通訊事務管理局辦公室
OFFICE OF THE COMMUNICATIONS AUTHORITY

TRAAC Paper No. 1/2013

Development of Broadband Infrastructure

Telecommunications Regulatory Affairs Advisory Committee
24 April 2013

Purpose

- To update Members about
  - The development of the broadband infrastructure and services in Hong Kong
  - A survey on progress in other advanced economies and the more recent initiatives that they have taken in this respect

4G Development in Hong Kong

- The Government has been mindful of making available the appropriate radio spectrum and releasing it to the market in a timely manner
- 2.3 GHz band
  - The band 2300 – 2390 MHz (90 MHz spectrum) were assigned to two incumbent mobile network operators (MNOs) and a new entrant by way of open auction in February 2012
  - Could be used for Time-Division (TD-) Long Term Evolution (LTE) technology
- 2.5/2.6 GHz band
  - The band 2515 – 2540 MHz / 2635 – 2660 MHz (total 50 MHz) were assigned to four incumbent MNOs by auction in March 2013
  - Could be used for Frequency Division (FD-) LTE technology

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3GPP A GLOBAL INITIATIVE

LTE ADVANCED

Digital Dividend

- Hong Kong commenced Digital Terrestrial TV (DTT) broadcasting in end 2007
- It is a working target to switch off the analogue television service (ASO) by end 2015
- Due to close proximity, frequency coordination with the Mainland authorities is needed to ensure efficient use of the spectrum in Hong Kong and Guangdong
- Hong Kong and the Mainland authorities have set up an Expert Group in August 2012 for discussion on ASO
  - Work in progress to examine technical feasibility of using the vacated spectrum in the television broadcasting band for new services after the ASO

Facilitating the Deployment of Femtocell

- Femtocell - Low power equipment to improve indoor coverage of mobile services and reception of radio signals within building
- Relevant regulatory requirements have been relaxed
  - Interested MNOs may seek to revise their licences before deploying femtocells
  - Femtocells are not considered as a base station for the purpose of licence fee calculation
  - The requirements for prior approval of the Communications Authority (CA) for individual femtocell installation and provision of detailed information of femtocells under the licences are dispensed with

Next generation Network (NGN)

- A consultancy study was held in May 2011
  - To review the implications of NGN development relating to the existing regulatory framework and
  - To identify the necessary changes to the framework for the NGN era
- The study was completed with presentation of consultant's recommendations to the former RAAC in January 2012
- A NGN Working Group reconvened in July 2012 for the following issues
  - Including NGN interconnection architecture and interconnection trials among operators, migration of number portability from existing networks to an IP-based NGN environment, and indicators to help reflect the NGN development status

Registration Scheme for Buildings with Optical Fibre-based Access Networks

- The scheme was launched in November 2010
  - Arousing the public awareness on the importance of fibre-based access facilities
  - Stimulating and promoting further development of the fixed broadband infrastructure in Hong Kong
- As of April 2013, about 15,100 buildings were registered with the scheme
- The scheme was extended to cover non-residential buildings at early April 2013

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Government Wi-Fi & IPv6 Development

- Government Wi-Fi
  - Started in 2008
  - Adopt Wi-Fi technology (IEEE 802.11n) and support IPv6
  - As at December 2012, services available to around 400 premises
  - Now continue for the *Next Generation GovWiFi Programme*

- IPv6 Development
  - The Government is monitoring closely the IPv4 address exhaustion status
  - Help equip business and Internet users with the knowledge for migration to IPv6
    - ✓ Publish “IPv6 Consumer Guide” to provide guidelines on enabling IPv6 in home and business networks

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Recent Development of Broadband Infrastructure in Mainland and Other Overseas Economies

Mainland China

Part of the 12th Five-Year Plan (2011-15)

- Raise the country's average wireline broadband speed to 20 Mbps in urban areas and 4 Mbps in rural areas by the end of 2015
- All newly built residences should be equipped with fibre connections with effect from April 2013

4G Trials

- TD-LTE trial networks had been set up in 15 Chinese cities in 2012 and would be expanded to cover 100 Chinese cities by 2013

United States

National Broadband Plan (NBP)

- 100 Mbps to reach at least 100 million homes by 2020

Operator's Plan on 4G

- An operator has planned for 4G LTE network expansion to cover 300 million people by end of 2014

