



Filippo Zerbini
19 Aprile 2017

DIGITAL TRANSFORMATION WITH COMPETITIVE EDGE **Honeywell**

Per andare dove dobbiamo andare... per dove dobbiamo andare?...

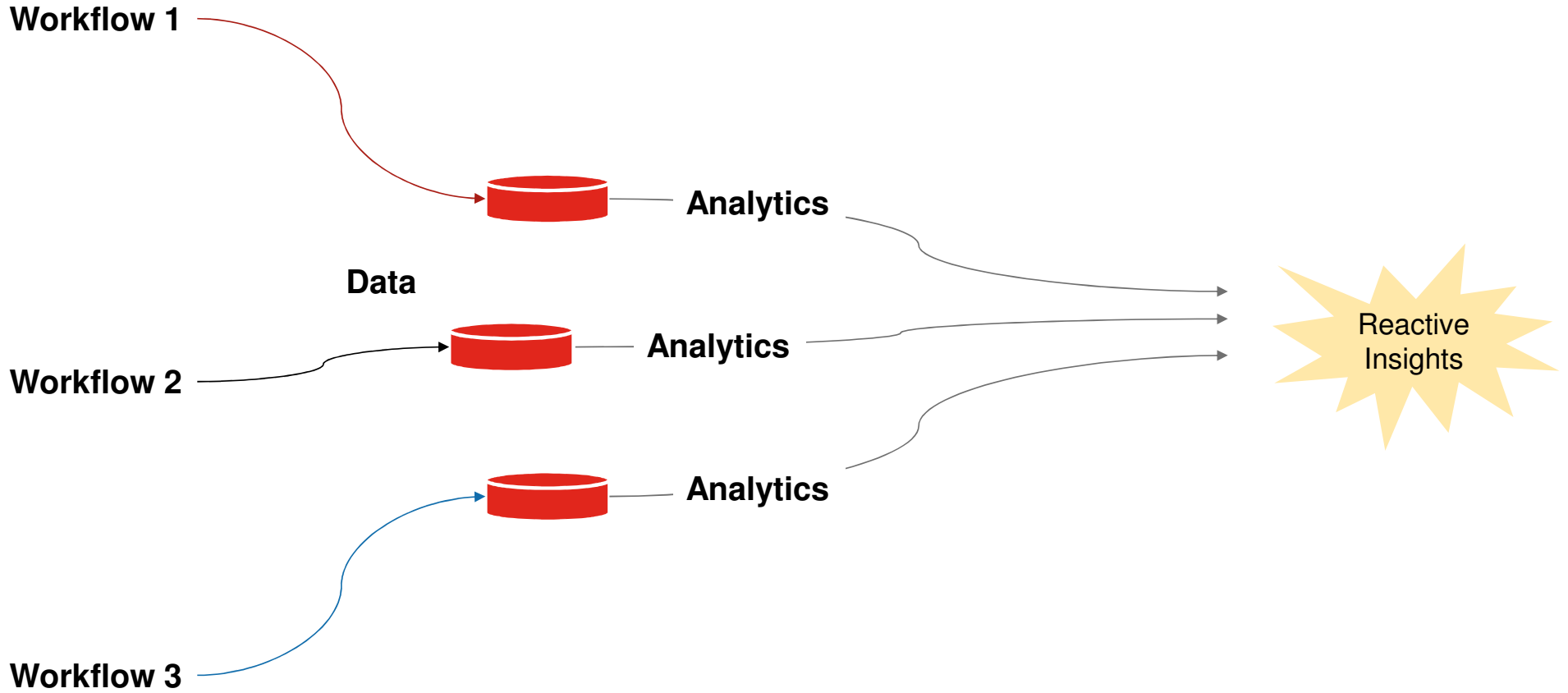
1



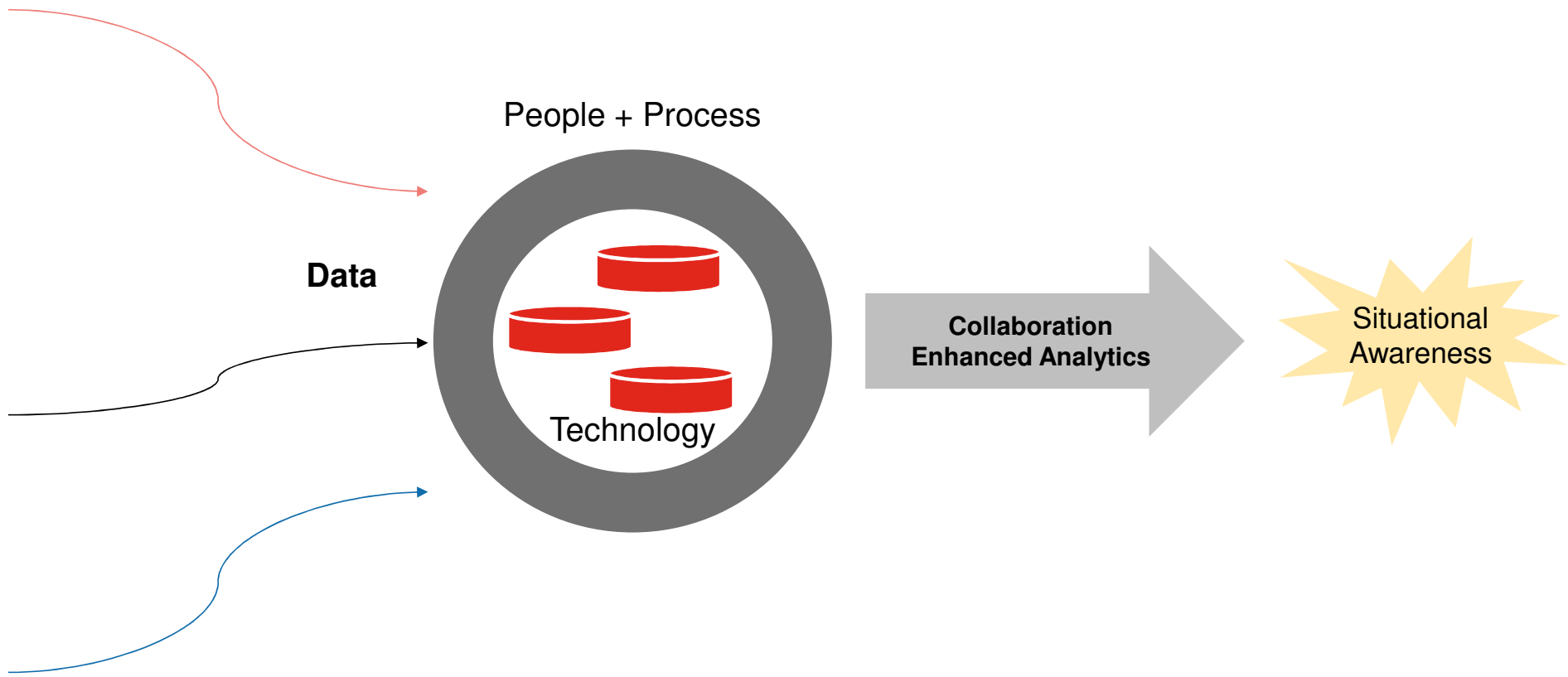
Agenda

- **1. Honeywell Connected Plant**
- 2. Digital Transformation
- 3. Architecture
- 4. Analytics
- 5. Visualization
- 6. Integration
- 7. Infrastructure
- 8. Getting Started

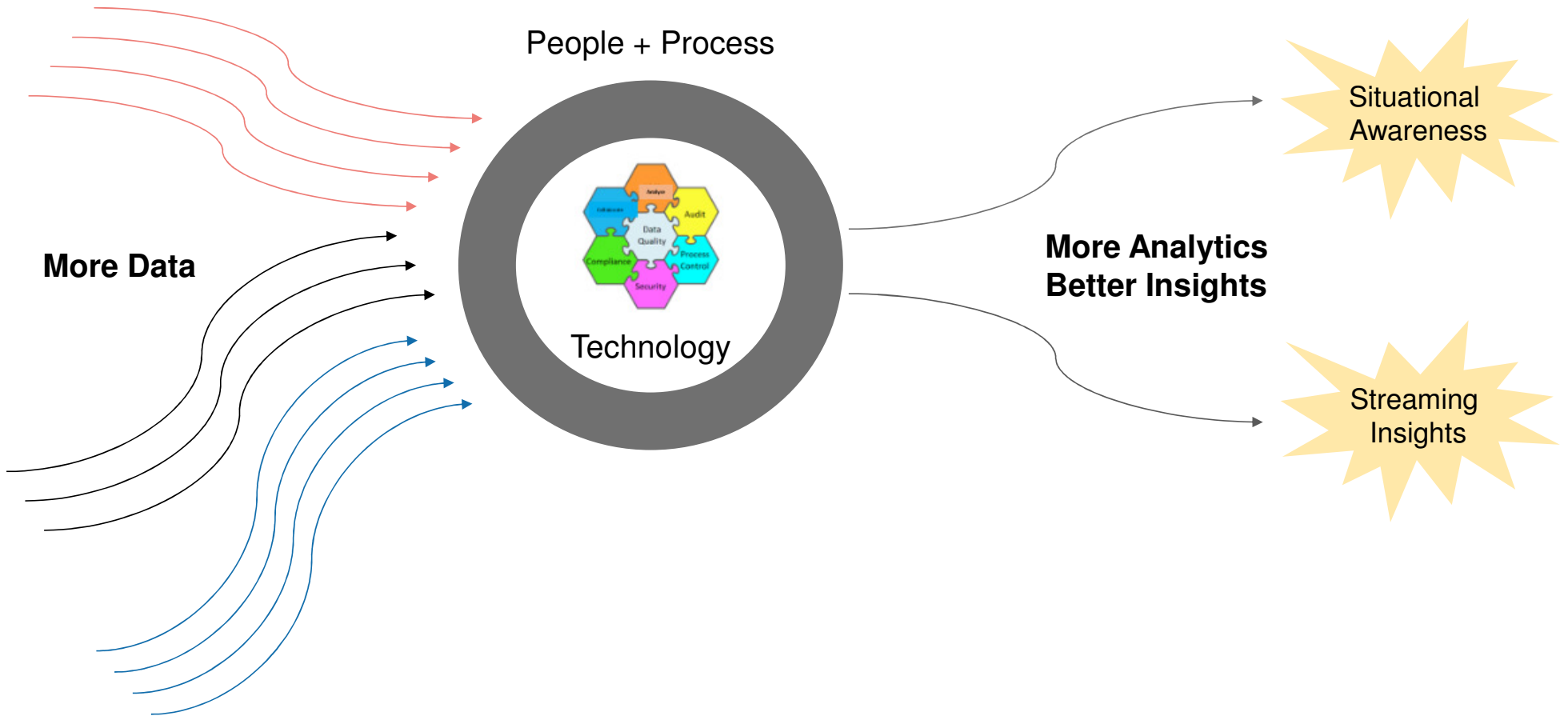
Past Trend



Current Trend



Future Trend



Honeywell Connected Plant - Value Proposition

Deliver and sustain improvements in our **customers' profitability** by increasing throughput & yield at lower cost via:



