



REVONOS

REVOLUTION IN UNDERSTANDING

Are You Poised to Capitalize on the Industrial Internet of Things?
Best Practices for Monetizing Operational Assets

Speakers: Michael Maguire & Wesley Dyk

- Background
- Driving IIoT to Organizational Transformation and Business Value
 - Vision
 - Strategy and Plan
- IIoT Framework Considerations
- Role of Operational Technology (OT) Infrastructure – PI AF
- Best Practices and Lessons Learned



- **Revonos – Launched 2016:**
 - **Focus on unleashing the value of Data Assets**
 - **Partnerships in Software, Hardware and Industry:**
 - O&G Industry
 - Fleet and Asset Management Equipment
 - EHSR Compliance Equipment
 - Time Series Historian and Analytics
 - Asset Management Software
 - Business Training
- **Limitless Well in Release 1 – Multi-state well completion and production analytics discovery tool**
 - Proof of Concept to develop value-case for standardizing disparate data sets and Big Data and traditional database structures
 - Positive market feedback leads to commercial release

LimitlessWell



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Organizational Transformation and Value

Vision:

- Companies recognize and embrace opportunities in enhancing their Industrial Internet of Things (IIoT) physical assets
- Companies will gain value by adopting methodology of IoT
 - Contextualize IIoT streams across devices and disciplines
 - Democratize the data

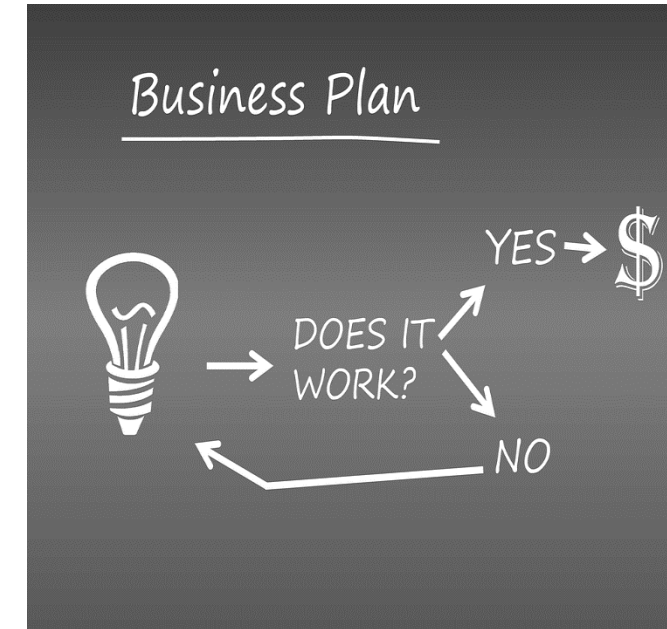
Potential:

- 6.4 Billion devices to be connected by 2016 (30% increase from 2015)
- 21 Billion devices by 2020
- 10-25% CAGR potential through IoT – efficiency, accessibility, speed of execution
- Biggest impact in Operations Management and Predictive Maintenance

Organizational Transformation and Value

Strategy and Plan:

- **Remember – it is about Business value – the “4Ms” – Make Me More Money!**
- **Establish C level Support with strong OT leadership/involvement**
- **Build a Data Driven Culture**
 - Cross-Discipline Stewardship and Governance
 - Develop data accountability
 - Community of Interest to identify and drive towards high value projects/programs
- **Build a strong Operations Technology Framework**
 - Don't rush to implement a “Big Data” infrastructure
 - Evaluate your existing technology - Prioritize systems that capture and provide contextualized, high resolution and standardized data AND/OR can consume actionable data streams from advanced analytic platforms
- **Democratize the Data – Manage Decisions**
 - Automate the easy decisions
 - Get the data to the decision makers quickly and efficiently
 - Measure impact of decisions and feed results back to the system and decision makers



- **Build on what you have**

- Develop Real-time analytics at near-Edge point, but make sure to keep original data streams
- Contextualize your assets through smart asset templates (PI AF is ideal)
- Don't overload SCADA systems

Building accountability and assets description in the IIoT space is foundational to higher level analytics and C level operational knowledge



- **Where to put your technology**

- Edge – On Premises
- Best in Breed applications - Hybrid
- Big Data and Advanced Analytics – Hybrid and/or cloud

- **Integrate New Technology as needed**

- Evaluate your internal expertise, infrastructure and pricing
- Cloud services are very approachable and work together very well, with the right planning



- **“Chart of Accounts for Operations”**

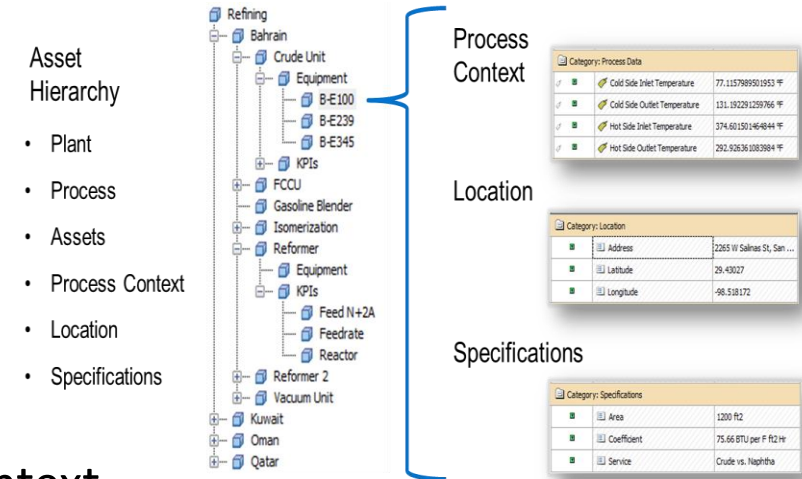
- Standards and Accountability
- Abstraction/normalization, quality checking close to source
- Entire Organization can understand the physical assets and the data they create
- Drives innovation and ability to leverage innovation across the company
- Operational ownership of the data – creation of data driven culture

- **Real-time decisions and Right-time Reporting**

- Asset specific analytics and metrics
- Allow quicker report development
- Automation of decisions and alerts

- **Foundational to BI and Big Data**

- Access to large amounts of high fidelity real-time data adds context
- KPI's can be incorporated to Financial BI at the appropriate level
- Decreases cleansing and contextualization activities in your Data Lake.

