



## THANK YOU FOR VISITING THE **HOW** BOOTH

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We appreciate your interest and hope you find this material helpful.

Regardless of what stage you are at in your digital transformation journey, **feel free to reach out..**

We would be happy to share examples, best practices, and how Brock can help you achieve your digital transformation goals!



**IOT Partner of The Year  
2023 Winner**

**Americas Systems  
Integrator  
2023 Finalist**

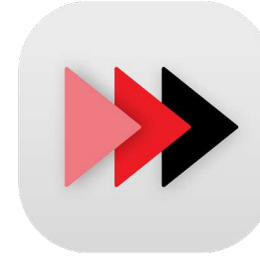
# THE **HOW** BOOTH



Equipment  
Connectivity



DPM  
Delivery



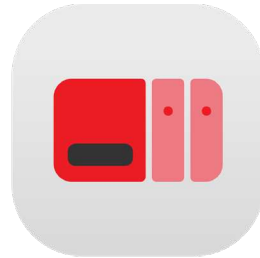
Enterprise  
Rollout



DPM  
Plus



MES



PLC &  
Panel Replacement



Cyber  
Security

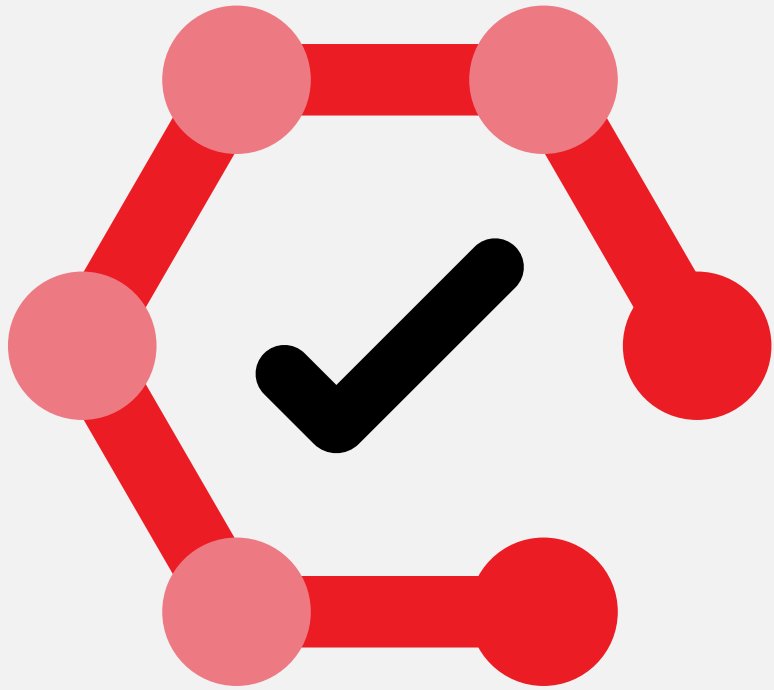


Work  
Instructions



Quality

# Equipment Connectivity



Readiness and Gap Analysis



Connect and Collect



PLC Programming



Architecture & Best Practices

# Equipment Connectivity

## DIFFERENT CAMPS



### Manual / Operator Entry

#### Limited / No Automation

Limited Investment  
Limited Visibility



### IoT Gateway

#### Data Concentrator or IoT Sensors

Automated vs User Dependence  
Agnostic Connectivity Ability



### Direct Integration

#### Connection Between Application and Edge Devices

Zero User Involvement  
Rapid Extendibility

Granularity of Data  
Accelerated Enterprise Deployment

# Connect & Collect (Brock Services)



## Readiness Assessment

- Inventory of assets in various manufacturing areas
- Device information such as make, model, location, and equipment connections
- Evaluation on asset life-cycle, standardization, and connectivity



## Architecture Design

- Identifying hardware requirements for machine upgrades, workstations, and cabinets
- Phasing and Implementation planning
- Server specifications and basic network topology interactions



## Wi-Fi Assessment

- Wi-Fi availability analysis in each of the production rooms
- Inventory of network access points
- Gap analysis for connected assets
- Heatmap of available Wi-Fi signals in the manufacturing area



## Hardware Upgrades

- Device upgrades for controllers, work stations, and network connectivity
- Panel design and fabrication
- Modifications to control logic and flow charting
- Standardize data models for consistent machine integration



## Equipment Cutover

- Offline device simulation and Factory Acceptance Testing
- Equipment staging and cutover strategies to minimize equipment down time
- Site acceptance testing and post-commissioning support



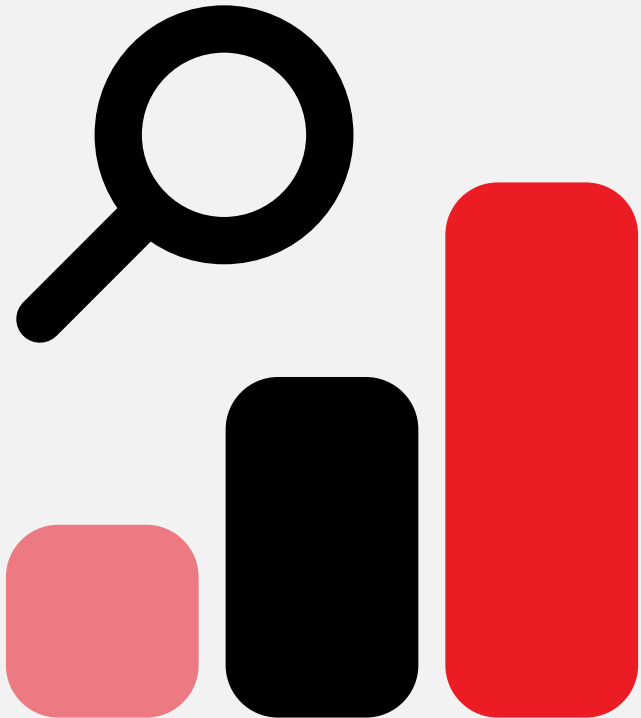
## Consolidated UI

- Unified machine interface to access SCADA, MES, and ERP platforms
- Standardized screens for user navigation
- QA environment for software staging
- Source code and revision management of PROD applications

