Policy & Regulatory Overview

Interconnection Workshop
China, 17-19 August 2001

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ITU
Agenda

• Paradigm shift in digital economy
• What are the global trends in ICT?
• What are the main policy, legal & regulatory issues?
• Where does China stand in global ICT sectors?
• ITU’s activities on interconnection
Paradigm shift in digital economy & divide

**Shift from**
- Industrial society;
- Centralized control or regulation from regulators or monopolies in telecom;
- Significant market powers of incumbents, conglomerates & MNCs.

**to**
- Information society with a knowledge-driven digital economy;
- Deregulated or privatized telecom; & Industry-led self-regulation & power of individual users’ fingertips over convergence of ICT, especially in the advent of Internet;
- Share the markets with micro, small & medium-sized entrepreneurs esp. in the era of eBusiness or eCommerce; ... and
- Almost ‘instant global village’ connected by various technologies and services ....
Global trends over decades

**Until 1970s:** most state-owned or monopoly for all functions in telecom.

**By 1999:** some 80 countries separating regulatory function from policy-making with introduction of competition at market.

**1980s-1990s:** many separating operational function by liberalization or privatization.

**2000 & beyond:** Convergence of IT or computing, broadcasting & telecom: i.e., ICT.

**Until 1970s:** most state-owned or monopoly for all functions in telecom.
Global calling patterns

1993

F2F: Fixed-to-Fixed; F2M: Mobile-to-Fixed; M2F: Mobile-to-Mobile; M2M: Mobile-to-Mobile

2003

{Source: ITU, Trends in Telecom Reform, 2000-2001}
F2F: Fixed-to-Fixed; F2M: Mobile-to-Fixed; M2F: Mobile-to-Mobile; M2M: Mobile-to-Mobile
Convergence in a broader scale

Regulations & Institutions:

to accommodate
these converged
technologies & services

Technologies:
computing,
telecommunications
& broadcasting

Services:
Internet,
IP telephony,
CATV
Different Legacies in the converged ICT

**Telecom**
- centralized
- switching
- political regulation
- long-term planning
- predictable QoS
- accounting for billing
- major invest. in network
- infrastructure/services are one
- major invest. in end equipment
- open standard/3rd party services

**Datacom**
- decentralized
- routing
- open market
- time-to-market
- best effort
- flat rate
- accounting for billing
- open standard/3rd party services
### Digital divide in ICT, Asia-Pacific (1999)

<table>
<thead>
<tr>
<th>Service</th>
<th>Haves</th>
<th>Have-nots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main tel. line:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public tel.</td>
<td>51.5 per 100</td>
<td>5.3 per 100</td>
</tr>
<tr>
<td>Cellular mob:</td>
<td>7.4 per 1000</td>
<td>1.32 per 1000</td>
</tr>
<tr>
<td>TV:</td>
<td>47.6 per 100</td>
<td>25.1 per 100</td>
</tr>
<tr>
<td>Internet:</td>
<td>54.6 per 100</td>
<td>17.2 per 100</td>
</tr>
<tr>
<td>- ISP (no)</td>
<td>5,088</td>
<td>748</td>
</tr>
<tr>
<td>- Users</td>
<td>32.2 per 100</td>
<td>0.8 per 100</td>
</tr>
</tbody>
</table>

(Source: ITU, Asia-Pacific Telecom Indicators, 2000)
What are the major policy trends?

- Undertake sector reform or reengineering through liberalization or privatization;
- Ensure fair competition or competition safeguard;
- Protect public interests from anti-competitive behaviors of industries and growing cyber-crimes;
- Face convergence of ICTs in not mere technologies & services but also legislation & institutions;
- Aware of digital divide in ICT infrastructure & applications not only between countries but also within the country.
Liberalized trends in Asia-Pacific, 2000

{Source: ITU, Trends in Telecom Reform, 1999 & 2000}
Increasing involvement of private sector in the ITU activities

Status of Incumbent operator

Private
State-owned

Source: ITU Telecommunication Regulatory Database.
Why liberalization or competition, then?

