



Requirements on telecom infrastructure in the era of the App Economy

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**The views expressed in this presentation are purely personal*

Outline

- What is the App Economy?
- Connectivity & investment requirements: who bears the cost?
- Infrastructure sharing & EU legislative developments
- Concluding remarks

The launching of the App Economy



9 January 2007, San Francisco

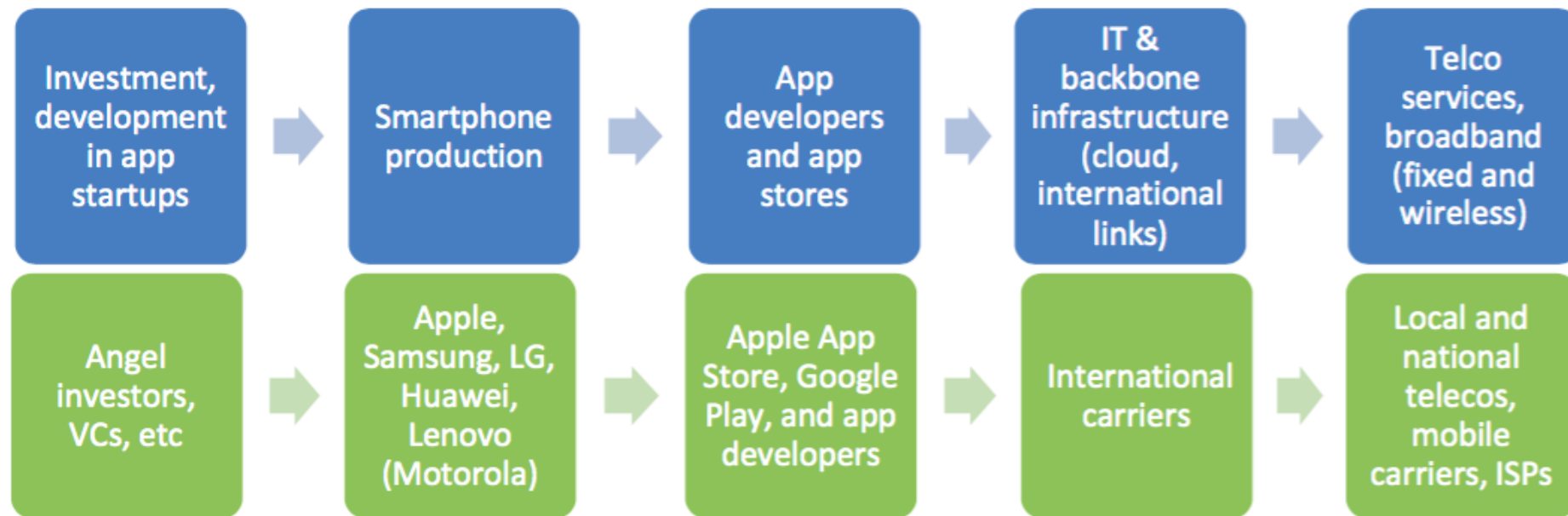


The iPhone

What is the App Economy?

'Sum of all economic activity, products and services required to deliver app functionality to end users via mobile broadband services'

App economy value chain



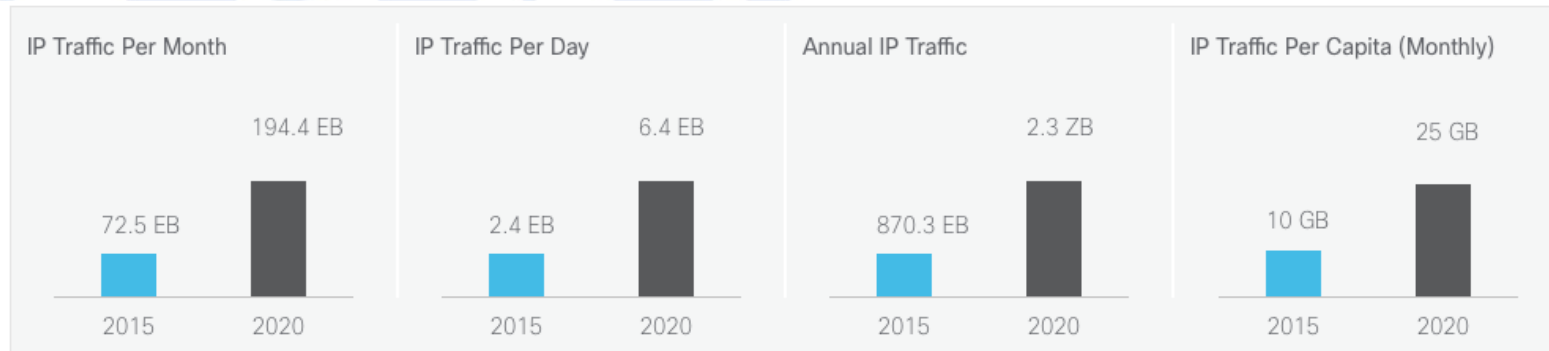
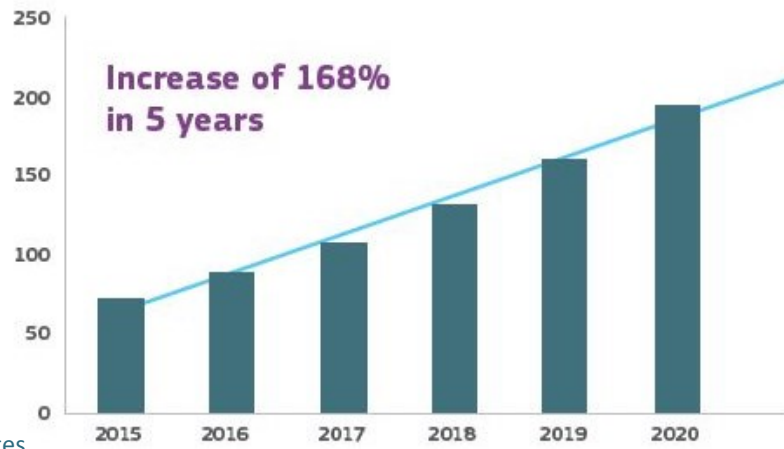
Source: Systems Knowledge Concepts (www.skc.net.au)



