



Bringing NB-IoT to the Market

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Vodafone IoT

29% revenue
growth YoY*

1,400 IoT
professionals

50m
IoT
Connections**

84 million MB
of data
supplied
each month

Vodafone Automotive
800 000
telematics
subscribers***

**Ranked as leader
in independent
analyst reports**



**Machina
Research**

Gartner

*At Year End 15/16

**At end of Q3 16/17

***At end of Q3 16/17

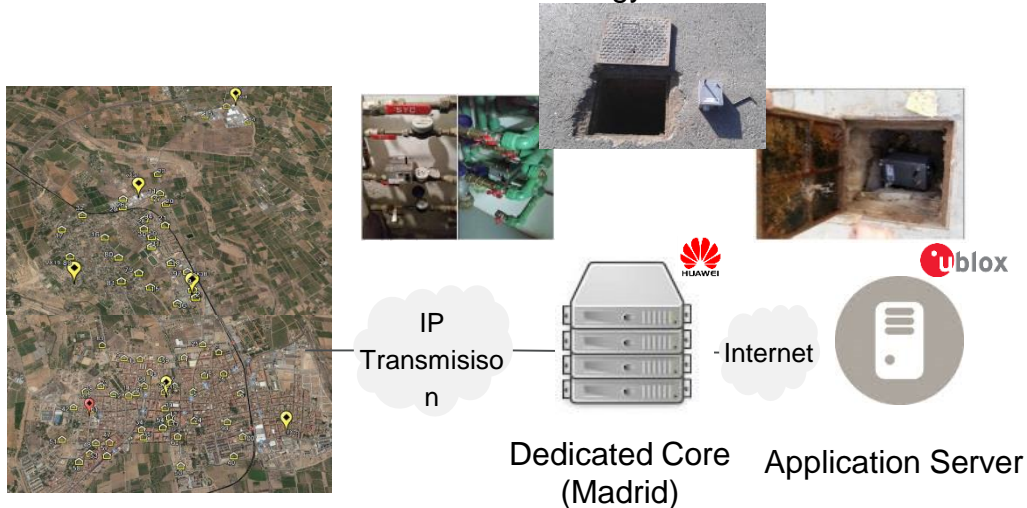


NB-IoT Technology Pilot with Aguas de Valencia (AdV)

Network and Locations

Vodafone Spain live network (Moncada town, Valencia Region) **with the collaboration of Aguas de Valencia** Water Supplier Company

- Phase 1: pre-standard technology
- Phase 2: R13 standard NB-IoT technology



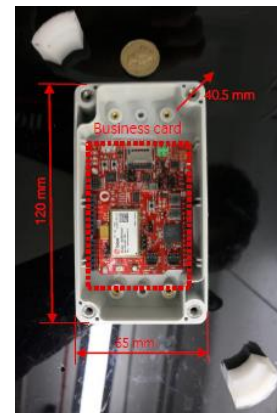
Device

Testing device prototype available to validate coverage using Neul chipset and ublox module (Sara)

- Battery Limited
- Autonomous operation, no integration in meter



Phase1 TUE



Phase2 TUE

<https://www.youtube.com/watch?v=Wn1m01ttHBM>



NB-IoT Open Labs

- NB-IoT Open Labs are an initiative that originated as workstream within the NB-IoT Forum, part of the GSMA Connected Living programme
- Current focus is on NB-IoT, an access technology that was specified as part of 3GPP R13 (June 16)
- Aim is to reduce cost, complexity and time to bring NB-IoT to market and promote the ecosystem effectively
- Two labs are currently operational:
 - Astor House, Newbury: joint lab with Huawei
 - Vodafone Innovation Park, Dusseldorf: multi-vendor lab

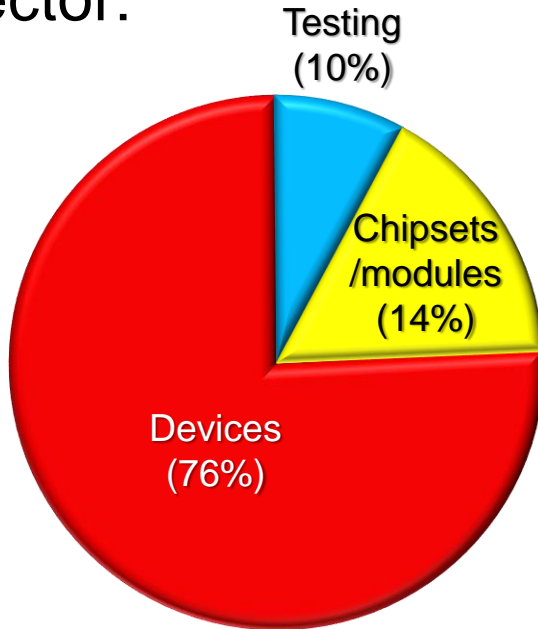


Lowering Entry Barriers and Reducing TTM



Open Labs for Partner and Industry Engagement

Ecosystem visits by sector:

