



Connected
Living



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Security – Essential for the Growth of M2M and IOT

Mobile World Congress Shanghai – 16th July 2015

Shane Rooney – Executive Director GSMA

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About the GSMA



The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 250 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and Internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai and the Mobile 360 Series conferences.



IOT Market Potential for Operators by 2020



2014
12.6 Billion

Total Connected
Devices

2020
27 Billion

Total Connected
Devices

2014
7.3 Billion

Mobile Connected Devices

2020
10 Billion

Mobile Connected Devices

Total Addressable Opportunity For
Mobile Network Operators in 2020

**\$1.1
Trillion**

2020 Addressable opportunity for Operators in selected
vertical sectors*

Connected Health
\$31 Billion

Connected Industry
\$18 Billion

Connected Car
\$135 Billion

PCs/Handsets/Tablets
\$ 687 Billion

Connected Cities
\$26 Billion

Connected Living & Working
\$188 Billion



CREATING OPPORTUNITIES THROUGH CROSS-INDUSTRY COLLABORATION

GSMA Connected Living Programme

MOBILISING THE INTERNET OF THINGS – ENABLING GROWTH & OPPORTUNITY



MARKET GROWTH

CONNECTED LIVING PROGRAMME SCALING THE CELLULAR IOT

Cellular M2M Connections

2020 Forecast	2020 Growth target
970m	1.25bn

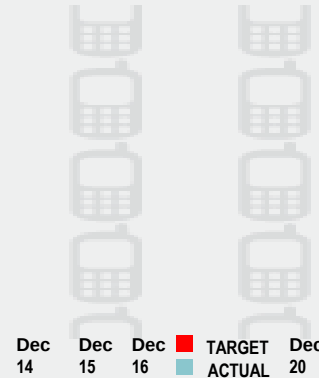
Compound Annual Growth Rate (CAGR)

2020 Forecast	2020 Growth target
26%	32%

Cellular M2M connected devices supported (2G, 3G, 4G)

No. of devices
(billion)

