3E deploys artificial intelligence to support asset configurations

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The 3E SynaptiQ platform is intended for the monitoring of renewable energy sources such as wind and solar farms. A correct configuration is required to connect an energy farm to an online monitoring platform. This is a time-consuming, manual and error-sensitive process. The configuration of larger farms can require careful analysis of the data collected from hundreds of units to reverse engineer the configuration. Because configuration costs are relatively high, sometimes only the main performance indicators are configured, neglecting indicators that are perhaps less relevant but still interesting to observe.

Data-driven approach

The SynaptiQ software already includes a very thorough fault-detecting system that permanently records unknown and incorrect indicators at the energy farm. A research project was set up with the Sirris EluciDATALab to find ways to take further advantage of the fault data. The project objective is to shorten the configuration time, and therefore to increase the range of the indicators by means of a data-driven approach that recommends the configuration parameters and the corresponding values for a specific solar farm.

The first step to predict the configuration consists of the calculation of so-called frequent item sets based on a carefully determined set of configurations, grouping the various parameters and values in item lists that frequently occur together.

The second step consists of applying an association rule mining algorithm to the set of frequent parameter settings, to derive rules from standard configurations. This results in a set of rules that indicate which configuration settings and values correspond to one another. As many rules are typically identified, multiple suitability measurements can be computed for each rule, and allow to select the most suitable rule(s) to apply.

The objective was to provide recommendations for configuration errors, based on errors observed during from the data ingestion process of the farms concerned.

The results showed that an AI-based approach can be implemented effectively to support asset configuration: we can provide recommendations on the configuration parameters and corresponding values.

Further details on the project are available from **Techniline**.