

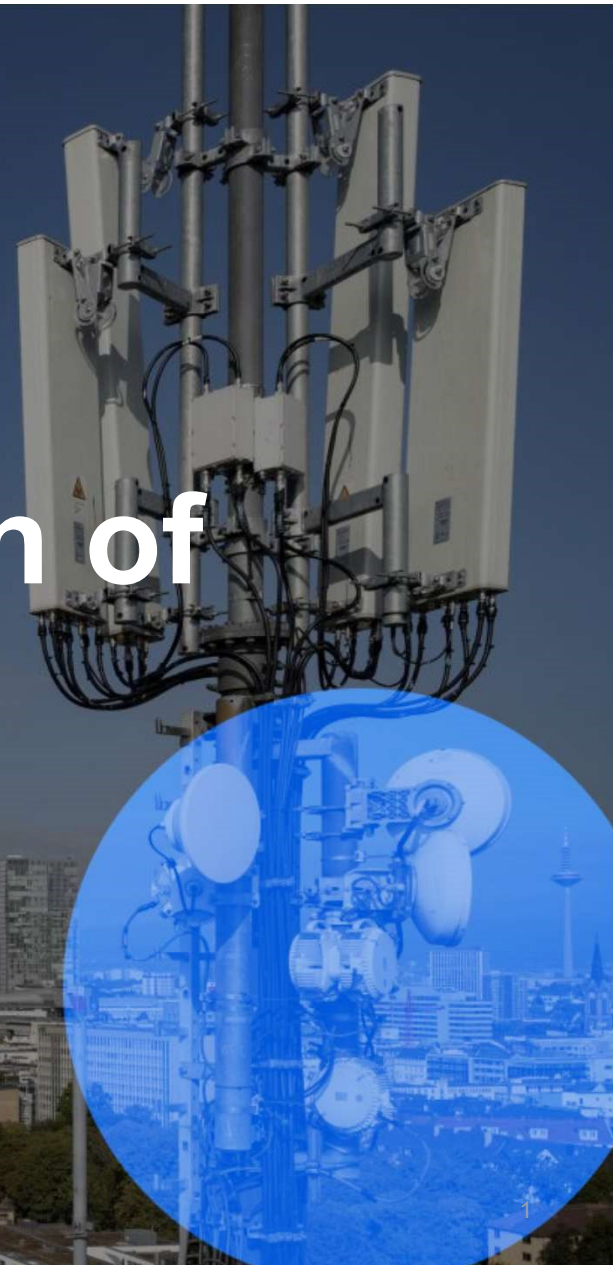


5G-Networks Booster for the digitization of BOS

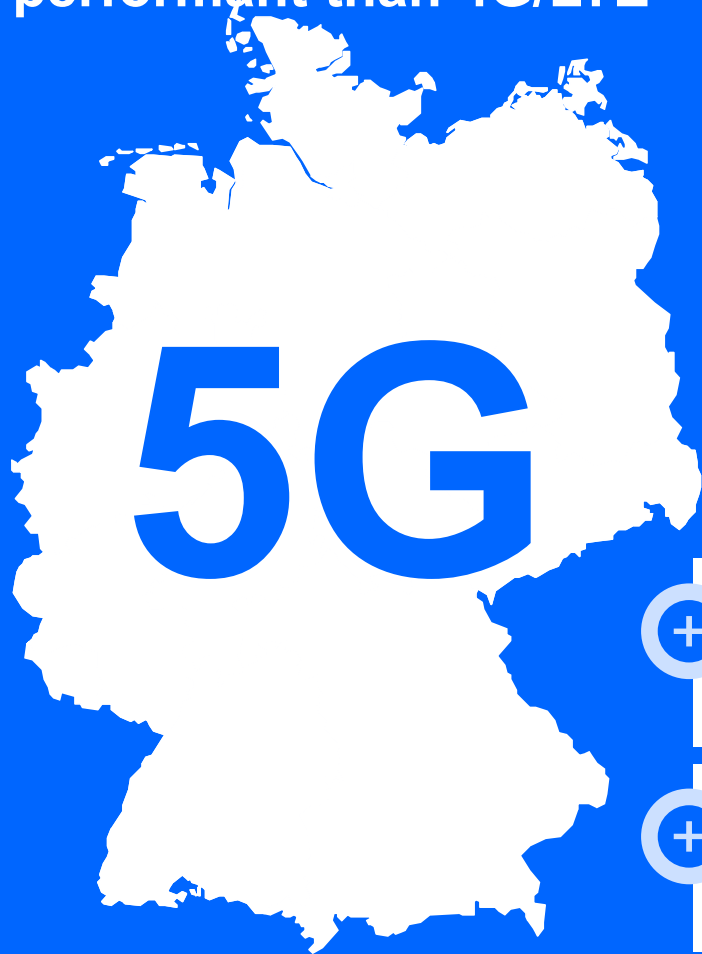
Europäischer Polizeikongress, 03.05.2023

