



Internet  
of Things



# Mobilising the Smart Cities

September 2017

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## **MOBILISING THE IoT**

Enabling a world in which consumers and businesses enjoy rich new services, connected by intelligent and secure mobile networks

 **THE GSMA**  
WAS FOUNDED  
IN  
**1987**

### 12 OFFICES WORLDWIDE:



 The GSMA represents the interests of mobile operators worldwide

 UNITING NEARLY  
**800**  
MOBILE OPERATORS

WITH  
**300+**  
COMPANIES  
in the broader mobile ecosystem

The world's leading mobile industry events, Mobile World Congress and Mobile World Congress Shanghai, together attract  
**130,000+**  
people from across the globe each year

The GSMA works to deliver a regulatory environment that creates value for consumers by engaging regularly with:



MINISTRIES OF TELECOMS



TELECOMS REGULATORY AUTHORITIES



INTERNATIONAL & NON-GOVERNMENTAL ORGANISATIONS

 CONNECTING  
**27,000+**  
Industry Experts

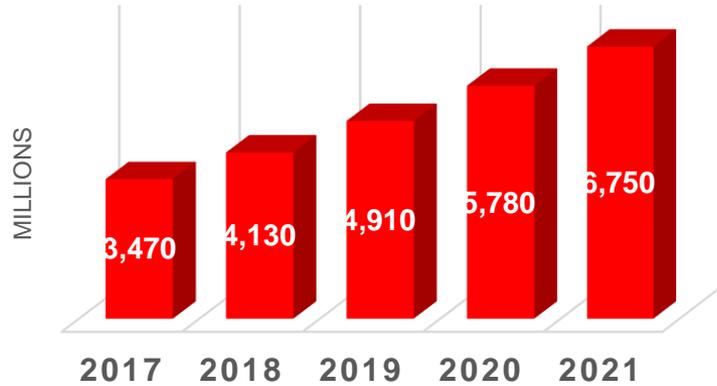
Exclusively for GSMA Members, InfoCentre<sup>2</sup> is your place to connect with a global community of industry experts

GSMA Working Groups provide frameworks and standards in commercial, operational and technical matters that help maintain and advance mobile industry ecosystems

 **7.5 BILLION+**  
MOBILE CONNECTIONS  
WORLDWIDE

## IoT Connections in APAC

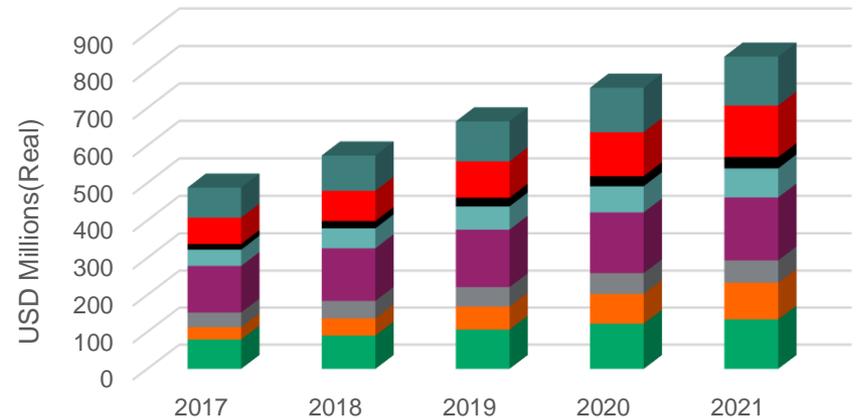
IOT CONNECTED DEVICES GROWTH IN ASIA 2017-2021



