

# ENERGY & UTILITIES

OUR  
SUCCESS  
STORIES

# 01

## Centralization of Operations and Maintenance at Power Generation Plants

**Who Was the Client:** One of the largest energy companies in the U.S.

### Strategy and Objectives

Increase reliability of power across the client's 11 fossil fuel power generation plants and critical assets — gas turbines, generators, steam turbines, etc.

Centralization of operations and maintenance processes

Reduce operational costs

Support fleet monitoring, and centralized operations and maintenance using an Amazon Web Services (AWS) cloud platform



[View Solution Diagram](#)



### Happiest Minds Solution

Defined overall solution architecture across key pillars of the Reimagine program: centralizing management and control of plant operations, and removing manual effort involved in O&M processes by leaning and technology automation to the greatest extent possible

Assessed gaps required for seamless functioning of the client organization's Fossil Center of Work Excellence (FCWE) and Consolidate Command Center (CCC) under the Reimagine program initiative

Defined a solution with technology interventions required for addressing identified gaps

Prioritized solutions for execution

Designed a high-level solution blueprint for shortlisted solutions

Provided deep-dive details on FCWE's daily and outage work processes

Leveraged AI/ML models for optimizing work orders and improving data quality for validation, prioritization, and scheduling of FCWE's daily and outage work

### Digital Capital Delivered



Effective remote management and maintenance of all of the 11-fossil fuel power generation plants from a centralized solution



Work order optimization



Better data quality for validation, prioritization, and scheduling of daily and outage work



Improved operational efficiency and reduced costs



Greater visibility into plant processes and equipment, and improved predictive maintenance

# 02

## Smart Grid Analytics Platform Delivering Actionable Insights, Improving Operational Efficiency

**Who Was the Client:** A leading US-based smart grid applications company

### Strategy and Objectives

A scalable analytics platform that would integrate with SCADA and DMS distribution management systems

Ability to derive timely insights for operational efficiency



### Happiest Minds Solution

We developed a scalable platform for managing the various intelligent sensors while providing machine learning-based analytics on the data collected from all areas of the distribution grid. The key highlights of the platform were:

#### Group management

Scalable to manage millions of data points as well as a logical grouping of end devices

#### Fault and disturbance analytics engine

Development of machine learning algorithms for fault analysis, distribution classification, and anomaly detection

#### Auto-phase detection

Data to validate and detect the feeder phase and thereby enhance safety

[View Solution Diagram](#)

### Digital Capital Delivered



Optimized data flow to the SCADA system



Timely actionable insights resulting in better operational efficiency

# 03

## Automated Frequency Stabilization of Power System and Power Generation Equipment

**Who Was the Client:** A world leader and innovator in pioneering high technology, including power systems and nuclear energy

### Strategy and Objectives

Development of a power systems application

IT integration and automation for demand and supply applications



### Happiest Minds Solution

Integration of the client's demand and supply applications

IT automation for monitoring demand and controlling supply based on demand (layer 3 of the stack)

Porting of the whole application code from C++ to Java and executing unit testing of the code despite lack of documentation on the C++ codebase—the activity included Java-based design development for wrapper classes, database (DB) classes and business logic, as well as Enterprise JavaBeans (EJB) interface development

[View Solution Diagram](#)

### Digital Capital Delivered



Efficient frequency stabilization of the power system and power generation equipment taking place in 3 modes: manual control, scheduled control, and automatic demand/supply control

# 04

## ERP and Inventory Management

**Who Was the Client:** A leading hardware and software manufacturer for electric vehicles (EVs)

### Strategy and Objectives

Implement a reliable, more scalable solution with rapid deployment than the current QuickBooks, Expandable system

Auto-validation of sales orders based on business validation rules, and auto-processing of return orders

Reporting and consolidation across subsidiaries and locations without manual intervention

Hassle-free reporting for business users without the need to write queries



### Happiest Minds Solution

Implementation of NetSuite modules: Order to Cash, Procure to Pay, Basic Manufacturing, and Advance Inventory

