WIREPAS FOR LPWAN DAYS JUNE 2025

Revisiting connectivity: how NR+ unleashes scalable, infrastructure-free networks

Eden Suire – Account Executive

Wirepas

wirepas.com


What if connectivity no longer needed
infrastructure, operators...
or trade-offs ?

A new playground – NR+

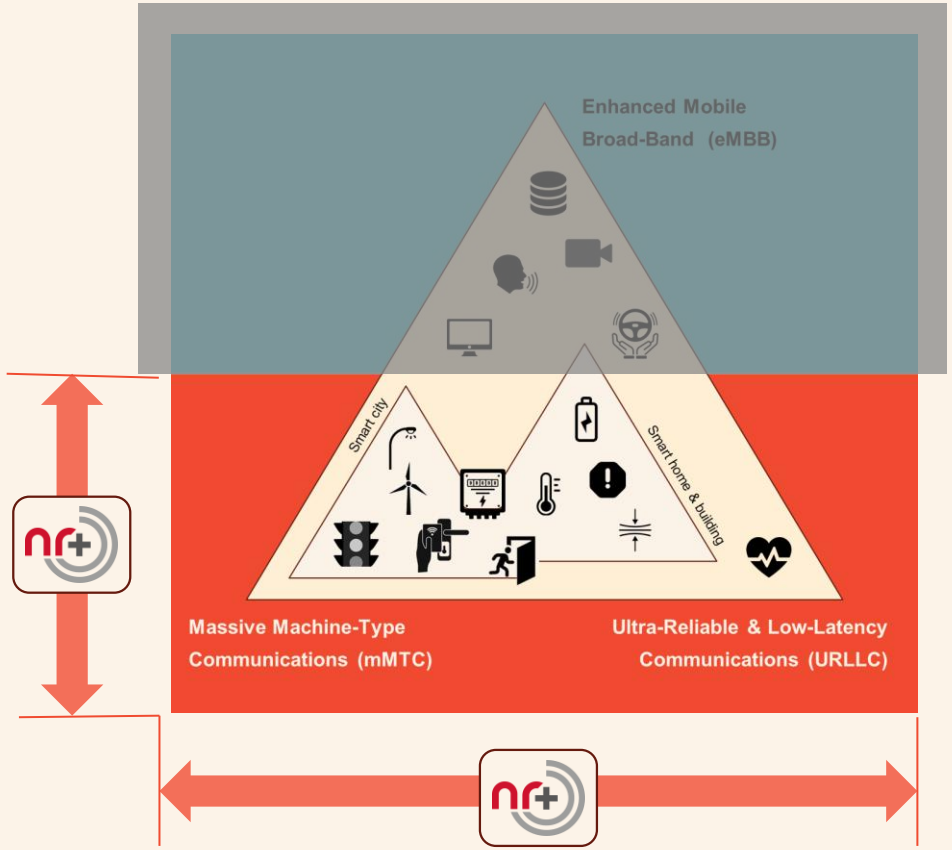
Global standard by **ETSI TC-DECT** – using DECT band (1.9GHz) to provide massive scale IoT connectivity

NR+ is the world's first non-cellular, non-operated **5G approved mesh** technology standard.

NR+ combines the state-of-the-art ultra-reliable mesh protocol over OFDM/HARQ PHY layer

Supports **iPV6**

5G and mesh under unlicensed frequency band



NR+ : Private and autonomous network by design

Designed for private networks

Deployed by anyone, operated by anybody, used anywhere

Simple operations → autonomous & co-existing

Easy introduction into **new frequency bands**

Application-agnostic: one network for many use cases

Designed for shared spectrum

DECT 1.9 GHz band with **20 MHz of clean spectrum**

Decentralized **interference management**

Autonomous **frequency channel selection**

Minimized spectrum management

Supports:

Multiple TDD bands
Multiple network topologies

One protocol. Any topology. Any band. Full autonomy and privacy.