Integrated Safety
& Cyber Security



Increased Production
Efficiency



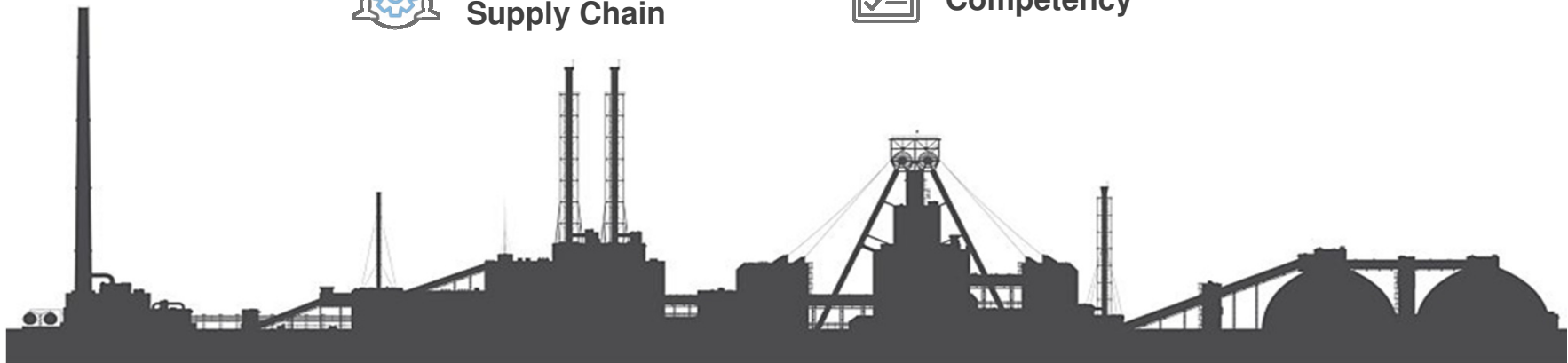
Improved Process
Reliability



Optimized
Supply Chain



Workforce
Competency



Connected Elements

Unequaled Equation For Success



- Domain expertise
- Data in context
- System optimization via analytics

+



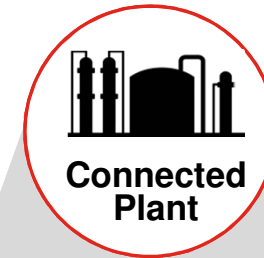
- External expertise & capabilities
- Aggregate and collaborate on all relevant data w/ analytics

+



- HPS Solutions to execute/ maintain improvements
- Enhanced decisions via data analytics
- Worker safety & compliance

=



- Unmatched industry offering
- Unique value prop
- Robust platform to attract “app” development & monetization

Agenda

- 1. Honeywell Connected Plant
- **2. Digital Transformation**
- 3. Architecture
- 4. Analytics
- 5. Visualization
- 6. Integration
- 7. Infrastructure
- 8. Getting Started

Vediamo chiaramente dove andare e siamo “attrezzati”?



Digital Transformation

Industry 4.0

Cloud

Industrial
Internet of Things

Digital Transformation

Data
Analytics

Mobility

Big Data

Distributed Control Systems Are the Earliest Form of IIOT



Thousands of Sensors

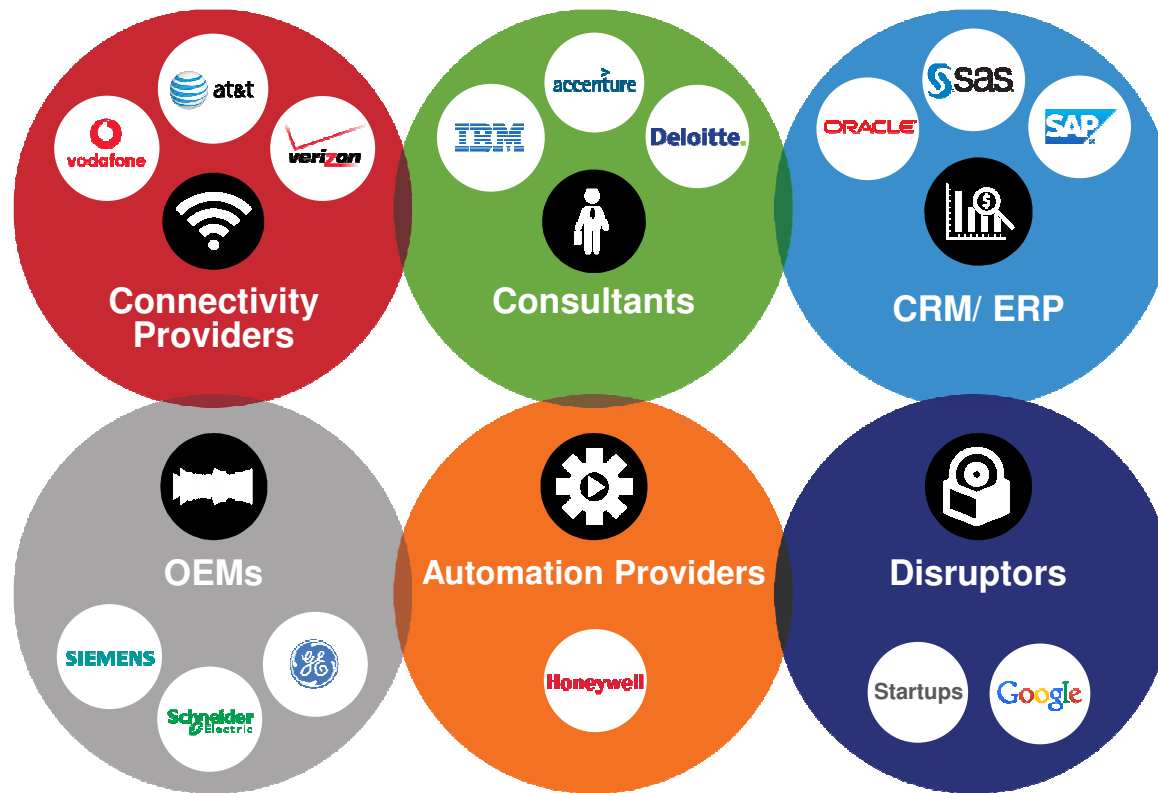
Millions of
Values per
Minute



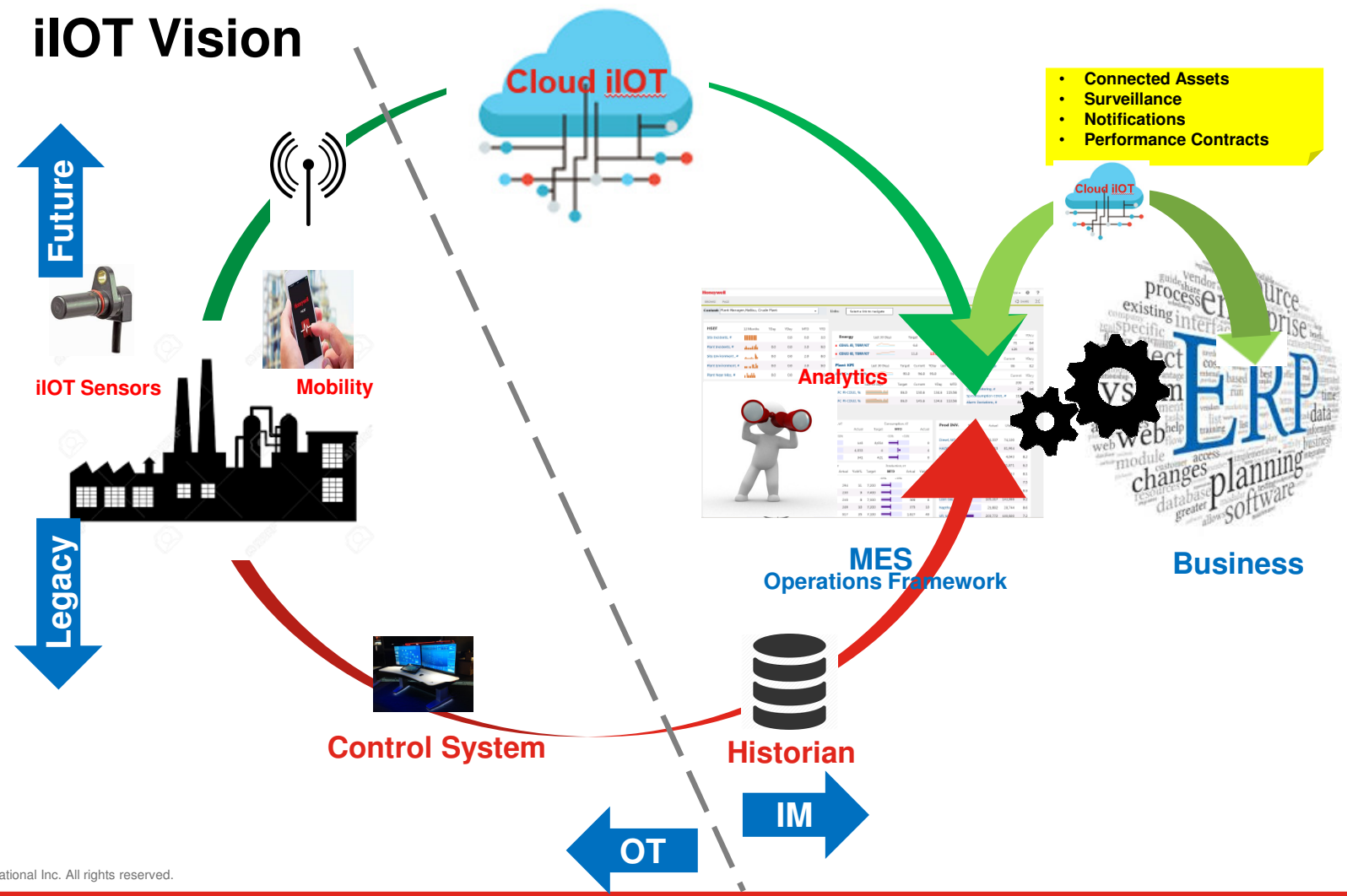
Analyzed, Processed, and Actioned

Where Can We Go From Here?

