Creating a Regulatory Framework for New Technologies: Legal and Institutional Challenges

New Technologies, New Thinking: ICT Regulation in a Changing World
How the ICT Regulation Toolkit Can Help
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Telecommunications Management Group, Inc.

What is Convergence?

Multiple service provision under different network infrastructures

Network Infrastructure	Voice	Data	Video
Copper line	PSTN	DSL, FTTC, FTTP	VOD, IPTV
Cable	Analogue, VoIP	Cable modem	Analogue, DTV
Mobile	Analogue, 2G, 3G	2.5G, 3G	DVB-H, others
Fixed Wireless	VoIP	Proprietary, 3G, WiMAX, LMDS, MMDS	DVB
Power lines	VoIP	BPL	VOD, DVB, IPTV

PSTN= Public Switched Telephone Network, DSL=Digital Subscriber Line, FTTC=Fiber to the Curb, FTTP=Fiber to the Premise, VOD=Video on Demand, IPTV=Internet Protocol TV, VoIP=Voice over IP, DVB=Digital Video Broadcasting, 2G=Second generation mobile service, 3G=Third generation mobile service, DVB-H=Digital Video Broadcasting Handheld, WiMAX=Worldwide Interoperability for Microwave Access, LMDS=Local Multipoint Distribution System, MMDS=Multichannel Multipoint Distribution System, BPL=Broadband over Power Line.

Is the Regulatory Framework Ready for Convergence?

Checklist of Issues for Regulators to Consider with Regard to Convergence

1) Does the regulatory framework facilitate the provision of different services over different platforms (*e.g.*, technology neutrality)?
2) Does the regulatory framework support full competition?
3) Does the regulatory framework allow service providers to offer multiple services?
4) What are the regulatory policies for these new technologies and services with regard to numbering, spectrum, universal service, and interconnection?
5) Does the country's legal framework contain the necessary legislation to support an ICT environment (*e.g.*, intellectual property laws, computer crime, electronic transactions, data privacy and security)?

Chasing Technology Developments

- Technology is always faster than regulation – Convergence is already here and there will be further developments…
- Regulation cannot be thought of as a definitive solution
  - Interim regulations to adapt the framework to new challenges (*e.g.*, VoIP)
  - Mechanisms for regulator to engage in continuous review
- Regulation must be flexible and allow broader interpretations by the regulator
- Need to constantly gather input from industry
  - Consultation mechanisms

Involve Stakeholders in Regulatory Process

Consultation as an essential part of the decision-making process:

- Enhances confidence in the regulator
- Increases consensus and support for regulatory decisions
- Provides input and feed-back from stakeholders
- Reinforces regulatory autonomy and accountability

Introduce industry self-regulation approaches:

- Designing and developing policies through an ad hoc or existing consultative body
  - ➢Provides a way to constantly review and monitor new developments in the marketplace and permits first-hand contact with industry needs
  - ➢Potential risk that dominant industry players will hijack recommendations

Creating a Regulatory Framework

Essential elements of an effective regulatory framework in a converged services environment:

- Implementation of a well-defined and consistent regulatory framework for telecommunications, broadcasting, and ICT.
- Regulatory framework must give regulator the authority and means to effectively define and apply regulations in a market. These characteristics are important, especially in markets where incumbent operators have extensive political and financial power.
- Regulatory framework must provide for regulatory flexibility to adapt to the unanticipated needs and use of new technologies and services

Elements for an Effective Regulator

1. Structural Independence
   - Reduces possibility of political or industry capture
   - Separation of regulator from operator, insulation from external pressure, not wholly dependent on the related ministry in charge of telecom policy
2. Financial Independence
   - Funding should be free from political and private interest influence
   - Two main sources of budget: (1) allocation from government budget; (2) collection of regulatory fees for licenses, fines, spectrum usage, etc.
3. Functionality
   - Ability of regulator to carry out its daily activities effectively

Institutional Design Options

- Three primary **institutional designs** for telecommunications regulatory entities:
  - Single-sector regulator: sole function is to oversee the telecommunications sector.
  - Multi-sector regulatory authority: usually encompasses various industry sectors considered to be public utilities, *e.g.*, telecom, water, electricity, and transportation.
  - "Converged" regulator: tend to have oversight for information and communications technologies, including broadcasting.

