

Offering Overview

The offering is the **rapid deployment through a Proof of concept with clients' data** of a scalable, portable, cloud deployable **industrial data platform**, with an engineering information and **time series data historian foundation**. It is specifically adapted for **electric, gas and water utilities**. It can **support high volume, high velocity sensor and control messages** that is built using **open-source technologies**.

Offering description

This Proof-of-Concept engagement aims at **quickly providing and demonstrating a real time streaming platform** to collect, aggregate, validate, interpolate and interpret operational data and provide a foundation for advanced analytics and digital twins.

The solution to be deployed is **based on the IBM Consulting asset called the Energy Data Hub**. It combines the best elements of several custom-made solutions developed for Energy clients.

It provides a **rules engine** to develop data validation and estimation rules for data quality and completeness.

The platform can adapt to **multiple persistence technologies and be easily integrated in the client's existing environment**.

Such platforms are required to **successfully enable various types of Smart Grid programs** like:

- **Digital Twins** implementation, for grids, energy systems or (renewables) power generation
- **ADMS / DERMS** implementation and integration
- **AMI 2.0 / Smart Metering Operations Centers**
- **Next generation Work and Asset Management**

The Proof of Concept is followed by a phase of design of the enduring platform and DataOps Operating Model.

Contacts

Charles Vincent: cbvincen@us.ibm.com

Biren Gandhi: biren.gandhi@de.ibm.com

Typical Client Needs

- To deal with the increased complexity and volatility of a Net Zero Energy System, Electric Utilities and Power Generation companies must increase their ability to **efficiently operate closer to real-time**, and **increase the level of instrumentation** deployed on their asset base, e.g. LV network monitoring
- To do so, they need to improve and scale their capabilities around **real-time data streaming** and closely **integrate their OT, IoT and IT data sets** combined with sophisticated analytics (like digital twins, optimization engines, etc.) leveraging multiple data estates.
- These new capabilities must be deployed with an **increased level of security** and in compliance to **evolving regulatory frameworks**.

Key Use Cases

Clients should consider running a Proof of Concept with IBM Energy Data Hub to support the following exemplary use cases and/or programs:



Technical Solution and Assets

The solution that IBM Consulting is offering includes the following characteristics:

- **Scalable Architecture, Multi-cloud ready platform:** Utility, Industrial and Process and Petroleum customer are beginning to transition a lot of their analytical workloads and System of Engagement to the cloud, while keeping their Systems of Records on premise. As a result, we offer a solution that can be deployed on prem and in the cloud both, providing customers with flexibility.
- **Open-Source Technologies:** customers are seeking open-source based solution in order to avoid the high end-point based licensing fees traditional solutions in this space use.
- **Enterprise Systems Integration:** The platform will be designed to support analytics platforms, as well as interfacing to real time control systems. Supports standards such as KAFKA, SPARK, Kubernetes etc.
- **Standard Driven Integration:** The integrations are based on standards prevalent in the industry for interfacing with IOT devices and include ICCP, DNP3, MQTT, OPC as well as JSON and XML. Supports traditional comms such as serial and Modbus, as well as newer IP based protocols and 5G
- **Linux Foundation Edge Platform (Fledge):** Deployed in industrial use cases since early 2018, Fledge integrates IIoT, sensors, machines, ML/AI tools-processes-workloads, and cloud/s with the current industrial production systems and levels, as per ISA-95.
- **Many Different Persistence Layers:** Platform can support IBM Products such as DB2 and Informix, as well as partner technologies like Snowflake, AWS Aurora and Redshift.
- Integrates a **Rules Engine** to apply validation and estimation rules for improving data quality and completeness.
- Combines **Data, AI and ML services** to build Intelligent workflows with automation

Typical Client Challenges

- **High cost and limited scalability:** Traditional OT platforms (e.g. historian) are priced by the number of endpoints. As companies deploys 10 to 20 times the number of sensors it results in rocketing license cost and data-related Opex and Capex.
- **Lack of data streaming and real-time capabilities:** New requirements imply to rethink the data platform with real-time data streaming at the core, and not as an add-on as is typically the case today.
- **Lack of common and integrated IT / OT semantic models:** Digital Twin Models require that data is put into context through associated engineering data and asset models. Currently these data are highly siloed.

Committed Client Outcomes

The PoC allows to demonstrate the **suitability and feasibility** of the platform. It lays out the **foundations** for building a fully integrated and enduring solution based on the Energy Data Hub brings the following benefits :

- **Reduce the data-related IT Opex** by up to 60% (eliminate expensive licenses cost, increase automation, reuse data pipelines)
- **Reduce Capex and Time-to-Market** by up to 60% for new use cases (reuse, automate)
- **Reduce business risk** using proven assets and industry standard
- Drive DataOps culture and skills
- Drive best practices for **user-centric digital transformation** with IBM Garage co-creation process

Key References

- US leading Electric and Gas Utility, to support a **large data-driven Performance Improvement program** across all their Business Units
- US leading Midwest Electric and Gas Utility, to support the **deployment of a ADMS and DERMS**
- EU Oil & Gas super major in support to their **enterprise-wide Digital Twins program**.

Why IBM

- **Comprehensive platform and accelerators** allowing to deliver results in a few weeks
- **Proven architecture and models**
- **Open, multi-cloud architecture** to deploy on-premise and Azure
- **Natively designed for OT data** processing
- Rules Engine to replace functions delivered by costly platforms like OSI PI.
- IBM recognized by industry analysts as "top right quadrant" **leader in Data & Analytics and AI Services**, Digital Twins with 10.000+ consultants.
- IBM leader in **Hybrid Cloud** and **EDGE** technology and services.

Getting started

The PoC is delivered using the user-centric **IBM Garage** method for solution co-creation:

- **Envisioning** workshop to define the expected outcomes, success criteria, architecture, use cases and data requirements.
- **Iterative implementation** with a mixed client and IBM team using SAFe agile.
- **Testing & Validation** that the expected outcomes have been delivered

After successful completion of the PoC, the next step is to define the vision, architecture and future DataOps Operating Model to scale the solution.