



NETWORK EVOLUTION BEYOND SELF-EVOLUTION

AI-Native/Sensing-Enabled towards
Quantum-Integrated

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The Two Clocks of Telco Transformation

The G-cycle Clock

~10-year cycle



- > Spectrum
- > Architecture
- > Interoperability
- > Global consensus

The Software / AI Clocks

weeks/months cycle



- > Software
- > AI-models
- > Data
- > APIs
- > Automation

6G must standardize stable foundation, while enabling intelligence to evolve at SW speed.

Foundation: Disaggregated and Cloud-based NWs



Modularity & Open Interfaces



→ Large scale deployment of Open fronthaul in Germany (3000+ sites by 2027)



→ Development of DT SMO for centralized control



Cloudification



→ Launch of Horizontal Telco Cloud

→ Optimization of Core & Services Platforms

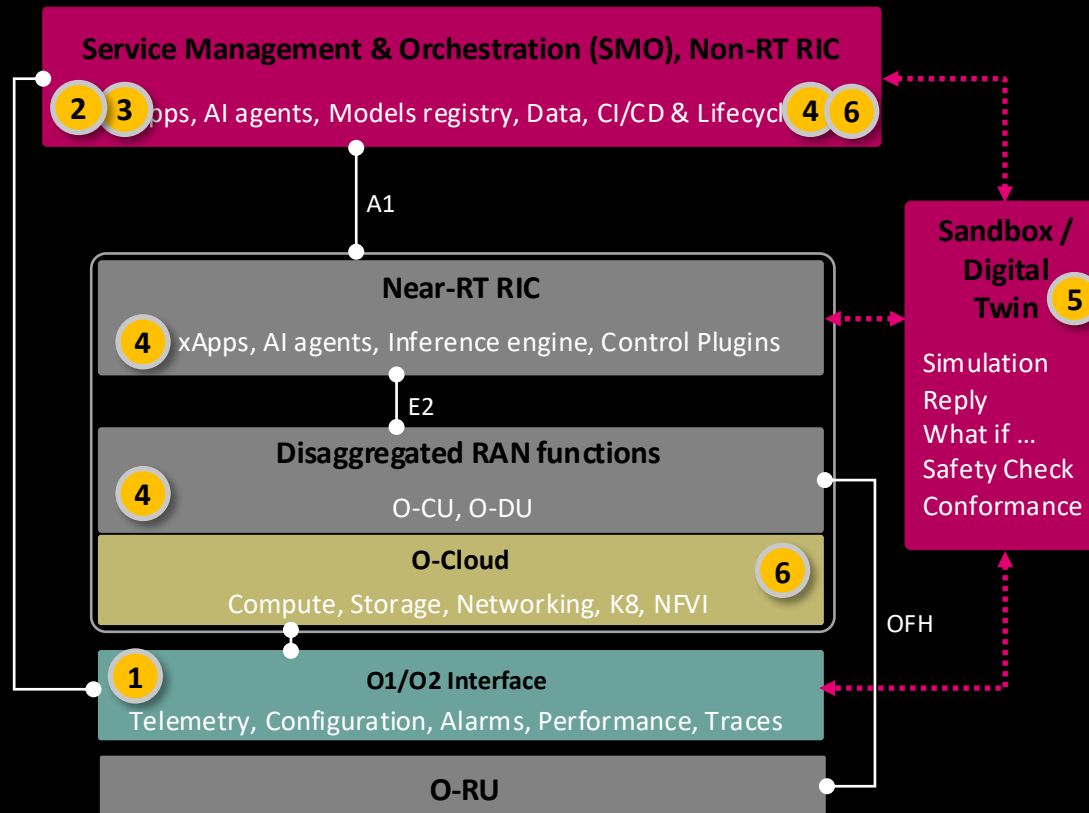
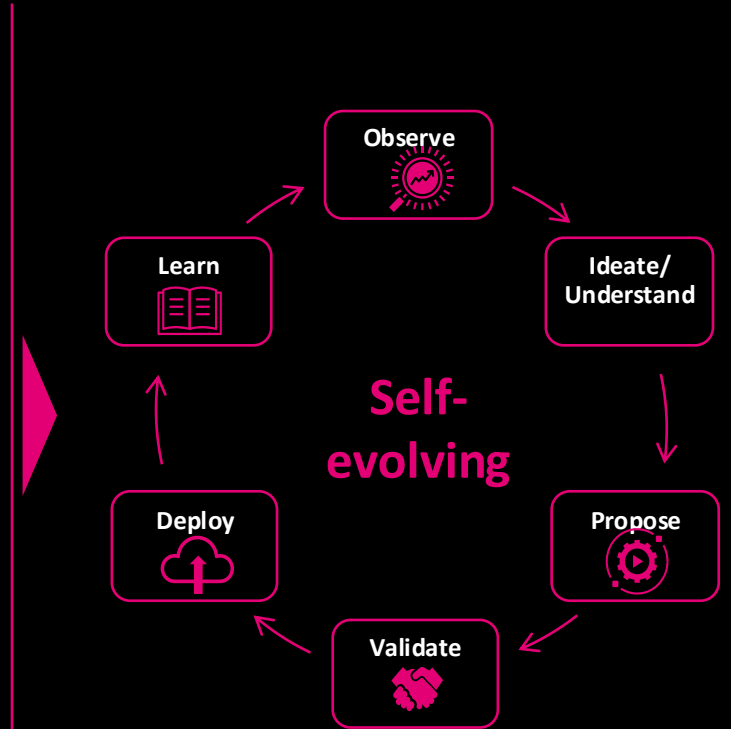
→ Tests and trials of Cloud RAN

