

5G-MONARCH

Turning 5G mobile network architecture concepts into practice

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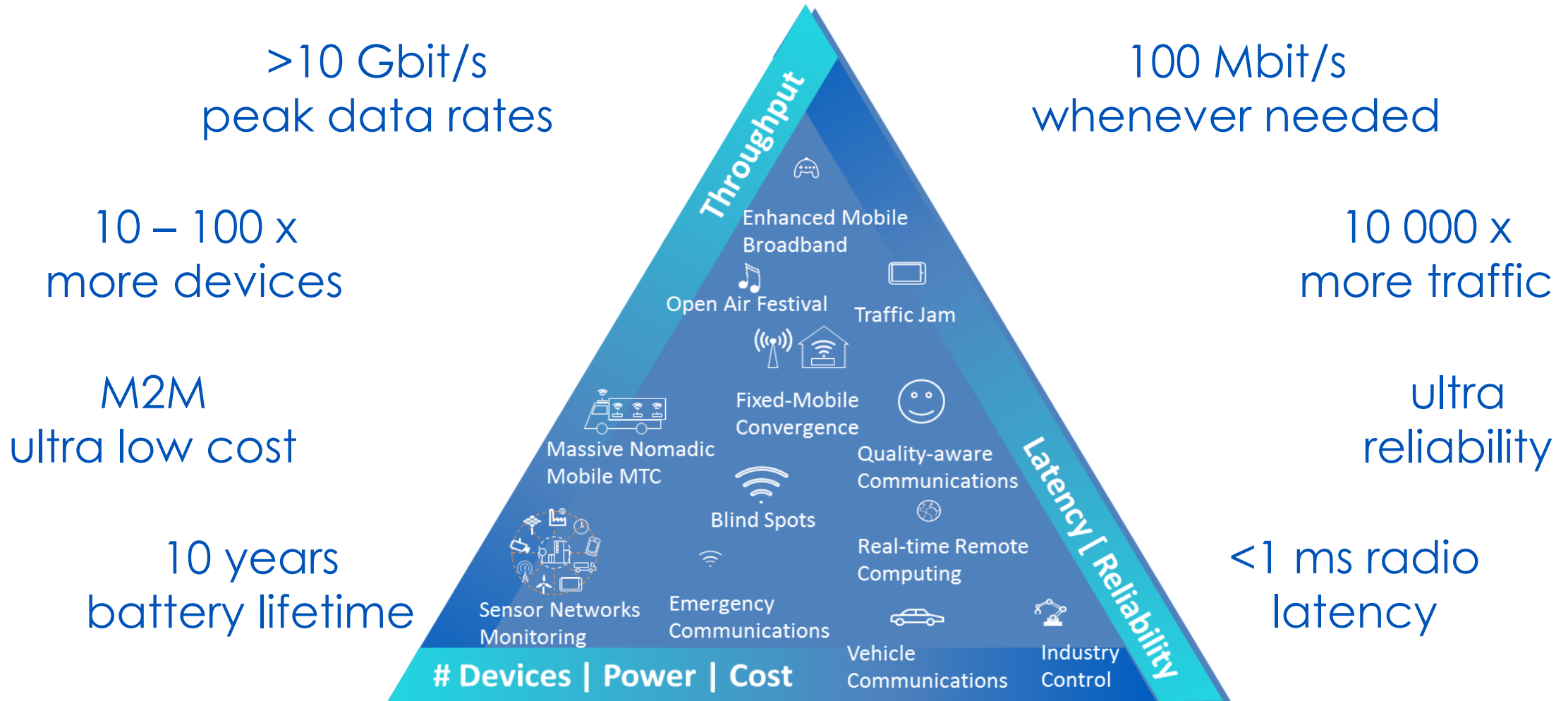