Decentralized architecture – System topologies

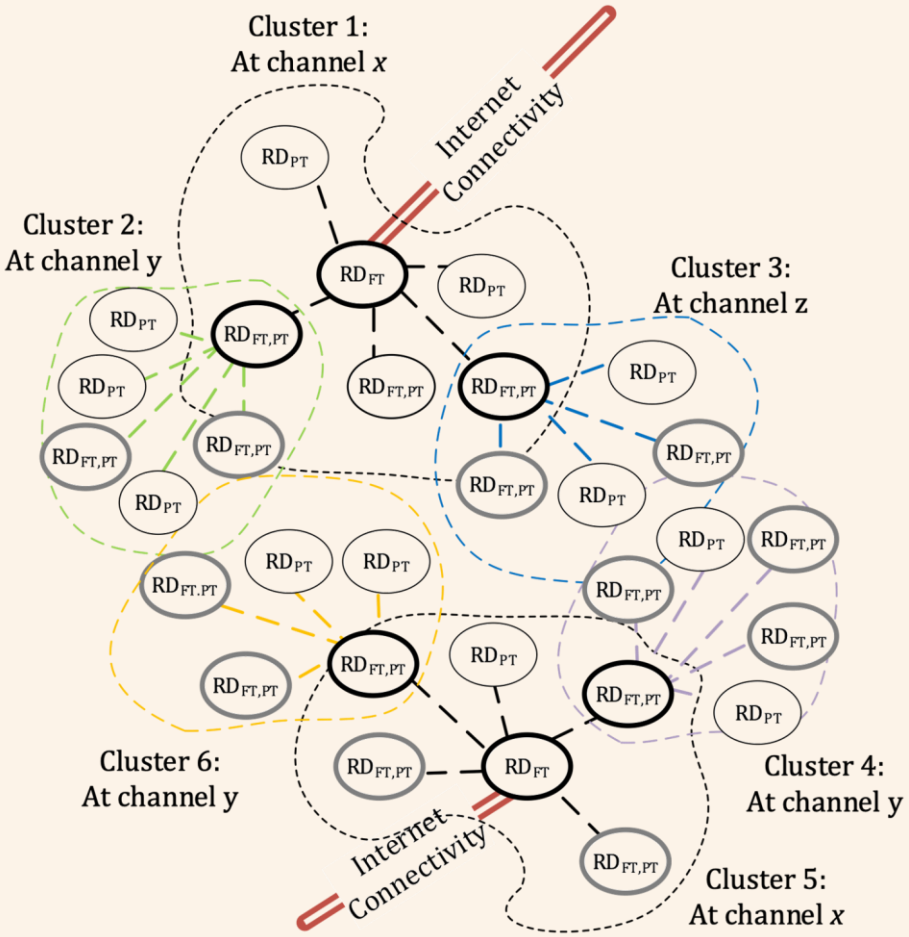
Cluster tree mesh network Architecture

A Single Network can extend its operations to different channels

Independent from the backend/internet connectivity

Unlimited number of Backend/Internet connectivity points

Simple to increase capacity or extend the network



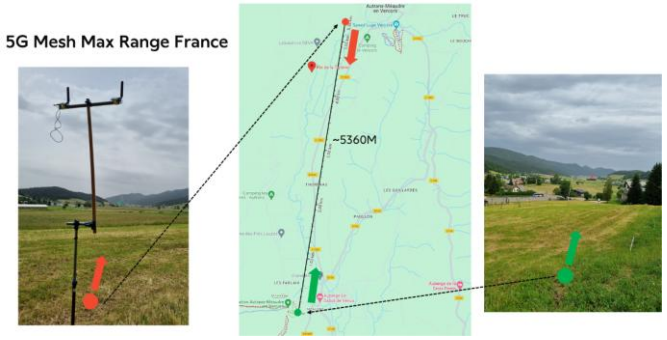
What NR+ radically changes

Scalability	Density	Latency	Power Efficiency	Throughput	Range & Reliability
Up to 4 billion devices	Over 1 M nodes/km²	<1 ms per link	Sleep-ready relays	Links from1 Mbps+ to above	Over 3 km LoS
Decentralized decisions	Local autonomous operations	Multiple events per 10ms	TX power: -40 to +23 dBm	Payload is 180 bytes	Smart channel scanning
Mesh-based wide area coverage	FDMA + TDMA routing coordination	Ultra-low transmission delay	Leafs only listen	No compromise with mesh	HARQ ensures range and reliability

