

How To Achieve Business Outcomes with IoT

Internet of Things Applications

50

Billion devices
by 2018

8

Zeta bytes
of data today

\$3

Trillion market
by 2020



IoT is at the top
of the Hype Cycle

< 1%

of data in digital
universe is analyzed
today ¹

60 %

of IoT projects fail ²



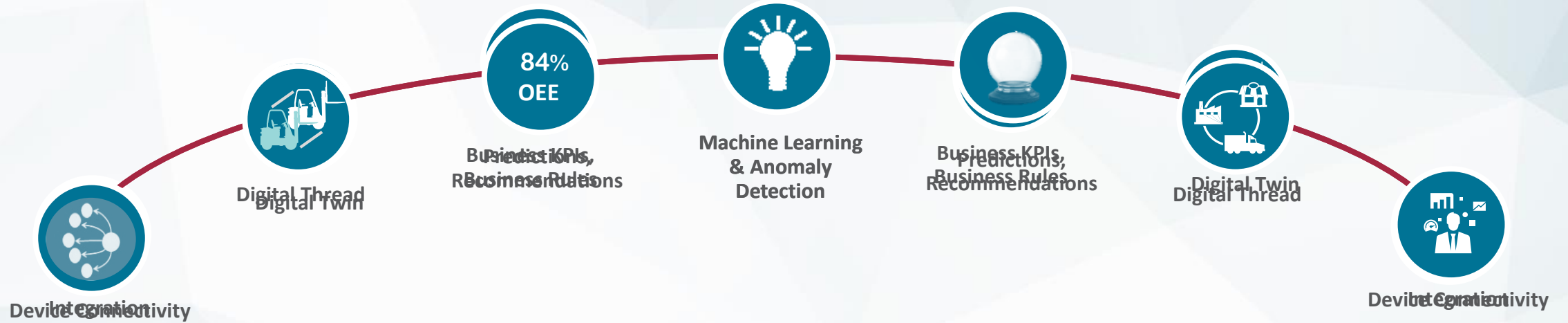
Why is IoT this hard?

1. Lack of clarity
2. Where do I start?

1. <https://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>
2. <https://newsroom.cisco.com/press-release-content?articleId=1847422>

Internet of Things Cloud

IoTify your Applications



Start with the business outcomes

What analytical/predictive insights do you need to address this business challenge? How do I measure the outcomes (What KPIs?)

What Algorithms do I need, and what data do I need for these algorithms to work?

How do I collect this data? What sensors, how often, etc.?

Reduce unplanned downtime by 15%

Improve fleet utilization to 78%

Prediction of machine failure.
Least effective routes, Most and Least utilized trucks, etc.

Overall Equipment Efficiency, Quality data
Utilization & availability of entire fleet

ARIMA, SAX
Autoencoder

Machine health data,
Manufacturing Plan
Fleet loading data, Active routes & trips

Collect data from historian,
Get Plan from Manufacturing Cloud

Use OBD-II sensors on trucks, cargo sensors. Get shipment start notifications from Transportation management

Disruptive Technologies enabling Innovations

- **IoT-enabled**
 - Internet of Things
 - Connect physical equipment & business apps
 - Digital Thread

- **Interactive**
 - Digital Twin
 - Augmented Reality



- **Intelligent**
 - Machine learning
 - Artificial Intelligence

- **Interconnected**
 - Blockchain
 - Chatbots



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01

IoT enabled
IT + OT



Real Time
Visibility



Digital Thread



Optimized
Service

02

Intelligent

- Machine learning
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03

Interconnected

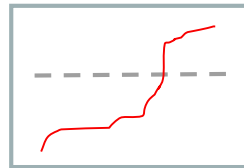
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04