PUBLIC-PRIVATE PARTNERSHIP



The promise of 5G

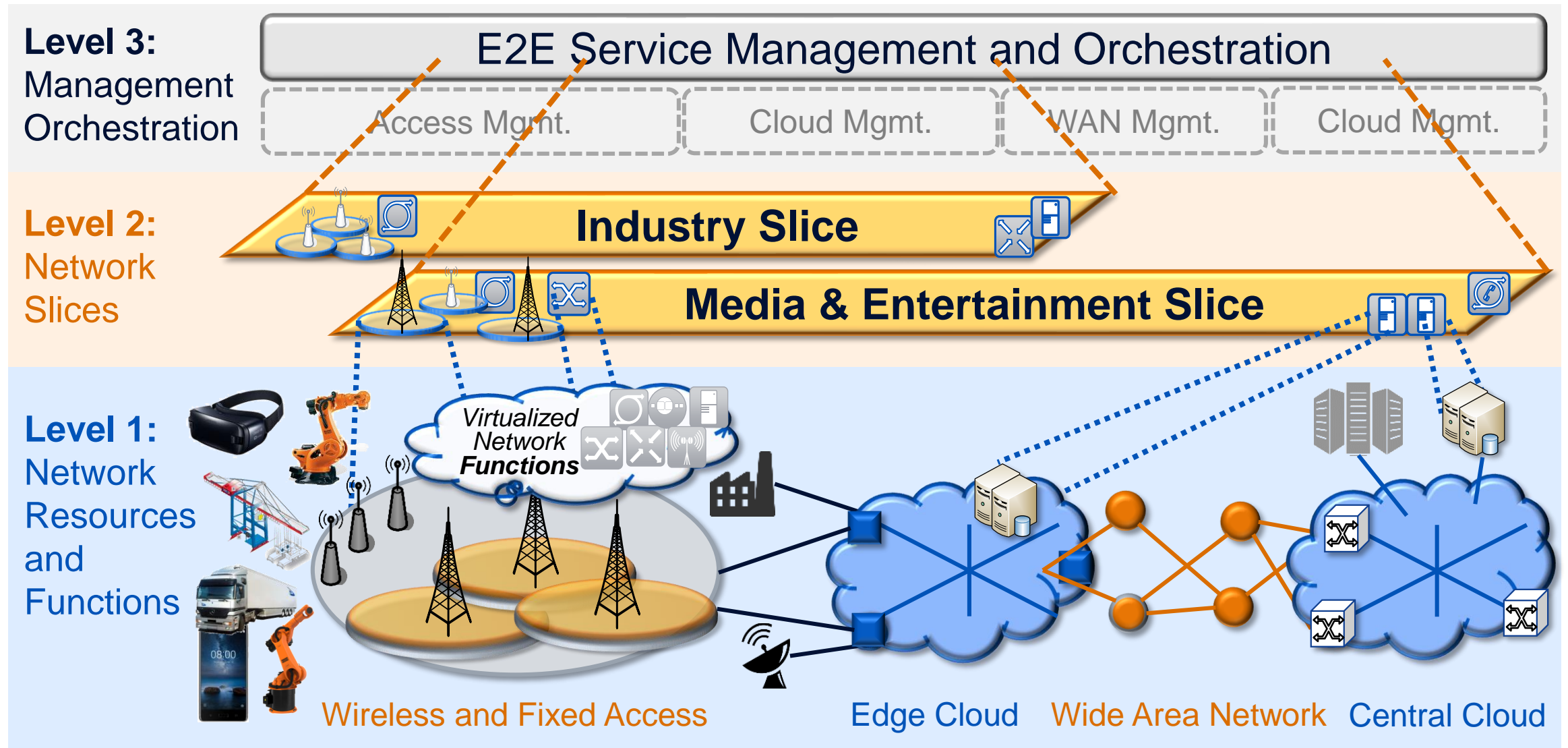
Meet verticals' heterogeneous requirements



**And all this on
the same
infrastructure?**



What is network slicing?



What 5G-MoNArch contributes

Why are we doing it?

- Shift research focus to **verticals' use cases**
- Identify **service specific** requirements & characteristics
- Show that slicing is **capable of serving verticals**

What are we doing?

- Complete **concepts and architecture** for network slicing
- Build **customised use cases** for industry & media / entertainment
- Prove, verify and validate concepts

How are we doing it?