1.4
1.2
1.0
0.8
0.6
0.4
0.2



Source: GSMA Intelligence

MARKET OPPORTUNITY

TOTAL ADDRESSABLE MARKET FOR MOBILE NETWORK OPERATORS IN 2020

\$1.1
TRILLION

Increased operator
role and revenue
opportunity



Source: Machina Research

ENABLING OPERATORS TO MOVE UP THE VALUE CHAIN TO
ACHIEVE FULL MARKET POTENTIAL

FOCUSED DELIVERY ON KEY MARKET ENABLERS

UNIFYING THE IOT
COMMON GLOBAL
SPECIFICATIONS



SECURING THE IOT



CUSTOMER FOCUSED
SERVICE - REMOTE SIM
PROVISIONING



SUSTAINABLE IOT
REGULATORY &
POLICY ENVIRONMENT



MANAGED CONNECTIVITY



ECOSYSTEM ENGAGEMENT

ACTIVE INDUSTRY ENGAGEMENT VERTICAL
MARKETS - AUTOMOTIVE, TRANSPORTATION,
UTILITIES AND HEALTH



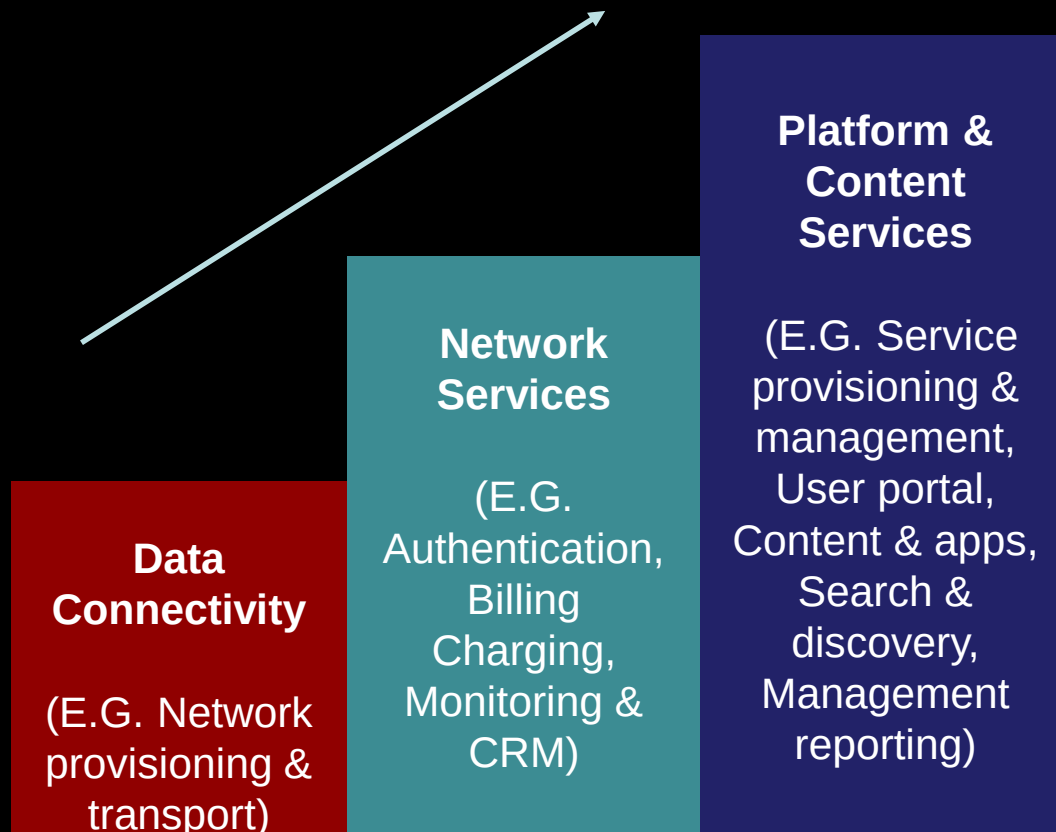
DEMONSTRATION & ENCOURAGEMENT OF IOT
INNOVATION



Operators enable the market throughout the value chain



Operator value starts with connectivity and increases up the chain



Simple Valuable Business Model

Lower cost driver premiums

Traditional insurance - £3k

Connected Insurance - £1.4k

UK driver aged 17, annual premium actual data 2014

Insure the Box, the parent company after 4 years valued at £140m, 2014

How to get involved in the Connected Living programme ?



GSMA Connected Living – “Mobilising the Internet of Things”

Remote SIM Provisioning
Interoperable M2M
Remote SIM Provisioning
Adoption

Future IOT Networks
Evaluation of Low Power, Wide Area and Security Requirements

Industry Engagement
Implementation of technology pilots and big data aggregation

IOT Business Enablers
Operator Self Regulation Toolkit

Vertical Ecosystem Engagement – Automotive, Transportation, Utilities and Health

Email: connectedliving@gsma.com to track progress or join the Interest Groups

Visit www.gsma.com/connectedliving for more information on the Connected Living Programme, upcoming events & Industry Research

Mobilising the Internet of Things

Internet of Things - How did we get here?

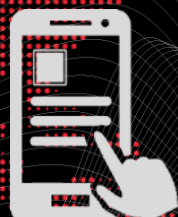
COSTS

(compared to 10 years ago)
Sensors – 50% less
Bandwidth – 40x down
Processing – 60x down



SMARTPHONES

Gateway to IOT



WIFI

Everywhere – free or low cost



BIG DATA

IOT will unlock it



IPv6

3.4 x 10³⁴ addresses



**YES, OF COURSE I REMEMBER THE 4 DIGIT
SECURITY CODE ORANGE GAVE ME DURING
A 5 MINUTE PHONE CALL...**

...TWO YEARS AGO!



