Global Policy & Regulatory Trends for M2M/ IoT

iDA Workshop on M2M, Singapore, 19 November 2015

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CONTENTS

- GSMA activities on M2M/ IoT
- Global Deployment Models
  - Embedded SIM
  - M2M Roaming
- Policy and Regulation
  - Examples from around the world
  - Enabling growth and innovation in IoT

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What is the Internet of Things (IoT)?

- **GSMA definition:** The Internet of Things describes the coordination of multiple machines, devices and appliances connected to the internet through multiple networks.
- **Devices in IoT**: Vast array of devices covering many vertical industries; smartphones, tablets and consumer electronics, and others including vehicles, monitors and sensors equipped **with M2M communications** that allow them to send and receive data.
- **Growing number of connections**: IoT sees innovative new business models create value by connecting existing and new "Things" together to create new business processes and efficiencies including data analytics.

'Anything that will benefit from being connected will be connected'
Networked Society 2012

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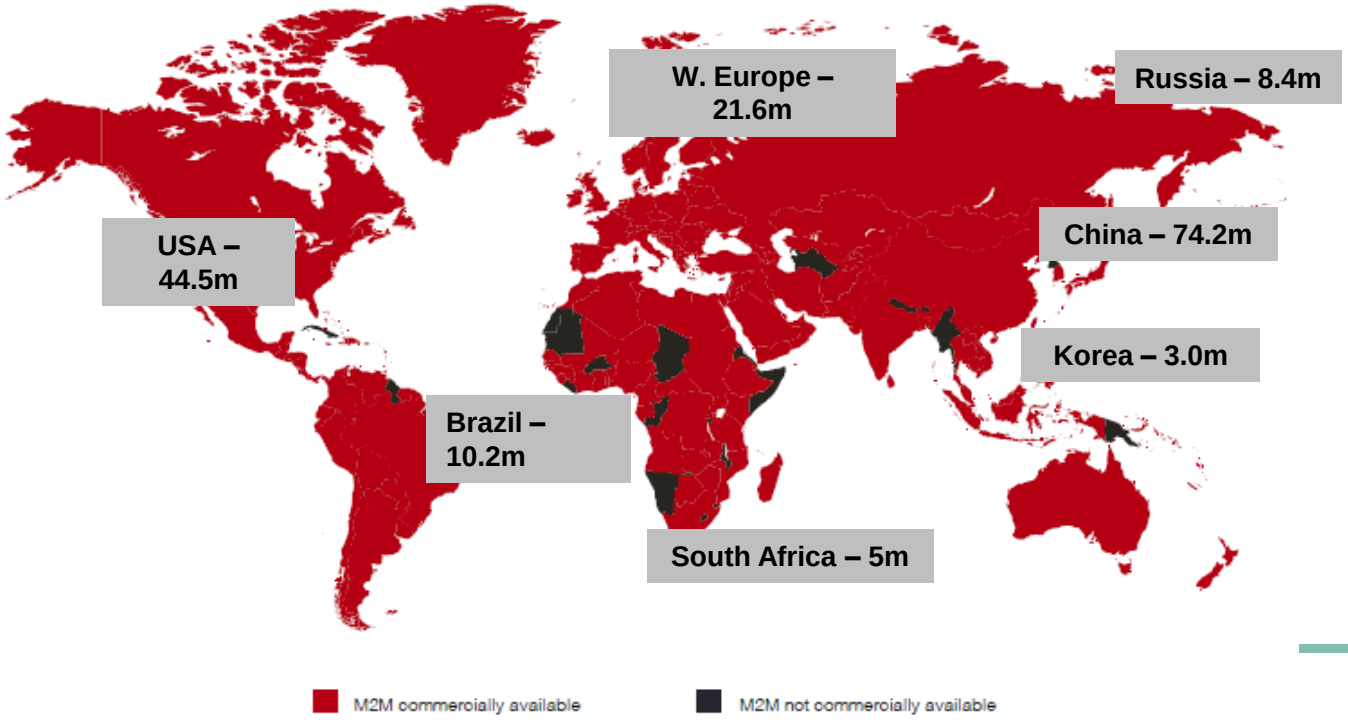
A nascent market with significant potential

Number of M2M cellular connections



468 operators
190 countries
255 million connections

Source: GSMAi, Machina, Q1 2015

Value chain involves many players and networks

Forecast 2020:

- 25 billion **total** M2M connections
- 1 billion **cellular** M2M connections

Source: Gartner, GSMAi

Companies will build cross-industry alliances and partnerships, increasing the intensity of competition

***Source**: PwC analysis, ADL*

Quantifying benefits of IoT in practical terms

mHealth
could save over 1 million lives in Sub-Saharan Africa over the next five years.

