools, hospitals and governments with ICT by 2015 and ensuring that half of the world’s people are within reach of ICT
II. Why Wireless?

- Countries are using it to leapfrog wireline approaches and install new infrastructure
- Mixtures of solutions – fixed wireless, terrestrial and satellite, VSAT with Wi-Fi
- Mobile access devices – cheap, easy to sell and start-up, voice as well as data applications; now video
- 80% of world population can’t be served terrestrially
Wireless Access Stats
Exponentially High Growth Rates

• Mobile subscribers are 51 percent of all telephone subscribers worldwide
• 1 billion GSM subscribers worldwide 2/04
• Uganda in 1997 – 5K cell subs, in 2002, 393K
• Paraguay in 1997 84K cell subs, in 2002 1.7 million
• China expects 400 million mobile subscribers by 2005
Table I. Cellular Penetration Levels by World Regions

Source: ITU

Cellular Mobile Subscribers as Percentage Total Telephone Subscribers
Table II. Countries Over 80% Cell for Total Phone Penetration

Source: ITU

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<thead>
<tr>
<th>Country</th>
<th>Percentage Year-End 2002</th>
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<tbody>
<tr>
<td>CAMBODIA</td>
<td>90%</td>
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<tr>
<td>DR CONGO</td>
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<td>MOROCCO</td>
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<td>UGANDA</td>
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<td>KENYA</td>
<td>75%</td>
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The Problem of WI-FI Policy

- Many countries have no law/policy regarding WI-FI, thus 2 approaches
  - Ban it
  - Let it flourish
- Kenya forbids since no law; question of protecting incumbent telecom/ISP suppliers?
- Senegal – grey area; we’re working with regulators to allow WI-FI and WIMAN
III. Principles and Best Practices

U.S. Government Paths

- **Funding**: Traditional and new aid initiatives (USAID, TLP, USTTI, DFI)
- **Market Access**: Interagency reform efforts in overseas markets (NTIA, State, ITA, FCC, USTR, DOJ)
- **Principles**: Joint efforts through bilateral partnerships, multilateral and regional organizations
Purpose of ITU-D Question 13/1
Promote Internet Access in Developing Countries

• Develop policy guidelines for government officials to foster development of Internet infrastructure

• Identify the technological options available to achieve Internet build out

• Determine how to best build human capacity for technical expertise
Basic telecom capabilities are the infrastructure necessary to provide Internet applications

Telecom regulatory policies have a direct impact on the Internet

Competition and privatization in Internet service spur development of affordable basic telecom infrastructure
Telecom Licensing System

• Licensing conditions should be published
• Licensing procedures should be transparent
• Procedures should be minimal and expedient
• Fees should be proportionate and based on market principles
Recommendations For Policy-Makers:

- Promote widespread and affordable access to the Internet
- Ensure that the regulatory regime does not hinder development
- Urge ISPs to develop concessionary rates for Internet access in public service and development-oriented institutions
- Establish a consortium of public service institutions to contribute to Internet access, use and development
- Encourage the development of information strategies and models that facilitate community access
- Develop national programs to promote capacity building in Internet development and use, and the creation and dissemination of multicultural and multilingual Internet content
**13/1 INTERNET TECHNOLOGICAL OPTIONS**

- Traditional Internet transmission technology
  - Wire (often copper), cable and fiber
  - Expensive for rural, remote and/or poor communities

- RF-based technologies include:
  - VHF and UHF radio systems using narrow packet radio technology
  - Global System for Mobiles (GSM400) Using Packet Switching Technology
  - Time Division Multiple Access (TDMA) Based on Point-To-Point (PTP) or Point-to-Multipoint (PMP) Radio Systems
Additional RF-Based Technologies

- Code Division Multiple Access (CDMA) 450 MHZ
- Multipoint Multichannel Distribution System (MMDS)
- Local Multipoint Distribution System (LMDS)
- Very Small Aperture Terminals (VSAT)
- Satellite Based Internet Access
HUMAN CAPACITY-BUILDING

Some ITU Suggestions

• Develop education and training programs

• Sponsor and promote programs aimed at assisting entrepreneurs with loans and/or matching grants

• Promote collaborative efforts to attract private companies to establish training

• Develop national and international networks of institutions, teachers and learners

• Enlist volunteers from the relevant community to manage other volunteers
Asia Pacific Economic Cooperation (APEC): Digital Divide

(21 Economies)

• **Level of Internet Access:**
  - varies among populations
  - Income, education, age, gender, disability and rural/urban location

• **APEC “Triple” Goals:**
  - To triple Internet access between 2000 and 2005
  - To ensure all groups within an economy have Internet access by 2010
APEC: Underserved, Unserved Needs

