Edge-based solutions for energy systems

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**SOGNO pillars**

**SENSORS AND MEASUREMENTS**

LoCO PMU A-PMU

**CLOUD VIRTUALIZATION OF SUBSTATION INTELLIGENCE**

ViSA (SE, PC, PQ, FLISR and LGF services)

**5G WIRELESS COMMUNICATION**

Lab tests with Ericsson BS SDRs

**DATA ANALYTICS BASED ON DEEP LEARNING**

SE, FLISR and LGF services using machine learning
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SOGNO platform

- Cloud or DSO server
- Device & connectivity management
- Visualization
- Service “1”
- Service “n”
- Databases

Integration bus

Communication infrastructure
- LTE
- 5G
- PLC
- Fiber optics

Electrical Grid
- measurement devices
- inverters
- switches
- EVs
- storage

External Data Sources

Service “1” and “n” connect to databases, which in turn are part of the integration bus. The integration bus connects to the communication infrastructure, which includes LTE, 5G, PLC, and fiber optics. These technologies are used to connect various components of the electrical grid, including measurement devices, inverters, switches, EVs, and storage.
Putting all together to overcome limits of legacy solutions

- Combining the solutions envisioned in the previous architecture, here we have:
  - Secure data link thanks to blockchain
  - Integration of legacy DMS
  - Link to market for dual use of data
  - Integrated data bus for flexible integration of new services
Going across sectors

- To support sector coupling and to go also in the Smart City direction, it is necessary to open energy platforms even further.

- As example, FIWARE offers a perfect solution to break the silos and bring data together.

- In general, Cross-domain approach (Energy, Agriculture, Manufacturing and Healthcare) is used by Open-DEI to detect gaps, encourage synergies and support cooperation.

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Diagram:

- **Services**
  - **3rd Party**
    - Legacy SCADA
  - **DSO Platform**
    - Micro-service1
    - Micro-service2
    - Micro-service n
  - **Message Broker**
- **Databus**
- **FIWARE**
  - Smart City Multi energy
  - Context Broker
  - IoT Agent