Traffic telematics
could help Chinese commuters reclaim nearly two hours each of their time every week and add over 20 billion USD to the Chinese GDP each year.

Technology-enhanced learning
could save South Korean families between 8,000 to 12,000 US D on private tuition for their children.

The IoT could
save 99 billion EUR
in healthcare costs in the European Union and add 93 billion EUR to the GDP.

In developing regions,
mEducation
could provide 180 million children the opportunity to stay in school.

Reducing power theft and increasing usage efficiency via
smart meters
could save enough electricity in India to power more than 10 million homes.

***Source**: PwC estimates*

GSMA Programme: Mobilising the IoT

OUR VISION: TO ENABLE THE INTERNET OF THINGS, A WORLD IN WHICH CONSUMERS AND BUSINESSES ENJOY RICH NEW SERVICES, CONNECTED BY AN INTELLIGENT AND SECURE MOBILE NETWORK.

OUR AIM: TO HELP OPERATORS ADD VALUE AND ACCELERATE THE DELIVERY OF NEW CONNECTED DEVICES AND SERVICES IN THE M2M MARKET. ACHIEVED BY INDUSTRY COLLABORATION, APPROPRIATE REGULATION, OPTIMISING NETWORKS AS WELL AS DEVELOPING KEY ENABLERS TO SUPPORT THE GROWTH OF M2M IN THE IMMEDIATE FUTURE AND THE IOT

Remote SIM Provisioning for M2M

Future IoT Networks

IoT Business Enablers

Industry Engagement

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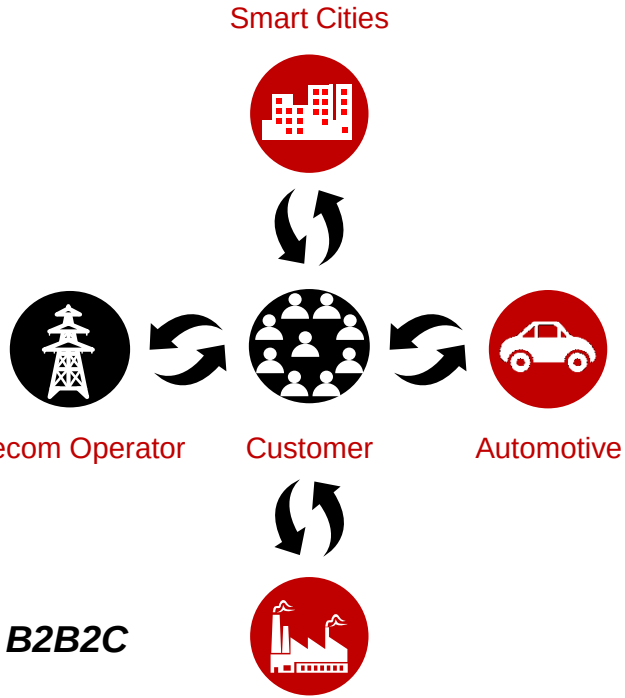
The customer will be accessed by many

Many companies will access their customers directly to discuss their connectivity needs

