



5G4SC Capacity building
Session 4

Innovative use cases 5G Densification

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Product Strategy and Innovation
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1 | Cellnex at a Glance

Cellnex at a glance

Europe's leading operator of telecommunication infrastructure

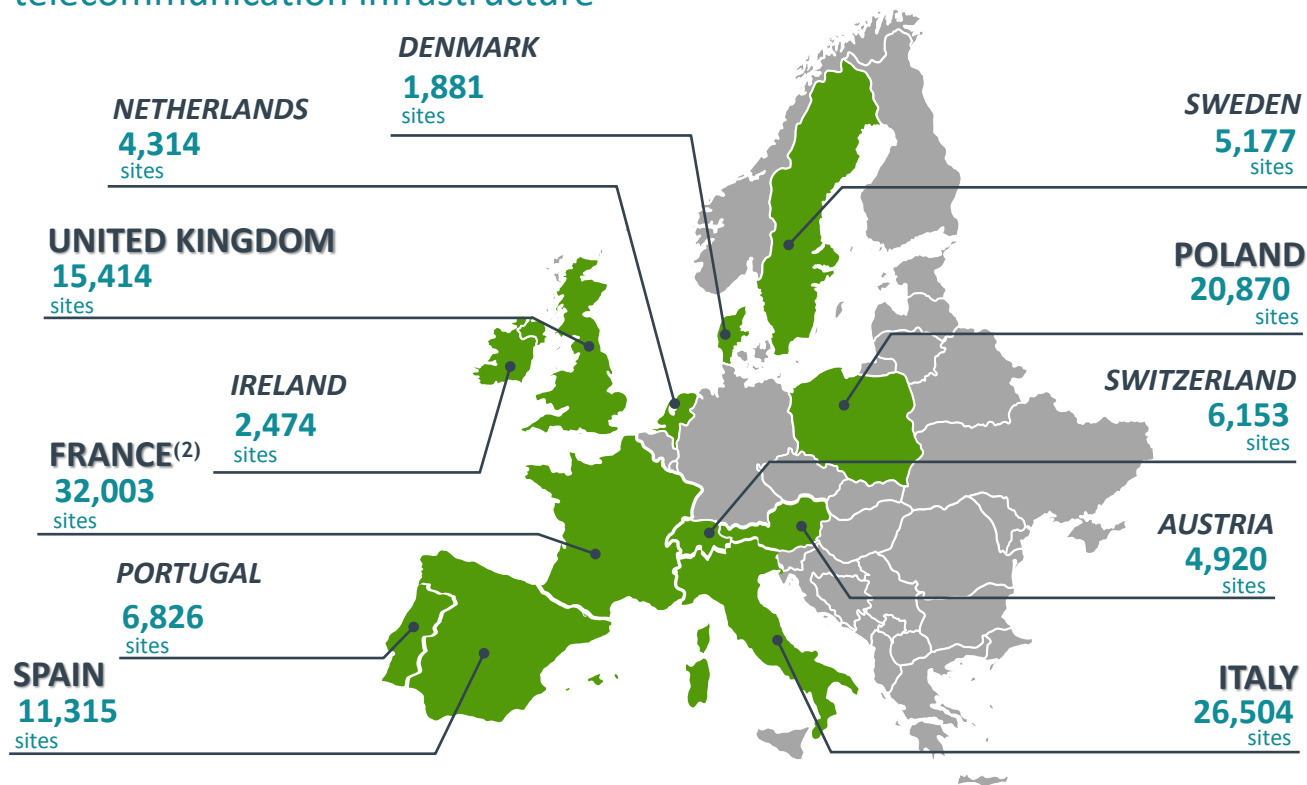
12 countries

where we operate

135 000 Sites ⁽¹⁾

31 000 km Of Fiber
+ **130** Datacenters ⁽³⁾

250 millions
people connected
through our infrastructure



More than 135,000 sites ⁽¹⁾, towers and communication nodes

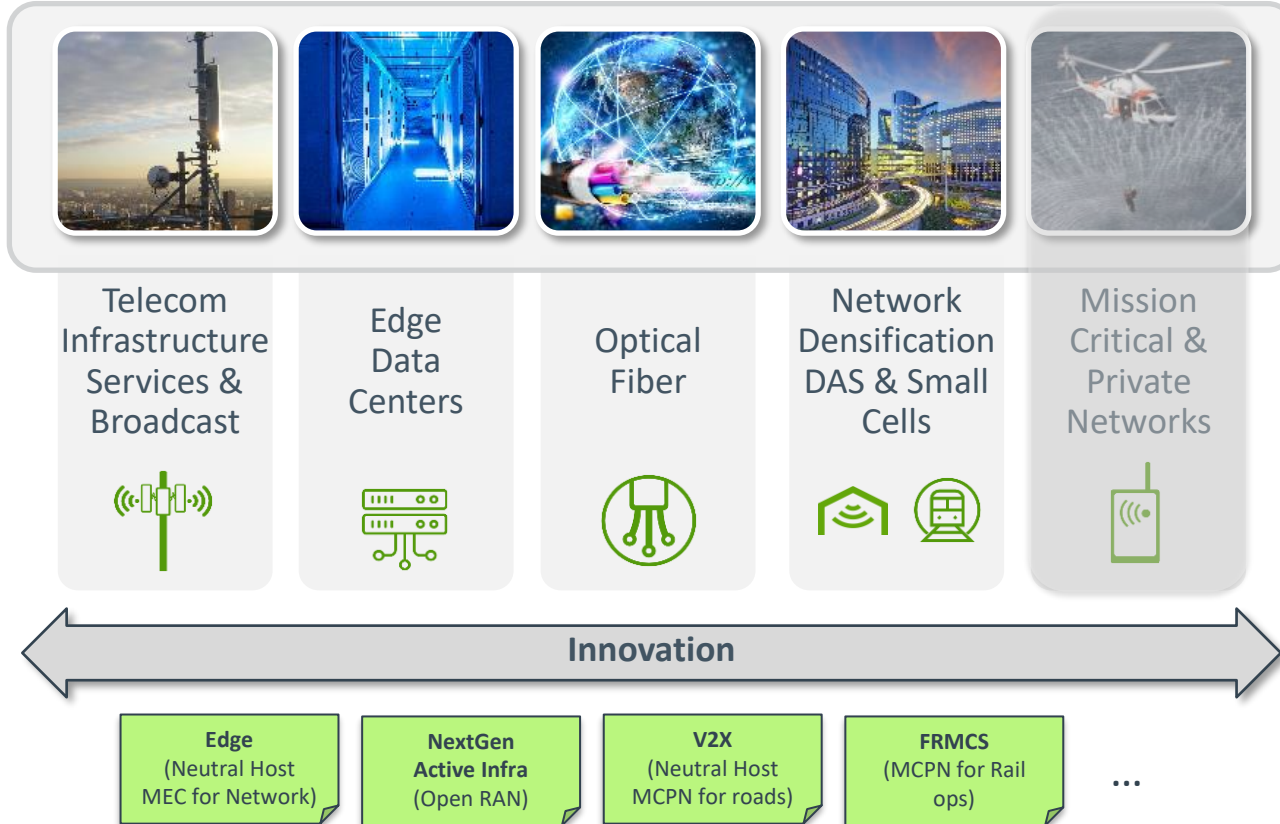
⁽¹⁾ Including forecasted roll-outs up to 2030

