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

For

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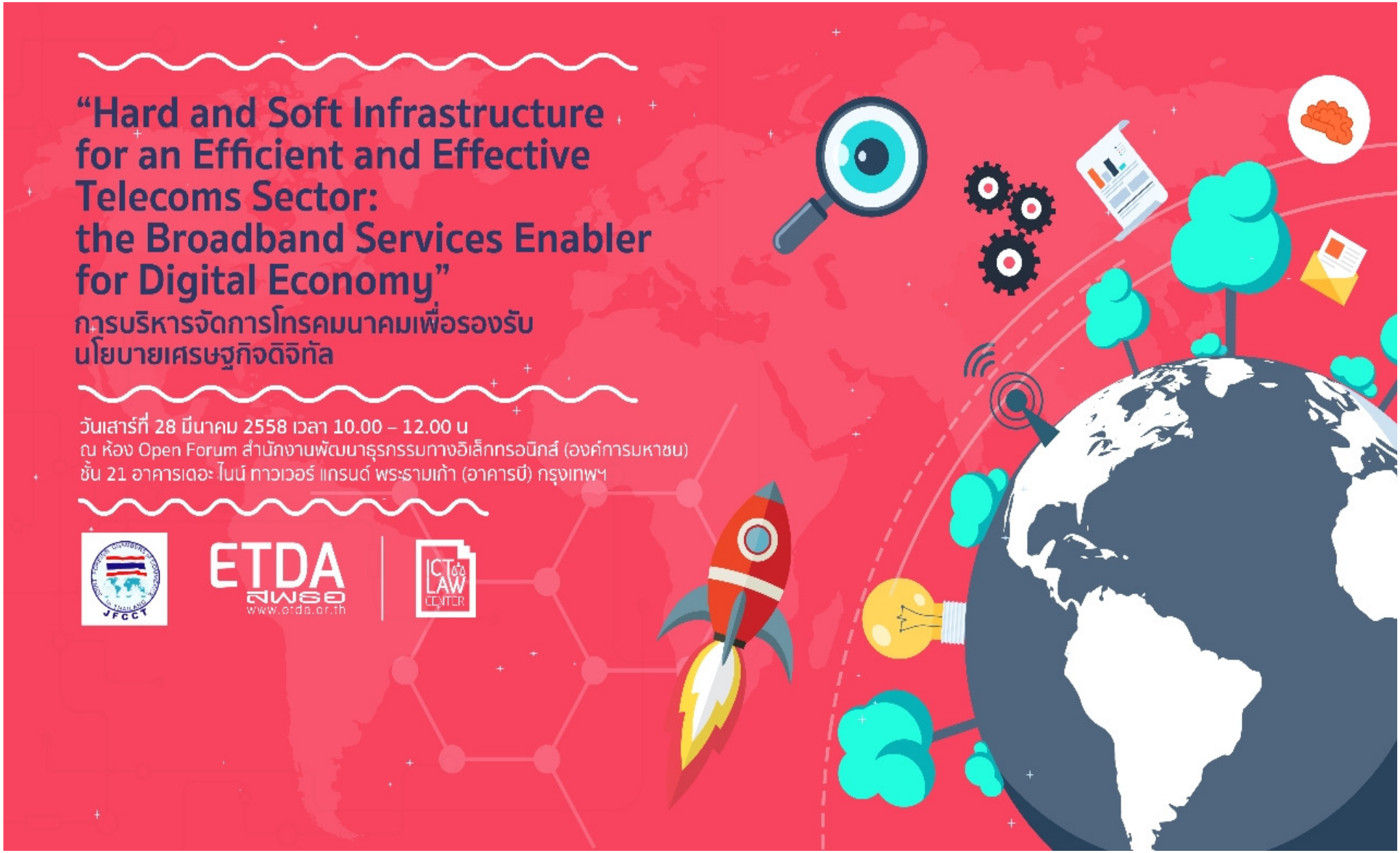
Open Forum 28 March 2015

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"
การบริหารจัดการโทรคมนาคมเพื่อรองรับนโยบายเศรษฐกิจดิจิทัล
วันเสาร์ที่ 28 มีนาคม 2558 เวลา 10.00 – 12.00 น
ณ ห้อง Open Forum สำนักงานพัฒนาธุรกรรมทางอิเล็กทรอนิกส์ (องค์การมหาชน)
ชั้น 21 อาคารเดอะ ไนน์ ทาวเวอร์ แกรนด์ พระรามเก้า (อาคารบี) กรุงเทพฯ
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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

Purpose

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.

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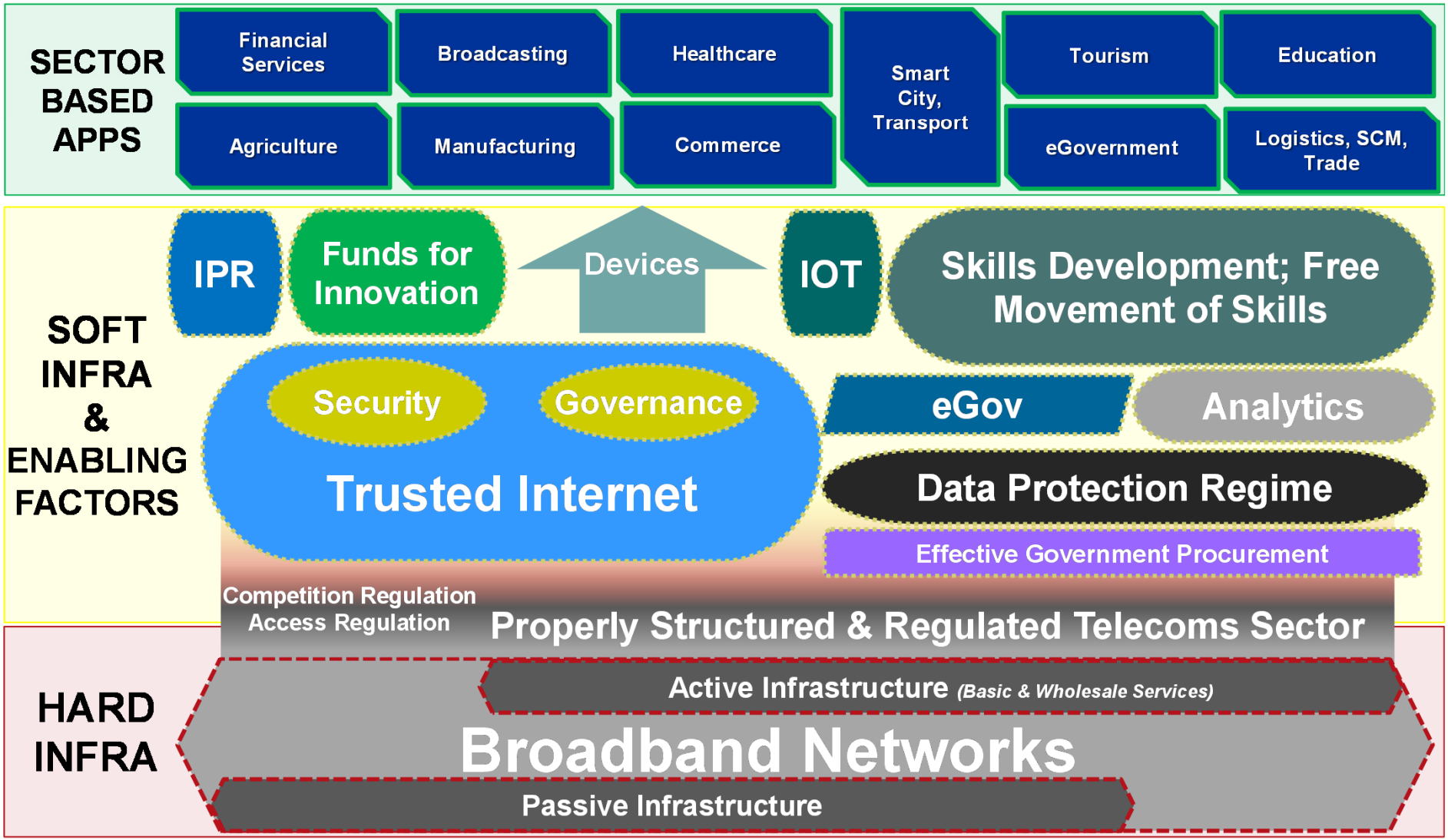
Digital Economy Schematic



Definition of Digital Economy

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

How Digital Economy should work

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.

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Dual Role of Telecommunications Services

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.

Dual Role of Telecommunications Services

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 mulitiplier

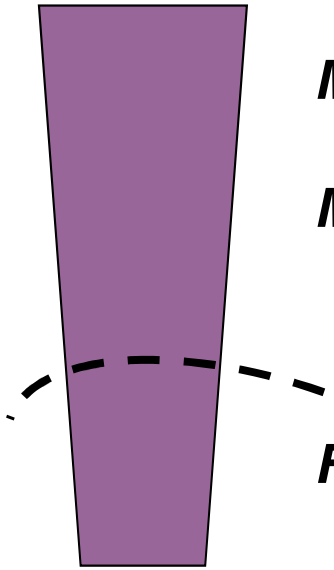
Good corporate services supporting global communications – supports MNC/RHQ/IHQ locations (this area in particular is not well understood)

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



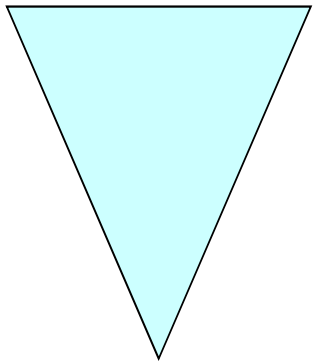
Many application service providers

More service providers

Fewer facilities-based network operators

Basis for an attractive, competitive effective industry

Layers in industry structure



CASP

ASP

NSP

NFP

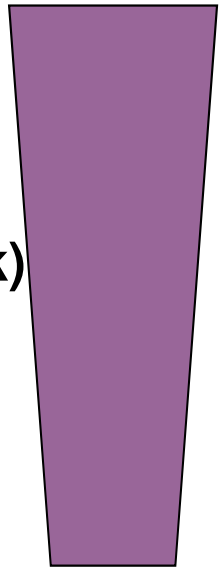
Malaysia

First cat

Second cat (no network)

Second cat (w network)

Third cat

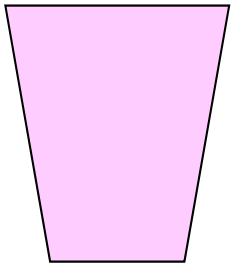


Thailand

CSBO

SBO (I)

