

# Mobile IoT for Smart Cities: Open for Business

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# GSMA Connected Living Programme

## MOBILISING THE INTERNET OF THINGS – ENABLING GROWTH & OPPORTUNITY

### CURRENT SITUATION

- IoT is developing rapidly but with significant market fragmentation.
- Operators need to add value beyond just connectivity.

### MARKET GROWTH

IoT M2M Connections

Forecast Growth

2015	2020
6bn	15bn

Source: Machina Research, 2016

### MARKET OPPORTUNITY

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

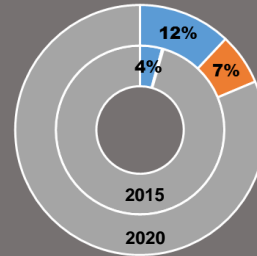
# \$1.3

TRILLION

Total IoT Services Revenue market in 2020

Source: Machina Research, 2016

### IoT M2M Connections as percentage of mobile connections



By 2020 nearly 20% of mobile connections will be cellular or LPWA = 1.8 billion

### FOCUSED DELIVERY ON KEY MARKET ENABLERS

Mobile IoT to develop licensed LPWA opportunity and pilots



Customer focused remote SIM provisioning



IoT Big Data harmonised data and APIs



Securing the IoT



Sustainable IoT regulatory & policy environment



Active industry engagement – Smart Cities, Automotive and Health



More info on IoT - [www.gsma.com/connectedliving](http://www.gsma.com/connectedliving)



# Smart Cities: Benefits & Opportunities

## BENEFITS

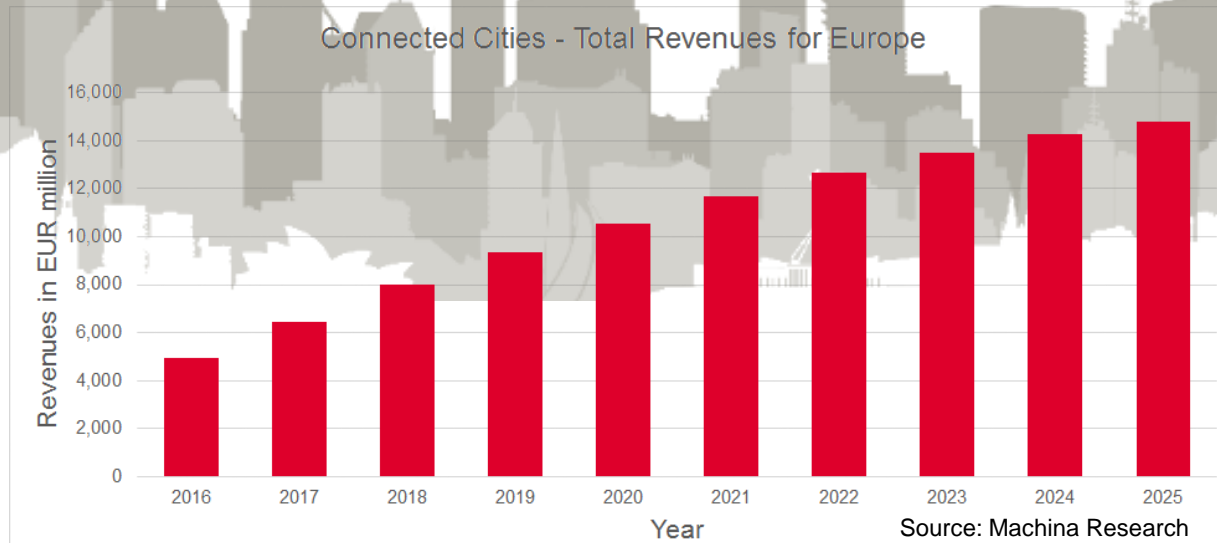
Economic growth



Quality of life



Sustainability





# Smart City Applications

City services can be linked by common infrastructure, data sets and technologies. Mobile operators are able to focus on the infrastructure needed to deliver the whole, or focus on individual services to ensure smart cities roll out in the required way.

TRANSPORT	 PUBLIC TRANSPORT	 TRAFFIC MANAGEMENT	 PARKING
SAFETY	 STREET LIGHTING	 CROWD CONTROL	 CCTV
HEALTHCARE	 DISEASE CONTROL	 EMERGENCY RESPONSE	 PATIENT AUTHENTICATION
ENTERTAINMENT AND TOURISM	 EVENT MANAGEMENT	 RECREATION FACILITIES	 SHOPPING MALLS
ENVIRONMENT	 AIR QUALITY	 WEATHER SENSING	 FLOOD CONTROL
UTILITIES	 SMART METERING	 WASTE MANAGEMENT	 SEWERAGE
GOVERNMENT	 CITIZEN ENGAGEMENT	 MUNICIPAL SERVICES	 INFRASTRUCTURE MONITORING
COMMERCE	 DELIVERY LOGISTICS	 RETAIL	 ADVERTISING