- **Goals** are for providing customers with more choices of technologies & services with quality and affordable prices, but not necessary lower prices;

- **Effective competition policies** are anticipated to ensure that the benefits of liberalization or deregulation and market-based reforms flow through to both industries & consumers;

- **Cases** demonstrate faster and more growth of data (esp., Internet) and mobile services, both areas which have tended to be more open up to competition, than that of basic fixed voice services;
Not merely liberalization or deregulation, but with minimum safeguard

- Increasing concerns over private anti-competitive practices led by liberalization or privatization;
- Some 80 countries (inc. 50 developing ones) adopted competition policy including laws & other measures to promote competition in the national economy through dealing with price fixing, cartel arrangements, abuses of a dominant position or monopolization, mergers that limit competition;
- The privacy laws, cyber law, dispute settlement over domain names; and Certificate Authority began to be introduced in the advent of Internet & e-commerce;
- Developing a multilateral framework on competition & e-commerce policy within the WTO is under the review.
Call for convergence of policy-makers
“e-minister?”

“The next government should appoint an e-minister to coordinate policies concerned with information technology, telecoms, e-commerce and other aspects of the New Economy” said Dty Commerce Minister, G. Asvinvichit

The Nation
28/08/00

In case of Thailand

- The Science & Technology Ministry for information technology;
- The Transport & Communications Ministry for telephone and other basic telecoms infrastructure;
- The Commerce Ministry for e-commerce.

In case of Thailand
LAWS & LEGISLATIONS
What are the main legal trends?

- Establish new telecom or ICT legislation;
- Modify the existing telecom laws or regulations;
- Harmonize or improve legal environments & frameworks to reflect convergence & its implications in advent of the Internet: e.g.,
  - Data protection/privacy, intellectual property rights;
  - Security (e.g., authentication, digital signatures etc.);
  - Harmful & illegal content (e.g., child pornography etc.);
  - Domain names & their standardization;
  - Jurisdiction & cross-border issues;
  - Cybercrime (e.g., virus, fraud) etc.
Global trends on legislative reform

- Over 150 countries have introduced new telecom legislation or modified existing regulations to:
  - Introduce competition, establish regulatory authority, & privatize the incumbent: &/or
  - Accommodate convergence of ICT:
- Further changes are anticipated to fit the new realities of convergence
  for example,
# Recently revised ICT legislation in Asia

<table>
<thead>
<tr>
<th>Countries</th>
<th>Years</th>
<th>Laws</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>1999</td>
<td>Telecommunications Policy</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>Information Technology Act</td>
</tr>
<tr>
<td>China</td>
<td>1997/8</td>
<td>Regulations</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>2000</td>
<td>Telecommunications Ordinance (Rev)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcasting Ordinance (Rev)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1998</td>
<td>Communications &amp; Multimedia Act</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communications &amp; Multimedia Commission Act</td>
</tr>
<tr>
<td>Singapore</td>
<td>1998</td>
<td>Electronic Transactions Act</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>Telecom Act</td>
</tr>
<tr>
<td>Thailand</td>
<td>1999</td>
<td>Corporatization Law</td>
</tr>
<tr>
<td></td>
<td>Pending</td>
<td>Frequency Bill</td>
</tr>
</tbody>
</table>

{Source: ITU, Asia-Pacific Telecommunication Indicators, 2000}
Examples of convergence of legislation

Pressures from the increasing convergence of telecom, broadcasting, and computers - esp., the advent of Internet are reflected in: e.g.,

- **China: Regulations (1997/8)** covers radio, TV & film and provides interim provisions for the management of computer information networks and for the security of computer networks & the Internet;

- **Malaysia: Communications & Multimedia Act (1998)** establishes a regulatory framework in support of national policy objectives for the industries;

- **Singapore: Electronic Transactions Act (1998) & Regulations (1999)** enacts a commercial code to support e-commerce transactions and creates a voluntary licensing scheme for CA respectively;
Legislation on interconnection

- India: The Register of Interconnection Agreement Regulation (1999)
- New Zealand: Interconnection Contracts (2000, Rev)

For more & detailed information: http://www.itu.int/ITU-D-TREG
What are the main regulatory trends?