Integration of all third-party systems with NetSuite using MuleSoft

Data migration utilities from Expandable to NetSuite

Multi-book accounting system facilitating inter-company transactions

### Enablers

End-to-end capabilities in ERP

Middleware to take care of all integration aspects

Streamlined tracking process

Real-time reports to identify shipments, delays, station activations and assembly of items

NetSuite integrations to resolve productivity issues



### Process Efficiencies Delivered



Efficient consolidation and monitoring of international subsidiary locations



Greater visibility and control over the sales process and financial reporting



Effortless management of international subsidiary finances with the enablement of multi-currency transactions



Improvement in visibility and Sarbanes-Oxley (SOX) Act compliance



Complete transparency into billing and tracking in the sales process

# 05

## Quote-to-cash Solution

**Who Was the Client:** One of the world's largest and most open electric vehicle (EV) charging network providers.

### Strategy and Objectives

Salesforce, which was used by the client only till the phase of managing opportunities, had to be leveraged for other activities such as product configurations and pricing—which were being stored on external repositories

Automation of the final quotes which were being created manually—by copying information into the quote template document

Elimination of rework in the quote creation process and real-time tracking of quote status



### Happiest Minds Solution

Leveraged Salesforce CPQ and Billing to configure products and price books, and create bundles

Utilized the quoting engine to ensure seamless data flow and accuracy of information with respect to opportunities

Enabled easy tracking of the quote status after it was sent to the end customer

Facilitated quote PDF file generation using DocuSign for Salesforce CPQ with customer e-signature feature for a faster turnaround time



### Process Efficiencies Delivered



Integration with Steelbrick resulted in increased efficiency with quote creation and approval time reduced to one-tenth of the original time and errors dropping to less than 2%



With all data stored in Salesforce, sales managers could analyze reports and view intuitive dashboards concerning quarterly revenue generation.

# 06

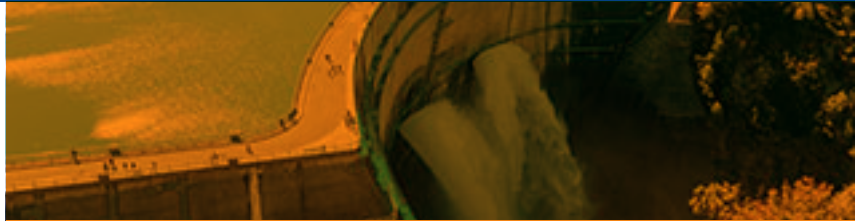
## Renewable Energy Management Solution

**Who Was the Client:** One of the largest clean energy generation companies in India

### Strategy and Objectives

Enhancing the value proposition for the independent power producer (IPP) through predictive maintenance of the entire farm

Creating dashboards to help farm owners foresee energy production and make predictive maintenance decisions



### Happiest Minds Solution

Developed a monitoring system for renewable energy farms by aggregating data from wind turbines, solar panels, and hydro plants

Set up a multi-tenanted system to cater to multiple customers owning multiple farms, which included:

- An on-field data acquisition and control (DAC) system with multiple connectors (such as OPC, Modbus, and PI) to the farm
- Commissioning of an IoT platform
- Application development and integration
- Remote infrastructure management and L2/L3 support

Created a DAC system for acquiring data from wind turbines and solar panels, and it hosted instances of the client services (OPC DA, OPC XML DA, MODBUS, PI, and RDBMS Client) for subscribing to tags data from servers.

[View Solution Diagram](#)

### Process Efficiencies Delivered



Efficient aggregation of data from wind turbines, solar panels, and hydro plants, enabling optimal management of renewable energy



Intelligent data analysis and predictive maintenance

# Anomaly Detection and Predictive Maintenance for Wind Turbines

**Who Was the Client:** One of the largest clean energy generation companies in India

## Strategy and Objectives

Cleansing and standardization of data insights offered by the client to windfarms on possible predictive maintenance required at windmills. Each windmill generated about 500 data parameters every 5 minutes, including the location master data, windmill master data, and historical failure information.