Connectivity requirements for the App Economy

Global mobile & fixed IP traffic 2015- 2020

Globally, IP traffic will grow 3-fold from 2015 to 2020, a compound annual growth rate of 22%.



* 1 ExaByte = 10^{12} MegaBytes – Source: CISCO

Infrastructure investment: who bears the cost?

Figure 3.5: Overview of the categories of company active in Internet investments [Source: Analysys Mason, 2014]

	Type of companies	Examples
Content Application Provider (CAP)	Companies that provide end users with Internet content and applications	Google, Facebook, Yahoo!, Microsoft, Amazon, eBay, Netflix, BCC, Spotify, Dailymotion, Axel Springer
Service provider (SP)	Companies that help delivering Internet content, including data centre and backbone providers, IXPs, CDNs	Level 3, Cogent, XO Comms, Tata, Equinix, Akamai, CenturyLink, SunGard, Amazon (AWS), AMS-IX, DE-CIX, LINX
Internet Access provider (IAP)	Companies that provide Internet connectivity for consumers and businesses	NTT, Comcast, AT&T, Deutsche Telekom, Time Warner Cable, Verizon, Orange, KT

Figure 4.1: Investments in networks, facilities, and equipment required at each stage of the Internet value chain [Source: Analysys Mason, 2014]

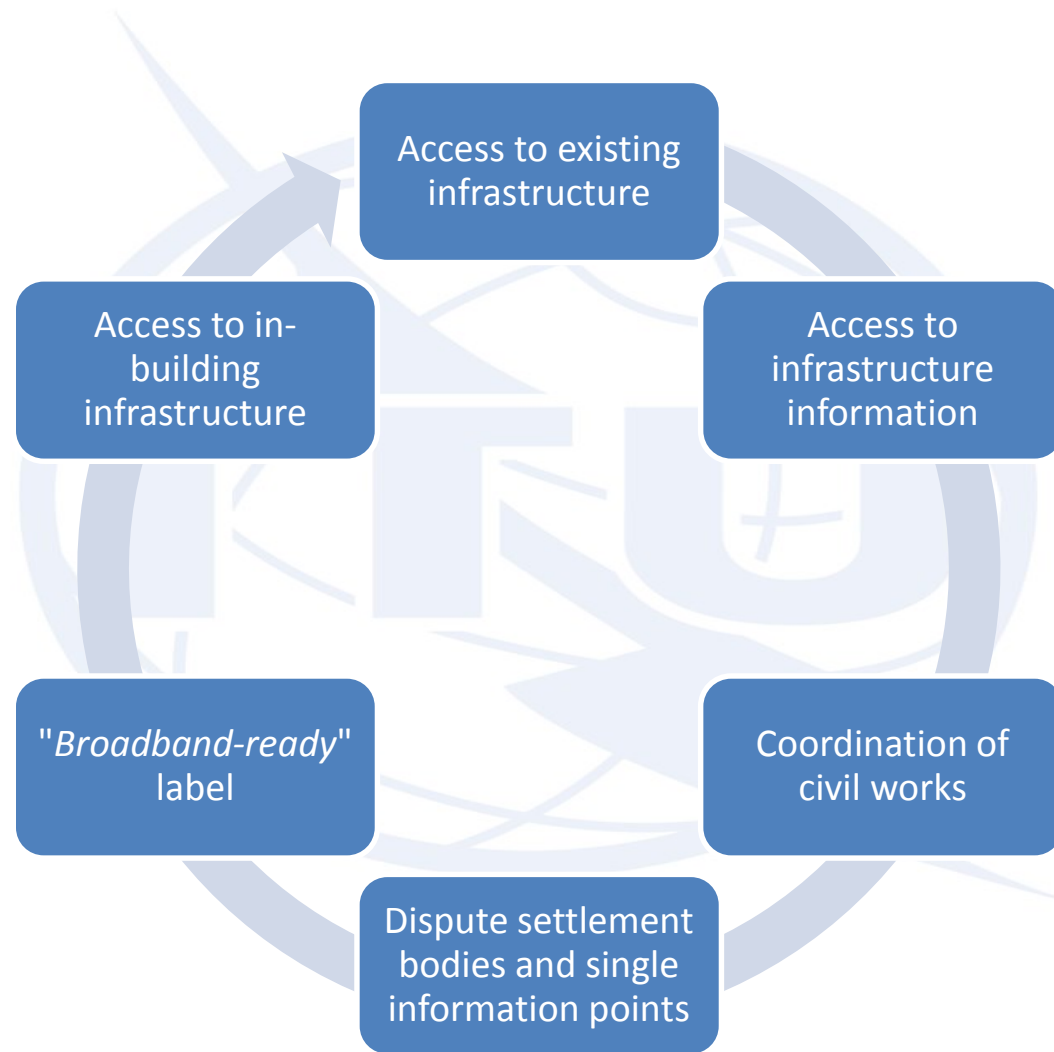
Steps	Content and applications	Store, process, servers (Hosting)	Transport towards customer	Delivery to the IAP	IAP to end consumer
Activities	Provision of video, entertainment, search, news, social networking, e-commerce and other services	Provision of physical infrastructure for the storage of computing capacity and content	Transport of content from the CAPs to the end users	Transfer of traffic across players in the value chain. Content storage or creation of hubs for exchanging traffic	Provision (last-mile) to the end user of the access to the content provided in the network
Investments	Software development and content production	Data centres buildings and related equipment	Submarine and terrestrial cables	Internet Exchanges and related facilities	Last-mile fibre and investment in the backbone

