Emerging Mobile IoT Technologies: Use Cases, Business and Security Requirements

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Connected Living Programme, GSMA
ETSI M2M Workshop
9 December 2015
From M2M to IoT - *Many technologies driving growth*

![Graph showing growth in connected devices, non-cellular M2M, and Cellular M2M from 2014 to 2020.]

Source: Industry estimates for IoT connections; August 2015

GSMA intelligence estimates for Cellular M2M connections
Low Power Wide Area – Many Markets with Diverse Applications

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<th>INDUSTRY</th>
<th>APPLICATION</th>
<th>LIKELIHOOD OF DEMAND</th>
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In Summer 2015, GSMA’s Low Power Use Case project participants analysed requirements of LPWA use cases in 7 vertical industries.

Source: Analysys Mason, April 2015
# Understanding Key Requirements for LPWA Applications

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<tr>
<th>APPLICATION</th>
<th>LOW COST</th>
<th>WIDE AREA</th>
<th>NO MAINS POWER</th>
<th>STRONG PROPAGATION</th>
<th>SUITABILITY FOR LPWA</th>
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Source: GSMA Low Power Use Case Project, Aug’15
A minimum set of security related requirements:
- Secure provisioning and physical protection of device identity, network authentication credentials and communication cryptographic keys.
- Strong mutual authentication of the device and network.
- Strong (and efficient) cryptography to provide secure communication channels.

Two – way communication is needed for all LPWA apps for software/security patches

Energy overhead due to security needs to be minimised

Use of common internet protocols, e.g. TLS, may not be possible
Mobile IoT - 3GPP supported mobile technologies

Technologies with global reach, large ecosystem, scalability and ability to support diverse IoT applications

**LTE Evolution**
- LTE-MTC – CatM (Release 13, Mar’16)

**EC- GSM**
- Extended Coverage GSM (Mar’16)

**NB- IoT**
- Narrow Band – IoT (June’16)
A family of Mobile IoT technologies – for Diverse IoT Applications

- **Long Battery Lifetime:**
  Can be as long as 15 years for such apps as water metering

- **Extended Coverage:**
  Can provide deep indoor coverage (+10dB-+20dB)

- **Low Complexity / Cost:**
  Can be at and below current GSM/GPRS module prices

- **Other:**
  Mobility, security, management of millions of devices, billing/charging

Source: GSMA, Aug’15
Mobile IoT Technologies Time to Market

- 2015 3GPP standardization
  - LTE for IoT: Cat1 modules available
- MAR – JUNE 2016 3GPP Standards
- 2Q’2016- 4Q’2017 PSM and eDRX power saving / coverage extension network infrastructure available
- 2H-2016 / 1H-2017 Pre-commercial and commercial launches of NB – IoT and EC-GSM
- 2H-2017 – Commercial launches of LTE MTC Cat M

2016 – 2017 Customer trials and pilots

Today…

Solution in the market
Deploying Mobile IoT - Need to Redefine Business Models

- Low Cost Devices
- Low Data Device

**Mobile IoT meets those needs**

**But what about other costs?**
- Installation Costs
- Network Costs
- Maintenance Costs
Accelerating LPWA market - GSMA IoT Mobile initiative

- In July 2015 the GSMA started the Mobile IoT Initiative to help the industry to accelerate time to market for licensed LPWA technologies backed by mobile operators, OEMs, chipset, module and infrastructure companies.

- It is now home of the NB-IoT Forum.

- On 17-22 January’16, GSMA will host an ad hoc NB-IoT meeting in Budapest to finalise the details of NB-IoT standard.

MOBILE IOT PROJECT PARTICIPANTS

21 MNOs:
AT&T, Bell Mobility, Bermuda Digital Comm, China Telecom, China Unicom, China Mobile, Deutsche Telekom, Etisalat, KDDI, KT, Mobistar, NTT DoCoMo, Orange, Singtel, SoftBank, Taiwan Mobile, Telecom Italia, Telefonica, Telenor, Telstra, Verizon, Vodafone

10 VENDORS:
Alcatel-Lucent, Ericsson, Gemalto, Huawei, Intel, Nokia, Oberthur, Qualcomm, Sierra Wireless, u-blox
THANK YOU

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