Source: Machina Research IoT forecast

## IoT Revenues in APAC

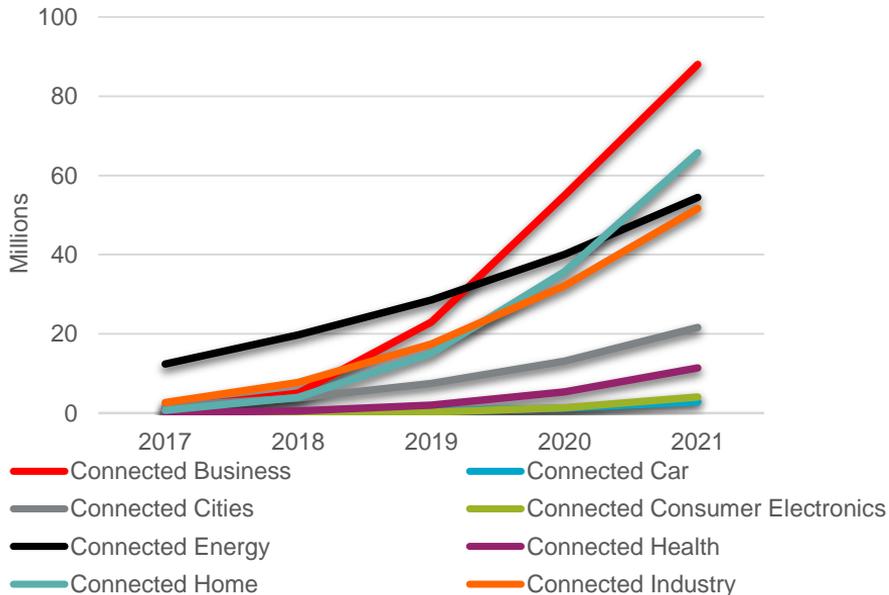
IoT Revenue growth in Asia by Industry 2017-2021



Source: Machina Research IoT forecast

## LPWA Connections in APAC

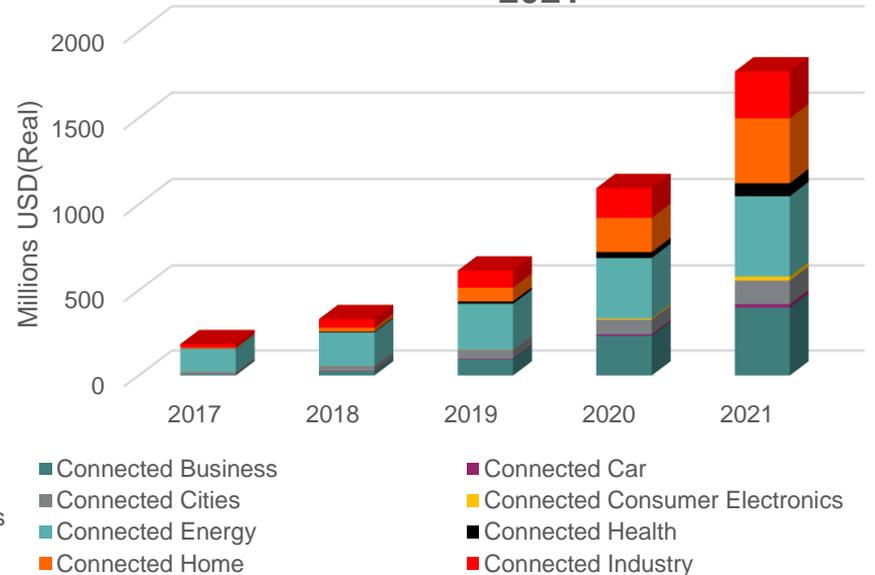
### LPWA Connections growth 2017-2021 in Asia (by Industry)



Source: Machina Research IoT forecast

## LPWA Revenues in APAC

### LPWA Revenues growth by industry 2017-2021



Source: Machina Research IoT forecast

### CURRENT SITUATION

IoT is developing rapidly but with significant market fragmentation.

Operators need to add value beyond just connectivity.

### MARKET GROWTH

IoT M2M Mobile Connections Forecast Growth

2016: 0.43bn	2026: 6bn
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\*Mobile & LPWA IoT Connections

**3.8 BILLION**  
64% ARE LPWA CONNECTIONS\*

### FOCUSED DELIVERY ON KEY MARKET ENABLERS

- Mobile IoT to develop licensed LPWA opportunity and launches
- Securing the IoT
- Harmonised IoT Big Data and APIs
- Sustainable IoT regulatory & policy environment
- Active industry engagement Smart Cities, Connected Vehicles and Drones

