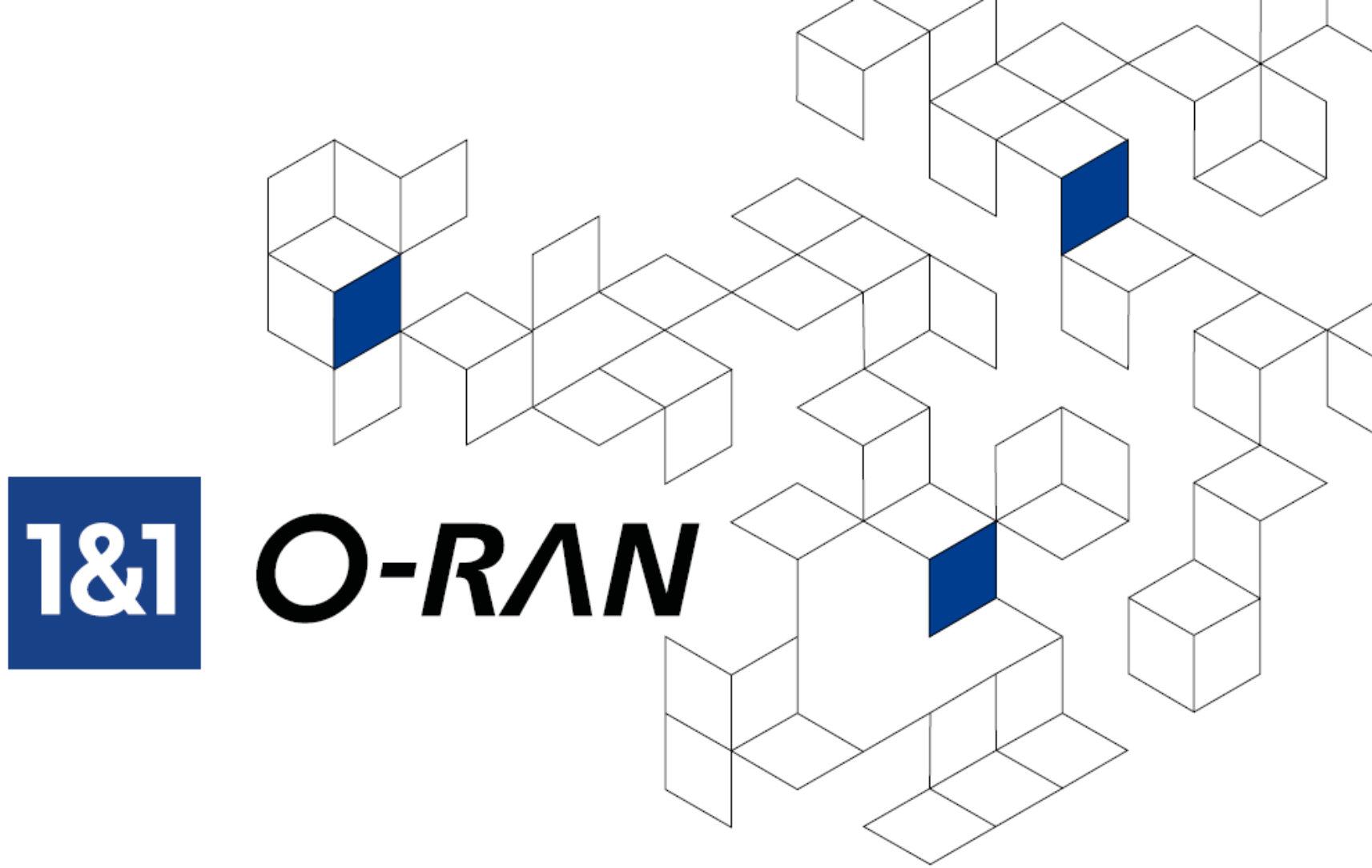
BCO Network

BCO Network WEBseries: 1&1 Presentation on OpenRAN Infrastructure

28 January 2025

Speaker:
David Mündel, 1&1

Funded by the European Union



1&1 O-RAN

OPEN FOR MOBILE FUTURE

The company

- 1&1 is an **agile internet and telecommunications company focusing on Germany** with 30 years of experience – lean, customer- and service-centric.
- 1&1 is the ideal contender to be the fourth network operator:

➔ More than 12 million mobile communications customers for network utilization and refinancing of investments

➔ MVNO since 2010

➔ One of the largest fiber-optic networks (around 55,000 km with 1&1 Versatel) for connecting mobile data centers and antennas

➔ Data-Center and Cloud-Expertise through cloud service provider IONOS

➔ Long-standing expertise in the operation of telecommunications networks, data centers and applications

➔ Strong sales force, high customer satisfaction and brand awareness

➔ Acquisition of 5G frequencies at 2.1 and 3.6 GHz in 2019

The network in the cloud

- 1&1 deliberately sets itself apart from the established network operators and duplicates neither strategy nor networks.
- 1&1 **exclusively** invests in infrastructure **in Germany** and is thus not conflicted about whether to invest abroad.
- As a provider without path dependencies, 1&1 **does not have to compromise on technology** and invests solely in the latest technologies.
- The **Open RAN approach** does not create a network in the conventional sense, but a private cloud distributed across hundreds of decentralized data centers.
- Standardized interfaces and standard hardware simultaneously ensure that the infrastructure is secure and **independent of individual manufacturers** - such as Huawei.

Reached Milestones

2019 June
Successful participation in the 5G-Frequency auction (2.1 & 3.6 GHz)

2021 May
National Roaming Agreement with Telefónica

2021 August
Partnership with OpenRAN-Pioneer Rakuten

2021 Q4
Cooperation with Tower Companies for the 1&1 Network rollout

2022 July
RAN and Core Readiness, Fix Wireless Access (FWA) Friendly User Trial in Mainz, Karlsruhe and Frankfurt