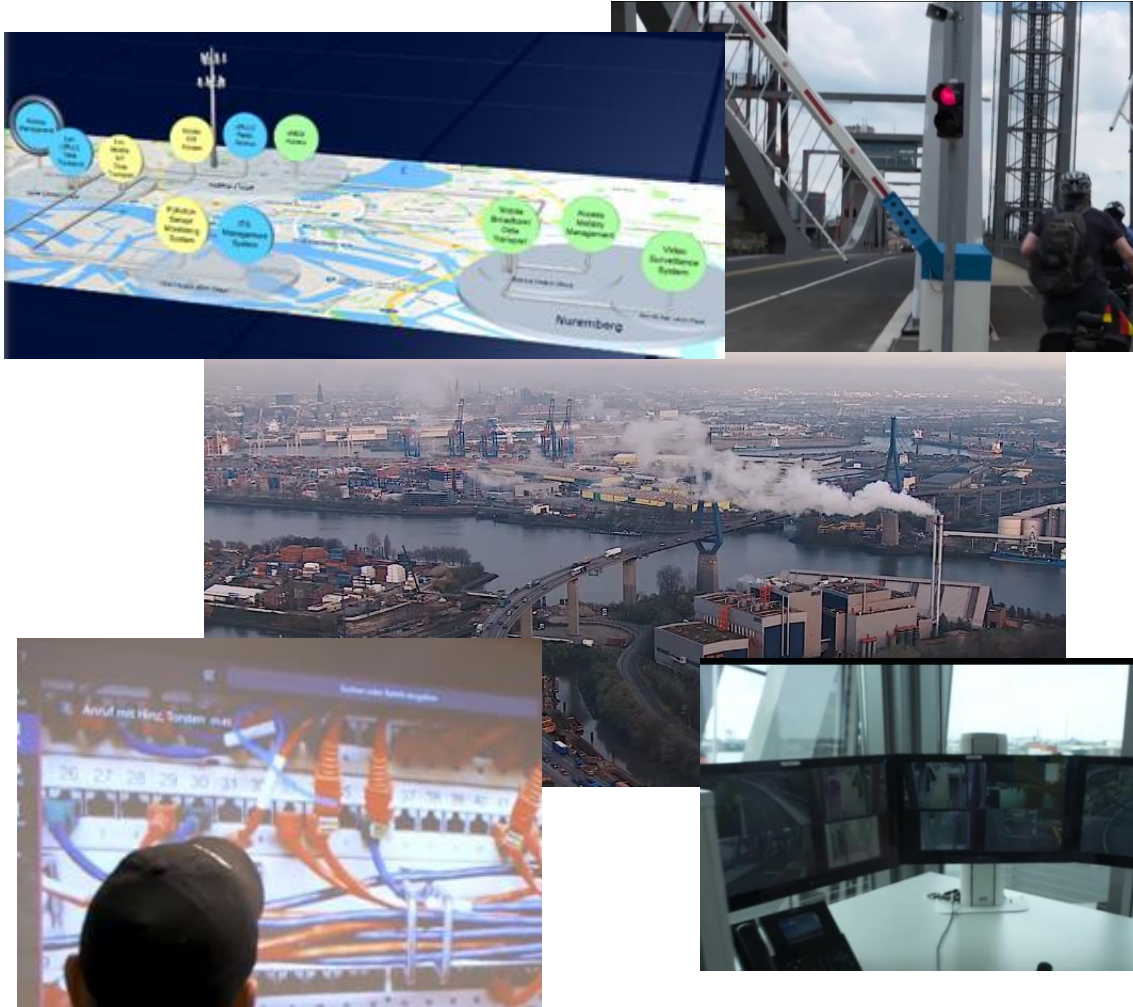
- Develop **generic functions** that support slicing
- Develop **specific functions** for
 - Resilience
 - Security
 - Resource elasticity
- Implement **real-world testbeds**

Testbeds – Turin Touristic City

- Scope
 - Customised network slices
 - **Media & entertainment** use cases
 - Temporary mass events with **high load / throughput** + challenging **latency** requirements
- Application areas:
 - **AR/VR for live event experience (eMBB)**: 360° museum view full of real and imaginary people, enabling remote visits
 - **Cooperative media production (URLLC + eMBB)**: user interaction with virtual environment and other users, to offer remote guided tours in the museum



Testbeds – Hamburg Smart Sea Port



- Scope
 - Three customised network slices
 - **Industrial / smart city** use cases
 - Focus on **reliability, resilience, and security**: failsafe operation of applications in the port
- Applications
 - **Better Traffic Flow (URLLC)**: Transportation traffic steering within port area through connected traffic light
 - **Improved Pollution Control (mMTC)**: Air quality monitoring in the port area through connected mobile sensors
 - **Improved Port Operations (eMBB)**: AR/VR and video streaming for remote expert assistance of port engineering teams

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Key Facts

Project Details

- Project runtime: July 2017 to June 2019 (24 Months)
- Leadership team:
 - Coordinator: Nokia Bell Labs Munich (Germany)
 - Technical Management: Universidad Carlos III de Madrid UC3M (Spain)
 - Innovation Management: Deutsche Telekom, Berlin (Germany)

