



CELTIC-NEXT Event

20th June 2019, Valencia



Pitch of the Project Proposal

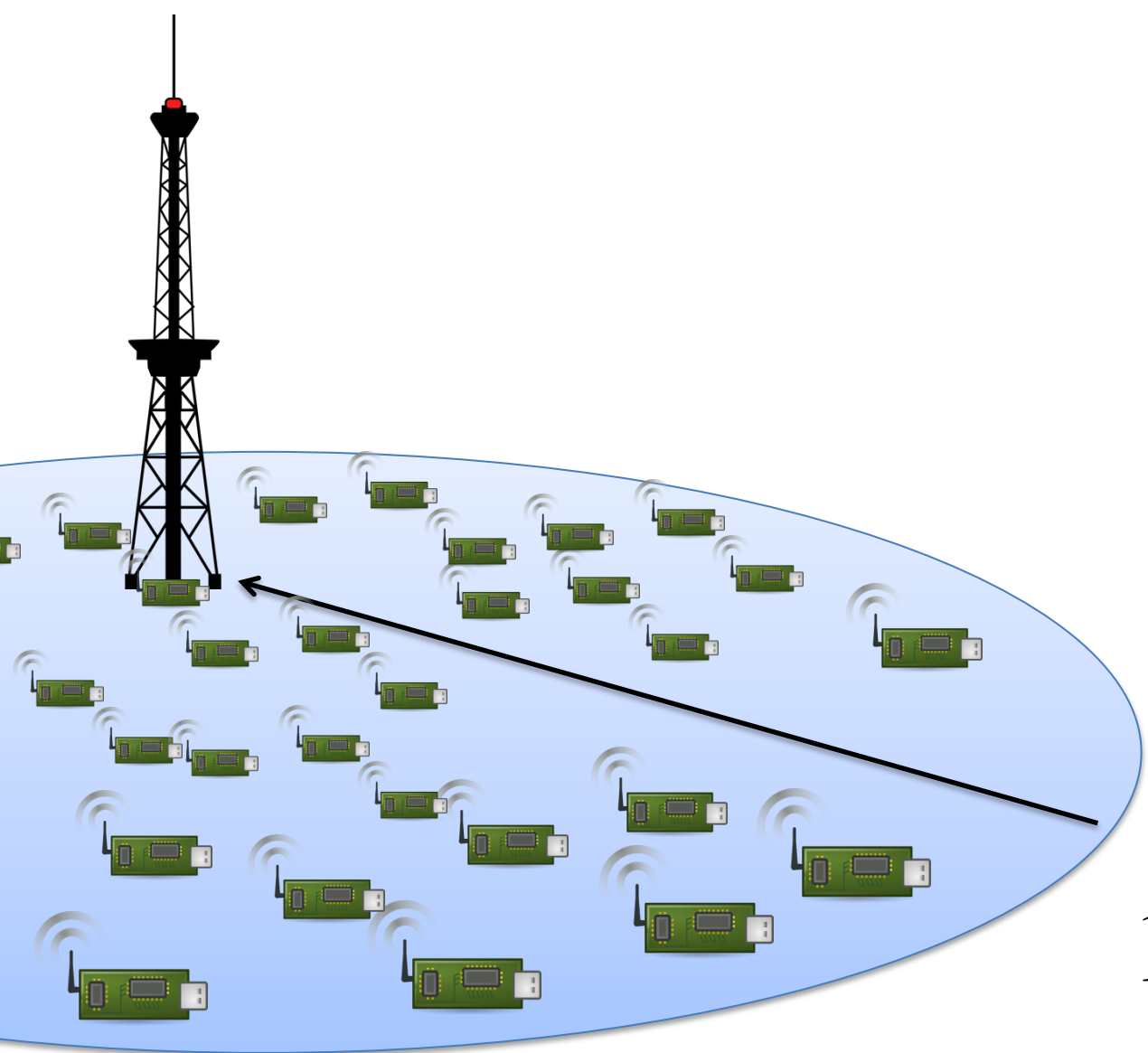
OpenLPWAN

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Teaser

*LPWAN technologies will connect (hopefully) **millions** of LP IoT devices*
with minimal communication requirements (sensors)

but... in which technology should you invest???
Public / Private networks??



10 – 40 km

source: Castells-Rufas, David, Adrià Galin-Pons, and Jordi Carrabina. "The Regulation of Unlicensed Sub-GHz bands: Are Stronger Restrictions Required for LPWAN-based IoT Success?." arXiv preprint arXiv:1812.00031 (2018).