Security must exist because we need to

PROTECT PERSONAL DATA



GUARD AGAINST FRAUD



PROTECT THE VULNERABLE



We don't always like Security

Changing a “**Necessary Evil**” into an “**Absolute Necessity**”

IT RESTRICTS



IT IS COMPLEX



IT COSTS



BMW i ConnectedDrive Services



Dynamic
Charging Station
Information



Dynamic
Range Map



Range
Assistant



ECO Pro
Route



Dynamic
Parking
Information



Intermodality



Traffic
Information



BMW i Remote:
Mobility



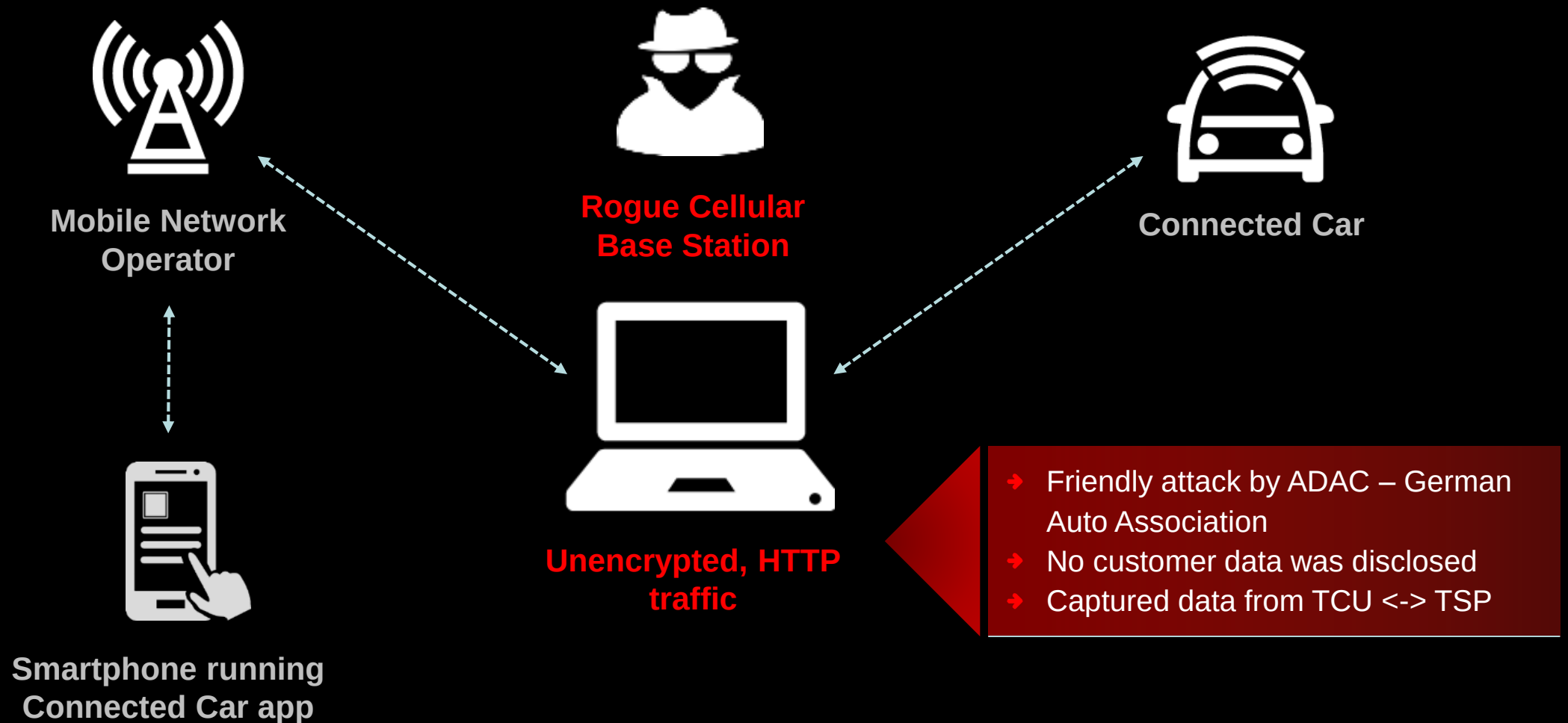
BMW i Remote:
Efficiency



BMW i Remote:
Status & Control



Spoofing the Cellular Network





Existing GSMA Activities



GSMA Fraud & Security Group

Permanent working group within the GSMA

Focus on all aspects of Networks, Devices, Applications and SIM