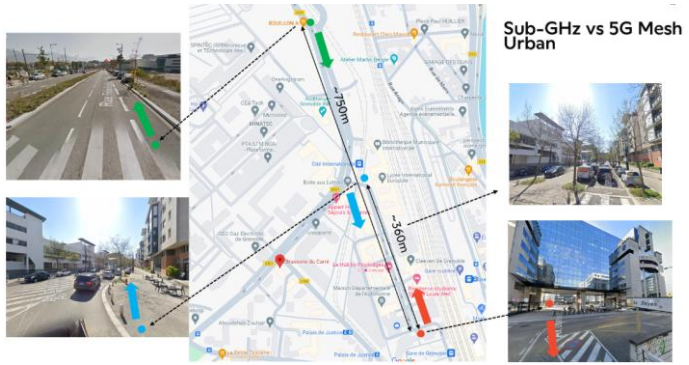
A decentralized network, like the internet — but for things.

NR+ range tests

Wirepas measurements June 2023



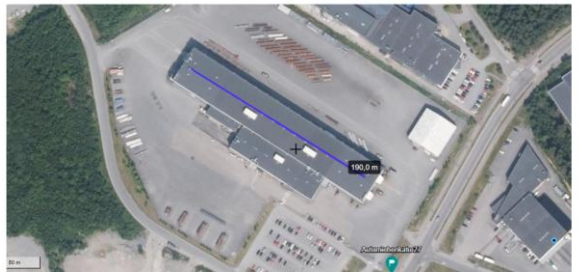
NR+ LOS range 5360 m



Urban NR+ 750 m and Sub-GHz 360 m

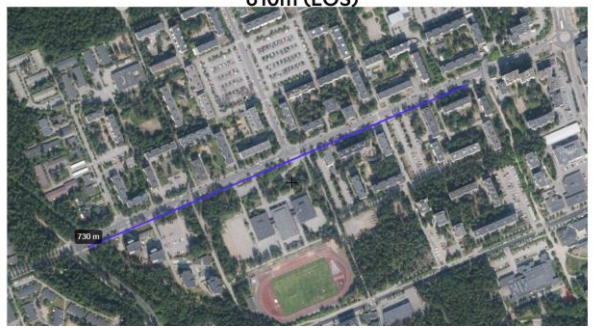
Tampere University measurements 2024

Valmet Technologies Oy Factory (Automiehenkatu 27, 33840 Tampere)- Map View



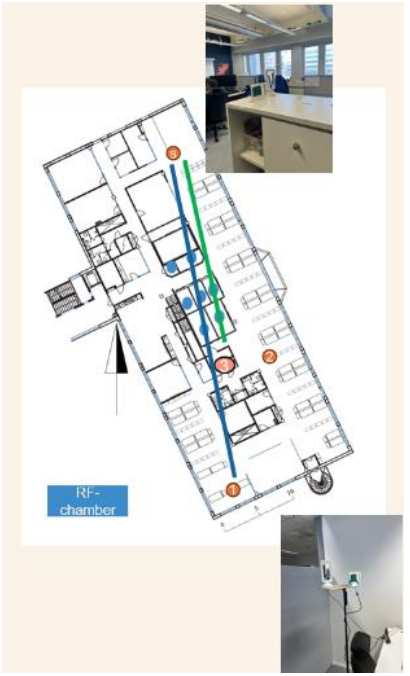
NR+ Indoor 160 m with -8dBm TX power

Measurement Scenario : Opiskelijankatu Walking Trail Distance 610m (LOS)



