

# IT/OT Convergence – EDF and The SAP HANA IoT Integrator Story

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# What We'll Cover

- SAP OSIsoft Partnership
- IT/OT Convergence
- EDF RE Story
- Other Utility Use Cases
- Solution Architecture and Roadmap
- Questions

# Insight to Action

**BUSINESS  
PROCESSES**

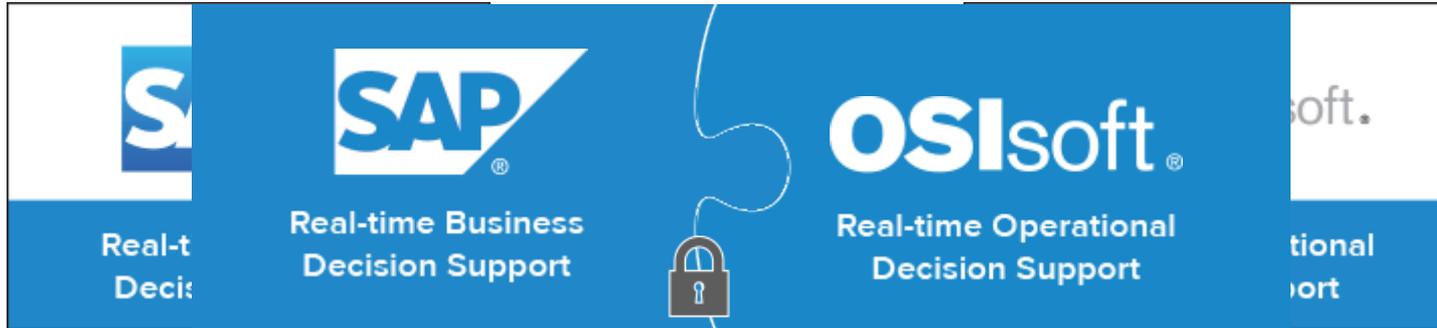
**Operational  
PROCESSES**

Advanced  
Visualization

Advanced  
Analytics

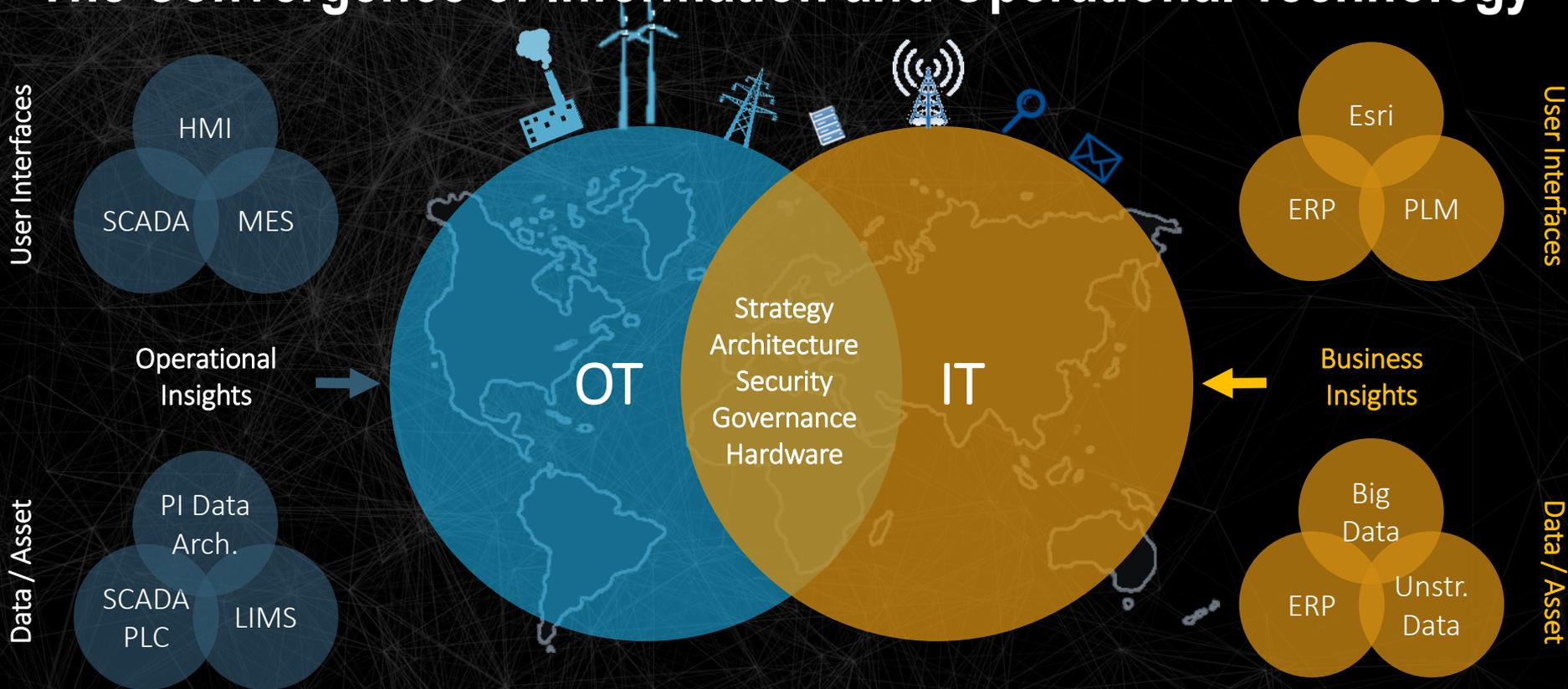
SAP HANA

SAP HANA IoT Integrator by OSIssoft



Cyber Security

# The Convergence of Information and Operational Technology



Enabling digital enterprises to do business innovation

# Value through Convergence of IT and OT in Utilities

- Utilities are pursuing IT/OT integration to enable smart grids, handle volatile renewable energy resources and improve the return on their assets.
- Business processes supported include:



# The EDF RE Story

Enterprise data platform featuring the first IT/OT integration powered by SAP HANA and IoT Integrator by OSIsoft

- Integrating operational, transactional and geospatial data
- Near real-time integrated operational and business intelligence
- Informed management, strategic and operational decision making