Evolving Industrial Internet Landscape



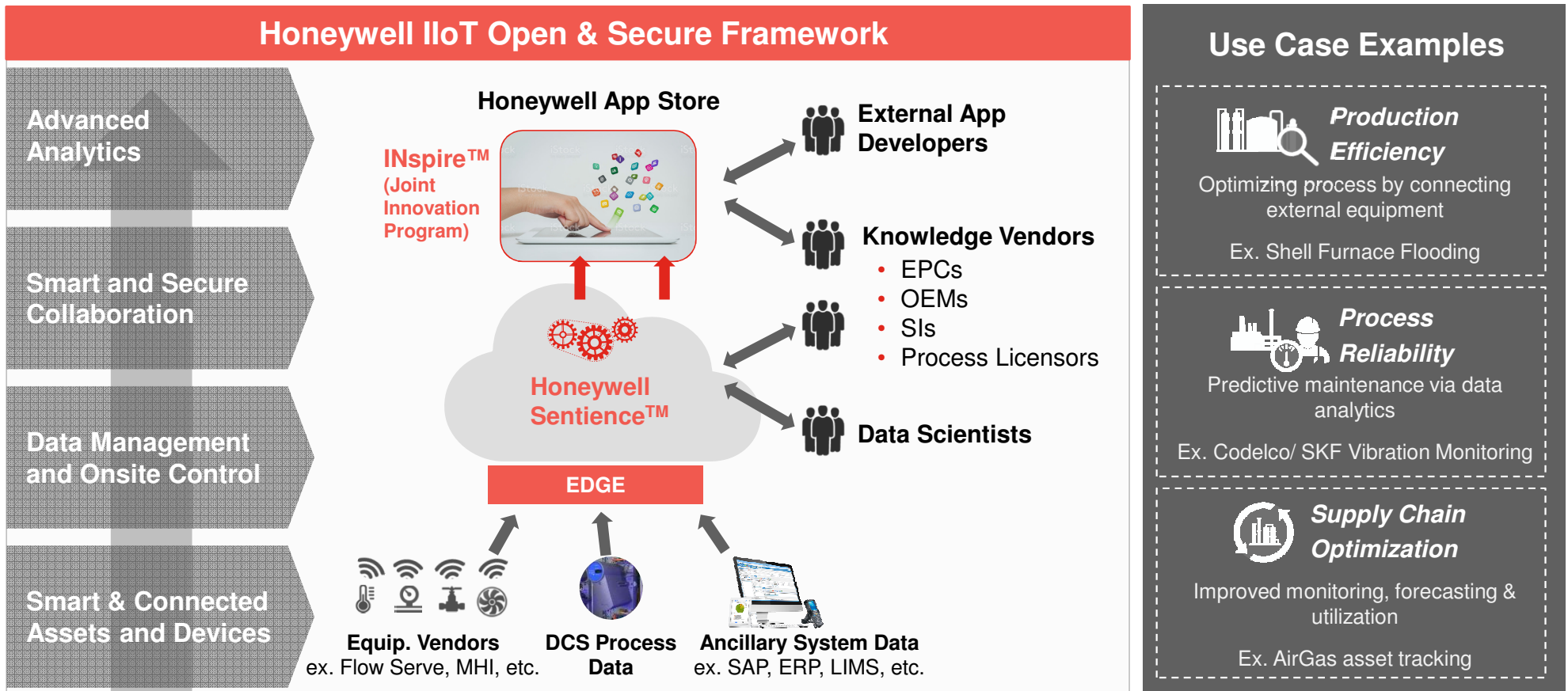
iIOT Vision



© 2015 by Honeywell International Inc. All rights reserved.

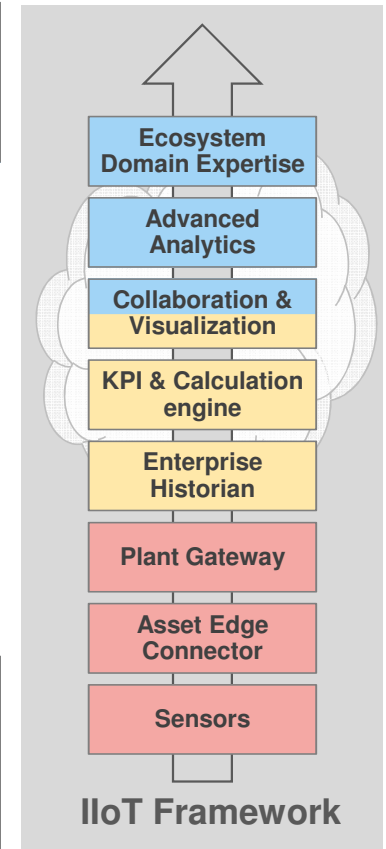
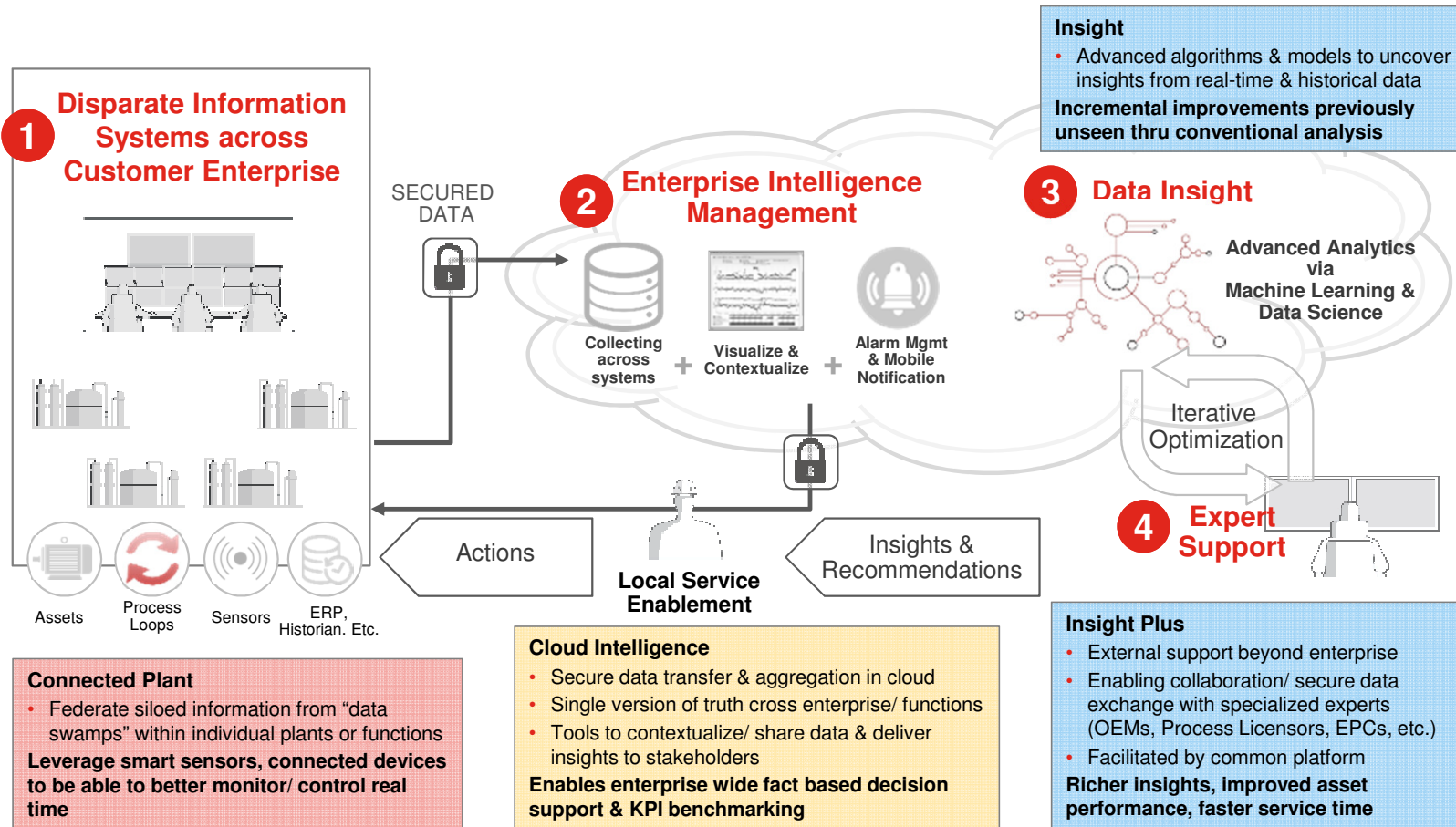
Quality, Yields, Safety, Margins

What does Digital Transformation (IIoT) look like?