Planning Phase

Implementation Phase

# DPM Delivery



Value Justification



DPM Configuration



Automated Entry



Enterprise Rollouts

# DPM Solution Architecture

Application powered by  ptc



**LEVEL 4**  
Enterprise  
Business  
Network



Employee  
Workstation



- Provide order context to TW
- MFG Order details
- Material BOM/Routing
- Process Block target times

SOLUMINA

- Provide order context to TW



- Self-serve enterprise troubleshooting

**LEVEL 3**  
Plant  
Manufacturing  
Network



Operator  
Workstation



- Real-time line status and lost time reasons
- Logging downtime events
- Tracking cycle time against target
- OEE KPIs for CI analysis
- Trend / Review Process details from Kepware & Historian

Visualize historical values



- Long-term process data storage
- Optimize data archiving/retrieval
- Feeds various other tools with data



- Connect Equipment to PLCs
- Pass data to TW for consumption
- Provide OPC connection to Historian

**LEVEL 2**  
Process  
Control



- Predict downtime events



Equipment HMIs



Equipment PLCs



Supporting Applications

**LEVEL 1**  
Field Device  
Network



Sensors

**Brock Sample**



# DPM Solution

## Brock Sample

Application powered by  ptc



### PROJECT GOALS

### CURRENT NEED

### SOLUTION

### SOLUTION FUNCTIONALITY

Automated consolidation and capture of critical production parameters

Eliminate non-value add manual effort

Display of actionable, real-time information for operator, management, and CI personnel

React faster... minimize unplanned downtime

Allow for closed loop decision making surrounding corrective actions

Understand impact of corrective actions and further refine improvement efforts Foster a culture of CI

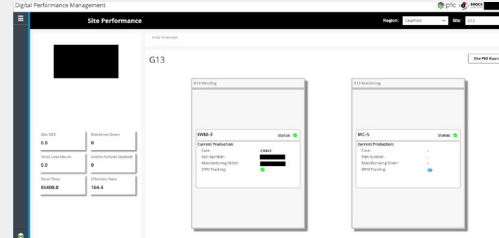
Introduction of modern, extendable platform

Create a foundation and allow for additional value-add features and enhancements

#### Executive

- Is the site/facility/area on target today, this week, this month?
- How many hours have we lost across the area?
- How is the site operating overall?

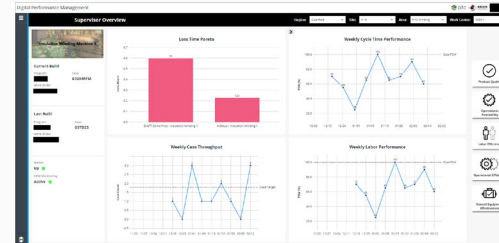
Executive Mockup



#### Management

- Why is the line down?
- Are we on target today, this week, this month?
- What are the bottlenecks and where do we focus?

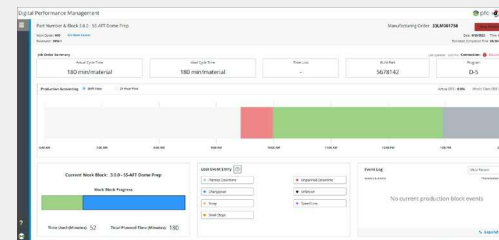
Supervisor Mockup



#### Operator

- I need an easy way to log loss time reasons
- How am I doing compared to target?
- Am I trending well?

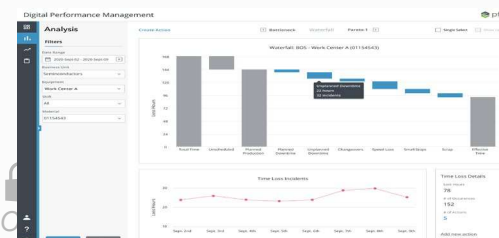
Operator Mockup











#### Process Engineer





- Why did we run well or poorly?
- How do we replicate successful runs?





DPM Analysis & Analytics



-  Site-wide OEE
-  Total vs Effective Time
-  Site-wide Open Actions
-  Real-time site availability

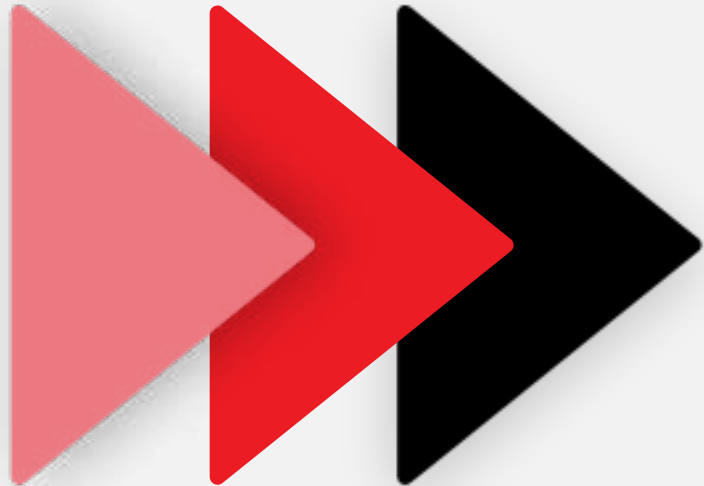
-  Weekly case throughput vs. target
-  Top loss time reasons (pace setters, bottlenecks)
-  Weekly cycle time vs target
-  Weekly labor performance vs. target

-  Order information (current program, work order, etc)
-  Real-time KPIs and trending
  - Extruder pressure
  - Rotation speed
  - Speed vs nozzle temp
  - Ribbon width
-  Automated and manual downtime capture
-  Real-time run analysis

-  Automated data retrieval and analysis
-  Loss waterfall & pareto analysis
-  Time-loss diagnostics & recommendations
-  Track impact of corrective actions (closed loop)

CONFIDENTIAL  
INTERNAL PURPOSE ONLY

# Enterprise Rollout



Program Management



Managed Services / EaaS



Deliver...At Scale



Enablement

# Enterprise Approach

- Solutions designed with uniform, forward-thinking architecture
- Common code-use between sites
- Library of re-usable components
- Consistent approach and metrics between sites
- Ensure leadership is engaged

