Presentation for HKCONNECT 2017

Supporting Telecommunications Infrastructure Development in Hong Kong

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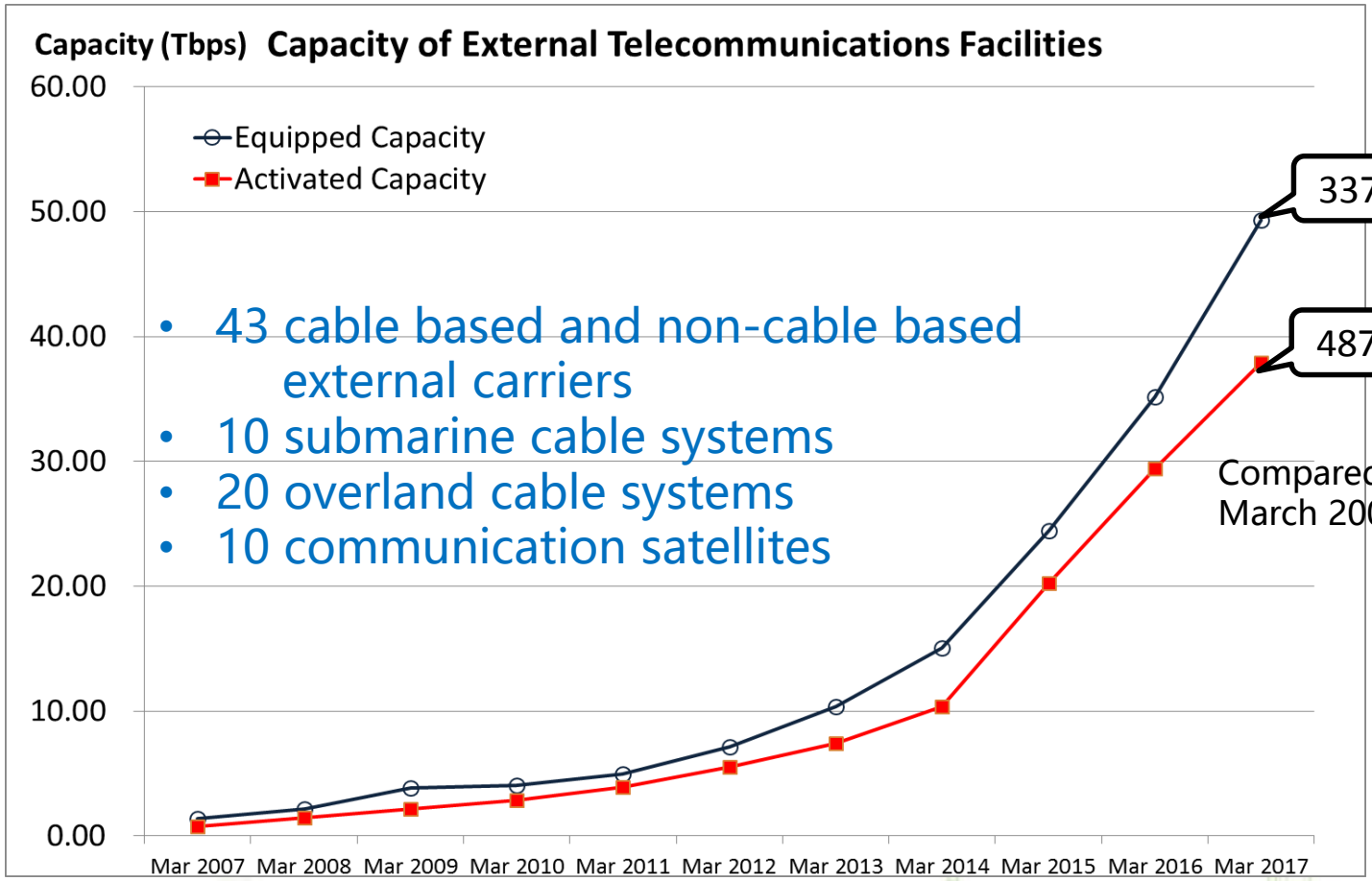
通訊事務管理局辦公室
OFFICE OF THE COMMUNICATIONS AUTHORITY

1. Development of External Telecommunications Infrastructure and Facilitating Measures

External Telecommunications Capacity



- 43 cable based and non-cable based external carriers
- 10 submarine cable systems
- 20 overland cable systems
- 10 communication satellites

Over 73% of equipped and activated capacities are provided by submarine cable systems

