Conceptual Design of Protection Scheme for Active Distribution Network using a Smart Grid Architecture Model framework

Authors: Juan D. Orozco-Álvarez*, Andrés R. Herrera-Orozco, Juan J. Mora-Flórez.

Institution: Universidad Tecnológica de Pereira.
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VI. Questions
I. Introduction

Motivation

EU mandate M/490

Fig. 1: Domains and Zones of the Smart Grid Architecture Model (SGAM) framework.
II. Theoretical aspects

What is a network architecture?

II. Theoretical aspects

The IEC 62559 methodology

What is an use case?

- Actor.
- Scenario.
- Event.

Fig. 3: Example of an use case.
III. Proposed methodology

Selected use case

Fig. 4: Selected use case. Use case taken from: Hatzigiorgiou, Nikos, ed. Microgrids: architectures and control. John Wiley & Sons, 2014.
III. Proposed methodology

IEC 62559 methodology

1. Describe the use case.

2. Make a diagram of use case.


5. Identify the information being exchanged.

6. Define the requirements necessary to make the communication effective.

7. Define common terms and...
III. Proposed methodology

IEC 62559 methodology

1. Describe the use case.

2. Make a diagram of use case.


5. Identify the information being exchanged.

6. Define the requirements necessary to make the communication effective.

7. Define common terms and definitions.

Table 1: Step-by-step analysis of the use case.
IV. Results

Fig. 6: Component Layer.

Fig. 7: Communication Layer.
IV. Results

Fig. 8: Information Layer.

Fig. 9: Function Layer.
## IV. Results

### Fig. 10: Business Layer.

<table>
<thead>
<tr>
<th>Market</th>
<th>Enterprise</th>
<th>Operation</th>
<th>Station</th>
<th>Field</th>
<th>Process</th>
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</thead>
<tbody>
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**Related Business Cases:**
- Operation of the distribution network.
- Stability of the microgrid.
- Protection of the microgrid.
- Improvement of supply continuity rates.

**Restrictions:**
Local or national laws that affect the development of the use case.
V. Conclusions

- Following the template proposed by the IEC 62559-2 standard makes it possible to recognize devices, events, and scenarios to develop the reference architecture.

- The description of any process within the generation chain allows the standardization of the processes described there, making a process interoperable.

- Research on the IEC 62559 standard allows the identification of constraints and standards to be considered when implementing systems using new technologies.