- Separate regulatory functions from policy & operational functions by setting up regulators;
- Reform & revise roles of regulators in aspects of:
  - independence & autonomy from politics, finance, & operation: i.e., for efficiency;
  - accountability of staff equipped with expertise & enforcement power: i.e., for reliability;
  - transparency of regulatory procedures & decisions: i.e., for credibility.
- Revise & update more flexible & user-friendly regulatory frameworks subject to different development phases of each country.
Global trends of regulators

Source: ITU Telecom Regulatory Database.

Countries with Separate Regulatory Body
Status of regulators by regions

{Source: ITU, Trends in Telecom Reform, 1999}
Emergence of regulators in Asia

- Some 90 separate regulators in the ITU member states as of 2000: e.g.,
  - Malaysia: Malaysian Communications & Multimedia Commission;
  - Singapore: Infocomm Development Authority of Singapore;
  - Hong Kong: Office of Telecom Authority;
  - Bhutan: Bhutan Telecom Authority;
  - India: Telecom Regulatory Authority of India;
  - Australia: Australian Communications Authority
  - Korea: Korea Communications Commission etc.
Different ways of convergence in regulators

- Including convergent functions in the existing telecom & broadcasting regulators: e.g.,
  - **Australia**: The ACA merging AUSTEL with SMA
  - **Canada**: The CRTC for both broadcasting & telecom

- New converged regulators including telecom, broadcasting &/or computing: e.g.,
  - **Malaysia**: The MCMC, a sole regulator, for telecom, broadcasting & computing;
  - **UK**: New OFCOM will integrate regulatory functions of telecom (OFTEL), broadcasting (ITC) and computing;
  - **China**: The MII, a sole ministry, for telecom regulation and information infrastructure
  - **Singapore**: The IDA combining the TAS with ITTA
Roles for regulators

- Consider needs from various consumers, first, with appropriate mechanisms for representing &/or protecting their interests;
- Ensure competition providing with level playing fields in liberalized & competitive markets;
- Do minimum effective intervention - i.e., industry-led self-regulation, when possible - with minimum standards for trust in the marketplace;
- Be equipped with accountability, transparency, & predictability in their actions and decisions to reduce the cost of capital and to serve the long-term interests of consumers, companies and shareholders;
- Place timely and consistent regulatory procedures & frameworks with delivering open and effective regulation.
What kind of regulatory frameworks?

- **Licensing**: criteria and fees?
- **Competition safeguard**: prevent anti-competitive practices
- **Pricing**: return on investment or price cap?
- **Numbering & number portability**: within and/or beyond market segments?
- **Universal Service Access/Obligation**: scope (e.g. basic telephony or beyond) and its funds (e.g. incumbent only or all)?
- **Quality of services**: waiting time, any echo, bad connection?
- **Management of scarce resources**: e.g., spectrum, numbers etc. (e.g., first-come first-served or auction) and fees?
- **Structural & accounting separation**, and
- **Last but not least, Interconnection & charges**: commercial agreements or prescribed by regulator?
Regulation required for interconnection: e.g.,

- To ensure that technical specifications of interfaces between networks and CPE for Network Services must be published with sufficient notice before launch to enable other operators and equipment manufacturers to prepare. In addition, operators with interface control must provide technical specifications of proposed network-network interfaces for consultation in advance of publication.

- To ensure technical specifications of interfaces between competing networks (network-network interfaces) for Network Services must be published with sufficient notice before launch to enable other operators and equipment manufacturers to prepare when such specifications are 'commonly provided'. In addition, operators with interface control must provide technical specifications of proposed network-network interfaces for consultation in advance of publication.

- To ensure an operator with market power should ensure that other operators are able to interconnect Network Services simultaneously with the launch of its own corresponding retail service or, where there is no such retail service, when new functionality in the network becomes available for use.
Licence conditions for interconnection: e.g.

- **Connection of networks**: This condition includes detailed requirements related to the rights and obligations of operators to interconnect with one another.

- **Essential interfaces**: This condition enables Regulator to specify essential interfaces in certain circumstances. Prohibition on undue preference and undue discrimination.

- **Fair trading**: This condition prohibits abuse by an operator of a dominant position and the making of anti-competitive agreements.