GSMA Connected Living Programme

End-to-End Security for M2M & IOT Whitepaper

Expert View, Use Cases, Challenges for IOT

RECOMMENDATIONS



Software Update Handling

Security education

Incidence Response and Disclosure

Industry position on Data Protection

Security Standards for Products



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GSMA IOT Security Guidelines

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What's Next in the Connected Living Programme?

Building upon the recommendations contained in our “End-to-End Security for M2M & IOT” whitepaper the GSMA will now develop a public set of **IOT Security Guidelines**

Must be **relevant** to
IOT Ecosystem

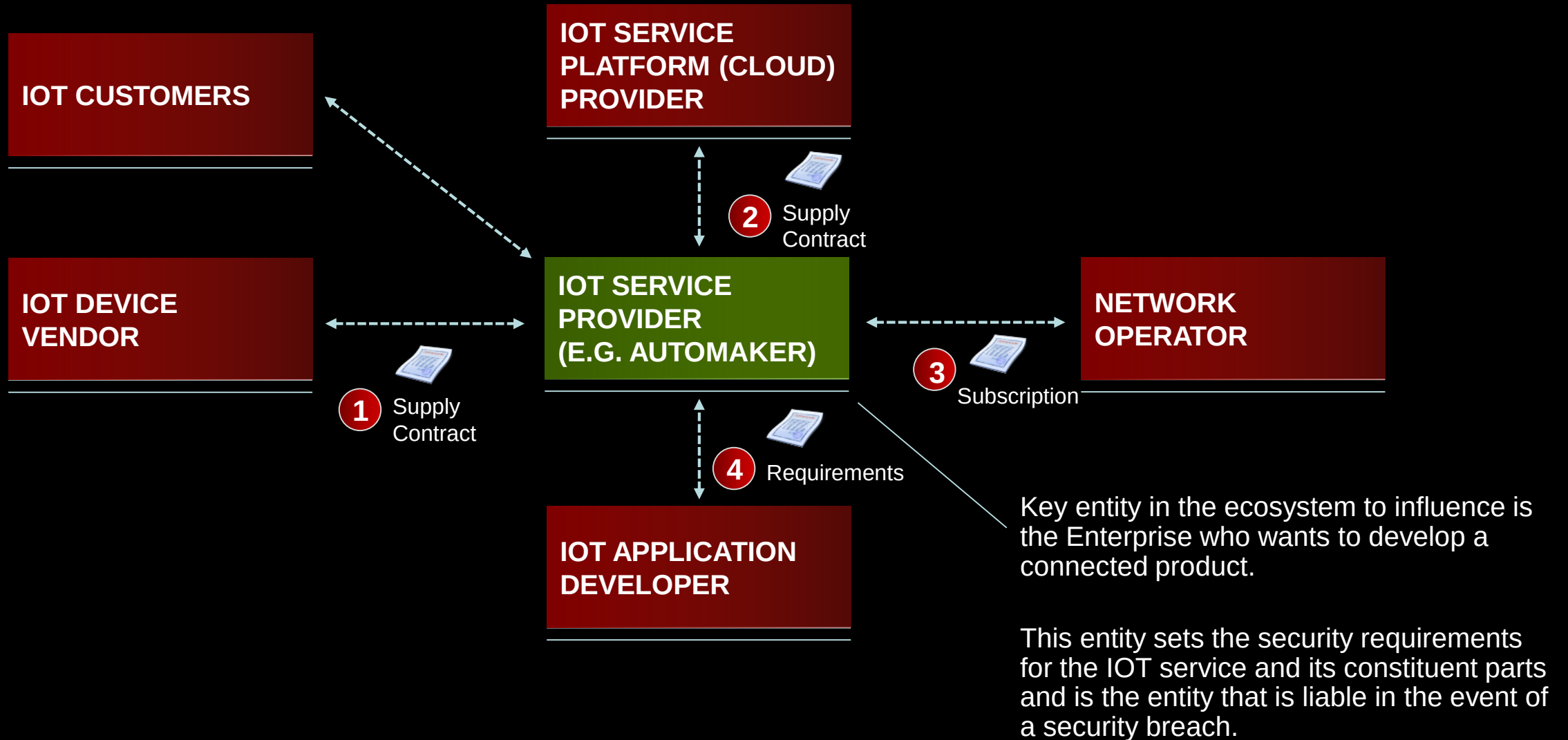
Use **existing**
technology and
standards