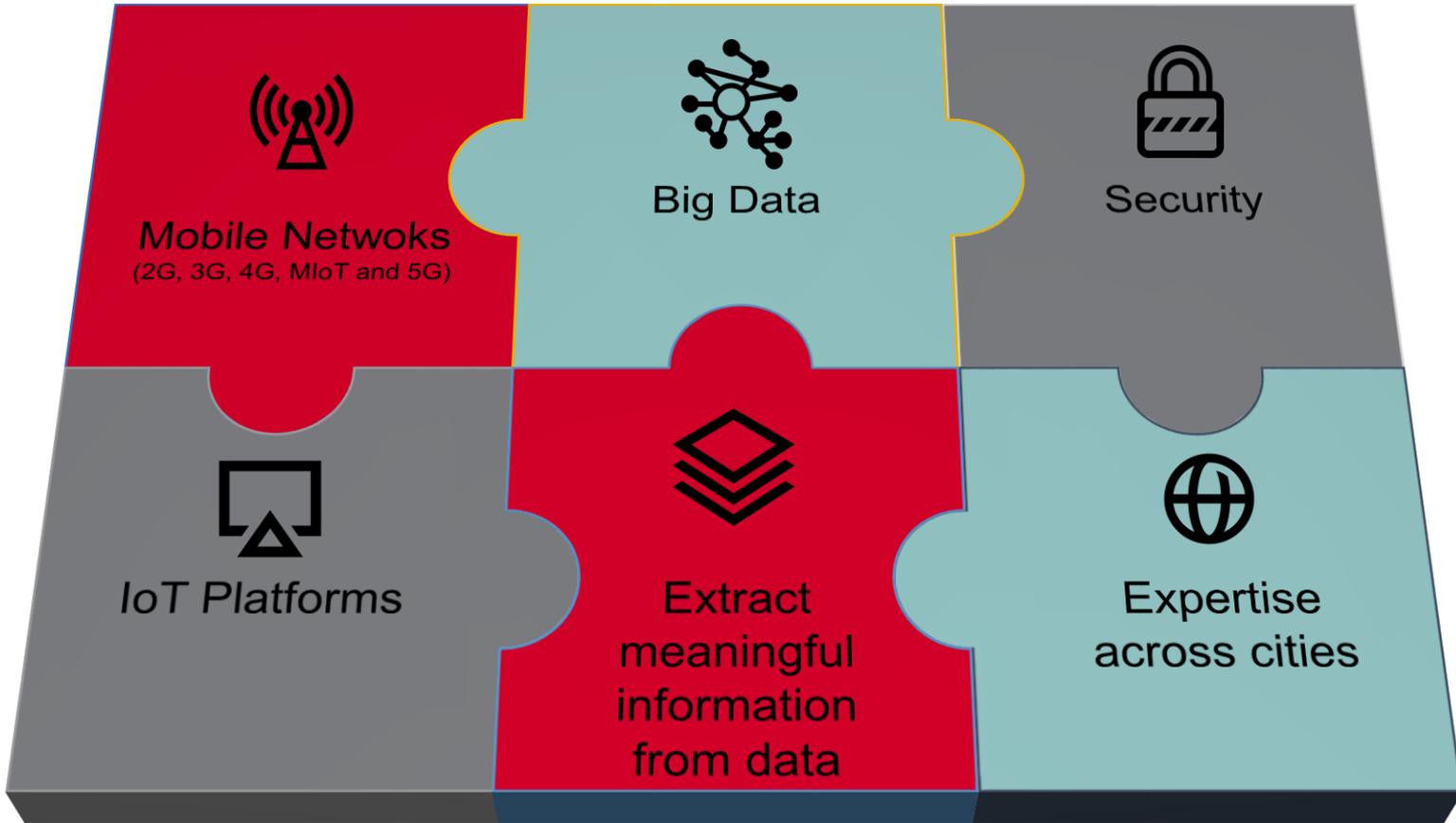
### MARKET OPPORTUNITY

Enable Operators to deliver the breadth of IoT solutions required and move up the value chain to achieve more of the full market potential.

**\$1.8 TRILLION**  
\*All income from IoT devices and related services in 2026

The diagram shows a value chain with three stages: Data Connectivity, Network Services & Managed Connectivity, and Market Potential Platform & Content Services. An arrow points from left to right, indicating the flow of value through these stages.