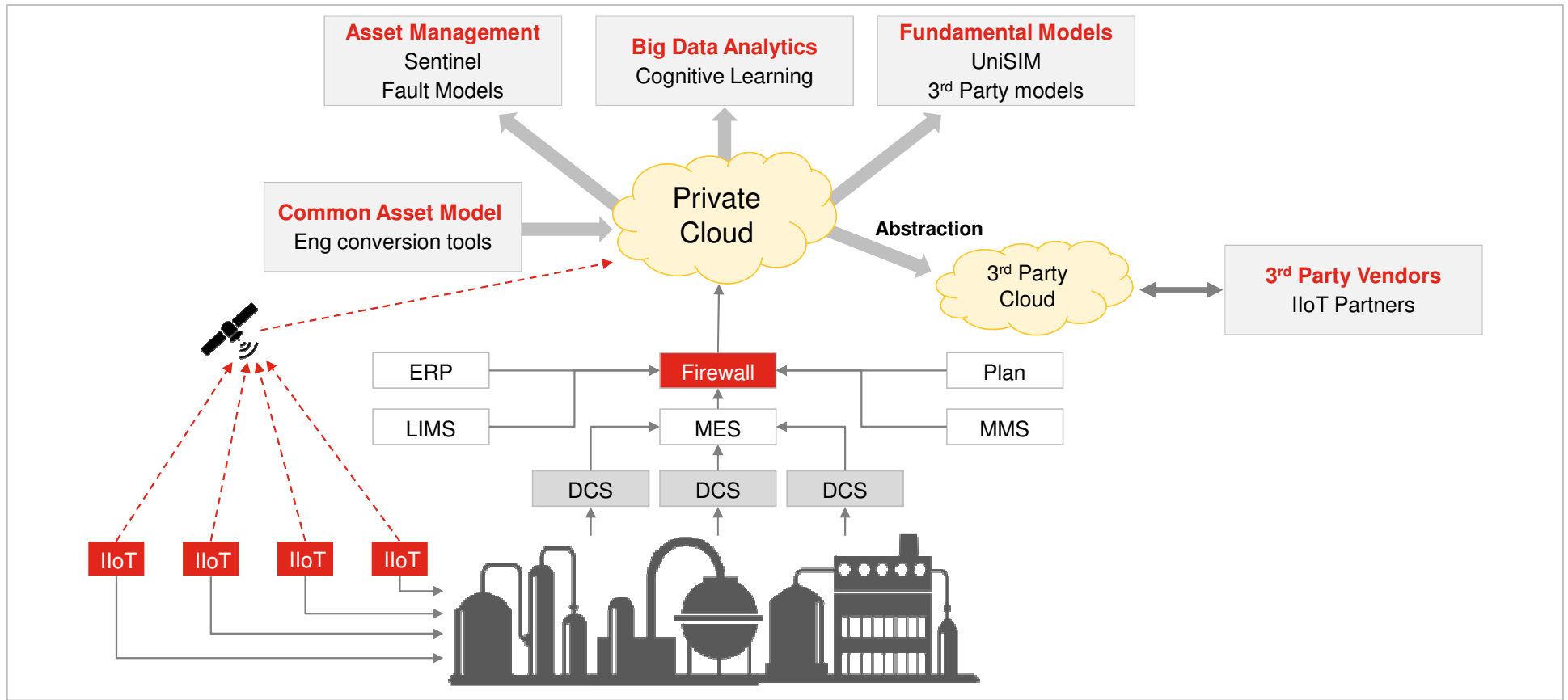


Ecosystem Critical to Add Domain Knowledge to Solve Challenging Problems

IloT by Honeywell – Driving Value

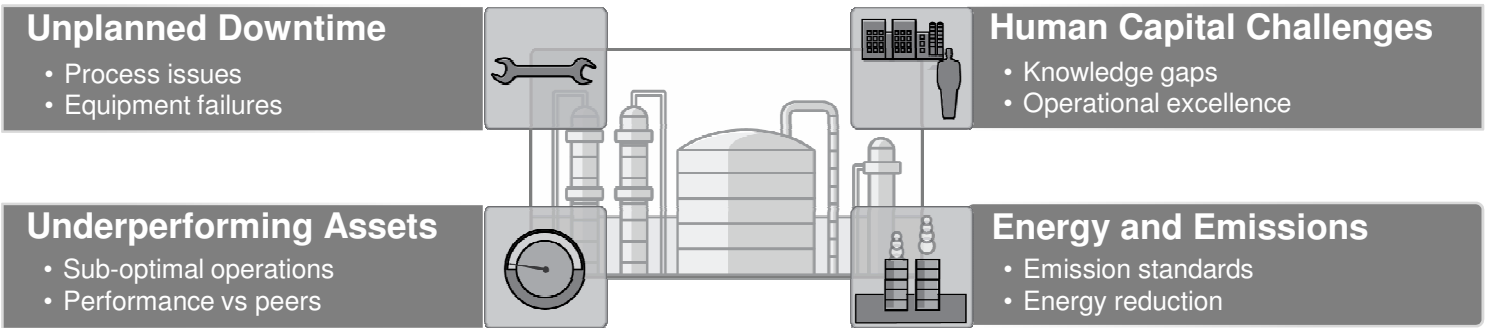


Honeywell Connected Plant – An Integrated approach

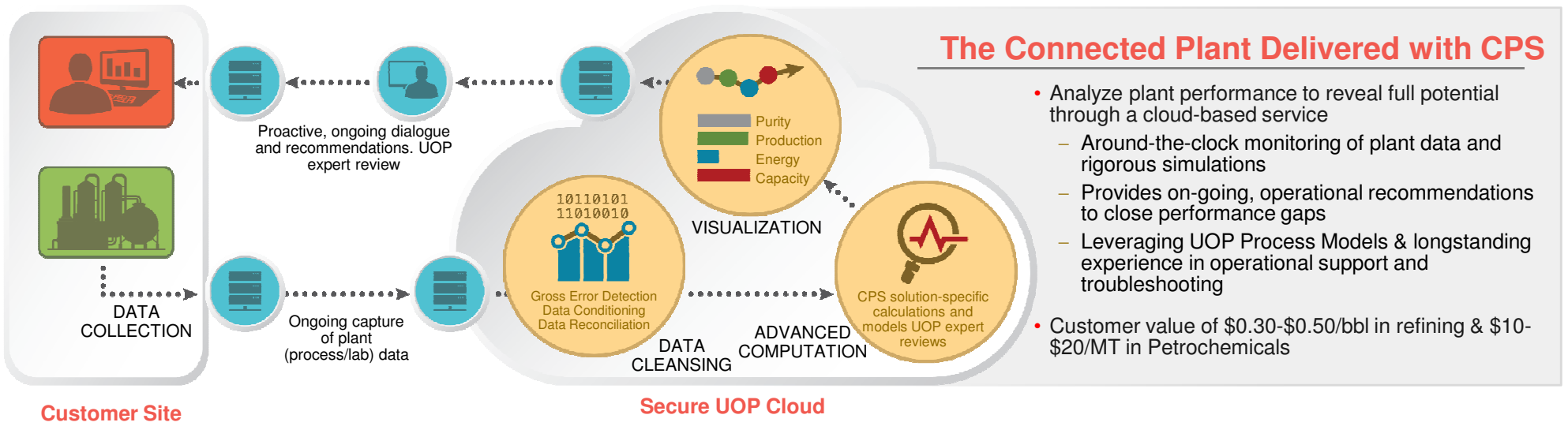


Connected Performance Services

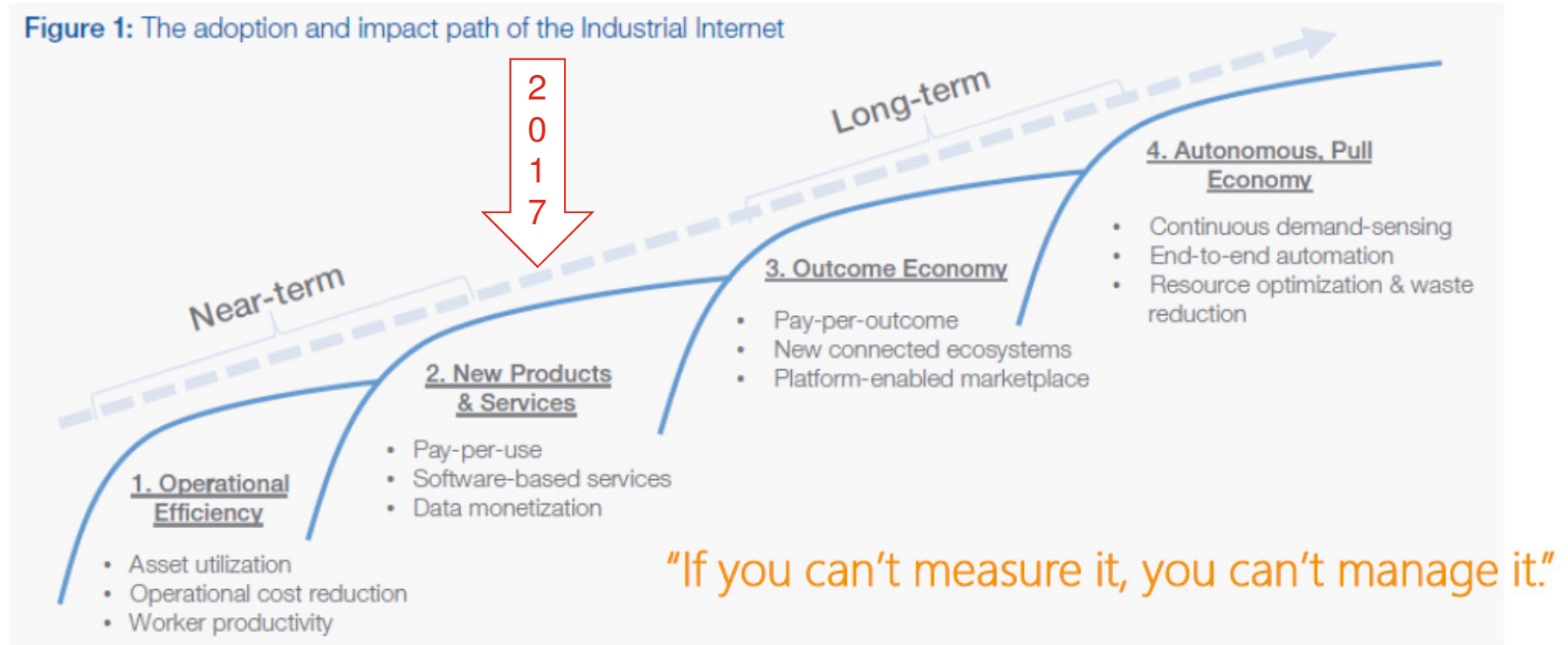
Key Customer Challenges



CPS Architecture



Honeywell – IIOT Strategy



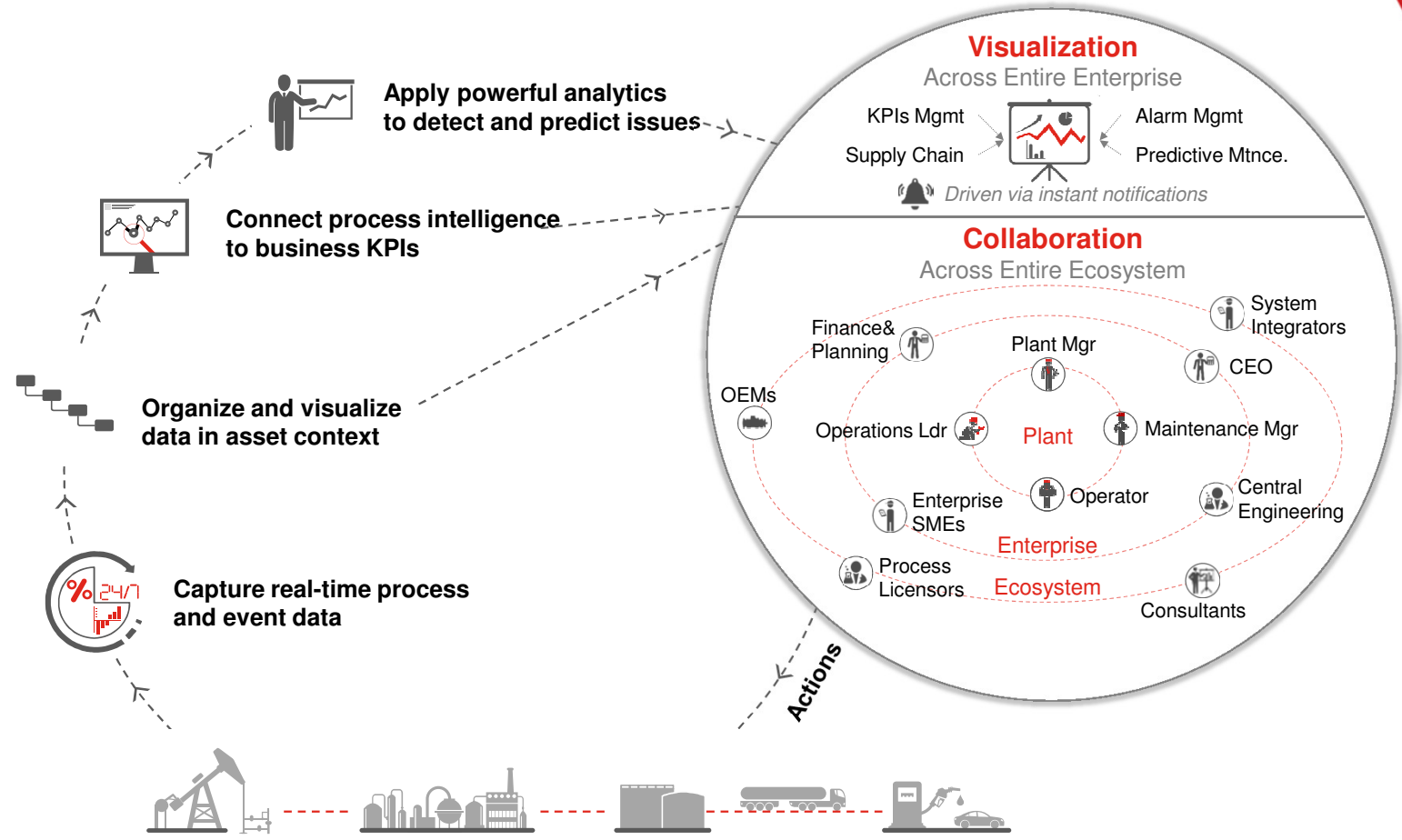
World Economic Forum, January 2015, Industrial Internet of Things: Unleashing the Potential of Connected Products and Services

Agenda

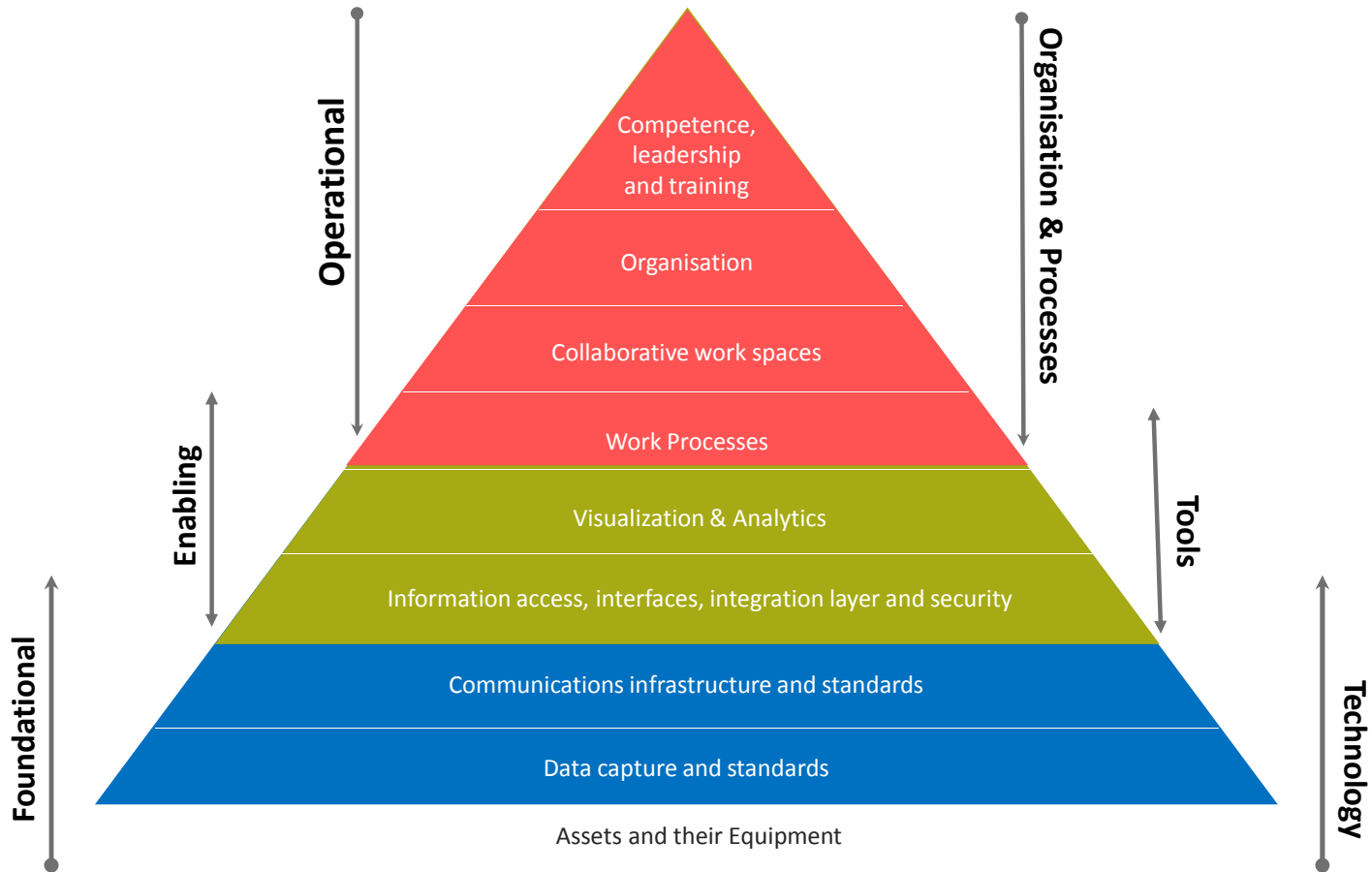
- 1. Honeywell Connected Plant
- 2. Digital Transformation
- **3. Architecture**
- 4. Analytics
- 5. Visualization
- 6. Integration
- 7. Infrastructure
- 8. Getting Started

