Hard and Soft Infrastructure for an efficient and effective telecoms sector: the broadband services enabler

For

ETDA

Open Forum 28 March 2015
Bob Fox – ICT Group – JFCCT with EABC
“Hard and Soft Infrastructure for an Efficient and Effective Telecoms Sector: the Broadband Services Enabler for Digital Economy”

วันเสาร์ที่ 28 มีนาคม 2558 เวลา 10.00 – 12.00 น.
ณ ห้อง Open Forum สำนักงานพัฒนาการคุณภาพภูมิภาค (องค์การมหาชน)
ชั้น 21 อาคารเฉลิมพระเกียรติ พระบาทสมเด็จพระเจ้าอยู่หัว (อาคารที่ 4) พระวิหาร
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
This topic today covers focuses on an area described in the Digital Economy Schematic developed by JFCCT/EABC, and thus on some aspects of policy and proposed laws. JFCCT/EABC makes recommendations about these.

In addition, JFCCT,EABC notes that there are two missing laws and recommends policy and law coverage. These are noted in a table.
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
Digital Economy Schematic

**SECTOR BASED APPS**
- Financial Services
- Broadcasting
- Healthcare
- Smart City, Transport
- Tourism
- eGovernment
- Education
- Logistics, SCM, Trade
- Agriculture
- Manufacturing
- Commerce

**SOFTWARE INFRA & ENABLING FACTORS**
- IPR
- Funds for Innovation
- Devices
- IOT
- Skills Development; Free Movement of Skills
- eGov
- Analytics
- Data Protection Regime
- Effective Government Procurement

**HARD INFRA**
- Competition Regulation
- Access Regulation
- Properly Structured & Regulated Telecoms Sector
- Active Infrastructure (Basic & Wholesale Services)
- Broadband Networks
- Passive Infrastructure

**Trusted Internet**
- Security
- Governance
The ‘digital economy’ is all economic activity mediated by software and enabled by telecoms infrastructure.

This includes core telecoms services such as voice, messaging, data and video.

The goods and services within the digital economy can be broadly grouped as:

- **intrinsically digital** – streaming video, ebooks, computing services, Facebook, LINE

- **substitutes for established equipment and services** – virtual private communications networks, security services, virtualised PBXs, and services delivered on-line (e.g. accounting, graphic design, software development, Software-as-a-Service, data analytics, knowledge-based outsourcing).

- **marketing, sale, logistics etc of physical goods** – eg Amazon, eBay, Alibaba, Tarad.com, Pantipmarket

Digital Economy is the means of enabling participation by all in social and economic enterprise, and also includes the role played by governments in developing infrastructure and services.
As with networks, and the telecoms licensing structure, Digital Economy works through layers, or building blocks.

Full vertical integration is (rightly in our view) not proposed. Thus those providing applications and services may have access to infrastructure but not have to build or own it.

There is much relevant global experience to brought to this situation, such as net neutrality principles, wholesale market operations, regulated wholesale pricing, competition regulation and a fair structure for the telecoms industry.
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
Telecommunications has a dual role in the economy. This is recognised by WTO in GATS and in FTAs with telecoms chapters.

(i) Telecommunications (and ICT) in its own right as an industry – a productive and attractive industry

(ii) The rest of the economy needs many services – key include efficient, high quality and cost effective telecommunications infrastructure and services; telecoms services are a key contributor and support

**Thus telecoms is a key ‘strategic’ industry; its proper functioning, regional competitiveness and effectiveness are vital to the economy overall.**
A well functioning sector is cost effective and efficient, innovative, attracts investment and stimulates demand for its quality services.

10% increase in mobile penetration = > 1% increase in GDP growth long term (estimate for Thailand).

Increase in broadband penetration (with good quality service) would be an even higher multiplier.

Good corporate services supporting global communications – supports MNC/RHQ/IHQ locations (this area in particular is not well understood).