2023 December
Launch of mobile Services (eMBB) in 1&1-O-RAN

2024 August
Start of the National Roaming Agreement with Vodafone

USP of the 1&1 Network

Cloud

Virtualized **Containers** on standardized **COTS HW** make the difference

Radio

OpenRAN is the most crucial component for the Telco Revolution

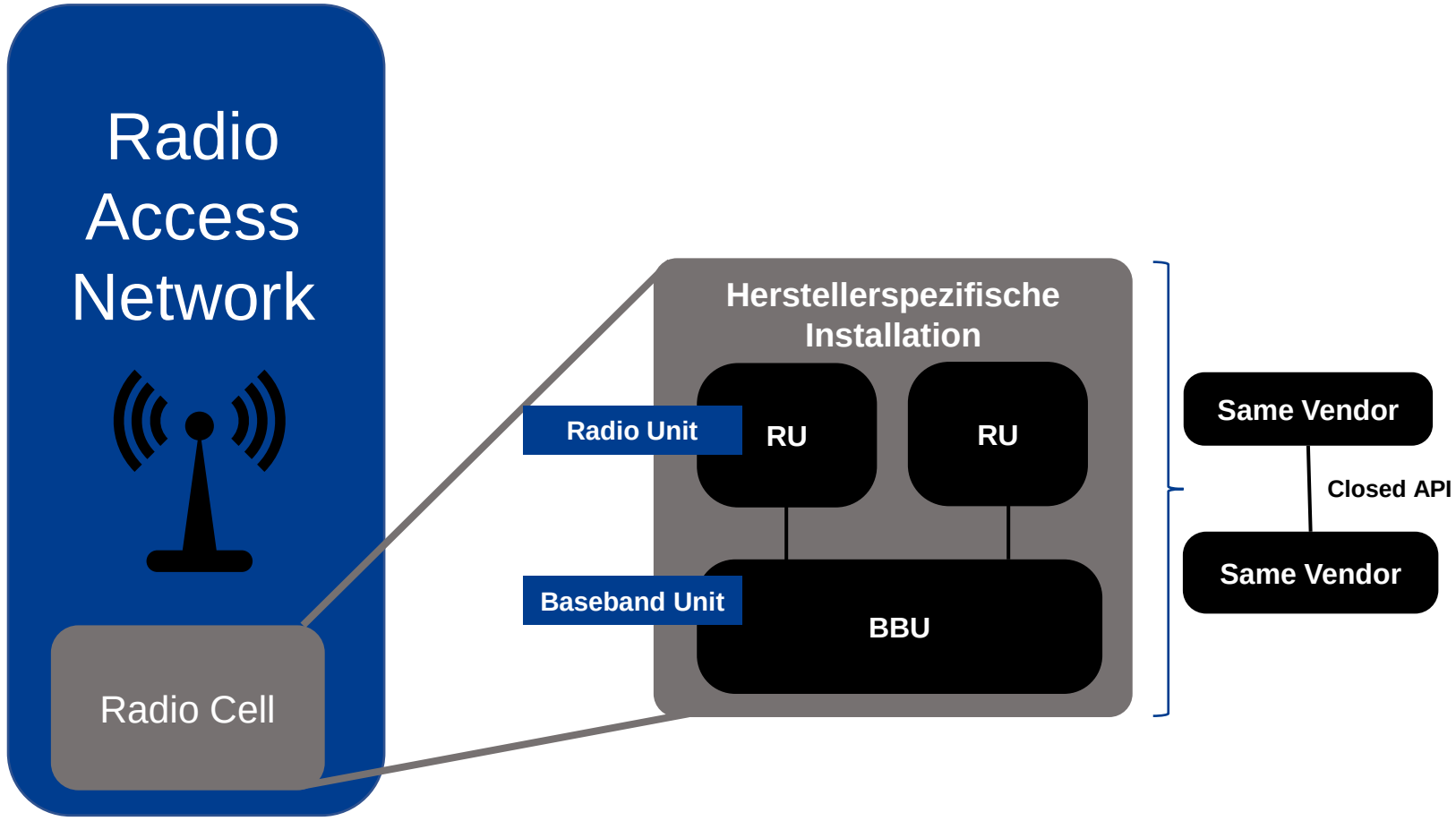
Automation

Automation enables operational savings and superior efficiency

Collaboration

Enabling **Open Innovation** is a must

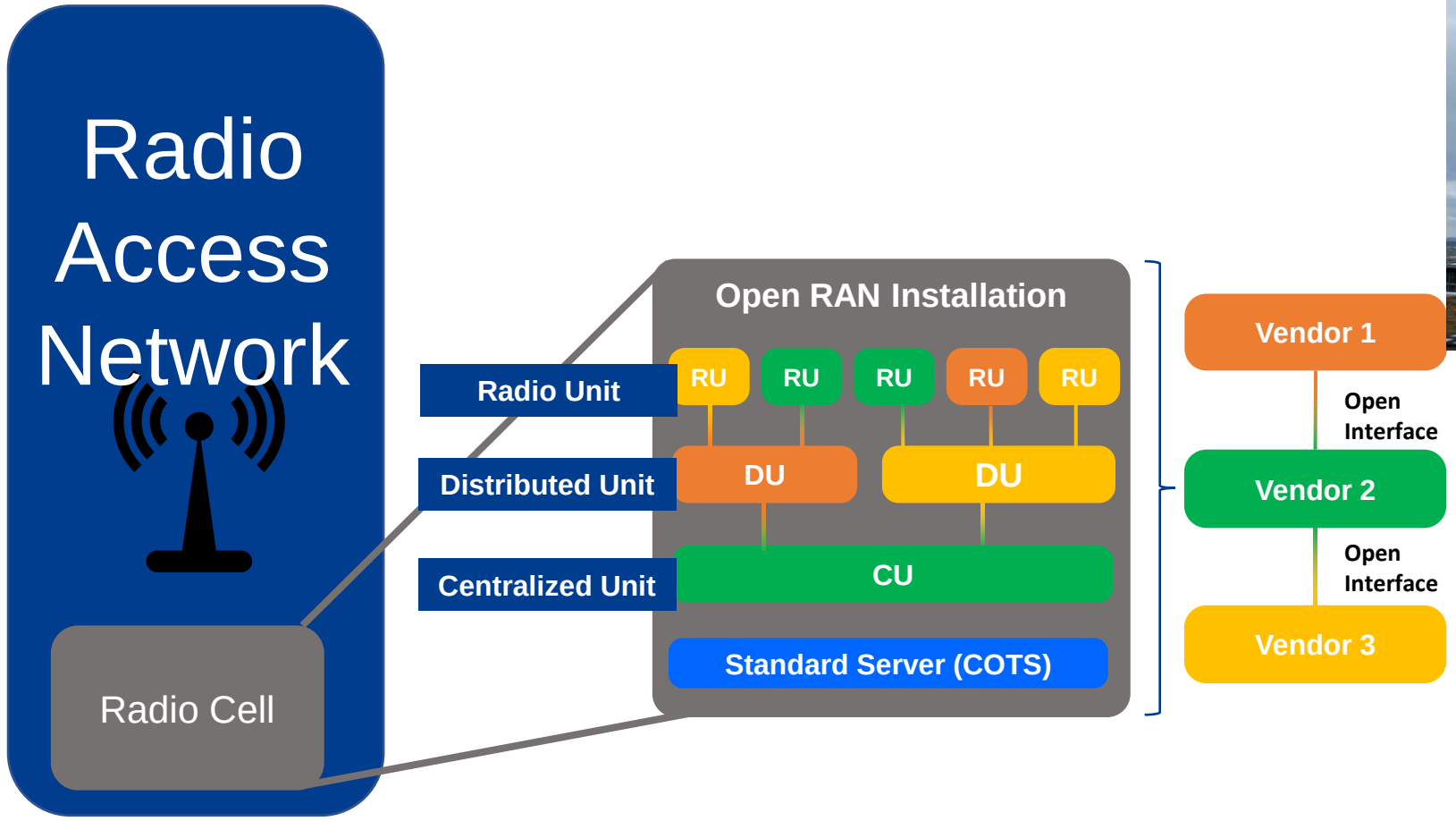
Proprietary Radio Access Networks



Site

BBU for one site

Open RAN as open architectur



Site

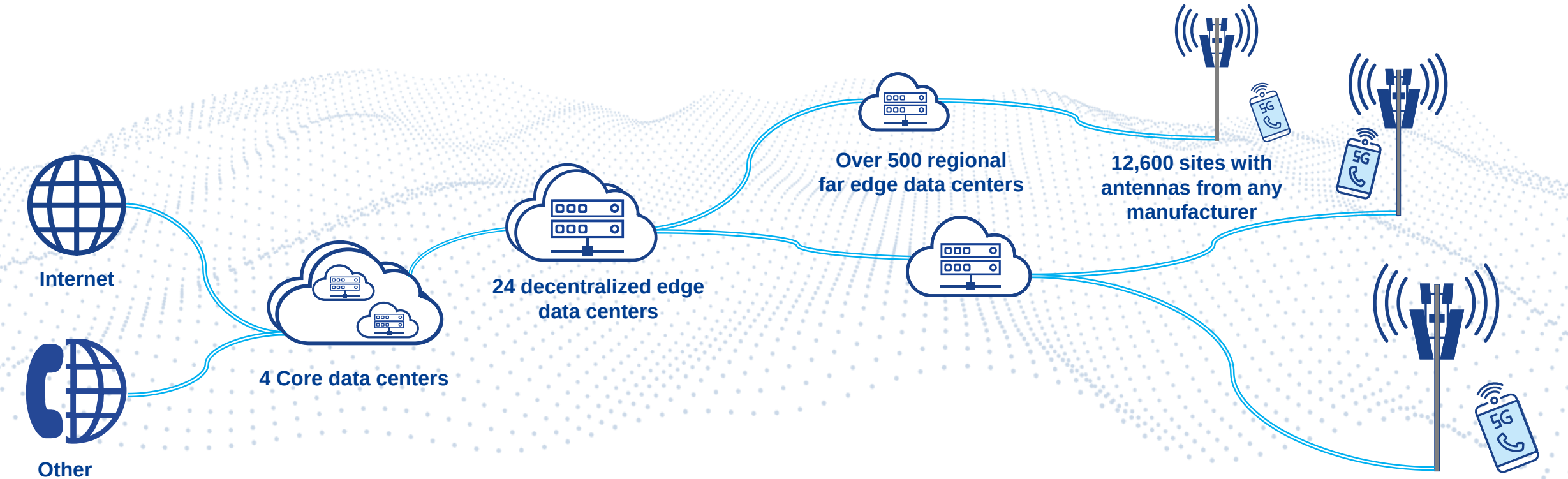
DU Location for 40 sites

December 2023: Launch of Europe‘s first virtualized Open RAN

Software in a private cloud realizes all network functions on **standard servers**