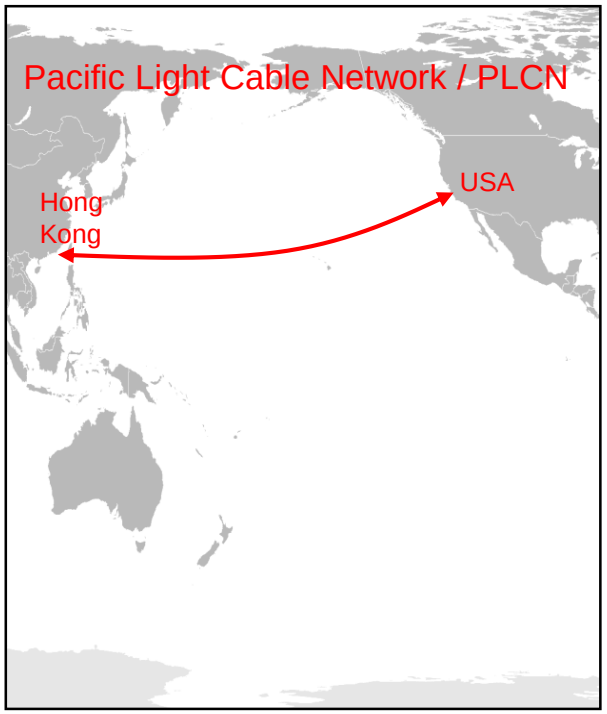
Submarine Cable Systems Linking Hong Kong

Cables landed in the past 10 years

Submarine Cable System	Ready for Service	Designed Capacity (Tbps)
Asia Pacific Gateway (APG)	2016	54.8
South-East Asia Japan Cable System (SJC)	2013	45.6
Asia Submarine-Cable Express (ASE)	2012	32
Asia-America Gateway Cable System (AAG)	2009	8
TGN-Intra Asia Cable System (TGN-IA)	2009	18.4

New Submarine Cable Systems in the Pipeline

- Ready for Service : Q4 2017
- Length : 25,000 km
- Designed capacity : 40 Tbps



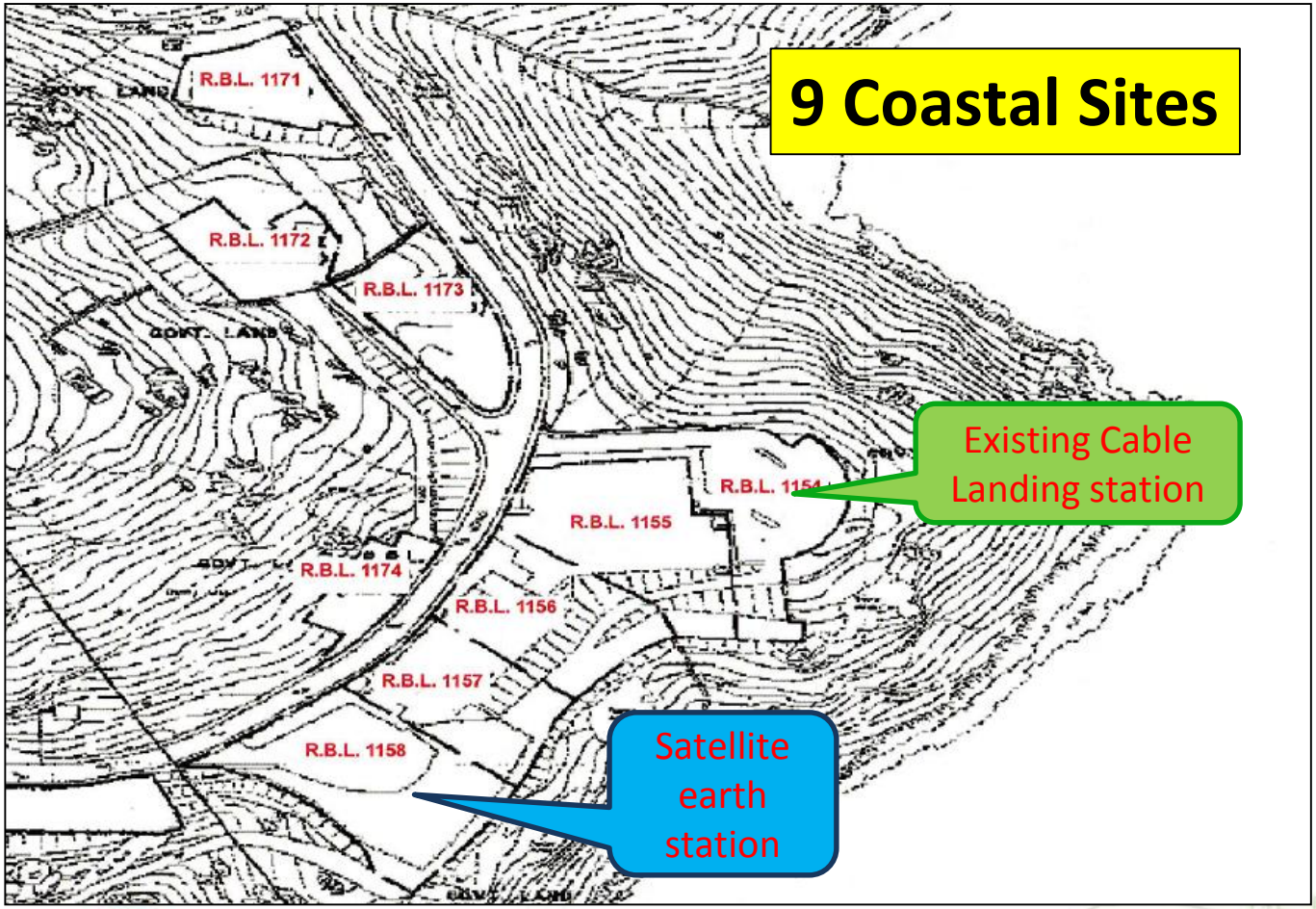
- Ready for Service : 2018
- Length : 12,800 km
- Designed capacity : 144 Tbps