\*Source: Machina Research, 2017



## Optimised communications networks



- Licenced spectrum, low power wide area

## Remote asset management



- Embedded SIM & IoT Remote provisioning

## Local service development and deployments



- In-depth local planning

## Big data management



- Managing huge data volumes daily

## Robust security



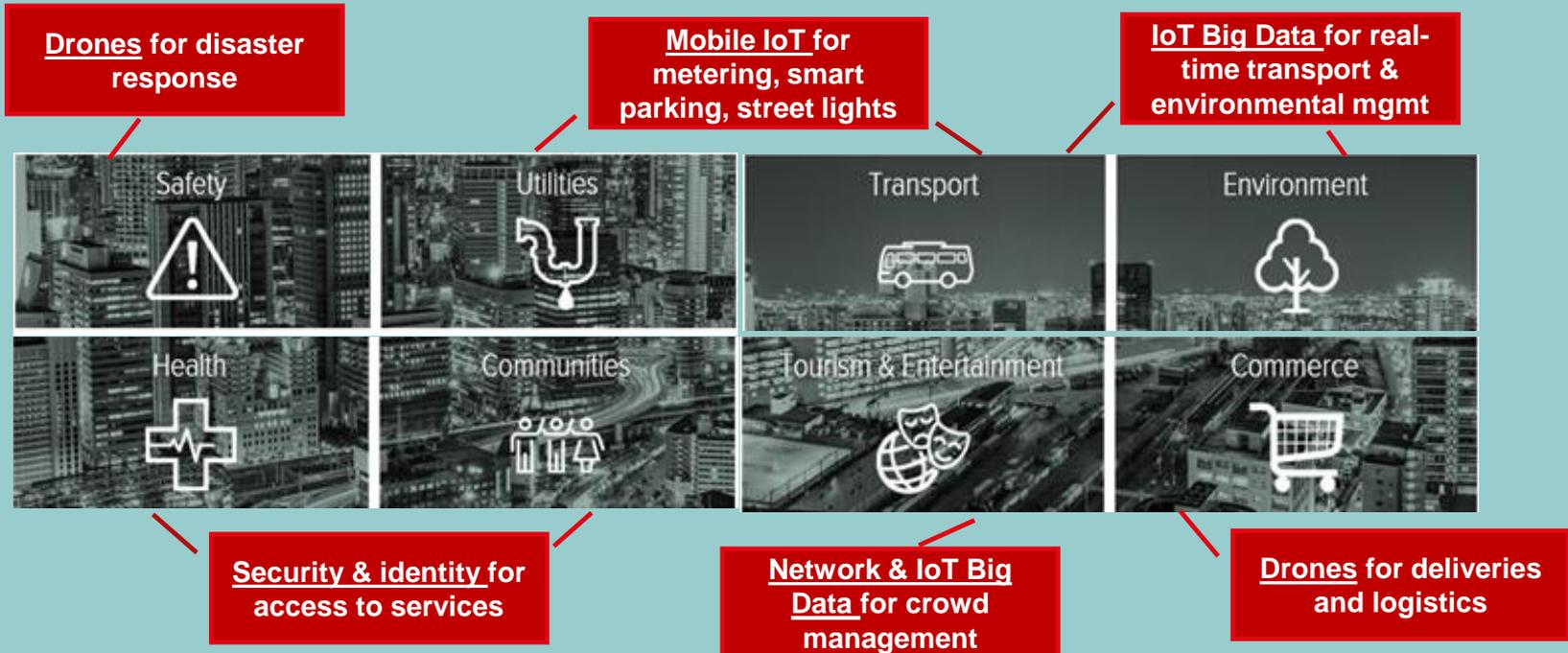
- GSMA guidelines ensure compliance

## Citizen & Service identification and authentication

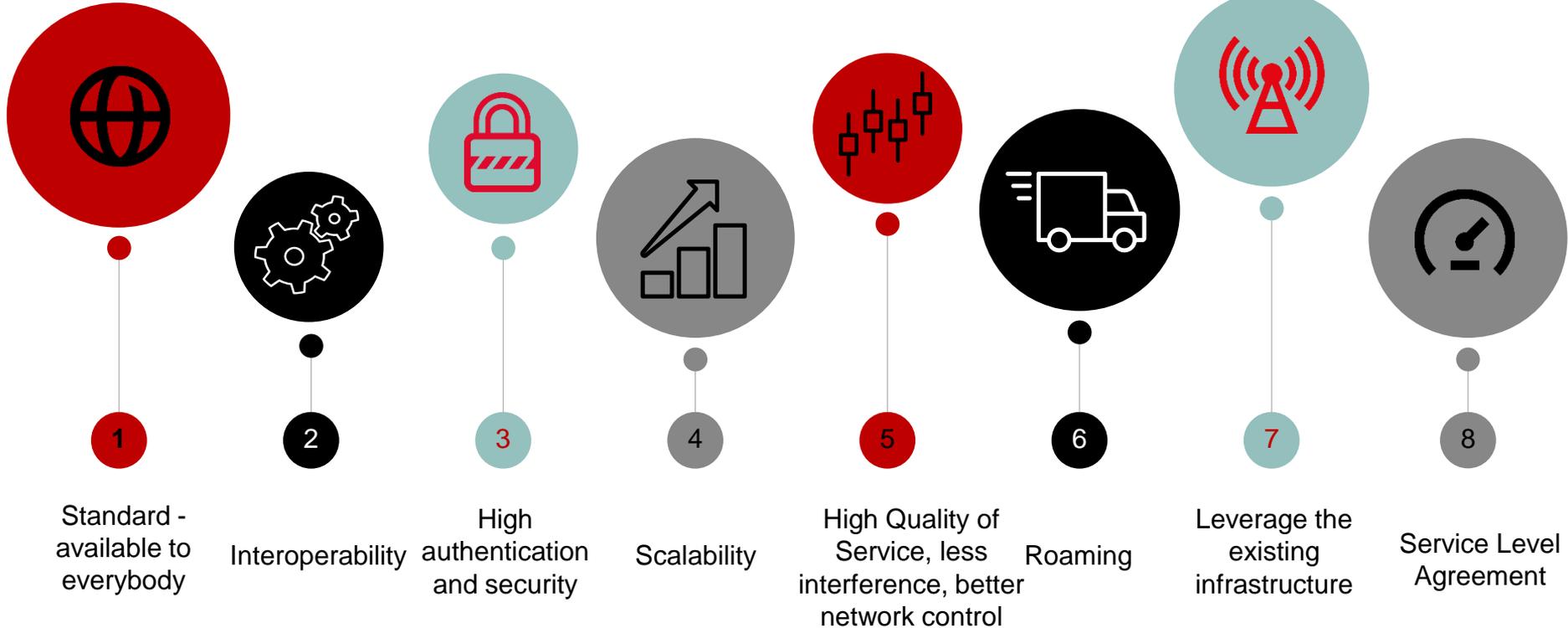


- Mobile Connect secure authentication

With 27 billion devices connected globally by 2025, the evolution of Smart Cities will change our everyday lives.