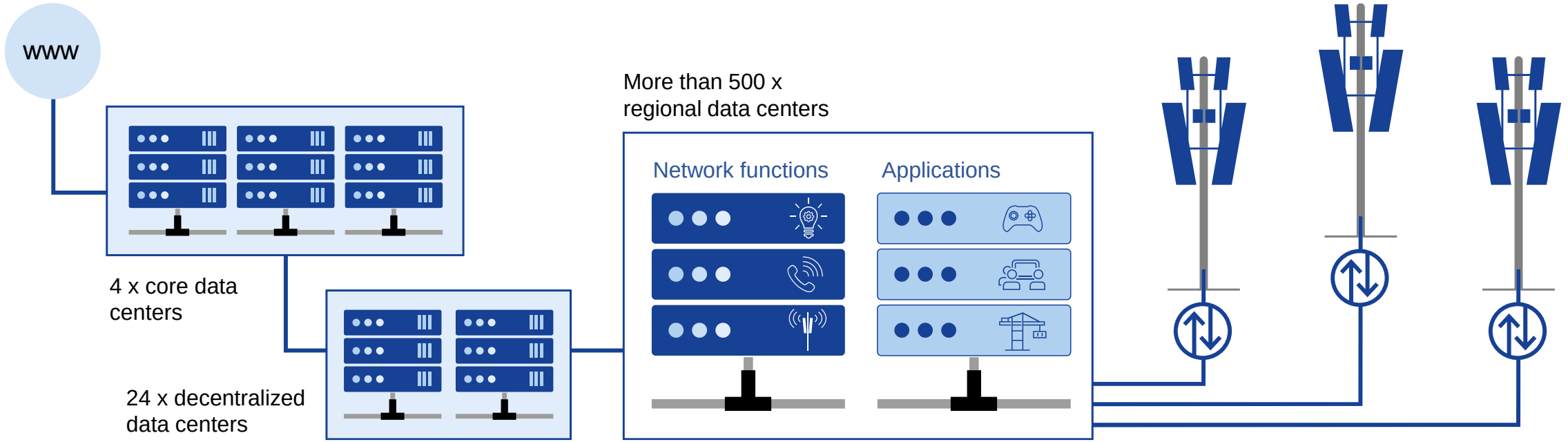
Realtime capability through **regional edge data centers** with capacity for **Internet applications**

Gigabit antennas from any manufacturer, connected to **fiber optics** via **standard interfaces**



Obligations for rollout: 50 % household coverage until 2030

The most innovative network architecture: virtualized Open RAN



Software in a private cloud running on **standard hardware** realizes all network functions (high agility through software updates, fast innovation cycles, flexible use of the best technology, high degree of automation).

Over 500 regional **edge data centers** with network functionalities and **Internet applications**. Maximum 10 km distance to the antennas for extremely short data runtimes and **real-time capability throughout the network.**

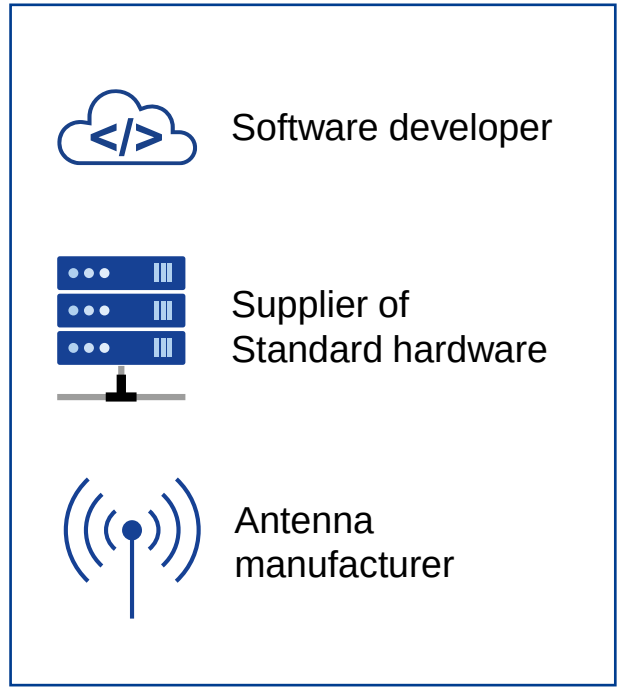
Open RAN: Due to standardized interfaces, antennas from various manufacturers can be deployed. As a result, 1&1 is independent of the innovation cycles of a particular equipment manufacturer.