- Ready for Service : 2020
- Length : 3,900 km
- Designed capacity : 48 Tbps

Facilitating Measures for Cable Landing

- **Single-Point-of-Contact Service**
  - Coordinate with relevant government departments
  - Facilitate timely handling of applications
  - Foster close communication between applicants and relevant government departments
- **Thematic webpage on OFCA's website**
  - Information about existing submarine cables and landing stations in Hong Kong
  - Potential sites for landing stations
  - Information note on necessary statutory approvals
  - Contacts of relevant government departments and parties

Facilitating Measures for External Facilities

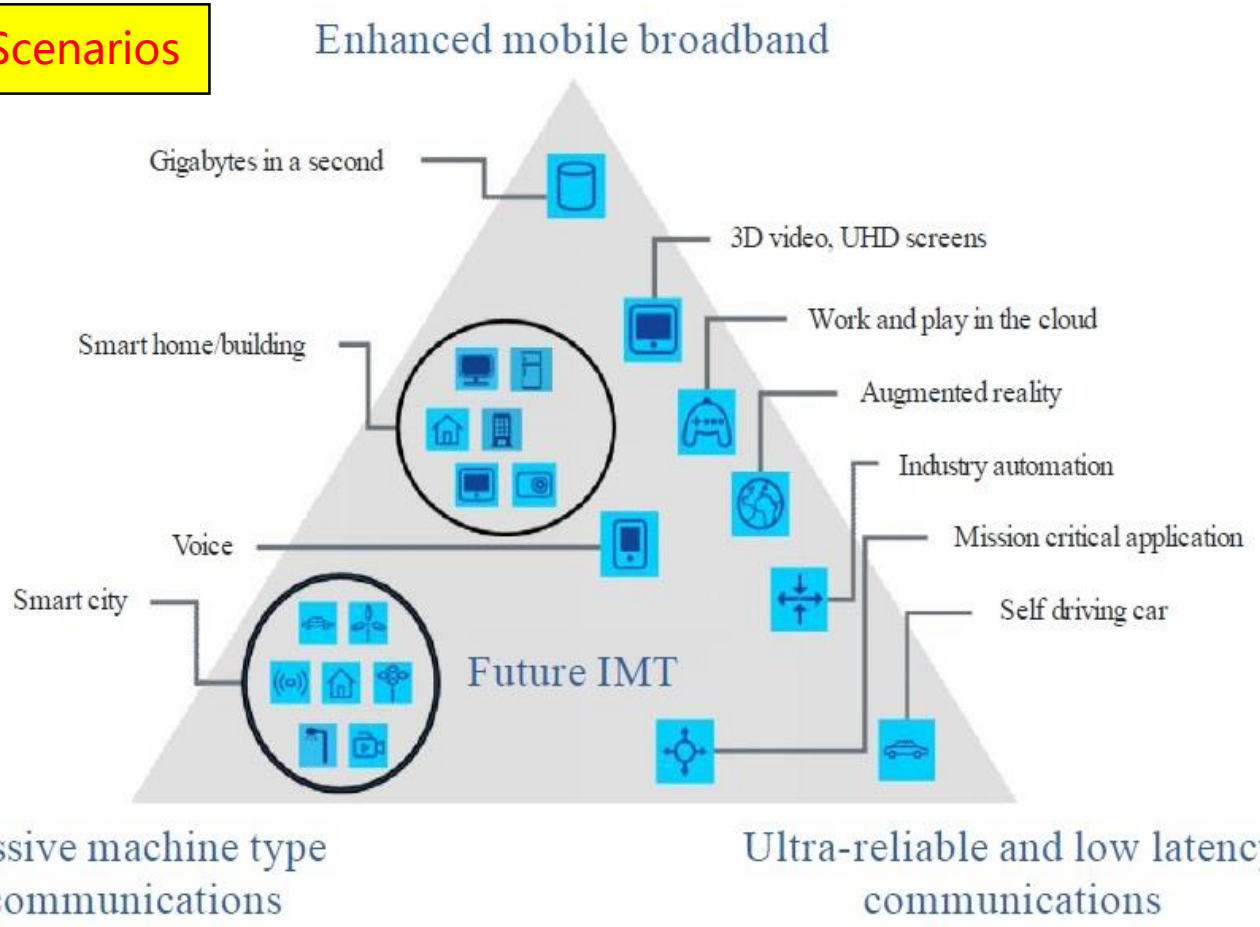


- 2 sites occupied: 1 for cable landing station and 1 for satellite earth station
- 7 sites available for establishment of new external telecommunications facilities
- Interested parties who wish to apply for the land may contact OFCA or submit their applications direct to the Lands Department

2. Development of 5G and Facilitating Measures

Scope of 5G Services

Usage Scenarios



Source : Rec. ITU-R M.2083-0

Collaboration among Stakeholders

Enhanced Mobile Broadband,
Low Latency, High Reliability, IoT, ...

Work Plan for Making Available Spectrum for Mobile Services towards 2020 and Beyond

3.5 GHz Band (3.4 – 3.6 GHz, total: 200 MHz)

3.4 – 4.2 GHz band allocated for fixed satellite service, with around 1,600 SMATV systems with about 870,000 user outlets in HK

ITU identified 3.5 GHz band for IMT; 5G implementation considered by many economies

Public consultation in July 2017, closed on 7 Sept 2017

Technical consultancy study in the 2nd half of 2017

26 & 28 GHz Bands (24.25 – 27.5 GHz & 27.5 – 28.35 GHz, total: 4.1 GHz)

26 GHz band allocated to fixed services in HK mainly for microwave links

28 GHz band is currently vacant

26 GHz band being considered for 5G

28 GHz band already opened up in the US; 5G trials in the US and Korea; Implementation as early as 2018

PyeongChang 2018

26 GHz band spectrum vacation and relocation of existing link assignments before April 2019 in HK

Invitation for Expression of Interest in Q4 2017 to gauge industry interest

Facilitating 5G Technical Trials

Temporary Test Permit

- **Equipment and Device Suppliers / Mobile Network Operators** may apply for test permits for conducting technical trials of new 5G equipment or devices at specific indoor or outdoor locations
