



Plenary Panel Session

The impact of massive IoT deployments in future spectrum use

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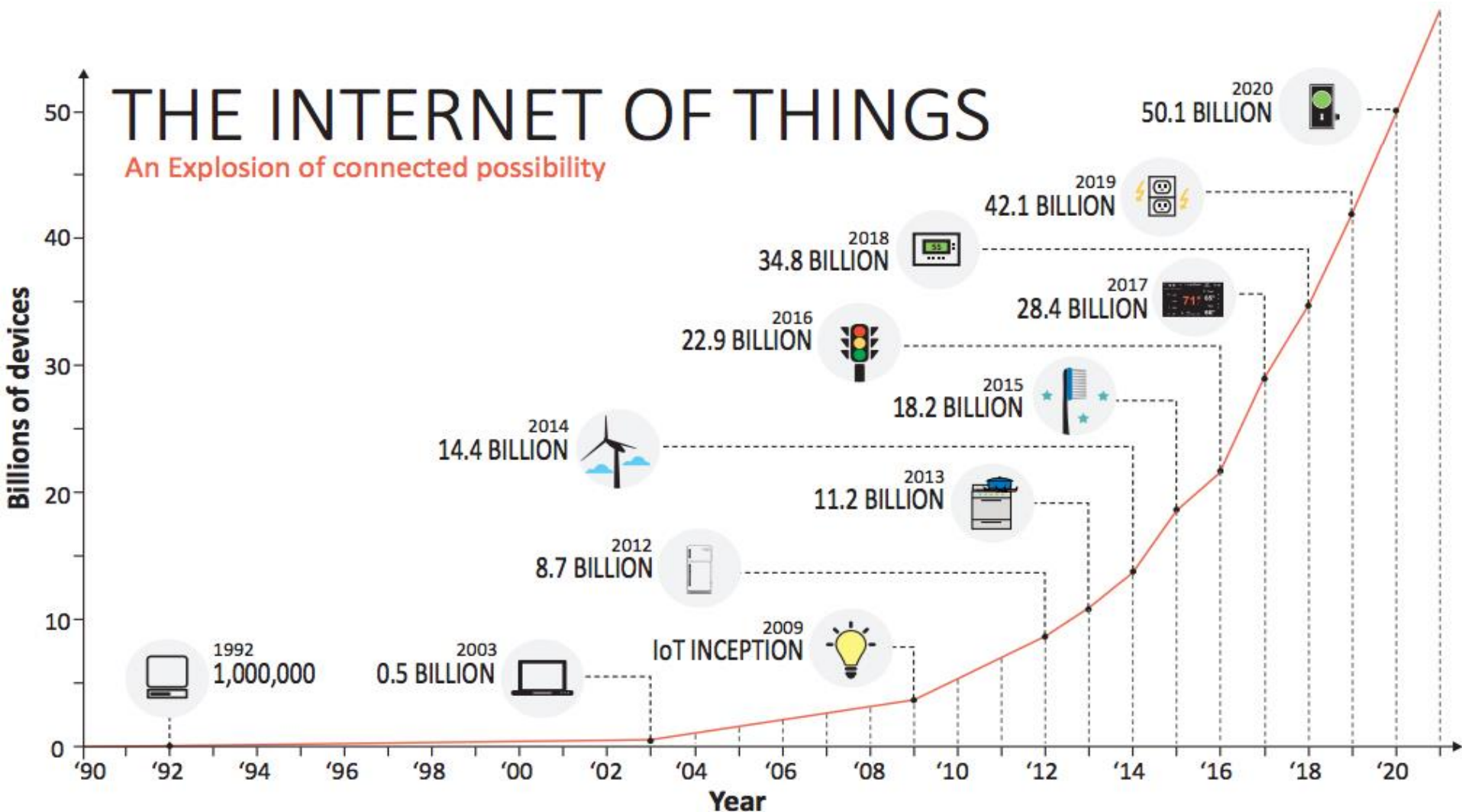
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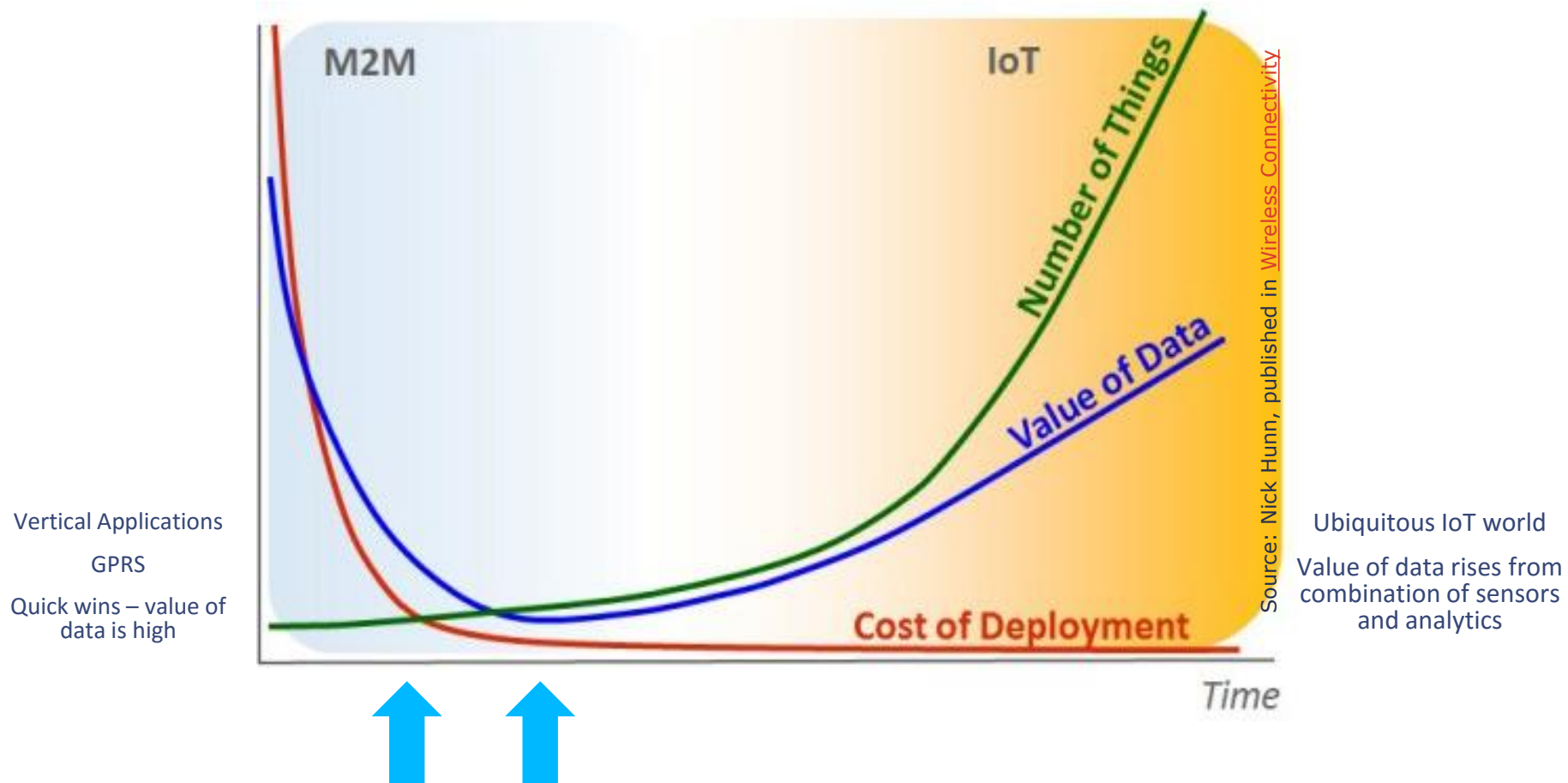