- Disaggregation & Modularization enables AI insertion points
- Full softwarization of NW functions provides AI insertion points, deployment agility, scalability
- Communication-compute convergence for new scenarios (e.g. Physical AI)

Monolithic network → Virtualized network → Disaggregated/Cloud-native network → Autonomous networks

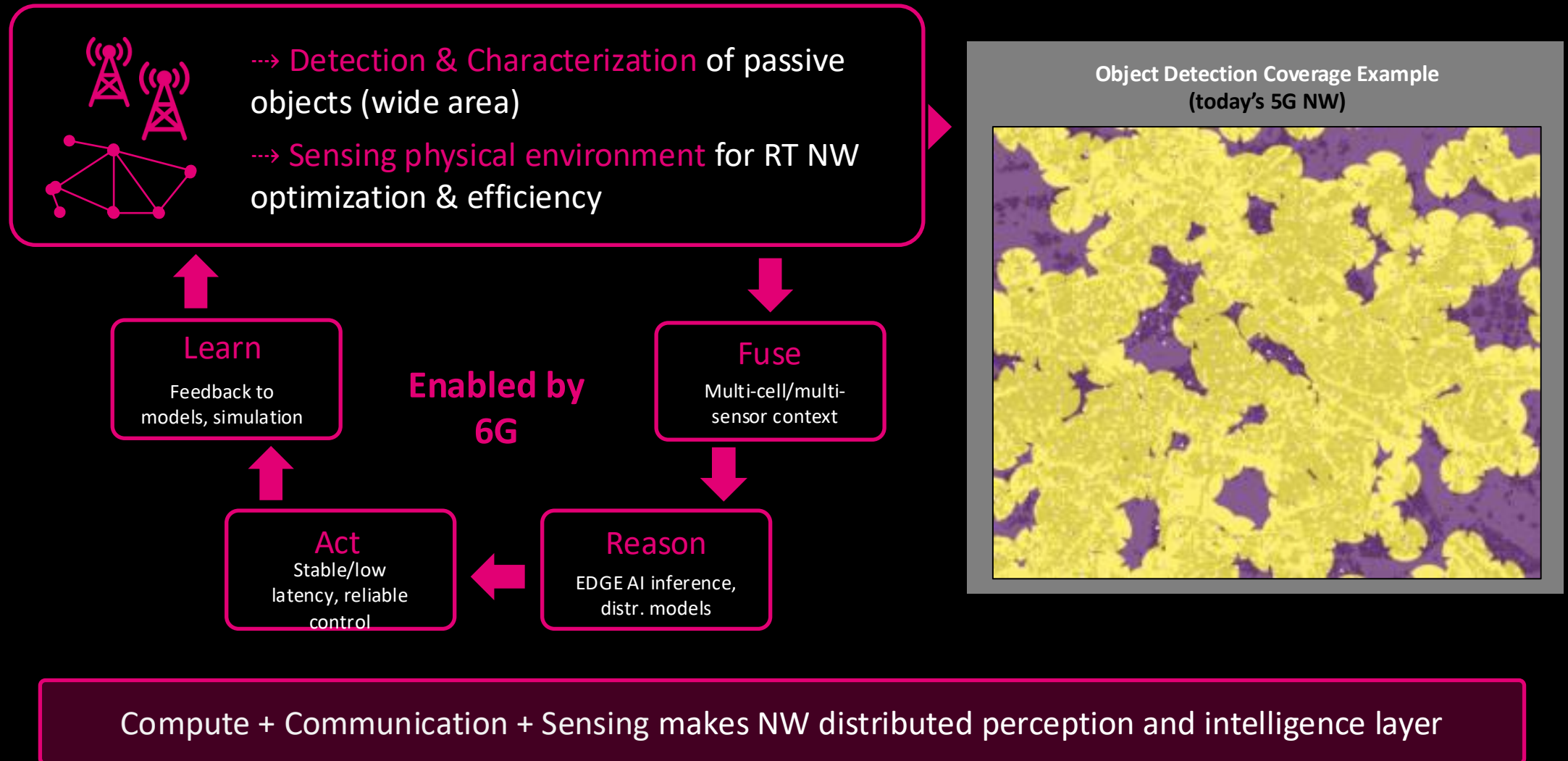
Enabling Self-Evolving Networks

- 1 AI for Observability
- 2 AI for Knowledge & Training
- 3 AI for Policy & Config. optimization
- 4 AI for Adaptive Control
- 5 AI for Experimentation
- 6 AI for Lifecycle Automation

