QoS4OT:
QoS and cybersecurity management for Industrial OT

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Introduction

- Industrial OT applications include increasingly connected, real-time data based, smart, autonomous operational technologies, for which QoS must be manageable in the related networks.
  - e.g. autonomous/remotely controlled heavy machinery, automated control of energy systems, remote process control, etc.
- The applications can be viewed as end-to-end software systems deployed and operating over variety of networks and computing nodes managed by different parties.

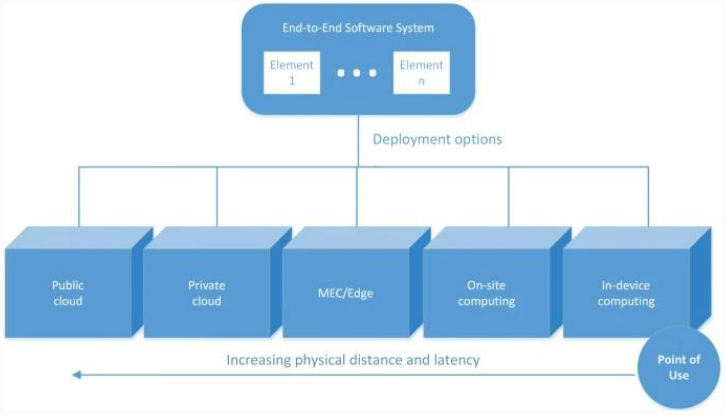


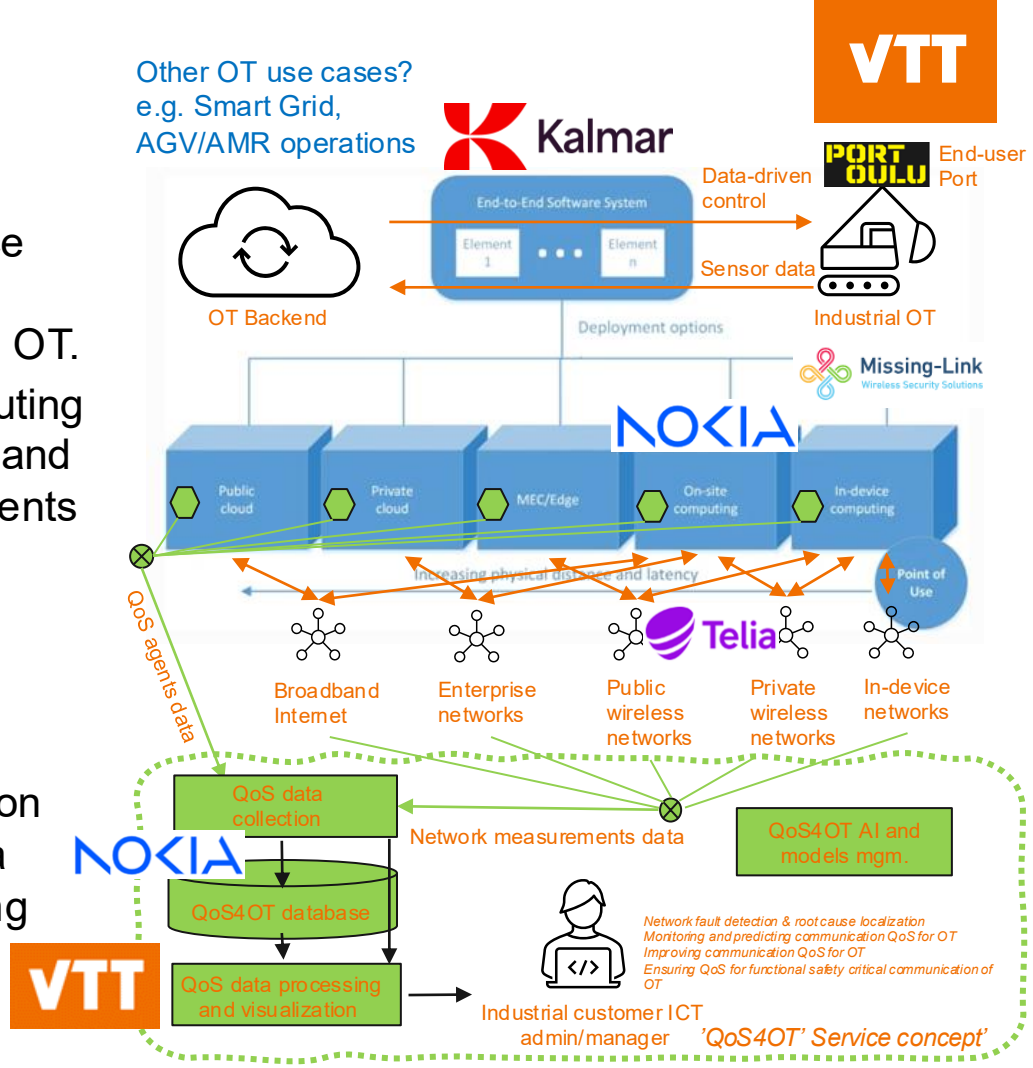
Figure from:
Pääkkönen, P., & Pakkala, D. (2020). Extending reference architecture of big data systems towards machine learning in edge computing environments. Journal of Big Data, 7(1), 1-29.

