

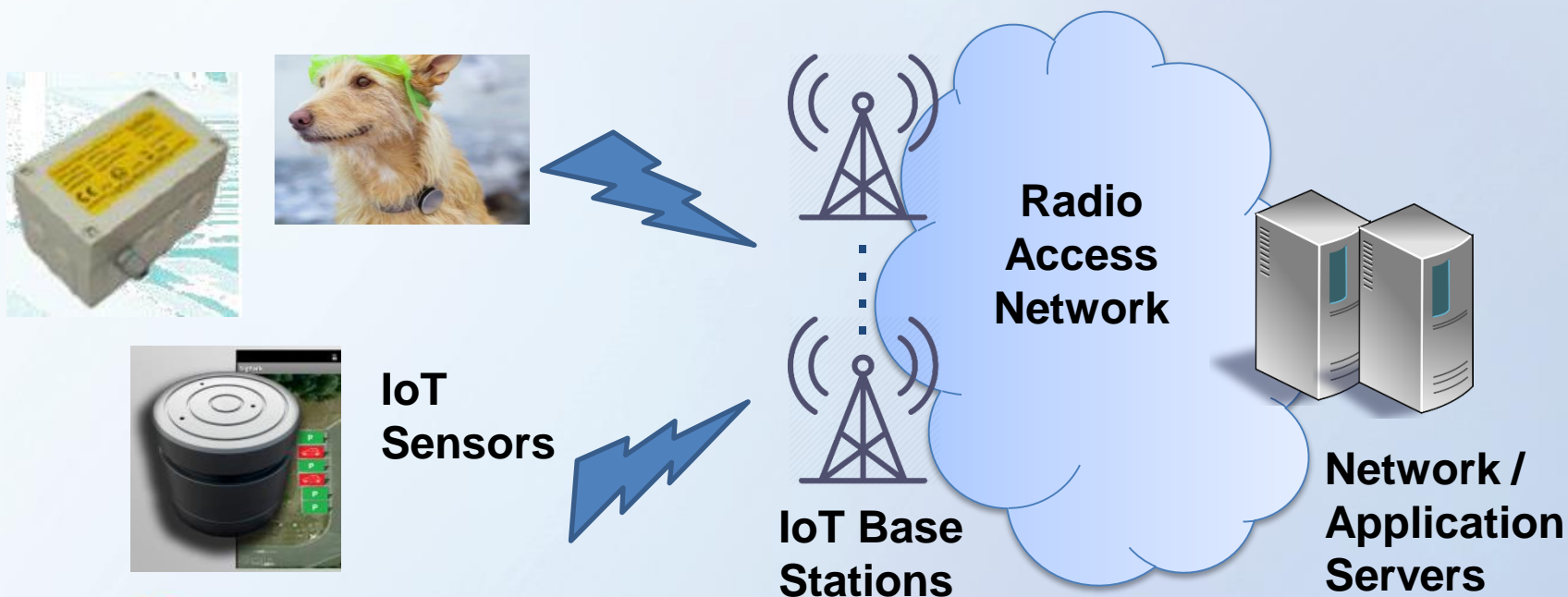


# **Proposed Creation of a New Licence for the Provision of Wireless Internet of Things Services**

Telecommunications Regulatory Affairs Advisory Committee  
10 August 2017

# Background

- **Internet of Thing** (“IoT”) is an emerging technology which enables the provision of communications platforms and services for interconnected devices to generate, exchange and consume data with minimal human intervention
- Enabling technologies include **mobile technologies (e.g. Narrowband IoT)** and **Low Power Wide Area Network (“LPWAN”) technologies** operating in licence exempted bands such as the 920 – 925 MHz band



# There will be 24 billion IoT devices installed on Earth by 2020

BII

BI Intelligence  
 © Jun. 9, 2016, 9:46 AM 🔥 29,112

**BI Intelligence - June 2016**  
 By 2020 more than 24 billion IoT devices

Egham, U.K., February 7, 2017

**Gartner Says 8.4 Billion Connected "Things" Will Be in Use in 2017, Up 31 Percent From 2016**

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**Gartner - January 2017**  
 Connected devices will reach 20.4 billion by 2020 from 6.4 billion in 2016