Traditional telecom: B2C

Telecom Operator — Customer

IoT enabled world: B2B2C



***Source**: PwC analysis, GSMA*

Through global production and distribution models

Distinct elements of the value chain will be performed in different geographies

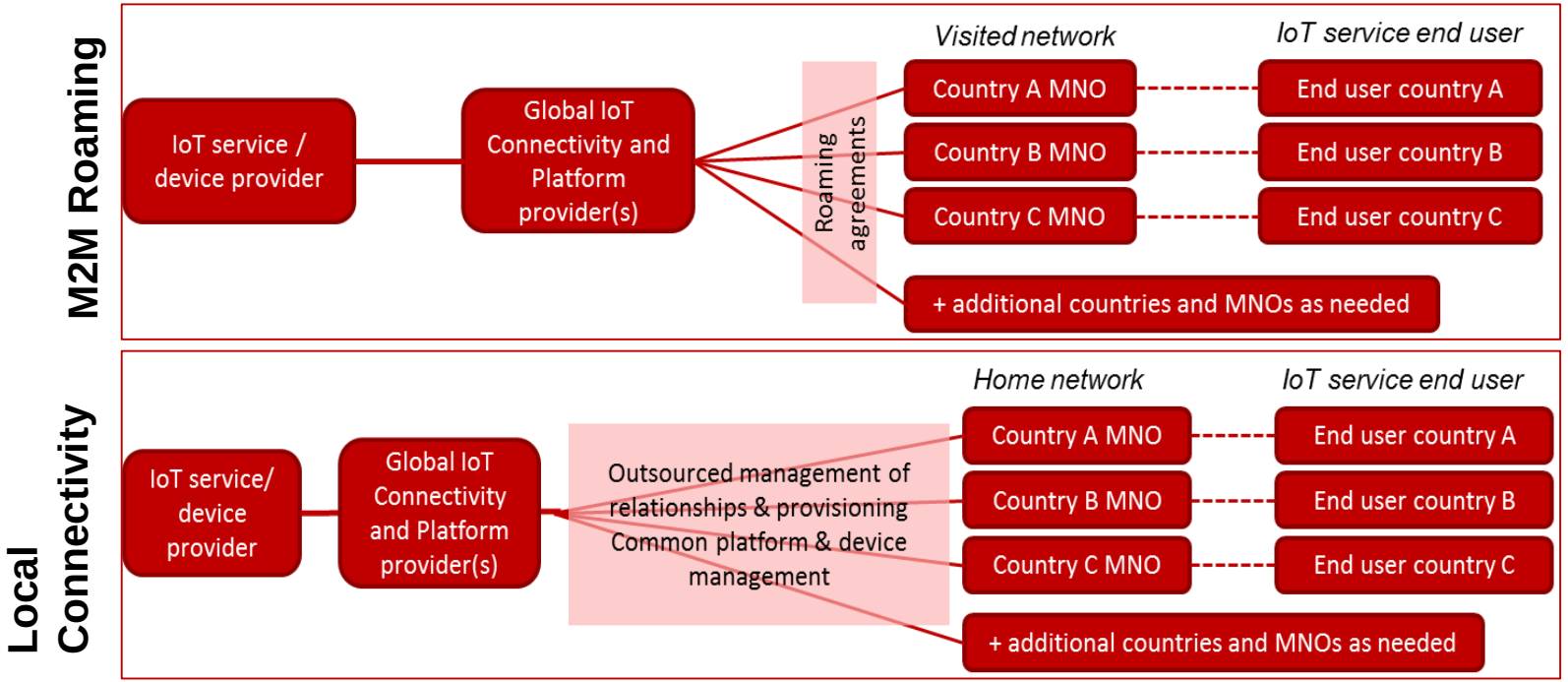
Example: Automotive

Connected cars manufactured in one location

Distributed globally with installed sensors, seamless connectivity, data and analytics