- **Customer interface standards**: This condition requires publication of the technical specification of interfaces between a Network Termination Point at CPE and the Applicable Systems (customer-network interfaces).

- **Alterations to the Applicable Systems**: This condition may be imposed in the licences of incumbent fixed & mobile network operators. It requires information to be provided on changes to Applicable Systems and the means of access to a Relevant Service.
## Interconnection charge & principles

<table>
<thead>
<tr>
<th>Interconnection Charge</th>
<th>Prescribed by regulator</th>
<th>U.K., U.S. etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial agreements</td>
<td></td>
<td>U.K., U.S. etc.</td>
</tr>
<tr>
<td>Set up by the incumbent</td>
<td></td>
<td>Greece</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pricing principles</th>
<th>Reasonable, non-discriminatory,</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reasonable, non-discriminatory,</td>
<td>Korea</td>
</tr>
<tr>
<td></td>
<td>cost-oriented</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>Reasonable, non-discriminatory,</td>
<td>U.K.</td>
</tr>
<tr>
<td></td>
<td>cost-oriented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>price-cap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fair</td>
<td>New Zealand</td>
</tr>
<tr>
<td></td>
<td>Reasonable,</td>
<td></td>
</tr>
</tbody>
</table>

(Source: ITU, Trends in Telecom Reform, 1999)
Dilemma of regulators

Hands-on or -off
in deregulated
and/or
industry-led
ICT markets?
Balance between Hands-On or -Off Regulations

Q. Why hands-on ?
- Provide transparent & fair regulatory environment for fair competition in liberalized markets;
- Police anti-competitive behaviors in industries;
- Protect vulnerable groups &/or consumers, to have access, if deployment is left to market forces alone;
- Ensure public interest &/or national security, esp. from cyber-crimes.

Q. Why hands-off ?
- Facilitate markets &/or promote industries to provide consumers with:
  - innovative technologies;
  - quality services;
  - with choices;
  - at competitive prices;
  - in a timely manner;
  - based on self-regulation or code of conducts ...
What kind of challenges still ahead?

- How to balance traditionally regulated telecom and non-regulated computing sectors in converged era?
- How to determine ways to regulate or not to regulate new technologies and services (e.g., IP telephony, E-Commerce etc.) that are ever fast evolving and converging?
- How to determine the structures and roles of the regulator in converged sectors?
- How to develop & execute consistent and relevant regulations (i.e., regulatory frameworks) which do not inhibit the growth of sector, but rather encourage technological innovation and market economy?
- How to ensure fair competition - e.g., how to implement transparent, non-discriminatory, & fair interconnection in competitive markets!
Where does China stand in ICT?

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Country</th>
<th>E-readiness score (of 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>US</td>
<td>8.73</td>
</tr>
<tr>
<td>2</td>
<td>Australia</td>
<td>8.29</td>
</tr>
<tr>
<td>3</td>
<td>UK</td>
<td>8.10</td>
</tr>
<tr>
<td>4</td>
<td>Canada</td>
<td>8.09</td>
</tr>
<tr>
<td>5</td>
<td>Norway</td>
<td>8.07</td>
</tr>
<tr>
<td>6</td>
<td>Sweden</td>
<td>7.98</td>
</tr>
<tr>
<td>7</td>
<td>Singapore</td>
<td>7.87</td>
</tr>
<tr>
<td>8</td>
<td>Finland</td>
<td>7.83</td>
</tr>
<tr>
<td>9</td>
<td>Denmark</td>
<td>7.70</td>
</tr>
<tr>
<td>10</td>
<td>Netherlands</td>
<td>7.69</td>
</tr>
<tr>
<td>11</td>
<td>Switzerland</td>
<td>7.67</td>
</tr>
<tr>
<td>12</td>
<td>Germany</td>
<td>7.51</td>
</tr>
<tr>
<td>13</td>
<td>Hong Kong</td>
<td>7.45</td>
</tr>
<tr>
<td>49</td>
<td>China</td>
<td>3.36</td>
</tr>
</tbody>
</table>

{Source}
The Economist Intelligence Unit/Pyramid Research e-readiness rankings, measured by teledensity, availability, costs, literacy rates, & education etc.
## Basic telecom indicators in Asia