Digital Intelligence

- Advanced Analytics
- Smart and Secure Collaboration
- Data Management and Onsite Control
- Smart & Connected Assets and Devices



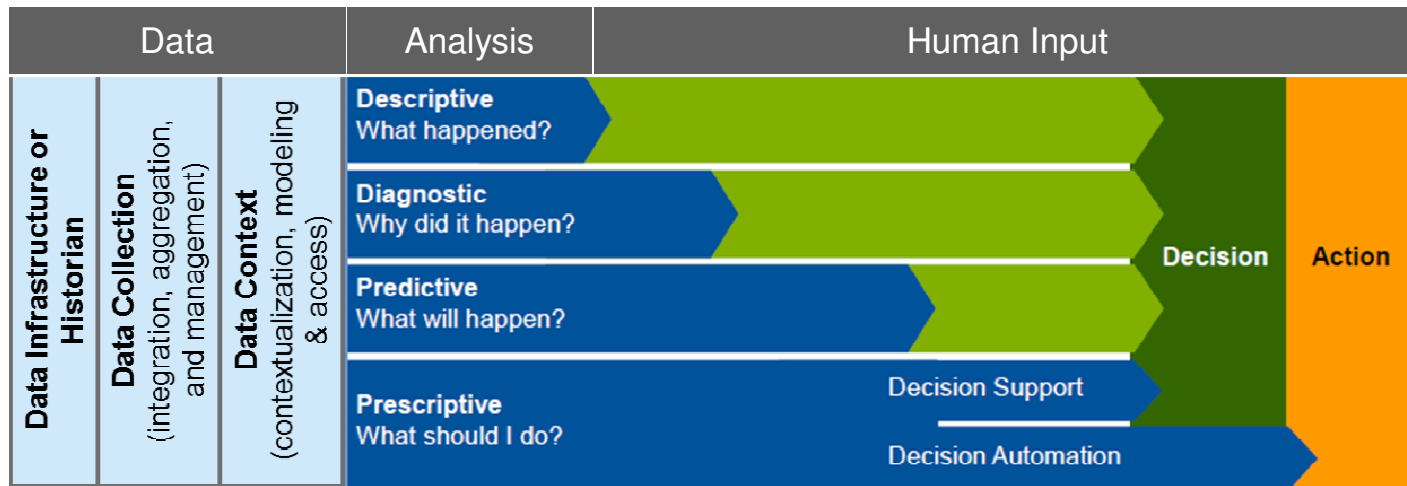
Digital Elements



Agenda

- 1. Honeywell Connected Plant
- 2. Digital Transformation
- 3. Architecture
- **4. Analytics**
- 5. Visualization
- 6. Integration
- 7. Infrastructure
- 8. Getting Started

A Pragmatic Definition of Data Analytics



The goal of analytics is to provide information for **improved decisions and actions** for economic benefit.

Note that maximizing automation and minimizing human input are *not* always the goals → analytics should be suited to the use case.

Graphic from "Big Data Industry Insights", Lisa Kart, Gartner webinar, 2015.

Honeywell Confidential - © 2016 by Honeywell International Inc. All rights reserved.