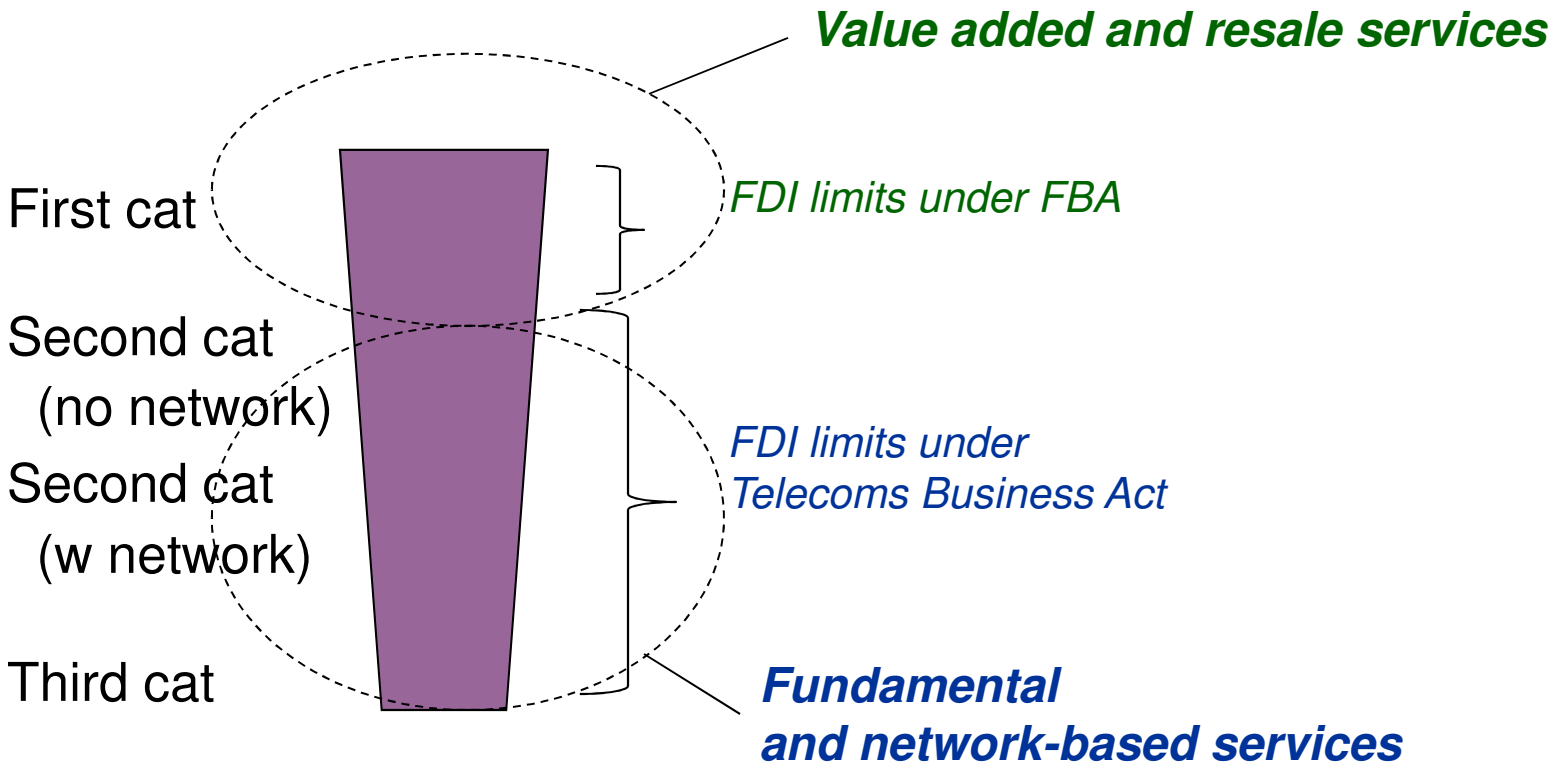
FBO



Singapore

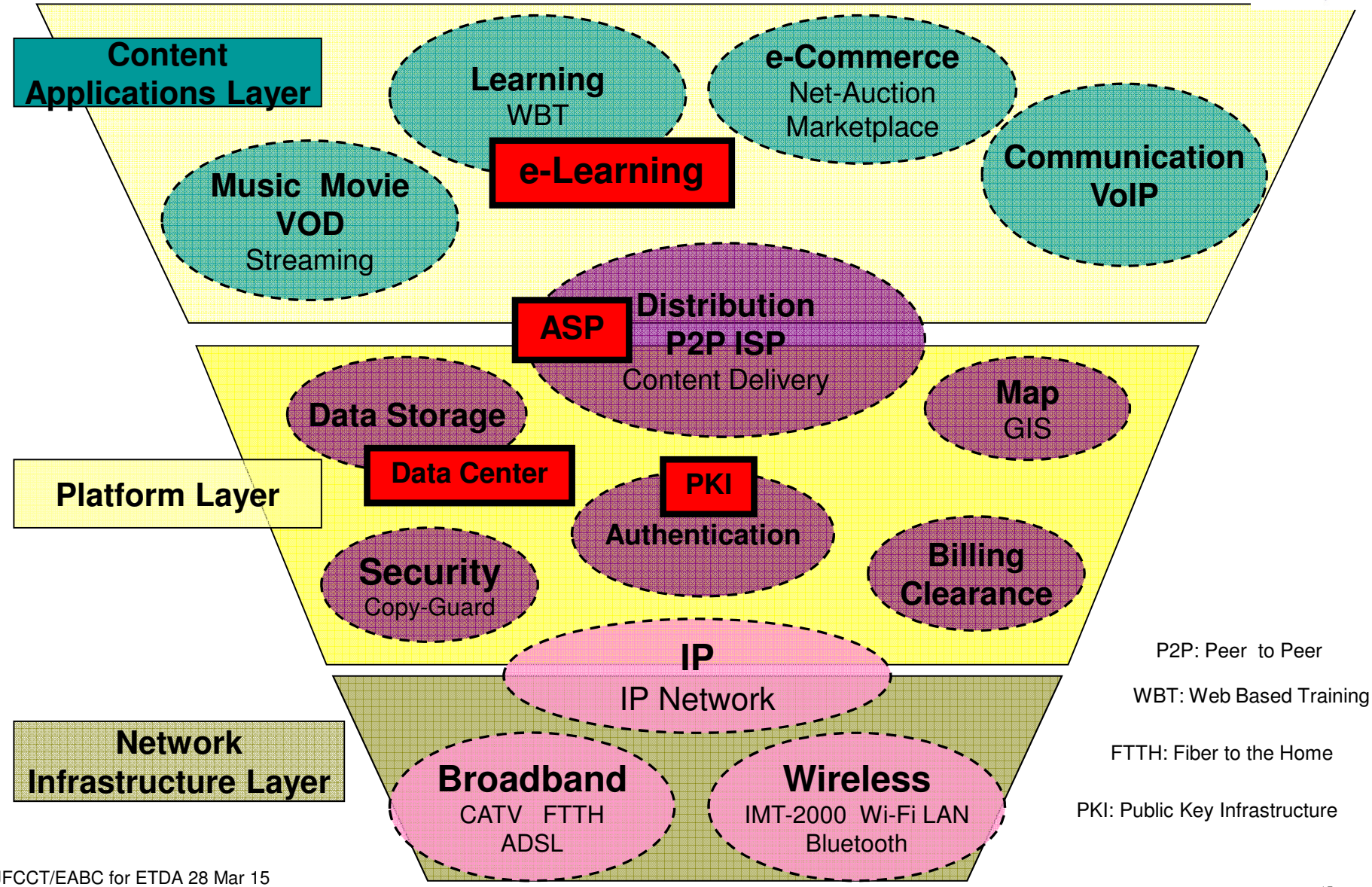
Conceptually similar industry shape

TBA Distinction amongst categories



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

Example: using internet



P2P: Peer to Peer

WBT: Web Based Training

FTTH: Fiber to the Home

PKI: Public Key Infrastructure

Network layers

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.

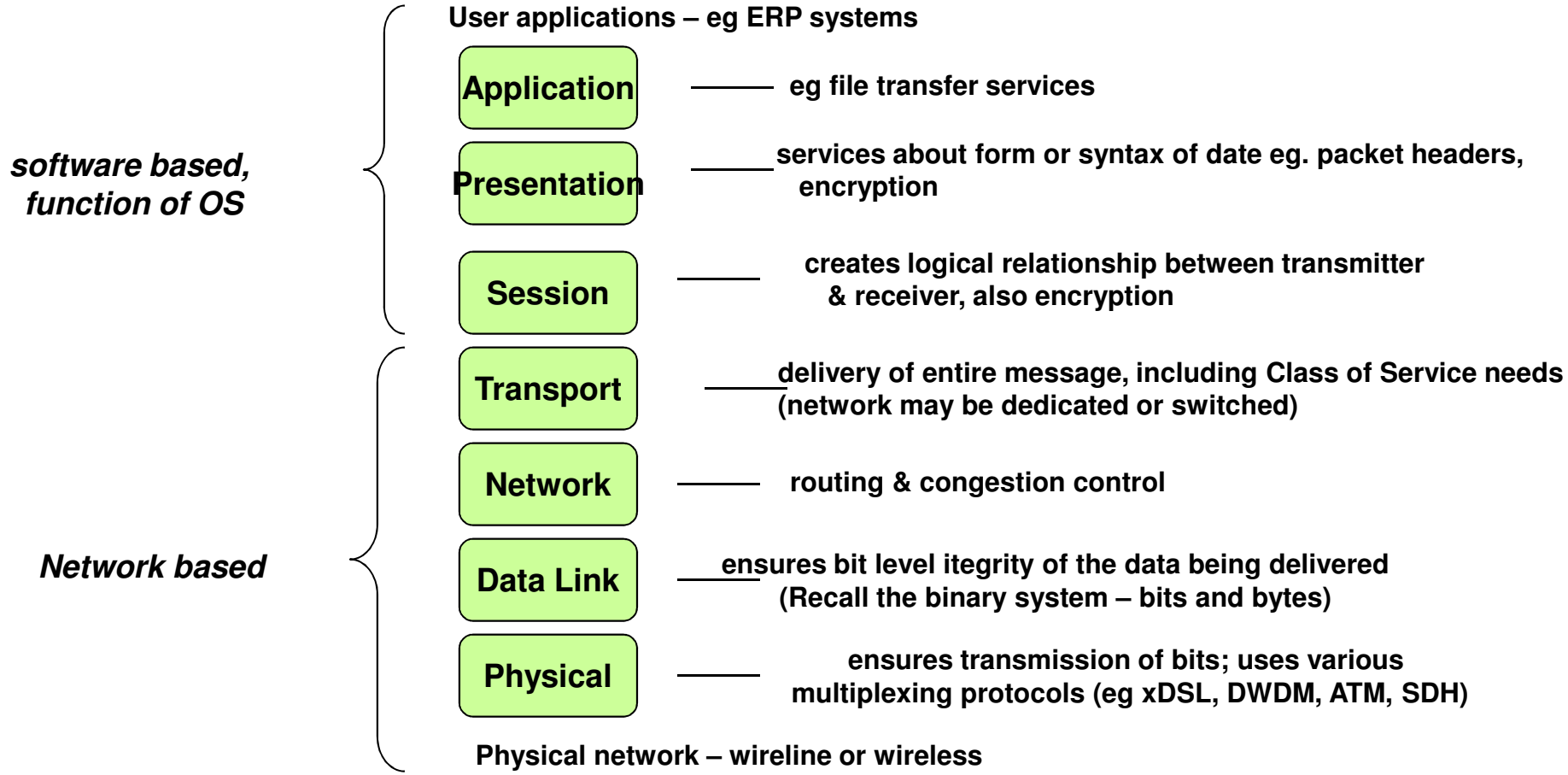
The most efficient industry structural model supports:

- **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.

Illustration
Protocols – Open Systems - layers



Open Systems Interconnection Reference Model ('OSI Model')

