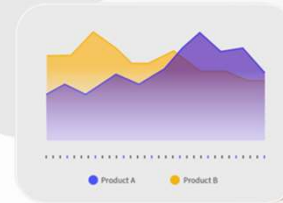CLOUDSUITE SOLUTIONS

INDUSTRY SPECIFIC

Prophecy IoT®

Your Manufacturing World is Living on the Edge – Industrial IoT Can Help!

Presenter Name
Role

Date 0000.00.00

Operational Improvements are Biggest Manufacturing Goals

Key Performance Indicators	Share of companies that regard the respective KPI as very important or important for measuring the smart factory strategy
Operational - Increase in overall equipment effectiveness (OEE)	86%
Operational - Increase in labor efficiency	79%
Operational - Increase in output	78%
Operational - Decrease in costs	77%
Operational - Increase in quality	76%
Supply Chain - Increase in supply chain resiliency	73%
Marketing & Sales - Increase in revenue	69%
Operational - Increase in on-time delivery	69%

Microsoft Report 2022

infor   Prophecy

Smart Factory - Connectivity

Smart Factory

Equipment Automation

Worker Automation
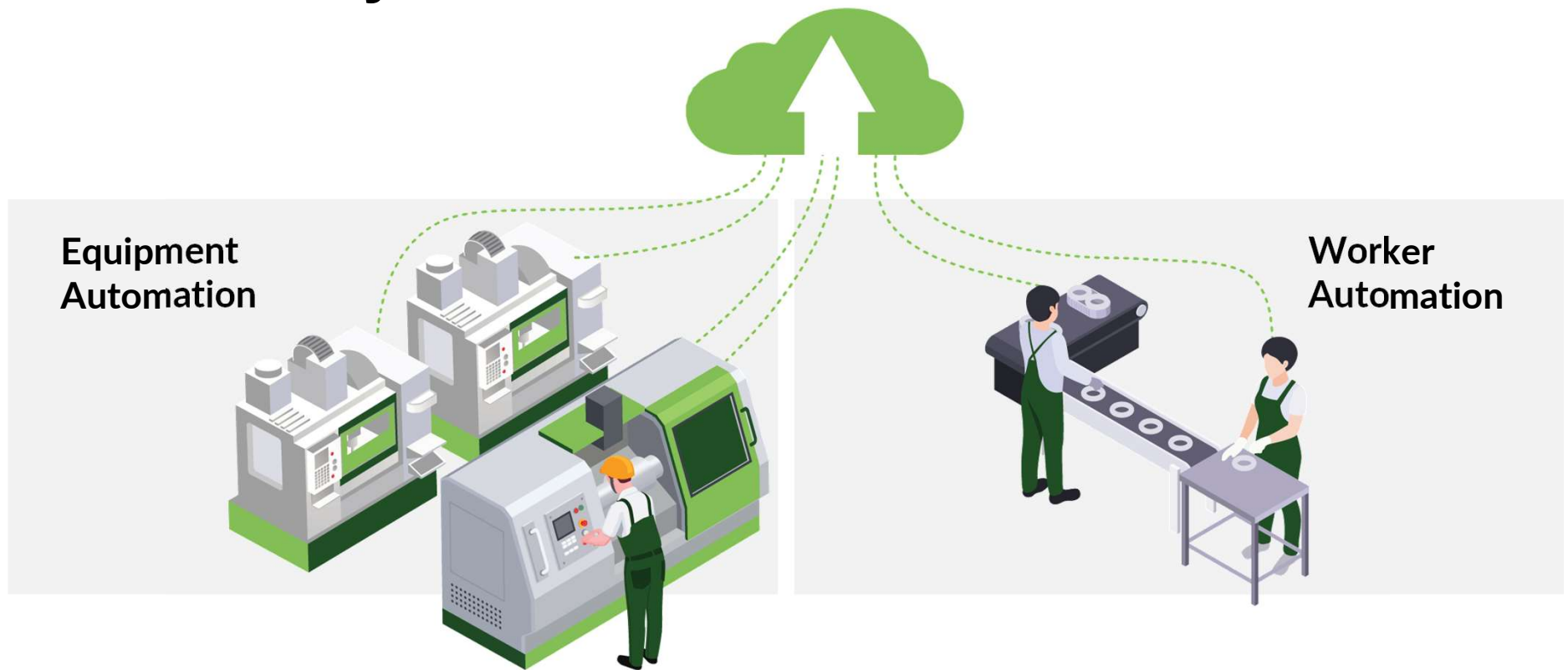
Equipment Automation

Live Streaming Connectors

PLC Connectors

- Allen Bradley
- Modbus
- Siemens
- OPTO
- MT Connect
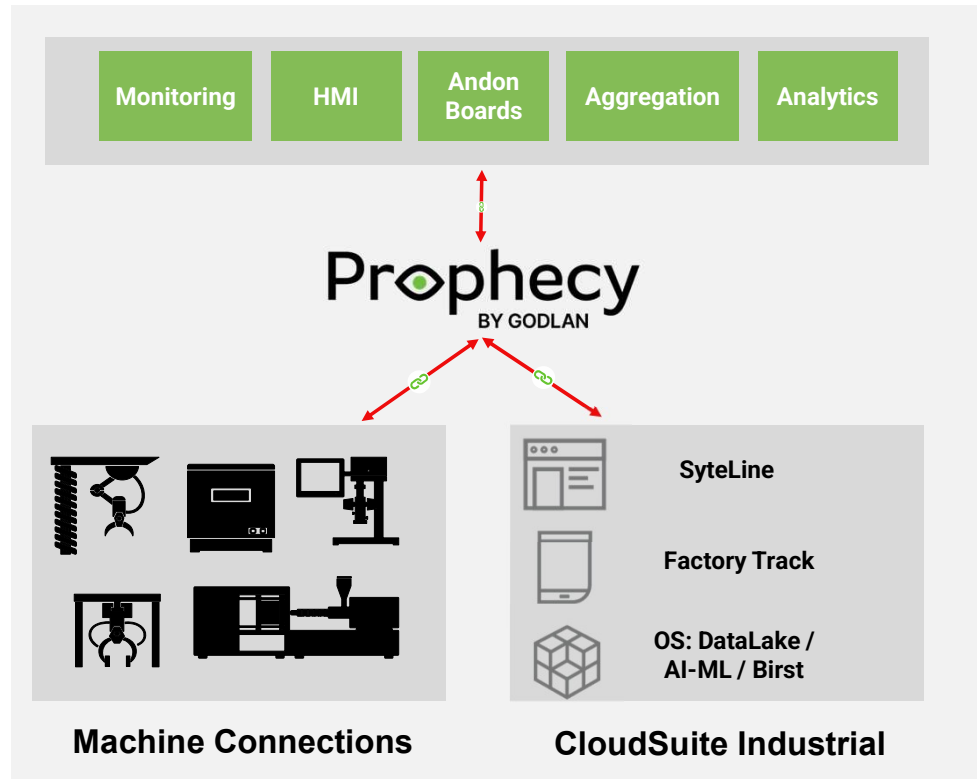- OPC & OPC UA
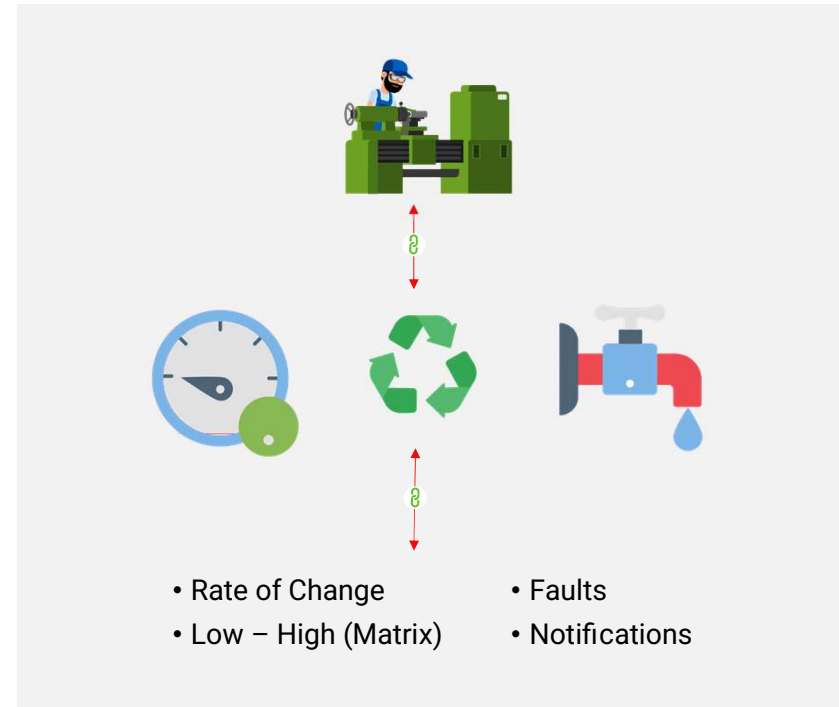- MQTT
- CANbus
- Kepware

Edge Connectors

- Stack Light State
- Voltage
- Pressure
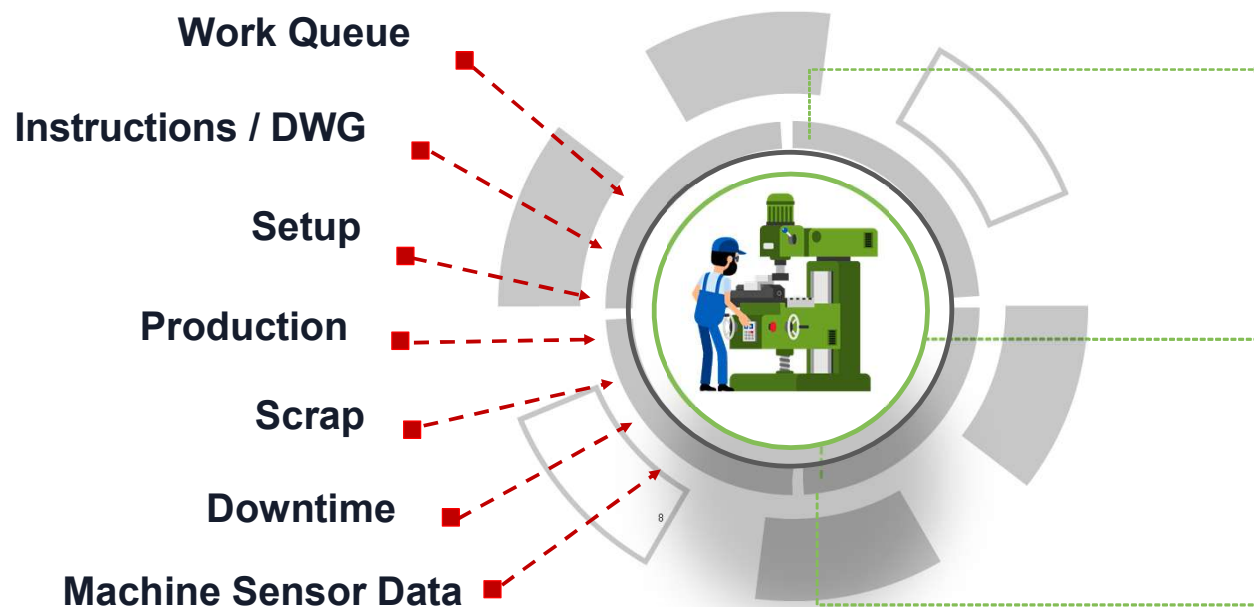- Temperature
- Motion
- Humidity
- Speed
- Vibration