**Mobile operators and cities are working closely together to make mobile-enabled Smart Cities a reality.**



# Which mobile solution to choose

Automotive



CCTV



Health



Wearables



Environmental  
/ Agriculture



Water/gas  
meters

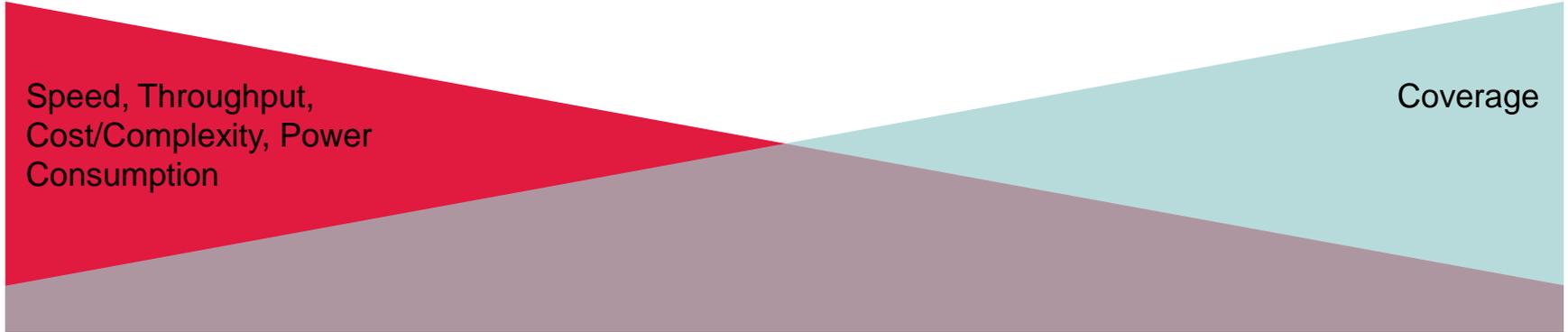


4G+

MIoT

Speed, Throughput,  
Cost/Complexity, Power  
Consumption

Coverage





**3GPP Rel13  
Standard**  
finalised in  
9 months

First  
**COMMERCIAL  
NETWORK**  
In 7 months

## **ECOSYSTEM**

Support for Mobile  
IoT from **38 MNOs**  
and **27 vendors**  
worldwide



**15 COMMERCIAL  
LAUNCHES** by September  
2017, 35 expected by  
February 2018

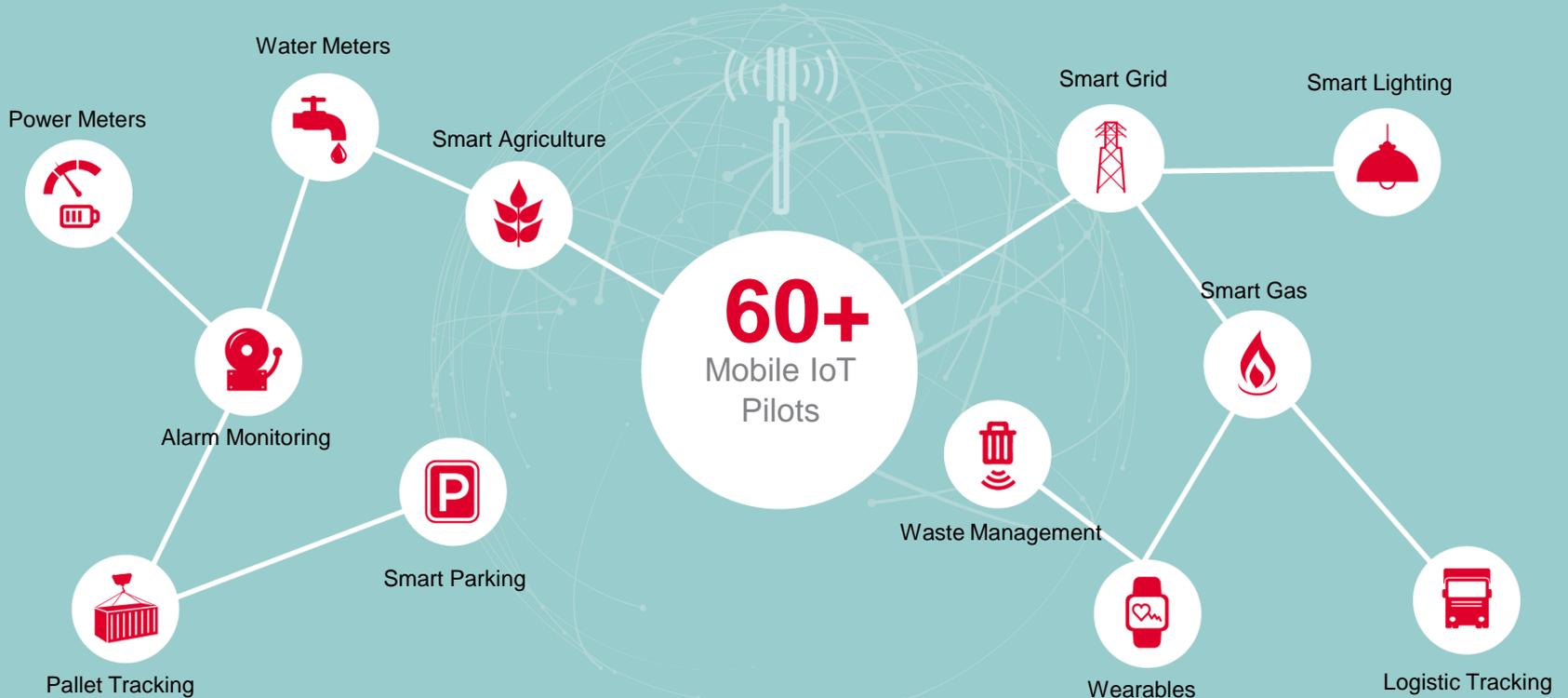
**26 OPEN IoT  
LABS** in 12 countries

**60+** Mobile  
IoT pilots  