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

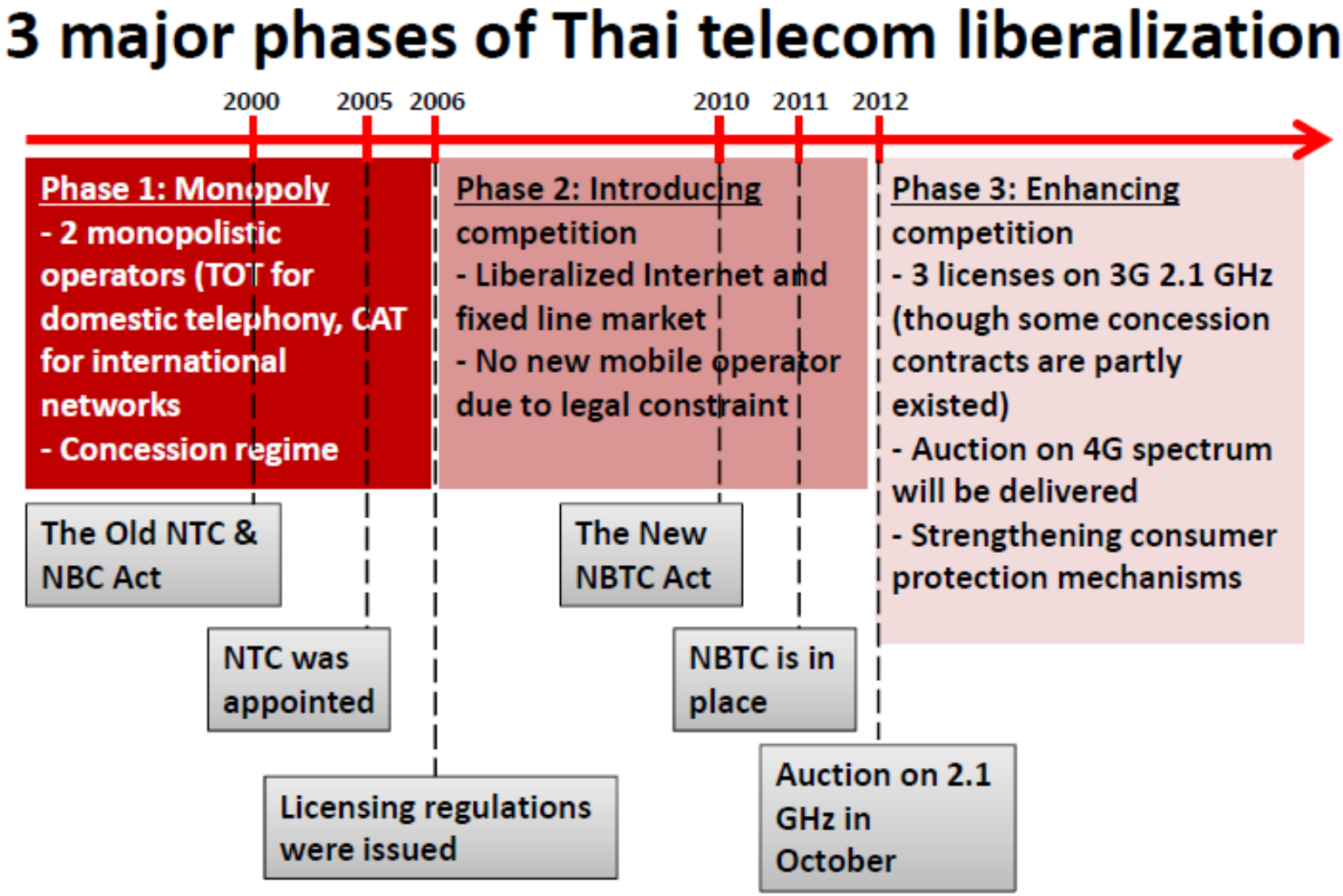
Regulation enforced

Wholesale market

Liberalisation mindset and policy

Make the industry work as a whole, not just state-owned because state-owned

From concessions to licensing

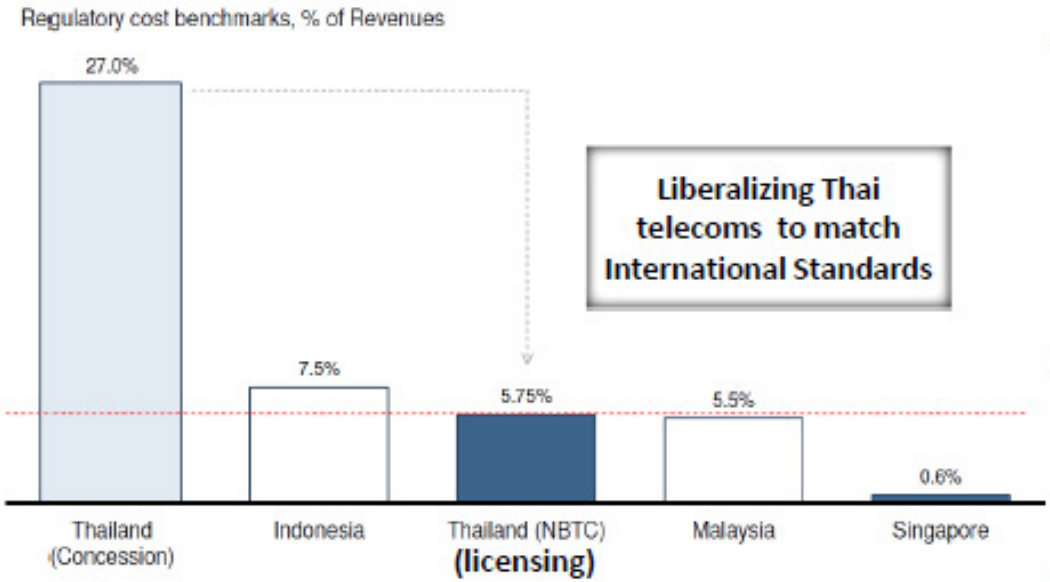


Source: NBTC

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



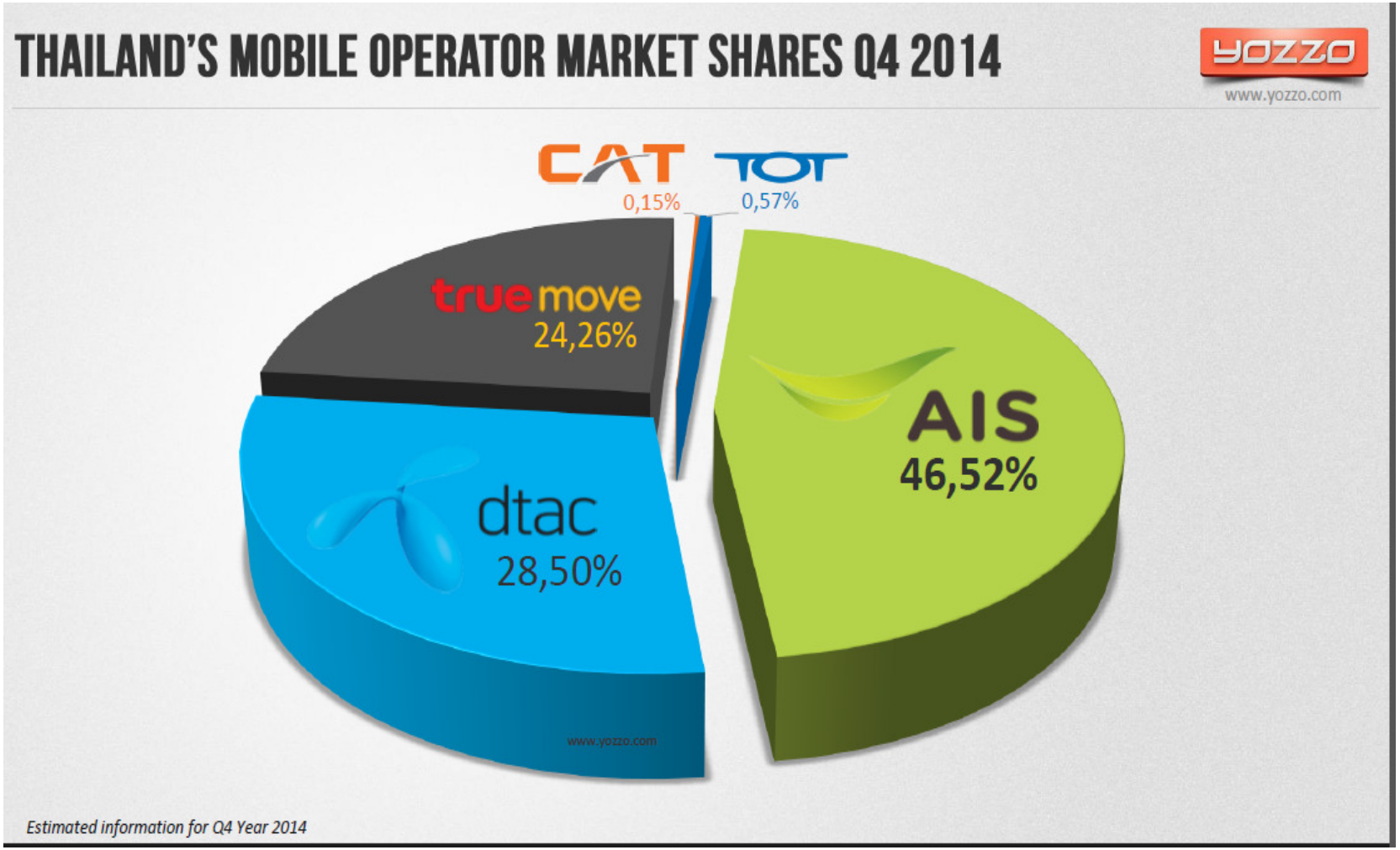
First time in implementing auction according to NBTC Act (2010). Auction allows basis for fair and transparent spectrum assignment

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

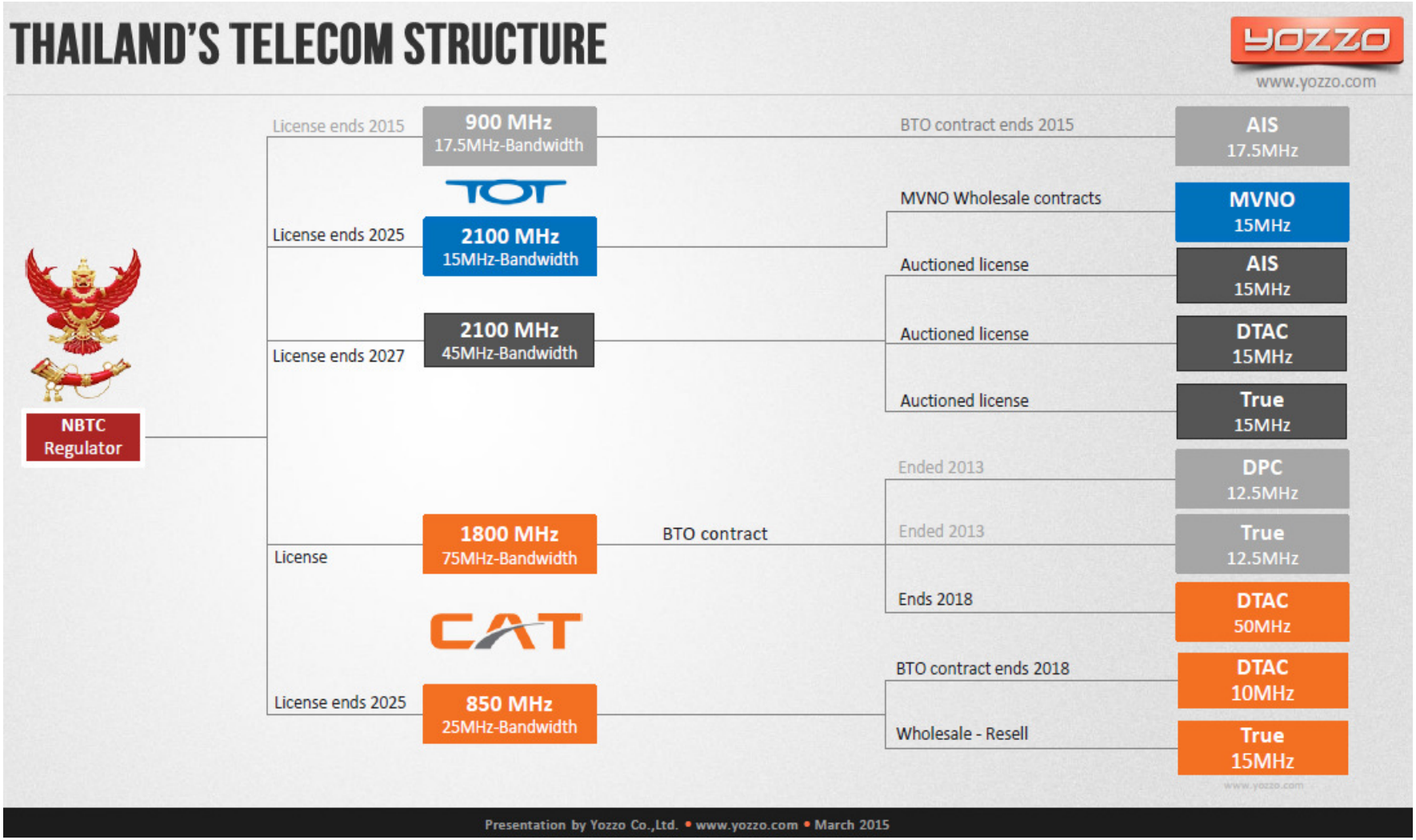


Source: Yozzo, with permission.
Use of Yozzo data does not imply Yozzo endorsement of views or recommendations.