Monitoring HMI Andon Boards Aggregation Analytics

Prophecy BY GODLAN

SyteLine

Factory Track

OS: DataLake / AI-ML / Birst

Machine Connections

CloudSuite Industrial

Live Monitoring – Change Detection & Notifications

- Rate of Change
- Low – High (Matrix)
- Faults
- Notifications

Smart Factory - Connected Workplace

Work Queue

Instructions / DWG

Setup

Production

Scrap

Downtime

Machine Sensor Data

Operator HMI

Andon Boards

Asset Health

Visualization – Andon Boards

Manufacturing Plant Floor

- Display LIVE on Shop Floor
- TV – Web Link

Production

- Work Center Status
- Equipment / Mechanical Room

IoT - Real Time Factory Visualization

Manufacturing Work Groups

- Display LIVE on Shop Floor
- TV – Web Link

Production

- Work Center Status
- Job Status
- Targets - Hours (plan vs actual)
- Targets - Qty (plan vs actual)
- Target Scrap % by reason
- Downtime % by reason

Real Time HMI & Visualization

Simple Engagement on One Screen

Reduce complexity by combining multiple operator tasks into a single view

- Live Machine State

- Downtime - Reasons

- CSI Job Interaction

- Quality / Scrap

- Label Printing

- IDM - View Drawing & Work Instructions

- Trigger Maintenance

- Transaction Automation

- Alert Supervisor
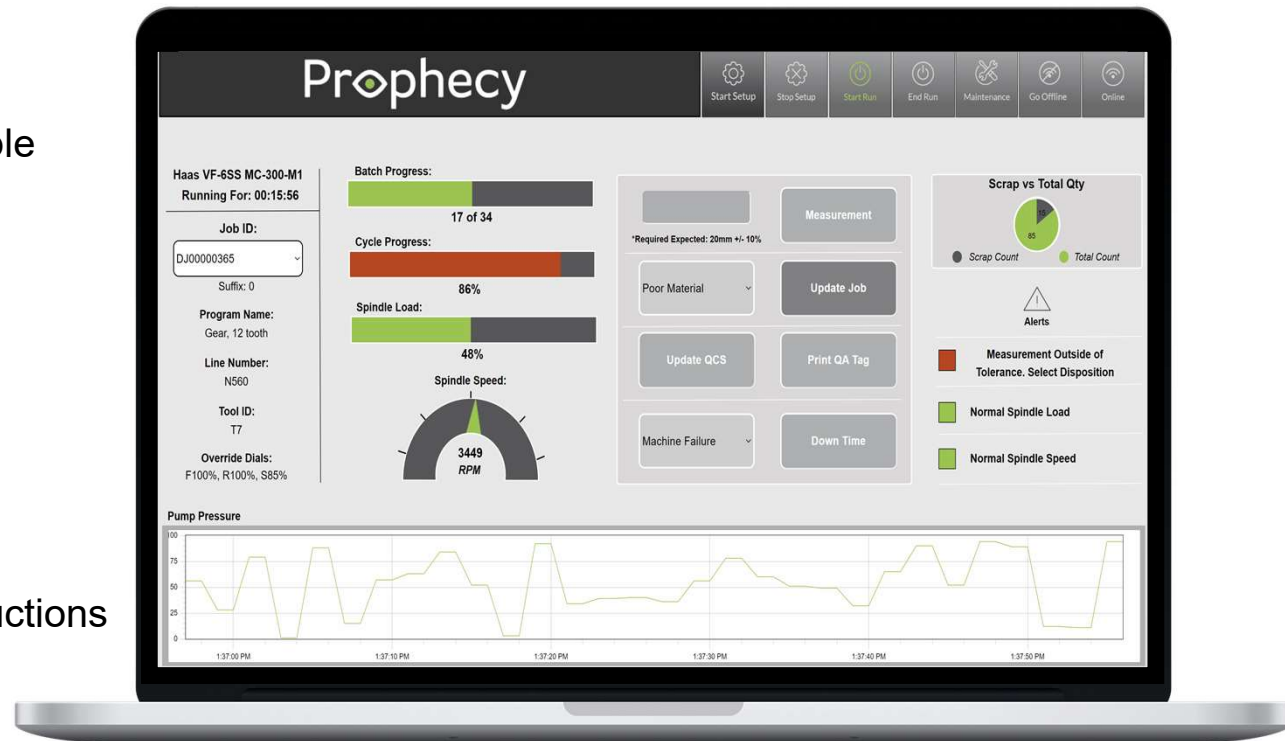
IoT - Real Time Asset Card Visualization

Simple Engagement on One Screen

Live– Asset Monitoring

- Alarms
- Job information
- Run vs. Downtime
- Maintenance schedule
- Stats
- Quality
- Productivity
- Utilization
- OEE