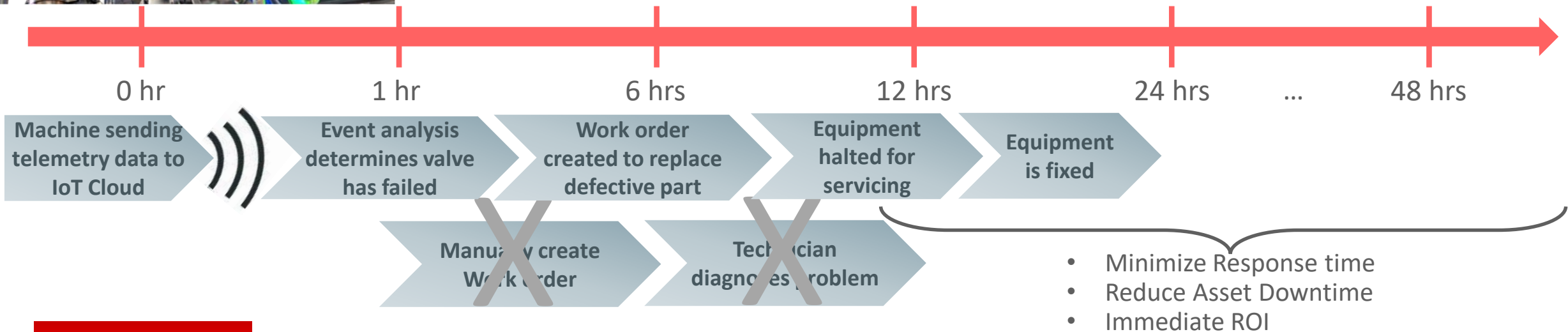
Connected Assets with IoT

Customer Example

IoT-enabled Supply Chain



! Valve DL-57
Failed to close correctly



IoT Enabled Supply Chain

AFTERMARKET SALES & SERVICE



Improve customer satisfaction through proactive monitoring of asset health



Create new channels to gather information from the products



Reduce time to repair through prescriptive suggestions based on real-time & historic data to service technicians