NR+ urban street 610 m

Wirepas measurements 2025

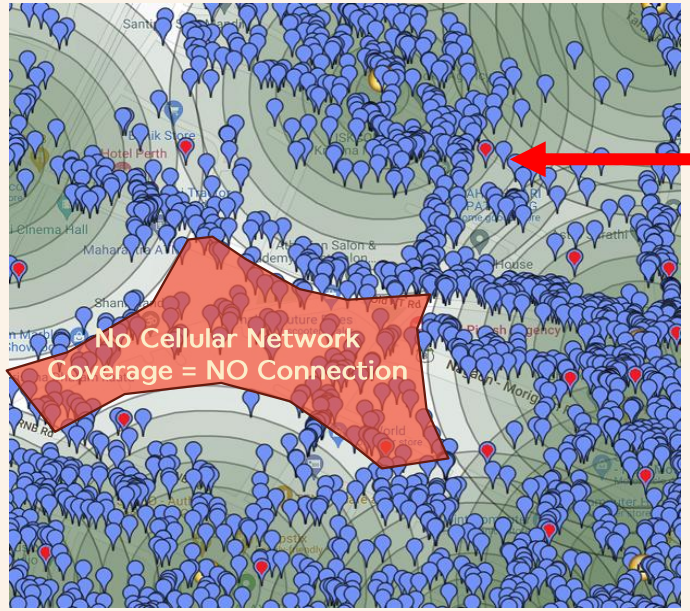


NR+ outperforms SubGHz:
With the same link distance
NR+ achieves lower UL PER values
with clearly lower TX power than SubGHz

NR+ overcomes cellular blind spots

Cellular

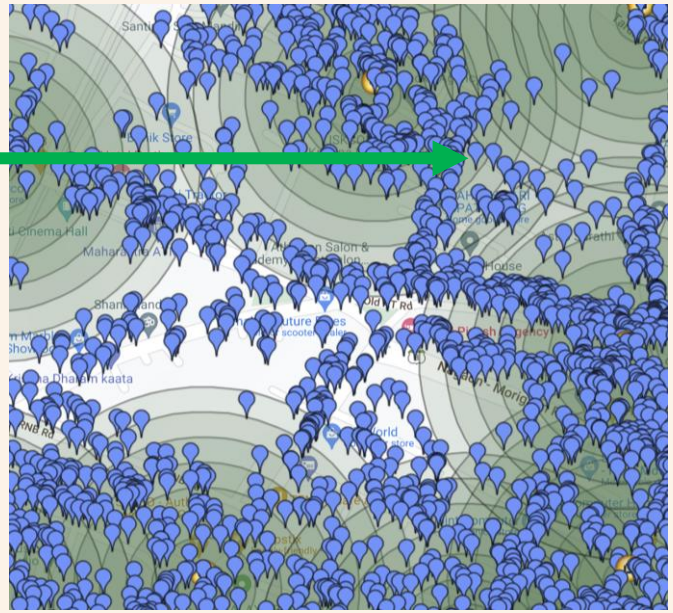
Some meters cannot connect due to lack of cellular base station coverage.



Random non-communicating devices are very difficult to reach and fix.

NR+

Any meter can connect to any meter in its radio range



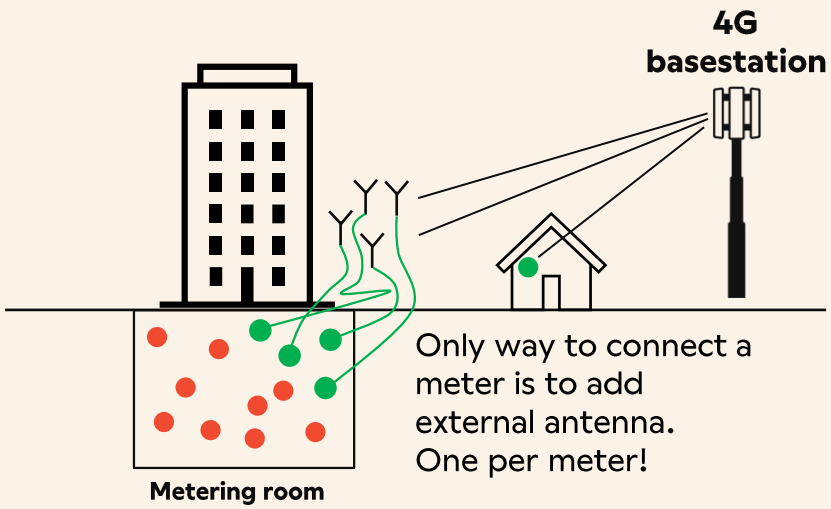
Connecting 99.9% of the meters reliably during the lifetime