- Enables workforce management and scheduling optimization

# EDF, the world's biggest energy generator

38.5

Million  
customers  
worldwide

72.9

Billion Euros in  
annual revenue

12

Billion Euros in  
net investment

FIRST



Generator of new energy  
& renewables in Europe

28.3 GW

Installed capacity



Power Grid  
operator in Europe

105,000 Km of power lines

47 Cross border lines



Nuclear Operator  
in the World

73 reactors

In France & UK

\*Annual report 2014



OSIsoft.

REGIONAL SEMINARS 2016

# EDF Renewable Energy



Subsidiary of EDF  
Energies Nouvelles, the  
renewable arm of EDF

## 30 years

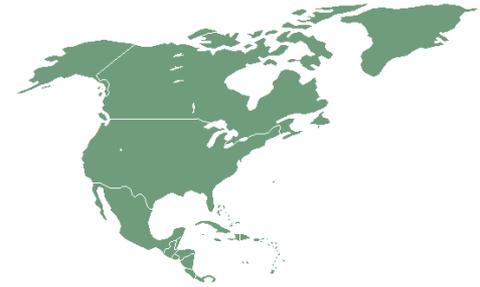
Expertise in  
renewable industry



Leader in  
development & operation  
for wind and solar



Also presence in:  
battery storage,  
biogas and biomass



## North America Portfolio

**7.8 GW** Developed  
projects

**4.1 GW** Installed  
capacity

**10.7 GW** Operations &  
Maintenance



# Project Drivers



Large amounts of data  
in silos



Data  
integration  
challenges



Data inconsistency



Compliance & security  
requirements

## Solution

A unified Business Intelligence (BI) & Data Warehouse (DW) platform enabling advanced BI and Analytics applications through -