Security
(confidentiality, integrity,
availability, authenticity)
and **Privacy**

Must be **industry**
agnostic

IOT Security Guidelines must influence the whole IOT Ecosystem

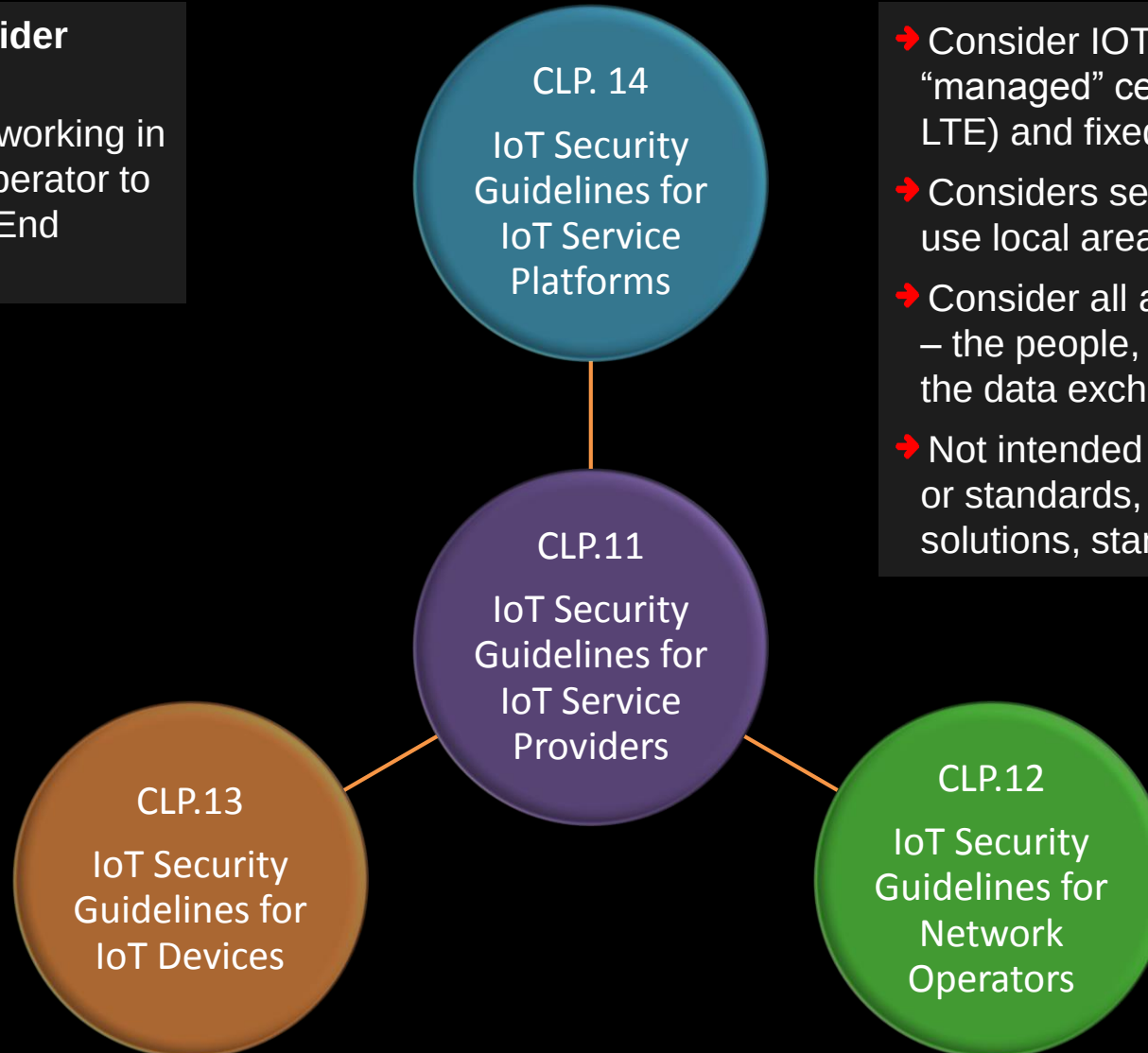
Arrows show flow of 'value' within the system



