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Smart.Simple.Innovative

Impresa Meter Data Hub

Impresa Meter Data Hub maintains information about meters and the service points at which they are installed. The application provides means of recording measurements for the field meters as well as the ability to compute usage for the recorded measurements. The bill determinants and exceptions can be published to downstream billing or ERP applications.

The flow of meter data in a smart metering infrastructure involves several interconnected components to ensure efficient & accurate billing processes. Smart meters, deployed at the consumer's premises, continuously collect & store consumption data. This data is then transmitted to Data Concentrator Units (DCUs), which act as local aggregation points. The DCUs consolidate data from multiple smart meters & forward it to the Head-End System (HES). The HES is a central management system that processes and validates the incoming data, performing tasks such as error correction and ensuring data integrity. Subsequently, the HES forwards the refined data to the Meter Data Hub (MDH), where it is stored, analyzed, & made available for various applications. Finally, the billing systems retrieve the necessary information from the MDH to generate accurate and timely bills for the consumers. This seamless flow of data ensures the reliability of billing processes & facilitates efficient energy management for both consumers and utilities.

Smart Meters
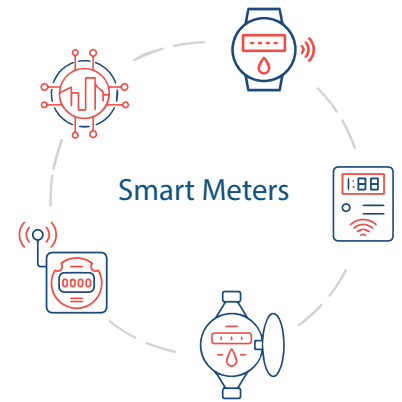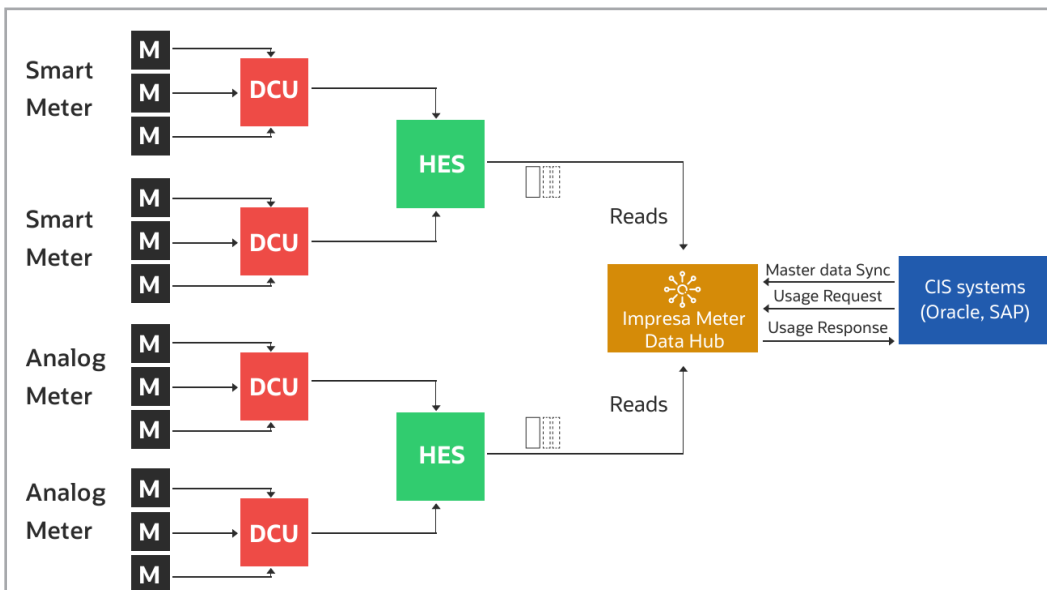
Key Features