Downtime Reasons – Operator Prompt

Downtime - Ribbon

ID	State Name	Color
1	Running	Green
2	Not Running	White
3	Shift Exception	Orange
4	Off-Shift Default	Black
5	In Setup	Yellow
6	Broken Tooling	Blue
99	Missing Sensor Data	Red
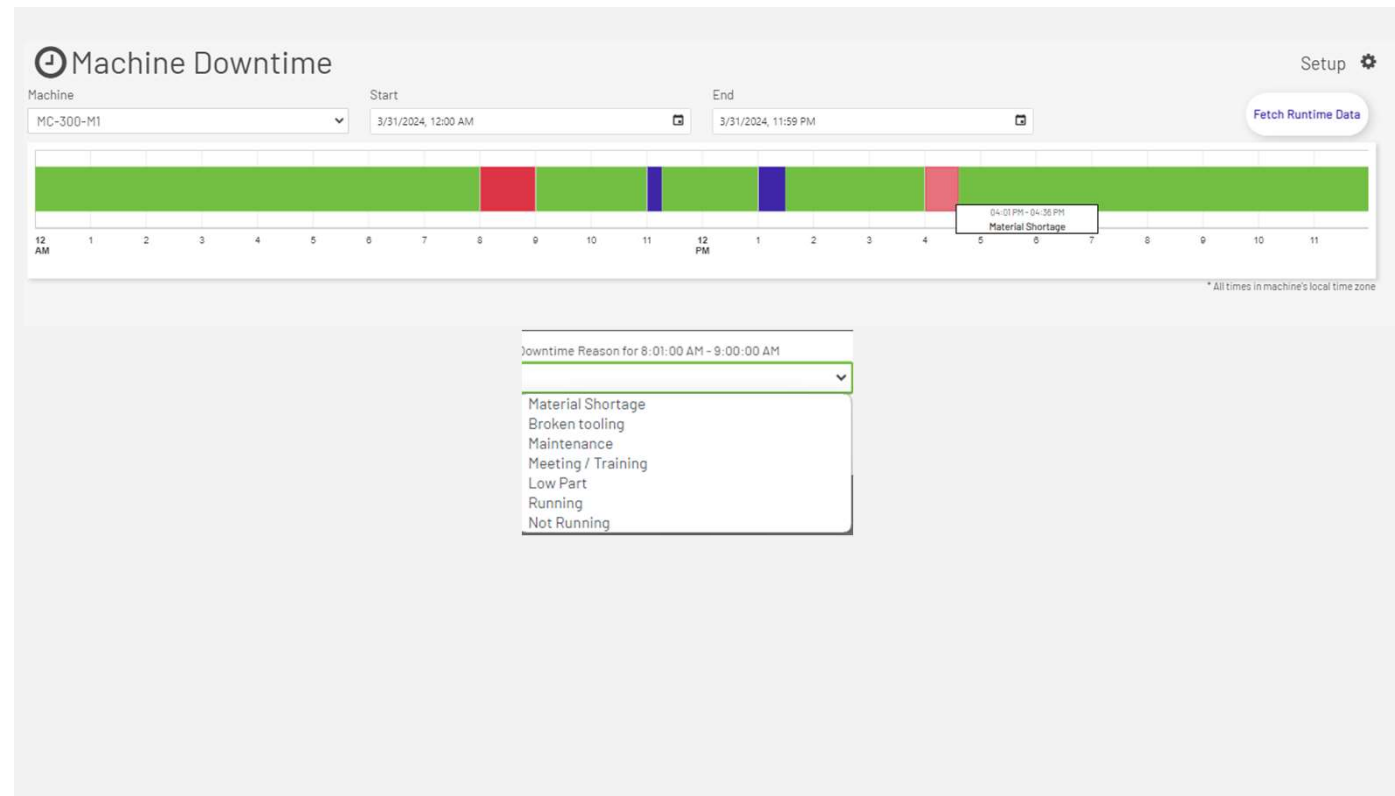
Downtime Management

Downtime - Ribbon

ID	State Name	Color
1	Running	Green
2	Not Running	White
3	Shift Exception	Orange
4	Off-Shift Default	Black
5	In Setup	Yellow
6	Broken Tooling	Blue
99	Missing Sensor Data	Red

Empowering Workers

Connected Workplace
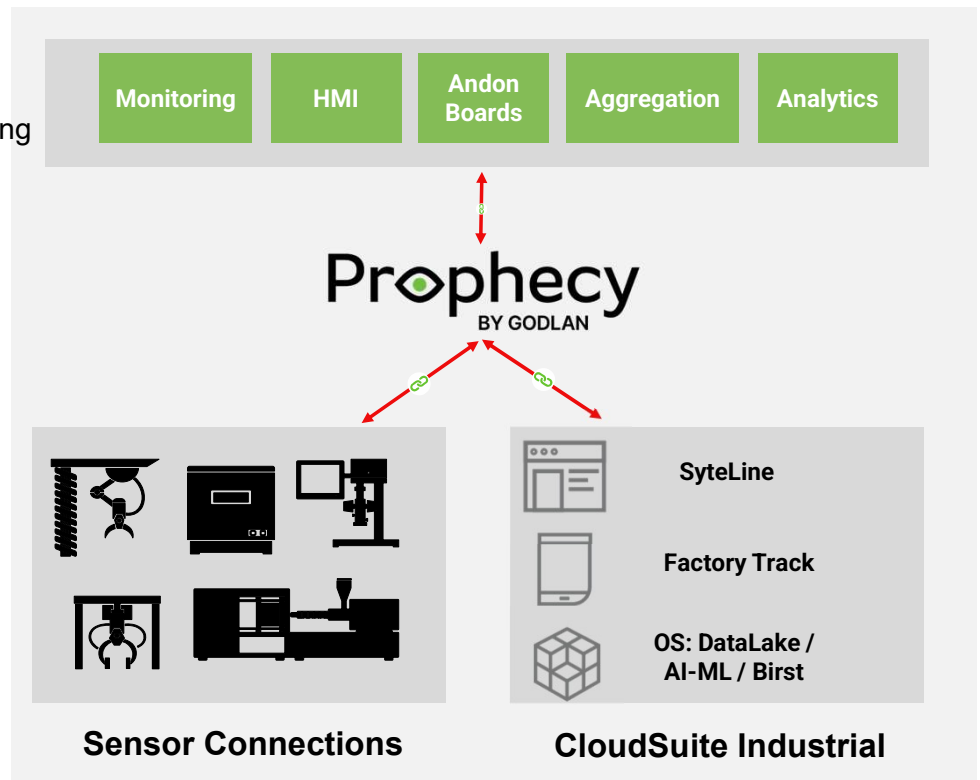
Factory Track – WM & SF

- Live machine state
- Downtime detection
- Operator / transaction engagement
- Maintenance ticket / exceptions

- Scrap detection & label printing
- Labor production reporting
- Control Tower – LIVE data

SyteLine & CloudSuite Industrial

- Material usage
- Visualize drawings
- Set up and production engagement

Prophecy

- LIVE Andon boards
- Asset health
- Machine alerts & monitoring

| Monitoring | HMI | Andon Boards | Aggregation | Analytics |

Prophecy BY GODLAN

Sensor Connections

SyteLine

Factory Track

OS: DataLake / AI-ML / Birst

CloudSuite Industrial

infor. **Prophecy**

Factory Track

Factory Track Integration

- Control Tower – Live Data

- Downtime

- Qty & Scrap detection

- Maintenance tickets

Key Performance Metrics – Prophecy & Factory Track

Job to Shift Time

The Labor Comparison dashboard displays a bar showing the total hours per day employees spent on jobs and a line chart showing the total time employees were on shifts for a day.

