INGRID.MDM

SMART ENERGY SOLUTIONS
Meter Data Management

indracompany.com
MEASURE MANAGEMENT

Smart Management

A Solution for the treatment, operation and certification of the measure to be used by itself or by third-party systems. A central database needed to connect the downstream and the upstream of the data life cycle.

VALIDATIONS

A Validation is a business rule that certificate the validity of a given measurement data according to certain criteria. Each metering point (Real and/or Virtual) has a Validation Template associated to it. The system offers to the user the possibility to configure the available validations in the system, creating personalized templates.

SOURCE RANKING

The system seeks among all available measures for a given time interval what source has the highest priority, and taking into account the validation process, marks this measure as the best time value (BTV). This source ranking applies only to real metering points (not virtual points).

ESTIMATIONS

Estimation processes associated to each metering point will be launched if there is a "GAP" when the optimal measures are collected. Once these processes are finished, the system ensures measures are completed. They are input into the system as an "Estimated" source within the ranking.

FORECASTING

Forecasting algorithms calculate measures provided to estimate future needs to be covered. These algorithms can be applied to various magnitudes so the user must indicate the scale on which the calculations are performed.

DATA PERSISTENCE

Infinite & consistent growth

The system implements a solution to handle the information stored in a repository with capacity to work easily with any new standard protocol in order to exchange data information. A flexible, high-performance, secure platform for running diverse workloads on SQL Database: Static Data (inventory, coefficients ...) and NoSQL Database: Dynamic Data (measure data, events, traces ...), incorporating an advanced open software framework for mapping objects to a relational database.

- Massively scalable, open infrastructure to store, analyse and manage.
- Flexible configuration and elastic hardware choices for optimizing both floor space and growth path.
- Maximize query performance on all data using advanced techniques.
INVENTORY

Energy Infrastructure Data

Main elements of the energy infrastructure represented in the system and those which are included in the different measurement data the system works with.

**Metering Points**: full details about metering points discharged in in the system. It shows two set of points:
- **Real points**: points obtained from field devices.
- **Virtual points**: points calculated from other metering points by calculation formulas.

**Master tables**: static master data used within the system (tariff structure, hourly profile, strategies...).

**Equipment**: metering devices associated to metering points.

Installations: structure and relationship of the system`s high level elements such as:

- Clients
- Zones/Groups
- Network Model

DASHBOARD

Great information Display

Screens where is displayed a summary of the most important information shown in the application. The aim is to show the user a quick view of the system status and the most relevant information.

REPORTING

Configurable Dossier

Manual/Automatic report (templates pre-configured by the user) generation and exportation with BIRT tool in several formats, such as:

- Microsoft Excel, Word or Power Point
- PDF
- HTML
- TXT

SOURCE COMPARISON  AGGREGATED MEASURES
**ADDITIONAL FEATURES**

**Interesting functionalities**

**TRACEABILITY**
This module includes all functions related to the system’s auditing and monitoring. Read-only information that refers to actions that occur in different parts of the system and which is useful to further incident resolution.

**SCALEABILITY**
The system has dynamic load balancing that can be directly configured online from the web interface, thus being able to download the more saturated nodes and send such load to less saturated nodes.

**REVENUE PROTECTION**
This module includes balance and fraud detection tool, allowing the user to control the input and output of power into the grid while minimizing losses. The system detects anomalies and acts accordingly.

**PREBILLING**
This module includes the configuration and generation of bills/voices. Tariff structures with different prices and periods are modifiable by the user.

**SECURITY**
This module creates and configures the different users that have access to the system and related permissions and elements they can interact with.

**ARCHITECTURE**

**Software Implementation**

Based on our experience in Energy Efficiency Management, Indra’s platform allows us to offer our customers an advanced system for monitoring and control based on an architecture front-end 100% Web based in a platform created in HTML 5.0 running in any Web browser. The back-end is an Open Source product, implemented with J2EE and integrated with the most recent standards and frameworks.

**INTERFACES**
The system is able to exchange and share information with any third system, both input and output. Through Web Service the user can shift data, modify the inventory or another data within the system.

**OPERATIONAL FLOW**

**Logical execution**

1. **Data Collection**
The data acquisition can be made manually or automatic via: Head End Systems, Hand Held units....

2. **Data Management**
The data management involves from all the V.E.E processes to the smart treatment of the measures

3. **Third Systems**
All data can be exchanged, either input/output with other systems in the appropriate format.