MVNO share

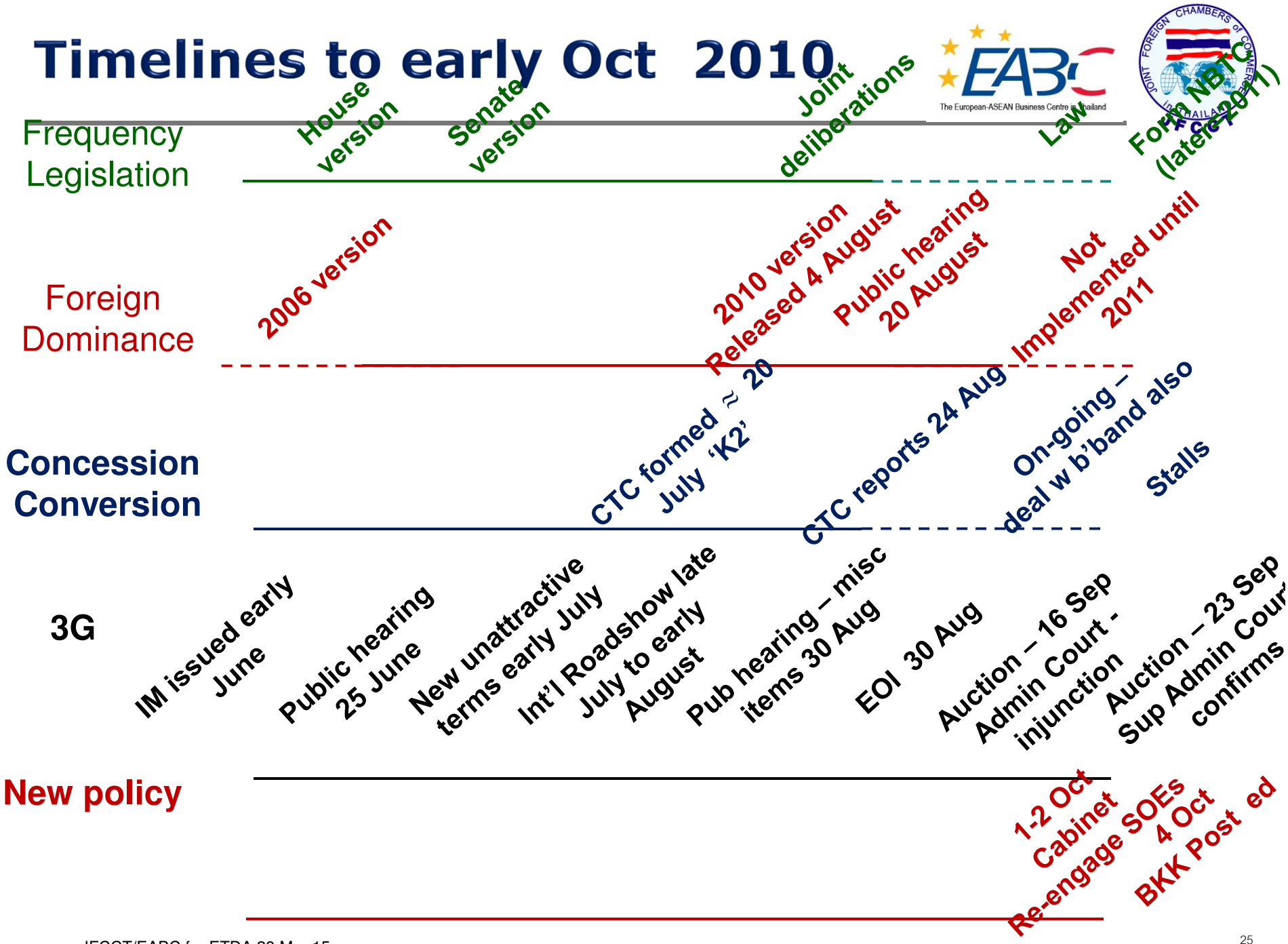
There are about 30 MVNOs with Type 1 licences

Complexity of concessions + direct licensing



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.

Timelines to early Oct 2010



BKK Post editorial 4 Oct 2010

"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

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Evolution of the SOE

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, Oreedoo, Telenor

Evolution of the SOE

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

The same theme appears in a letter to MICT here
http://www.jfcct.org/files/2012/10/ICT-SOE-Development-ICT-Minister-13-May-2013.pdf

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

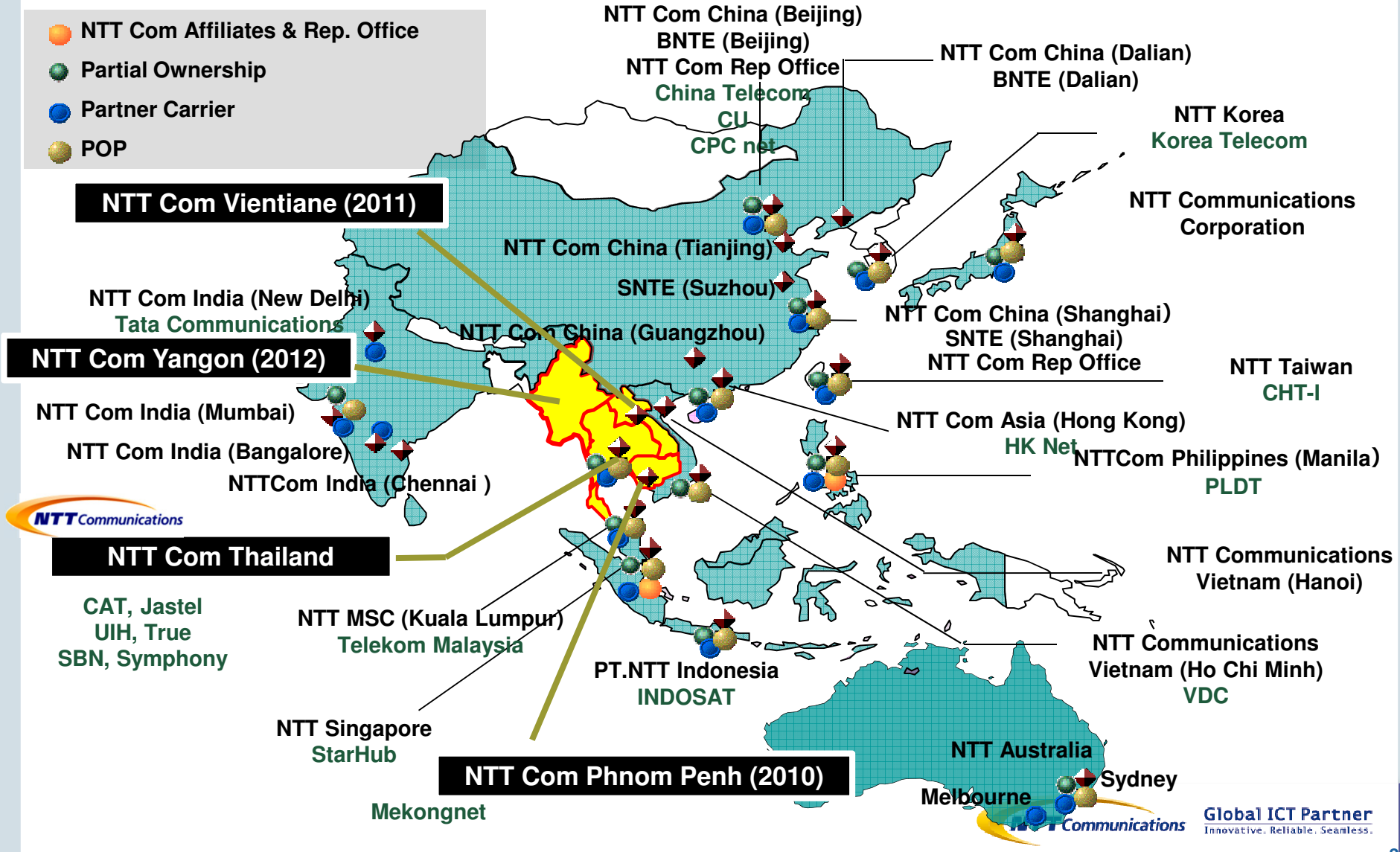
1999: NTT was re-organized into four companies
→NTT Holdings, NTT Communications, NTT East, NTT West

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

2011: Dimension Data joined NTT group

NTT Communications Global ICT Partner
Innovative. Reliable. Seamless.

NTT Asia-Pacific Footprint



BT

80s'– Mark the beginning of two decades of market liberation

1878: Early telephone services provided by private sector (eg 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)

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

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

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

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 alliances worldwide

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

1984 –Privatized, End of Monopoly

1996: BT & MCI announced merger agreement

1997: MCI sold stake to WorldCom

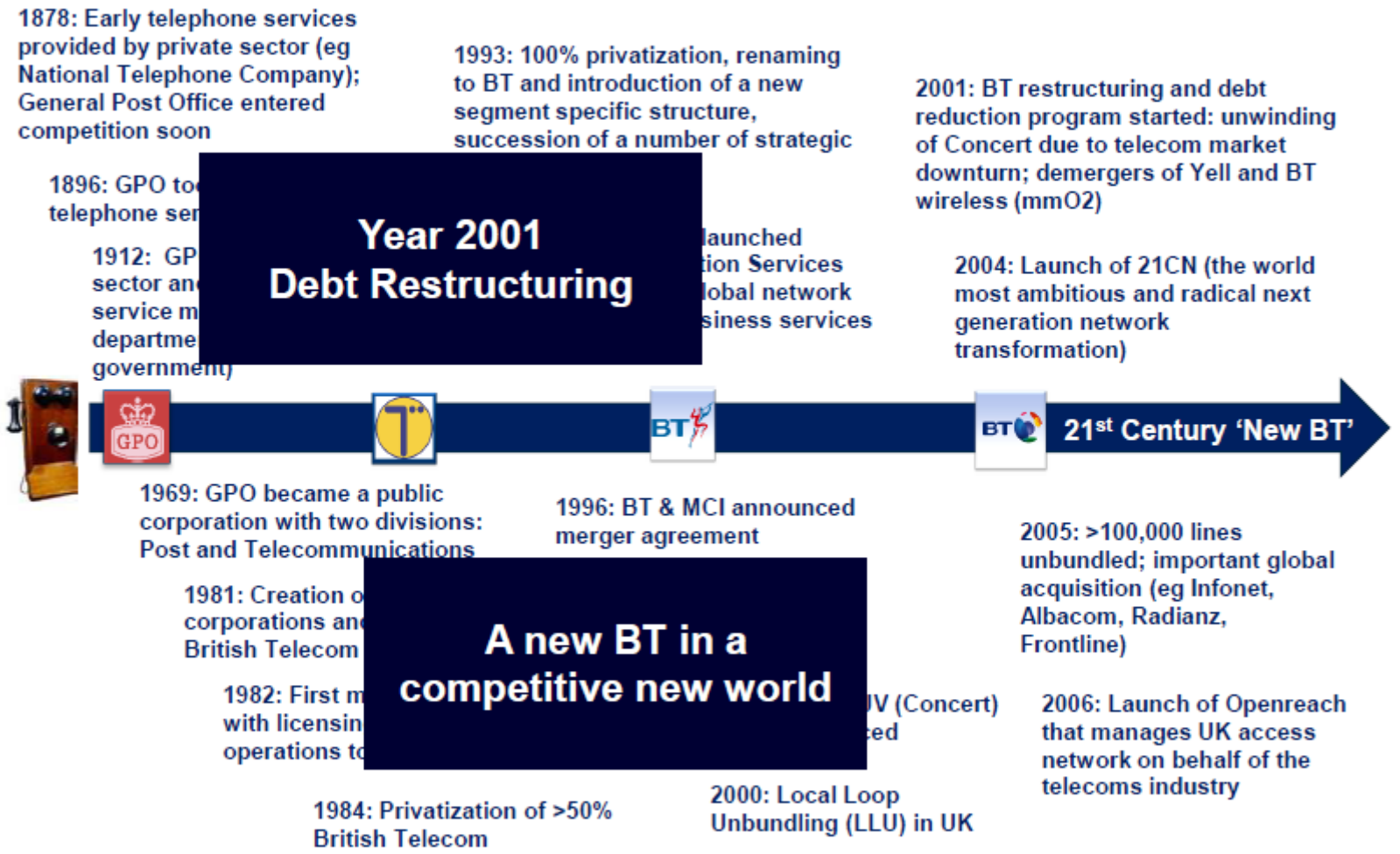
1998: 50:50 global JV (Concert) with AT&T announced

2000: Local Loop Unbundling (LLU) in UK

New Corporate Identity – BT Global Expansion & JV

BT

The 21st Century: Divestments, Re-Organisation, Streamline & Acquisitions



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

Role of SOEs 1 – Recommended policies

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

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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.