European Union

Digital Agenda for Europe (DAE):

Basic Broadband	• Basic Broadband (512 kbps to 4 Mbps) for all by 2013
Fast Broadband	• Fast broadband by 2020: broadband coverage at 30 Mbps or more for 100% of European Union citizens
Ultra-fast Broadband	• Ultra-fast broadband by 2020: 50% of European households should have subscriptions above 100 Mbps

DIGITAL AGENDA FOR EUROPE
A Europe 2020 Initiative

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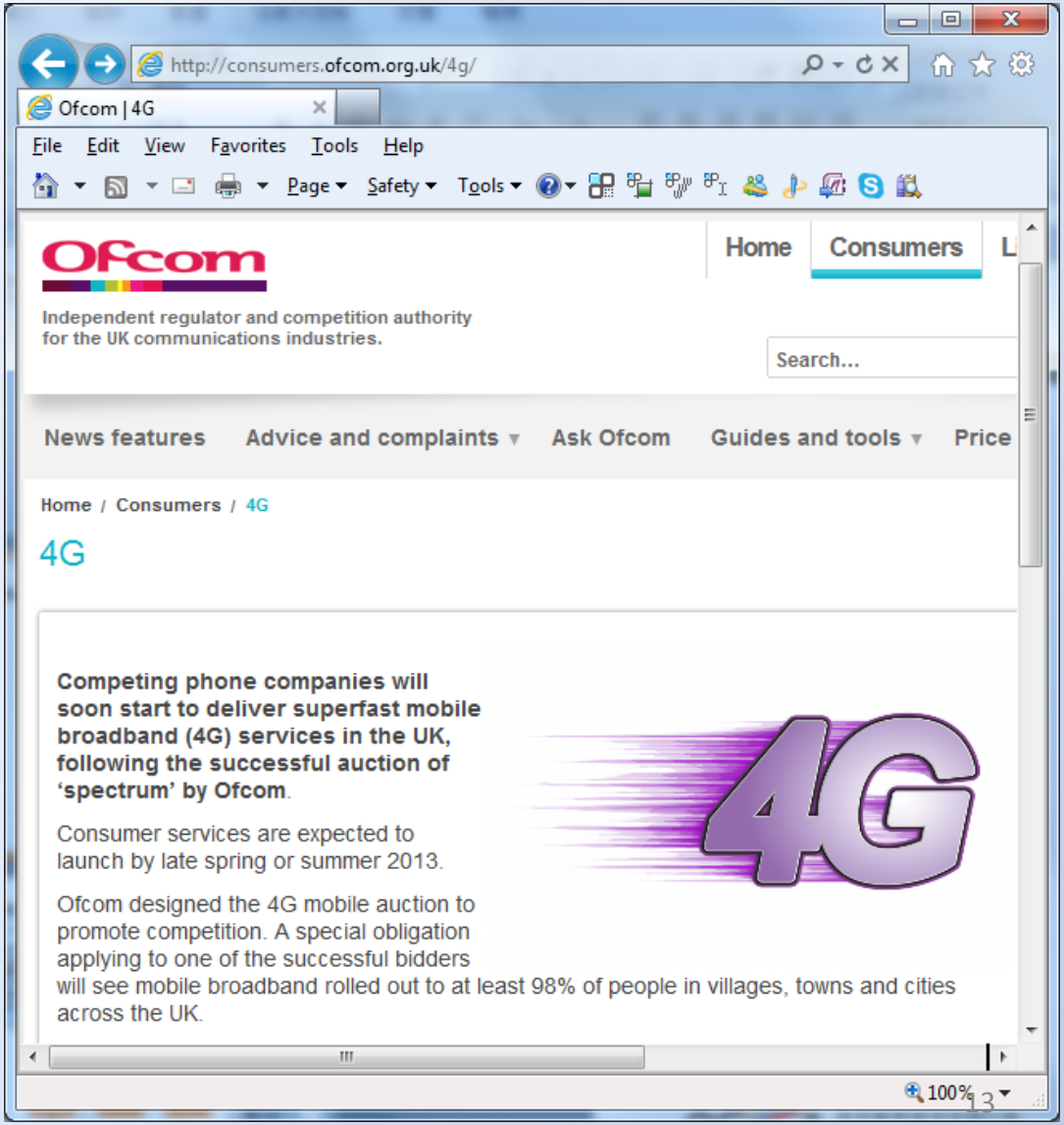
United Kingdom (1)