Underground coverage resolved

Cellular

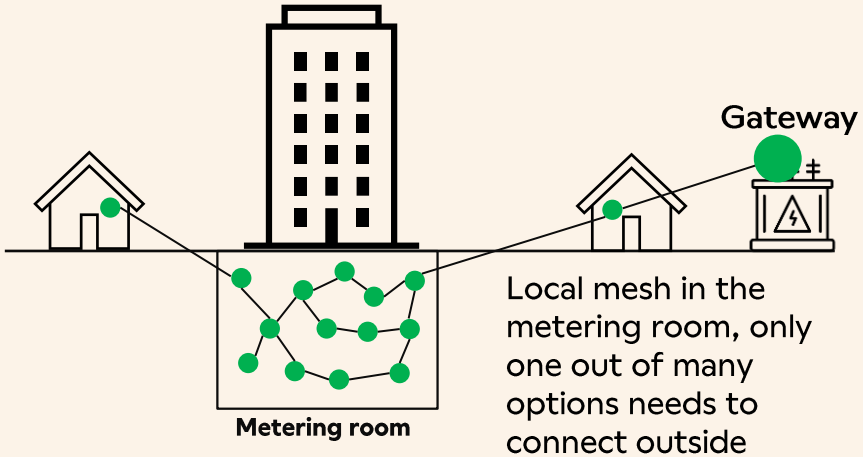
Each meter requires an external antenna and a cable to a cellular base station

Cumbersome and expensive solution



NR+

Meters create a mesh network in a metering room and only one of the meters needs to find a connection to the next building