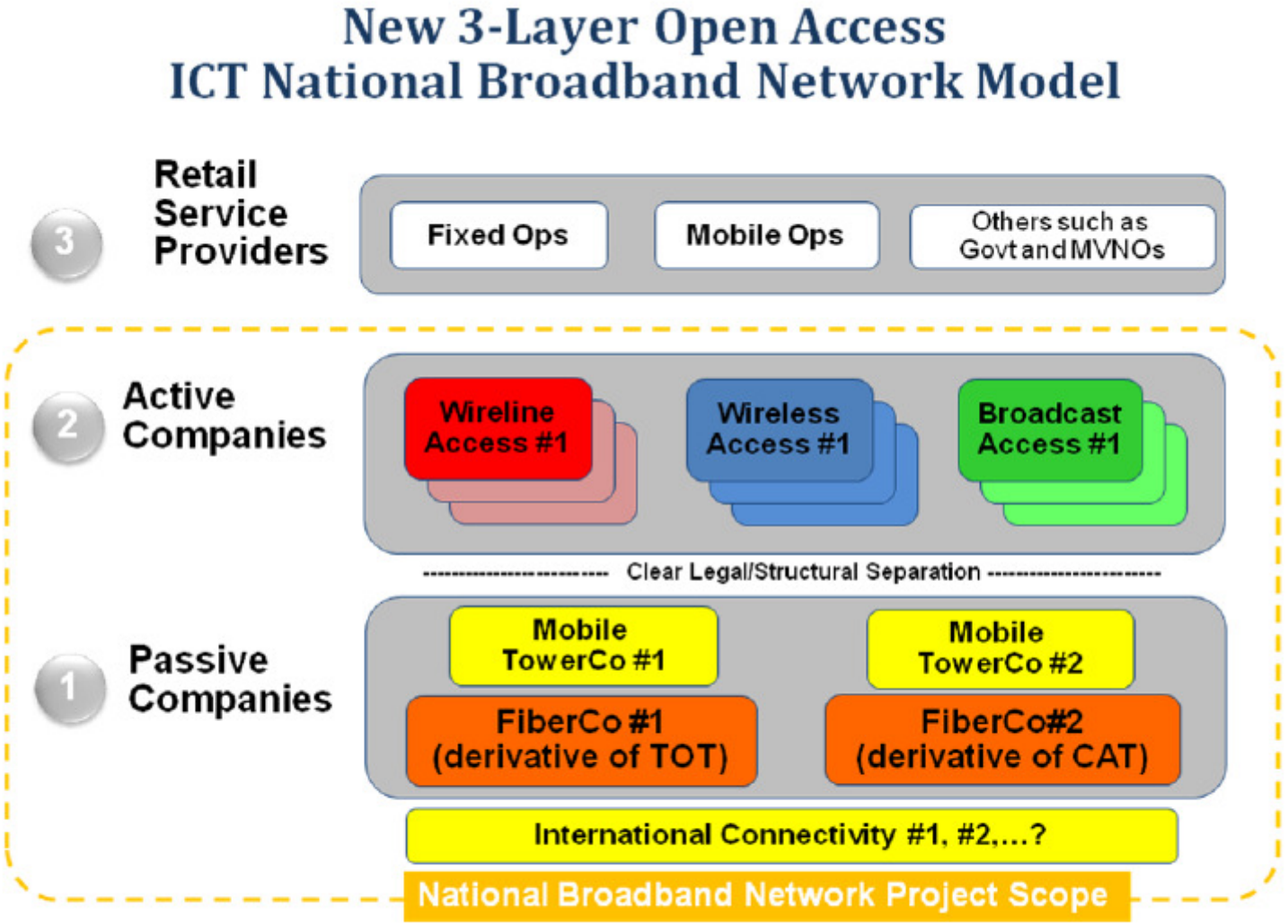
Pooling of infrastructure may work IF facilities completion is allowed (policy should be a base network; focus on backbone, backhaul – allow for FTTx connection and recognise mobile broadband).

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



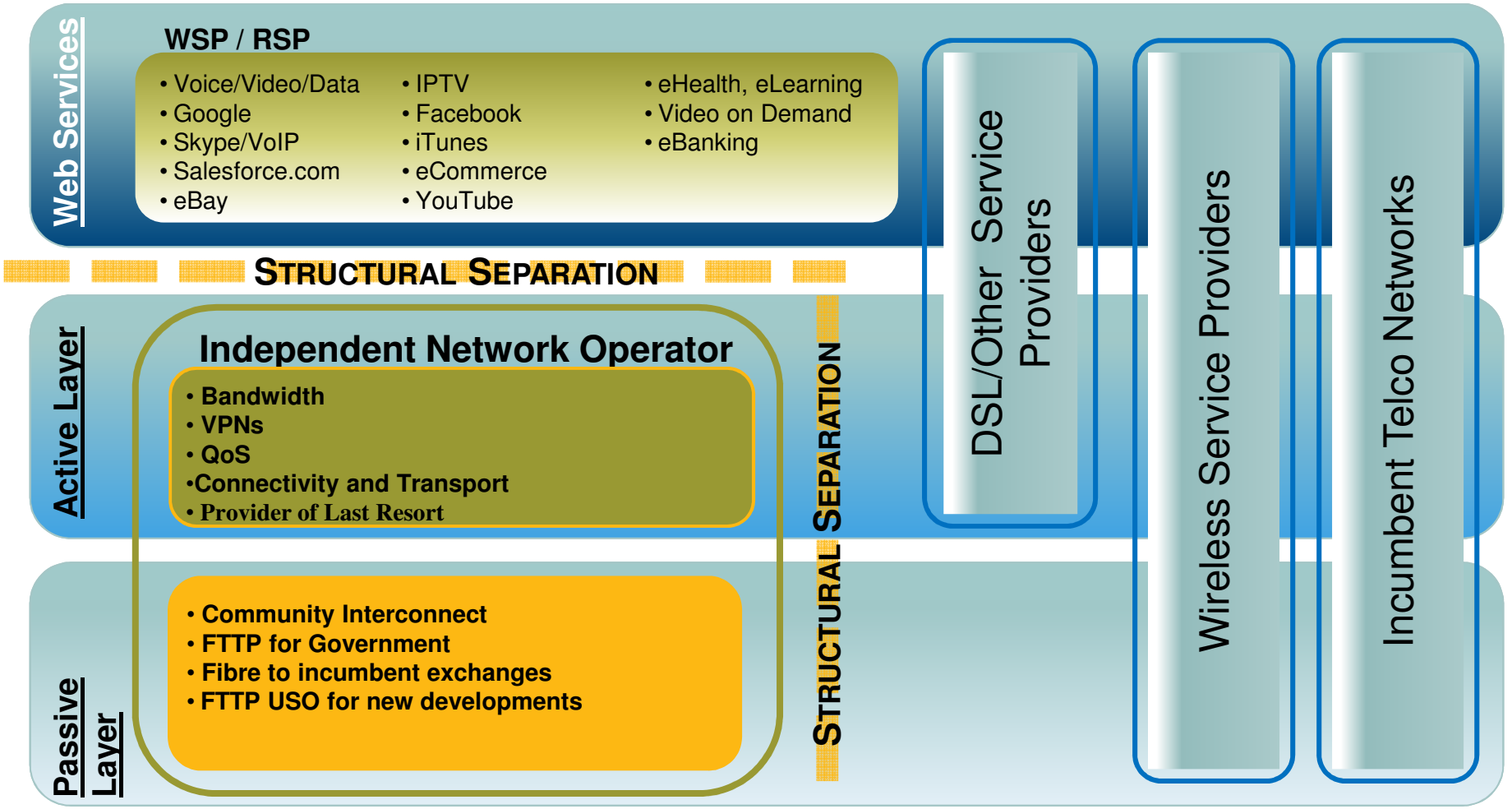
Source: Thailand National Broadband Network Committee

NGNs are not Telco networks

- Governments should not start from an ‘incumbent Telco’ paradigm.
- These NGNs are fundament 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



A Definition of an Open Access Next Generation Network

Open Access:

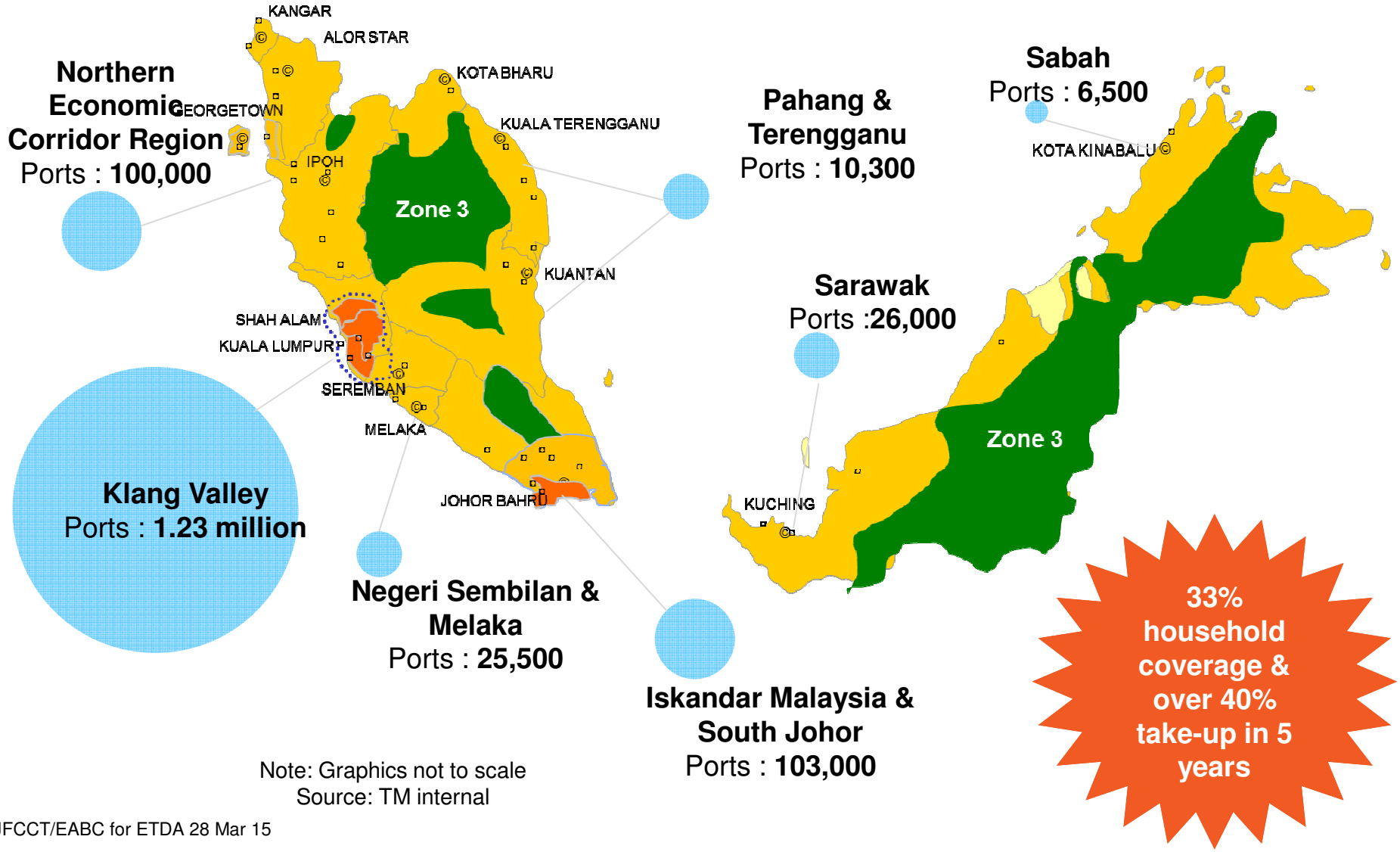
- Creates truly open network that is available to all parties at same low bandwidth rates.
- Solves Digital Divide with single rate structure regardless of rural, regional or metropolitan users.
- "Operator neutral" networks that provide no preference in rates or terms to any one or group of market participants.
- 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**

Pahang & Terengganu
Ports : **10,300**

Sabah
Ports : **6,500**

Sarawak
Ports :**26,000**

Klang Valley
Ports : **1.23 million**

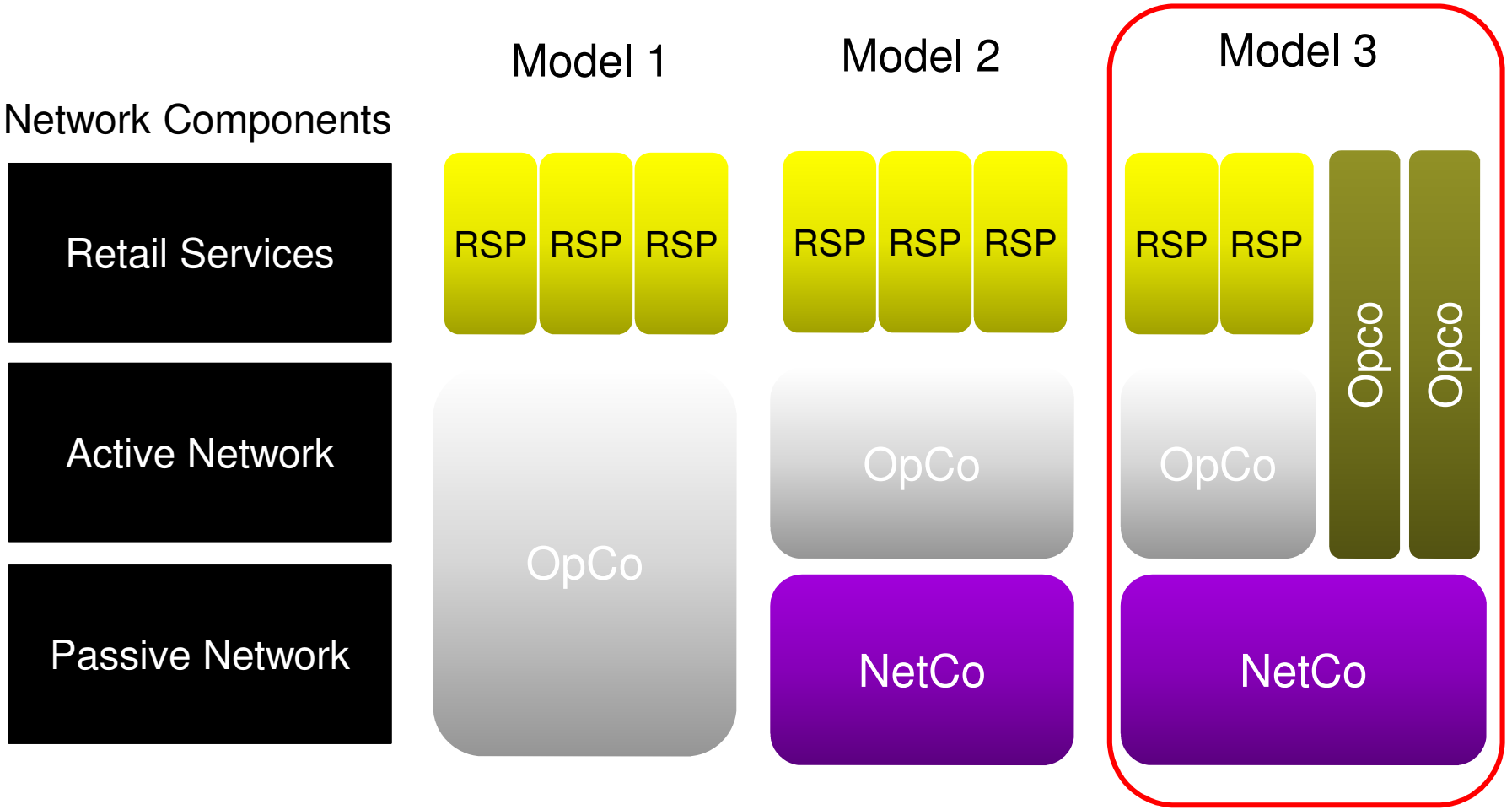
Negeri Sembilan & Melaka
Ports : **25,500**