- Data integration
- Data analysis
- Data modeling
- Information delivery



# Project Overview



Geo-location through  
ArcGIS

SAP HANA IoT  
Integrator by OSIsoft



OSIsoft PI System  
High volume sensor  
data infrastructure



SAP HANA power &  
advanced analytics



First Implementation of SAP  
HANA IoT Integrator by OSIsoft



Futureproof  
Big Data  
platform

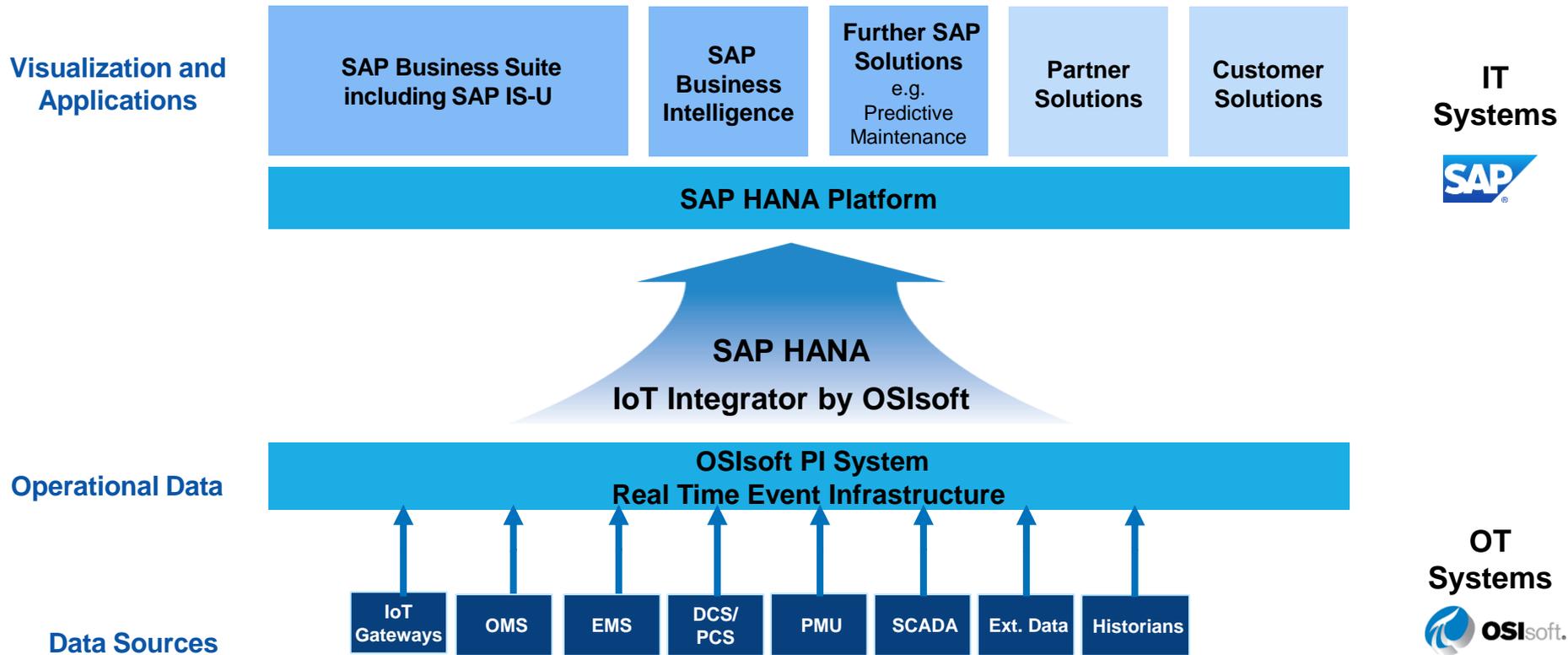


Near Real-time  
operational &  
business intelligence



# SAP HANA Platform and OSIsoft PI Server

Enable real time IT/OT convergence



# EDF Use Cases



## Executive Suite

Near real-time reporting and analysis resulting in better decision making



## Operations

Near real-time predictive asset and maintenance analytics leads to improved operating efficiencies



## Business Management

Holistic view of asset and financial performance with drill down analysis enabling decreased risks & informed decisions