Example question: is this industry performing well? Is it contributing to the rest of the economy in the way it could, in the way it is in many economies in the region? Is it supporting attraction of investment in other sectors as well?
Typical model

One regulator only

An effective competition, interconnect & access regime

Many application service providers

More service providers

Fewer facilities-based network operators

Basis for an attractive, competitive effective industry
Layers in industry structure

First cat
Second cat (no network)
Second cat (w network)
Third cat

Conceptually similar industry shape

Malaysia
Thailand
Singapore

CASP
ASP
NSP
NFP
CSBO
SBO (l)
FBO
TBA Distinction amongst categories

Structure anticipated by the TBA is OK; but wholesale; enforced competition?

First cat
(no network)

Second cat
(w network)

Third cat

Value added and resale services

FDI limits under FBA

FDI limits under Telecoms Business Act

Fundamental and network-based services
Telecommunications services are provided via networks. These systems need to be thought of in layers.

The owner of the physical network which includes:

• active elements – eg switches, routers, radios; and

• passive elements: eg ducts, towers

need not be the industry participant which provides the service.

The most efficient industry structural model supports:

• Access to network elements and sharing of these elements; and

• Provision of access and services – (eg dark fibre, bandwidth services, wholesale services) on top of which other operators – eg Category 1 and some Category 2 licensees – can provide value added, managed services etc.

Thailand’s mobile sector for example did not develop like this due to the lack of a solid interconnect and access framework. To make a 3G/4G business cases work, better sharing will be needed.

The OSI model (next slide) illustrates layers.
Open Systems Interconnection Reference Model (‘OSI Model’)

### Software Based, Function of OS
- **Application**: User applications – eg ERP systems
  - eg file transfer services
- **Presentation**: services about form or syntax of data eg. packet headers, encryption
- **Session**: creates logical relationship between transmitter & receiver, also encryption
- **Transport**: delivery of entire message, including Class of Service needs (network may be dedicated or switched)
- **Network**: routing & congestion control
- **Data Link**: ensures bit level integrity of the data being delivered (Recall the binary system – bits and bytes)
- **Physical**: ensures transmission of bits; uses various multiplexing protocols (eg xDSL, DWDM, ATM, SDH)

### Network Based
- **Physical network** – wireline or wireless
Truths about telecomms

A Interdependent industry
Works in layers
Regulated: access to infra, competition
Global norms – based on learning
Competition on a level playing field: services, facilities-based
Which means..

Away from rent-seeking, concession mindset

Independent regulatory authority – 3 dimensions

Regulation enforced

Wholesale market

Liberalisation mindset and policy

Make the industry work as a whole, not just state-owned because state-owned
From concessions to licensing

3 major phases of Thai telecom liberalization

Phase 1: Monopoly
- 2 monopolistic operators (TOT for domestic telephony, CAT for international networks)
- Concession regime

The Old NTC & NBC Act
- NTC was appointed
- Licensing regulations were issued

Phase 2: Introducing competition
- Liberalized Internet and fixed line market
- No new mobile operator due to legal constraint

The New NBTC Act
- NBTC is in place
- Auction on 2.1 GHz in October

Phase 3: Enhancing competition
- 3 licenses on 3G 2.1 GHz (though some concession contracts are partly existed)
- Auction on 4G spectrum will be delivered
- Strengthening consumer protection mechanisms

Source: NBTC

JFCCT/EABC for ETDA 28 Mar 15
High cost of concession

Transcend from Traditional Concessionaire Regime to Licensing Regime

Due to concessionaire regime, spectrum has not been injected into the Thai telecommunications for more than a decade

First time in implementing auction according to NBTC Act (2010). Auction allows basis for fair and transparent spectrum assignment

This spectrum auction is the first act in injecting spectrum supply where demand has been growing exponentially for almost a decade

First milestone to transform from traditional concessionaire regime to licensing regime.