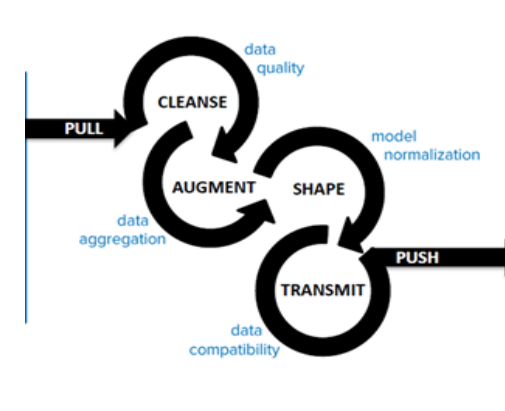


- **Do you need Integrators? YES!**

- Need machine data to be consumable and meaningful to downstream systems
- Verify data quality and integrity and resolve if applicable
- Summarize, normalize and contextualize time series data: Democratizing the Data!

- **PI Integrator for Business Analytics**

- PI System capability out of the box tools for **Cleansing**, **Augmenting**, **Shaping**, **Transmitting** PI System Data (CASTing)
- Eliminates the need for multiple third party tools and programming expertise
- Creates structured “records” for downstream systems and applications
- Significantly reduces the preparation time leveraging PI AF for context & normalization



Best Practices and Lessons Learned

Case Studies - Real time data pipeline feeds multiple destinations

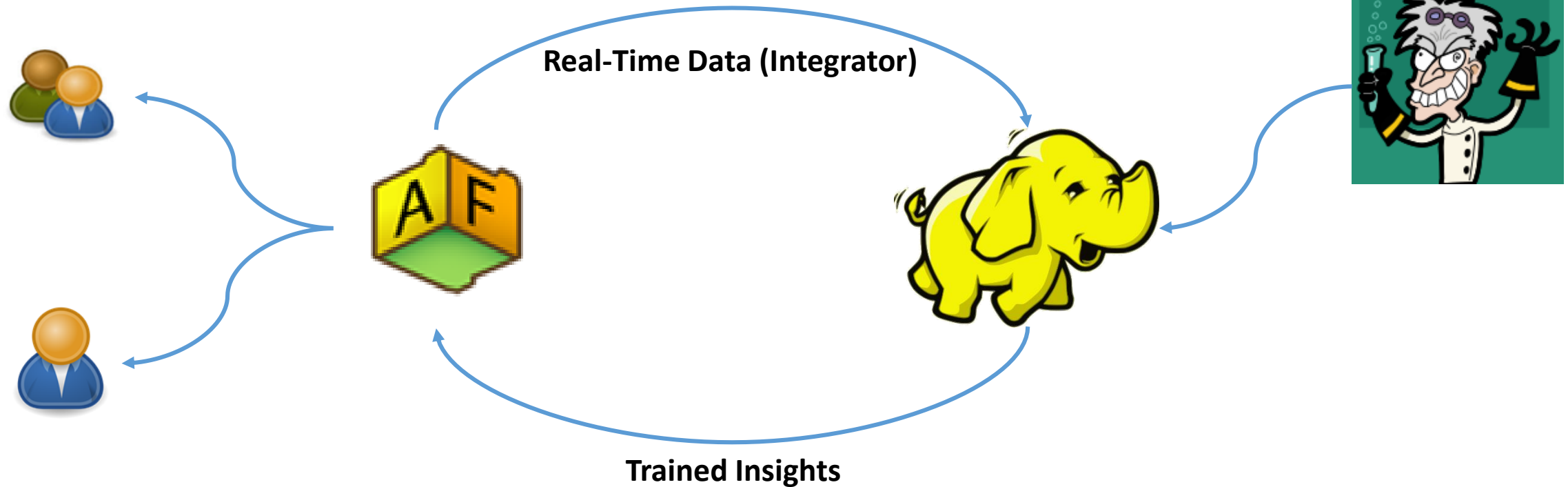
- Alarming at the Edge - notify field and office personnel.
- Live data available for engineers. (Coresight)
- Historical data used for input to regulatory system. (PI AF ties to Corporate Assets)



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Case Study – Bi-directional pipeline with Big Data platform

- Time series data processed with Big Data platform, finding insights.
- Model extracted from Big Data platform used in real time system to bring insights to decision makers before data goes “dark”. (PI Analytics)



- **Embrace IIoT** - Operations must OWN their data and realize the value of their Data Assets.
- **Value Creation** - Identify projects that will move the needle. Always drive towards value!
- **Culture** - Gain support from your C level and create a data-driven culture.
- **OT** - Focus on improving your Operations Chart of Accounts (Operational Technology Infrastructure – PI AF)
- **Democratize the Data!** Get actionable insights in the hands of decision makers.