Pia von Houwald

03.05.2023



The current mobile communications standard 5G is significantly more performant than 4G/LTE



perspective downloads with up to

20 GBit/s



up to

100x

faster than 4G



up to

90%

higher power efficiency



up to

1 Million

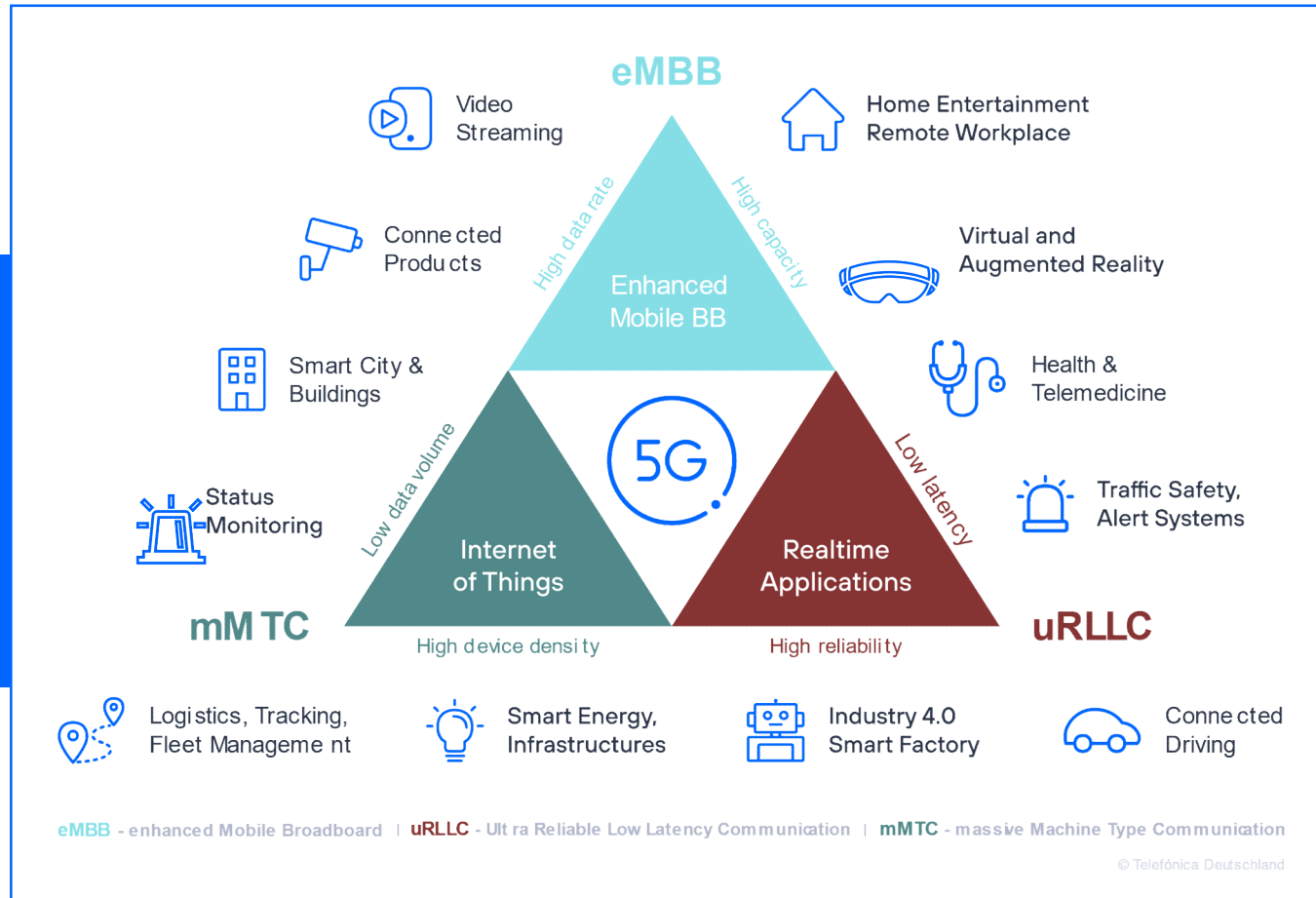
devices/km² can be networked



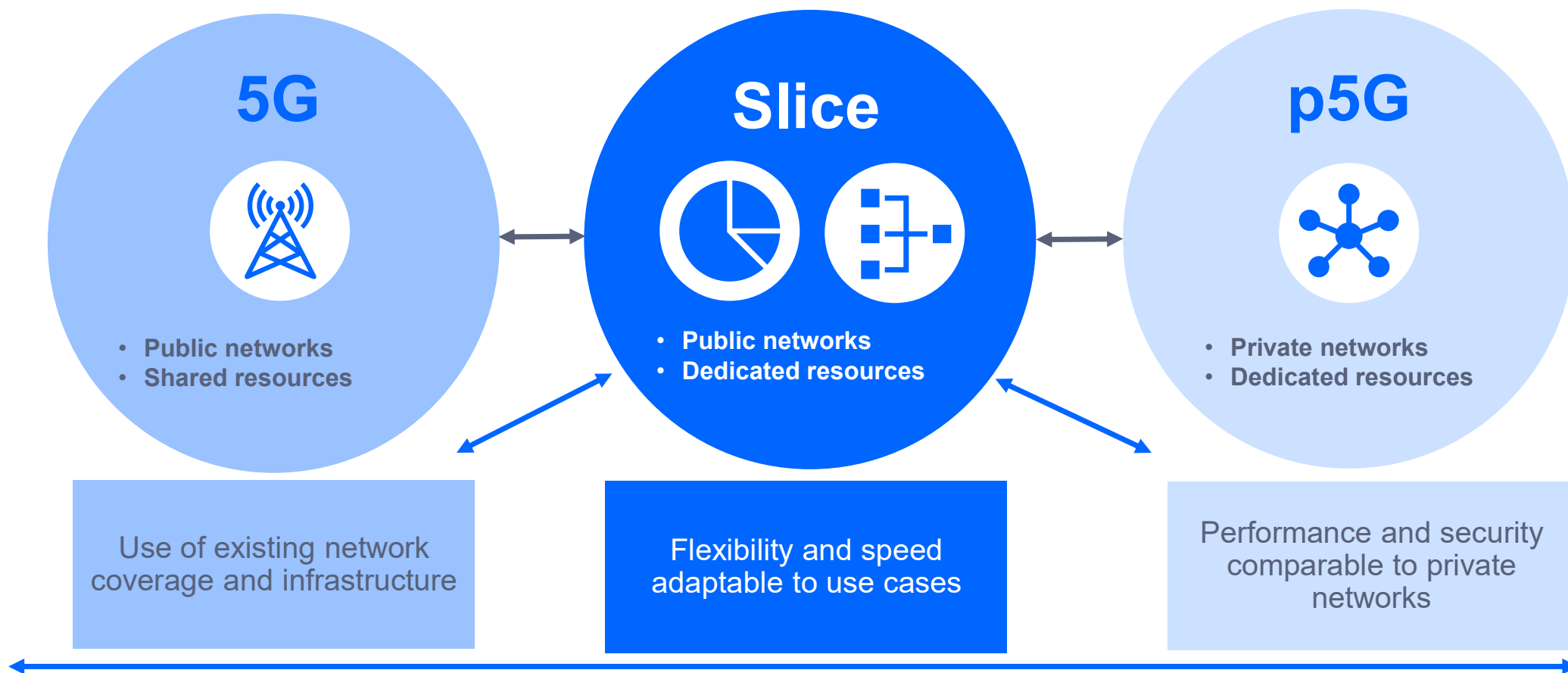
Latency times of only

1 Millisecond

5G technology delivers many new features and enables new use cases



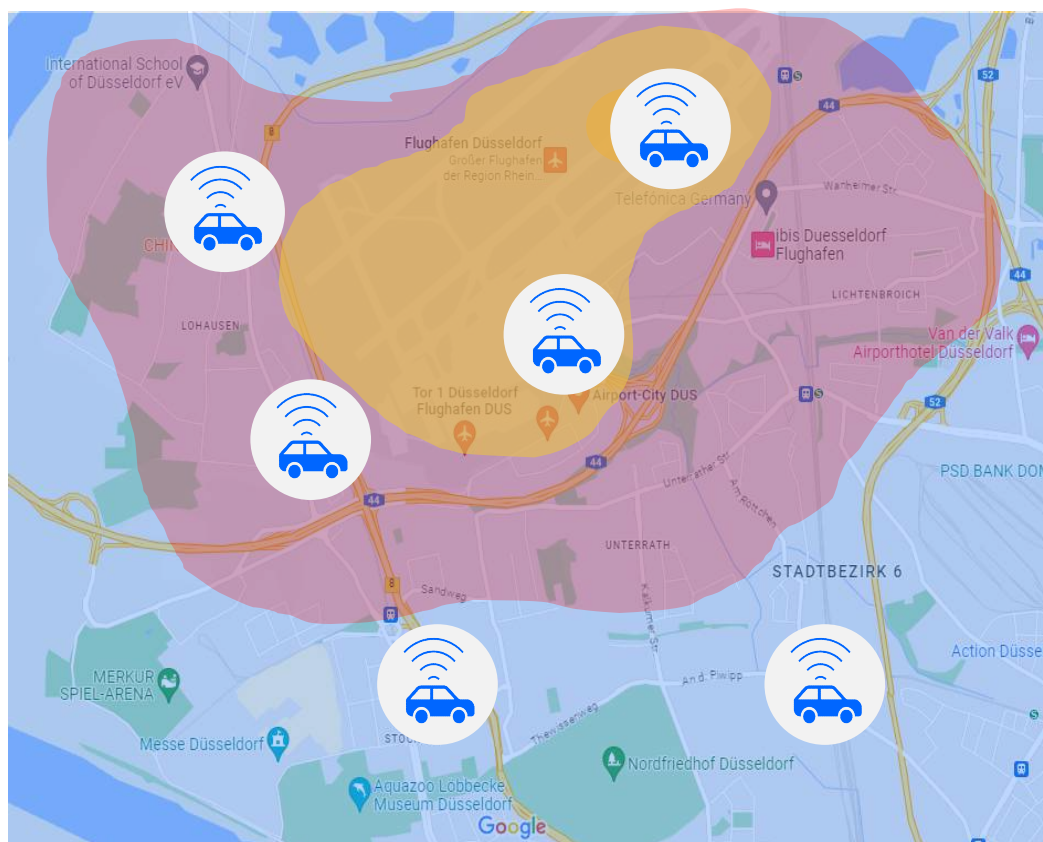
5G networks can be used and operated in different variants (1/2)



5G networks can be used and operated in different variants (2/2)

	Public 5G Networks	Slicing			Private 5G
		Slice	Hybrid: Shared RAN	Hybrid: Shared Core	
Spectrum	Mobile Network Operator (MNO)	Dedicated by Network operator	Dedicated by Network operator	Private	Private
Core network	Mobile Network Operator (MNO)	Dedicated by Network operator	Private	Dedicated by Network operator	Private
Application scenarios	Comprehensive broadband coverage	Broadband supply with dedicated resources	Mobile communication with high security requirements	Data-intensive use cases with high video bandwidth	Data-intensive use cases with large video bandwidth and own services
Roaming to different networks possible					

Private 5G, slicing and roaming offer the perfect mix with optimized operating costs: Example of a vehicle manufacturer



Source maps: Google Maps

Standalone and private 5G networks (p5G)

- Fully autonomous
- Network coverage, capacity and configuration perfectly adapted to individual requirements
 - e.g. for high speed AGV, R&D etc.