# Mobile IoT: 3GPP standard technology for LPWA



**Mobile IoT** refers to 3GPP standardized secure operator managed IoT Networks, in particular low power wide area network

## Choice of Technologies

LTE M

NB-IoT

EC-GSM-IoT

## Key Features

Low Cost Module

Better Coverage

Long Battery Life

Low data needs

2-ways communication

## Key Benefits

3GPP Standards

Global Coverage

Secure

Scalable



## What Mobile Operator can provide

### Optimised communications networks

- licenced spectrum, with several capabilities including low power wide area technologies

### Remote asset management

- Embedded SIM & remote provisioning

### Local service development and deployments

- In-depth local planning

### Big data management

- Managing huge data volumes daily
- Strong privacy guidelines

### Robust security

- GSMA guidelines ensure compliance

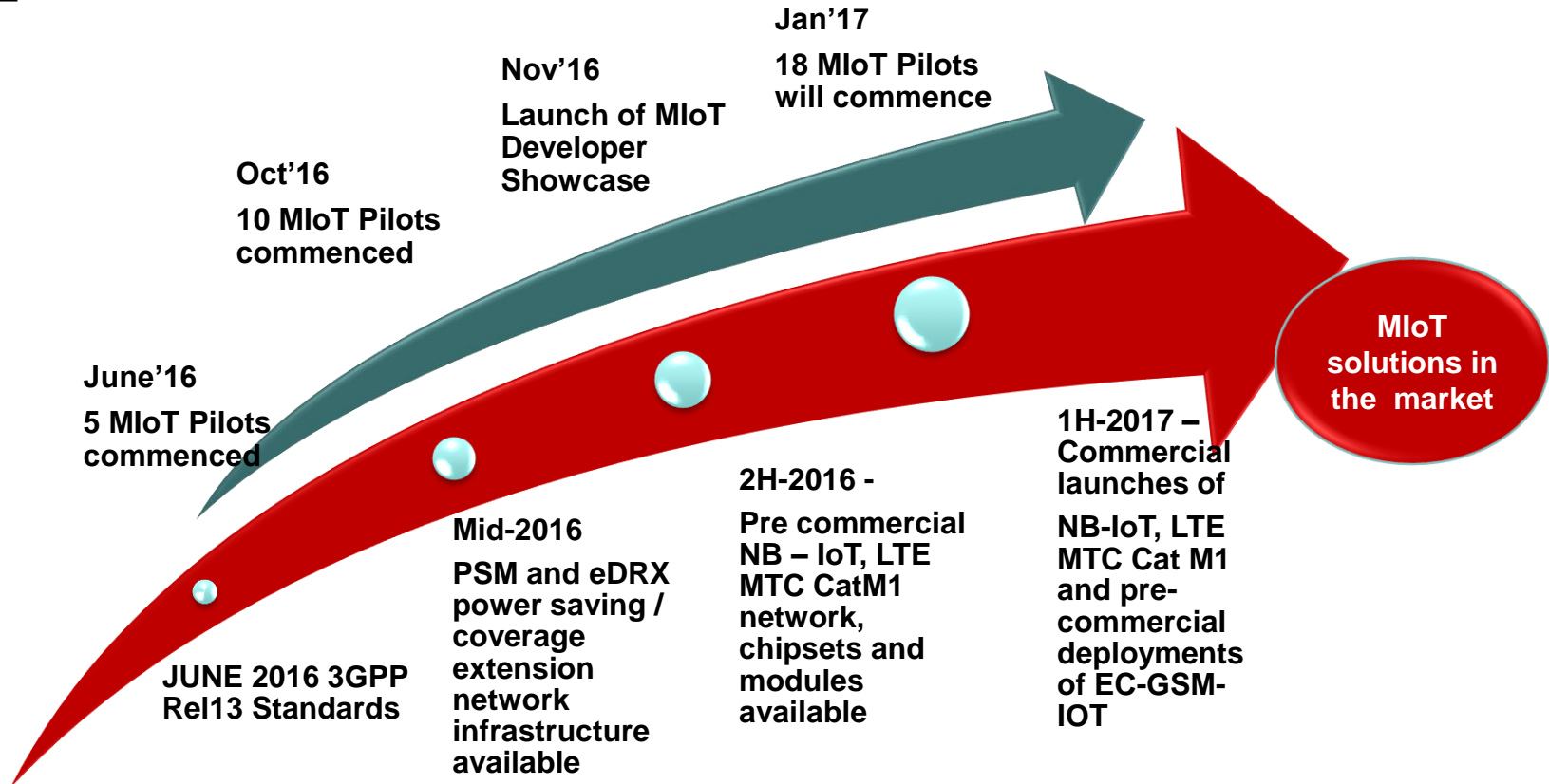
### Service & citizen authentication and identification

- Strong and secure authentication (SIM)
- Mobile Connect secure authentication





# Mobile IoT Technologies Roadmap





# Major Development: Growing MIoT Ecosystem

Supported by all major vendors in the mobile ecosystem  
Clear roadmap: NB-IoT and LTE-M will become part of 5G standard