Source: NBTC
Mobile Market

THAILAND’S MOBILE OPERATOR MARKET SHARES Q4 2014

Source: Yozzo, with permission.
Use of Yozzo data does not imply Yozzo endorsement of views or recommendations.
There are about 30 MVNOs with Type 1 licences
Shows: (i) direct licensing of private operator (eg 2.1GHz), (ii) BTO, and (iii) SOE own operation. This is not a 'clean' structure; not all operators are directly licensed for all spectra.
“The government has set back national telecommunications policy more than a generation. The cabinet decision to re-engage the TOT-CAT Telecom duopoly marks a retreat in the treatment of taxpayers, consumers and business investment. Far from a step ahead, this decision moves us backwards. “

Are we repeating part of this?
Existing policies

‘Conversion’ is dropped

Done by direct licensing – whole industry should be, on fair and equal terms

No policy for SOE reform
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
i) Government departments providing monopoly post, telephone and telegraph (‘PTT’) services
ii) A separated regulator which become independent.
iii) Corporatisation, often with postal services restructured to another entity
iv) At least partial privatisation
v) Injection of different financial targets and seeking out value-adding roles
vi) The reformation or restructuring of the SOE
Evolution of the SOE

Based on global experience and state practice:

i) Government departments providing monopoly post, telephone and telegraph (‘PTT’) services

ii) A separated regulator which become independent.

iii) Corporatisation, often with postal services restructured to another entity

iv) At least partial privatisation *Stalled here about 2002-2003*

v) Injection of different financial targets and seeking out value-adding roles

vi) The reformation or restructuring of the SOE

*Many examples: TM, Telstra, Singtel, TM, NTT, BT, Ooredoo, Telenor*
At the JFCCT/EABC Conference 2 July 2013 ‘Unlocking ICT’ two MNCs which started as government department (PTTs) described their evolution to being world-class participants in the sector. The following slides are extracts.

BT

NTT

More information is at http://www.eabc-thailand.eu/advocacy/102/ict.htm

History of NTT Group

1952: NTT was established from Ministry of Post and Telecom

1987: NTT was privatized and listed in Tokyo Stock Exchange

1995: NTT Data listed in TSE for system integration business

1998: NTT docomo was listed in TSE for mobile operation business

1999: NTT was re-organized into four companies
   → NTT Holdings, NTT Communications, NTT East, NTT West

2004: NTT Urban Development was listed in TSE for real estate business

2011: Dimension Data joined NTT group
80s’ – Mark the beginning of two decades of market liberation

1878: Early telephone services provided by private sector (e.g. National Telephone Company); General Post Office entered competition soon

1896: GPO took over NTC’s trunk telephone services

1912: GPO took over private sector and became telephone service monopoly in UK (as a department of central government)

1934: Privatization of >50% British Telecom

1993: 100% privatization, renaming to BT and introduction of a new segment specific structure, succession of a number of strategic alliances worldwide

1994: BT & MCI (US) launched Concert Communication Services ($1b JV) to provide global network for E2E advanced business services

1969: GPO became a public corporation with two divisions: Post and Telecommunications

1996: BT & MCI announced merger agreement

1981: Creation of two separate corporations and renaming to British Telecom

1997: MCI sold stake to WorldCom

1982: First market liberalization with licensing telecom operations to Cable & Wireless

1998: 50:50 global JV (Concert) with AT&T announced

2000: Local Loop Unbundling (LLU) in UK

1984 – Privatized, End of Monopoly

New Corporate Identity – BT Global Expansion & JV
The 21st Century: Divestments, Re-Organisation, Streamline & Acquisitions

1878: Early telephone services provided by private sector (e.g., National Telephone Company); General Post Office entered competition soon.

1896: GPO took entire telephone sector and service management into government.

1912: GPO to develop and operate telephone services on behalf of government.

1969: GPO became a public corporation with two divisions: Post and Telecommunications.

1982: First mobile service with licensing and no handset sale to customer.

1984: Privatization of >50% British Telecom.

1993: 100% privatization, renaming to BT and introduction of a new segment-specific structure, succession of a number of strategic investments.

2001: BT restructuring and debt reduction program started: unwinding of Concert due to telecom market downturn; demerger of Yell and BT wireless (mmO2).