**WORLDWIDE**

**MULTIPLE CHIPSETS  
AND MODULES NOW  
COMMERCIALY  
AVAILABLE**



# MOBILE IoT PILOTS & USE CASES





# MOBILE IoT IS NOW A REALITY

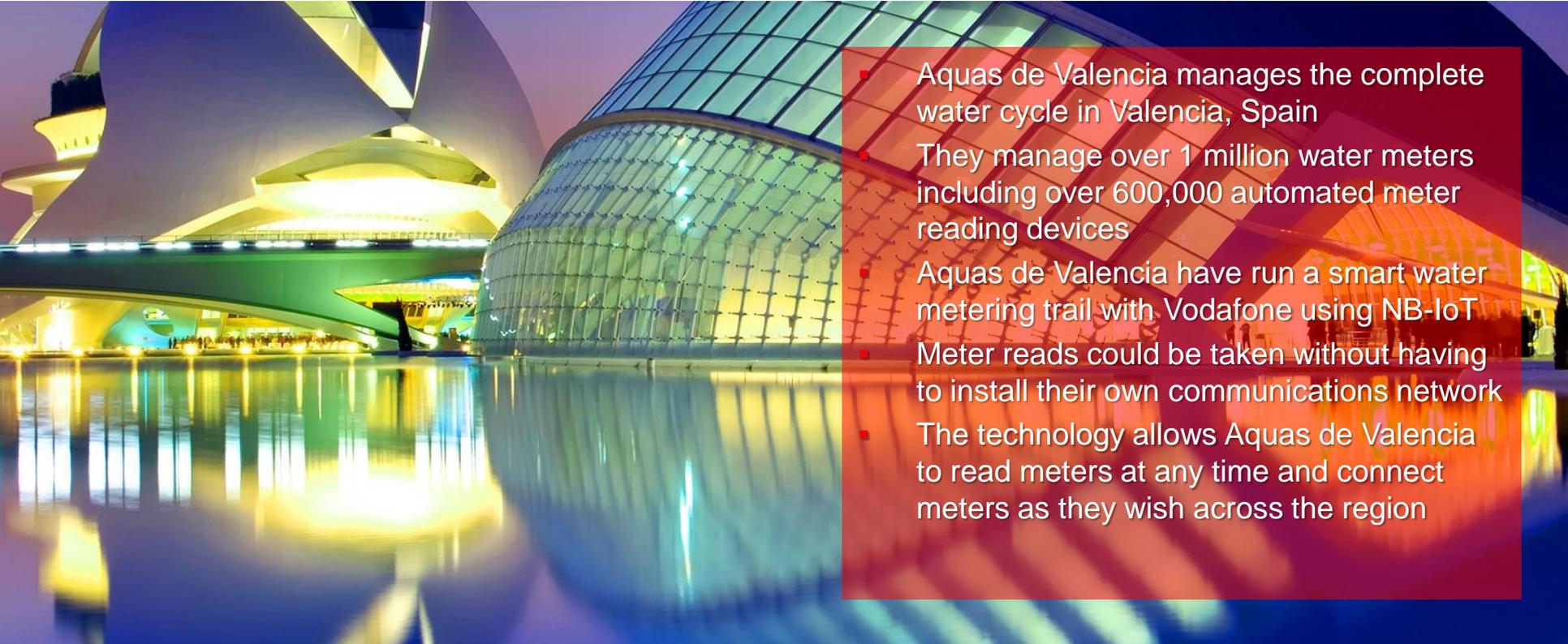


**LTE-M**

**NB-IoT**

## Commercial launches

Commercial Mobile IoT networks now spanning the 3 largest continents



- Aguas de Valencia manages the complete water cycle in Valencia, Spain
- They manage over 1 million water meters including over 600,000 automated meter reading devices
- Aguas de Valencia have run a smart water metering trail with Vodafone using NB-IoT
- Meter reads could be taken without having to install their own communications network
- The technology allows Aguas de Valencia to read meters at any time and connect meters as they wish across the region

