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Project Partners:

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Rapid digitalization of production and automation is crucial to the successful implementation of the visionary concepts of Industrie 4.0. Among other things, this entails a secure and efficient communication infrastructure that automatically adapts to the requirements of each application; an infrastructure that enables the efficient networking of the production machines, products, and innovative data services; and, one that easily and safely supports the introduction of new industrial applications. Also, increasing use of wireless technologies and the steady progress in the convergence of information technology (IT) and operational technology (OT) present special challenges.

The aim of the FIND project is to develop an integrated architecture for the industrial Internet of tomorrow; in particular, a network control capable of automatically mapping and monitoring the requirements of industrial applications for a variety of resources and networking possibilities. The project seeks to develop a new, future-proof network control through the combination and integration of existing network technologies that will be flexible, secure, and efficient in operation.

Manual interventions when configuring the network and during operations are kept to a minimum. In addition, using a variety of network technologies, it will also be possible to automatically provide defined service packages on an end-to-end basis. This approach, for example, permits a very flexible and efficient implementation of the complex, distributed control architectures where the underlying complexity is mainly abstracted from the application developers and plant operators. The system automatically compensates for the loss or failure of a single resource (for example, a control hardware), reducing unnecessary standstill time of the other units or machines and increasing the efficiency of the overall plant. Future systems currently in development like Time-Sensitive Networking (TSN) or 5G should be easily integrated just like the many existing industrial communication technologies and devices to ensure seamless migration.

Vodafone Chair Contribution:

The Vodafone Chair contributes expertise for 5G industrial radio, modelling and abstraction:

- Research on resilient network architectures, network functions pertaining to resilience and integration of multi-radio access technology (RAT) networks.
- Abstraction of monitoring and control capabilities of underlying 5G network
- Novel concepts and algorithms for the control, optimization, monitoring and management of networking technologies, with focus on resilience and real-time