IoT enables Modern Digital Field Service

MANUFACTURING



Real-time visibility into factory, production lines and machines

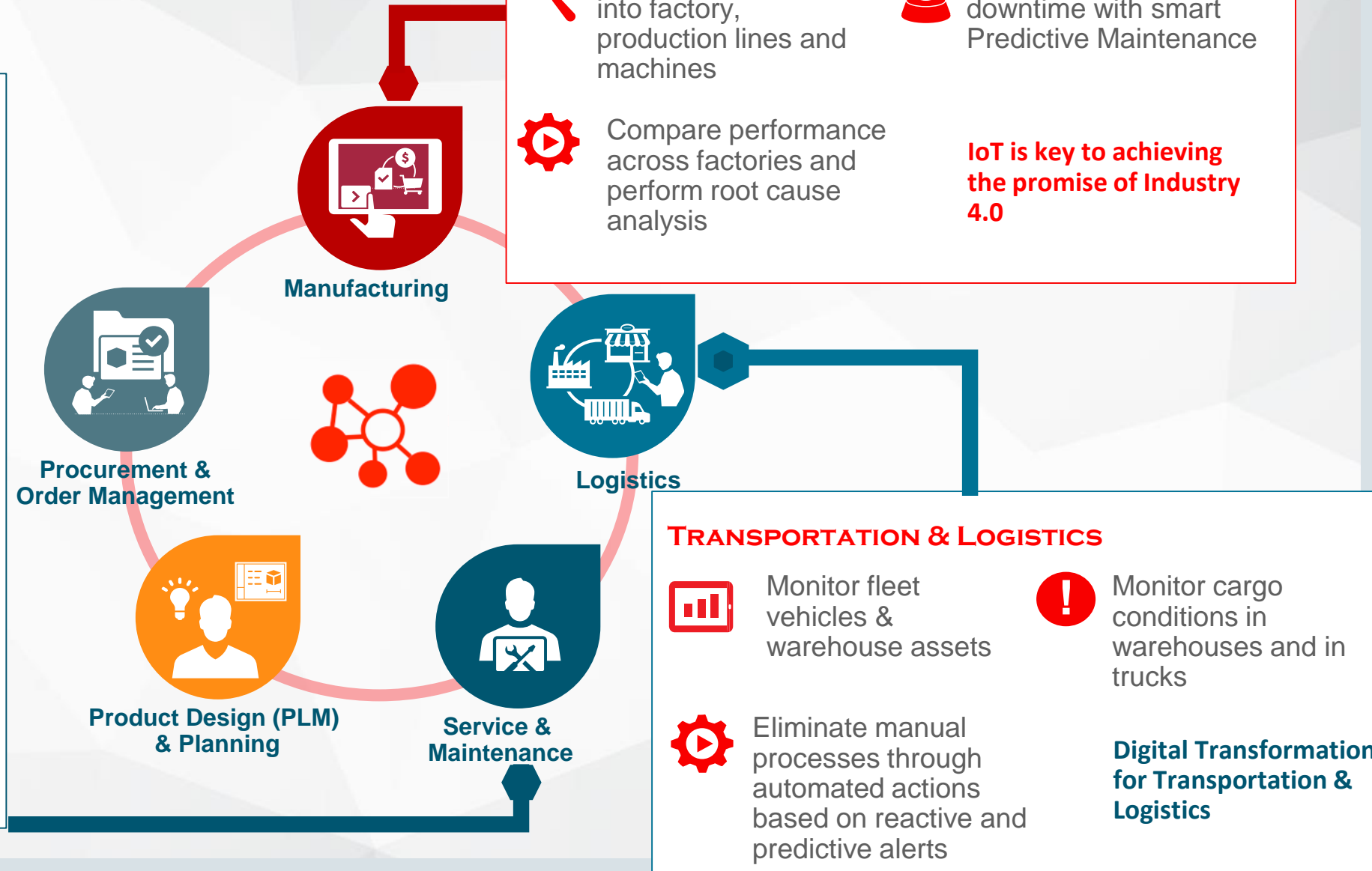


Minimize unplanned downtime with smart Predictive Maintenance



Compare performance across factories and perform root cause analysis

IoT is key to achieving the promise of Industry 4.0



TRANSPORTATION & LOGISTICS



Monitor fleet vehicles & warehouse assets



Monitor cargo conditions in warehouses and in trucks