Auction of the 800MHz and 2.6 GHz bands took place in March 2013



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United Kingdom (2)

Reframing of Spectrum

- In January 2011, Ofcom announced that operators could begin reframing of their spectrum using 900 MHz and 1800 MHz
- In August 2012, Ofcom approved one company to utilise its surplus capacity to launch 4G services

National Broadband Plan

- Next generation broadband at speeds of 40 Mbps to 90% of all UK premises by 2017

Finland

Dec 2008

- Formulated “Broadband 2015” - 100 Mbps broadband access infrastructure available to all no further than 2 km from the fiber-optic or cable network by 2015

Dec 2010

- Launched Mobile Broadband LTE in the 2.6 GHz band

Oct 2011

- Formulated “Strategy 2020” which extended the strategy of development of broadband market to 2020

Jan 2013

- Licences for 800 MHz auctioned in January 2013. Expected that 99% of population will be served in five years

Sweden

- Swedish Government published a national strategy for broadband development in November 2009
  - Market players are responsible for the investment in infrastructure
  - The Government task is to create well functioning and foster good business conditions for market players through suitable regulation

Key Attributes

- 40% of all households and businesses have access to broadband at a minimum speed of 100 Mbps by 2015
- 90% of all households and businesses at a minimum speed of 100 Mbps by 2020

Japan

i-Japan Strategy 2015

- 1 Gbps fixed broadband for all by 2015
- 100 Mbps mobile broadband for all by 2015

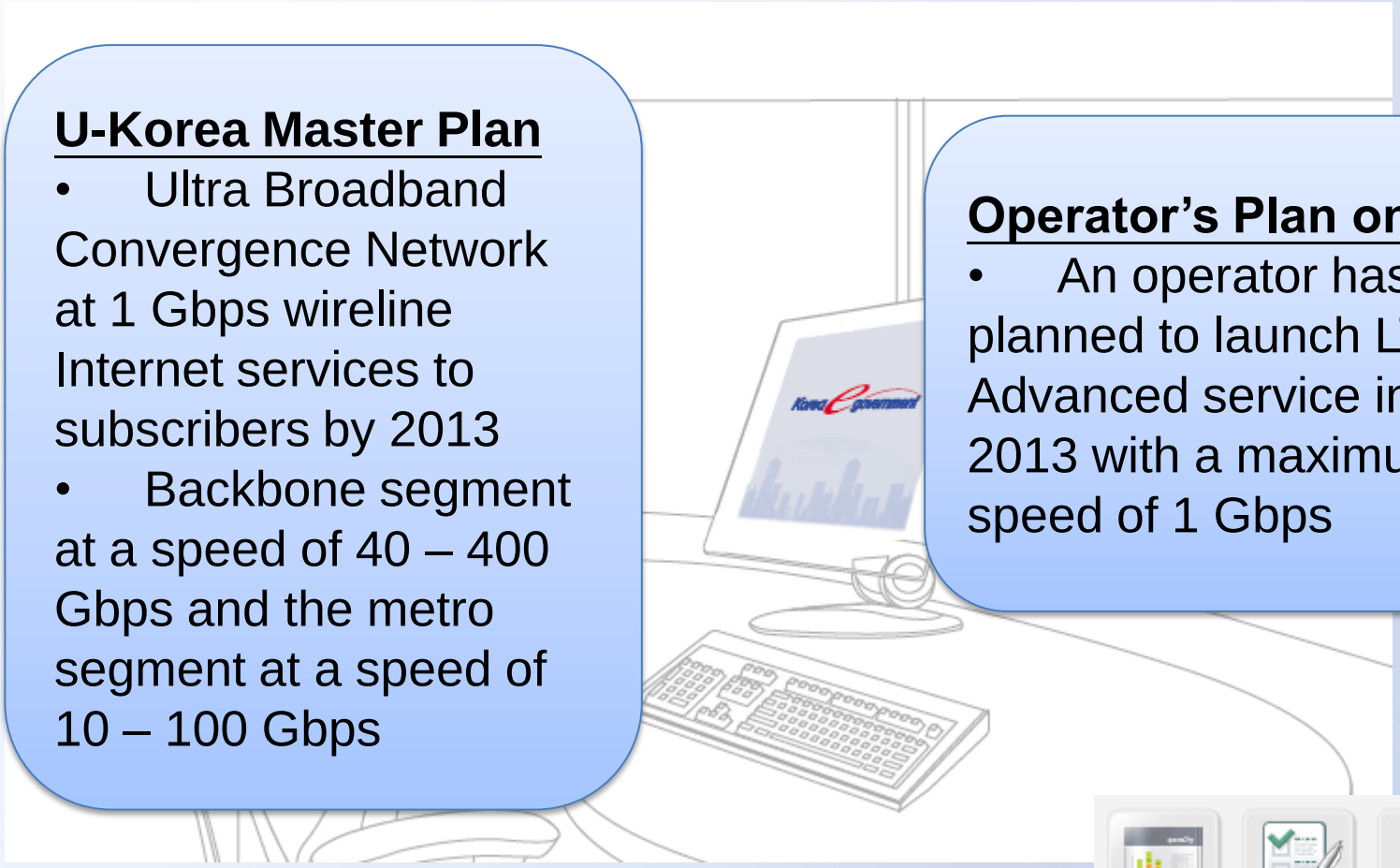
"Project Promoting Computerisation in Disaster Region"