Honeywell

Analytics: Asset Health, Process Performance and People

- Make faster decisions with better insights
- Convert tacit knowledge into explicit knowledge
- Link day to day actions to high level business goals

People Productivity



Excellence by Digital Transformation



Process Performance

- Improve process efficiency
- Reduce capacity loss
- Reduce energy spend

- Improve Overall Equipment Effectiveness (OEE)
- Increase asset utilization
- Identify underperforming assets



Asset Health

Uniformance Asset Sentinel Goal & Values

Current Situation

- Known knowledge are documented and trained but unknown knowledge leading to adhoc actions or failures
- No visibility or understanding on where Operations or maintenance against design at all loads

Challenges

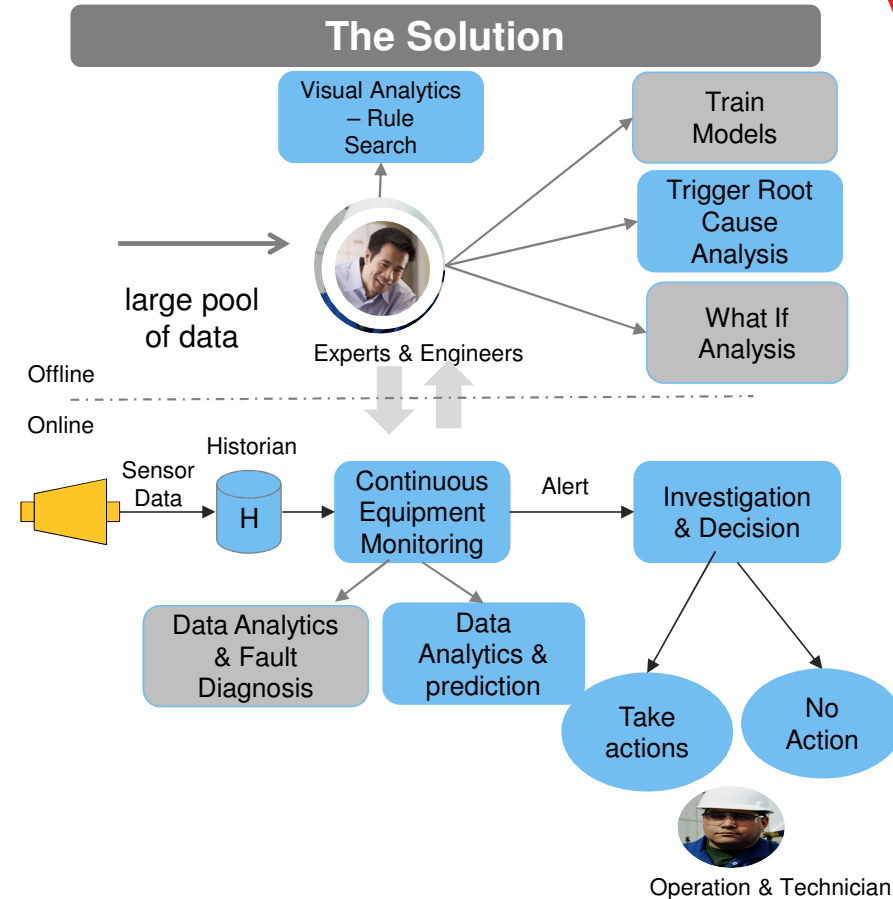
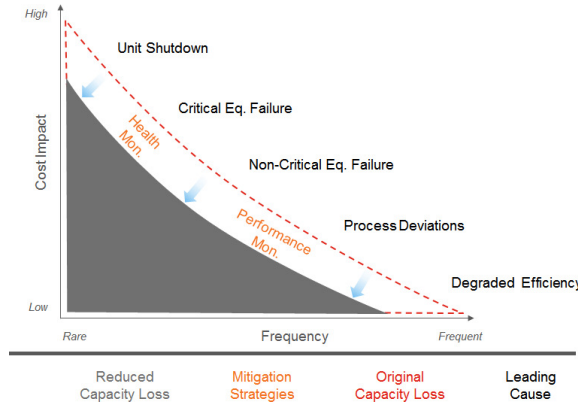
- 1 Silo Operations, data, decisions
- 2 Experts are few
- 3 Continuous improvements automation

Goal

- Improve the effectiveness of asset, people and process to keep the overall reliability & performance of plant at higher level with optimal cost of running.

Value

- Improved performance by triggering appropriate corrective action early
- Knowledge Repository & Reuse
- Reduced Opex & Capex
- SME collaboration in monitor models



Type of Monitoring & Examples

- **Equipment Performance Monitoring (Reliance)**
Example : Compressor Performance Monitoring
- **Overall Equipment Monitoring (Aramco)**
Example : Fired Heater Performance (1st Principle), Fault monitoring : simple rules, time window based rules, predict time to fail based on online real time regression function in Sentinel
- **Equipment Health Monitoring (Shell Bridge)**
Example : Choke Value Leak detection using dynamic pattern detection (dynamic PCA)
- **Instrument Health Monitoring (Suncor)**
Example : Smart Temperature control valve (device diagnostics & NAMUR)
- **Process Performance Monitoring (Glatfelter)**
Example : Generate control limits based on user baseline definition of a golden run in Sentinel and report deviation to operator
- **Energy Monitoring (RepSol)**
Example : Dynamic target model for CDU , energy aggregation and identify actionable events to improve overall energy efficiency
- **Rigorous Optimization service (CPS-UOP)**
Example : Platforming model – data preprocessing , Fault detection and leverage Unisim Link for data reconciliation, Parameter estimation, Optimization

Agenda

- 1. Honeywell Connected Plant
- 2. Digital Transformation
- 3. Architecture
- 4. Analytics
- **5. Visualization**
- 6. Integration
- 7. Infrastructure
- 8. Getting Started

HSEF

Total Safety Incidents



6

Total Environmental Incidents



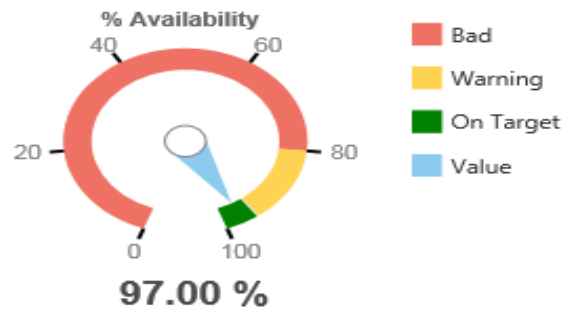
5

Near Misses



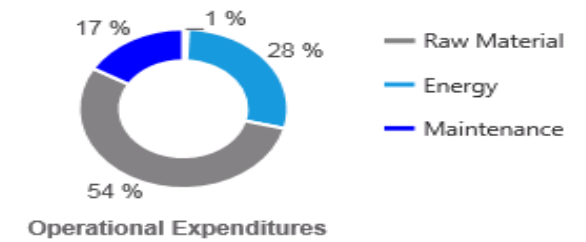
1

MAINTENANCE

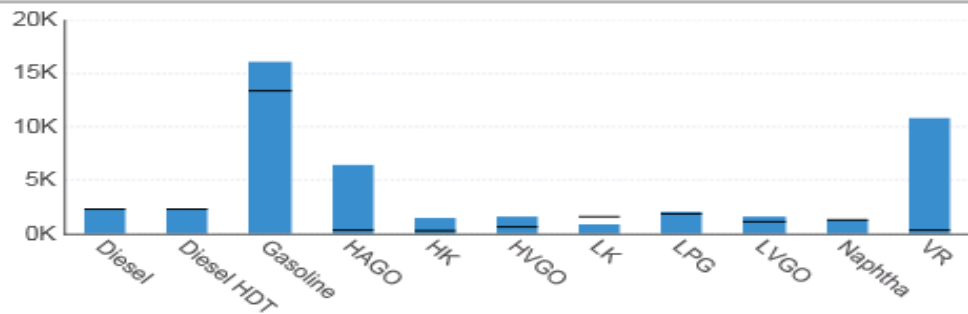


FINANCIAL

	Value	Target
Contribution (\$)	160,90	58,125



PRODUCTION (MT)