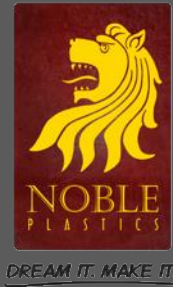


Eliminate manual processes through automated actions based on reactive and predictive alerts

Digital Transformation for Transportation & Logistics

Industrial Robot Monitoring

Noble Plastics specializes in injection molding, decorating, assembly, and contract manufacturing services.



Challenges

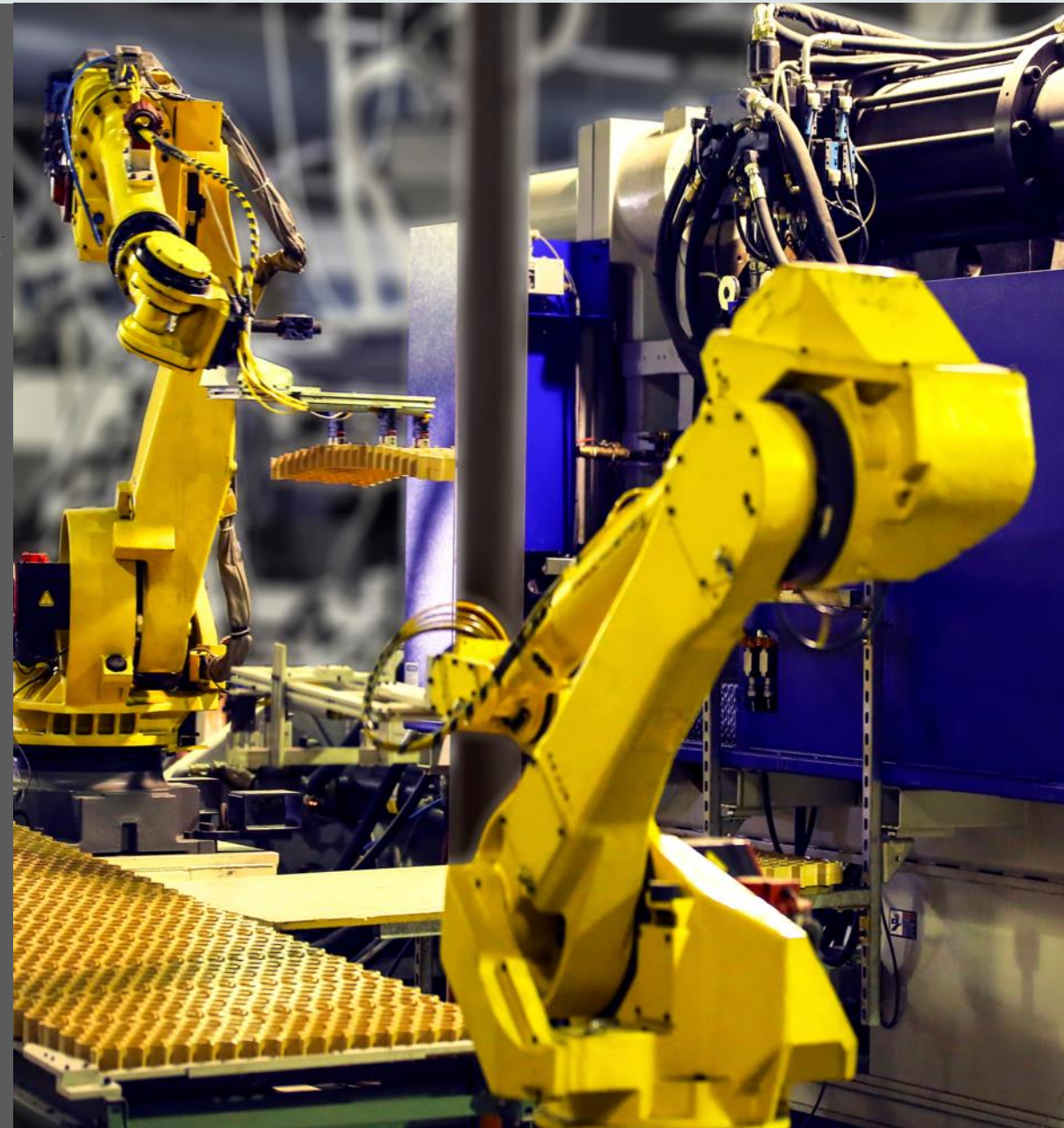
- Transform company from shoot-and-ship job shop
- Lack of visibility into robot driven injection molding process