## Happiest Minds Solution

Developed routines in Databricks Spark for data cleansing and standardization, and facilitated collaboration among data engineers and data scientists using Databricks features

Data aggregation by meaningful units of time for analysis

Creation of meaningful targets to identify failures

Enabled identification of important factors by looking at correlation, facilitating failure prediction well ahead in time

Created pre-defined models based on windmill data and adjacent windmill characteristics

Evaluated the performance of trained and re-trained models in a systematic manner

## Process Efficiencies Delivered



On-time failure prediction enabling predictive maintenance

# 08

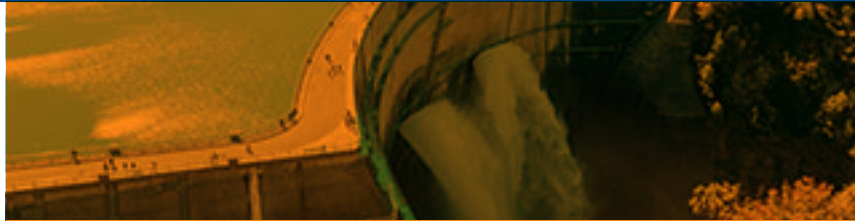
## Solar Projects Management Solution

**Who Was the Client:** Renewable energy solutions provider in the U.S.

### Strategy and Objectives

Automated solar deployment management platform and application—to do away with the manual process of periodic checks performed by the client's support staff visiting installation sites or attending support calls from customers

Summarized and drill-down data view for customers to help them understand the power generation of their installations and receive alarms or notifications on the current state and operations of installations



### Happiest Minds Solution

We developed a connected monitoring system with the following features:

Connects Enphase, eGauge and SMA APIs with Azure IoT Hub through HTTPS protocol

Reads data from the gateway provided by egauge.net (19785), Enphase, and SMA through respective APIs for power generated and utilized

Parses and stores data on the Azure blob storage

Builds reports on monthly power generated and consumed as provided by the gateways and delivers them based on schedule

[View Solution Diagram](#)

## Process Efficiencies Delivered



Automated monitoring and management of solar deployments

# Smart Home Energy Monitoring

**Who Was the Client:** A leading IP cable operator in Europe

## Strategy and Objectives

An ecosystem with the following components that would allow the rollout of home automation services to customers:

Smart home devices including smart meters

Smart home gateway vendors

A common platform interface (CPI)

The controller layer for the network

Multiple smart home applications



## Happiest Minds Solution

Developed CPI framework components, including smart meter device

Integrated the smart meter with the CPI layer

Developed a web application for monitoring and managing homes energy consumption

Customized use cases for different smart home services

[View Solution Diagram](#)

## Process Efficiencies Delivered



Efficient rollout of home automation services

# 10

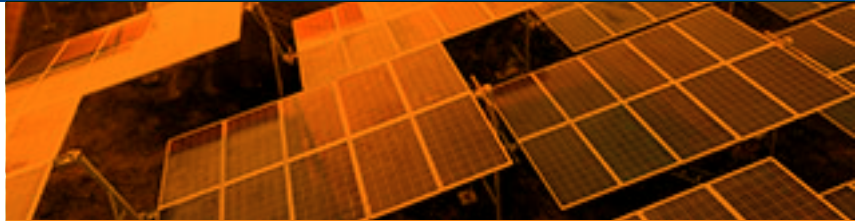
## Building Energy Management

**Who Was the Client:** A USA-based Fortune 100 clean, healthy energy generation company

### Strategy and Objectives

Create a data model or schema for visualization of raw data in MYSQL, displaying energy consumption trends with daily, weekly, and monthly comparison charts

Enable customers to track and reduce energy consumption with comparative depiction, allows them to study occupancy level inside rooms, units, zones, floors, and towers of buildings.



### Happiest Minds Solution

Created a data model or schema for visualization of raw data in MYSQL

Created Java APIs that the front end could call for visualization

Created customized visualization for the depiction of energy consumption



### Process Efficiencies Delivered



Reduced energy consumption, resulting in revenue savings



Comparative analysis between different towers, floors, zones, and units to pinpoint encouragement of lagging units for energy conservation



Lower carbon footprint and achievement of green buildings

## About Happiest Minds

Happiest Minds, the Mindful IT Company, applies agile methodologies to enable digital transformation for enterprises and technology providers by delivering seamless customer experience, business efficiency and actionable insights. We leverage a spectrum of disruptive technologies such as: Big Data Analytics, AI & Cognitive Computing, Internet of Things, Cloud, Security, SDN-NFV, RPA, Blockchain, etc. Positioned as "Born Digital . Born Agile", our capabilities spans across product engineering, digital business solutions, infrastructure management and security services. We deliver these services across industry sectors such as retail, consumer packaged goods, edutech, e-commerce, banking, insurance, hi-tech, engineering R&D, manufacturing, automotive and travel/transportation/hospitality.

