Putting the Industrial Internet to Work: How to start, where to focus

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GE Digital Plants

500,000+ Nodes
100 Countries
40 Industries
~18,000 Customers

- Affects 65% of car production in North America
- Controls 60+% of hydroelectricity produced in US
- Improves efficiency in 50+ breweries across 15 countries
Global IIoT trends impacting Manufacturing

Circular Economy

Analytics in The Cloud
Digital is an enabler of the Circular Economy

SOURCE: https://www.government.nl/topics/circular-economy/from-a-linear-to-a-circular-economy
The Circular Economy

**Build Equipment with secondary materials**

**Operate Equipment while optimizing resources**

**Service / Circulate Equipment & Parts**
- Maintain, reuse, and remanufacture assets and parts

**Circulate Materials through cross-industry material loops, indefinitely**

**Discover** production byproduct and waste with a digital value stream map sitting on digitized production processes

**Reduce** production waste through advanced analytics and defect/anomaly prediction

**Monetize** production waste through closed-loop partnerships; predict and forecast waste as raw material

**Optimize** energy and utilities usage through analytics and operational models

**Maximize** equipment utilization and lifetime with predictive, prescriptive maintenance

**Translate** maintenance requirements into supply chain actions

**Monitor** equipment and parts as they are reused, refurbished, and remanufactured

**Predict** and forecast waste/byproduct as input to next generation equipment

**Connect** across value networks for omnidirectional flow of material, information, and financials required for circular supply chain & operations
$700 billion
Factory of the Future: Where to focus?

- Digital Factory Operating System
- Intelligent Line Process Control
- Intelligent Line Maintenance
- Intelligent Line Scheduling
- Cobots and AGV’s
- Digital Twin
- Augmented Reality

From HMI/SCADA to APM
<table>
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<th>What’s getting in the way?</th>
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<td>Fragmented and Untapped Data</td>
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<td>Lack of Visibility Across Processes</td>
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<td>Outdated Information</td>
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<td>Prone to Human Errors</td>
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<td>Lack of Broad Access to Shop Floor Info</td>
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<td>Information in Silos</td>
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<td>Difficult to See Information in Time to</td>
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<td>Accommodate Changes</td>
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<td>Delays for critical data to reach decision</td>
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<tr>
<td>makers</td>
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<td>Aging workforce</td>
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How does “going Digital” help?

Operate
Make it easier to operate industrial equipment and systems to deliver the right results

Analyze
Analyze industrial data to derive actionable insights from point of impact to c-suite

Optimize
Use data to Optimize assets, operations, and processes to reduce waste and improve results

Operational data fuels analytics
Analytics drive optimization
Closed loop control & automation

Enable at Speed & Scale
A common platform to enable enterprise scale industrial applications

Predix “Edge to Cloud” Platform with industrial security capabilities
Connect, Store, Analyze capabilities required for mission-critical industrial applications
Give operating teams the digital tools to improve their results

**Power in the hands of the people**

Early adopter of digital tools

Chose a scalable solution

Operating teams have easy, flexible access to their manufacturing data for decision making

Mobile devices for real-time interaction
Aggregate data for increased insights

With GE Digital’s Predix Manufacturing Data Cloud, P&G is consolidating and transforming manufacturing data across plants for cloud storage, analysis, and analytics.

P&G has already gained a detailed, data-supported view into their manufacturing processes providing insights that drive efficiencies.

The new Predix MDC solution is helping the company meet data compliance regulations and significantly increase the speed of its on-premise MES.
Choose a scalable Edge to Cloud architecture

- Edge-based analytics detect anomalies and filter cloud data
- Cloud dashboards and analysis monitor and optimize operations

- Increased equipment uptime by 97%
- Reduced unscheduled downtime by 300%
- Limited potential cloud traffic by 94%
Analytics in The Cloud

Tips

1. Identify your business case
2. Lay a strong on-premise data foundation
3. Optimize existing workflows & processes
4. Think big, Start small, Scale fast (with scalable architecture)
Analytics in The Cloud

5 reasons to move to the Cloud

1. Increased visibility on enterprise performance
2. Analytics potential
3. Replicate best-in-class across fleet
4. Cost reduction
5. Security

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