- In March 2011, Japan suffered the most powerful earthquake in its history, losing 500,000 FTTH broadband connections
- The Government subsidised projects for re-development of broadband infrastructure

South Korea

U-Korea Master Plan

- Ultra Broadband Convergence Network at 1 Gbps wireline Internet services to subscribers by 2013
- Backbone segment at a speed of 40 – 400 Gbps and the metro segment at a speed of 10 – 100 Gbps



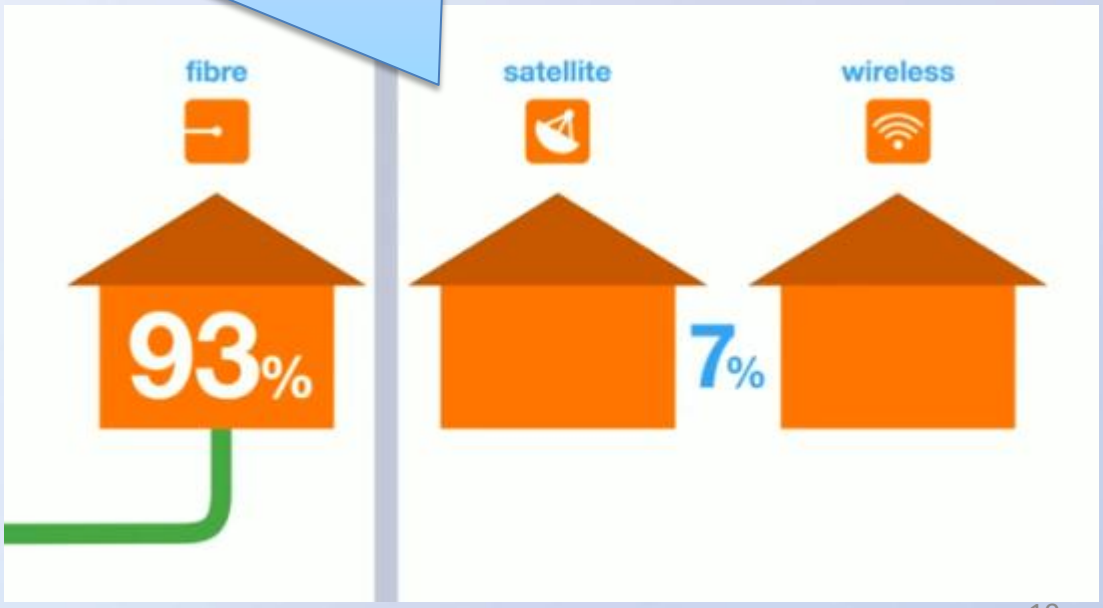
Operator's Plan on 4G

- An operator has planned to launch LTE-Advanced service in 2013 with a maximum speed of 1 Gbps

Australia (1)

The Government announced in 2009 that it would invest A$43 billion for 8 years to build **the National Broadband Network (NBN)**, covering 3.5 million premises, 93% of which will access optic fibre at up to 1Gbps and 7% of which get connected via wireless or satellite at the peak of 12 Mbps