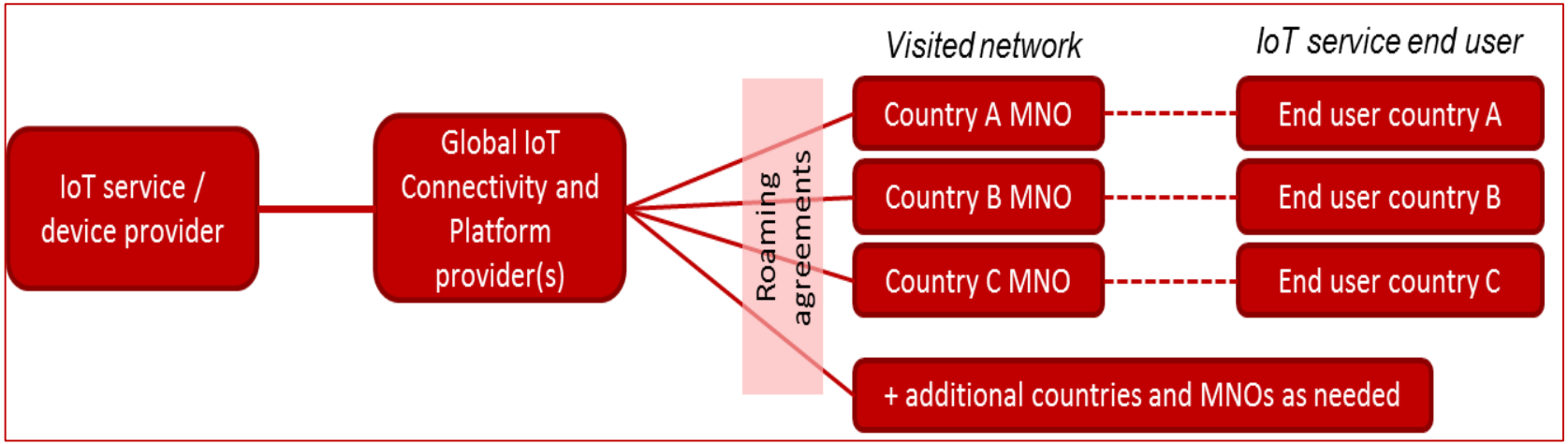
***Source**: PwC analysis, GSMA*

Global deployment solutions available today

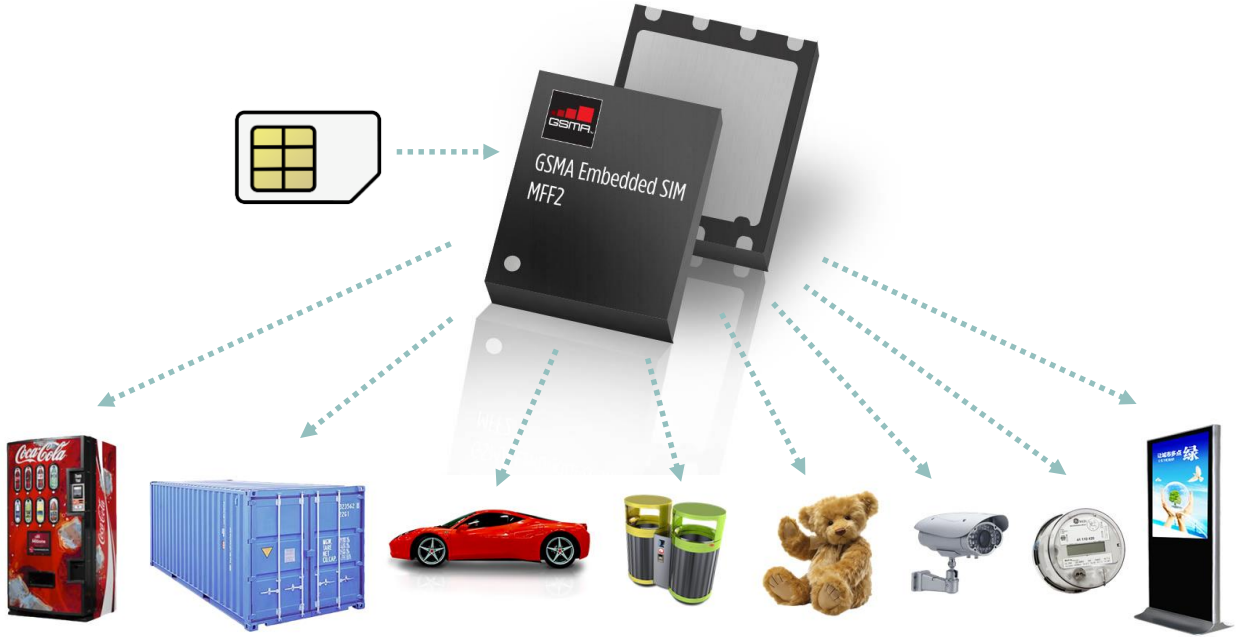