Solution Components

- Oracle Asset Monitoring Cloud, Oracle Mobile Cloud
- FANUC Industrial Robots for pre and post production processes
- Oracle IoT Asset Monitoring cloud connects to FANUC industrial robot to monitor manufacturing cell cycle time
- Asset Monitoring Cloud analyzes streaming part counts, error status at real-time & sends real-time alerts to technician's mobile

Benefit

- Eliminate the labor costs of manual intervention
- Immediate realization of value @ \$15-\$30/hour
- Began digital transformation from a job shop to innovative design and manufacturing company with focus on automation



Provider of Digital Customer Service & Workforce management solutions

Challenges

- Provide ability to users to request maintenance via smartphone and tablets and reduce repair times
- Adapt on-site workforce activities to real demand (ie: cleaning, refills)

Solution Components

- Oracle Service Cloud provides service request management through a responsive portal
- Oracle IoT Cloud analyzes sensors data in real-time and automatically creates service requests including contextual data
- Business Intelligence dashboards provide live insights to workforce on resources usages

Potential Benefits

- More sales deals won customer by improving users satisfaction and KPI transparency
- Higher workforce efficiency





GreenMe

Continuously temperature,
humidity, lighting quality,
noise and air quality

“Placed on desks, in meeting rooms or in corridors, the cubes, which are independent from the building information systems, record data via the LoRa network and transmit it to the Cloud,”

Bertrand Beauchesne, IT Tools Director at VINCI Facilities.

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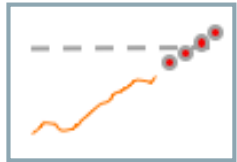
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Predictive Maintenance

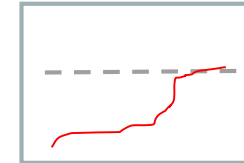
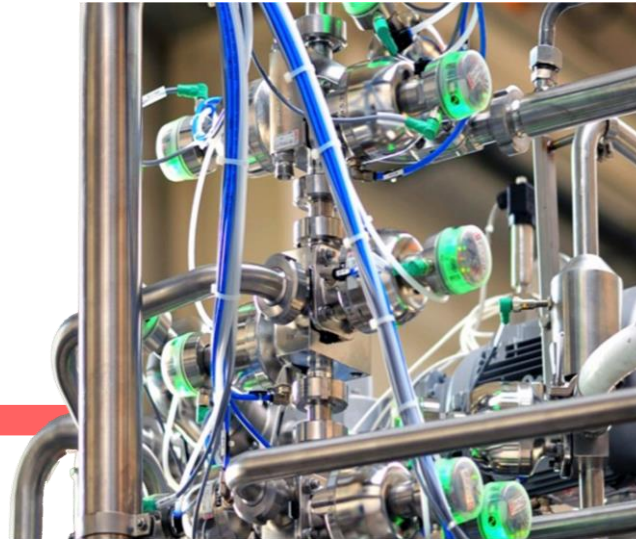
Using IoT and AI to prevent downtime