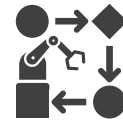


## Result

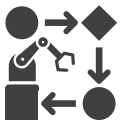
Reduced rollout timeline and cost

# Project Delivery

Line 1



Line 2



**50-80%**  
**Cost & Time Savings to Roll out**

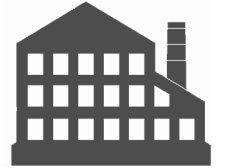
### Rollout

- Re-use core components
- Minimized design

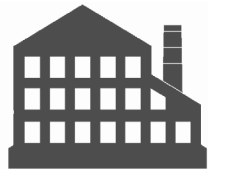
### Potential Enhancements

- Plant Overview
- Maintenance

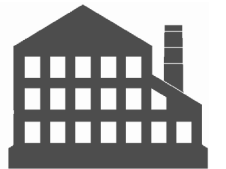
Plant 3



Plant 4



Plant 5



### Potential Enhancements

- Enterprise Overview



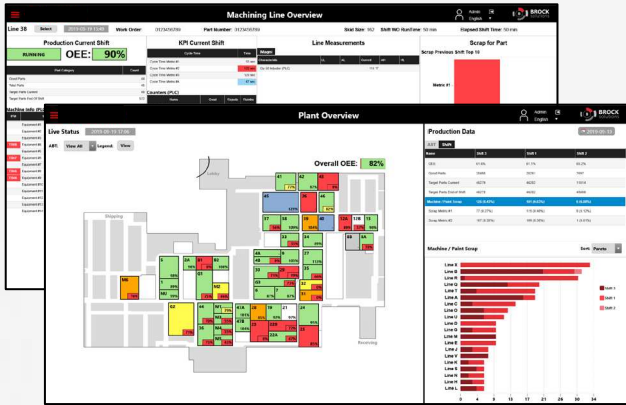
# Engineering as a Service

- ✓ Managed by Brock – no hassle
- ✓ Cost effective – manage cash
- ✓ Go faster
- ✓ Leverage expertise, infrastructure applications & development
- ✓ Value-based

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# DPM Plus





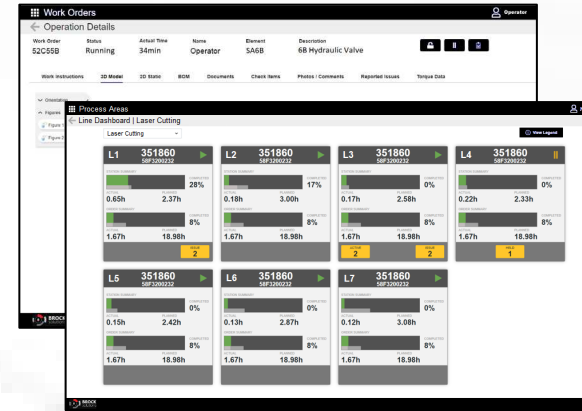
**Executive Roll-ups**

**Downtime Reason Tracking**

**OEE / OLE**

**Equipment Utilization**

**Maintenance notifications**



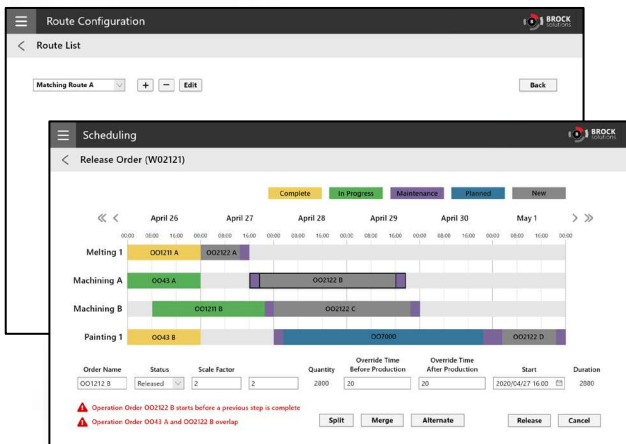
**Work Instructions**

**Work instructions and step execution**

**Order assignment**

**Issue alerting and progress tracking**

**Digital Thread - CAD and PLM**



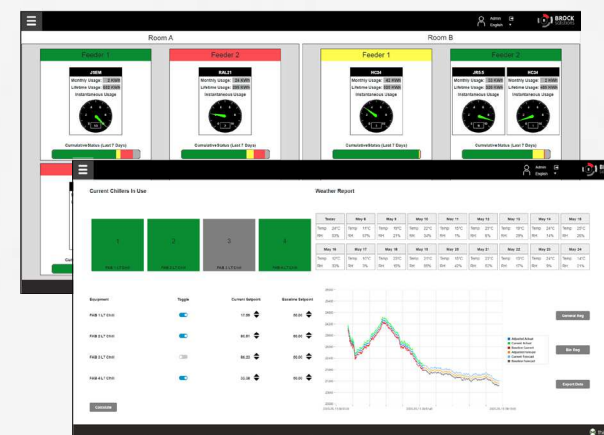
**Scheduling**

**Order assignment to routes and equipment**

**Order re-sequence on equipment**

**Current order status and progress**

**Automated ERP / order download**



**Energy Management**

**HVAC and BMS control**

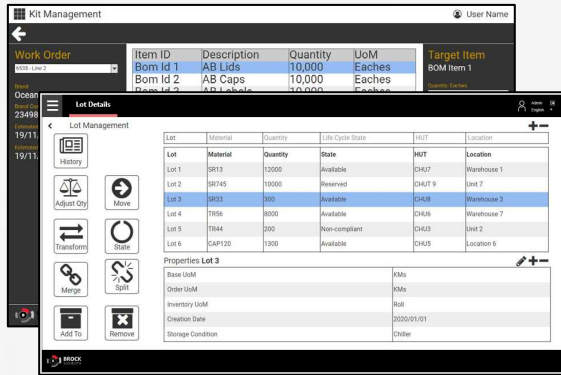
**Consumption tracking**

**Predictive maintenance**

**Optimized asset utilization and weather control**

# IoT Use-Cases

Proven, repeatable solutions for faster Time-to-Value  
Configuration rather than customization based on customer needs