Total Job to Shift Time

The Labor Total dashboard displays a bar that compares the total time employees spent on jobs for the set time frame to the total time employees spent on shifts for the set time frame. were on shifts for a day.

Labor Efficiency – Employee Engagement

- Shift Time: Total time an employee was on a shift for the day.
- Job Time: Total time an employee spent actively working on jobs for the day.
- Goal: Goal set for efficiency.

Key Performance Metrics – Prophecy & Factory Track

Parts Per Day

The Parts Per Day dashboard displays a bar chart with a goal line showing the parts completed per day and how that number measures up to a set completion goal.

Planned to Actual Hours

The Planned To Actual Hours dashboard displays a bar chart with a line. The bar is planned job hours per day and the line is the actual hours spent on those jobs for the current day.

Completion to Scrap

The Completion to Scrap dashboard displays a bar chart with the total completed parts and reported scrap. The bar is the completed parts and scrap for the current day.

Throughput Optimization

- Total PPPH: Total planned parts per hour.
- Total APPH: Total actual parts per hour.
- Total Released: Sum of all released quantities for the jobs.
- Total Move (Job): Sum of all moves at the last job operation for the filtered time period.
- Daily Scrap: Sum of all scrap quantities in the Main Grid for the filtered time period.
- Average Yield: Average Yield from the Main Grid.

Key Performance Metrics – Prophecy & Factory Track

Top Scrap Items

The Top Scrap Items dashboard displays a bar chart showing the top items contributing to scrap over a period. This dashboard defaults to a date range of 7 days and the top 5 contributing items.

Top Scrap Reasons

The Planned To Actual Hours dashboard displays a bar chart with a line. The bar is planned job hours per day and the line is the actual hours spent on those jobs for the current day.

Completion to Scrap

The Completion to Scrap dashboard displays a bar chart with the total completed parts and reported scrap. The bar is the completed parts and scrap for the current day.

Throughput Optimization

- Total PPPH: Total planned parts per hour.
- Total APPH: Total actual parts per hour.
- Total Released: Sum of all released quantities for the jobs.
- Total Move (Job): Sum of all moves at the last job operation for the filtered time period.
- Daily Scrap: Sum of all scrap quantities in the Main Grid for the filtered time period.
- Average Yield: Average Yield from the Main Grid.

Prophecy & Infor Augmented Intelligence - AI/ML
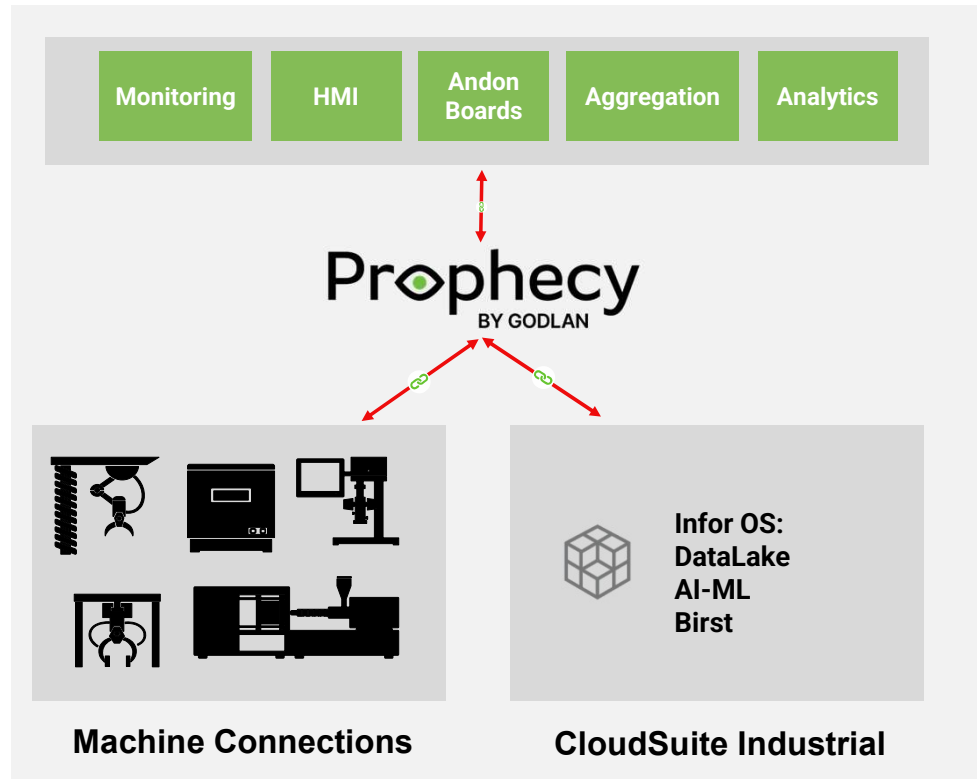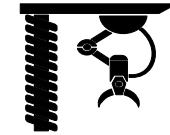
Asset Intelligence