Iskandar Malaysia & South Johor
Ports : **103,000**

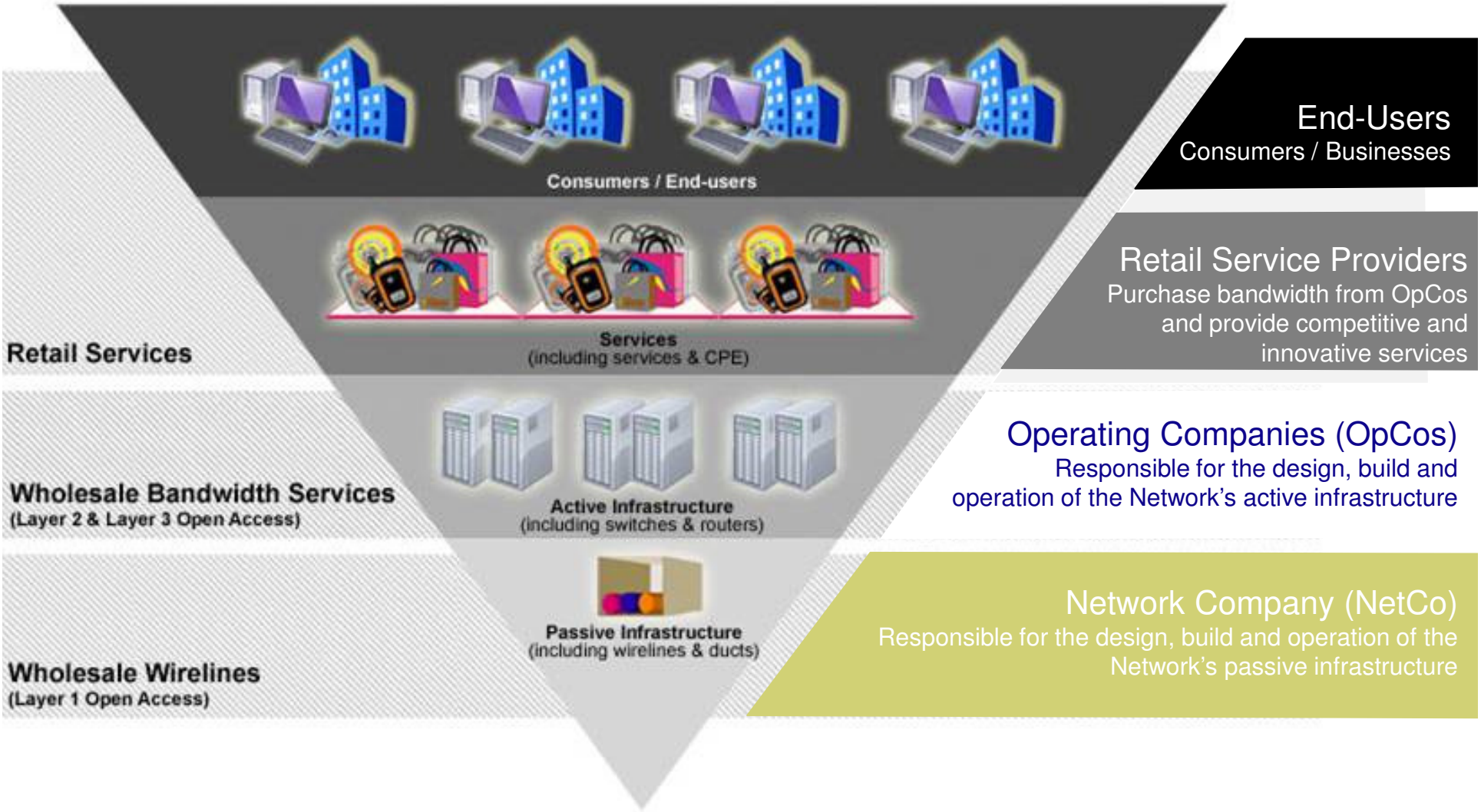
33% household coverage & over 40% take-up in 5 years

Note: Graphics not to scale
Source: TM internal

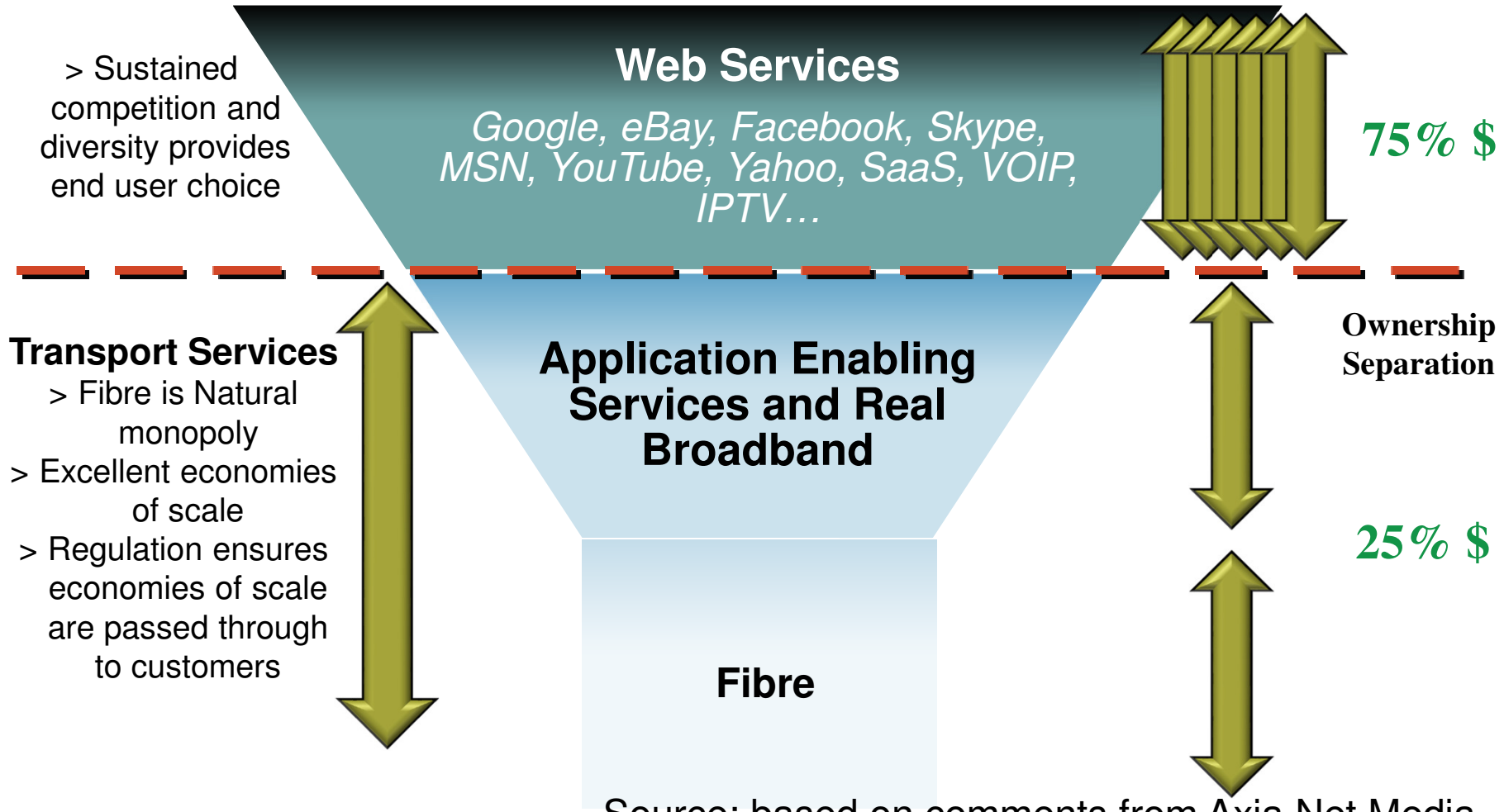
Possible Industry Models - Singapore



Next Gen NBN Open Access Model -SG



Competing With Your Customer Does Not Work



Source: based on comments from Axia Net Media

Economics – fibre - layered

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

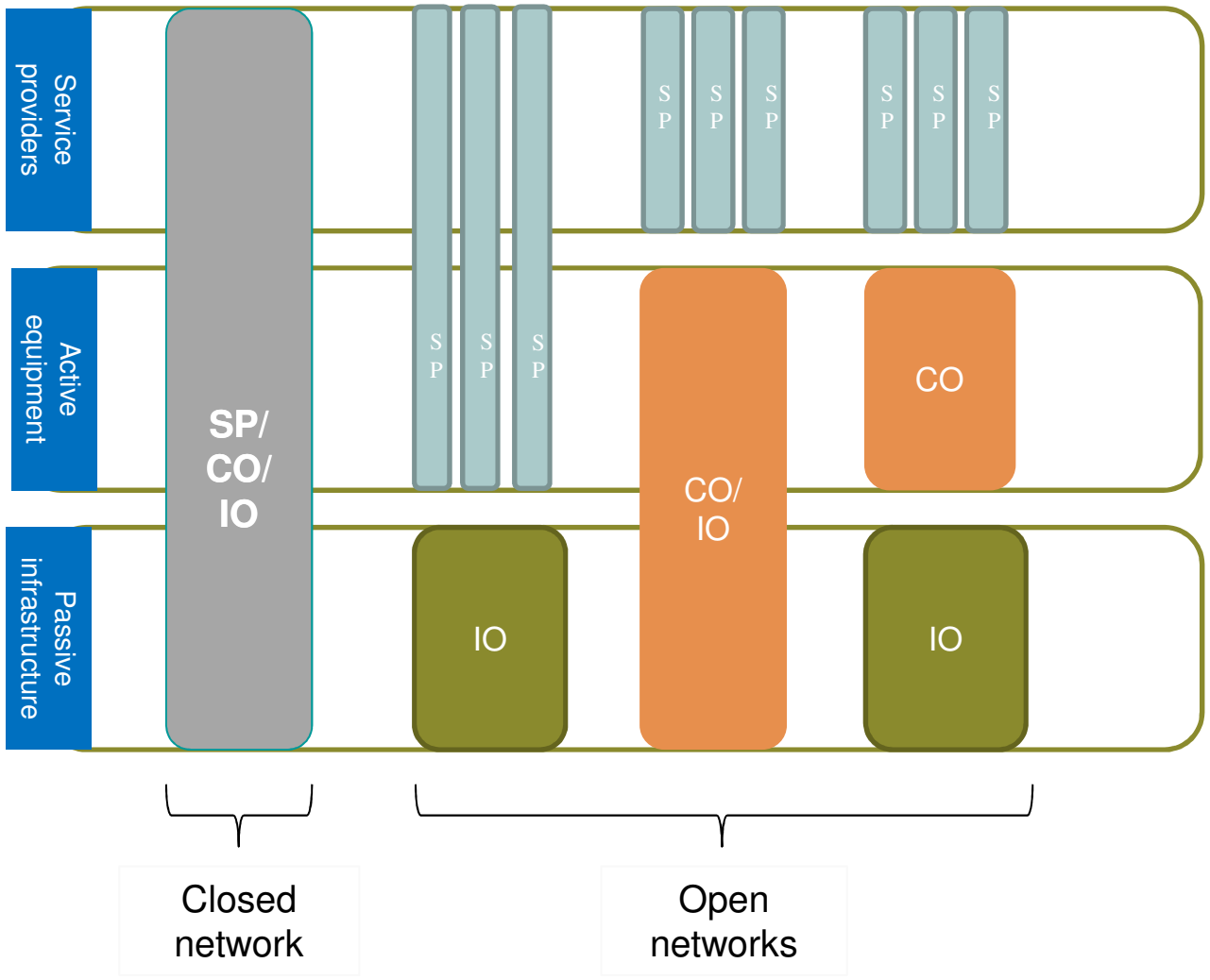
Source: FTTH Council Asia Pacific June 2014