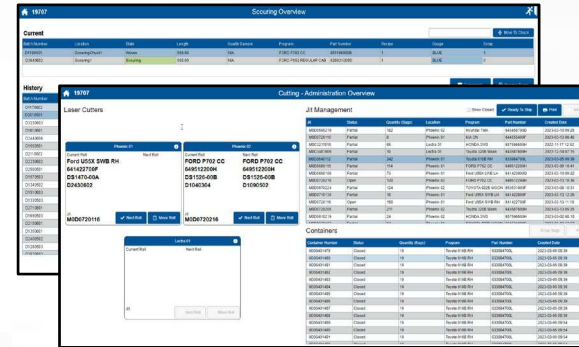
## Warehouse Management

**Material lot / unit Management**

**Tracking & location**

**Forklift & Personnel Order Requests**

**Operation History**



## Track & Trace / Genealogy

**Product Genealogy**

**Execution Auditing**

**Production & WIP Tracking**

**Employee Verification**



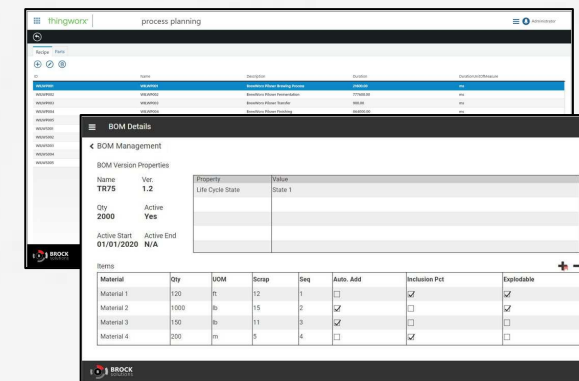
## Quality / SPC

**Defect Capture and Logging**

**In-line SPC tracking**

**Quality control & process interlocking**

**Issue Alerting**



## Production Definition

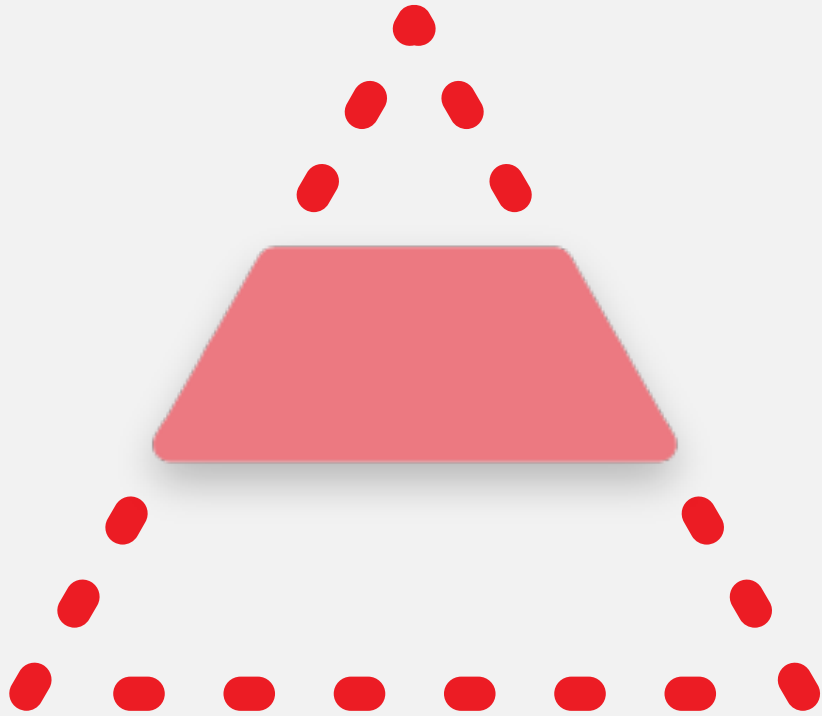
**Engineering Change Management**

**Revision History & Auditing**

**Recipe Management**

**BOM Management**

# MES



Requirements Gathering



Configuration and Deployment



What Goes Where



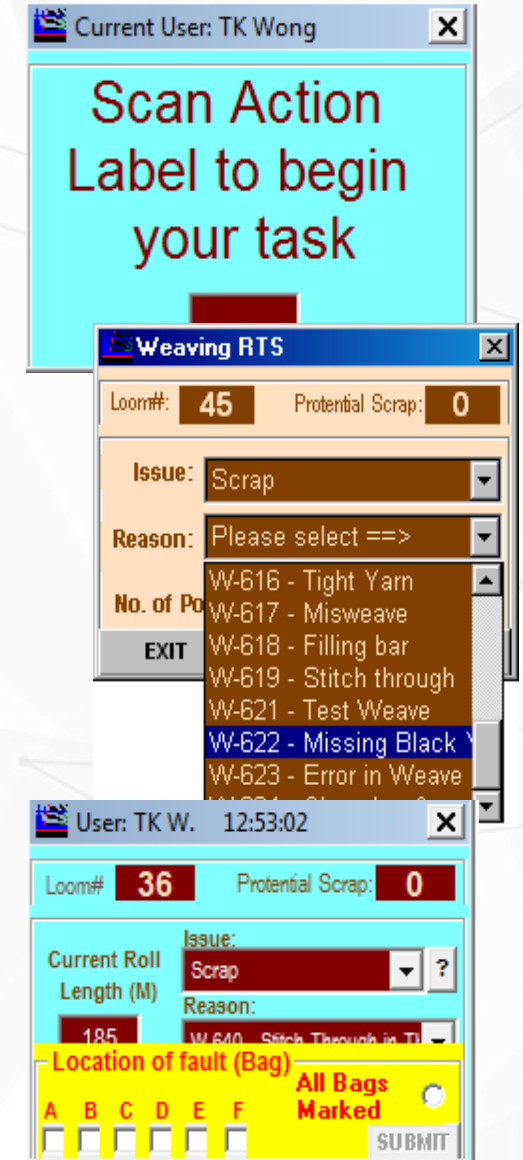
MES Accelerators



# Risk Factors of Legacy System



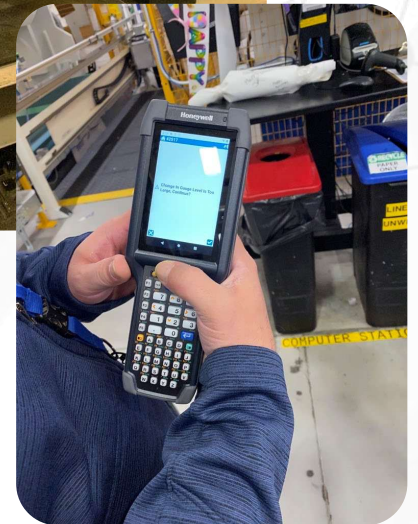
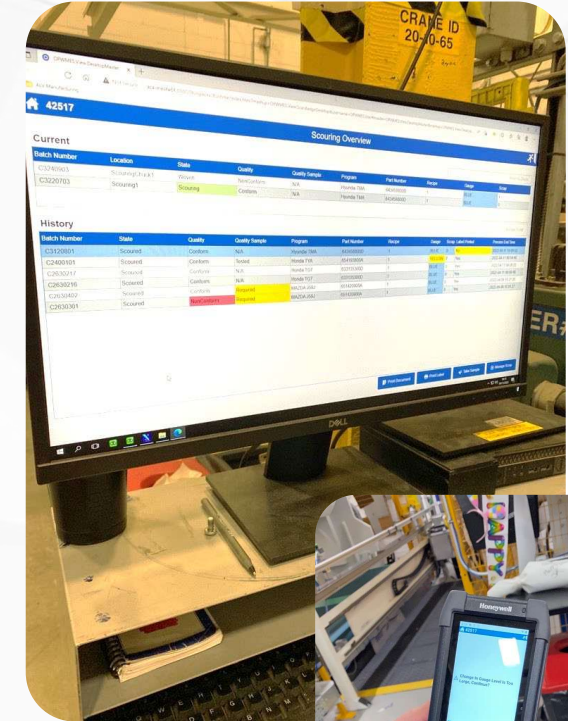
- ! Frequent Access System Outages**  
Causes downtime to production
- ! Limited System Support**  
Support team of ~1 posing risks to business
- ! No Accessible Single Source of Truth**  
CI Effort required heavy lifting and long turnaround time
- ! Large Reliance on Manual Effort and Paperwork**  
Inefficient and posed potential risks
- ! Substantial IT Upkeep Costs**



# Benefits of Modern System



- ✓ **Increased platform stability**
  - Limit production outages
  - System redundancy
- ✓ **Streamlined Architecture**
  - “what lives where” aligns with Autoliv Standard (ALIS, Ignition, etc)
  - Lower cost of ownership
- ✓ **Implement sustainable, standardized platform (TW)**
- ✓ **Eliminate manual steps with Automation**