2004: Launch of 21CN (the world most ambitious and radical next generation network transformation).

2006: Launch of Openreach that manages UK access network on behalf of the telecoms industry.

2005: >100,000 lines unbundled; important global acquisition (e.g., Infonet, Albacom, Radianz, Frontline).

A new BT in a competitive new world.

BT in UK – retail fixed, wholesaler, sold O2 (mobile).
BT outside UK

BT Global Services – grew from strength to strength

- BTGS contributes about £8bn revenue from customers in over 170 countries
- 40% of BT Group Revenue in Year 2012

Gartner Magic Quadrants assesses suppliers on delivering services for WAN, MPLS, IPSec, Ethernet, Voice and dedicated internet access including managed VPN
Transform/evolve from instrument of national policy, to competitive, innovative network operator

Not holding the torch of competition to the PTT (stopping it going through a painful transformation) hinders efficiency gains in the whole industry, hampers cost effectiveness and innovation, holds back the ‘hub’ status

Merge: almost all countries have

Focus on strengths: infrastructure, local fixed
Role of SOEs 2 – Recommended policies

Global experience shows that this is a difficult but necessary process. It is still not being addressed in Thailand.

We see a missing law (#10 in our list) to cover this. Needs:

• Company alone cannot do this (needs political will)

• Focus of SOE strengths -- strategy on wholesale, infrastructure and base fixed services supply

• Do not pursue retail mobile – exit from that space

• MVNO: is this working? better to leave to private sector?

• Industrial: all personnel should have a job – but invest retraining, re-skilling; hire elsewhere as necessary

• Licensing on same terms for all
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
Broadband – which model?

A new monopoly – no competition allowed? – eg NBN 1 Australia

A new fibre company – competition allowed? – eg NGNBN

Targeted development – eg HSBB Malaysia

Whichever model – needs a wholesale market to be cost effective.

Pooling of infrastructure may work if facilities completion is allowed (policy should be a base network; focus on backbone, backhaul – allow for FTTx connection and recognise mobile broadband).

Mobile broadband will continue to development in spectral efficiency

How will a government-run last mile policy work? What about private sector mobile?

The strategy and choice need industry and user group consultation. Following are illustrations of different approaches.
Model ca 2010 - Thailand

New 3-Layer Open Access
ICT National Broadband Network Model

1. Passive Companies
   - FiberCo #1 (derivative of TOT)
   - FiberCo #2 (derivative of CAT)
   - International Connectivity #1, #2,....?
   - National Broadband Network Project Scope

2. Active Companies
   - Wireline Access #1
   - Wireless Access #1
   - Broadcast Access #1

3. Retail Service Providers
   - Fixed Ops
   - Mobile Ops
   - Others such as Govt and MVNOs

Source: Thailand National Broadband Network Committee
NGNs are not Telco networks

- Governments should not start from an ‘incumbent Telco’ paradigm.
- These NGNs are fundamental infrastructure that should be structured and governed as basic utilities rather than as Telco networks.
- A utility approach allows the independent operator to capture the available economies of scale and pass the benefits along to the market.
- Public-Private partnerships are a good structure to use to build these NGNs as both public and private capital are often required.

Source – Axia Net Media with broadband networks in Alberta, France, Singapore
Create Choice and Competition

Web Services
- Voice/Video/Data
- Google
- Skype/VoIP
- Salesforce.com
- eBay
- IPTV
- Facebook
- iTunes
- eCommerce
- YouTube
- eHealth, eLearning
- Video on Demand
- eBanking

Independent Network Operator
- Bandwidth
- VPNs
- QoS
- Connectivity and Transport
- Provider of Last Resort
- Community Interconnect
- FTTP for Government
- Fibre to incumbent exchanges
- FTTP USO for new developments

DSL/Other Service Providers

Wireless Service Providers

Incumbent Telco Networks

JFCCT/EABC for ETDA 28 Mar 15
A Definition of an Open Access Next Generation Network

Open Access:
> Creates truly open network that is available to all parties at same low bandwidth rates.
> Solves Digital Divide with single rate structure regardless of rural, regional or metropolitan users.
> "Operator neutral" networks that provide no preference in rates or terms to any one or group of market participants.
> No conflict – the NGN operator cannot compete with its customers (but passive shareholders may be providing other networks and services IF the structure is right)
> Unbundles the fibre network infrastructure from the Application Services layer driving value, choice and competition for the end user.