<table>
<thead>
<tr>
<th>Economy (1999)</th>
<th>Main Tel. (Per 100)</th>
<th>Cellular (per 100)</th>
<th>Waiting time (Y)</th>
<th>Public Tel (per 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>8.58</td>
<td>3.42</td>
<td>-</td>
<td>2.35</td>
</tr>
<tr>
<td>India</td>
<td>2.66</td>
<td>0.19</td>
<td>0.9</td>
<td>0.37</td>
</tr>
<tr>
<td>Malaysia</td>
<td>20.30</td>
<td>13.70</td>
<td>0.7</td>
<td>7.43</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2.22</td>
<td>0.21</td>
<td>1.5</td>
<td>0.21</td>
</tr>
<tr>
<td>Korea</td>
<td>43.79</td>
<td>50.03</td>
<td>no</td>
<td>12.06</td>
</tr>
</tbody>
</table>

{Source: ITU, Asia-Pacific Telecom Indicators, 2000}
“Information & Communication Technology (ICT) is now the main driver of the Chinese economy”, says China's Minister of Information Industry (MII), Wu Jichuan.

The sector is expected to enjoy average annual growth of 20% over the next five years.

The size of both the IT industry and the telecom business (fixed-line and mobile) is anticipated to double over that period.

But, development of software - e.g., ICT literacy, local contents, quality of services with a variety of choices by providers, technologies, & services etc. - should be also enhanced to ensure public or consumers’ interests & boost SMEs.

Rule of games or regulatory frameworks between operators (fixed-mobile) - i.e., fair competition esp. through interconnection measures - should be implemented in the market-led economy.
ITU’s activities on interconnection

- **Publications:**
  - Trends in Telecommunications Reform, 2000

- **Conferences:**
  - 4th Regulatory Colloquium on Interconnection, 1995
  - Development Symposium for Regulators, 2000, concentrated on interconnection

- **Training on regulatory issues including interconnection:**
  - face-2-face training via Center of Excellency in Asia & Pacific

- **Partnership for training in policy & regulation (inc., interconnection) between ITU and various national & international institutes.**
What partnerships?

- **Virtual Training Centre** (http://www.itu.int/VTC): among NetG, Tadiran, Cisco, Gartner Group

- **Management Development for Telecom**: among AI CEP (Portugal), Swiss Government; AHCIET (Spain), ICE Cost Rica, Telecom Colombia, CTC Chile, Telemig Brazil etc.

- **Global Telecom University/Global Telecom Training Institute**: among RCC (Russia), Ukrainian State Academy of Telecoms

... more partnerships in training

- AICEP (Association of Portuguese-speaking telecom organizations);
- Cable & Wireless College, UK;
- ICU (Information & Communication University), Korea
- INTELSAT;
- Telia Academy Sweden;
- Temic, Canada;
- Thunderbird Graduate School of Management, USA;
- UKTA (UK Telecom Academy), UK etc.
Glossary

- ICT: Information & Communication Technology
- CA: Certification Authority
- ISP: Internet Service Provider
- ACA: Australian Communications Authority (Australia)
- AUSTEL: Australian Telecommunications Authority (Australia)
- SMA: Spectrum Management Agency (Australia)
- CRTC: Canadian Radio-television Commission (Canada)
- MCMC: Malaysian Communications & Multimedia Commission
- MII: Ministry of Information Industry (China)
- IDA: Infocomm Development Authority of Singapore
- TAS: Telecom Authority of Singapore
- ITTA: IT & Telecom Authority (Singapore)
- OFCOM: Office of Communication (UK)
- SME: Small & Medium sized Entrepreneurs
More information?

ITU website:
- www.itu.int for overall ITU activities
- www.itu.int/ITU-D/treg for regulatory & policy issues
- www.itu.int/osg/sec/spu/ni/iptel/workshop/index.html for detailed case studies in countries

ITU Publications & On-line Services:
- *Trends in Telecommunication Reform:*
  1999 & 2000

ITU Development Symposium for Regulators:
- November 20-22, 2000, Geneva
- December 3-5, 2001, Geneva

ITU World Telecommunication Policy Forum on IP:
- March 7-9, 2001, Geneva

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Thank you