Source: Analysis Mason, Investment in Networks, Facilities, and Equipment by Content and Application Providers, September 2014



EU initiatives: 2014 Broadband Cost Reduction Directive*

Aims at facilitating and incentivising the roll-out of high-speed electronic communications networks by reducing its cost.



Rules seek to increase the sharing and re-use of existing physical infrastructure across various sectors (energy, transport, etc.) and should cut by up to 30% the cost of rolling out high-speed internet.

* Directive on measures to reduce the cost of deploying high-speed electronic communications networks (2014/61/EU)



EU initiatives: Connectivity for a Gigabit Society

On 14.09.2016 the European Commission proposed a set of initiatives and legislative proposals to place the EU at the forefront of internet connectivity.

3 strategic connectivity objectives for 2025

1. All main socio-economic drivers should have access to extremely high gigabit connectivity
2. All European households, rural or urban, should have access to connectivity offering a download speed of at least 100 Mbps
3. All urban areas and major roads and railways should have uninterrupted 5G coverage and 5G should be commercially available in at least one major city in each EU Member State by 2020

The European Electronic Communications Code - new rule book for providers of internet access and communication services

Common EU broadband targets for 2025

A plan to foster European industrial leadership in 5th generation (5G) wireless technology

A voucher scheme for public authorities who want to offer free Wi-Fi access to their citizens (WiFi4EU)

EU 2025 Connectivity goals require investment of c. € 500 billion over the coming decade



The EU code – regulatory framework for connectivity



- **Access to and take-up of very high capacity connectivity** as a regulatory objective alongside the existing ones of promoting competition, contributing to the internal market and promoting the interests of citizens (art. 3).
- National regulators to **map network investment intentions** – current BB deployment and 3y forecasts. Enables public authorities to seek **investors in under-served areas**. Sanctioning of failure to provide info (art. 22).
- Prioritises network access remedies that directly support competitive infrastructure deployments where feasible – **access to ducts and poles as first remedy** to tackle competition bottlenecks (art. 70/71).
- Regulatory conditions **promote co-investment in new network elements**– no obligations imposed on SMP operator deploying new network elements which contribute significantly to the deployment of VHS networks and are open to co-investment (art. 74)
- Regulatory conditions **promote wholesale-only business models** – SMP operator only subject to access remedies (art. 77).
- Facilitates **network sharing** - access to in-building wiring or up to first concentration point; sharing of passive or active infrastructure, obligations to conclude localised roaming access agreements, or the joint roll-out of infrastructures necessary for the provision of services relying on spectrum; conditions attached to conditions to individual rights of use for radio spectrum (art. 47, 59)

Concluding remarks

- The Digital Economy (of which the App economy is part of) contributes to increasing connectivity needs.
- Both CAPs and network operators invest in infrastructure (directly or indirectly) and/or transit. No free riding problem.
- Promoting efficient investment in new and very high-capacity networks and facilitating network and infrastructure sharing is key for the development of the Digital Economy (app/sharing/collaborative).



A large, light blue watermark of the ITU logo is centered on the page. It features a globe with a lightning bolt and the letters 'ITU' overlaid.

Thank you for your attention!

Key bibliography

- GSR-16 Discussion paper, *'The race for scale: market power, regulation and the App Economy'*, ITU, 2016
- Analysis Mason, *Investment in Networks, Facilities, and Equipment by Content and Application Providers*, September 2014
- [European Commission Gigabit Connectivity package](#)