Next Generation Network:
> Build an open-access fibre core network and push it as far into the access layer as possible – future proof solution is Fibre-to-the-Premise everywhere.
> Fully converged Internet Protocol (IP) based leveraging MPLS and DWDM as appropriate
> Support high-speed wireless local access (WiMax, 3G/4G, etc.)

Source: based on comments from Axia Net Media
Malaysia – HSBB – targeted focus

Northern Economic Corridor Region
Ports: 100,000

Iskandar Malaysia & South Johor
Ports: 103,000

Pahang & Terengganu
Ports: 10,300

Sarawak
Ports: 26,000

Sabah
Ports: 6,500

Klang Valley
Ports: 1.23 million

Negeri Sembilan & Melaka
Ports: 25,500

Note: Graphics not to scale
Source: TM internal

33% household coverage & over 40% take-up in 5 years

JFCCT/EABC for ETDA 28 Mar 15
Possible Industry Models - Singapore

Network Components
- Retail Services
- Active Network
- Passive Network

Model 1
- RSP
- RSP
- RSP

Model 2
- RSP
- RSP
- RSP

Model 3
- RSP
- RSP
- OpCo
- OpCo

JFCCT/EABC for ETDA 28 Mar 15
Next Gen NBN Open Access Model -SG

Network Company (NetCo)
Responsible for the design, build and operation of the Network’s passive infrastructure

Operating Companies (OpCos)
Responsible for the design, build and operation of the Network’s active infrastructure

Retail Service Providers
Purchase bandwidth from OpCos and provide competitive and innovative services

End-Users
Consumers / Businesses

Retail Services

Wholesale Bandwidth Services
(Layer 2 & Layer 3 Open Access)

Wholesale Wirelines
(Layer 1 Open Access)

Services
(including services & CPE)

Active Infrastructure
(including switches & routers)

Passive Infrastructure
(including wirelines & ducts)

Consumers / End-users
Competing With Your Customer Does Not Work

Web Services
Google, eBay, Facebook, Skype, MSN, YouTube, Yahoo, SaaS, VOIP, IPTV…

Application Enabling Services and Real Broadband

Fibre

> Sustained competition and diversity provides end user choice

Transport Services
> Fibre is Natural monopoly
> Excellent economies of scale
> Regulation ensures economies of scale are passed through to customers

Source: based on comments from Axia Net Media

Ownership Separation
75%$

25%$

JFCCT/EABC for ETDA 28 Mar 15
# Economics – fibre - layered

<table>
<thead>
<tr>
<th>Layers</th>
<th>Characteristics</th>
<th>Asset Life (years)</th>
<th>EBITDA Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services: broadband, cable TV, security &amp; smart home</td>
<td>Services. Focus on content, branding, customer service and pricing.</td>
<td>&lt;5</td>
<td>15%-20%</td>
</tr>
<tr>
<td>Active equipment / systems</td>
<td>Provides and operates the active equipment</td>
<td>6-7</td>
<td>20%-25%</td>
</tr>
<tr>
<td>Passive (ducts &amp; fibre)</td>
<td>Initially expensive but long life assets. When shared or open tend to form natural monopoly.</td>
<td>Fibre 25 Ducts 40+</td>
<td>95% but big capex</td>
</tr>
</tbody>
</table>

Source: FTTH Council Asia Pacific June 2014
3 layer model

**SP**: Service Provider

**CO**: Communications Operator

**IO**: Infrastructure Owner

Source: FTTH Council Asia Pacific June 2014

JFCCT/EABC for ETDA 28 Mar 15
Typical money & service flows for infrastructure finance or open networks