Setting the scene: The 50B devices



Source: <http://www.i-scoop.eu/internet-of-things>, Slide 2

Setting the scene: The IoT dilemma



- The deployment cost has to be low enough to allow the infrastructure to be built up and provide a critical mass of data before we see the financial benefits.
- Spectrum has a great impact on the cost of IoT deployment.

Setting the scene

- IoT brings specific spectrum needs, mostly in the uplink, with sporadic and locally unpredictable profile.
- Device cost, battery life, and deep indoor coverage are demanding requirements for IoT radio access interface with strong implications on the type of spectrum suitable for optimal operation.



Setting the scene

- Trends on IoT competition and technology battles:
 - License-exempt spectrum vs. Exclusively dedicated spectrum
 - Proprietary technology vs. Fully open technology
 - Clean slate vs. Evolutionary approach

Unlicensed Spectrum



Licensed Spectrum

NB LTE-M
Rel. 13



LTE-M
Rel. 12/13



EC-GSM
Rel. 13



Objective

- This CROWNCOM panel will address the impact of massive IoT in future spectrum use and the available options to support the expected massive deployment of ubiquitous machine type communications in the context of the emergence of 5G.



Participants

- Christophe Fournet (Founder and CTO of SIGFOX)
- Pravir Chawdhry (Scientist at Joint Research Center EC)
- Jean Schwoerer (IoT Networks project manager at Orange)
- Luigi Ardito (Director Government Affairs EMENA, Qualcomm)
- Jaime Afonso (Vice-Chairman of CEPT-ECC, ANACOM)

Questions with no simple answers

- **Q1:** There will be a single IoT winner by 2020 as 5G standard ?
- Do we will need different technologies for different applications and business models ?

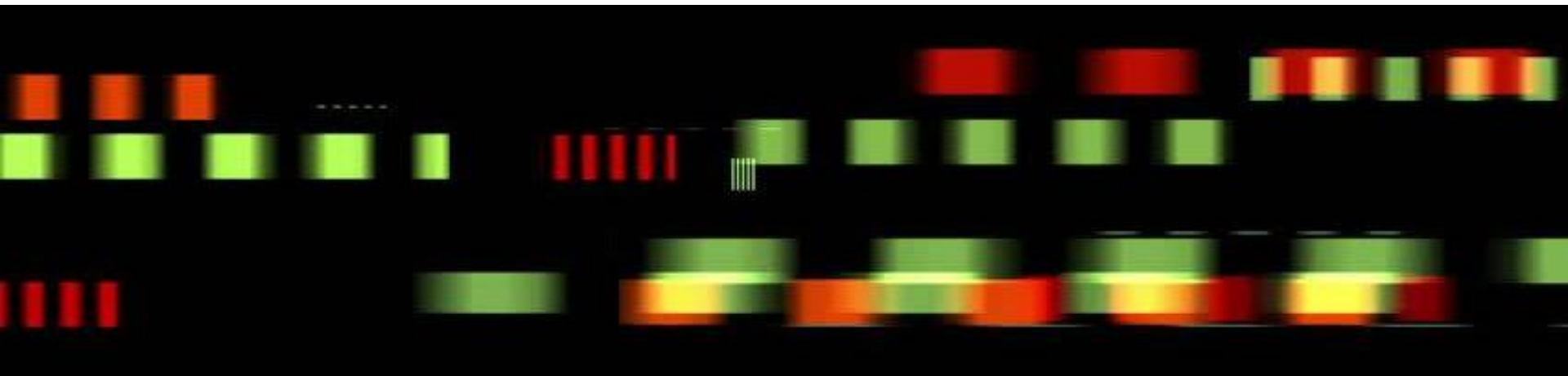


Source: <http://techzulu.com/forget-cloud-wars-time-iot-wars>

Slide 8

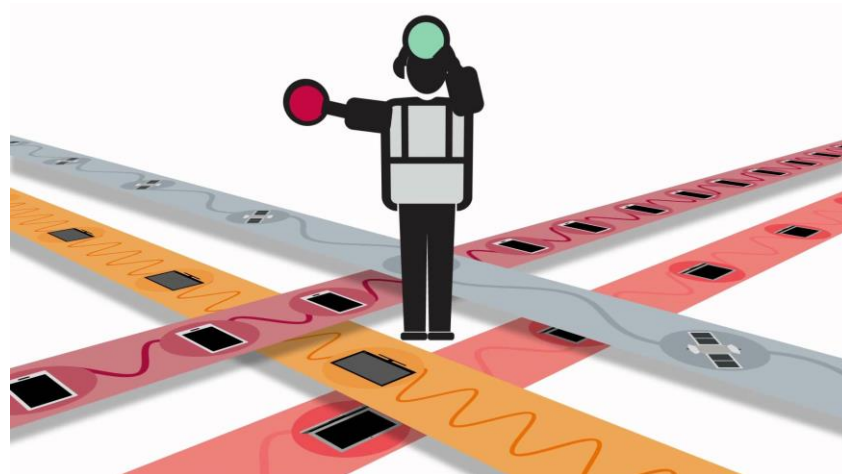
Questions with no simple answers

- **Q2: How to deal with massive IoT deployments?**
 - Is there a risk of congestion due interference aggregation in unlicensed spectrum ?
 - How the research community can help IoT industry ?
 - Coexistence studies considering massive IoT deployments with heterogeneous technologies
 - Is there a role for CR/DSA in low-cost and low-complexity IoT devices ?
 - What is the impact of massive IoT on the backhaul and core networks ?



Questions with no simple answers

- **Q3:** What EU spectrum regulators have to do for Europe to keep a leading role in IoT and create the right environment for innovation ?
 - What are the regulatory priorities to unlock new spectrum for IoT ?
 - Other sub- 1Ghz bands candidates for IoT (e.g VHF for rural IoT)
 - Spectrum harmonization, power limits, duty cycles ...
 - How to deal with the GPRS – IoT legacy after GSM switch off ?
 - How to avoid that IoT will just be the “Internet of Expensive Things” ?



Thanks !

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