⁽²⁾ In addition, there is fiber and edge data centers

⁽³⁾ As part of Nexloop engagement by 2027 in France

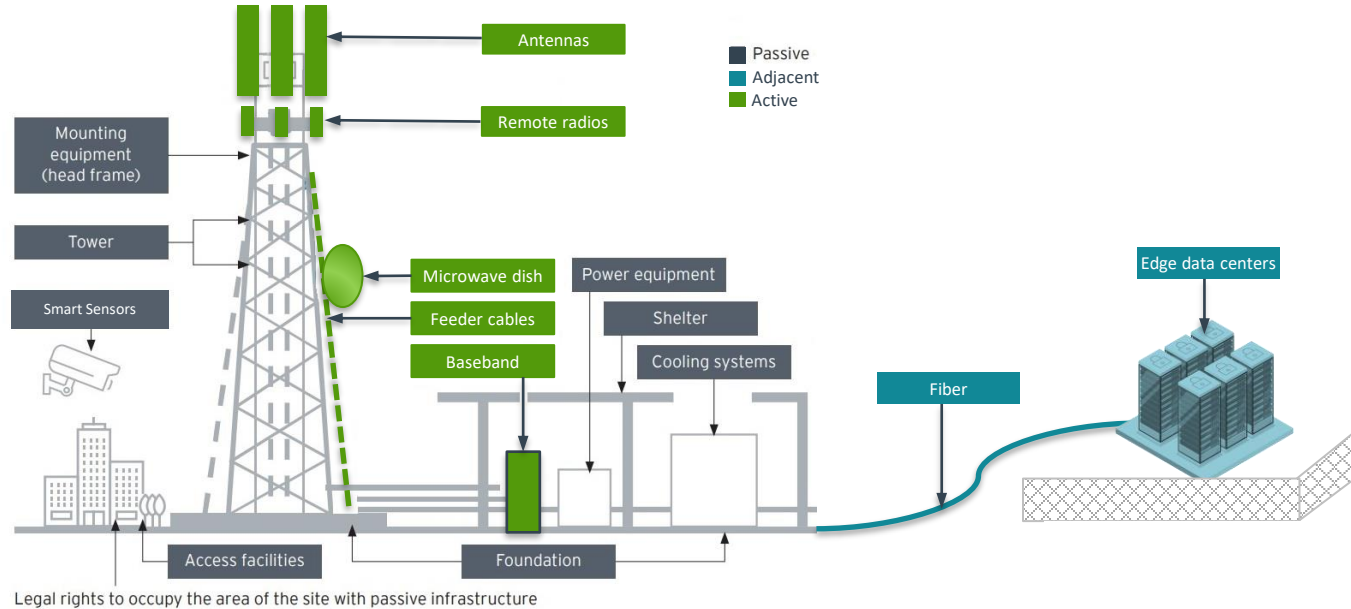
Products and services

Diversification and leadership of the sector



The “Augmented” TowerCo

Boosting synergies for MNOs and enabling the 5G mutualization



2 | Innovative use cases 5G Densification



Paving the way to the “Augmented” TowerCo

We are investing in getting a full understanding of disruptive technologies and building the capabilities to meet our customers’ “future” needs.

RAN Disaggregation and edge

UK
5G

O-RANOS - UK

Create architectural **blueprint** for **multi-domain (Private and Public) 5G Network multi-vendor Open RAN** integration and interoperability equipped with satellite backhaul. Explore **RIC** Application ecosystem.



PARIS
LA
DEFENSE

5G mmWave neutral host – FR

Neutral host model allowing the sharing of antennas and infrastructures to explore new use cases by leveraging **very-high-speed 26 GHz 5G** at the heart of Paris La Defense business area.



Future mobilities

5GMED

5GMED and PoDIUM - EU

Enabling cross-operator network for Connected and Automated Mobility and Future Railway Mobile Communications System services (**V2X, FMRC**).

PoDIUM



5GCAT

5GCat – Barcelona

Overcoming the challenge of deploying **Open RAN 5G small cells** in the urban environment. **RAN sharing**

MAVENIR



Vapor

Vapor IO partnership – EU

Expand to Europe the **Open Grid** network for delivering edge and grid services network **edge**. It aims to enable the efficient deployment of **virtualized radio access network** technology (**Open RAN** or vRAN).

OpenGrid ALLIANCE



Connecting Europe Facility (CEF-2)

Deploying 5G infrastructure in Europe, including the launch of a **neutral host vehicle to infrastructure (V2X)** communications network for safety and non-safety services, in **four cross border** transport corridors.



Cellnex deployed a 5G neutral host network in Barcelona metropolitan area and supported a partner ecosystem in the deployment of new cutting-edge use cases



Consortium



Key challenges

The project comprises seven use cases of 5G in the development of technological solutions in the urban environment.