Maximize Life of Assets

- Predictive vs. Reactive Maintenance
- Parts Planning

Reduce unplanned downtime and Associated costs

- Monitoring

Root Cause Correlation Data

- Part
- Operator
- Machine
- Tooling

| Monitoring | HMI | Andon Boards | Aggregation | Analytics |

Prophecy BY GODLAN

Machine Connections

Infor OS:
DataLake
AI-ML
Birst

CloudSuite Industrial

AI / ML - Asset risk/criticality

Objective

- Predict risk of asset failing to reduce unexpected equipment failures, increasing machine availability

- Move maintenance from time basis to risk/reliability basis

- Forecast new equipment failures by leveraging PROPHECY IoT data and/or maintenance history

Outcomes

- At-risk equipment highlighted in a simple, understandable dashboard

- Users notified when risk levels exceeded, prompting action

- Enabled transition from time-based or event driven to predictive maintenance for assets
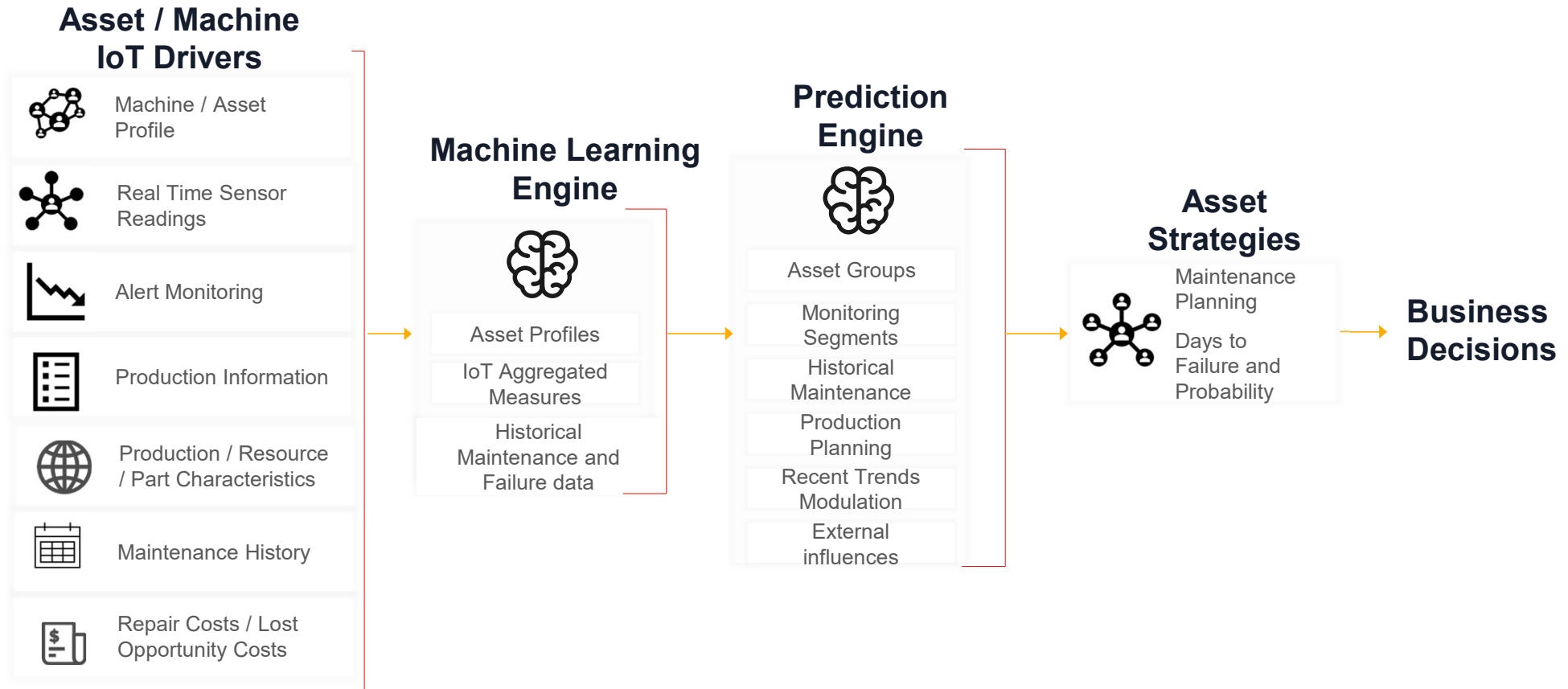
Impact & Key Results