Intelligent Supply Chain

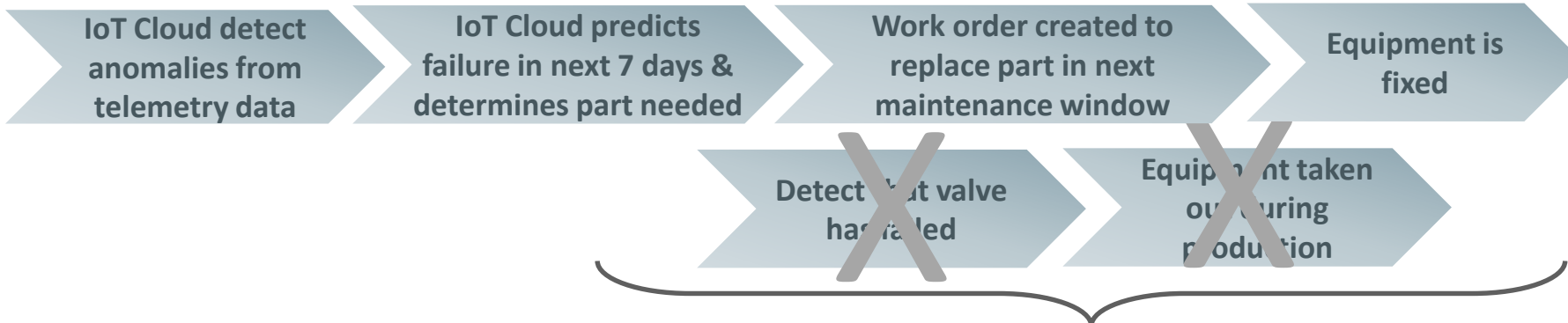


Valve BC-73

72% chance of failure in next 7 days



All Valves Functional



- Proactive Maintenance
- No Asset downtime or loss of service

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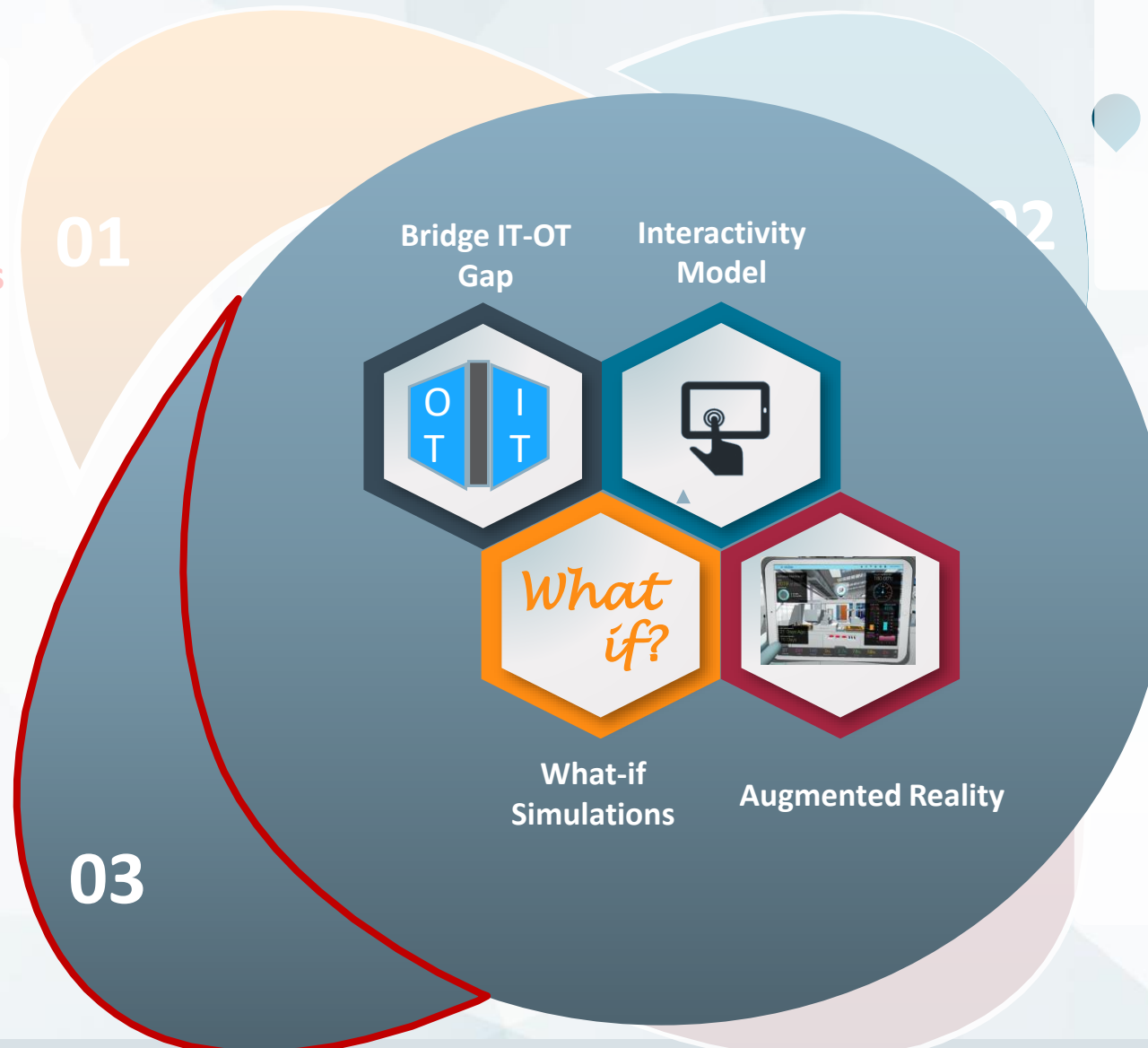
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Silo'ed IT and OT Supply Chain