A set of IOT Security Guidelines centred the IOT Service Provider

Definition of IOT Service Provider

- ➔ The provider of IOT services working in partnership with a Network Operator to provide an IOT Service to an End Customer



- ➔ Consider IOT Services that communicate over “managed” cellular networks (GSM, UMTS and LTE) and fixed networks.
- ➔ Considers security aspects of IOT Services that use local area and personal area networks.
- ➔ Consider all aspects of end-to-end IOT security – the people, the processes, the technology and the data exchanged.
- ➔ Not intended to create new IOT specifications or standards, but will refer to currently available solutions, standards and best practice.

Guidelines Scope: What information should they contain?

- Highlights the critical role of the IOT Service Provider in the IOT Ecosystem
- Overview of the key security risks and challenges for IOT Services.
- How the IOT Service Provider can mitigate risks by selecting partners who are competent in security and services and support standards based approaches.
- A set of 'best practice' security and privacy principles to be applied to the ecosystem partners during the entire IOT Service development lifecycle.
- Provides recommendations based on readily available systems, technologies and process that can be deployed today.

- IOT "Gateway" Devices
- IOT "End Point" Devices
- Secure local interfaces
- Certificate storage
- Physical security
- Embedded UICC
- Device Management
- Crypto capabilities



- Operational best practices
- Cloud security configuration
- Security capabilities
- Authorisation and authentication
- Use of Virtual Machines
- Use Anti-Malware
- Load balancing and redundancy
- "Secure by Default"
- "Secrets" management tools



- Subscription management
- UICC supply and management
- Communication channel security
- Authentication and encryption
- Network availability
- Roaming
- Operational and management best practice
- Backhaul security
- IOT device management



Who is involved?

Active project members thus far:

- If your organisation is a GSMA member – please join our project team and start engaging with the project today.
 - 7Layer
 - Alcatel-Lucent
 - AT&T
 - BlackBerry
 - China Mobile
 - China Telecommunications
 - Cisco
 - Copper Horse Solutions
 - Deutsche Telekom
 - ETISALAT
 - Ericsson
 - Gemalto
 - Jasper
 - Morpho
 - NTT DOCOMO
 - VimpelCom
 - Orange
 - Sierra Wireless. .
 - Starhome Mach
 - Telecom Italia
 - Telefónica
 - Telenor Connexion
 - Telit .
 - T-Mobile
 - Vodafone
 - Singtel
- If you are not a GSMA member - please help review our draft guidelines – to be circulated for industry review in ~ October 2015.
 - The industry review is your opportunity to ensure the guidelines ‘embrace’ all leading industry standards and best practices.

Points of Contact



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Further Information & Resources:
www.gsma.com/connectedliving