Virtual private network (slice)

- dedicated capacity and priority
- Configuration optimized for use cases
- Bridging of public areas (roads, train stations, ports)
 - e.g. for autonomous traffic between sites, to cover sites without their own p5G

Roaming on public networks

- Coverage of the rest of the world with public networks (incl. international roaming)
- Unified network configuration
- Optimized operating costs

Network slicing provides a customized network as a technology building block of 5G

▶ **Virtual private network** with secure end-to-end communication and data services

▶ **On-demand** automated and localized provisioning possible

▶ **Use of existing physical infrastructure** within the public network



▶ Slices configurable for **individual use case requirements**

▶ Separate network instances with **guaranteed resources**

▶ **Multi access edge computing** for use cases with very low latency requirements

Telefónica and NTT DATA bring 5G to the Port of Málaga to increase security



The Port of Málaga wants to control the approaches by the ships of different types at the harbor mouth.

The project focuses on **safety**. **The deployed solution records the** events associated with each ship. This provides the port staff with valuable information about the ships.

For this purpose, data from high-resolution video cameras is transmitted via 5G, analyzed in real time and transmitted to port personnel.

Ericsson showcases 5G-assisted remote diagnosis and treatment



The networked 5G ambulance connects patients, paramedics and medical experts with each other in real time.

The project involves Ericsson, University Hospital Birmingham NHS Foundation Trust (UHB) and King's College London.

Using a live 5G network in Birmingham, healthcare workers performed the first remote diagnosis in the UK over 5G.

The example shows how clinicians and paramedics can work together to care for patients, even when they are miles apart, thanks to 5G technology.

Telefónica develops and researches solutions for security and efficiency in the Spanish police force



In Málaga, the police control room operates with the help of fixed and mobile cameras that can be placed anywhere in the city, connected to the Telefónica network via 5G.

Telefónica has also deployed a private 5G voice and video communications network for the police, based on the latest 3GPP MCX standards.

Police officers can use 5G cell phones to communicate securely with each other via walkie talkie (push-to-talk) mode and define user groups.

O₂ Telefónica and Dataport launch 5G standalone campus network for Hamburg



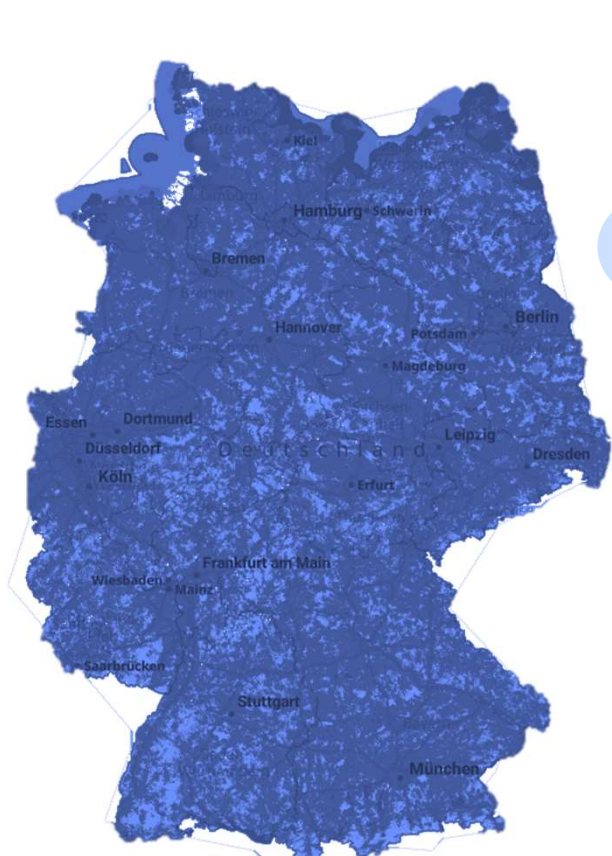
IT requirements for smart cities and public administration are continuously increasing.