- Multi-utility support (power, gas, water, heat, etc.)
- Validation, estimation and editing(VEE)
- Processing of time series meter reads based on interval data
- Master Data Sync with SAP, Oracle CC&B for Meters, Customers
- Bill Determinant Process
- Market conformant communication formats and protocols
- Import and Export: wide range of web services and file formats
- Flexible roles and rights management
- Connectors for billing and asset management systems such as SAP MDUS to support end-to-end Meter to Cash process
- Functional extension through use of other optional Impresa modules such as Impresa Insights (Add-On Product)

Functional Modules

Master Data Management

The module stores the master data of devices and customers collected from CIS or Billing Systems(SAP, Oracle CC&B etc). Any changes in the source system related to devices and customers(such as meter additions, removal, retiral,config changes or updates in account details) are synced to the Meter Data Hub via integration API for master data sync. Master data sync will collect the following information from the CIS/Billing Systems: Contact, Person, Device Configuration, Install Status, Service Points, Usage Subscription, Initial Read.

Data Pipeline

The module manages the import of measurement data from variety of source systems such as HES, Smart Meter Gateways or Manual Reads. The application supports raw data in multiple formats such as json, xml, and csv. Measurement data can be collected in near real-time from field meters via HES. It can also be collected from handheld devices as MRD files for the meters that do not have AMI, AMR capabilities.

VEE

The incoming data is validated and processed by an in-built rule engine. The application supports out-of-box validation rules for example, viz Consecutive Interval Check, Duplicate IMD Check, Final Measurement Replacement , Inactive Measurement Check, Interval Spike Check, Negative Consumption Check, Prolonged Estimation Check, Sum Check and Zero Consumption Check. The application will support estimation rules, for example, Interval Adjustment from Scalar, Interval Interpolation Estimation and Scalar Estimation.The exceptions that are generated during processing, can be tracked and resolved using Exceptions feature.

Bill Determinants

Calculates billable usage recorded on devices, applying factors & dividing the usage into configurable time of use periods. Bill determinants can take the form of TOU-mapped interval consumption, scalar consumption, scalar readings, and/or interval consumption obtained via measurements.

Exceptions

Exceptions or errors that may arise due to various reasons such as incorrect user input, system failures, unexpected environmental conditions, or programming mistakes are logged in MDH. Authorized Business Users can view these exceptions, assign or route to concerned individuals or resolve them.

Functional Modules

Operational Reporting

An operational dashboard for the shift supervisors that will provide the following capabilities: Widgets for Key Metrics: Installation Summary, Read Reliability, Read Error Summary, Batch Summary, Schedule new Jobs and monitoring of existing jobs.
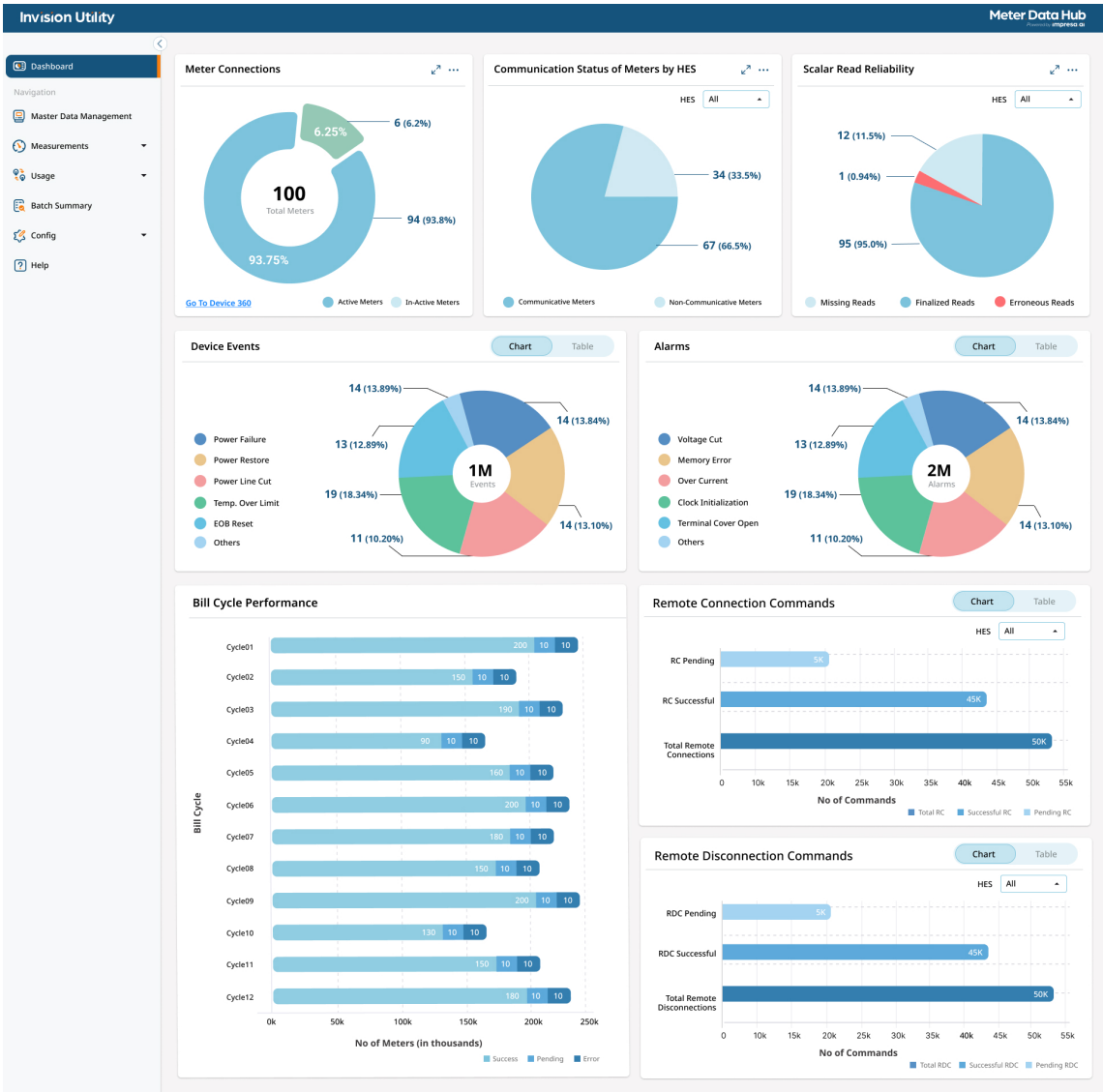
Toolbox

The module will store the meta data required for the integration objects and other programs used by the application. It manages the registry of subscribers and their interests in specific topics or channels to receive relevant messages. Application will publish the messages for the Bill Determinants and Exceptions

