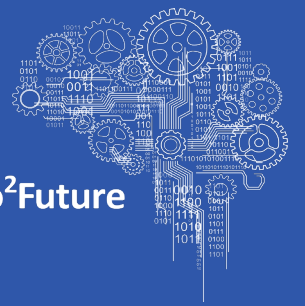# COGNITIVE SMART GRIDS
Dependable Wireless Communication Solutions for Smart Grid Operation

Pro²Future

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MOTIVATION & GOALS

- **Deploying substation equipment** is a **complex** task, which often requires a lot of **configuration** and **engineering effort**
- **Smart grid automation features** usually depend on **communication**, a change in **connection quality** requires an **adaption of functionality/communication**
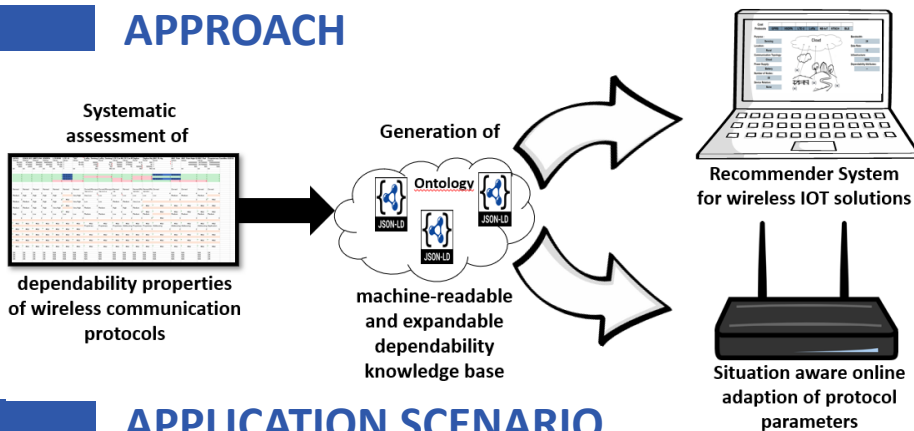
Project FactBox

Project Name CSG
Project ID MFP 4.1.3-2
Duration 12 Months

Area 4.1
Cognitive Products

Project Lead
Dr. Konrad Diwold

APPROACH

Systematic assessment of dependability properties of wireless communication protocols → Generation of machine-readable and expandable dependability knowledge base (Ontology, JSON-LD) → Recommender System for wireless IOT solutions / Situation aware online adaption of protocol parameters
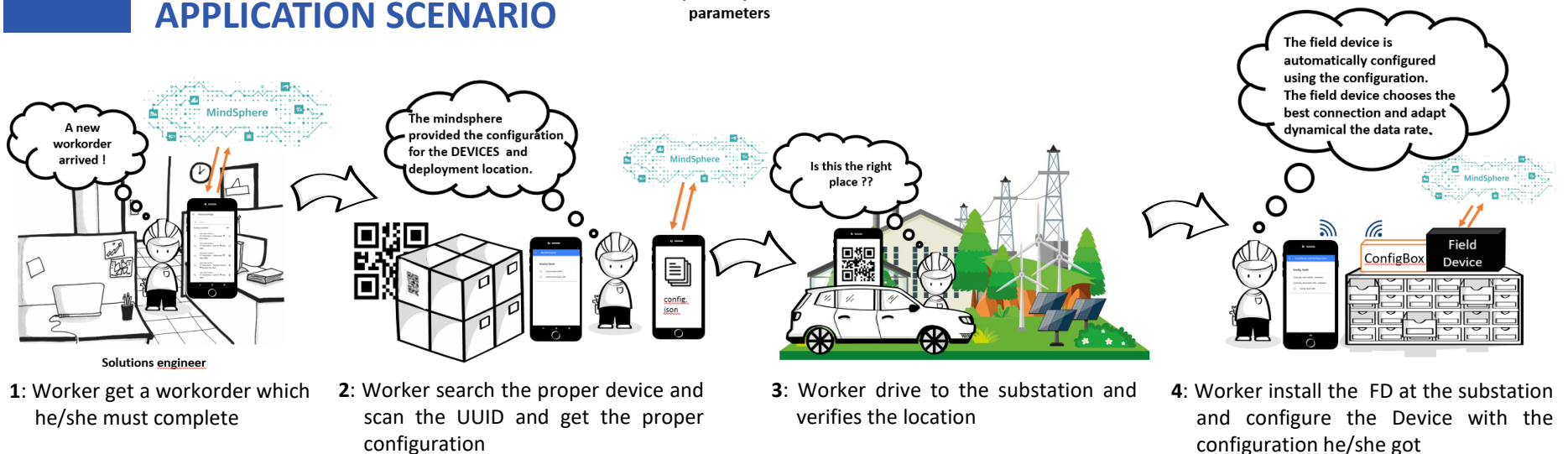
CONTRIBUTION

Scientific contribution
Within the project new methods for **adaptive wireless communication** are developed, which minimize engineering efforts while providing **dependable communication** for **system critical automation systems**
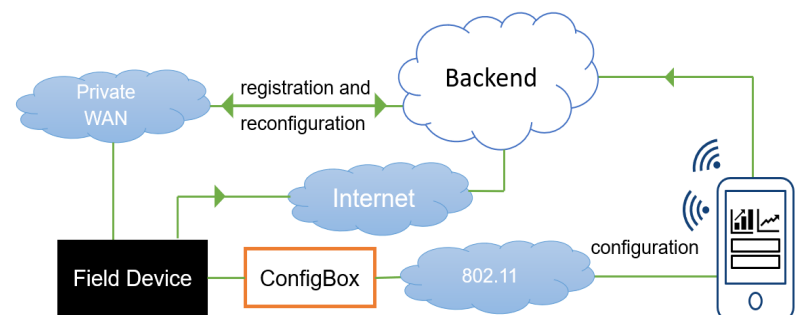
Economic contribution
For our partner SIEMENS this will result in **dependable** and **reliable communication** for their **substation automation solutions**.

APPLICATION SCENARIO

1: Worker get a workorder which he/she must complete

2: Worker search the proper device and scan the UUID and get the proper configuration

3: Worker drive to the substation and verifies the location

4: Worker install the FD at the substation and configure the Device with the configuration he/she got

SYSTEM ARCHITECTURE

The system consists of a **Backend**, a **Field Device**, a **ConfigBox** and a device which content the configuration (e.g. **Smartphone**). The **Field Device** is in general a Black Box with **different communication interfaces**, which **provides the dependable communication** of the substation. The **ConfigBox** is the device with which the Field device will be configured. And the **Smartphone** is used to get **configuration parameters** from the Backend to the Field Device over the ConfigBox.

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