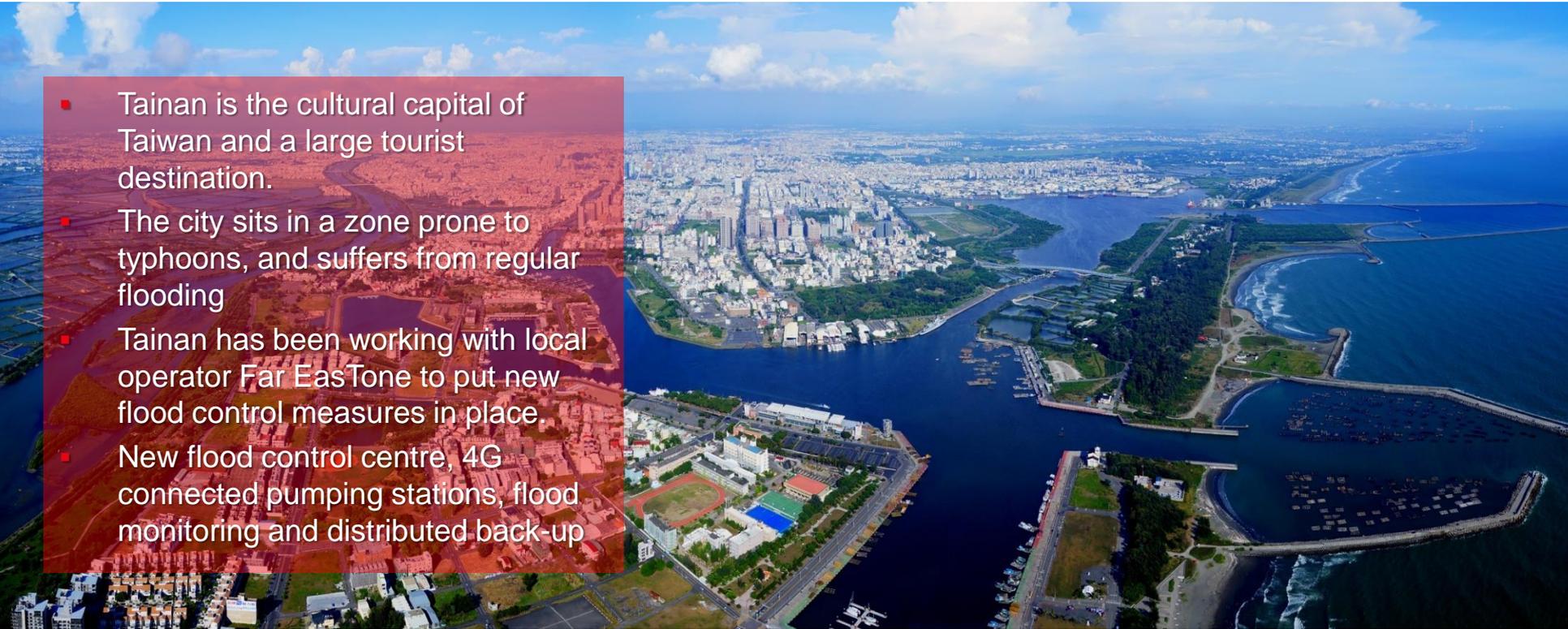


- Sagrada Familia is Barcelona's most popular tourist attraction
- It attracts over 3,000,000 visitors per year
- Barcelona is turning itself into a 'Smart Tourist Destination'
- The city is looking at how IoT, Big Data solutions, and mobile solutions for travellers can help them manage the volume of visitors they receive whilst providing a good experience.

- Tainan is the cultural capital of Taiwan
- It is built around a network of old, small streets
- Local Operator FET has installed 4G enabled traffic management system, with remote cameras, traffic lights and RFID tags/Licence plate readers
- Central traffic control centre can now view and control traffic in real-time.
- Smart Parking is now being added to the service



- Tainan is the cultural capital of Taiwan and a large tourist destination.
- The city sits in a zone prone to typhoons, and suffers from regular flooding
- Tainan has been working with local operator Far EasTone to put new flood control measures in place.
- New flood control centre, 4G connected pumping stations, flood monitoring and distributed back-up





- Monheim am Rhine in Germany has installed smart streetlighting with Deutsche Telekom and the local energy company
- Streetlights are now remote controlled, require less energy and can be dimmed remotely
- Light failures are reported automatically
- Christmas lights are also connected to the system
- As traffic volume decreases in the evening, the lights automatically dim to save energy.



## Mobile IoT Rollout Report

<https://www.gsma.com/iot/miot-rollout/>

## Mobile IoT Open Labs

<https://www.gsma.com/iot/deployment-map/#labs>

## Deployment Guides

NB-IoT:  
<https://www.gsma.com/iot/nb-iot-deployment-guide/>

LTE-M:  
<https://www.gsma.com/iot/lte-m-deployment-guide/>



## IoT Security

<https://www.gsma.com/iot/future-iot-networks/>

## IoT Big Data

<https://www.gsma.com/iot/iot-big-data/>

## Big Data for Social Good

<https://www.gsma.com/betterfuture/bd4sg/>

## Mobile IoT Innovators, an ecosystem of more than 680 members

<https://www.gsma.com/iot/mobile-iot-innovators/>

## Smart Cities

<https://www.gsma.com/iot/smart-cities/>



# Thank you

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 <https://www.gsma.com/iot>