TABLE 1
RADIO TECHNOLOGIES FOR THE PHYSICAL LAYER OF WIRELESS INTERNET OF THINGS

Category	Technology	Governing Body / Standard	Frequency bands	Capacity (kbps)	Multiple Access	Modulation
Cellular based	LTE-CATM	3GPP Rel 13	LTE	1024	OFDMA	QPSK, 16QAM, 64QAM
	NB-IoT	3GPP Rel 13	LTE/GSM	250	OFDMA	BPSK, QPSK, 16QAM
	EG-GSM	3GPP Rel 13	GSM	240	TDMA	GMSK, 8PSK
Dedicated Star Networks	Sigfox	SIGFOX	<1 GHz	0.6	UNB/FHSS	GFSK/DBPSK
	LoRaWAN	LoRa Alliance	<1 GHz	50	CSS	(G)FSK
	Weightless-P	Weightless SIG	<1 GHz	100	FDMA + TDMA	GMSK, OQPSK
	Telensa	WiLoTF	<1 GHz	0.5	UNB/FHSS	2FSK
Dedicated Mesh Network	Silverspring	Wi-SLPN Alliance	<1 GHz, 2.4 GHz	1024	CSMA/CA	MR-FSK/MR-OFDM/MR-O-QPSK
	WiFi	WiFi Alliance	2.4 GHz, 5 GHz	11000-6900000	OFDM, DSSS, OFDMA	CCK, BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
	Bluetooth (4.0/4.1/4.2 LE)	Bluetooth special interest group (SIG)	2.4 GHz	1024	TDMA	ASK, FSK
	Ingenu	Ingenu (formerly OnRamp)	2.4 GHz	20	RPMA	BPSK, OQPSK, FSK, GFSK, P-FSK, P-GFSK

UAB Profile



Universitat Autònoma
de Barcelona

Microelectronics & Electronic
Systems Dept.