  - Error-proof and efficiency gains
- ✓ **Create a foundation to allow additional digitization effort**
  - Advanced Planning and Scheduling
  - AGV tie-in
  - Digital Work Instructions
  - Serialization
- ✓ **Improved operator experience / empowered workforce**
  - Faster turnaround time for troubleshooting and CI activities



# ACA Tilbury

## Expected Manufacturing Systems Landscape

**Autoliv**



### **Leading2Lean**

Static Production Monitoring (e.g. OEE) Reports  
Self-Serve Reporting  
Coordinate Notifications

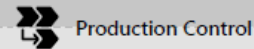
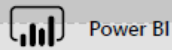
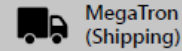
### **Quality ALIS**

Manage Lab Tests  
Store Test Results  
Provide Pass/Fail Results to MES



### **Inventory (JD Edwards)**

SQL Interface    IFACE Table    Boxing Folder



### **Core OPW MES**



Weaving



Scouring



Coating



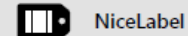
Cutting



Inspection



Shipping



Read/Write to Equipment & Databases  
Data Collection



### **Controls/Equipment**

Porini db  
Dornier Panel

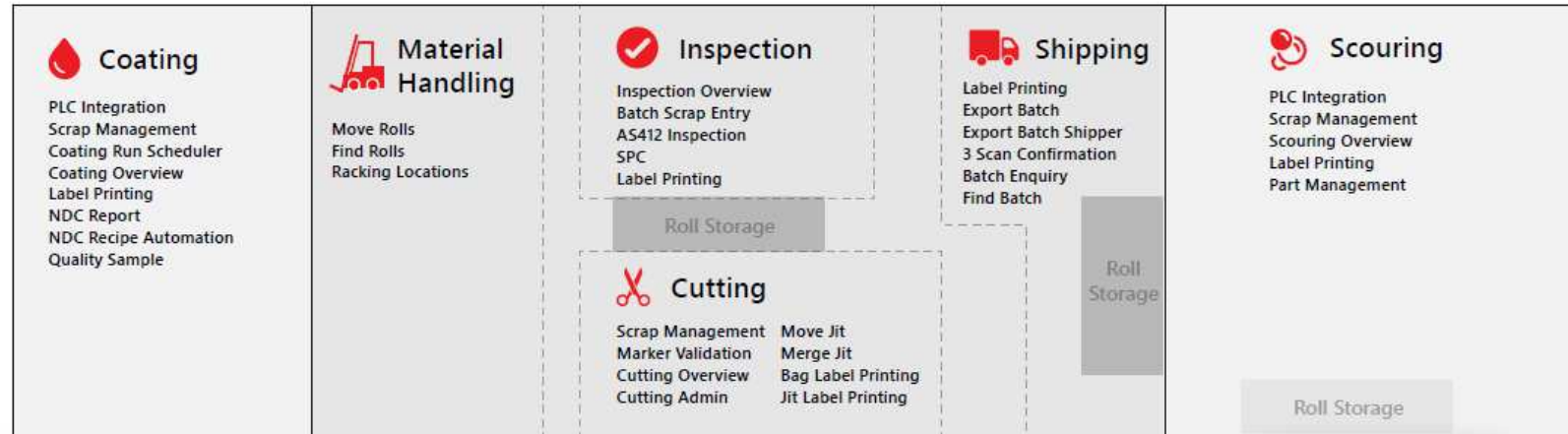
Jacquard Controller  
Coating PLC and HMI

NDC Computer  
Scouring PLC and HMI

Inspection PLC and HMI  
Cutting PLC, PCs and HMI

## Application Benefits

- Remove reliance on outdated Access DB technology, improving production uptime stability
- Introduction of modern, extendable platform to allow for additional value-add features and enhancements
- Lower cost of ownership from IT support and maintenance
- Increased efficiency in troubleshooting and continuous improvement/LEAN initiatives
- More engaged and empowered workforce