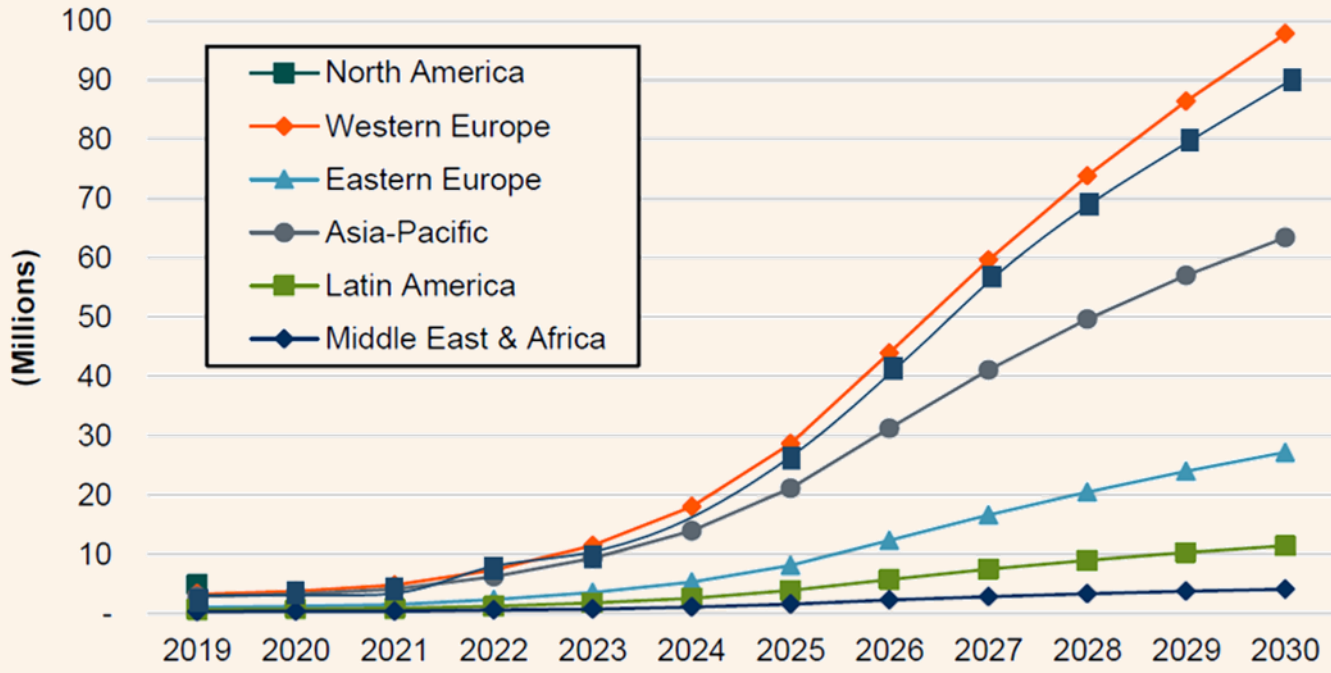


of connected sensors is exploding

- Occupancy
- Temperature
- Pressure
- Humidity
- Leaks
- Air quality
- Power consumption
- Smoke
- Fire

Sensor shipments by region
World markets: 2019 to 2030

(Source : ABI Research)



> 300M new wireless connected sensors / year…

* Does not include HVAC, Lighting control, Emergency lights, Access, Shades
** This is commercial building automation only and does not include residential market