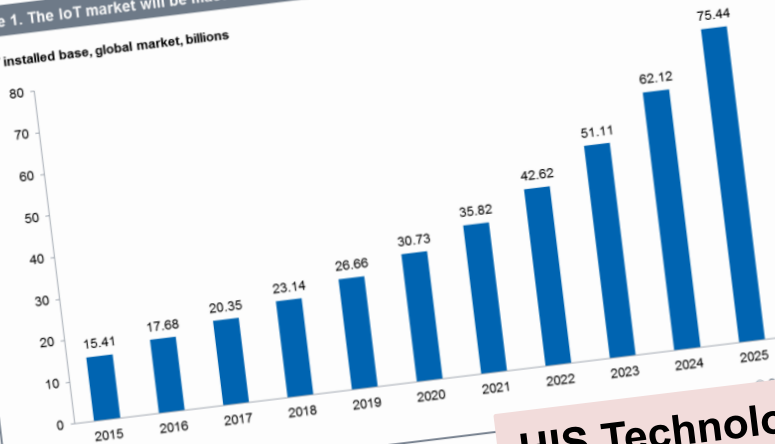
IHS Technology | IoT platforms: enabling the Internet of Things

## Forecasting the massive growth of the IoT

IHS forecasts that the IoT market will grow from an installed base of 15.4 billion devices in 2015 to 30.7 billion devices in 2020 and 75.4 billion in 2025, as seen below in Figure 1.

Figure 1. The IoT market will be massive

IoT installed base, global market, billions



Source: IHS

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## Internet of Things forecast

Growth of the Internet of Things and in the number of connected devices is driven by emerging applications and business models, and supported by standardization and falling device costs

### Key highlights

- 70% of wide-area IoT devices will be in use by 2022
- In 2018, mobile phones are expected to be around 400 million of 2016

**Ericsson - June 2017**  
 By 2022 around 18 billion IoT devices from 5.4 billion in 2016

around 29 billion connected devices<sup>1</sup> are forecast by 2022, of which around 18 billion<sup>1</sup> be related to IoT.

**IHS Technology - June 2016**  
 30.7 billion IoT devices in 2020

The Office of the Communications Authority (“OFCA”) has received applications to establish, maintain and operate wireless networks and systems for the provision of wireless IoT services using LPWAN technologies operating in the 920 – 925 MHz band

The establishment of a territory-wide network to offer in the course of business a public telecommunications service requires an appropriate licence to be issued pursuant to section 8(1) of the Telecommunications Ordinance (“TO”)



- There is a need to revise and update the existing licencing regime
- The new licence is to cater for wireless IoT services operating in the shared band of 920 – 925 MHz in an unprotected and uncoordinated manner
- Mobile Network Operators (“MNOs”) may freely provide wireless IoT services as part of the mobile services regulated under their current Unified Carrier Licences (“UCLs”)

# Creation of a New Licence (1)

The characteristics of wireless IoT services based on LPWAN technologies are **distinct from those of full-fledged mobile services**

- Wireless IoT devices use the 920 – 925 MHz band on a shared basis, and co-exist with other licence exempted devices without protection and coordination
- Wireless IoT devices are in general sensors, cameras, vehicles, appliances etc., without full-fledged functionality of mobile handsets or terminals
- Primarily involve automated operation with little or no human intervention
- Typically support scheduled data collection but not real-time interactive voice communications
- No telecommunications numbers needed

# Creation of a New Licence (2)

Existing facility-based operator licences, namely the **UCL** and Public Radiocommunications Service licence (“**PRSL**”), are **not suitable** -

## UCL

- × Wireless IoT services based on LPWAN technologies do **not** have the attributes of the conventional full fledged public mobile services licensed under the UCL
- × It is **not** suitable to impose the same level of stringent regulatory control in view of the smaller scale and mode of operation of wireless IoT services
- × Existing licence fee under the UCL may **not** be proportionate and reasonable in view of the lower estimated administrative cost of OFCA and the possible tremendous growth of such IoT devices

## PRSL

- × The legacy licensing regime (including licence conditions) is outdated and **not** appropriate for regulating the new wireless IoT services

# Proposed New Public Wireless Internet of Things Service Licence

## Creation of a New Wireless IoT Licence

- A new “**Public Wireless Internet of Things Service Licence**” (“**WIoT Licence**”) is proposed to be created under section 7(6) of the TO so as to regulate the provision of the wireless IoT services based on LPWAN technologies
- WIoT Licence is similar to UCL and PRSL in structure

The diagram illustrates the structure of the Public Wireless Internet of Things Service Licence document. It shows three overlapping yellow boxes representing different sections: Schedules, Special Conditions, and General Conditions. Below these is a sample page from the Telecommunications Ordinance (Chapter 106) titled 'PUBLIC WIRELESS INTERNET OF THINGS SERVICE LICENCE'. The page includes fields for the date of issue, company name, and address, followed by a list of conditions for the licensee.