LPWAN & WSN Experience
Metering Spinoff Company

OpenLPWAN

Popular Technologies have some degree of captivity
Licensed

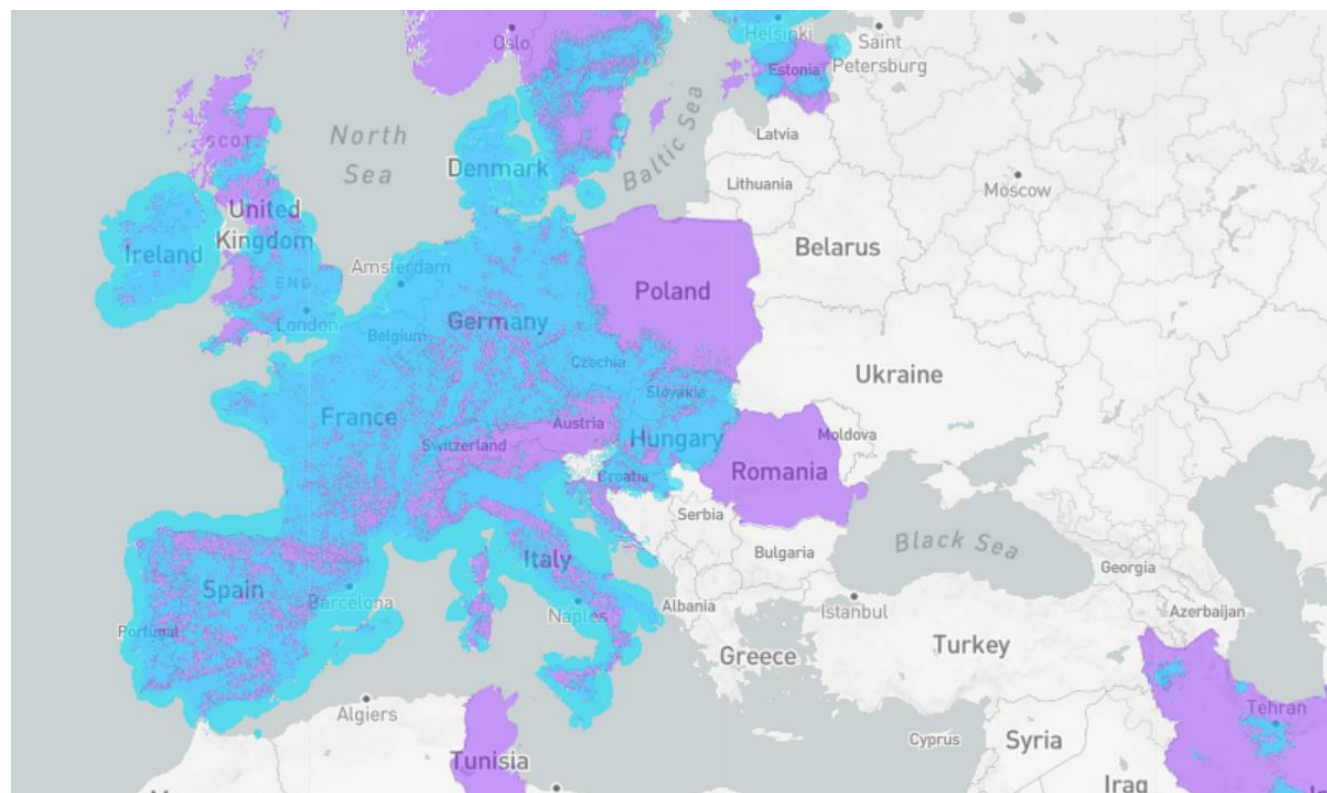
- *Operator (NBIoT, LTE-CATM)*

Unlicensed

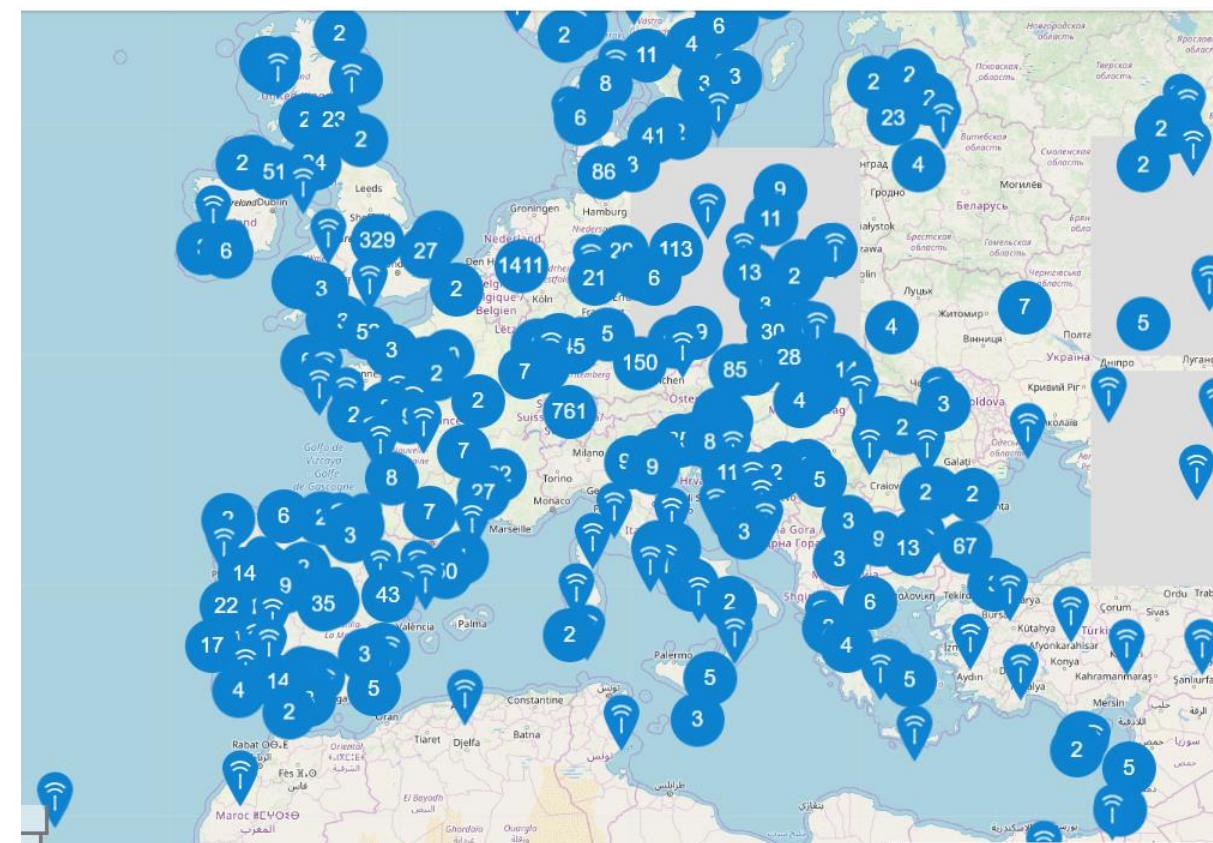
- *Operator (Sigfox)*
- *Transceiver IP (LoRa)*

Business Models

- *Transceiver Manufacturer*
- *IoT Dev. Manufacturer*
- *Telecom Operator*
- *Cloud Data Aggregation*
- *Service Provider*



Sigfox Coverage source: Sigfox.com



LoraWan Gateways Registered at The Things Network:
source: <https://www.thethingsnetwork.org/>

OpenLPWAN

Several More Open Standards:

Weightless (defined by Weightless SIG)

ETSI TS 103 357

(Sony ELTRES)

(Fraunhofer MIOTY)

- Promote Technologies that ease
- Private Networks (remote, e.g. mining scenario, with no operator interest)
 - Public Networks
 - urban, semi-urban (metering)
 - rural (smart farming)

Partners

- Spain
 - UAB (University)
 - APPLUS (Industry) Certification
- UK
 - (*) Open Protocol Promoter Interest
- Looking for:
 - Building Wider consortium
 - Cloud aggregating providers
 - Operators
 - Device Manufacturers
 - More Industrial Beneficiaries of the technology
 - Pilots



Contact Info

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Presentation available via:

