

# Meter Data Management for Smart Monitoring Power Networks

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*The electrical/power distribution and commercialization scenario is evolving worldwide, and electricity companies, faced with the challenge of new information requirements, are demanding IT solutions to deal with the smart monitoring of power networks. Two main challenges arise from data management and its smart monitoring of power networks: real-time data acquisition and big data processing over short time periods. We present a solution in the form of a system architecture that conveys real time issues and has the capacity for big data management.*

Electrical/power distribution markets worldwide are evolving, and power companies are demanding solutions that help them manage real time problems more efficiently and safely, whilst facilitating the integration of real time information into all corporate applications. These requirements present new data management challenges, which must be addressed by smart grids [1] with their capacity for smart metering and real time monitoring [3]. Smart grid management requires dealing with huge amounts of data including data collected from smart meters and other devices connected to the power network. The enormous volume of data scales up the data management to a Big Data issue [2]. Currently, data are acquired from meters throughout the day, and analysed “off-line” in time-constrained periods (quarterly, hourly, daily and monthly). Consequently, electricity companies are demanding IT solutions to deal with the smart monitoring of power networks and, in turn, to be able to respond to the current market energy needs in real time. However, there are two main challenges behind the smart monitoring of power networks: real-time data acquisition and big data processing in a short period time. We present a solution: a system architecture that conveys real time issues and has the capacity for big data management.

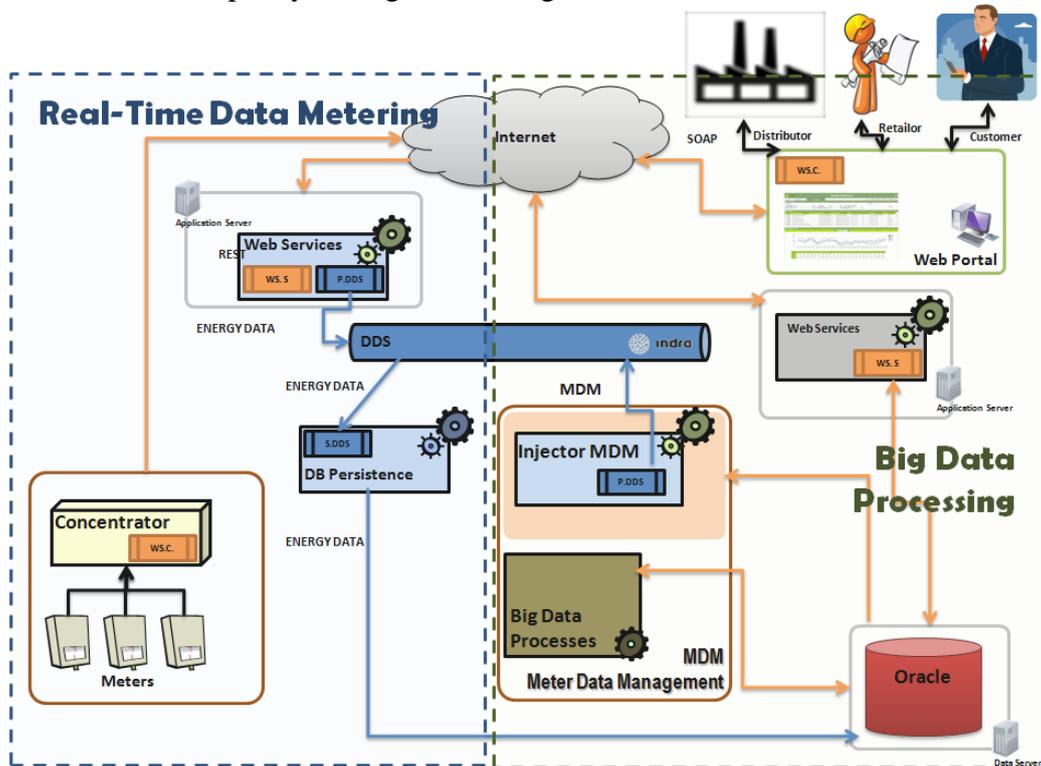


Figure 1: IMPONET Data Management Platform



validation formula, (ii) calculation of the best available energy data from different sources for a measuring point, magnitude and period of energy data. This information is then provided to the customer, the retailer and the distributor from different perspectives, enabling different stakeholders to analyse the results from their own particular point of view (see Figure 2).

**Link:**

- IMPONET: Intelligent Monitoring of POver  
NETworks, <http://www.innovationenergy.org/imponet/>

**References:**

- [1] S. Massoud and B.F. Wollenberg, Toward a Smart Grid, IEEE P&E Magazine 3(5), 2005.
- [2] S. Madden, From Databases to Big Data, IEEE Internet Computing, Vol.16 n°.3, 2012.
- [3] J. Byun et al, A smart energy distribution and management system for renewable energy distribution and context-aware services based on user patterns and load forecasting, IEEE Transactions on Consumer Electronics, Vol. 57 , n°.2, 2011.

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