Headquartered in Bangalore, India; Happiest Minds has operations in the U.S., UK, The Netherlands, Australia and Middle East.

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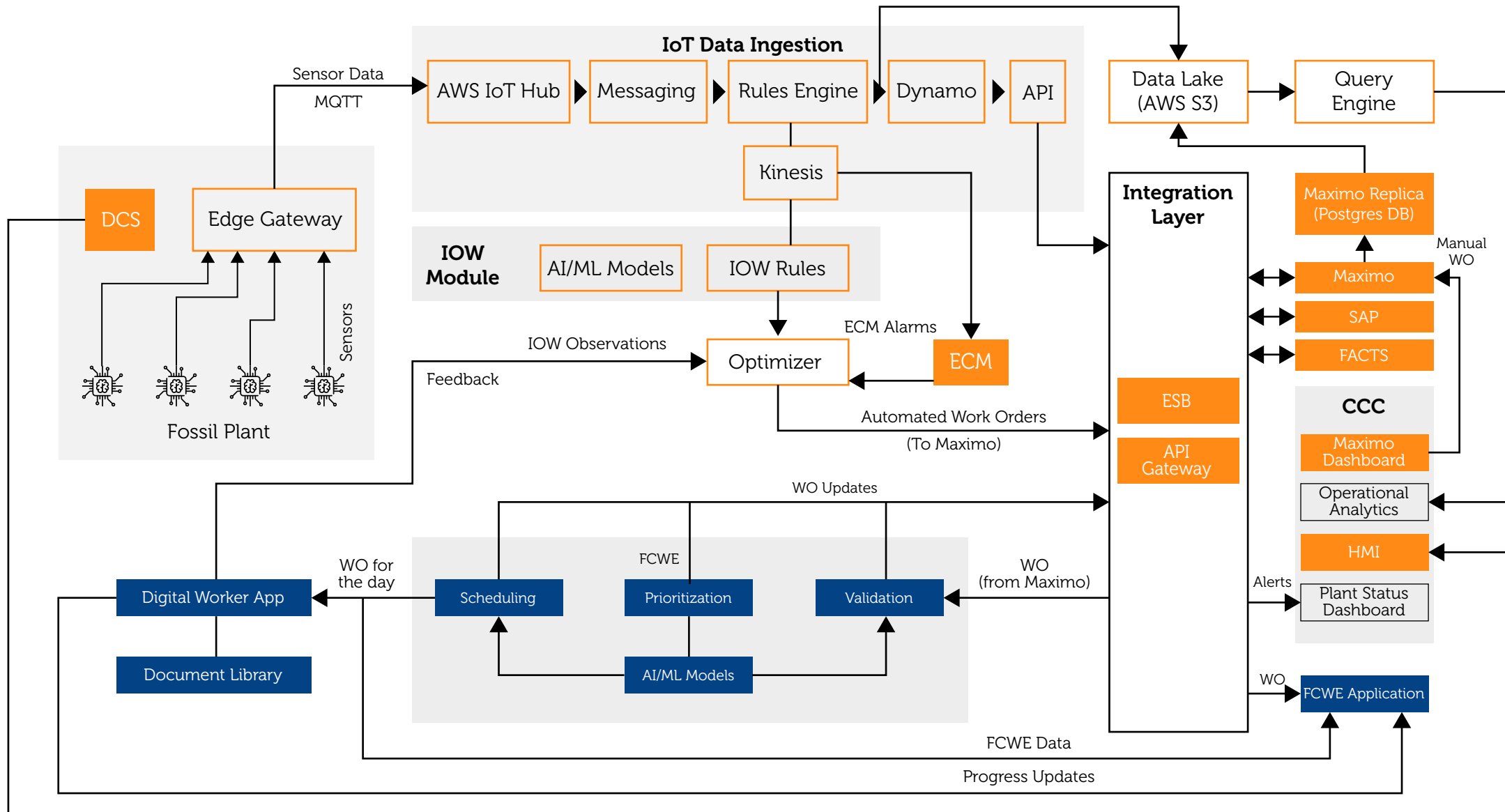
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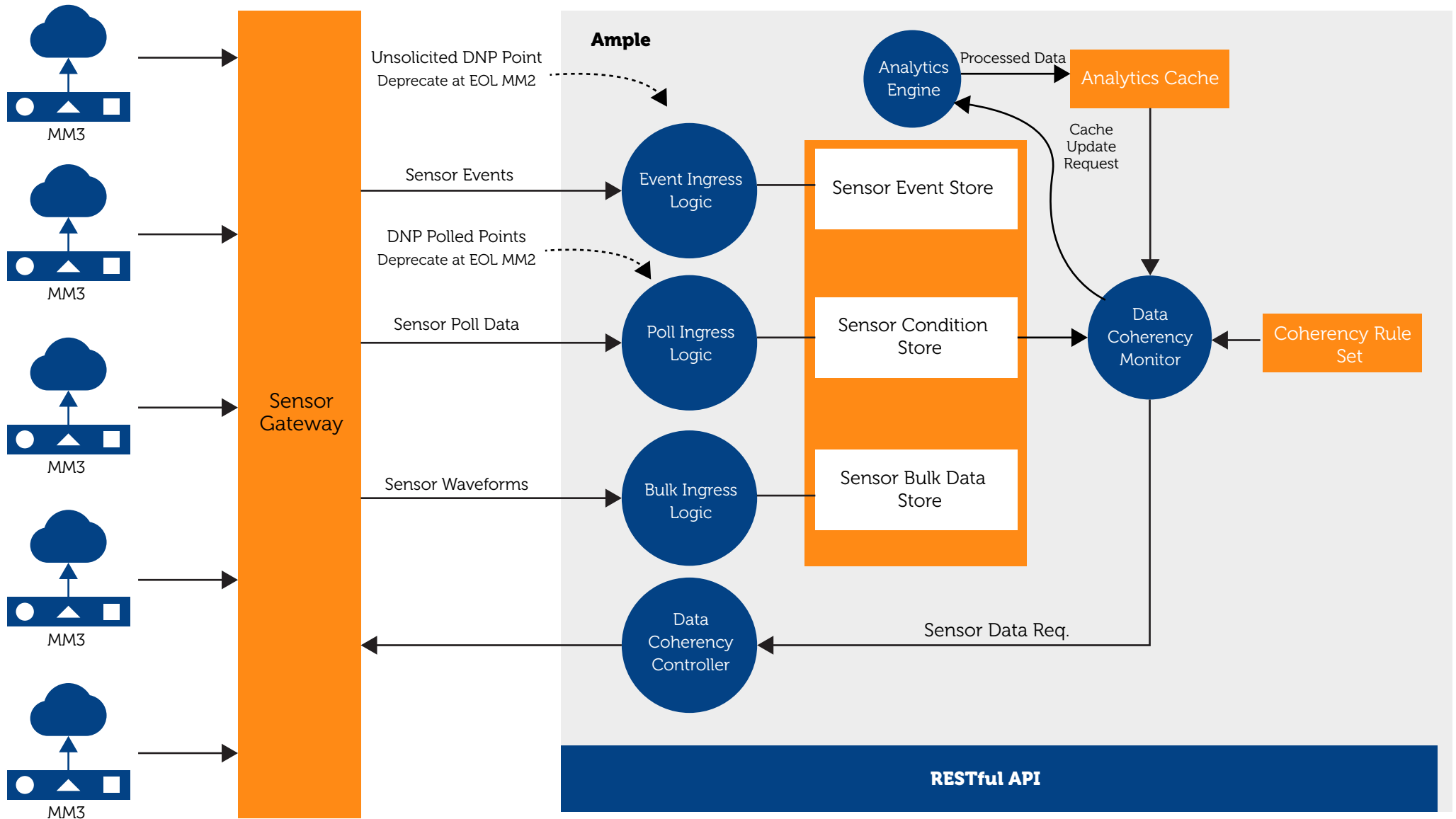
The Mindful IT Company