Data Storage and Archiving

The Data Storage and Archiving module for Meter Data Hub will provide secure storage of meter data through advanced encryption and access controls. The system's scalability accommodates the increasing volume of meter data seamlessly for high performance. Automated archiving processes streamline the storage of historical data. This module integrates seamlessly with Meter Data Hub, supporting various meter types and data formats. Users can customize data retention policies, and the intuitive interface facilitates efficient data retrieval and analysis. The module maintains a robust audit trail for accountability and compliance purposes.
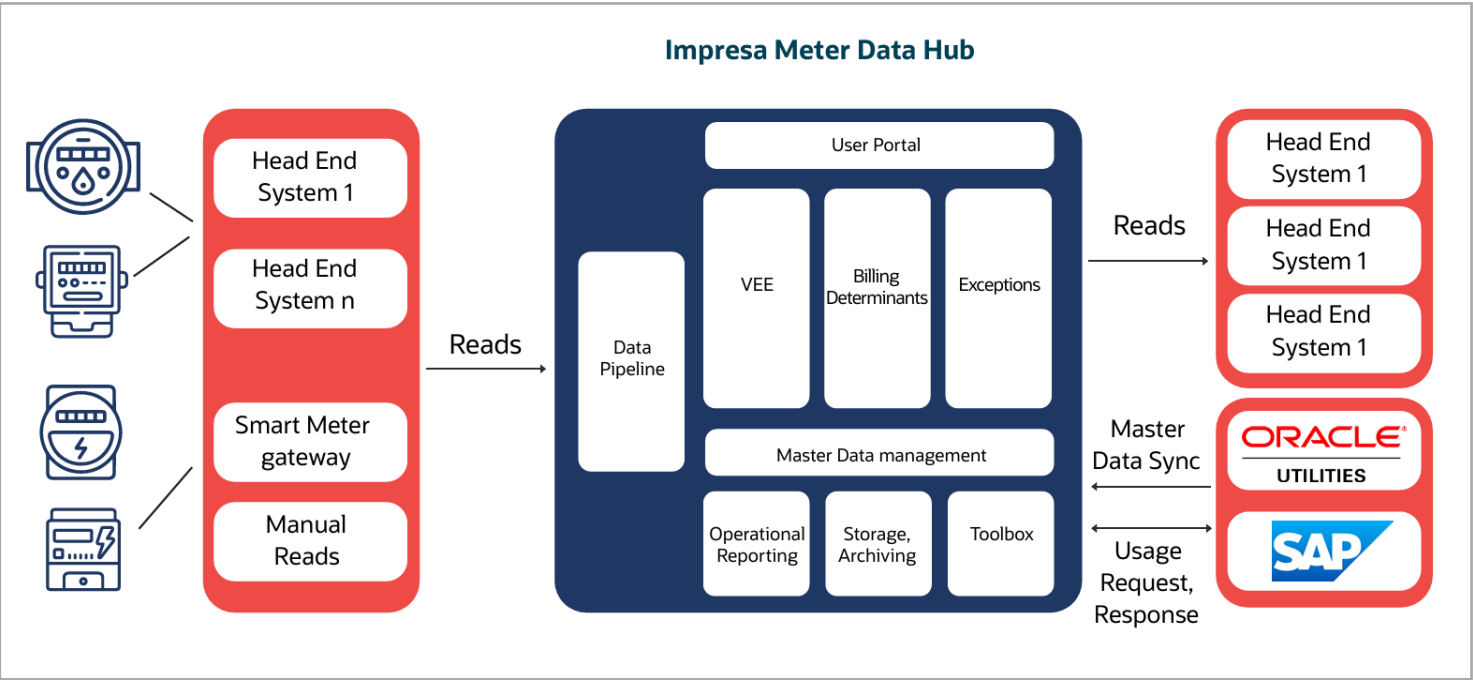
Impresa.ai Advantage

Impresa.ai is an advanced Artificial Intelligence platform designed to revolutionize the electricity and energy industry. By leveraging cutting-edge AI and machine learning algorithms, Impresa.ai provides actionable insights, predictive analytics, and optimization solutions for energy management.

With a focus on improving grid efficiency, reducing energy waste, and ensuring sustainability, Impresa.ai empowers utilities, businesses, and consumers to make data-driven decisions, enhance operational performance, and transition toward a more reliable, smart, and green energy future.

Energy Optimization Impresa.ai focuses on maximizing energy efficiency by analyzing usage patterns, identifying inefficiencies, and recommending actions to reduce waste, saving both costs and energy resources.

Smart Decision-Making The platform's AI-driven insights empower businesses and utilities to make smarter, data-backed decisions, from optimizing consumption to responding to energy demand in real time.

Our Portfolio Highlights Our Capabilities

Grid Stability & Reliability With real-time monitoring and predictive analytics, Impresa.ai ensures grid stability by forecasting potential disruptions, managing power flow, and preventing blackouts or system overloads.

Cost Reduction & Efficiency Gains Focused on driving down energy costs, Impresa.ai helps organizations identify opportunities for cost savings, automate demand responses, and streamline overall energy operations.

Learn More
To schedule a live demo or find out more information,
visit **www.Impresa.ai** or call **+1-919-594-9222**