Modifications to Telecommunications Legislation to Address Convergence

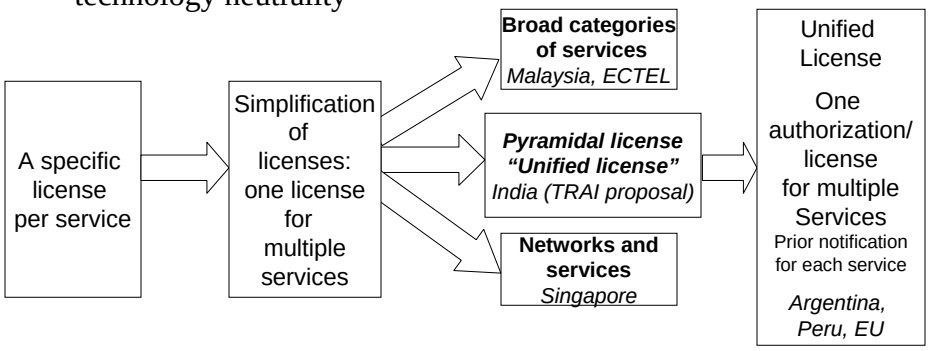
- Reforms are taking place to address new challenges posed by convergence
- Merging of broadcasting and ICT regulation
- Primary areas of regulatory reform of telecommunications frameworks:
  - Licensing regimes
  - Spectrum
  - Licensing rights and obligations (interconnection, numbering, and universal service)

Licensing

- Traditional regulatory frameworks were designed for a circuit-switched technology and era when clear functional differences existed between services and infrastructure
- Convergence erodes the service and technology specific concept
- Problems:
  - Multiple-service offers (*e.g.*, triple play) may require multiple licenses, some services may be regulated and others unregulated, and may have different geographic limitations
- In response, countries are changing their licensing frameworks
  - Two parallel processes:
    - Modification of licensing regimes
    - Reduction of administrative burdens to obtain a license

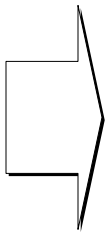
Licensing (cont'd)

- Modification of licensing regimes + introduction of technology neutrality



Licensing Categories in Malaysia

1) Domestic Network Operators
2) International Network Operators
3) Mobile/ Personal Communications Services
4) CT2 / Telepoint Service
5) Financial Electronic Transaction
6) Paging Services
7) Trunk Radio System
9) Radio Maritime Service
9) Mobile Satellite Services
10) Tele-communications Satellite Network Services
11) Very Small Aperture Terminal Services
12) Radio Location Services
13) Satellite Broadcasting Services
14) Mobile Data Services
15) Mobile Radiocommunications Services
16) Private Information Services
17) Public Electronic Data Interchange Services
18) Value Added Network Data Services
19) Value Added Services (Premium Rate)
20) Telecommunications Personal Services
21) Public Internet Kiosk Services
22) Internet Service Providers
23) Power Line Carriers
24) Payphone & Public Facsimile Services
25) Wireless Video Communications Network
26) Private Telecommunications Network
27) Common Subscriber Directory Services
28) Community Interactive Multimedia Services
29) Amateur Satellite
30) Broadcasters Radio
31) Broadcasters Television



- Network Facility Provider
- Network Service Provider
- Applications Service Provider
- Content Applications Service Provider

Licensing Categories in Malaysia

Malaysia -- Licensing under the new regime

Licensing Category	Individual Licence	Class Licence	Exempt/ Unlicensed
Network Facility Provider	Earth Stations; Fixed links and cables Public payphone facilities; Radio-communications transmitters and links; Satellite hubs; Satellite control station; Space station; Submarine cable landing centre; Switching centre Towers, poles, ducts and pits used in conjunction with other network facilities	Niche or limited purpose network facilities	Broadcasting and production studios; Incidental network facilities; Private network facilities
Network Service Provider	Bandwidth services; Broadcasting distribution services; Cellular mobile services; Access applications service; Space service	Niche customer access; Niche connection service	Incidental network services; LAN services; Private network services; Router; Internetworking
Applications Service Provider	PSTN; Public cellular services; IP telephony; Public payphone service; Public switched data service	Audiotext hosting services provided on an opt-in basis Directory services Internet access services Messaging services	Electronic transaction service; Interactive transaction service; Networked advertising boards and Cineplex; Web hosting or client server
Content Applications Service Provider	Satellite broadcasting subscription; Broadcasting; Terrestrial free to air TV Terrestrial radio broadcasting	Not issued	Internet content applications services

Licensing (cont'd)

- Traditionally licenses authorization used three approaches: individual license, class license and open entry.
- Now have simplification of administrative procedures which eliminates burdensome administrative proceedings by introducing registrations, notifications and deregulation (in certain instances)

Notification Forms in the EU*

Notification Form for a General Authorisation

Section 3 - Network and Service Description

(1) Network	(2) Service	(3) Further Details of Network and/or service[1]	(4) Geographical area where network and/or service is available	(5) Publicly Available? Yes/No	(6) Commencement Date	
					Planned	Actual