Reduce
unplanned downtime
and costs

Improve
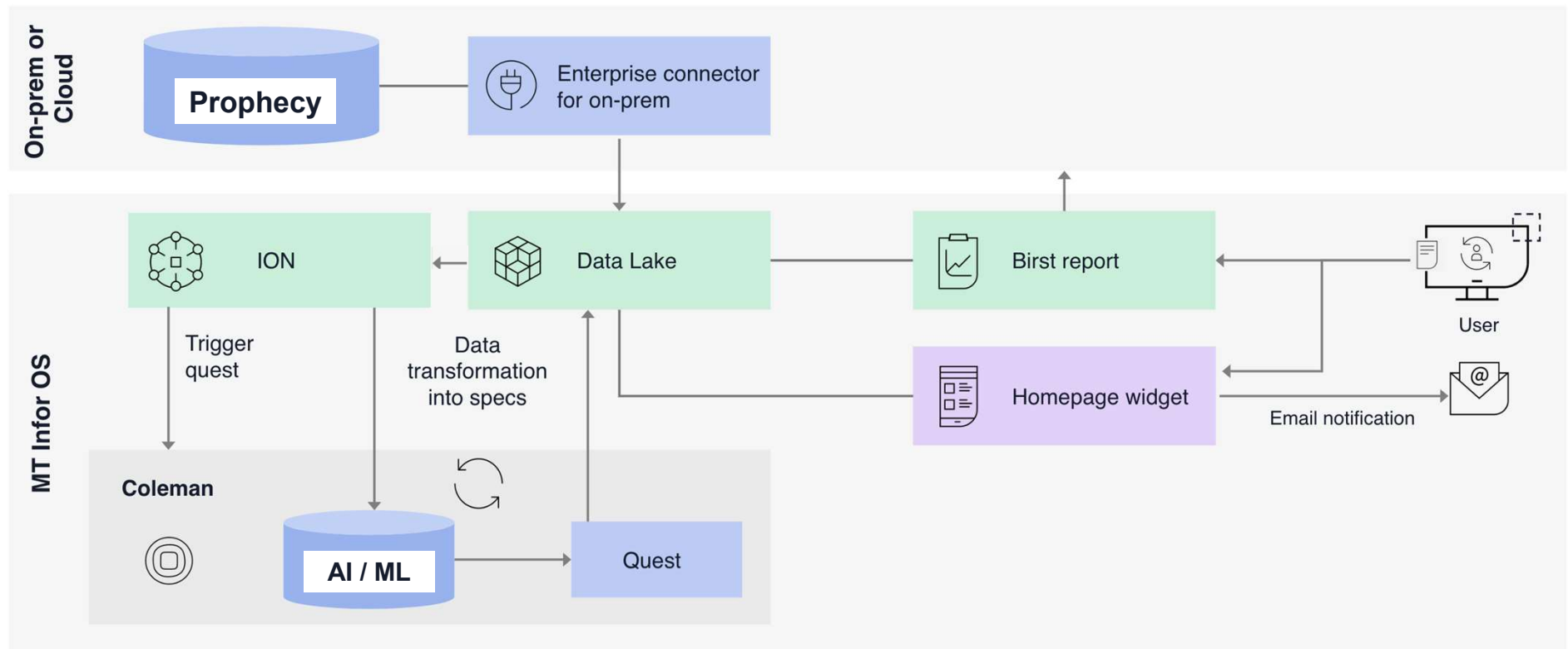failure prediction accuracy
and maintenance labor
planning

Ease
manual suboptimal user
processes

Asset criticality

Intelligent Data drives the AI/ML Engine – Data Journey

Asset / Machine IoT Drivers

- Machine / Asset Profile
- Real Time Sensor Readings
- Alert Monitoring
- Production Information
- Production / Resource / Part Characteristics
- Maintenance History
- Repair Costs / Lost Opportunity Costs

Machine Learning Engine

- Asset Profiles
- IoT Aggregated Measures
- Historical Maintenance and Failure data

Prediction Engine

- Asset Groups
- Monitoring Segments
- Historical Maintenance
- Production Planning
- Recent Trends Modulation
- External influences

Asset Strategies

- Maintenance Planning
- Days to Failure and Probability

Business Decisions

Infor Augmented Intelligence - Data Journey

Real-time Trends and Analytics –
Risk & Event Correlation to IoT Data
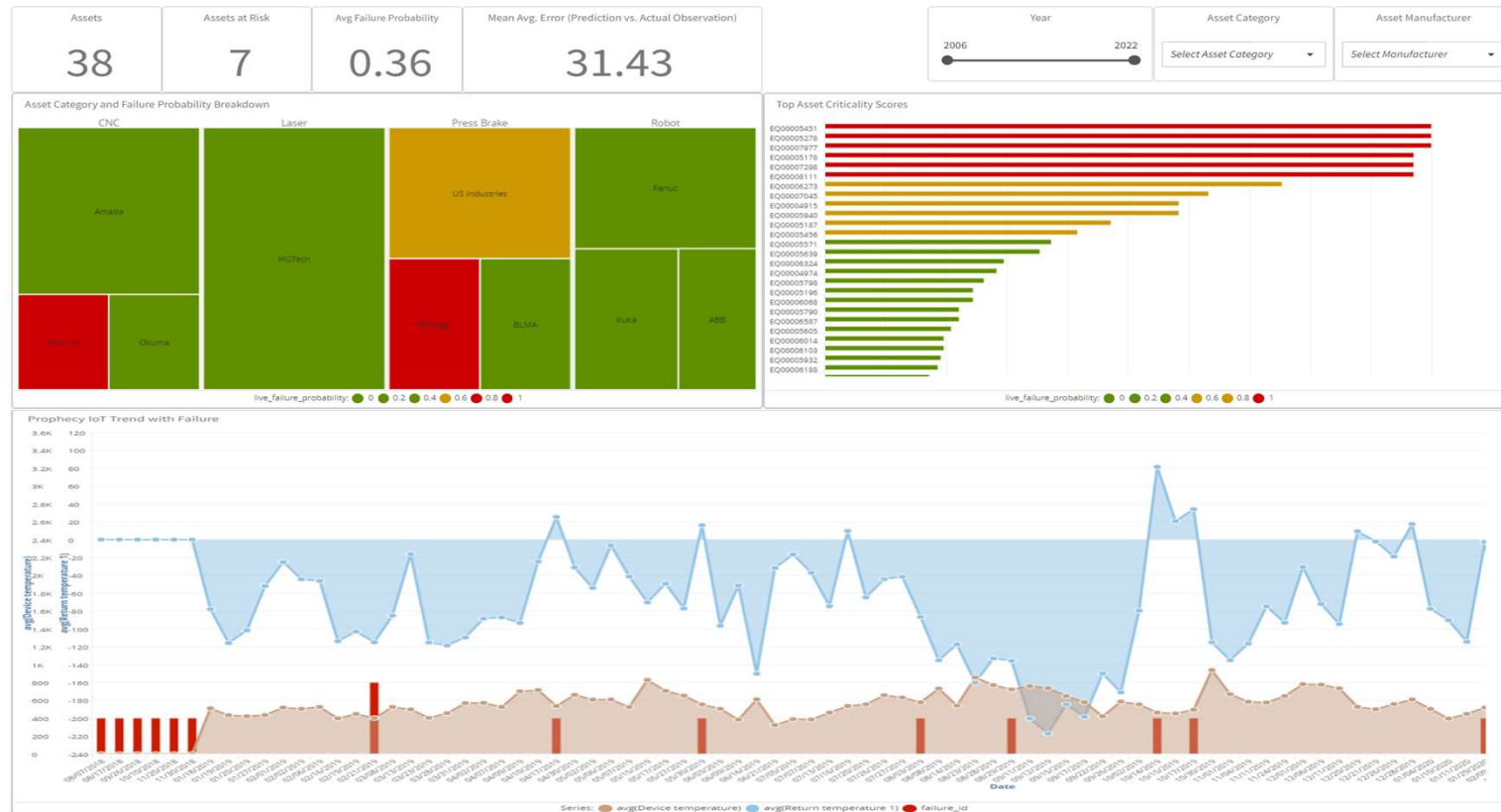
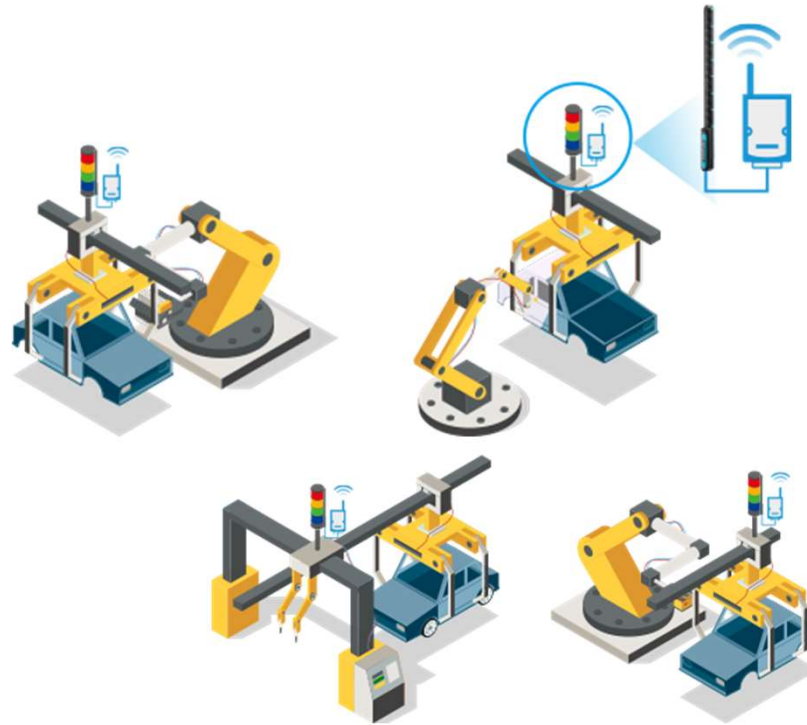# Real-time Trends and Analytics –
Event Correlation to IoT Data