Gigabit antennas at all locations, connected via fiber optics.

From the monolithic network to the sovereign cloud

- Standardized interfaces ensure the **independence** of the network infrastructure from **individual manufacturers** - such as Huawei.
- Implementing an open, cloudified network architecture for the first time in Europe will support the emergence of an agile **Open RAN ecosystem**.

Partner network from 1&1



Opportunity for many more companies

Security: Openness is not a risk

- There are **industry standards** by GSMA, 3GPP and O-RAN ALLIANCE, which secure the network components.
- 1&1 has demanded **security and privacy by design** from its vendors from the beginning.
- **Zero Trust Principles** are followed in the line of network design.
- 1&1 **is building a network from scratch**, so there are no problems with or requirements by legacy systems.
- As required by german law critical components of 1&1 O-RAN **are tested and certified by Bundesamt für Sicherheit in der Informationstechnik.**
- 1&1 O-RAN is operated in a **private cloud**, other cloud service providers are not planned to be used.

Rollout of 1&1 O-RAN

- The rollout of Open RAN is **not different** than the rollout of a RAN with propriety technology.
- **Advantages**:

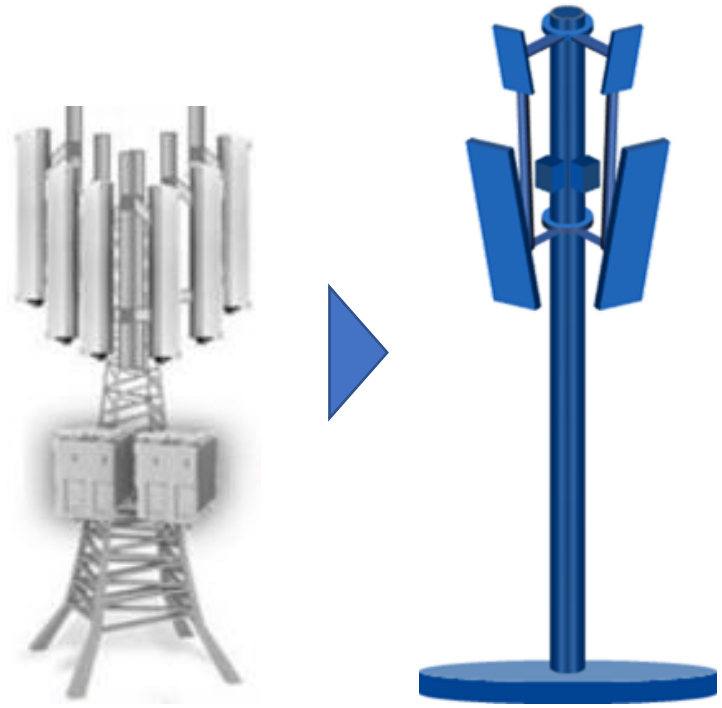
➔ **Less weight** on site because less equipment due to virtualisation and centralization of the BBU – that‘s especially an advantage with **rooftop sites.**

➔ **Less space** is needed because of less equipment.