3 layer model

SP: Service Provider

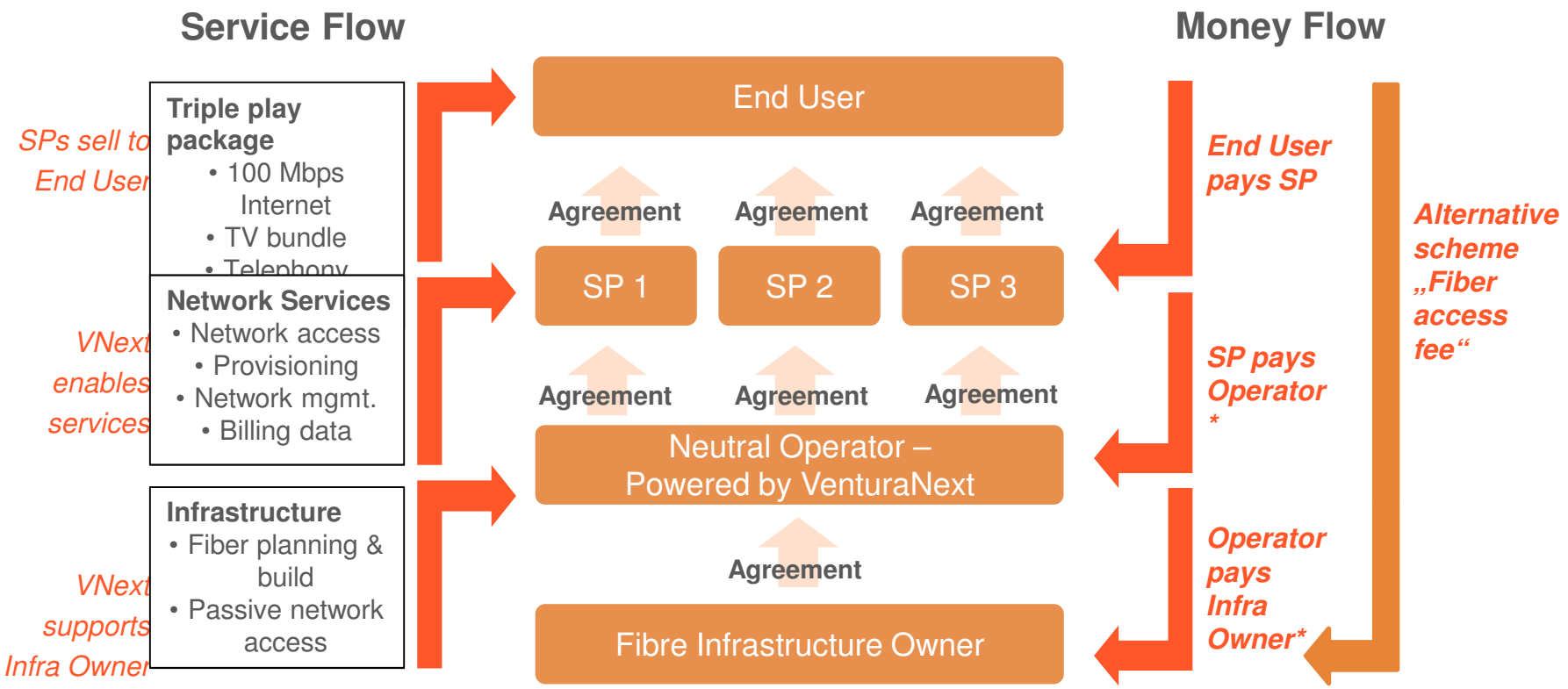
CO: Communications Operator

IO: Infrastructure Owner



Source: FTTH Council Asia Pacific June 2014

Typical money & service flows for infrastructure finance or open networks



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

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Data Centres

Layers

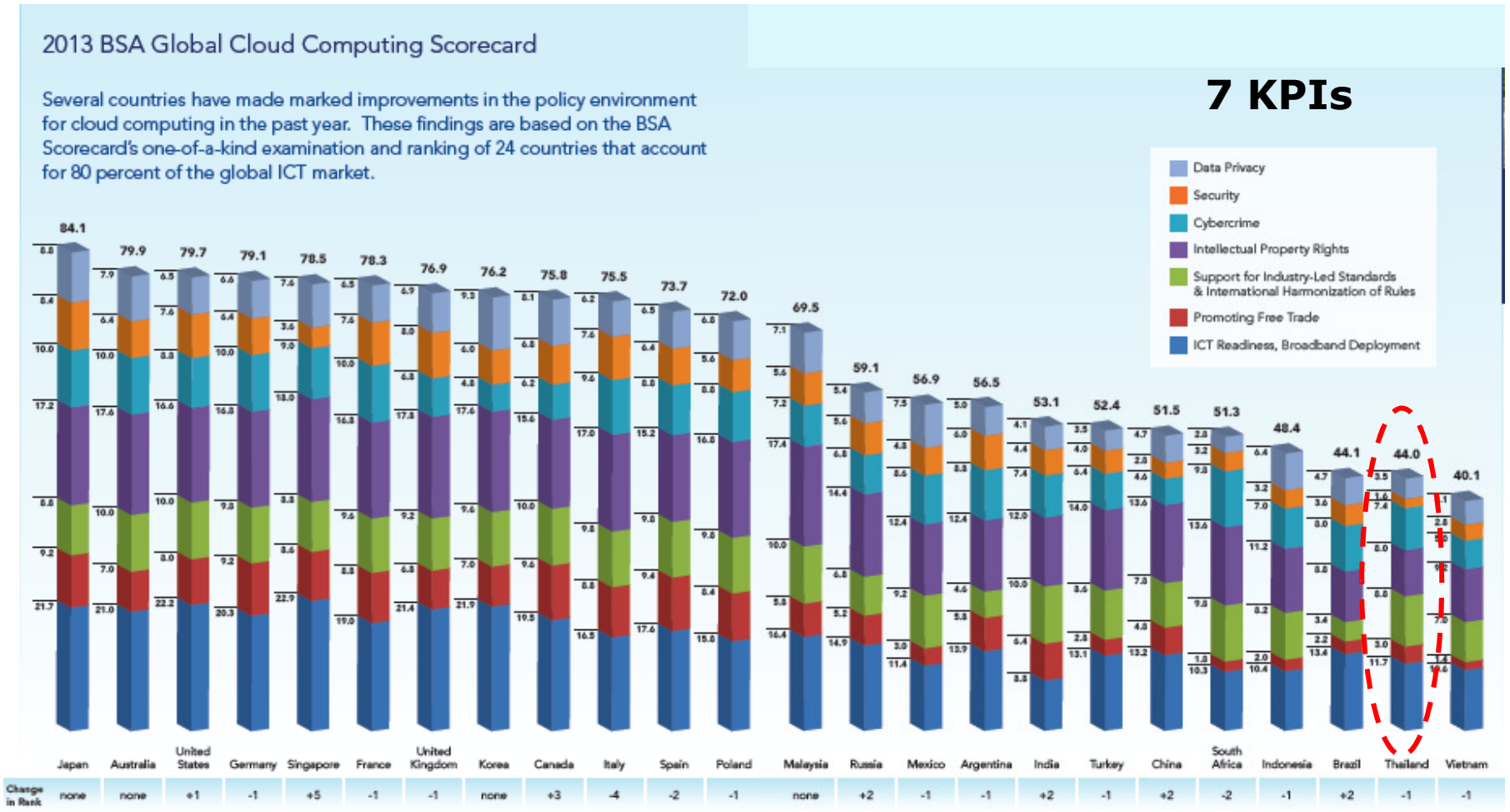
- Secondary operator
- Primary operator
- Real Estate

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



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

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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'
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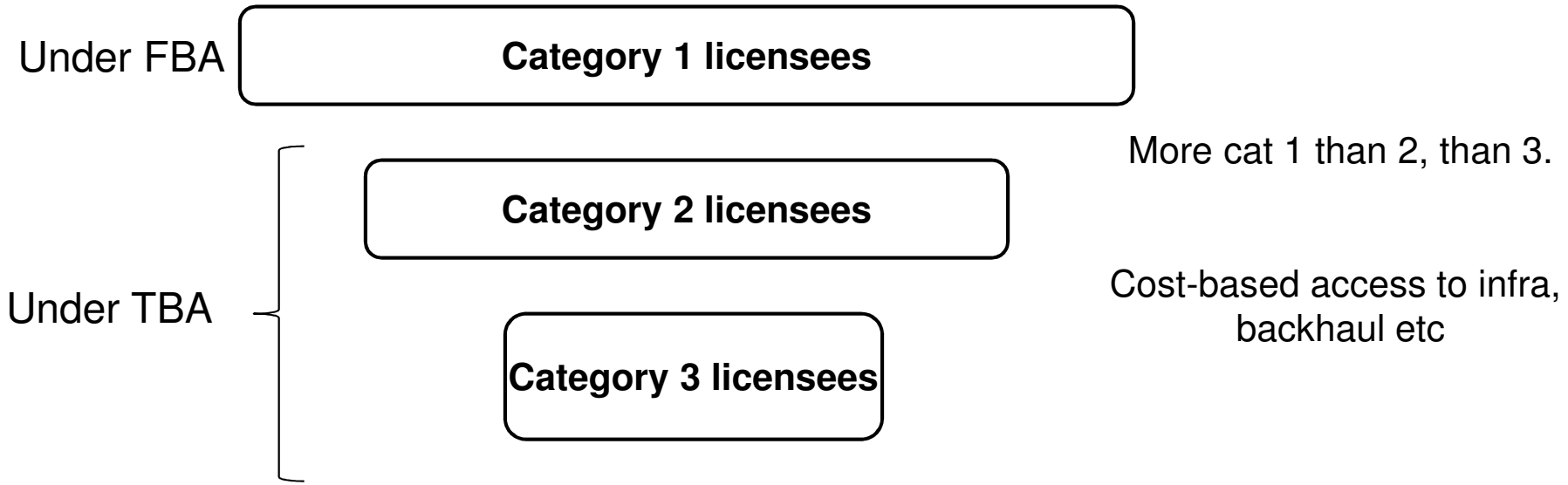
Building blocks in the telecommunications industry – licensing perspective

Foreign equity limits



AFAS – Expected foreign equity levels

	Air Transport. e ASEAN. Healthcare. Tourism.	Logistics	All remaining Service sectors
2008	**51%**	**49%**	**49%**
2010	**70%**	**51%**	**51%**
2013		**70%**	**51%**
2015			**70%**

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

Competition for skills and capital – will we be ready?

ASEAN Framework Agreement on Services

Networked Readiness Index – ASEAN extracts

ASEAN Member State	2012	2013	2014
Brunei	54	57	45
Cambodia	108	106	108
Indonesia	80	76	64
Laos	N/A	N/A	109
Malaysia	29	30	30
Myanmar	N/A	N/A	146
Philippines	86	78	86
Singapore	2	2	2
Thailand	77	74	67
Vietnam	83	84	84
Total economies	*142*	*144*	*148*

NRI published annually by WEF and academic partner

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.