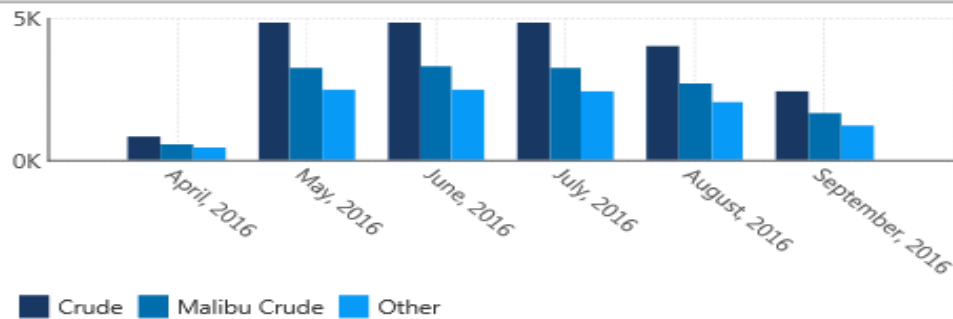


INVENTORY

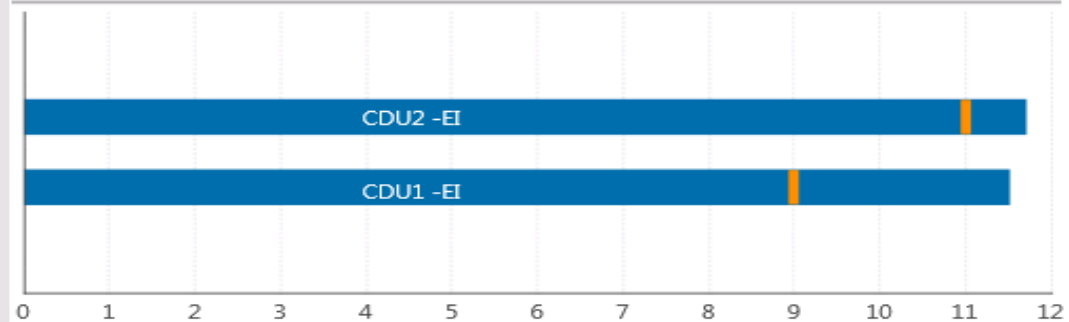
PRODUCT



FEED



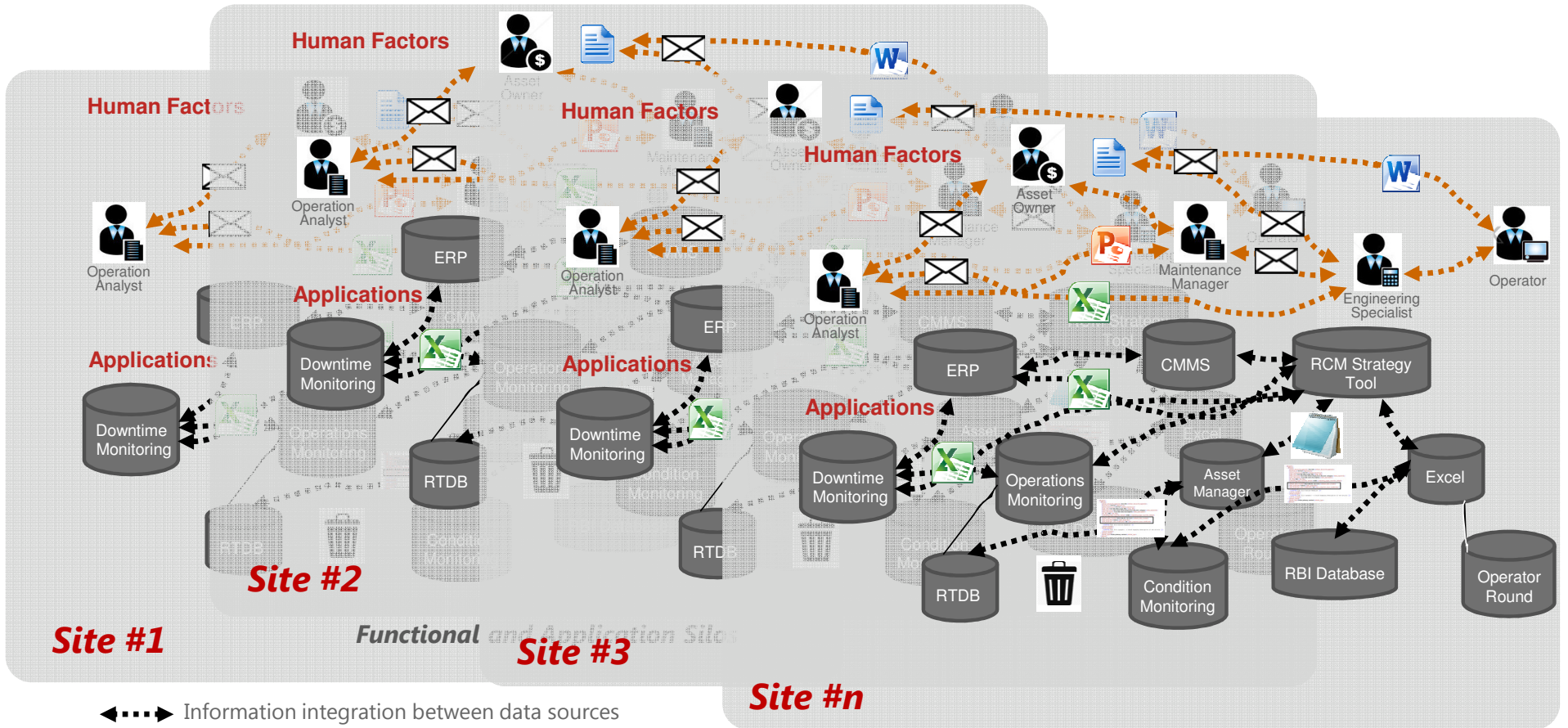
ENERGY INDEX



Agenda

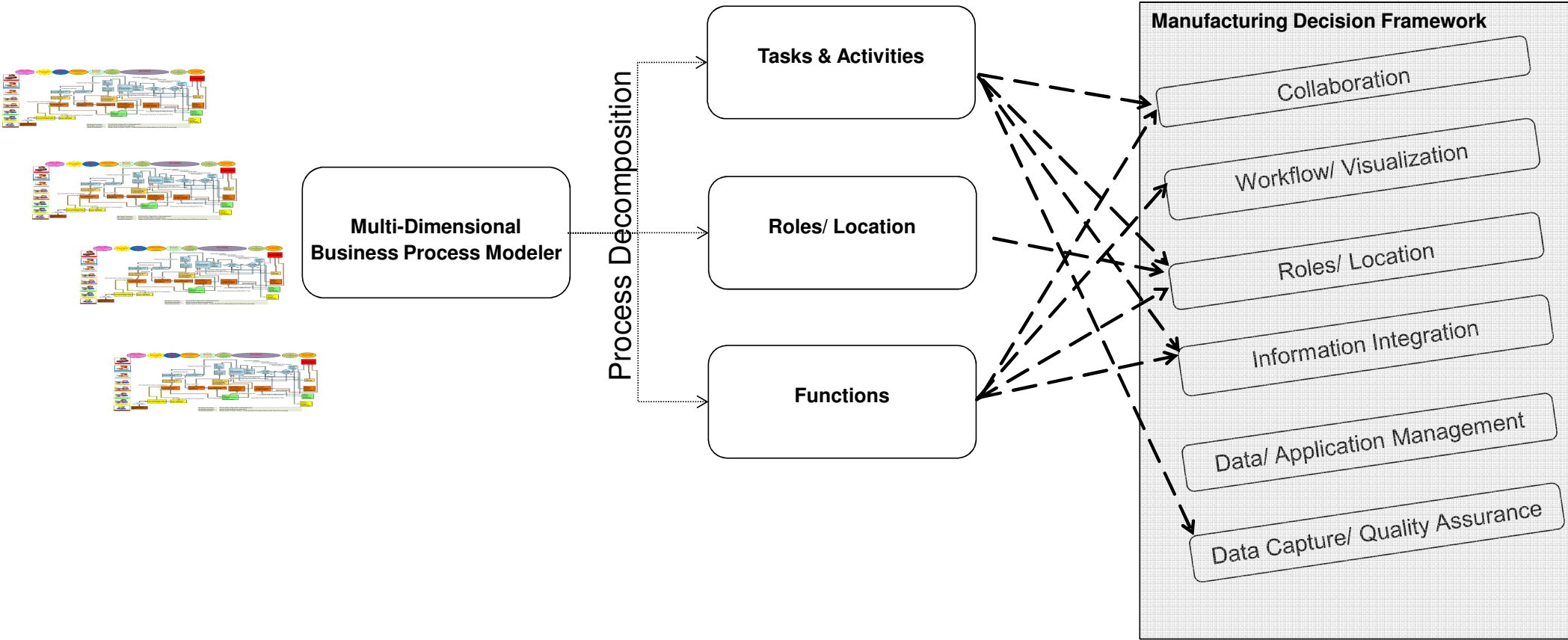
- 1. Honeywell Connected Plant
- 2. Digital Transformation
- 3. Architecture
- 4. Analytics
- 5. Visualization
- **6. Integration**
- 7. Infrastructure
- 8. Getting Started

Typical Integration Challenges



- ◄---► Information integration between data sources
- ◄---► Collaboration between individuals
- ◄---► Integration between applications needs intensive consulting & guidance *not shown in diagram*

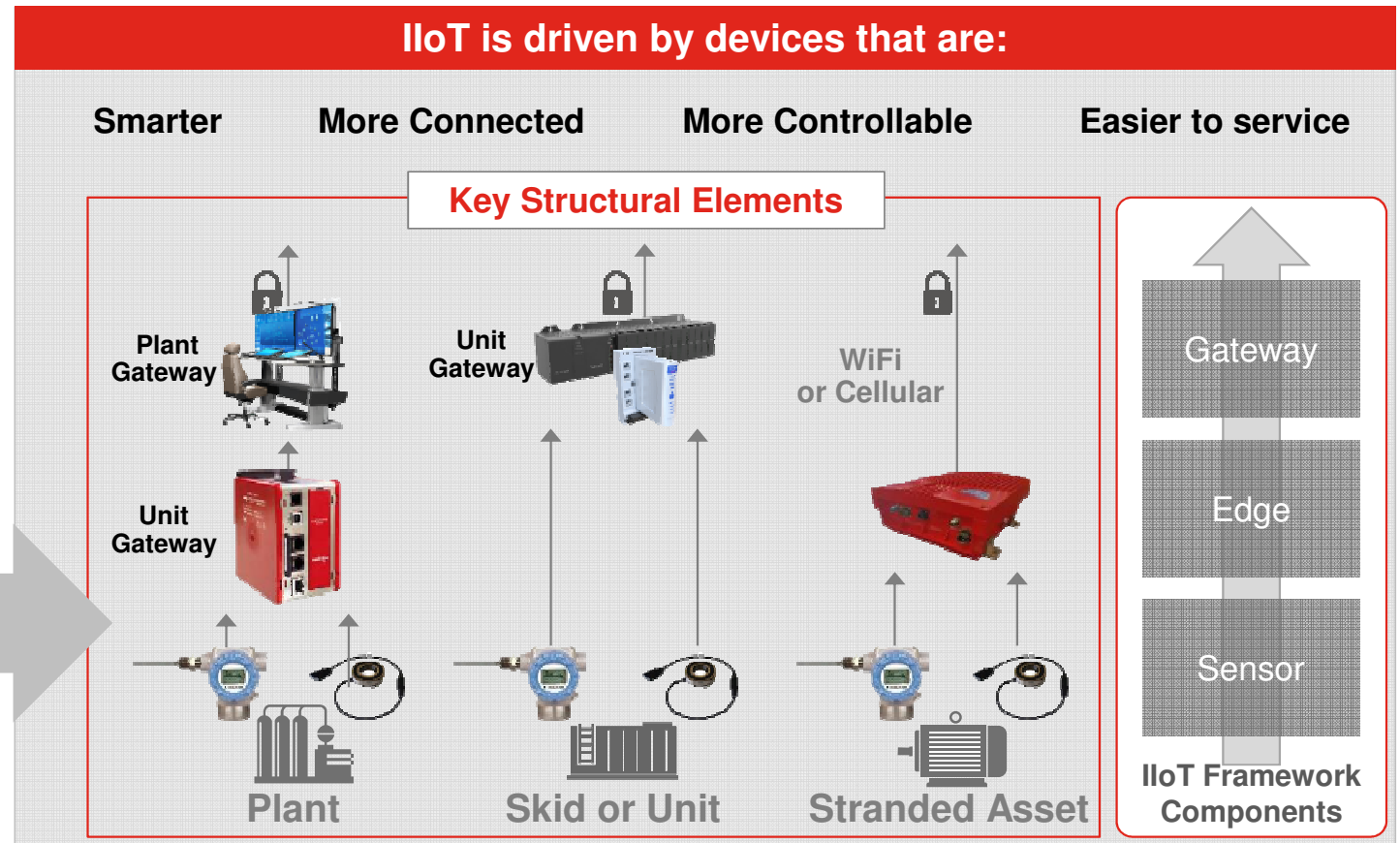
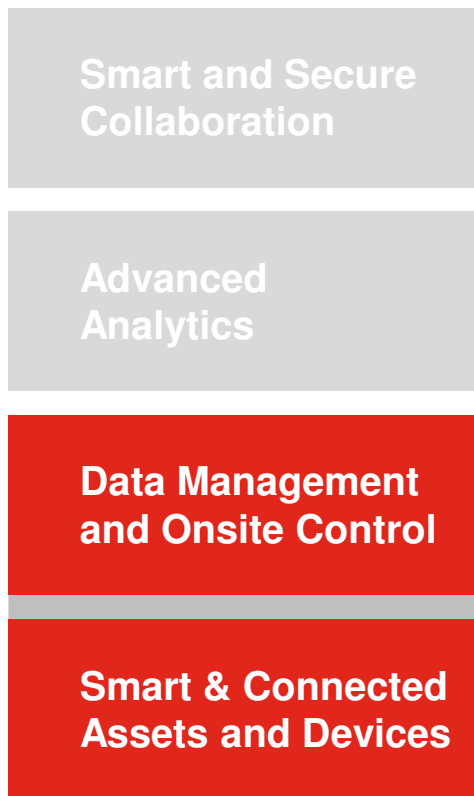
Honeywell Methodology – Business Process Modeler