➔ **Better centralisation**

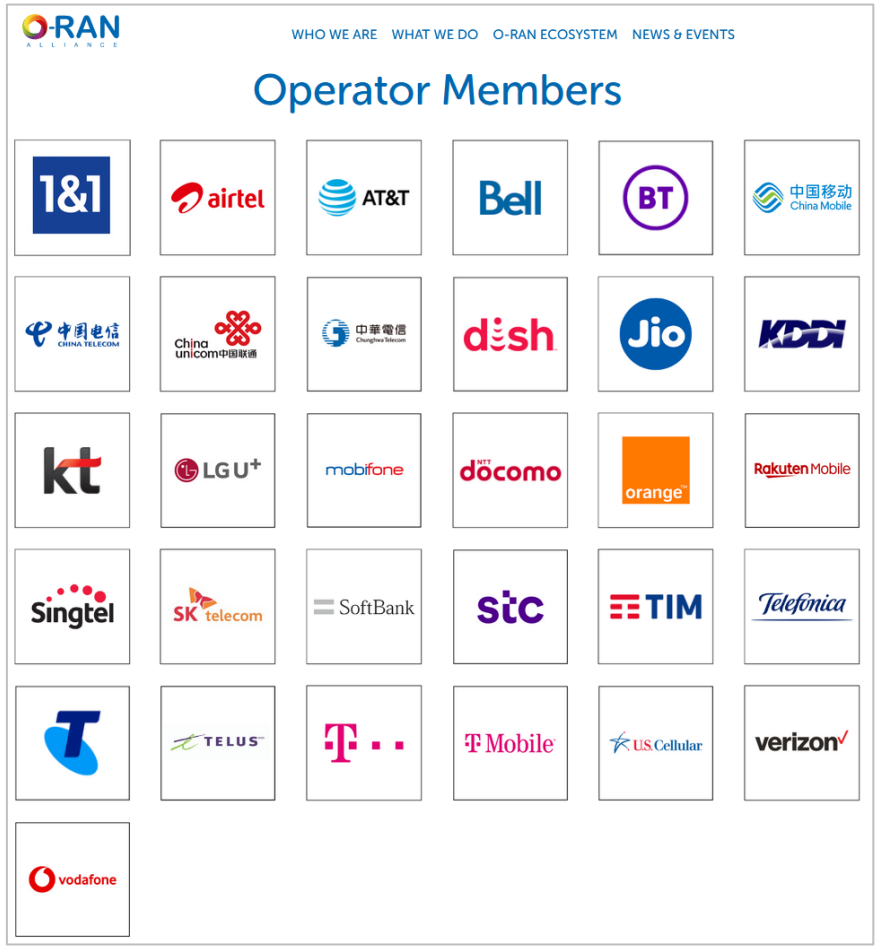
- **Challenge**:

➔ Every site needs to be **connected with fibre** – that can be difficult in Germany.



Open RAN is the future

- Even **incumbent mobile network operators like Deutsche Telekom, Telefónica and Orange** are perspectively relying on Open RAN, and the associated vendor independence providing technological flexibility.
- The members of **ORAN-Alliance**, the worldwide Open RAN-Community, include big MNOs, vendors, research and academic institutions.
- By now also European manufacturers like **Nokia and Ericsson** have jumped the Open RAN-Train, are talking about Open Interfaces and investing in the technology.
- Countries like the US, Japan, Taiwan and UK are investing billions in the technology, just the **US about two billion US-Dollars until 2030**. Operators are expected to invest **11 billion** Dollars until 2029*.
- Labs where **start-ups can test their Open RAN-Technology** are emerging all around the globe – funded by public and private money.



*According to a study by Juniper Research/July 2024

Open RAN: A chance for Europe

- **Leading innovation:** Europe’s goal should be to take a leading role in the latest technologies.
- **Sovereignty:** Open RAN technology is driven by Germany, the UK, the US and other Western partners to address existing dependencies.
- **From research to practice:** Once the basic research has been completed, the Open RAN technology must be applied in practice.
- Chance for European Start-ups: A new technology with open interfaces is a new **chance for new European start-ups** – they are already been founded in Germany and elsewhere.
- Only then an **ecosystem** will develop and **create pressure** for all market participants **to be innovative.**
- The European Commission should be **more open** towards Open RAN, recognising the opportunities and support Open RAN as a European strategy. The current restraint risks relevant developments taking place outside the EU, leaving Europe's innovation potential untapped and **creating new dependencies**.


1&1
O-RAN
OPEN FOR MOBILE FUTURE

BCO Network

HAKOM CROATIAN REGULATORY AUTHORITY FOR NETWORK INDUSTRIES

SAVE THE DATE
BCO Network Physical event

Zagreb, Croatia

Tuesday 11 and Wednesday 12 June 2025

To register, please send your contact details to: sofia.profico@broadbandeurope.eu

More details on the agenda will follow in the upcoming weeks

The event will be hosted by HAKOM

Funded by the European Union