Foreign Dominance Notification

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

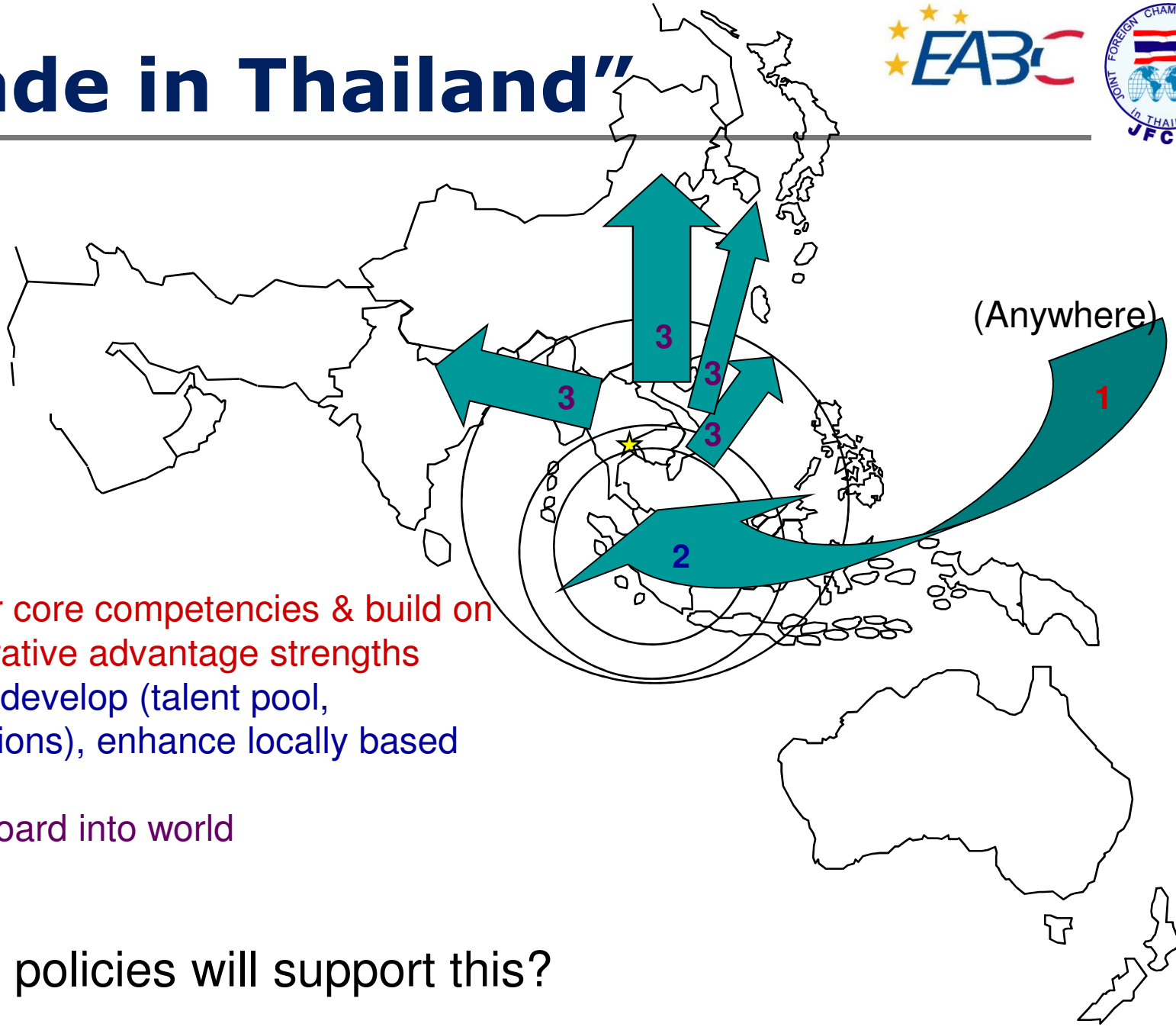
Skilled, educated workforce

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

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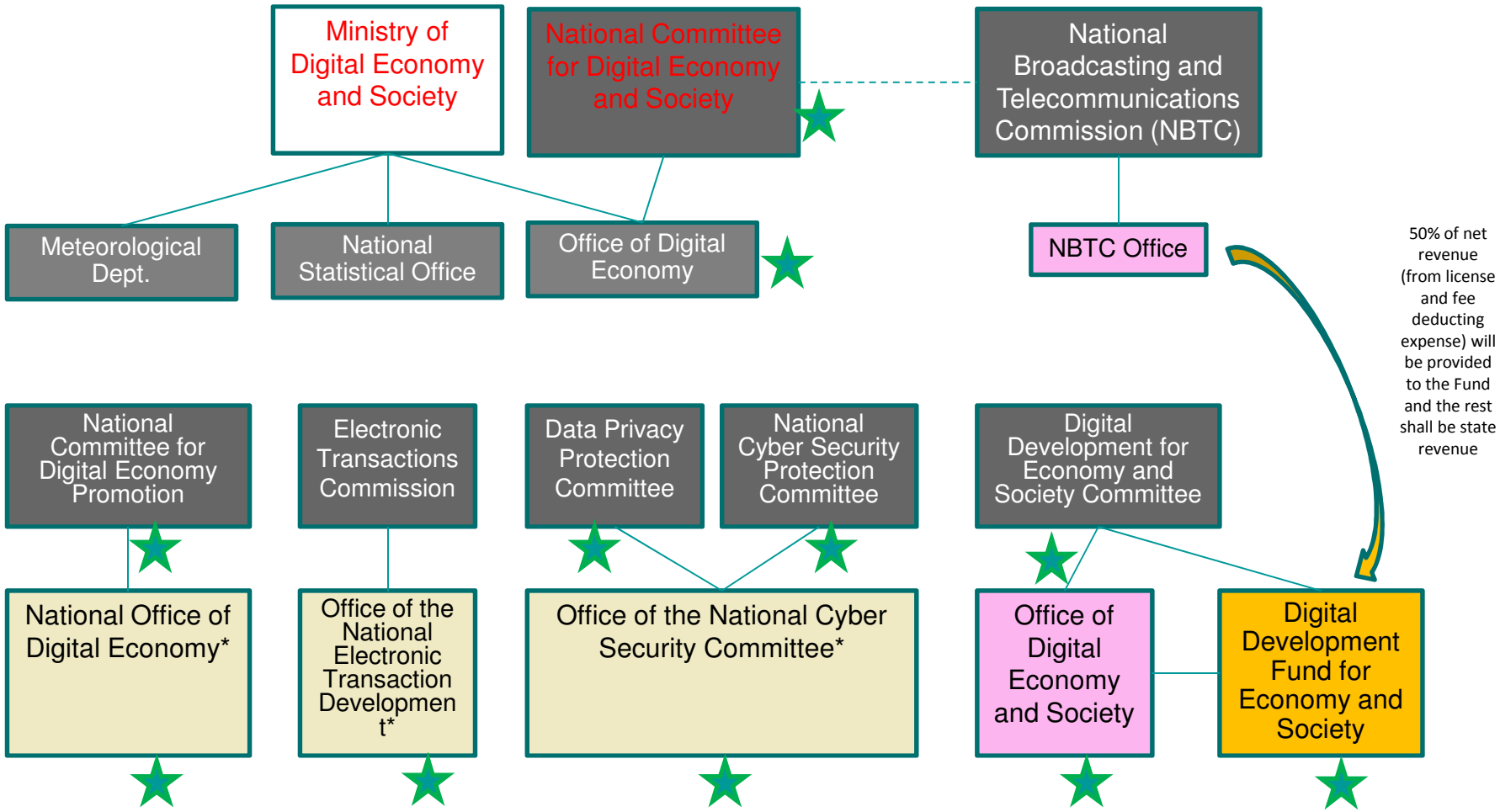
Laws

Ref	Name of Law	Purpose	Comments
1	Frequency Act, aka NBTC Act	Amends Frequency Act 2010, role of NBTC and how spectrum is issued.	• Robust independent NBTC important; • 'policy' vs 'regulation'. • Too much power to a committee
2	Personal Data Protection Law	PDP law will affect all	• Purpose should be about confidence in the jurisdiction and consumer protection, • Cross border insufficient;
3	Computer Crimes Act amendments	Tighten CCA	Surveillance, record keeping?
4	Digital Development for Economy and Society	Consolidates into one law, these three laws: • Committee for Digital Economy and Society • Promotion of Digital Economy • Digital Development Fund for Economy and Society law	Policy making powers in a committee. What checks and balances? Establish National Digital Economy Promotion Committee and committee office Establish Digital Dev Fund for Economy and Society, DDF for E&S Committee.
5	Ministry, Department and Bureau Reform law	Reforms MICT into MoDE.	Powers?
8	ETA amendment.	Upgrade ETA / ETDA	Liabilities?
9	Cybersecurity law	Due process? Establish NCSC, powers?	s. 35 controversial. Note 'trusted internet' concepts.
8	Draft Royal Decree establishing ETDA	Revises ETDA	
9	Competition Law upgrade (missing)	Promote and regulate completion.	Should apply to telecoms sector . See separate paper on this.
10	Structural reform - Mandated access to wholesale services and infra from SOEs (missing)	Towards properly structured industry	

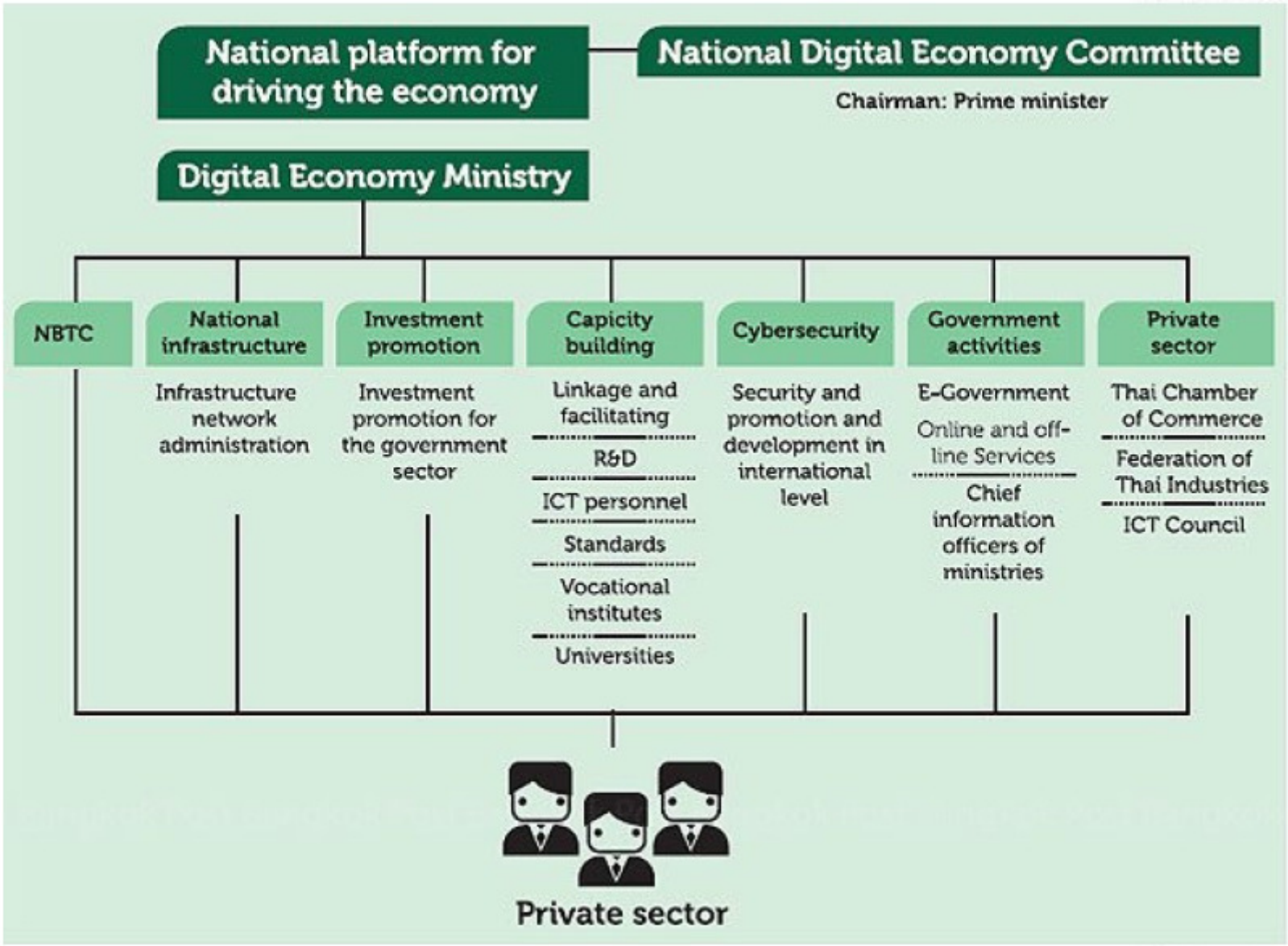
New National ICT Agencies Structure



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
National Digital Economy Committee
Chairman: Prime minister
Digital Economy Ministry
NBTC
National infrastructure
Investment promotion
Capicity building
Cybersecurity
Government activities
Private sector
Infrastructure network administration
Investment promotion for the government sector
Linkage and facilitating
R&D
ICT personnel
Standards
Vocational institutes
Universities
Security and promotion and development in international level
E-Government
Online and off-line Services
Chief information officers of ministries
Thai Chamber of Commerce
Federation of Thai Industries
ICT Council
Private sector
POSTgraphics

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

Thank you

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*

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*

Materials from prior ICT conferences co-organised by EABC and JFCCT (2013 and 2014) appear here: http://www.eabc-thailand.eu/advocacy/102/ict.htm