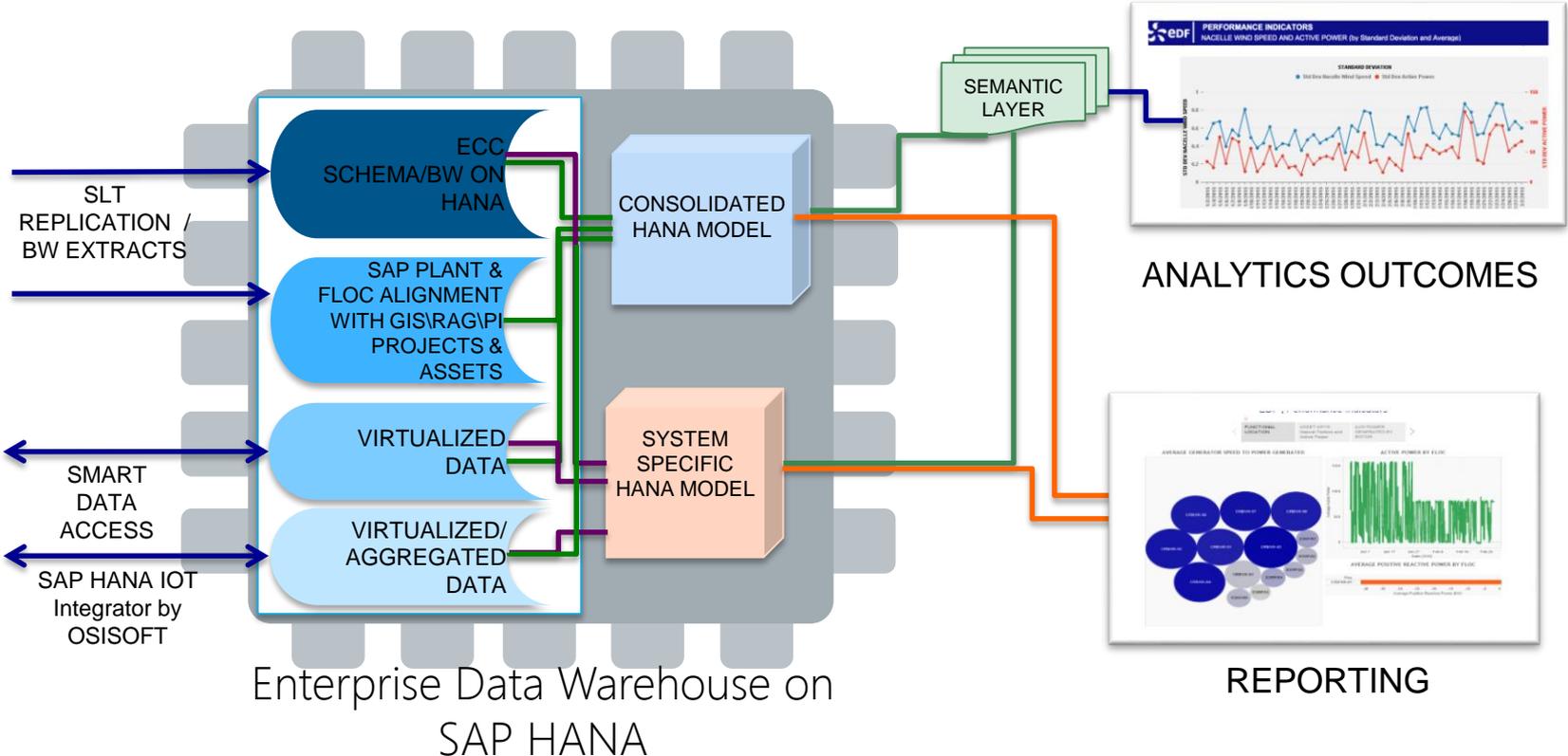


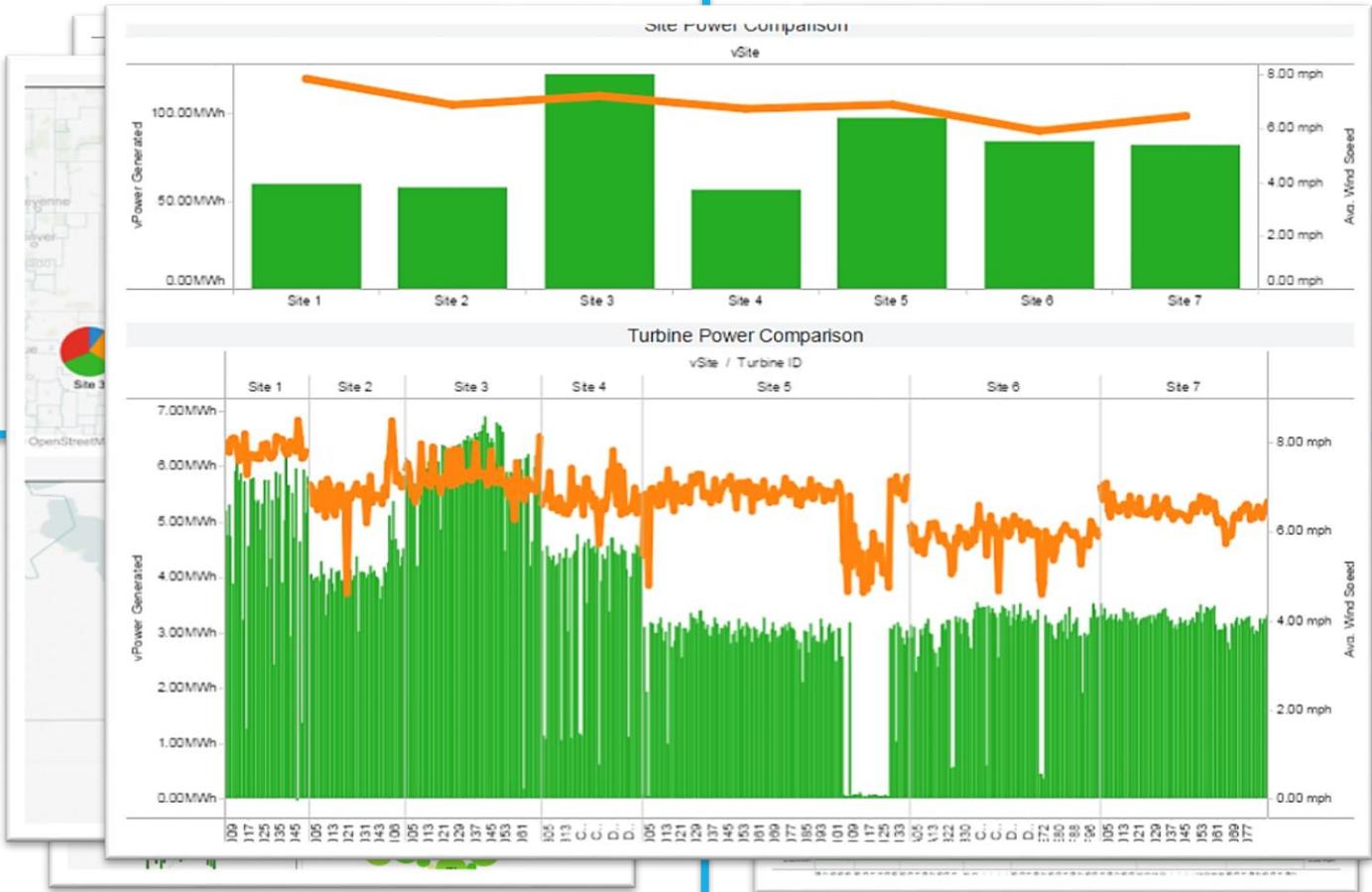
## Digital Enterprise

Collaborative data platform enable improved operating efficiencies both internally and externally



# Technical Solution





**92% reduction**

Report run times

Procurement reports now average 12s, down from 2.5 minutes

Weeks to **MINUTES**

Curtailment calculation

The process of pulling data from PI & SCADA in Excel used to take weeks to perform

**86% reduction**

Database size

790GB to 110GB through data compression and data virtualization

**Nightly data loads** for the procurement data model used to take an average of 1 hour and 20 minutes which is now been **totally eliminated**

**Enterprise Data Platform** supporting **single source of truth** and **Self-Service** analytics

# What's Next for EDF RE



BI & Analytics portal to share information with EDF RE's customers



Integrate more data, such as lease data, contract data, market data, manufacturer and OEM data



Build predictive analytics and improve preventative maintenance, workforce management and scheduling optimization