National Broadband Network



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Australia (2)

Regional Backbone Blackspots Programme

- The Government invested A$250 million to improve backbone transmission links
- In December 2011, the entire network completed with over 6000 kilometers of fibre backbone for 400,000 people and more than 100 regional locations

Goals of National Digital Economy Strategy

- By 2020, to be a top 5 organisation for Economic Co-operation and Development (OECD) countries in households that connected to broadband at home, and in relation to percentage of businesses using online opportunity

New Zealand

Ultra Fast Broadband Initiative

- Government to invest in infrastructure
- Aim to rollout FTTP network to 75% of population by 2019 and target to deploy FTTP footprint with speeds at least 100 Mbps

Rural Broadband Initiative

- Aim to serve rural areas (about 25% population)
- Deploy fibre to regional and rural schools, and builds mobile towers for mobile broadband
- Deliver peak speeds at least 5 Mbps to 86% of rural homes and businesses with mobile broadband, and100 Mbps to 95% rural schools with fibre connections

Singapore

Highlights

Post

Write something...

IDA Singapore shared a link.
6 hours ago

Auction

IDA decided in January 2013 to allocate 1800 MHz and 2.5 GHz band for 4G systems and services via auction

Wireless Broadband

IDA Singapore shared a link.
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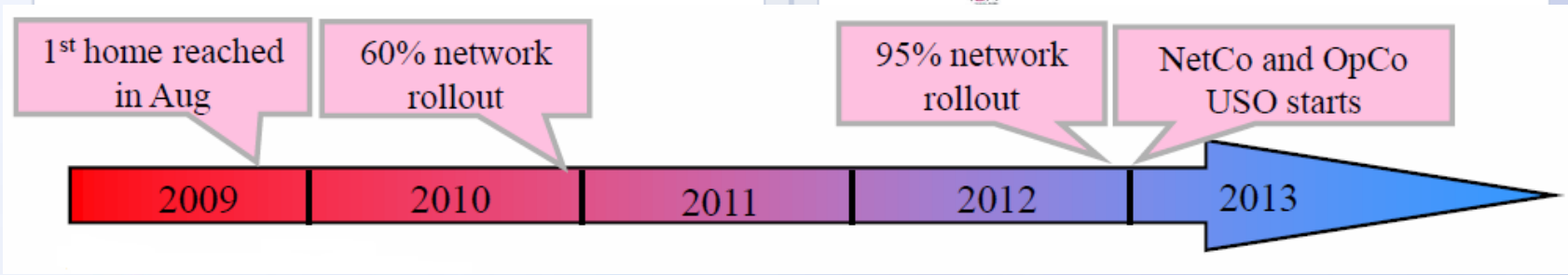
Next Gen NBN, Intelligent Nation 2015

Up to 1 Gbps high speed connection to 95% business premises and households by 2012

Universal broadband service obligation from 1 January 2013

iDA

iN2015 Masterplan



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Israel

Plan for National Optical Fibre Broadband Network

- 65% population have access to the Internet at 100 Mbps by 2018, with full coverage by 2020

4G Development

- Begin planning and establishing networks for 4G service before the end of 2013

United Nations (1)

- Broadband Commission for Digital Development (BCDD)
  - Established by the International Telecommunications Union (ITU) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO), and
  - Promote the deployment of high-speed, high capacity broadband connections to the Internet as an essential part of modern infrastructure

BCDD defined strategies to be achieved by 2015:

- Universal broadband policy
- Making entry-level broadband affordable
- 40% of households in developing countries should have Internet access
- Internet user penetration reach 60% worldwide, 50% in developing countries and 15% in Least Developed Countries (LDCs)

United Nations (2)

The State of Broadband 2012: Achieving Digital Inclusion for All

- A report released by BCDD evaluates the roll-out of broadband around the world and tracks progress toward achieving the four advocacy targets set by the Commission in 2011 for boosting broadband affordability and uptake
- Provide country rankings across up to 177 economies on economic impact, penetration, national broadband policy etc.
- Hong Kong's rankings
  - 4th out of 127 economies in Percentage of Households with Internet for developing countries
  - 6th out of 132 economies in Percentage of Individuals using the Internet for developing countries

BROADBAND COMMISSION FOR DIGITAL DEVELOPMENT

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Thank you