<https://www.5g-monarch.eu>

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5G PPP



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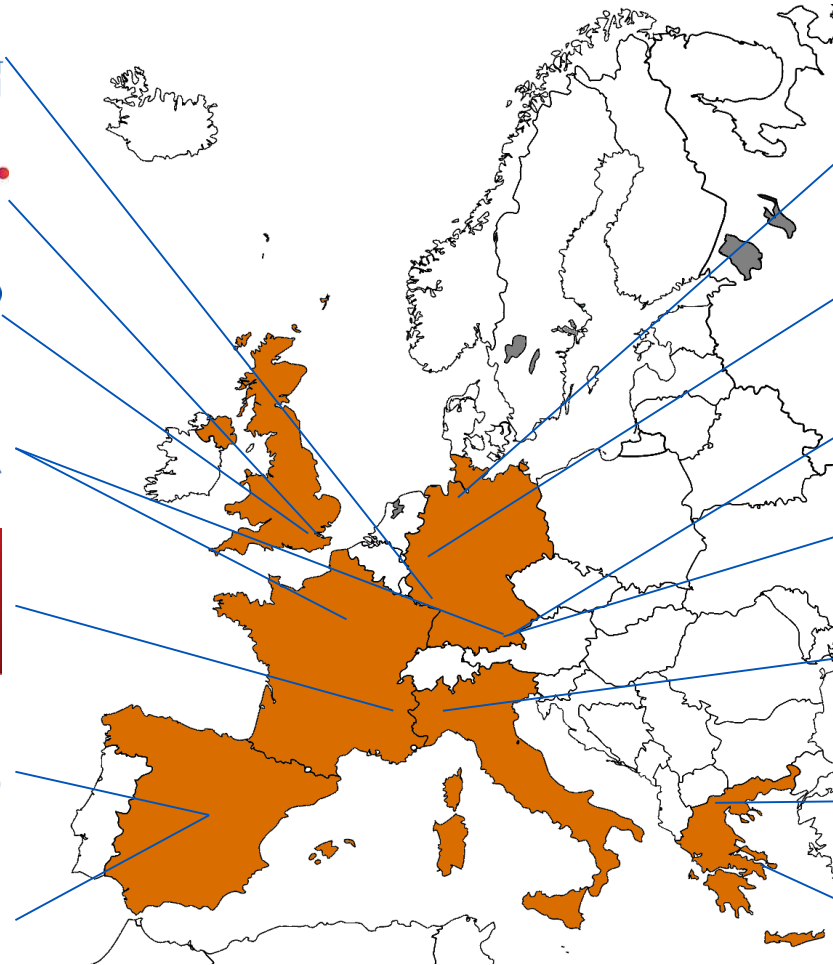


NOKIA



Atos

uc3m



noimoir
novel mobile radio
research



mobics

Exhibition

Overall 5G mobile network architecture

Resource elastic network slices

Turin touristic city testbed
Customised network slices for media & entertainment

Verification & validation
Evaluation concept

Verification & validation
Techno-economic analysis

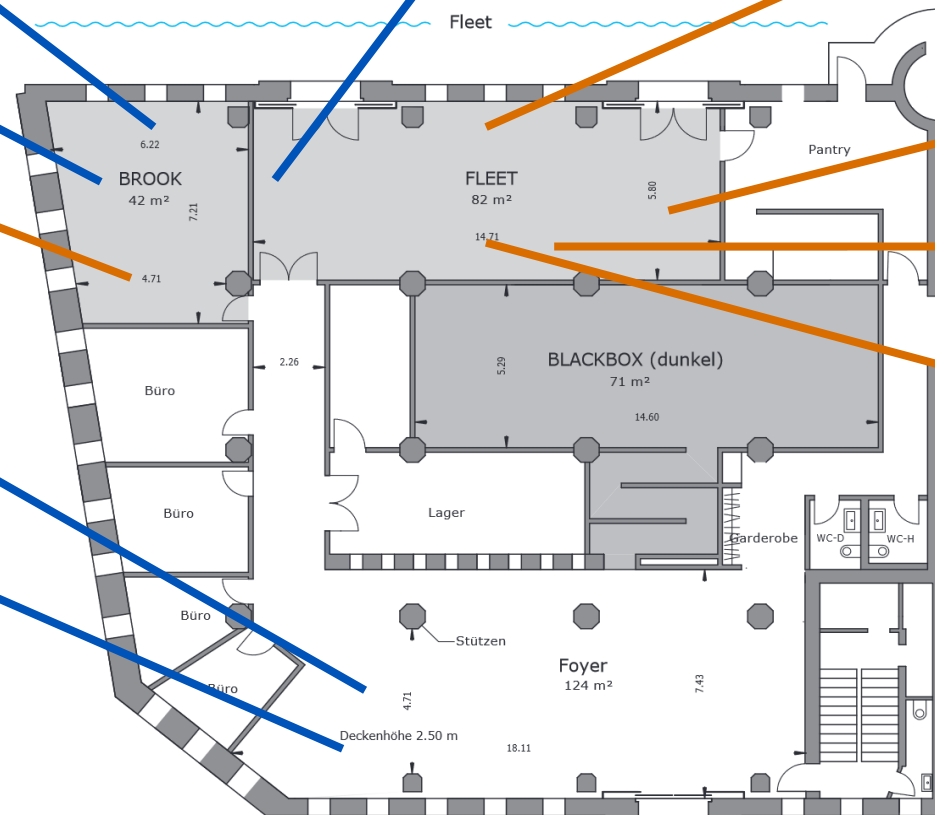
Resilient & secure network slices

Hamburg Smart Sea Port testbed
Network slice creation & management

Hamburg Smart Sea Port testbed
Improved port operations (eMBB)

Hamburg Smart Sea Port testbed
Mobile air quality sensors (MTC)

Hamburg Smart Sea Port testbed
Network slice isolation (traffic light)





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