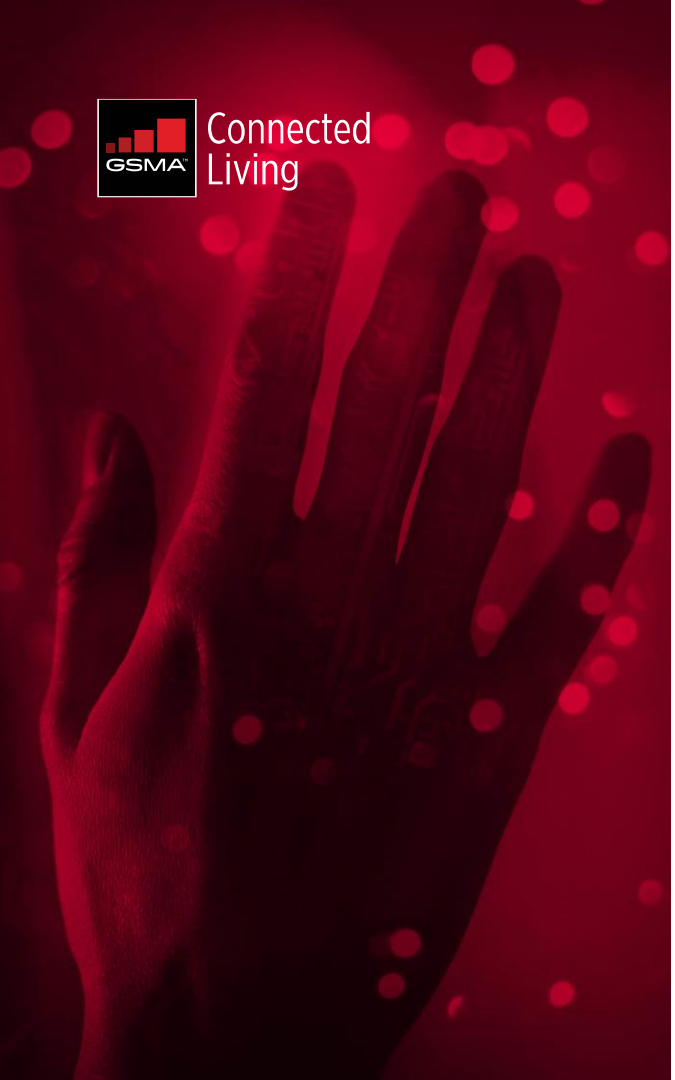
Hybrids models of M2M roaming and local connectivity could also be deployed, and new models might emerge in future