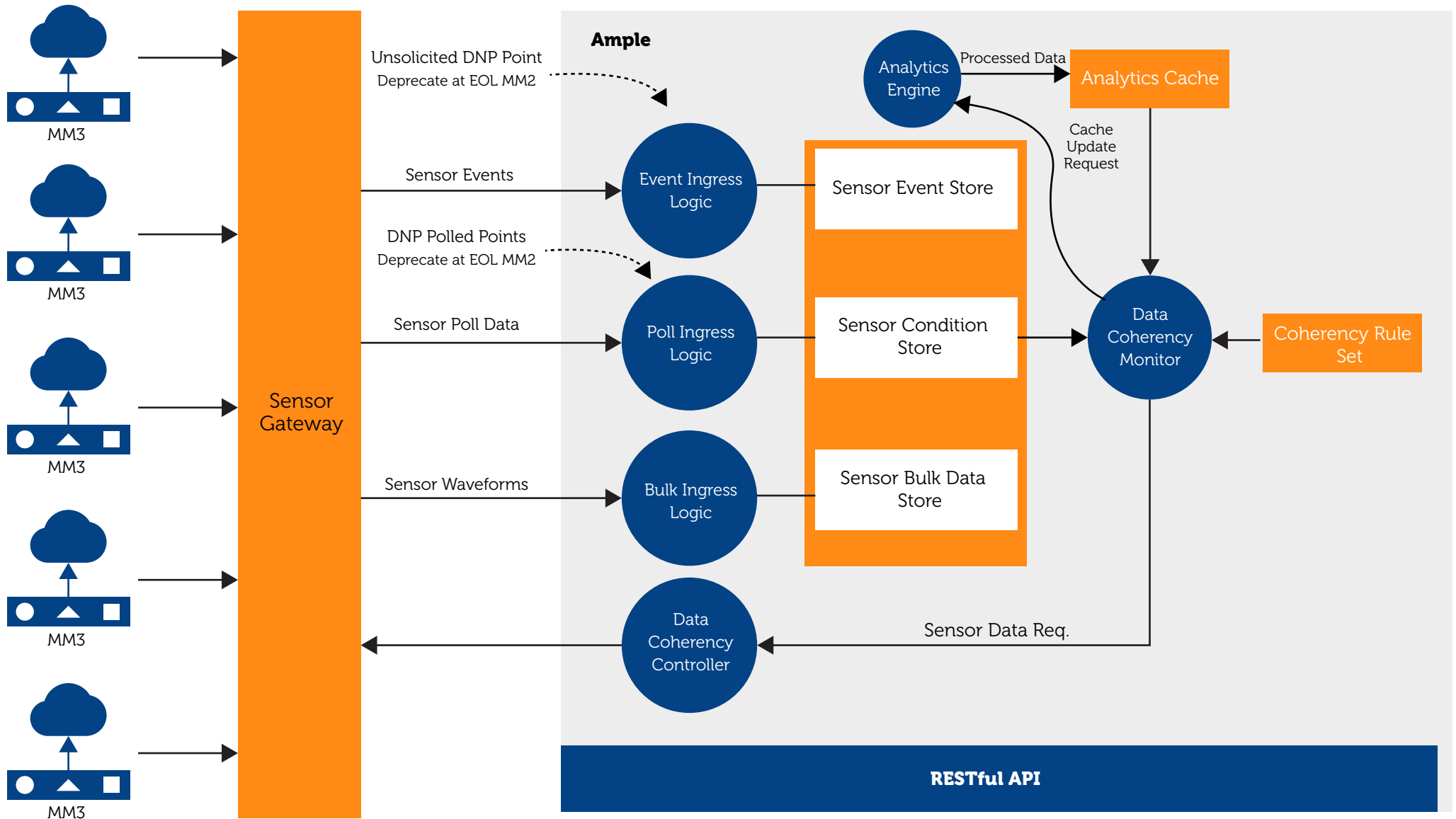
Born **Digital** . Born **Agile**

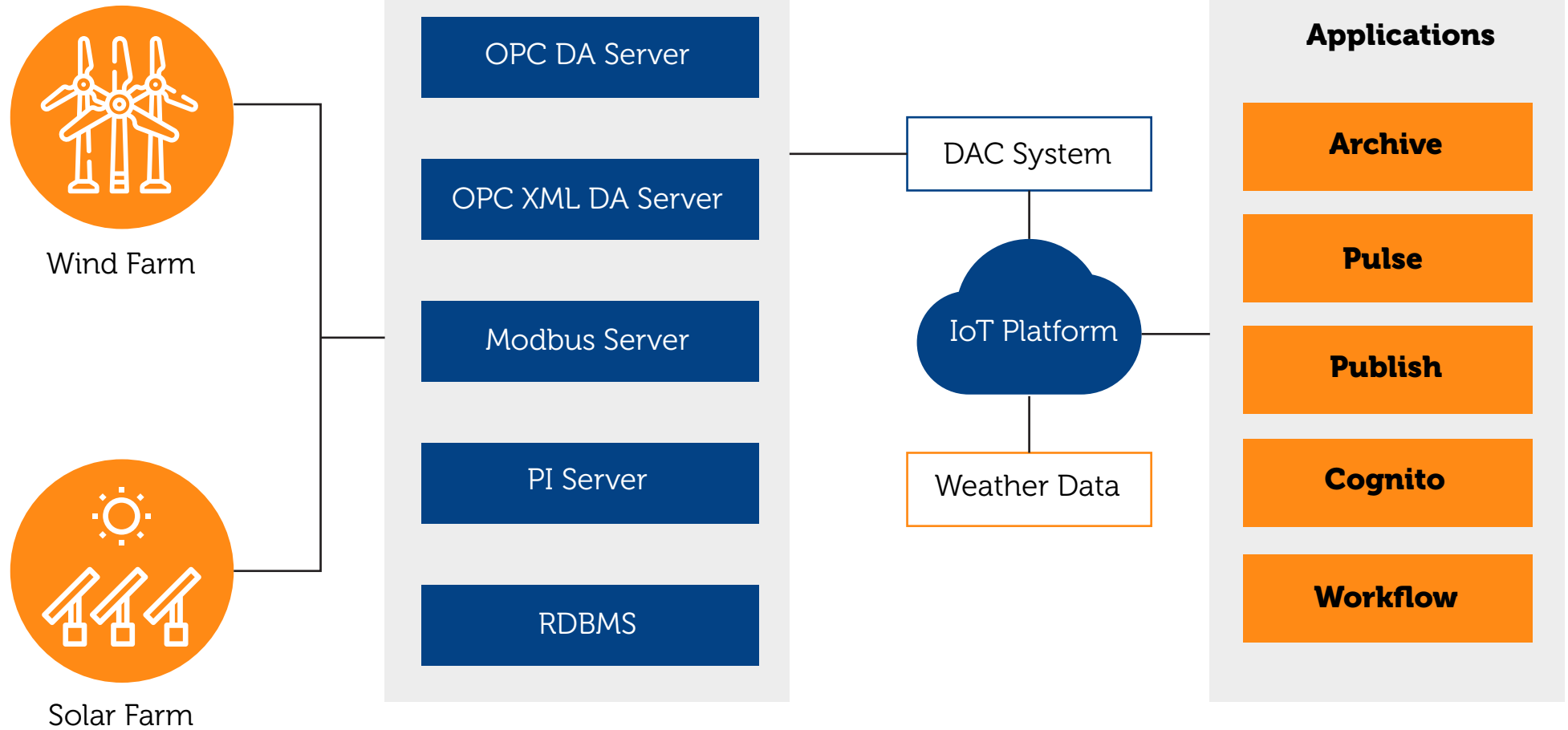
# 01

## Centralization of Operations and Maintenance at Power Generation Plants









## 07

## Anomaly Detection and Predictive Maintenance for Wind Turbines

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