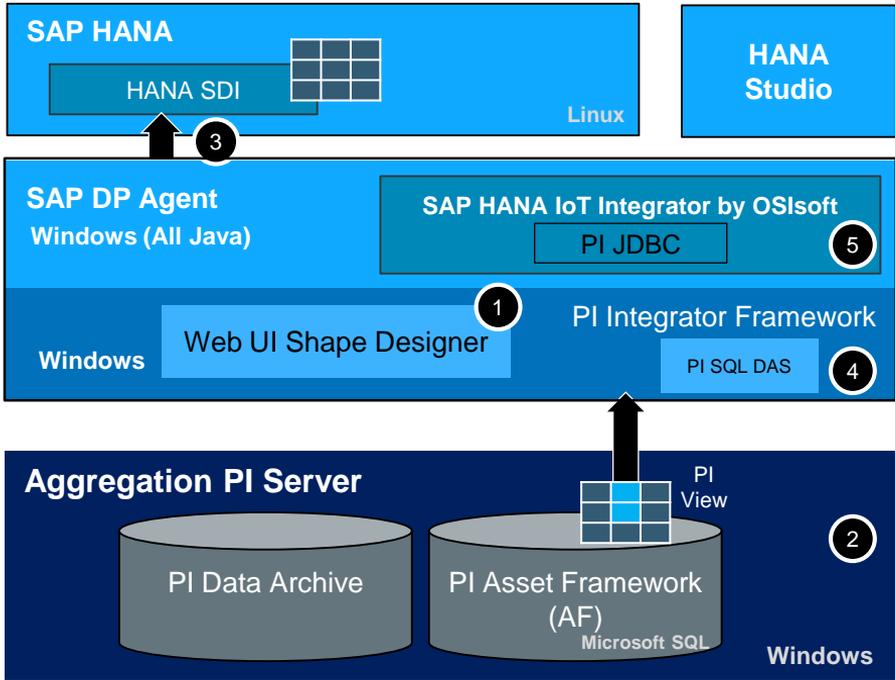
Expand to include sensor data from solar, biomass, and battery storage



# Architecture and Roadmap



# Solution Architecture - Pull

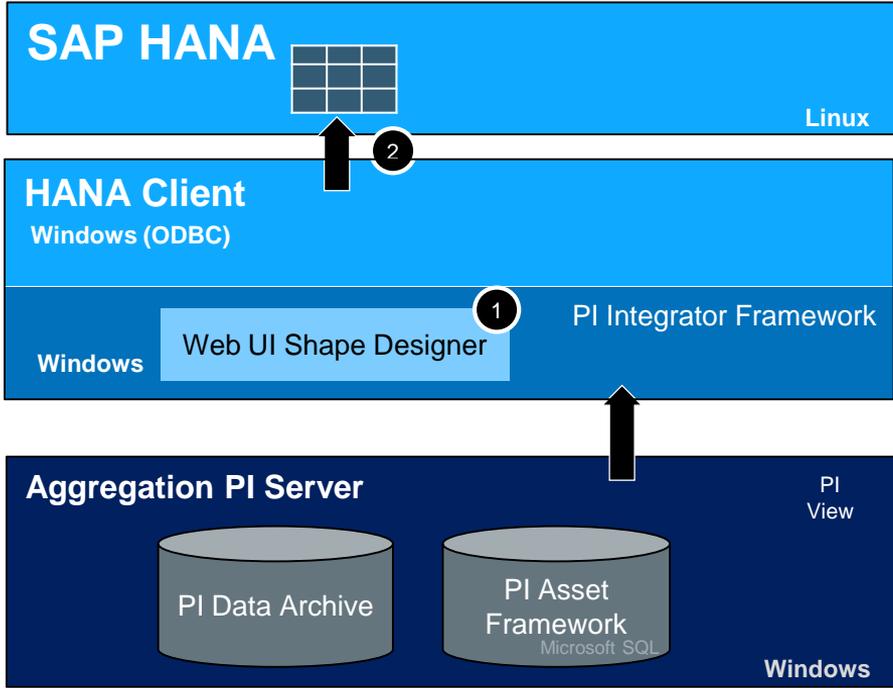


- 1** User creates PI View in Web UI Shape Designer via PI Integrator Framework
- 2** PI View definition is stored in PI System (AF). PI View data is stored in optimized format in AF-managed SQL Server
- 3** SAP HANA user configures virtual tables in SAP HANA Studio using SAP HANA SDI and SAP HANA IoT Integrator by OSisoft
- 4** PI SQL DAS controls access to PI Views
- 5** SAP HANA IoT Integrator by OSisoft retrieves data from PI View located in SQL Server via PI JDBC driver