Executing AI Model Recommendations

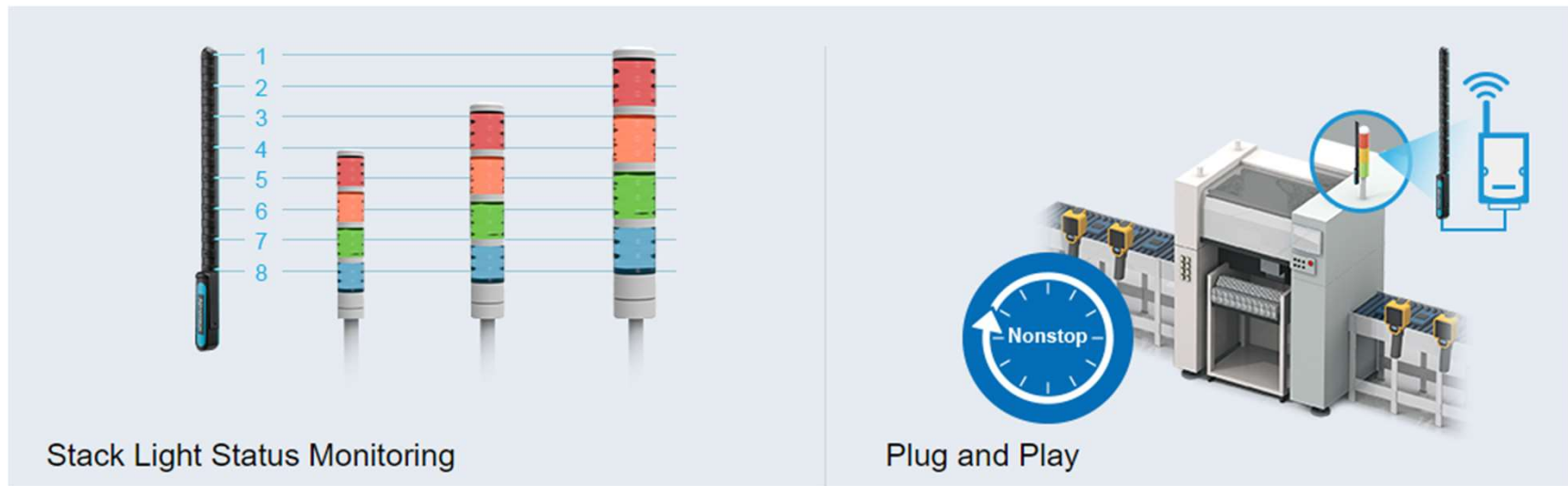Connected CloudSuite for work order generation + email notification

Prophecy Rapid Implementation Approach

Quick Time to Value

Stack Light Status Monitoring

Plug and Play

Stack Light - Machine Utilization

Stack Light - Machine States

ID	State Name	Color
1	Running	Green
2	Not Running	White
3	Shift Exception	Orange
4	Off-Shift Default	Black
5	In Setup	Yellow
6	Broken Tooling	Blue
99	Missing Sensor Data	Red

infor

Questions?