Agenda

- 1. Honeywell Connected Plant
- 2. Digital Transformation
- 3. Architecture
- 4. Analytics
- 5. Visualization
- 6. Integration
- **7. Infrastructure**
- 8. Getting Started

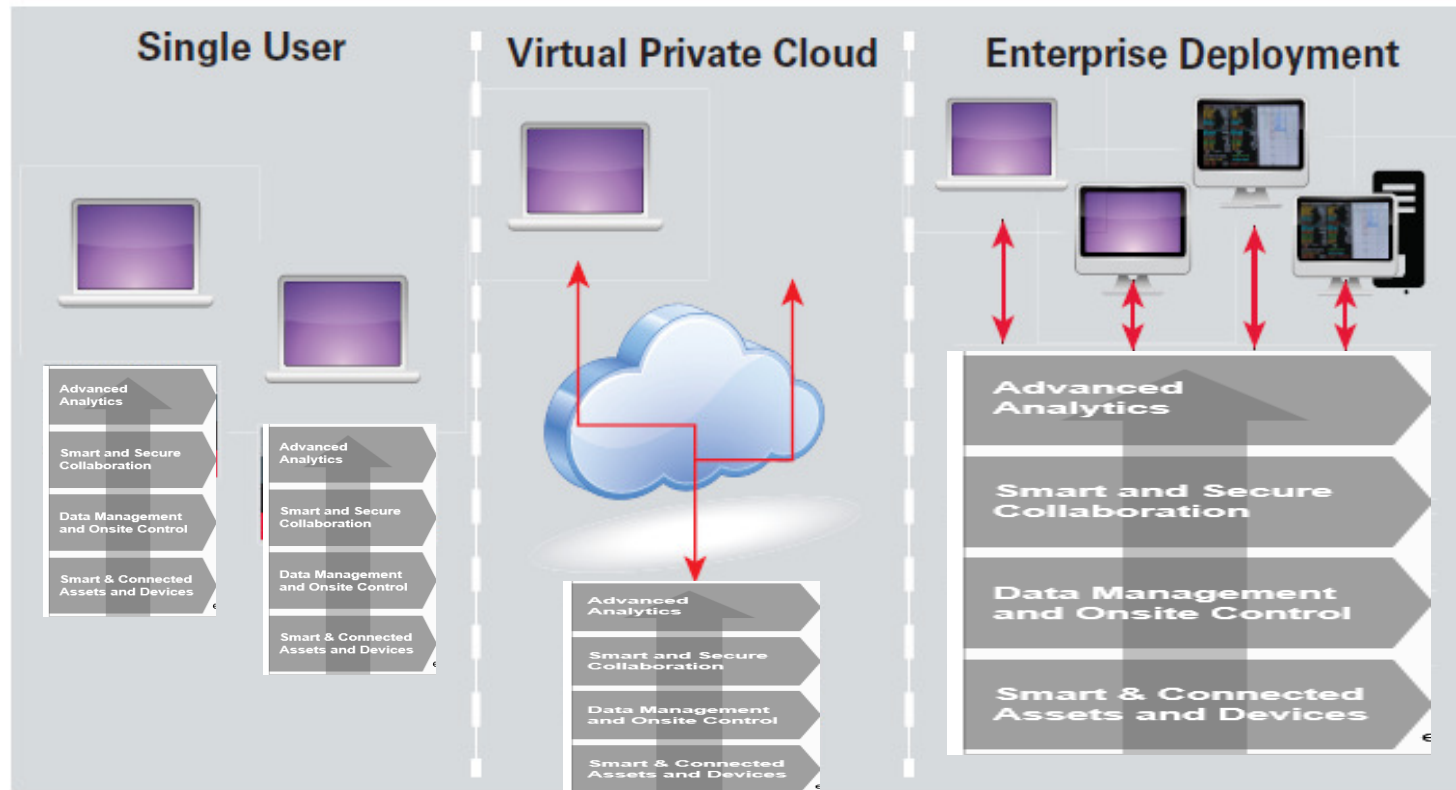
IloT by Honeywell Structure



Honeywell Confidential - © 2016 by Honeywell International Inc. All rights reserved.

Building off elements that you already have to enable IloT

Enabling Infrastructure Options

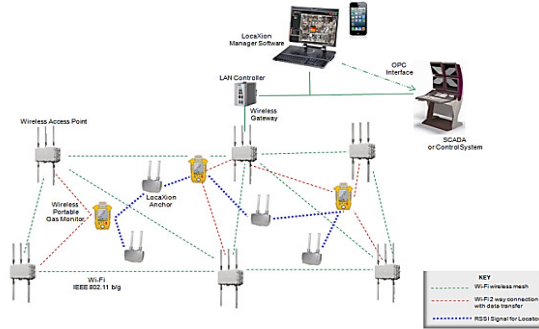


HON Solution – Connecting Workers With Workplace

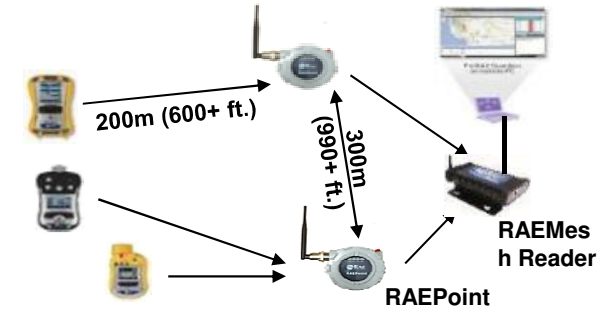


CONext safety solution – connectivity options

WiFi Infrastructure



MESH Network



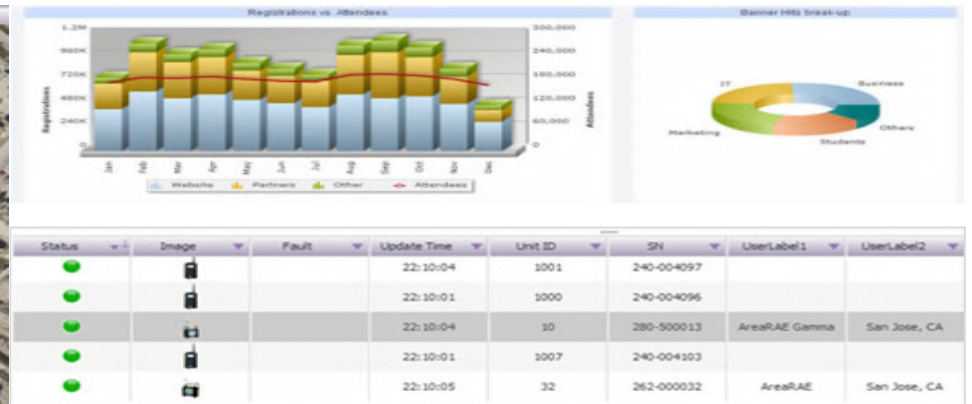
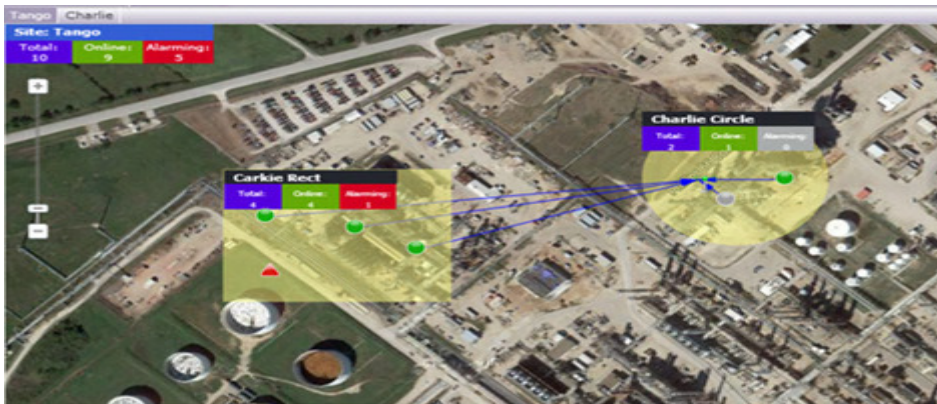
Alarm Notifications

Map Displays

Decision Aid

Plume Modeling

Data Integration



Agenda

- 1. Honeywell Connected Plant
- 2. Digital Transformation
- 3. Architecture
- 4. Analytics
- 5. Visualization
- 6. Integration
- 7. Infrastructure
- **8. Getting Started**

Getting Started



Blueprint for digital success



PWC: Industry 4.0: Building the digital enterprise



Honeywell

**Digital Transformation to help improve
performance, availability, reliability and safety**

www.hwi.co/IIoT