Challenges

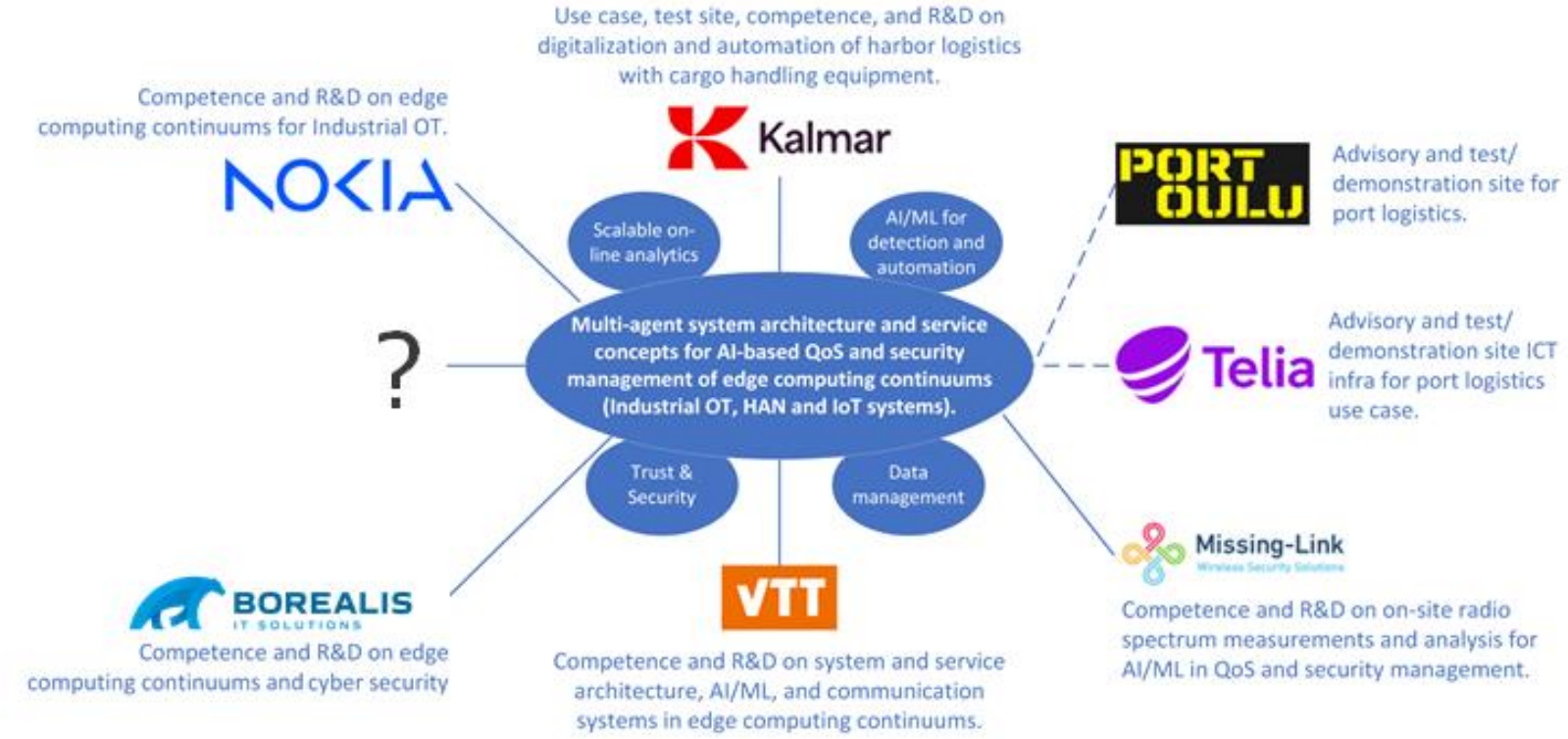
- How to manage ICT infrastructure QoS and cybersecurity in distributed industrial OT deployments efficiently to ensure continuity of production?
  - How to collect communication QoS and security information relevant for distributed industrial OT applications?
  - How to analyse and represent the communications QoS information in relevant way for industrial customers for
    - Network fault detection and fast root cause localization
    - Monitoring and predicting communication QoS of their OT
    - Improving communication QoS for their OT
    - Ensuring communication QoS for functional safety critical communication of their OT
- What kind of new ICT infrastructure management services, QoS data analytics, and technological enablers can support QoS and security management of distributed industrial OT applications?