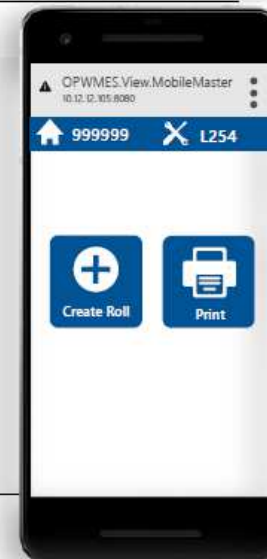
### Quality Lab

- Sample Request
- Ship Authorization

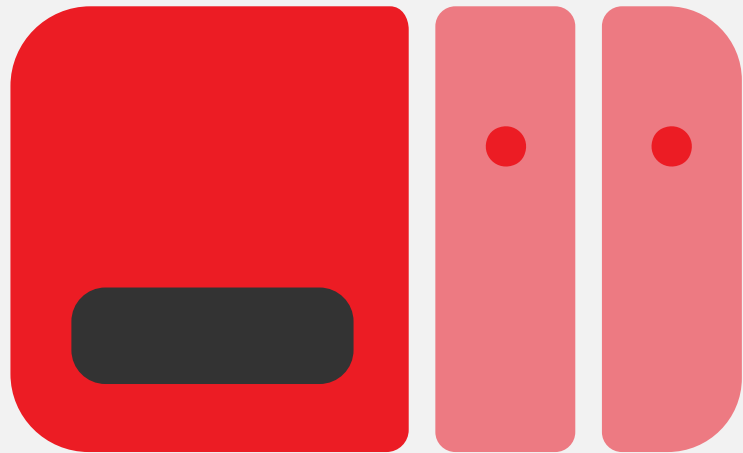
### Weaving

- Loom Patrol
- Create/Doff Rolls
- Raw Material Tracking
- Batch Paperwork
- Loom FTP Integration
- Label Printing
- ALIS Integration
- SPC Dimension State Machine

OPW MES mobile app →



# PLC & Panel Replacement



Hardware Procurement



Custom Panel Builds



Electrical Design and Cutover



Exclusive Pricing and Access



# Capabilities

- › PLC & HMI Procurement
- › Electrical / CAD Drawings
- › Zero-Downtime Cut-Over
- › Extensive drive experience
- › Full Load Testing
- › Shipping
- › CSA & UL self-certifying



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# Why Brock?

- Turn-key delivery spanning IT and OT
- Competitive pricing
- Cost and timing synergies
- Lead time avoidance