## Chipsets and modules



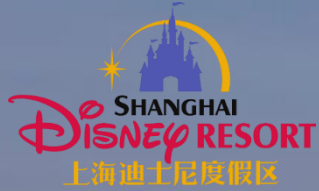
## Infrastructure







## Transport: Shanghai Smart Parking



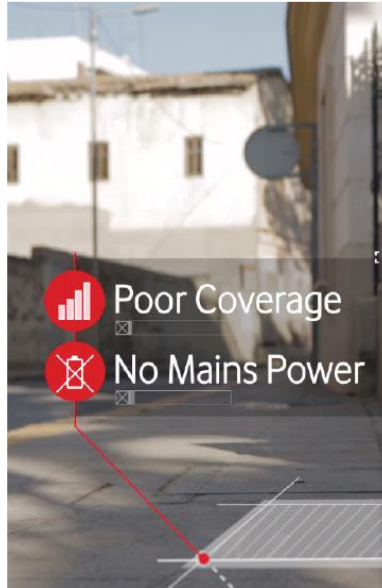
- NB-IoT Pilot with China Unicom
- Covering 300 spaces in Shanghai International Tourism & Resorts Zone parking lot
- Linked to Smart Parking app and control centre, offering end-to-end service

Smart Parking Sensors





# Smart Water Meters and Environmental Sensors



Six smart water metering and sensor trials have been launched by Vodafone (NB-IoT), AT&T (2 x LTE-M), China Telecom (NB-IoT) and Telefonica Chile (NB-IoT)

- ❑ Vodafone Spain and Aguas de Valencia trial connected meters in basements, meter boxes below ground and recess niches with metal covers that block the signal. Started as pre-standard, currently upgraded to trial standard.
- ❑ AT&T trials with Capstone and with Badger, to evaluate LTE-M-based solutions to enhance performance for enterprise customers, focusing on PSM and Coverage Enhancement features.
- ❑ Ericsson is also planning to use LTE-M to add water quality measuring sensors along the entire 430 mile length of the *Chattahoochee River* in Alabama and Georgia, in partnership with AT&T.





# Conclusion: How Mobile Operators enable Smart Cities



1. Mobile operators have a long track record of building and supporting commercially viable, scalable services for a wide variety of consumers and vertical markets.
2. Mobile operators are often already engaged with local and national governments.
3. Mobile operators can help city leader understand the technical capabilities and help build a realistic set of objectives, programmes and KPIs.
4. Mobile operators understands that the success of smart cities services is reliant on the use of standards.
5. Mobile operators are able to work with smart cities for stimulating innovation in the wider ecosystem, for example, through start-up and developer programmes.
6. Mobile operators already have a relation with the citizens and the penetration of mobile is significantly high in cities.



# GSMA Programmes for IoT

## Mobile IoT

Accelerate availability of standard LPWA solutions in licensed spectrum (EC-GSM-IoT, LTE M, NB-IoT)



## Remote SIM Provisioning

Allow for an increase of connected services and lower cost of connected products



## IoT Big Data

Harmonised data sets from multiple sources available to developers and third parties through common APIs.



## IoT Security

Help IoT Ecosystem providers to protect themselves from cybersecurity threats (Guidelines)



## Mobile Connect

Mobile Connect is a convenient and secure universal log-in solution with privacy protection.



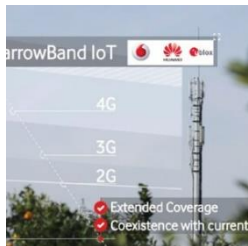
## IoT Business Enablers

Enable operators to capture the Internet of Things opportunity, by fostering relevant, flexible and technology-neutral policies and regulation





# GSMA Case Studies and Reports for MIoT / LPWA



## ➤ Case Studies

- LPWA: The Future of Smart Metering (June 2016)
- LPWA: Cost-Effective Care for the Environment (June 2016)



## ➤ Reports:

- Mobile Internet of Things Industry paper (March' 2016)
- 3GPP Low Power Wide Area Technologies White Paper (Oct'2016)
- LPWA Pilots Report (to be published in Feb'2017)



## ➤ Webinars

- Mobile IoT (LPWA) Open for Business (5 August 2016) - [replay](#)



<http://www.gsma.com/connectedliving/resources/>





# GSMA Case Studies & Reports for Smart Cities



## ■ Reports:

- Transport System:  
<http://www.gsma.com/connectedliving/mobilizing-intelligent-transport-systems-report/>
- Crowd Management:  
<http://www.gsma.com/connectedliving/gsma-smart-cities-guide-crowd-management/>
- Water Management:  
<http://www.gsma.com/connectedliving/gsma-smart-cities-guide-water-management/>

## ■ Case Studies:

- Transport: Shanghai Smart Packing
- Environment: Tainan Flood Control, Atlanta Chattahoochee River
- Utilities: Las Vegas Leakage Detection
- Safety: Sagrada Familia Barcelona



Connected  
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Thank you



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