TELECOMMUNICATIONS ORDINANCE  
(Chapter 106)

**PUBLIC WIRELESS INTERNET OF THINGS SERVICE LICENCE**

DATE OF ISSUE: [ ]

[Company Name]

of [Address]

(the "licensee") is licensed, subject to the following conditions set out in this licence –

- to provide a public telecommunications network service (the "service"), the scope of which is described in Schedule 1;
- to establish and maintain a telecommunications network (the "network") described in Schedule 2 to provide the service;
- to possess and use the radiocommunications installations described in Schedule 3 to provide the service; and
- to deal in, import and demonstrate, with a view to sale in the course of trade or business, such apparatus or material for radiocommunications as may be necessary to supply customers of the service.



# Proposed Licence Conditions (1)

## General Conditions (“GC”s) 1 – 16 and Special Conditions (“SC”s) 1 – 17

- Modelled based on the current set of licence conditions for the UCL with removal of irrelevant conditions and insertion of new conditions appropriate for wireless IoT operation

## New GCs 17 and 18

- Specify that the period of validity and licence fee of the WIoT Licence shall be determined and published by the Communications Authority (“CA”)



# Proposed Licence Conditions (2)

## New SC 18 (Shared Use of Frequencies)

- The use of specified frequencies in the 920 – 925 MHz band is shared with other applications in an uncoordinated manner and therefore not protected from harmful interference caused by other radio equipment

## New SC 19 (Demonstration)

- The licensee shall conduct demonstration, trials and tests to the satisfaction of the CA/OFCa to ensure no harmful interference to existing users of the concerned band

# Proposed Schedules

## Schedule 1 (Scope of Service)

- Make clear that nothing in the WIoT Licence authorizes the licensee to provide service which carries real-time voice communications

## Schedule 2 (Description of Network)

- Include a network description similar to UCL

## Schedule 3 (Technical Particulars of Radio Stations for the Provision of the Service)

- Specify the technical parameters for the use of the 920 – 925 MHz band

# Proposed Period of Validity and Annual Licence Fee

## Period of Validity: Five years

- Allow timely review of the regulation and licensing regime after the launch of the wireless IoT services using LPWAN
- Provide a reasonable timeframe for licensees to roll out their networks and services

## Fixed Fee: \$100,000

### Base Station Fee (identical to that for UCL and PRSL):

- For the 1st to 50th base stations: **\$1,000 each**
- For the 51st to 100th base stations: **\$500 each**
- For the 101st and thereafter base stations: **\$100 each**

### Wireless IoT Device Fee (similar fee component under UCL and PRSL):

- Initially set at a level of **\$200 for each 100 wireless devices or less** used by customers of the service, i.e. **\$2 each**

**X Spectrum Management Fee and Number Fee not applicable**

# Wireless IoT services by MNOs

- MNOs are already permitted to operate wireless IoT services using the mobile spectrum assigned to them and as part of the mobile services authorized under their current UCLs
- Same regulatory regime under the UCL will apply, including licence conditions and licence fee
- OFCA is prepared to review the licence fee arrangement for MNOs if they demonstrate plan of massive deployment of WIoT with their assigned mobile spectrum

# Way Forward

- Having regard to the feedback from the industry, OFCA will finalise the proposed licensing regime for the WIoT Licence for consideration by the CA
- Subject to the approval of the CA, OFCA expects to gazette the form of the WIoT Licence and issue licences to applicants fulfilling the licensing requirements in September/October 2017
- Subject to the development and experience on the implementation of wireless IoT services in Hong Kong, OFCA is mindful that there may be a need to further review and streamline the licensing regimes (including licence conditions and licence fee) for the provision of wireless IoT services

# Thank You