Service Flow

- **Triple play package**
  - 100 Mbps Internet
  - TV bundle
  - Telephony

- **Network Services**
  - Network access
  - Provisioning
  - Network mgmt.
  - Billing data

- **Infrastructure**
  - Fiber planning & build
  - Passive network access

**End User**

**Neutral Operator – Powered by VenturaNext**

**Fibre Infrastructure Owner**

Money Flow

- **End User pays SP**
- **SP pays Operator**
- **Operator pays Infra Owner**

Fiber Infrastructure Owner and Operator will receive the income independent of whichever Service Provider delivers the service to the End User.

* Per active user and/or per premise passed

Source: FTTH Council Asia Pacific June 2014
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
Data Centres

Layers
- Secondary operator
- Primary operator
- Real Estate

Commercial returns exist – why a policy for government to build, own and even operate (operate other than possibly for some government functions)?

BOI promotion available.

Also needs backhaul, full international gateway liberalization and work permit, visa reform for it to work
BSA Cloud Scorecard

2013 BSA Global Cloud Computing Scorecard

Several countries have made marked improvements in the policy environment for cloud computing in the past year. These findings are based on the BSA Scorecard’s one-of-a-kind examination and ranking of 24 countries that account for 80 percent of the global ICT market.

24 economies representing 80% of the world’s IT spend

Source: Business Software Alliance 2013
Cloud Scorecard criteria

I. Data Privacy

II. Security

III. Cybercrime

IV. Intellectual Property Rights

V. Industry-led standards & int’l harmonisation of rules

VI. Promoting Free trade

VII. ICT Readiness
Centres of Innovation - hubs

Good soft and hard infrastructure
- ports, airports, communications, real estate, local transport
- Sound legal and financial systems, IP protection, sound regulation and procedures, fair playing fields promoting free and fair competition

Pro-business polity; Favorable government policies, economic stability

Skilled, educated workforce

Global linkages with low cost, efficient logistics

- Specialized business service infrastructure: VCs, lawyers, dispute resolution, accountants, etc.
- High quality of life (safety, education, personal development) and creature comforts for families; stimulating cultural offerings

Trade / commerce or financial hub

JFCCT/EABC for ETDA 28 Mar 15
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
Independence - NRA

Essential for investor / operator confidence

1. Independent of government, but may broadly follow policy

2. Independent of any operator

3. Internal governance to ensure independence of direction.
Governance

NBTC currently a fully executive board

What about some independent directors/commissioners?

Examples:

• Other regulators – eg iDA, ACMA
• SET listed companies
• Other government agencies in Thailand
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
Building blocks in the telecommunications industry – licensing perspective

Foreign equity limits

Under FBA

Category 1 licensees

Category 2 licensees

Category 3 licensees

Under TBA

More cat 1 than 2, than 3.

Cost-based access to infra, backhaul etc

JFCCT/EABC for ETDA 28 Mar 15
AFAS – Expected foreign equity levels

<table>
<thead>
<tr>
<th>Year</th>
<th>Air Transport. &amp; ASEAN. Healthcare. Tourism.</th>
<th>Logistics</th>
<th>All remaining Service sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>51%</td>
<td>49%</td>
<td>49%</td>
</tr>
<tr>
<td>2010</td>
<td>70%</td>
<td>51%</td>
<td>51%</td>
</tr>
<tr>
<td>2013</td>
<td>70%</td>
<td>51%</td>
<td>51%</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td>70%</td>
<td></td>
</tr>
</tbody>
</table>

-------Priority sectors--------

Competition for skills and capital – will we be ready?