• Underserved areas are being served through a combination of:
  – technology deployment
  – supportive policy environments, and
  – programs directed at the needs of the underserved

• Meeting such needs crucial for macro-economic growth and improved quality of life.
APEC’s Six Digital Divide Principles

– **Leadership** – Governments should create national, regional, and local initiatives

– **Partnerships** – Economies should create partnership among business, education, civil society, and government

– **Policy Coherence** - Governments should ensure policies (macroeconomic, social, educational) work seamlessly

– **Market Focus** – Governments should promote pro-competitive supply, to foster demand that justifies investment required

– **Sustainability** – All should ensure the continuation of initiatives beyond the seed money stage, and

– **Scalability** – Project designers should ensure these can be replicated for other applications and geographic areas
IV. Digital Freedom Initiative (DFI)

- Launched March 2003, by Commerce, USAID, USA Freedom Corps, and Peace Corps – today is anniversary

- **Goal**: promote economic growth by transferring ICT benefits to entrepreneurs and small businesses in the developing world

- Three DFI Countries Now: Senegal, Peru, Indonesia

- To expand to 20 countries 2003-08
Key Elements of DFI

- **Knowledge Transfer**: Place volunteers in small businesses to share business knowledge and technology expertise

- **Regulatory/Legal**: Promote pro-growth regulatory and legal structures to enhance business competitiveness

- **Entrepreneurs**: Leverage existing technology and communications infrastructure in new ways to help entrepreneurs and small businesses to better compete
Senegal Pilot Projects

• 3 pilot projects to:
  – Improve productivity in Telecenters/Cybercafes
  – Improve access to markets for Small and Medium-Sized Enterprises (SMEs) using ICT tools
  – Create a supportive environment for micro-finance in a region where banking is centralized in a neighboring country.

• Recent successes:
  • Inauguration of a Cisco Networking Academy 12/03
  • Formation of a new users association, SITSA (Information Technology Association of Senegal)
DFI & WIMAN

• Senegal Feasibility Study – Pre-design Stages

• Considering Merits of Next-generation Wireless Technology, to include 802.16 WIMAN Technologies

• **Objective**: develop costing models and a testbed that can be replicated
WIMAN and Senegal

• **Connection Goal**: Dense Urban Settings to Sparse Rural Populations in Senegal at Greatly Reduced Costs, & Prices to Users

• Point-to-Multipoint Ability is Critical to Senegal
  – 0.14 on ITU Digital Access Index, #158 out of 178 Countries
  – Diverse Geographical Areas and Long Distances

• **3.5 GHz** - May consider dividing the band between licensed and license-exempt, and use 2.4, 5 GHz for innovation and smaller businesses
WIMAN Targets in Senegal

- Connect an existing Wireless Internet Service Provider (WISP) or a traditional ISP or Internet café entrepreneur
- Project participants to provide equipment and training as needed
  - Jointly develop technical configurations and a business model
- Work with local regulator and incumbent operators to ensure a supportive, competitive environment
- Aim: extend connectivity while developing a more dense user base
V. Going Forward

- **Iraqi Reconstruction:**
  - Joe Gattuso and Fred Matos in Baghdad
  - Using ITU 13/1, other USG principles to reform regulatory processes

- **ITU IP Policy Manual:** NTIA leading effort to develop a best practices manual for developing countries on Internet policy issues:
  - domain names systems, root server management
Websites I

- The Networking Revolution: Opportunities and Challenges for Developing Countries: Are Poor Countries Losing the Information Revolution?  World Bank: [www.infodev.org/library/working.htm](http://www.infodev.org/library/working.htm)
- ITU-D Question 16/2 - Handbook on New Technologies and New Services:  [www.itu.int/publibase/catalog/index.asp](http://www.itu.int/publibase/catalog/index.asp) (See Section 2.5 Work of the ITU-D Study Groups 1 and 2)
Websites II

- APEC Telecom & Information Working Group: [www.apectel.org](http://www.apectel.org)
- CITEL: [http://citel.oas.org](http://citel.oas.org)
- Global Internet Policy Initiative (GIPI): [www.gipiproject.org](http://www.gipiproject.org)
- ITU Internet Case Studies: [www.itu.int/ti/casestudies/index.htm](http://www.itu.int/ti/casestudies/index.htm)
- World Bank’s Information for Development Program: [www.infodev.org](http://www.infodev.org)
- World Bank’s Investment Promotion Network: [http://www.ipanet.net](http://www.ipanet.net)
- World Summit on the Information Society: [www.itu.int/wsis/](http://www.itu.int/wsis/)