M2M roaming widely used around the world

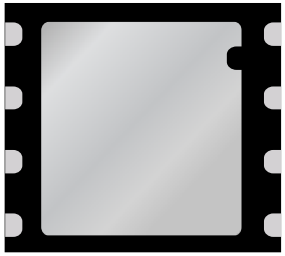


Local Connectivity model developed by GSMA



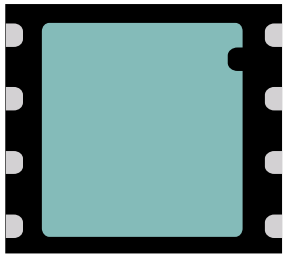


GSMA Embedded SIM at a Glance



V2.0

AVAILABLE SINCE OCT 2014
Products available now

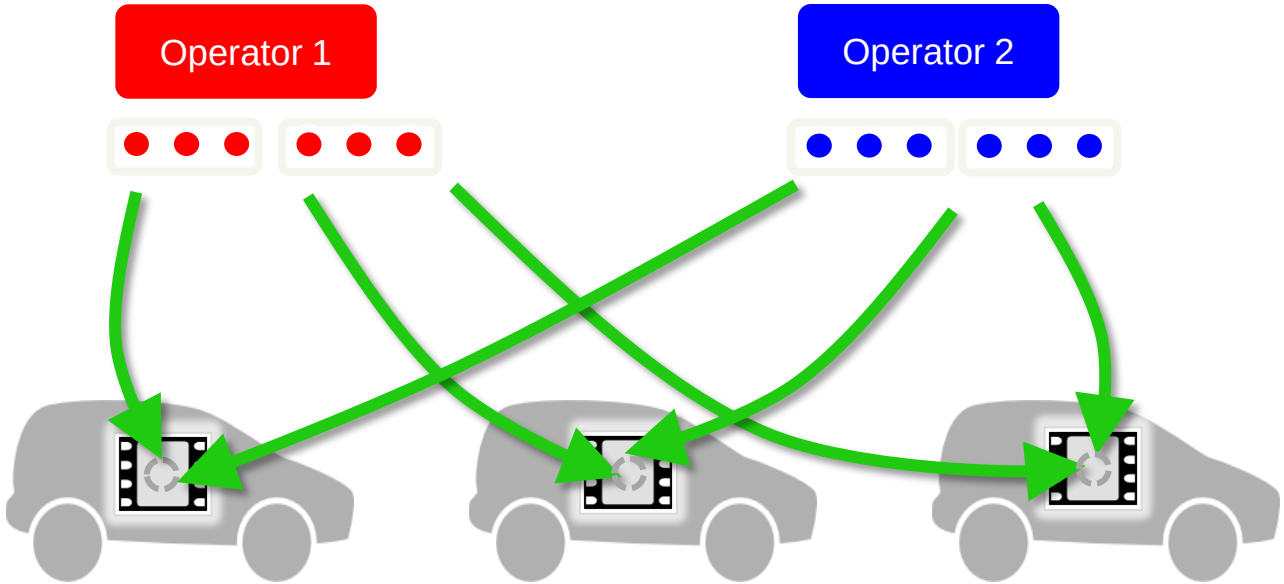


V3.0

DELIVERS PROFILE INTEROPERABILITY
AVAILABLE OCT 2015
Products available Q1 2016

A SINGLE, COMMON AND GLOBAL SPECIFICATION TO ACCELERATE GROWTH IN M2M

Profile interoperability explained



Industry needs flexibility

- Industry requires flexibility to develop and deploy models that best facilitate a rapid and economically viable roll-out of IoT services
- Tremendous diversity in services, partners and value chain means different solutions are required: not a ‘one-size-fits-all’
- Choice of deployment model might depend on a number of factors, such as:
  - particular needs of the mobile operator, IoT service provider and end-user
  - scale and geographical footprint of the deployment
  - type of IoT application and its unique service requirements,
  - the device lifetime and its accessibility

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Europe: Consultation on Enabling the IoT

Highlights of consultation by the Body of European Regulators of Electronic Comms (BEREC, October 2015):

- Numbering ➔ No scarcity; flexibility in models is required
- Roaming ➔ Viable model supporting M2M growth
- Switching ➔ Take into account specific M2M context
- Privacy ➔ Promote consistent approach across IoT players

Importantly, BEREC recognizes fundamental differences between M2M and traditional communications

Belgium: allows use of extra territorial numbers

Use of Belgian numbers abroad and of foreign numbering capacity in Belgium proposed to be authorised for M2M*:

- Operators can optimize billing and operational systems
- Interconnection, number portability, data retention and lawful assistance are not seen as obstacles
- A general principle is proposed, of separating consumer protection from numbering resource requirements

Allowing extraterritorial use of numbers will enable the global deployment of M2M and IoT

*Final ruling to be published by 2016

Brazil: significant reduction in M2M taxes

- Tax reduction for M2M connections
  - In May 2014 the Brazilian government passed rules reducing tax by 80% on M2M SIM connections
  - Ruling recognizes that M2M connections yield a much lower ARPU
- Positive impacts are measurable
  - Special M2M devices, which have benefitted from tax reduction, have grown 26%
  - Compared to 7% of standard M2M devices

Source: (GSMAi, Dec. 2014)

The Tax reduction increased the take-up of innovative M2M services, and might over time result in increased overall taxation revenue

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Policy and regulation for growth and innovation

A growing Internet of Things provides a huge range of socio-economic benefits. Governments and regulators can unlock these benefits by implementing policies that promote innovation and investment , plus introducing regulatory frameworks that build trust and that are technology neutral. This will give confidence to consumers and the industry that will help to drive adoption of the IoT.

Policies that enable growth

- Create a pro-investment environment
- Adopt IoT for government services
- Promote interoperability
- Harmonise spectrum use

Regulation that builds trust

- Maintain commercial flexibility
- Enable global platforms and services
- Ensure technology and service neutrality
- Apply data protection frameworks consistently

Questions?