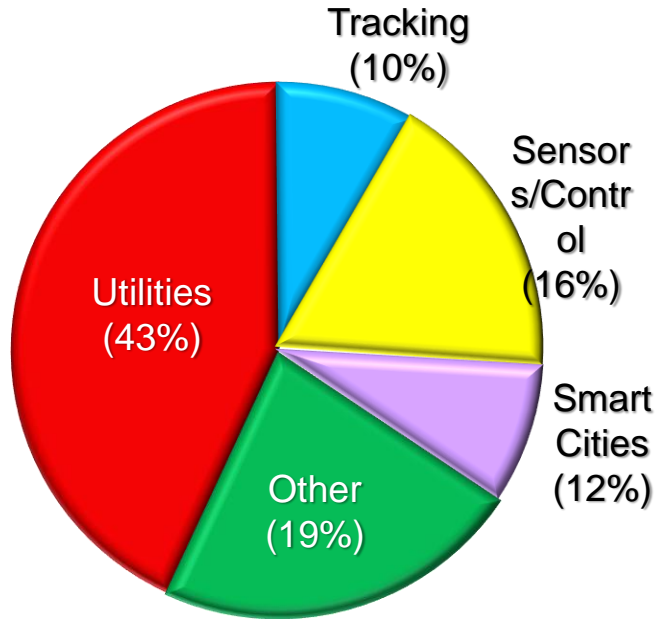


- 68 ecosystem visitors to the Vodafone Open Lab
 - 76% Device design/manufacture
 - 14% Chipset/module vendor
 - 10% Testing



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Customer visits by sector:



83 device developers in the Vodafone Open Lab

- 43% Utilities
- 12% Smart Cities
- 16% Sensors/Control
- 10% Tracking
- 19% Other



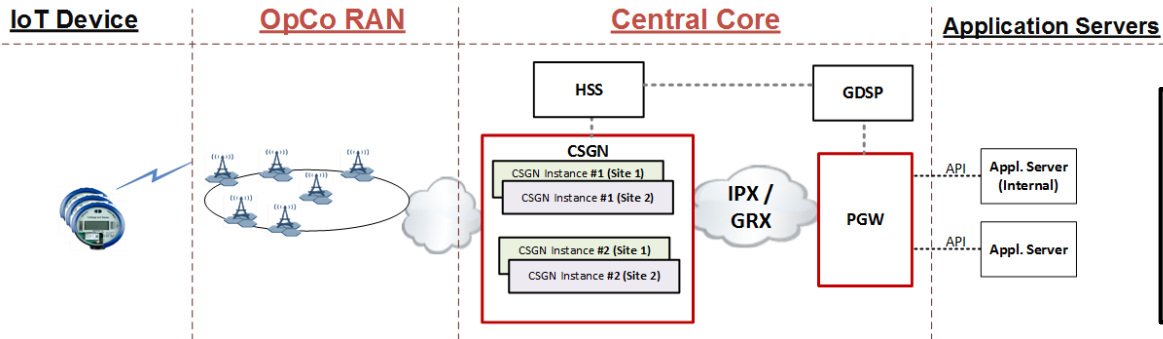
NB-IoT Demos @ MWC2017

- Vodafone and partners are showing or facilitating 18 demos at MWC covering the following prioritised sectors:



Agile Rollout and Footprint Expansion

- NB-IoT initial use cases and service profile enables tailored geographic rollout approach
- Vodafone has deployed coverage in 6 major Spanish cities
- NB-IoT Base stations in other countries can quickly be connected to the central core network and product platform, as



The future in our hands with the commercial launch of NB-IoT in Vodafone Spain

Next: Vodafone Ireland NB-IoT Rollout



Vodafone
Ireland

- **Vodafone Ireland has announced that it is to roll out commercial NB-IoT services.**

“We are preparing our mobile infrastructure for the future, which is helping us support Irish businesses to be at the forefront of connectivity - across both traditional mobile and connected machines. We are already in the process of preparing for the wide scale roll-out of our commercial Internet of Things network this coming summer, ”

Madalina Suceveanu, Chief Technology Officer, Vodafone Ireland



Next Steps

- Expand NB-IoT footprint
 - Further expansion in Ireland, Netherlands and Turkey through 2017
 - Enable global rollout capability
- Continue development of Vodafone's commercial NB-IoT product to enable greater control and improved efficiency for customers
- Drive further standards development of NB-IoT capabilities through R14
 - Native device location for tracking applications
 - Low power operation (coin batteries) for wearable IoT applications

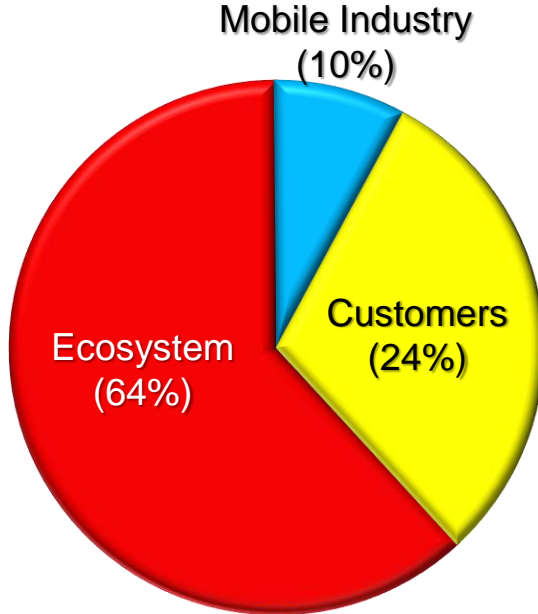




Backup slides

Open Labs for Partner and Industry Engagement

Visitors by type:



- 107 visits/engagements in the Vodafone Open Lab
 - 64% ecosystem
 - 26% customers
 - 10% mobile industry