- Low latency; reliability and robustness using 5G cameras connected to edge systems with artificial intelligence accelerators.
- Large bandwidth for transmission of high-quality images and holograms or high-definition video via 5G uplinks.
- Likewise, special attention will be paid to mitigating risks associated with the cybersecurity of the network, considering several use cases corresponding to sectors classified as critical
- Establish a blueprint for 5G small cells deployment in urban areas (First Spain/BCN).

Locations

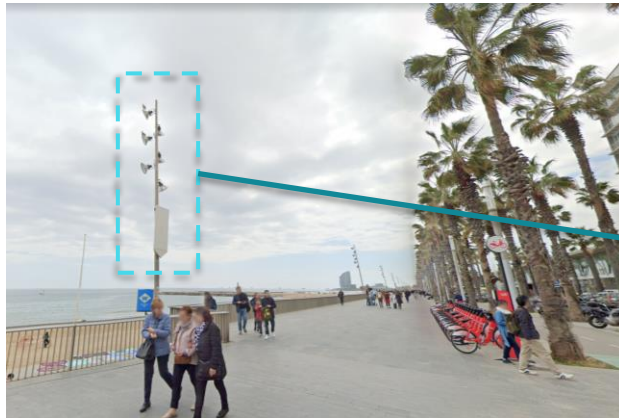
- Several locations in Barcelona city

USE CASE & AREA	TECHNOLOGY & SCENARIO	BENEFITS/OUTCOMES
 BOQUERIA MARKET SMART CITY	<p>Augmented reality for immersive e-shopping experience. Realistic online experience that mimic in-person shopping.</p>	<p>Impact on tourism and increased customer satisfaction through digital interactions.</p>
 XAL/BETEVÉ MEDIA/BROADCAST	<p>Real Time Production with HD audio-visual signal transmission using 5G network in a live streaming event.</p>	<p>Infrastructure cost reduction & Facilitates the increase in the supply of local content</p>
 GUARDIA URBANA 5G MISSION CRITICAL	<p>Image processing through 5G network (Camera monitoring of the emergency area) using video analytics techniques to improve safety and emergency management.</p>	<p>Improvement of communication capacity and management of citizen emergencies and security forces.</p>
 HOLOGRAPHY SMART CITY	<p>Bi-directional communication with 5G visualization system, enabling portability of holographic technology for distance learning environments.</p>	<p>Enhanced communication experience, through the ability to manage and (re)configure devices comfortably from afar.</p>
 INDUSTRY 4.0 SMART FACTORY	<p>Location of assets, such as car suspension brackets in assembly plant with 5G Precise Positioning.</p>	<p>Increased safety and efficiency in the transport of goods, reliable routing, and reduced logistics costs in industrial plants.</p>
 DRIVERLESS BUS SMART LOGISTICS	<p>Sustainable mobility communications solution for a shuttle bus in large enclosed spaces, such as the Fira de Barcelona.</p>	<p>Improving mobility in cities, providing more safety and efficiency for citizens.</p>
 BCN BEACHES Neutral host O-RAN	<p>Neutral Host ORAN network, to provide better connectivity in high traffic areas during seasonal periods in a tourist area.</p>	<p>Improved satisfaction of customers and tourists (roamers). Minimizes investment costs for operators (neutral host).</p>

- Deploy a multi-MNO neutral-host Small Cells solution in a touristic area with seasonal network capacity requirements where deploy SCs is not profitable for one single MNOs
- Evaluate Open-RAN as a viable technology for neutral host deployments

Technical information:

- Partner MNO: Más Móvil
- Frequency: n78
- Bandwidth: 80Mhz
- Two PLMN_ID provided
- Max power: 5 w