# Cyber Security



Automated Assessments



Environment Uplifts



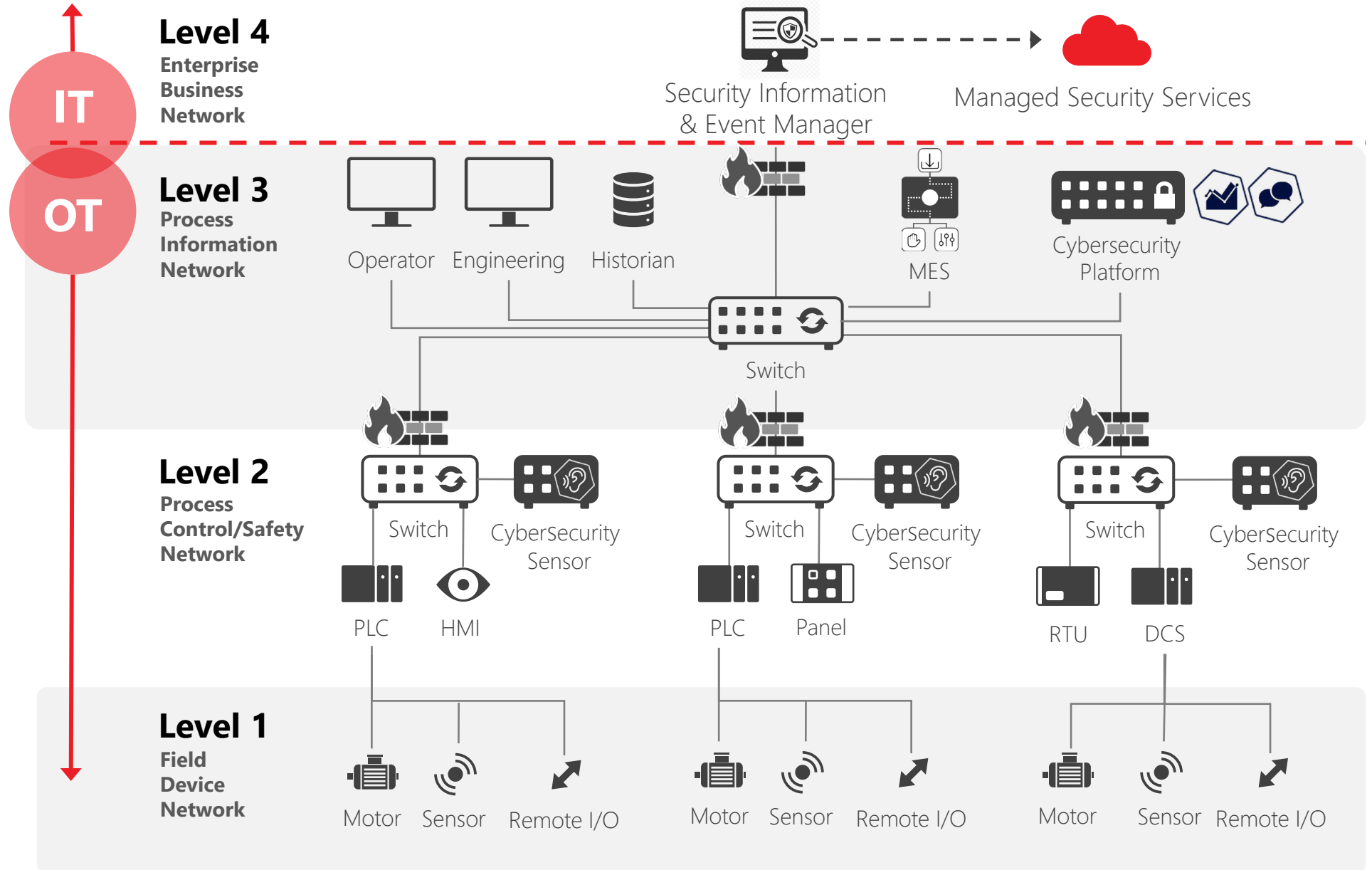
IT / OT Segmentation



Active Monitoring &  
Improvement



# OT Cybersecurity - Brock Scope



Scope of Services

# OT Cybersecurity - Methodology



Know what you have



Know what normal is



Assess your risk



Look for change



Inventory Assets



Connectivity



Baseline Traffic



User Activities



Assess Exposure



Protect/Harden

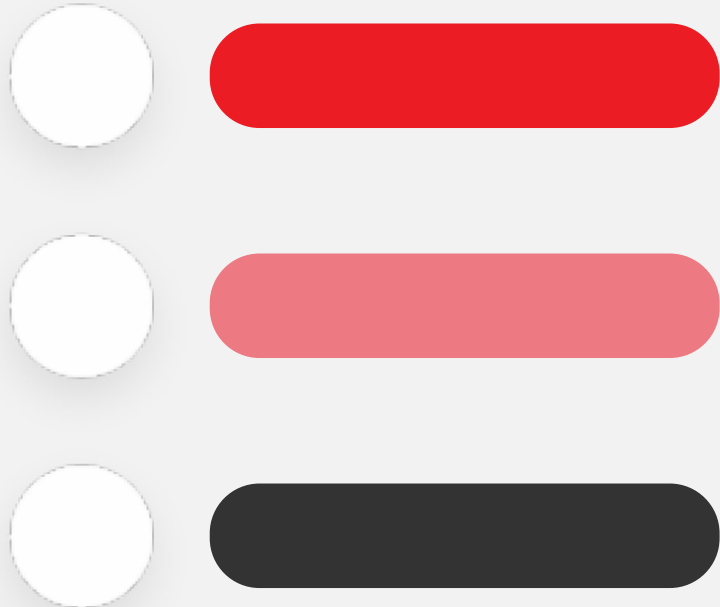


Monitor



Respond

# Work Instructions



Connect Disparate Applications



Automate Shop Floor Processes



Implement CWC



Operator Traceability

# Increasing Operational Efficiency Through a 'Single Pane of Glass'

- Combine production details within a single operator-facing system
- Leverage ThingWorx services/connectors for integration with disparate data sources



