Note: The views expressed in this presentation are those of the authors and do not necessarily reflect the opinions of the ITU or its membership.
Speeds and Prices

DSL speeds around the world, Mbit/sec, July 2003

- Yahoo BB (Tokyo, Japan): $32.07
- Yahoo (SBC) (Lansing, MI): $59.95
- France Telecom (Paris, France): $91.21
### Broadband Penetration, per 100 inhabitants, 2002, by technology

<table>
<thead>
<tr>
<th>Country</th>
<th>DSL</th>
<th>Cable</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea (Rep.)</td>
<td>21.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>HK, China</td>
<td>14.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Canada</td>
<td>11.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Taiwan, China</td>
<td>9.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Iceland</td>
<td>8.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Denmark</td>
<td>8.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Belgium</td>
<td>8.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>7.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Austria</td>
<td>6.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>United States</td>
<td>6.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Switzerland</td>
<td>6.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Japan</td>
<td>6.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Singapore</td>
<td>5.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Finland</td>
<td>5.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Breakdown of technology worldwide, 2002**

- DSL: 45%
- Cable: 50%
- Other: 5%

*Source: ITU World Telecom Indicators Database.*
Which economies are doing well?
Broadband and income

Broadband Subscribers 2002 by GDP (PPP), users per 100

Source: ITU World Telecom Indicators Database.

\[ y = 0.0054e^{0.0002x} \]

\[ R^2 = 0.7019 \]
Roadmap for a successful broadband economy

Demand
1. Awareness
2. Adoption and integration
3. Innovative environment
4. Affordability

Supply
1. Competitive market structure
2. Government participation
3. Innovative use and deployment of infrastructure
Promoting Broadband: Demand

1. Awareness
   - Schools
   - Government-sponsored programs
   - Co-branding
   - Bundling
   - Shared connections
**Awareness: Estonia’s “Tiger Leap”**

**Goal:**
- Introduce ICTs through secondary schools – exposure to broadband

**Results:**
- 75% of all schools have broadband connections
- 63% of teachers have received ICT training courses
- 35% population uses the Internet
- 38% of population uses PCs

**Internet users, per 100, 2001, upper-middle income countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea (Rep.)</td>
<td>52.1</td>
</tr>
<tr>
<td>Estonia</td>
<td>30.0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>27.3</td>
</tr>
<tr>
<td>Bahrain</td>
<td>21.5</td>
</tr>
<tr>
<td>Chile</td>
<td>20.1</td>
</tr>
</tbody>
</table>

**Broadband subs, per 100, GDP(PPP) 8-15K, 2001**

- Bahrain
- Czech
- Hungary
- Argentina
- Saudi Arabia
- Estonia
- Chile
- Poland
- Mexico
- Russian Fed
- Uruguay

*Source: ITU World Telecom Indicators Database.*
Promoting Broadband: Demand

2. Adoption and Integration
   - IP Telephony
   - Video
   - Audio
   - Gaming
   - Online photos
   - Teleworking
   - E-commerce
   - Local content
Adoption & Integration: Korea

Korea has 25,000 cybercafés (open 24 hours) despite having the highest home broadband penetration in the world.
3. Innovative environment

- Spurring innovation
  - Direct R&D Funding
  - Tax incentives
  - Spectrum

- Intellectual property rights
- Foreign investment
- Multiple distribution channels for content
- Security
Innovative Environment: Canada

CANARIE

- **Mission**: to accelerate Canada's advanced Internet development and use by facilitating the widespread adoption of faster, more efficient networks and by enabling the next generation of advanced products, applications and services to run on them.

- **Projects**: The Advanced Broadband Enabled Learning (ABEL)

- **Innovation**: Projects such as ABEL find new ways to use as well heighten awareness of broadband
Successful Broadband Promotion

4. Affordability

- Narrow vs. broadband pricing
- Pricing strategies
  - Flat rate
  - Volume-based
  - Product bundling
  - Tiered pricing
  - Prepaid
  - Time-based
Rappoport, Fridel, and Taylor (2002) look at detailed data from the United States on the type of connection, the type of Internet activity, and the amount of time spent online. Interestingly, they find a large portion of “heavy-use” narrowband subscribers.
While the monthly charge is important...

Price of typical BB connection as a % of monthly household income (PPP), April 2003

Price per 100 Kbps of data per month, US$, April 2003

While the monthly charge is important...

It's also the speed you get for it that counts.
Promoting Broadband: Supply

1. **Competition**

   Successful broadband economies, in general, have three elements in common:
   1. Competition through open access
   2. Strong competitive carrier
   3. Viable inter-modal competition
Competition: Korea

1. Competition through open access
   - Hanaro has provided service on Korea Telecom’s local loop since April 1999. Open access mandated throughout industry in 2000.

2. Strong competitive carrier
   - Hanaro first to offer DSL service and has 1/3 of DSL market. Deep pockets from backers (LG, Samsung, SK Telecom).

3. Viable inter-modal competition
   - 57% of homes are passed by cable, with wireless and LAN services available as well. (DSL = 63%, Cable + Other = 37%)
2. Government participation

- Government framework for broadband supply
  - Light touch (e.g. New Zealand, Switzerland)
  - Cooperative (e.g. Australia, Germany, UK, US)
  - National plan (e.g. Rep of Korea, Norway, Singapore)

- Tax credits/loans/subsidies

- Direct involvement developing infrastructure
  - Sweden, Japan, Iceland, USA

- Building certification programs
3. Innovative rollouts

- Expanding point of profitability (EPOP)
- Innovative use of existing infrastructure
  - Power cables
  - Rail and other under-utilized networks
- Community access points
- Wireless solutions
  - Satellite
  - WLAN (e.g. Wi-Fi)
  - Fixed wireless (802.16a)
Conclusions

1. Broadband promotion is most effective when it targets both demand and supply.

2. Users will adopt broadband once they understand its benefits, if it is affordable.

3. Governments can play a key role in all types of promotion and at all levels (e.g. national, municipal, etc).

4. There is no substitute for true market competition to expand networks and lower prices.

5. Community access centers in underserved, remote areas can serve as anchors, eventually becoming key nodes from which future networks can expand.
Thank you

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