Interactive Supply Chain

Operational Technology



The
IT
OT
Gap

Information Technology



Product
Development



Planning



Manufacturing



Forecasting



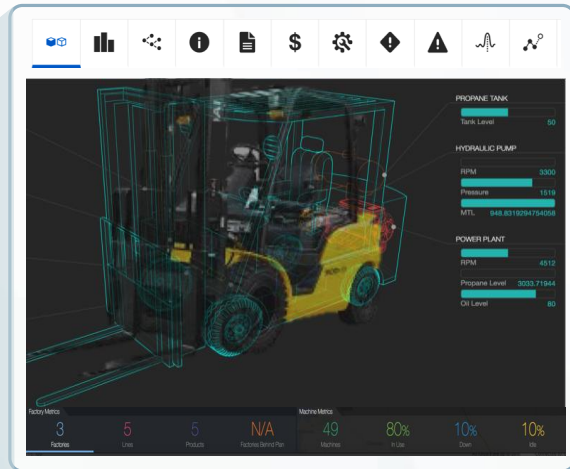
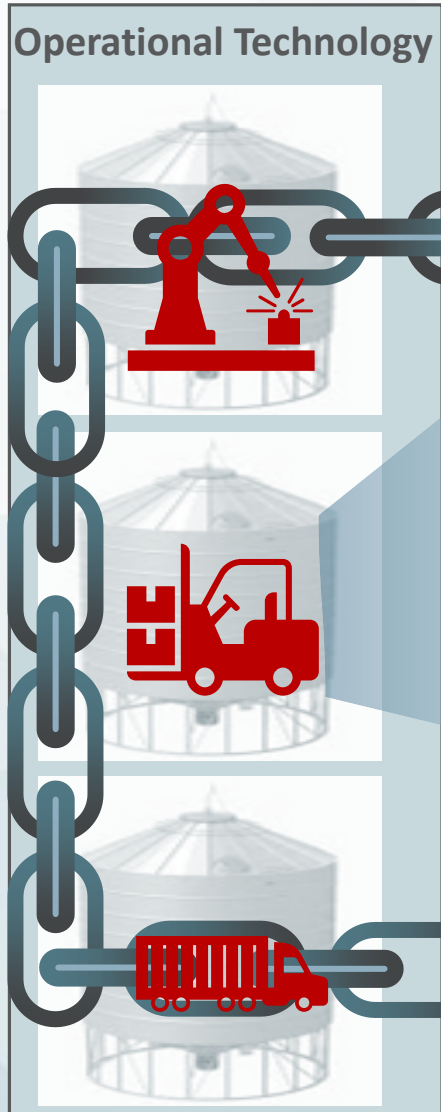
Inventory