# Quality



**In-line Monitoring & Alerting**



**Integrate Existing Quality Apps**



**Extend SPC Accelerator**



**Closed-Loop Quality Control**

# Quality Use Cases and ThingWorx

Typical in



**Defect Capture and Logging**



**In-line SPC/Basic Process Parameter Tracking**



**Quality Control & Process Interlocking**



**Issue Alerting**

Typical in Other  
Systems



**Fit-For-Purpose SPC Applications**

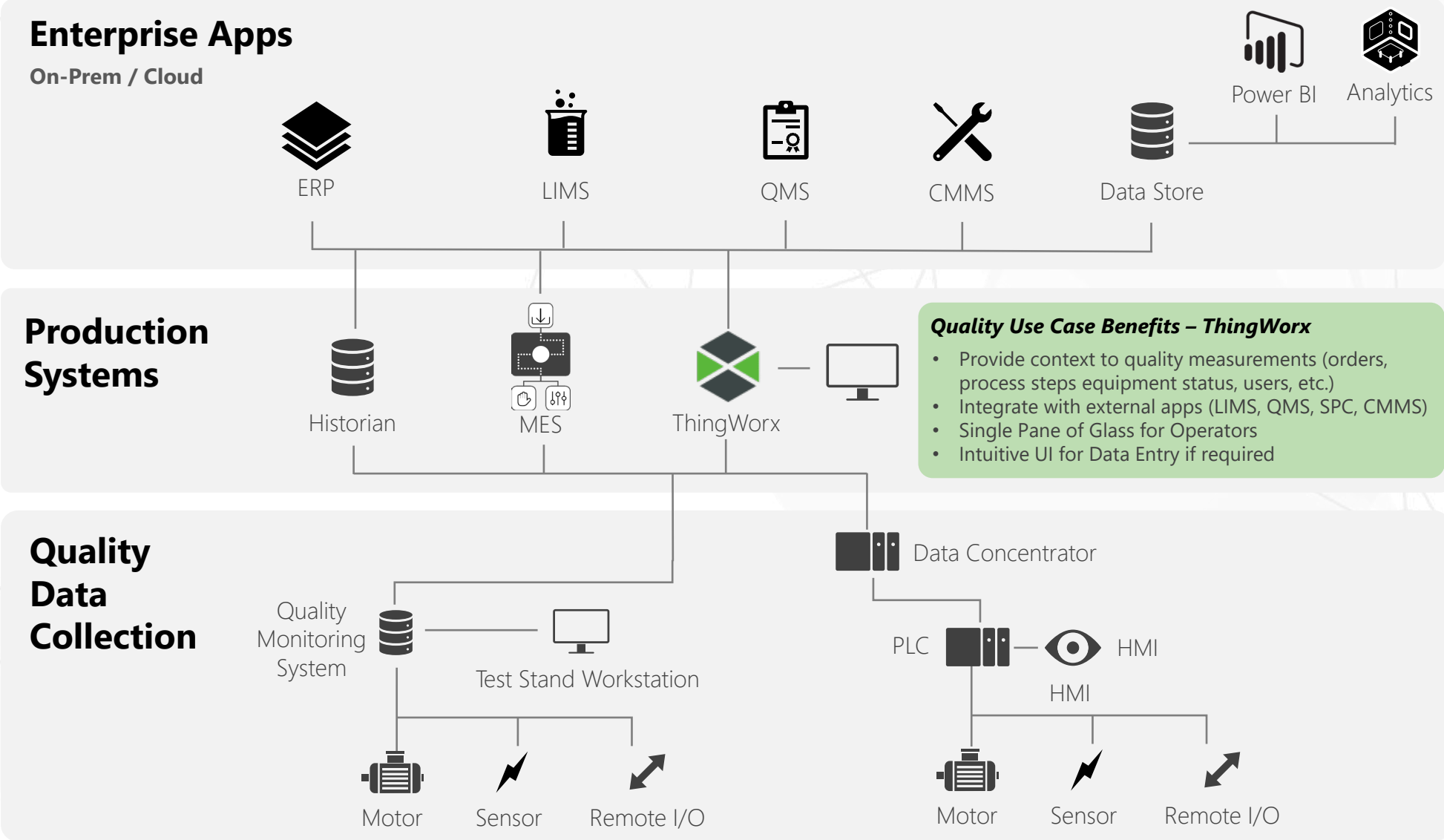


**Lab Information Management System**



**Quality Management System**

# Context From Disparate Systems



# About Brock Solutions

## Who?

**750+** INDUSTRY PROFESSIONALS

ENGINEERS



Automation



Software



IT

HIGH PERFORMANCE TEAMS



## What?

Deliver Transformational **Digital Solutions** in the Real-Time Space



Engineering Services



Software Solutions SaaS/OnPrem



Continuous Improvement & Support

## Where?

Serving **Enterprises** Across Industries



Aviation & Logistics

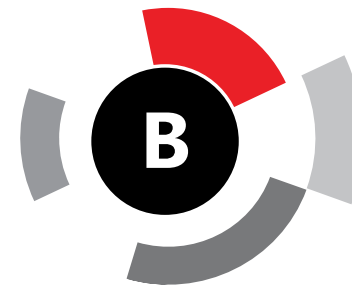


Manufacturing



Energy & Utilities

**GLOBALLY**



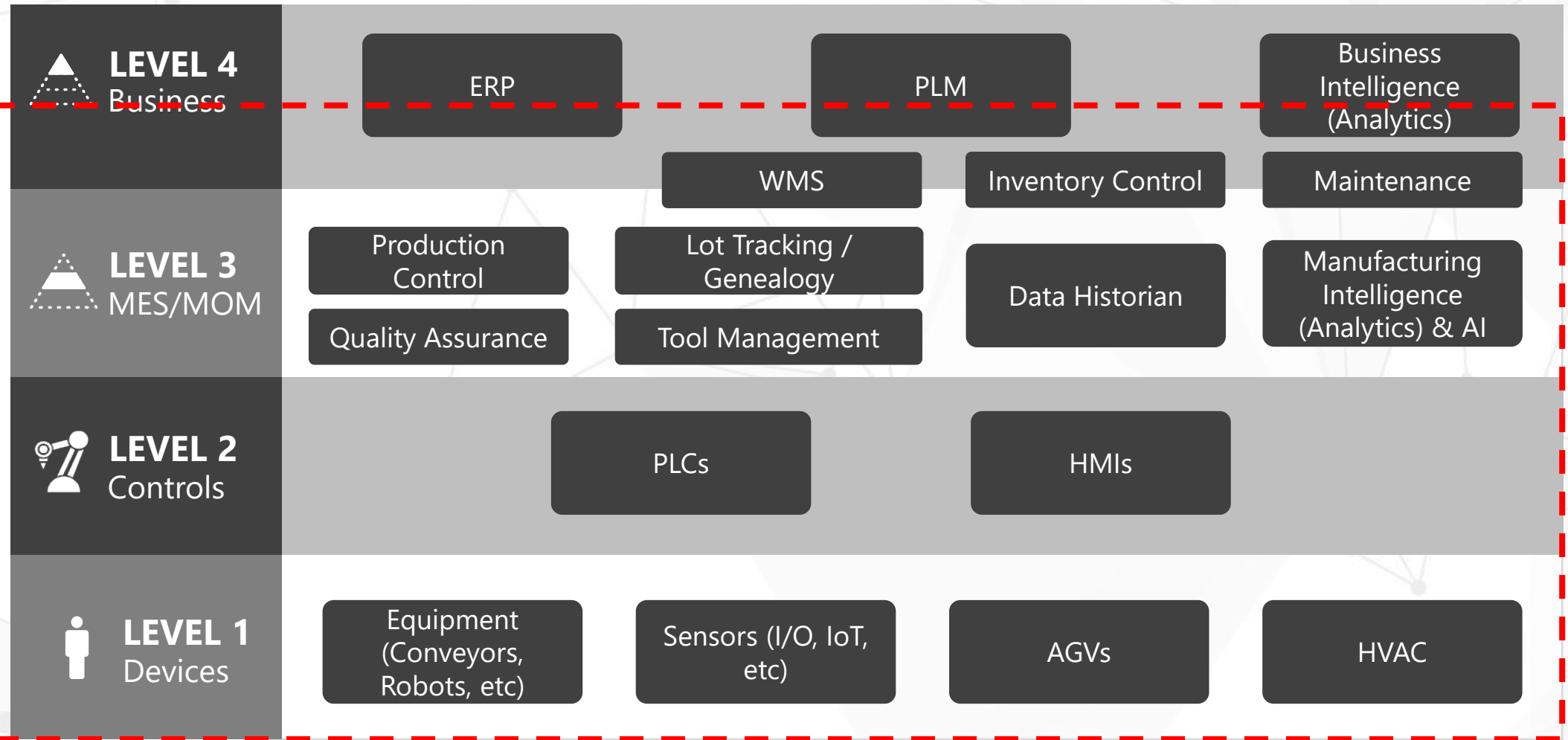
**BROCK**  
solutions



# What We Do



Scope of Services



# Our Industries

## Manufacturing



Automotive



Consumer Goods



Food & Beverage



Chemical Processing



Aerospace & Defense



Life Sciences

## Transportation & Logistics



Airports & Airlines



Marine & Terminal Automation



Courier & Post



Warehouse & Distribution

## Energy & Utilities



Water & Wastewater



Oil & Gas



Metals & Mining

# Where We Fit in the Systems Integrator Landscape

7000+ Controls Integrators

Brock Solutions

Global Automation Vendors,  
EPCs, IT Outsourcers



Serving Local Businesses



Serving Global Businesses



Serving Global Businesses



Small Resource Base



750+ Employees



Hundreds of Thousands  
of Employees

Controls/Electrical Services

**Digital Enterprise**

MES, IOT & Automation  
Advisory Services  
Sustainment  
ERP Integration

Construction Mgt  
Mechanical  
ERP Deployment  
IT Infrastructure Outsourcing

MES, IoT & Automation

MES, IoT & Automation

# Contact Us



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