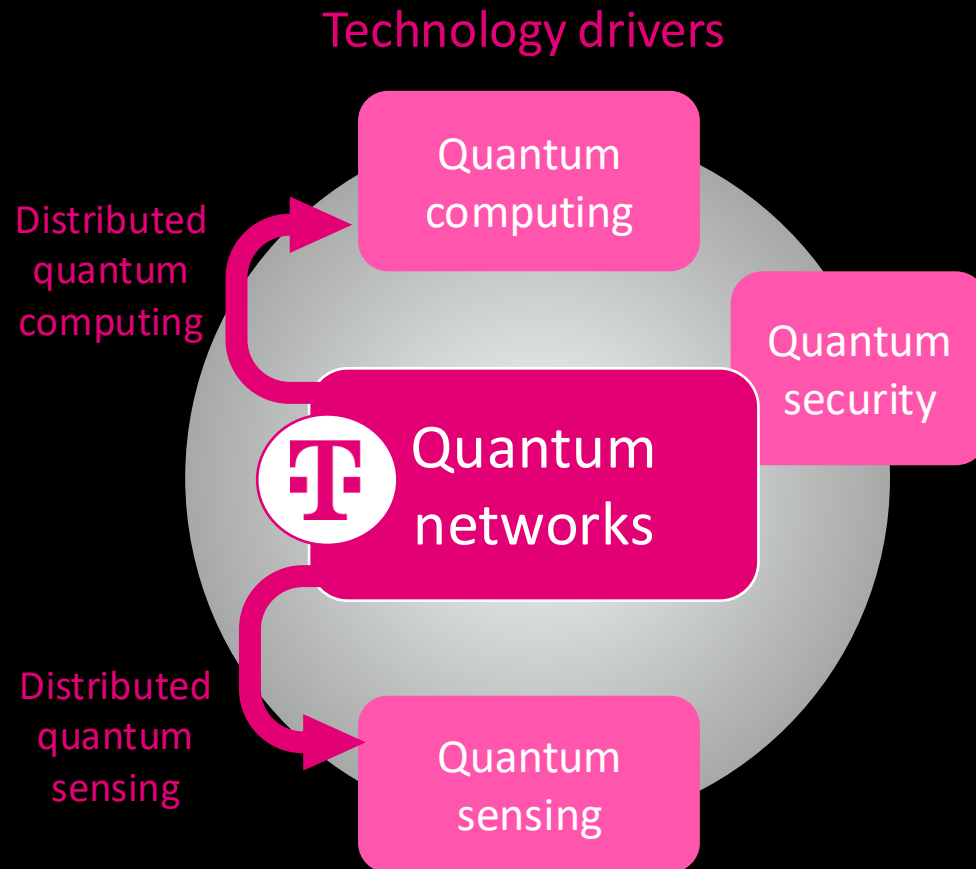


Telco Innovation will depend on our ability to adapt to software and AI speeds

6G as the Real Time Fabric for Physical AI

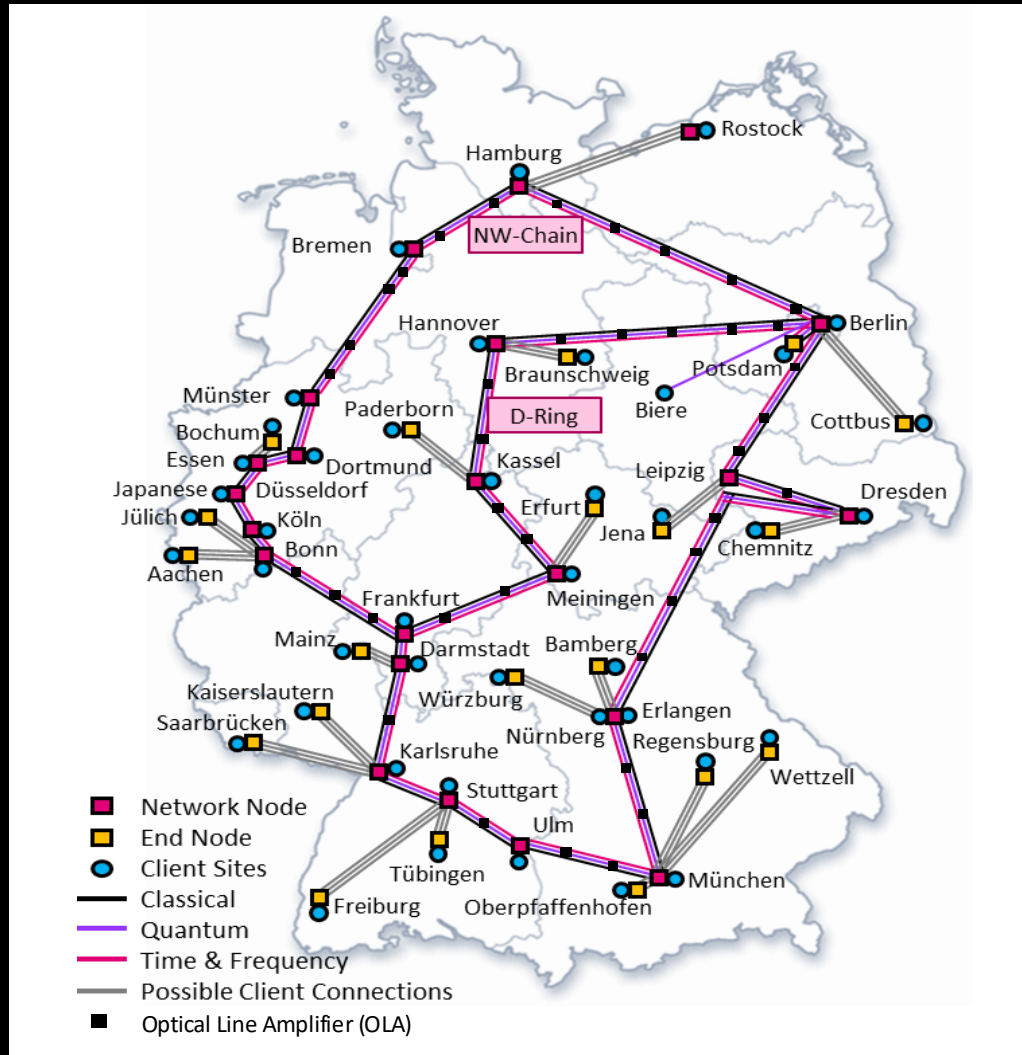


Integrating New Class of Resources in 6G Era – Quantum States

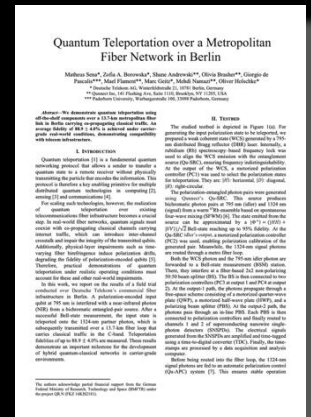


- **New compute resource** for accelerating selected hard problems (optimization, sampling, simulations)
- **New perception resource** for ultra-precise measurements (time, position, motion, fields, environmental changes)
- **New trust resource** for ultra security governed by physical laws (QKD, random numbers)

T-Labs Quantum Lab as a Service



- Quantum Lab for Quantum networks related research
- Entanglement distribution over a field deployed infrastructure within metro area
- Generate key experimental results with partners
- DT Teleportation experiment with Qunnect (under carrier real-word conditions, over the link carrying classical traffic)



Our innovation capacity is defined by our ability to
adapt to the rapid developments of AI

Let's build together the right foundation for the
6G era

Thank You