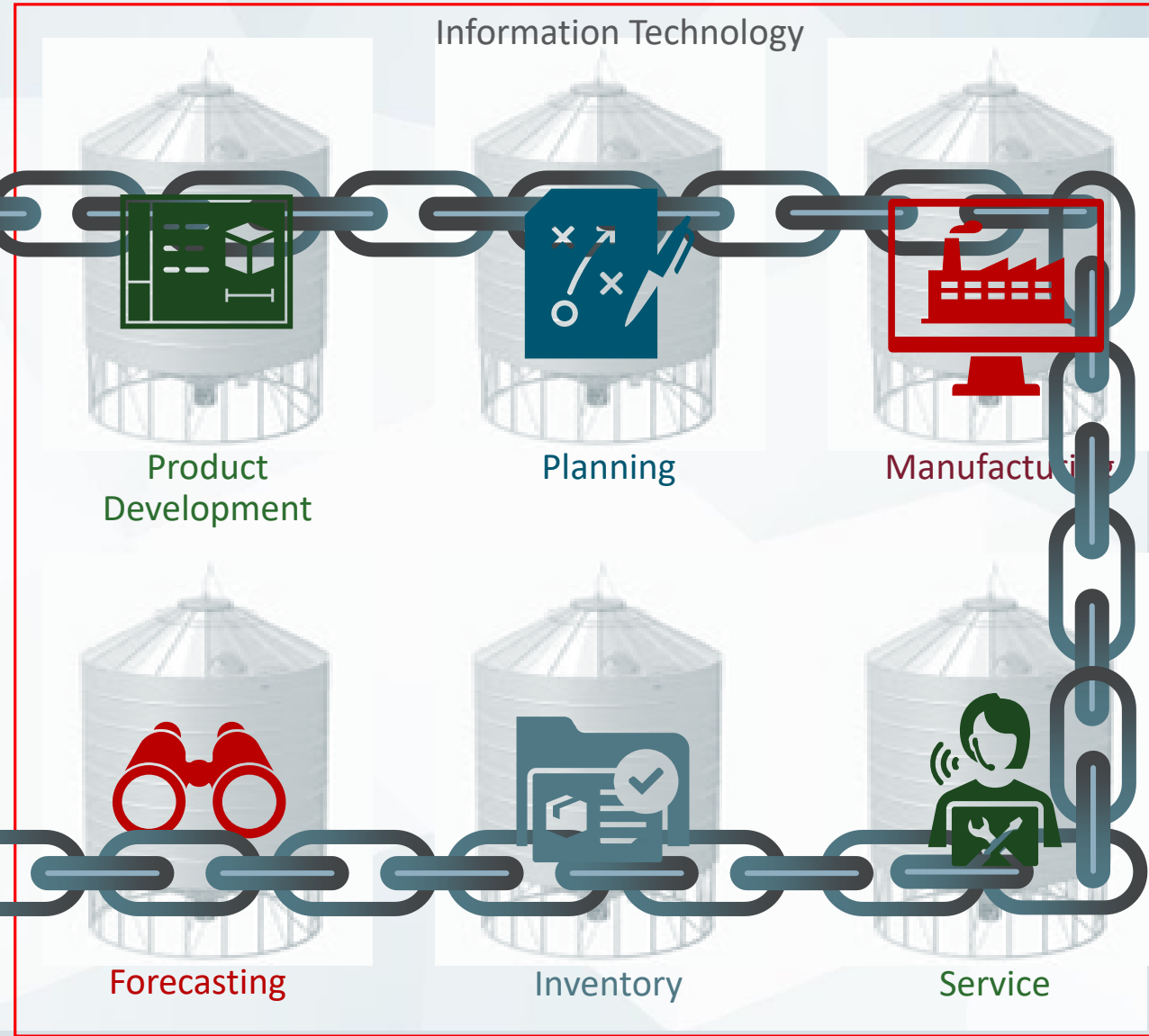
Service

Silo'ed IT and OT Supply Chain

Interactive Supply Chain



Digital Twin with Augmented Reality helps blur the boundaries between OT and IT



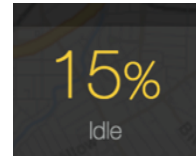
Business Problem

Lack of complete asset visibility in the context of your business



Validation of IoT use-cases/RoI

- Quickly validate RoI and Use-case without actual sensors and data feeds



Consolidated Business View of assets

- KPIs
- Incidents
- Maintenance
- Financials



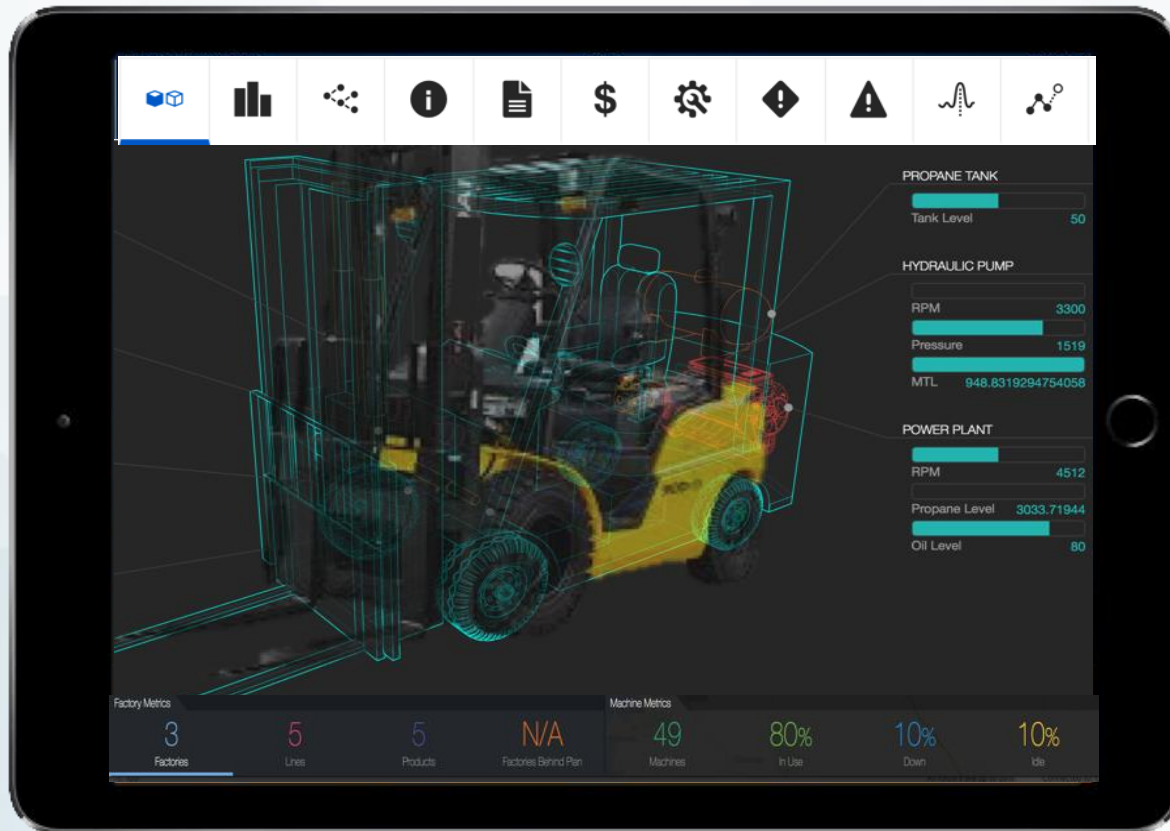
Interactivity model for physical world

- Telemetry AND Control
- Hierarchical views – from global to a sensor on a given asset

Digital Twin

Simplify Interaction with Physical Assets

Interactive Supply Chain



Visibility & Digital Interaction model

- Past, Current & Future view – metrics and device states



Single pane of glass – 360 degree view of assets

- KPIs
- Incidents
- Maintenance
- Financials



Business Context, Hierarchical, Relationships

- View the asset in the context of the business processes, and relate it to other assets and hierarchies

What if?

What if simulations

- Verify your business process by defining what-if-simulation scenarios

Digital Twin – Augmented Reality

Simplify Interaction with Physical Assets

Interactive Supply Chain



AR-enabled visibility

- Enable operators, plant managers etc. to view operational metrics and related equipment information in the context of the physical asset



AR Enabled Diagnostics

- Faster troubleshooting, assisted-maintenance



Training

- Training of technicians using AR – improves productivity and reduces chances of errors

ORACLE®