**Legend**

- Component sold by SAP
- Component sold by OSisoft
- Included with SAP HANA IoT Integrator by OSisoft (no fee). Provisioned by OSisoft

# Solution Architecture - Push



**1** User creates PI View in Web UI Shape Designer via PI Integrator Framework

**2** PI Integrator Framework streams data to HANA via HANA Client (ODBC)

- Legend:**
- Component sold by SAP
  - Component sold by OSIsoft
  - Included with SAP HANA IoT Integrator by OSIsoft (no fee). Provisioned by OSIsoft

# SAP IoT Integrator by OSIsoft



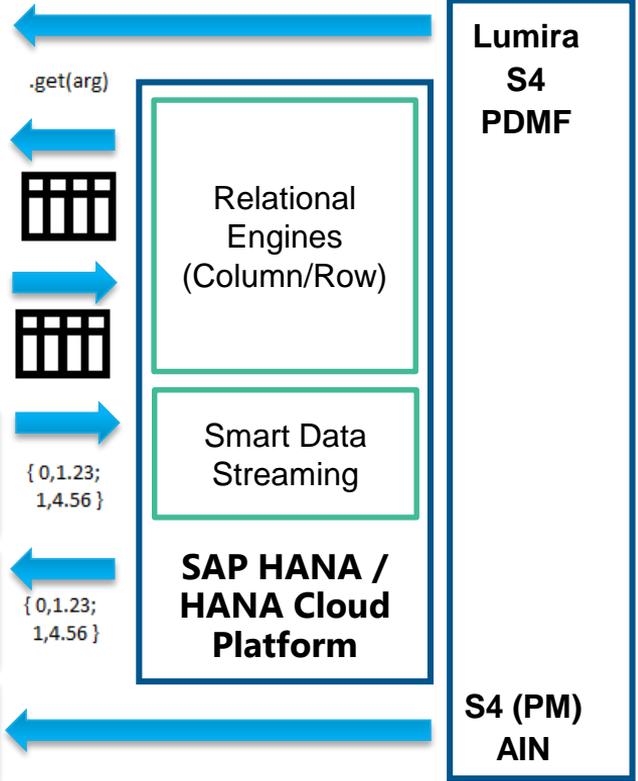
## Access

- Query Data (API)
- Pull Data (SDA)
- Push / Publish Data (SDI)
- Stream Data (Smart Data Streaming)
- Receive Data (Predictions)
- Receive Metadata (Assets / PM)

## Road Map

- Planning - 2017
- SAP HANA IoT Integrator V1 2015
- SAP HANA IoT Integrator V2 2016
- SAP HANA IoT Integrator V3 2017
- SAP HANA IoT Integrator V3 2017
- Planning - 2017

## Databases & Applications



# SAP HANA IoT Integrator V2

- Supports both HANA on premises and HANA Cloud Platform
- Based Completely on Smart Data Integration (SDI)
- Both Push and Pull methods
- Uses Latest SDI API – support for SPS10 and later and HCP
- No longer requires SQL Server DB – uses embedded open source DB
- Better performance for SDI Pull (pass through queries)
- Continuous Publication through SDI Push
- PQ Process starting in November 2016, EOY 2016 Release



# Questions

Please wait for the **microphone** before asking your questions



State your **name & company**

# Please don't forget to...

Complete the Survey  
for this session



The Power of Data  
DECISION READY IN REAL-TIME

## Evaluation Form (Seminar Location - Date)

Name: \_\_\_\_\_ Company: \_\_\_\_\_

Email: \_\_\_\_\_

Quality and content of the presentations	Poor	Good	Excellent	N/A
Welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Journey To Real-Time Operational Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Power of Connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tank Level Management System	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the FI System to Aid in Troubleshooting Operational Aspects of Oil and Gas Well Drilling and Completion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unleash your Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information on the Spot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrap-up/Seminar Conclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Quality and organization of the seminar</b>				
Choice of date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time allowed for lunch/breaks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choice of presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Break time allowed for the presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



감사합니다

谢谢

Danke

Merci

Gracias

**Thank You**

ありがとう

Спасибо

Obrigado