- Upon successful application, a test permit of **up to 6 months validity period** will be granted to the applicant

Permit issued for 5G Tests

- Test permit issued to an **Equipment Supplier** for its **5G tests using the 15 GHz band** conducted in January to February 2017
  (test report is available at http://www.ofca.gov.hk/en/pub_report/technical_reports/index.html)
- Test permits issued to **two Mobile Network Operators** in April and August 2017 respectively for their **indoor tests using the 3.5 GHz band**

3. Development of Internet of Things (IoT) Systems and Relevant Regulatory / Facilitating Measures

Internet of Things

Internet of Things ("IoT") systems enable interconnected devices to generate, exchange and consume data with built-in intelligence, with/without human intervention

- **Low Power Wide Area Network ("LPWAN")**
- **4G technology - Narrowband IoT**
- **5G technology - massive deployment of IoT devices with higher speed (> 1 Gbps) and lower latency**

IoT will be used in automatic control, vehicles, smart city applications, virtual reality applications, etc.

Proposed Regulatory and Facilitating Measures (1)

- At present, **Mobile Network Operators** can provide **WIoT services** using cellular mobile technologies (such as Narrowband IoT in 4G LTE) operating with the frequency spectrum assigned **under their existing UCLs**

- To **facilitate** development of new wireless IoT ("WIoT") service using LPWAN, a new **Wireless Internet of Things Licence ("WIoT Licence")** is proposed with
  - **lower level of licence fee**
  - **less stringent regulation**

  as compared with existing **Unified Carrier Licence ("UCL")** for facilities-based mobile services

Proposed Regulatory and Facilitating Measures (2)

Salient features of the proposed WIoT Licence

- Applicable to WIoT services based on LPWAN technology using licence exempt frequency band such as 920 - 925 MHz
- Enable automated data communications to and/or from IoT installations, apparatus, equipment and device
- Use of frequencies in shared basis and uncoordinated manner; not protected from harmful interference

OFCA is mindful of the need to further review and streamline the licensing regimes for provision of the new WIoT services subject to the market development and implementation experience in Hong Kong

Thank You

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