ASEAN Framework Agreement on Services
### Networked Readiness Index – ASEAN extracts

<table>
<thead>
<tr>
<th>ASEAN Member State</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>54</td>
<td>57</td>
<td>45</td>
</tr>
<tr>
<td>Cambodia</td>
<td>108</td>
<td>106</td>
<td>108</td>
</tr>
<tr>
<td>Indonesia</td>
<td>80</td>
<td>76</td>
<td>64</td>
</tr>
<tr>
<td>Laos</td>
<td>N/A</td>
<td>N/A</td>
<td>109</td>
</tr>
<tr>
<td>Malaysia</td>
<td>29</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Myanmar</td>
<td>N/A</td>
<td>N/A</td>
<td>146</td>
</tr>
<tr>
<td>Philippines</td>
<td>86</td>
<td>78</td>
<td>86</td>
</tr>
<tr>
<td>Singapore</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Thailand</td>
<td>77</td>
<td>74</td>
<td>67</td>
</tr>
<tr>
<td>Vietnam</td>
<td>83</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td><strong>Total economies</strong></td>
<td><strong>142</strong></td>
<td><strong>144</strong></td>
<td><strong>148</strong></td>
</tr>
</tbody>
</table>
## Liberalisation of services – applied to ICT

### General
- Liberalise foreign equity limits
- Free movement of skills (talent)
- Sector specific changes and mandates
- Other sector-specific reforms

### ICT – esp Info-Comms
- Probably in a structured way
- Especially specialist skills (technical and non technical)
- Permits, licences and operating rules not skewed against new entrants (local or foreign); remove targeted anti-foreign laws
- Structural change – access to facilities, query role of SOEs.

JFCCT/EABC for ETDA 28 Mar 15
Applies to all cat 2 and cat 3 TBA licensees. Originally made by NTC in last few days in office (Aug/Sep 2011), revised by NBTC – reissued July 2012.

September 2012: Norway, supported by US, EU & Japan – action in the GATS Council for Trade in Services; on going

Message: “Foreign investment not really welcome in the sector”

Two main reasons for lack of additional bidders in 3G auction 2012:

- Regulatory certainty missing at the time
- Foreign Dominance Notification
Centres of Innovation - hubs

Good soft and hard infrastructure

- ports, airports, communications, real estate, local transport
- Sound legal and financial systems, IP protection, sound regulation and procedures, fair playing fields promoting free and fair competition

Pro-business polity; Favorable government policies, economic stability

Skilled, educated workforce

Global linkages with low cost, efficient logistics

- Specialized business service infrastructure: VCs, lawyers, dispute resolution, accountants, etc.
- High quality of life (safety, education, personal development) and creature comforts for families; stimulating cultural offerings

Trade / commerce or financial hub
“Made in Thailand”

1. Transfer core competencies & build on comparative advantage strengths
2. Deploy, develop (talent pool, collaborations), enhance locally based talent
3. Springboard into world

Which policies will support this?
Agenda

1. Digital Economy building blocks
2. Telecoms industry development
3. Evolution of the State-Owned Enterprise – the former ‘PTT’
4. Broadband Models
5. Data Centres
6. Independent National Regulatory Authority (NRA)
7. Foreign Investment
8. Digital Economy family of laws
<table>
<thead>
<tr>
<th>Ref</th>
<th>Name of Law</th>
<th>Purpose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frequency Act, aka NBTC Act</td>
<td>Amends Frequency Act 2010, role of NBTC and how spectrum is issued.</td>
<td>• Robust independent NBTC important;  &lt;br&gt;• ‘policy’ vs ‘regulation’.  &lt;br&gt;• Too much power to a committee</td>
</tr>
<tr>
<td>2</td>
<td>Personal Data Protection Law</td>
<td>PDP law will affect all</td>
<td>• Purpose should be about confidence in the jurisdiction and consumer protection,  &lt;br&gt;• Cross border insufficient;</td>
</tr>
<tr>
<td>3</td>
<td>Computer Crimes Act amendments</td>
<td>Tighten CCA</td>
<td>Surveillance, record keeping?</td>
</tr>
<tr>
<td>4</td>
<td>Digital Development for Economy and Society</td>
<td>Consolidates into one law, these three laws:</td>
<td>Policy making powers in a committee.  &lt;br&gt;What checks and balances?  &lt;br&gt;Establish National Digital Economy Promotion Committee and committee office  &lt;br&gt;Establish Digital Dev Fund for Economy and Society, DDF for E&amp;S Committee.</td>
</tr>
<tr>
<td>5</td>
<td>Ministry, Department and Bureau Reform law</td>
<td>Reforms MICT into MoDE.</td>
<td>Powers?</td>
</tr>
<tr>
<td>8</td>
<td>ETA amendment.</td>
<td>Upgrade ETA / ETDA</td>
<td>Liabilities?</td>
</tr>
<tr>
<td>9</td>
<td>Cybersecurity law</td>
<td>Due process?</td>
<td>s. 35 controversial.  &lt;br&gt;Note ‘trusted internet’ concepts.</td>
</tr>
<tr>
<td>8</td>
<td>Draft Royal Decree establishing ETDA</td>
<td>Revises ETDA</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Competition Law upgrade (missing)</td>
<td>Promote and regulate completion.</td>
<td>Should apply to telecoms sector. See separate paper on this.</td>
</tr>
<tr>
<td>10</td>
<td>Structural reform - Mandated access to wholesale services and infra from SOEs (missing)</td>
<td>Towards properly structured industry</td>
<td></td>
</tr>
</tbody>
</table>
New National ICT Agencies Structure