Network –
- **Fixed Telephony Network** (e.g. fixed network used primarily for publicly available telephony services)
- **Mobile Telephony Network** (e.g. wireless network used primarily for publicly available mobile telephony services)
- **Satellite Network** (e.g. satellite network used for broadcast transmission, SNG, provision of other electronic communications services)
- **Broadcast Network** (e.g. cable, MMDS, terrestrial FTA, deflector)
- **Electricity Cable System** (only where used for the purpose of transmitting signals)
- **Other Fixed Network** (please specify in Column 3)
- **Other Wireless Network** (please specify in Column 3)
- N/A where network elements are not provided by notifying person

Service –
- **Publicly available telephone services** (note this includes telephone services provided by resellers e.g CPS;WLR, etc please also state if Single Billing is offered)
- **Other Voice Services** (e.g. community repeater service)
- **Broadcast Services** (e.g. provision of transmission services to broadcast content providers established in Ireland or transmitting content to, from or within Ireland)
- **Data Services** (e.g. data transmission services) specify details in Column 3 if necessary
- **Internet Access Services** (e.g. dial-up or broadband; specify details in Column 3 if necessary)
- **Other Electronic Communication Service** (please specify details in Column 3)
- N/A where electronic communications services are not provided by notifying person

***Example from Ireland**

Source: Commission for Communications Regulation

Licensing (cont'd)

- Different combinations are being used by countries to simplify licensing regimes and reduce administrative procedures
  - *e.g.*, Argentina, EU, Malaysia, Peru, and United States
- Usually spectrum rights are granted through a separate specific authorization process
- These licensing reforms better address convergence if technology neutrality and simplification are not limited to the classification of licenses but instead are addressed through the licensees' rights and obligations

Spectrum

- Governments and regulators are introducing flexibility in spectrum use
  - Technology-neutral spectrum
    - Limitations:
      - Interference
      - Standardization of technologies - economies of scale
      - ITU international coordination
    - Australia, New Zealand, United States and Guatemala
  - Spectrum trading and secondary spectrum markets
    - Introduction of service- and technology-neutral spectrum accessible to any provider
    - Selling and trading of spectrum rights
    - Australia, Guatemala and United Kingdom
  - In-band migration
    - Allow use of existing spectrum for new services and technologies
    - Americas and Asia with the introduction of IMT-2000 systems

Licensing Rights and Obligations

- Implementing modifications to address convergence regarding rights and obligations of licensees:
  - Interconnection
  - Numbering
  - Universal Service

Interconnection

- Traditional interconnection regulation established for switched voice services. New IP-based services require a new approach.
- Regulators are modifying their interconnection frameworks to respond to convergence:
  1. Symmetrical interconnection approach: all operators are obliged to interconnect upon request
     - A technology-neutral approach
     - Argentina, EU countries, Venezuela, Mexico and Canada
  2. New Kind of "Access"
     - Ad hoc interconnection to network infrastructure via direct access or resale (local loop unbundling and bitstream) (e.g., EU)
     - "Equivalence of Inputs" – United Kingdom
  3. Capacity-based interconnection
     - A flat rate charge for a specific capacity of interconnection instead of a per-minute rate (*e.g.*, Spain and Colombia)

Numbering

- Regulators are adapting numbering, which was originally developed for switched voice telephony, to IP and converged service environments
  - Assignment of numbering resources to new technology services providers (*e.g.*, VoIP)
    - Use of geographic numbers by services other than traditional voice switched telephony operators (*e.g.*, Japan, Spain, and UK)
    - Assignment of specific numbering rights for new services (South Korea, Singapore, and some EU member states)
  - Inter-modality portability which allows portability among different services (fixed-to-mobile and vice versa)
    - Limitations:
      - Geographical restrictions on telephone numbers (area codes)
      - Potential technical and economic effects to existing interconnection configurations

Universal Service

- Evolution of universal service concept
  - Intended to provide telecommunications services to underserved areas and population
  - Monopoly public policy and cross-subsidization
  - Originally included only voice services
- Converged services introduce new questions:
  - Development of new converged services vs. contribution to universal service funds
    - United States and Canada (information service providers)
  - Modification of universal service obligations - inclusion of broadband access providers (as the enabler of IP and converged services) as contributors to universal service fund

Conclusion

- Key elements that regulators should incorporate:
  - Regulatory flexibility
  - Neutrality
    - Network neutrality
    - Technology neutrality
    - Service neutrality
    - Spectrum neutrality
  - Licensing – keep it simple
  - Seek industry input
  - Need to keep in mind that an effective modification of the regulatory framework to address convergence requires an interwoven solution that addresses all key areas and changes to one area will affect other areas
- All these issues are addressed in ITU/*info*Dev Regulatory Toolkit – www.ictregulationtoolkit.org

Thank You

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