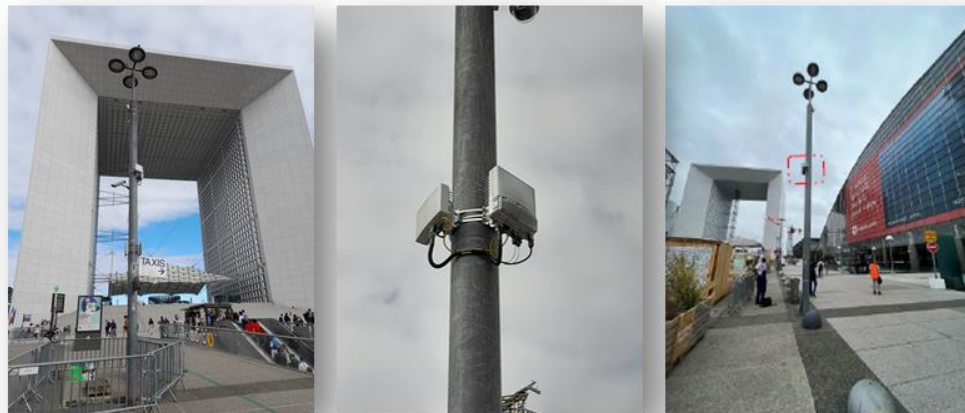


Location: Playa Somorrostro (Hospital del Mar - Barcelona)



5G mmWave – Paris La Defense (PLD)

Cellnex France partner with Paris La Défense, the iconic business district in France, to deploy a 5G mmWave neutral host network



Consortium



Key challenges

- How to satisfy the growing demand of mobile data traffic?
- How to minimize the impact and cost of deploying new telco infrastructure?

Project Rationale:

- **Validate neutral host** as an efficient deployment model that allows the sharing of antennas and infrastructure in dense urban areas
- **Transforming La Défense square into a 5G mmWave sandbox** to test new use cases in smart city, mobility, events coverage and more.

O-RANOS project

Building innovation at software platforms supporting the convergence of O-RAN private and public 5G networks



Department for
Digital, Culture,
Media & Sport



Consortium



Key challenges

Deploy a End-to-end multi-vendor and multi-domain O-RAN architecture

- Comprising public and private O-RAN network

Convergence of private and public networks

- Experimenting Satellite backhaul connectivity

Provide a RIC Application ecosystem

- Create a framework to easy develop RIC applications
- Develop innovative RIC applications to manage backhaul handover

Address Open-RAN security

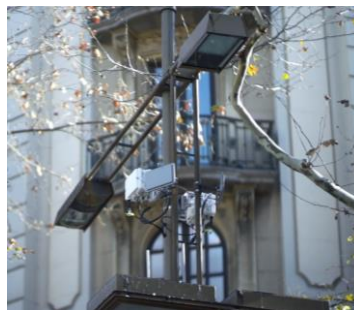
- Adopt a zero trust security layer by design

Locations

- Bristol City Center
- Westcott Innovation Centre
- Bristol 5GLogistics Private 5G testbed

Virtual RAN Small Cells trial in France

Solve traffic congestion in a high-density residential area in a suburb of Paris

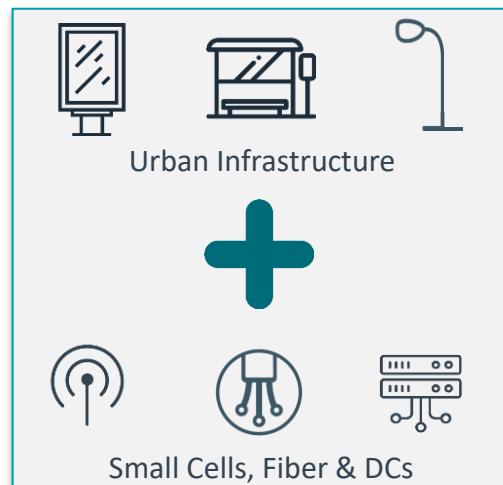


Key challenges

Explore new network solutions to address network congested areas where macro coverage is not enough to satisfy growing demand mobile services.

Proposed Solution

- Virtual RAN offers a flexible solution enabling virtualization of the RAN in edge data Centres reducing the cost and impact of deploying Telco infrastructure in public areas.
- Cellnex provide a RAN as a Service solution for MNOs including fibre, edge Data Centres and site management



nexLoop

- 31 500 km de Fibre Optique
- 76 Agglomérations
- 130 Datacenters Interconnectés

Thanks

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