Ministry of Digital Economy and Society

National Committee for Digital Economy and Society

Meteorological Dept.

National Statistical Office

Office of Digital Economy

National Broadcasting and Telecommunications Commission (NBTC)

NBTC Office

50% of net revenue (from license and fee deducting expense) will be provided to the Fund and the rest shall be state revenue

National Committee for Digital Economy Promotion

Electronic Transactions Commission

Data Privacy Protection Committee

National Cyber Security Protection Committee

Digital Development for Economy and Society Committee

Office of Digital Economy and Society

Office of the National Cyber Security Committee*

Office of the National Electronic Transaction Development*

Digital Development Fund for Economy and Society

Newly established agency/committee

* -- State agency with juristic person status but not an administrative agency or state enterprise
Post view

National platform for driving the economy

Digital Economy Ministry

National Digital Economy Committee
Chairman: Prime minister

Private sector

Private sector

NBTC
National infrastructure
Investment promotion
Capacity building
Cybersecurity
Government activities
Private sector

Linkage and facilitating R&D
ICT personnel
Standards
Vocational institutes
Universities

Security and promotion and development in international level
E-Government
Online and offline Services
Chief information officers of ministries
Thai Chamber of Commerce
Federation of Thai Industries
ICT Council

Infrastructure network administration
Investment promotion for the government sector

JFCCT/EABC for ETDA 28 Mar 15
Recommendations

1. Two missing laws: Competition upgrade, evolution of industry and SOE

2. Too many powers concentrated in a committee

3. Government as enabler, facilitator, not as operator

4. NBTC needs to be and be seen to be effective, independent regulator and industry developer – transform to embrace new technologies and business models. NBTC should do spectrum planning, issuance

5. All commercial spectrum issued by auction (pre-qual by beauty contest or other may be OK)

6. NBTC – good to have three clear dimensions of independence

Source: JFCCT/Presenter
The Joint Foreign Chambers of Commerce in Thailand (JFCCT) with 30 Chamber members and almost 9,000 end company members has been active in the ICT areas for well over a decade. The EABC and JFCCT in ICT areas are a unified voice of the foreign business community in Thailand, with regional and global linkages and expertise. Through dialogue and engagement, JFCCT ICT seeks to enhance the wider ICT sectors. Policy paper was released September 2014. [www.jfcct.org](http://www.jfcct.org)

The European Centre for Business & Commerce (EABC) was established as a consortium with sixteen business organisations and chambers both in Thailand and Europe. EABC contributes towards the improvement of Trade and Investment in Thailand, foresting business co-operation between Thailand and Europe and to strengthening the Thai economy. Policy paper 2015 was released early March 2015. [www.eabc-thailand.eu](http://www.eabc-thailand.eu)