▶ This involves, for example, coping with increased data traffic or the seamless system integration of wireless sensors.

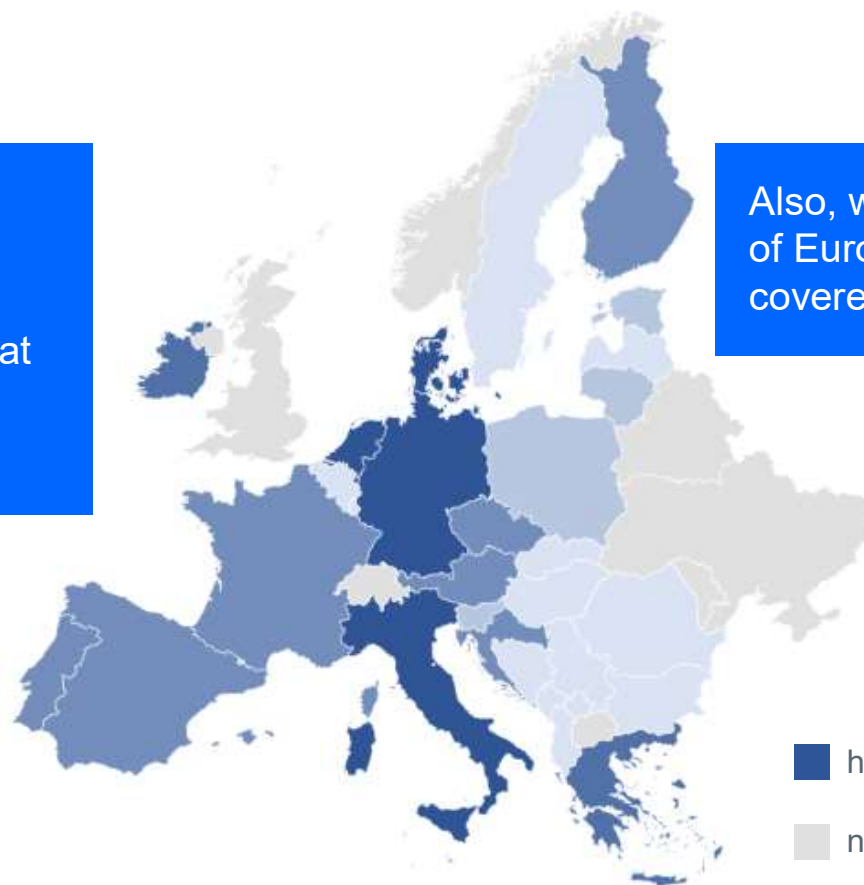
To expedite digitization of the public sector, Dataport is operating the first private 5G standalone campus network in Hamburg for its new 5G test lab.

The 5G standalone campus network designed and built by O₂ Telefónica acts as a digitalization turbo.

5G will soon be available nationwide in Germany and Europe



84.9%
5G coverage
in Germany by at
least one MNO



Also, wide parts
of Europe are
covered with 5G

Source: Bundesnetzagentur / January 2023

Sources: 5gobservatory.eu / December 2021

O₂ Telefónica offers the most comprehensive connectivity portfolio of mobile and fixed-network services in Germany

4G 99% of the population
5G full coverage by 2025

VDSL
 Access to the complete VDSL network of Deutsche Telekom and various local providers

CABLE
 Largest cable offering with exclusive wholesale access to Vodafone and Tele Columbus

FTTH
 Access to the fiber optic network of Deutsche Telekom, Tele Columbus and wilhelm.tel UGG (Our Green Fiber) since April 2021

High network and service quality

4G

99% coverage

5G

Expansion

Year	Expansion
2021	>30%
2022	>50%
2023	>80%
2025	100%

Source: Federal Network Agency



Telefónica