Yet today, the systems are siloed

Occupancy/ office space

Fire Alarm

Emergency Lights

Leak Detection

Energy

Lighting

Security

HVAC

- Siloed operation
- Lack of interoperability
- Lack of reliable wireless

The Industry response

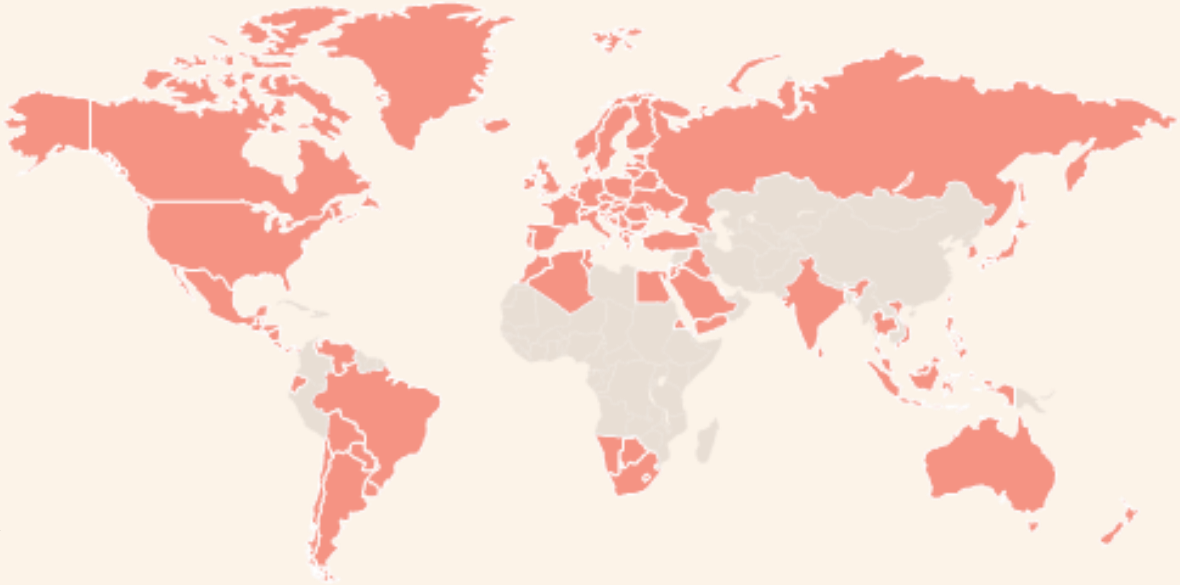
Sovereignty, Longevity, Transparency

Open Standard **- no vendor lock-in**

Software stack - deploy anywhere

Business model : License, **not per bit-billing**

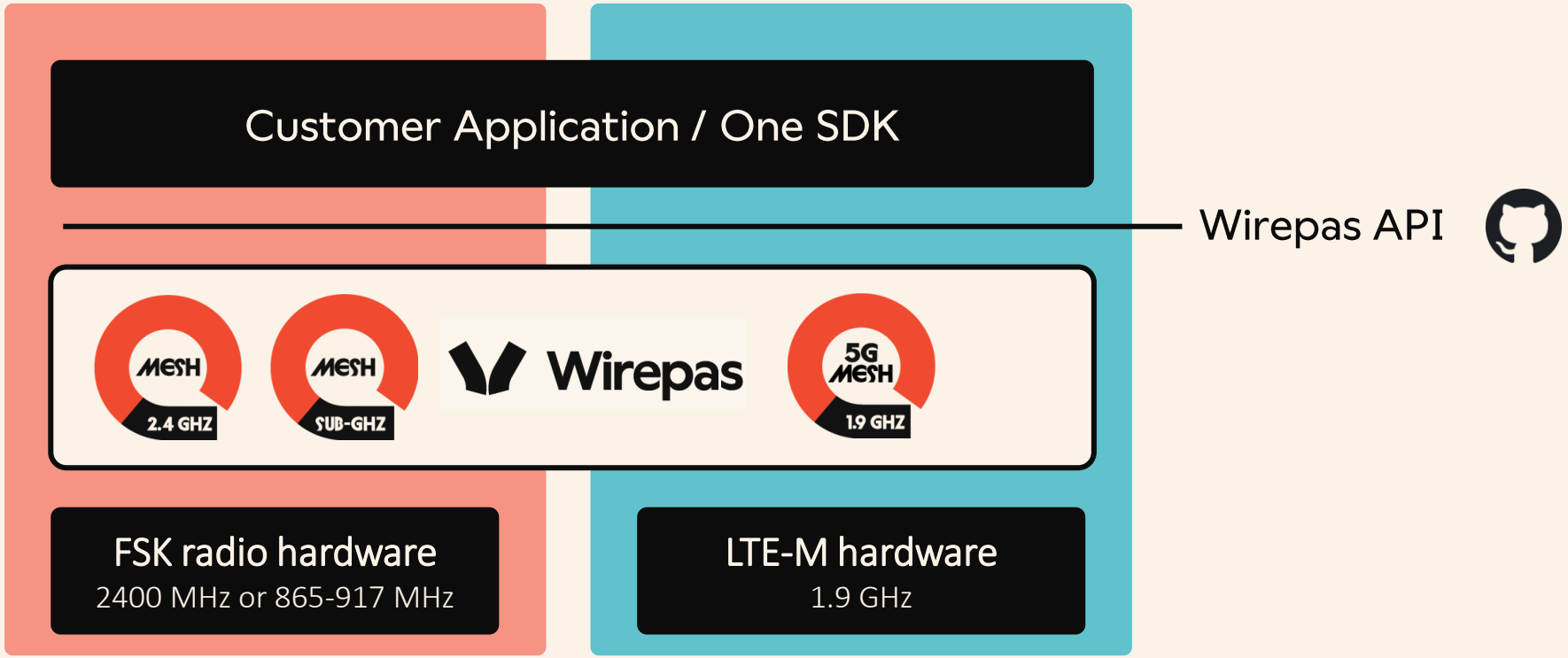
You deploy network the same way you deploy Wi-Fi - fully under your control



DECT 1.9 GHz frequencies globally

One product, several profiles.

One software, many hardware options.



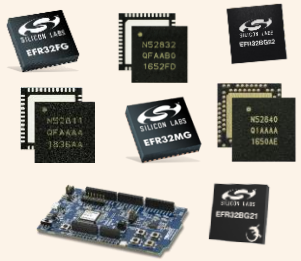
NORDIC SEMICONDUCTOR

SILICON LABS

nRF52832
nRF52833
nRF52840

EFR32xG12
EFR32xG21
EFR32xG22
EFR32xG24

EFR32FG23



nRF9161/nRF9151/nRF9131

- 100 employees
- Over 13 million active devices
- 220+ partners & solutions
- HQ in Tampere, Finland.
- Offices in EUR, Asia, Australia, India and the USA
- Founded in 2014
- Over 200 patents today
- Major contributor to NR+

QUESTION ?

NR+

Wirepas

wirepas.com