Approach

- Defining and evaluating a new service concept for QoS and security management in end-to-end industrial OT.
- Collecting communication and computing QoS data in end-to-end OT systems and combining it with network measurements QoS data.
  - Based on distributed agents deployed across the OT application computing continuum devices/nodes.
- Including a trusted and secure data collection, processing and visualization pipeline for communication QoS data for distributed industrial OT monitoring and management.

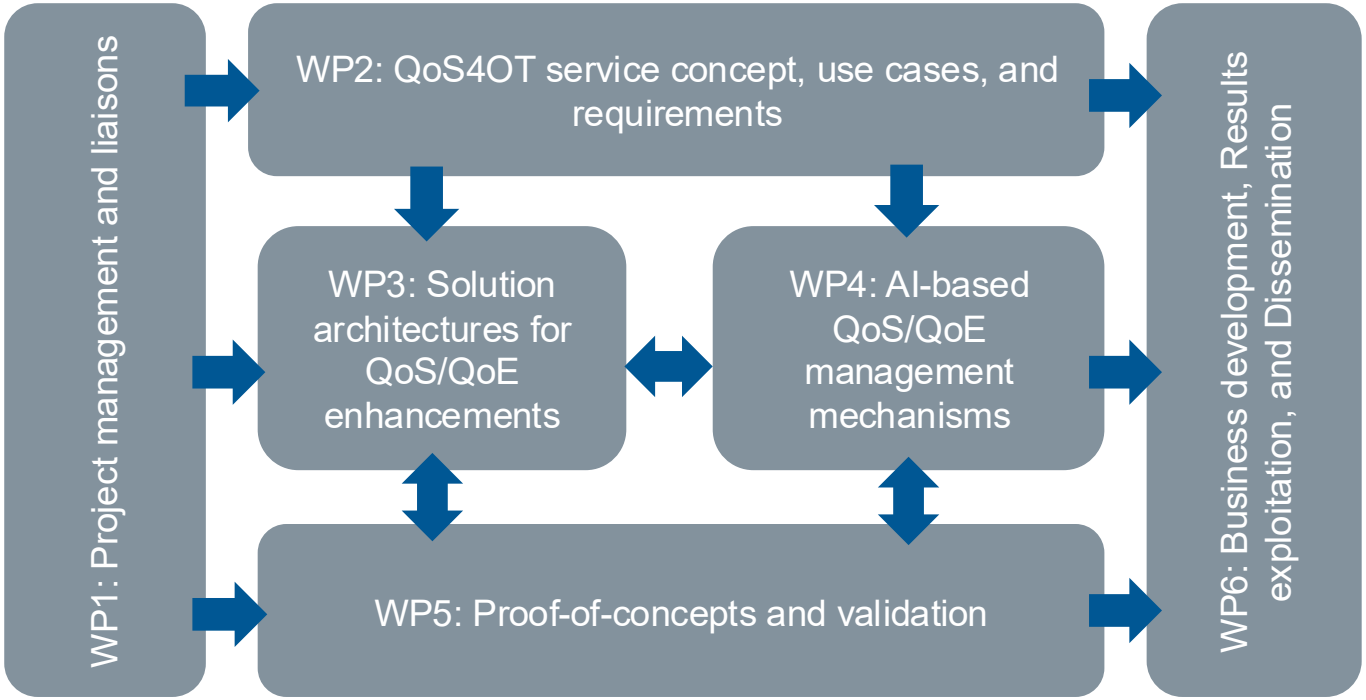


Partners and roles – a view of the project value chain



* Collaboration topics illustrated in blue ellipses and role descriptions in connection with the logos of the partners participating in the collaboration.

Work packages



Work packages