

LISTEN.  
THINK.  
SOLVE.®

# L03: Turn Control System Data Into Improved Business Performance Leveraging FactoryTalk Products

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# Overview

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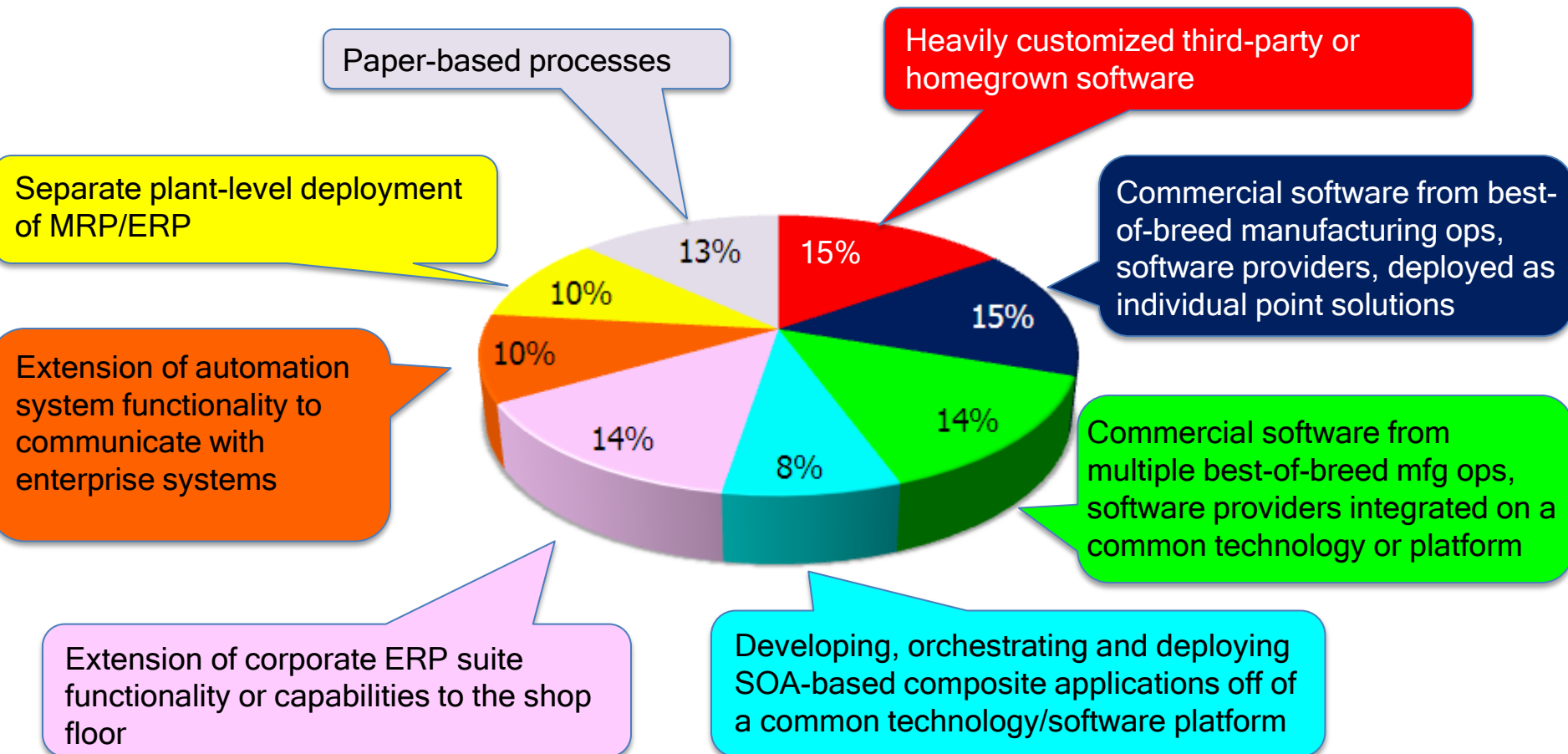
Traditional Manufacturing Challenges

What is Manufacturing Intelligence?

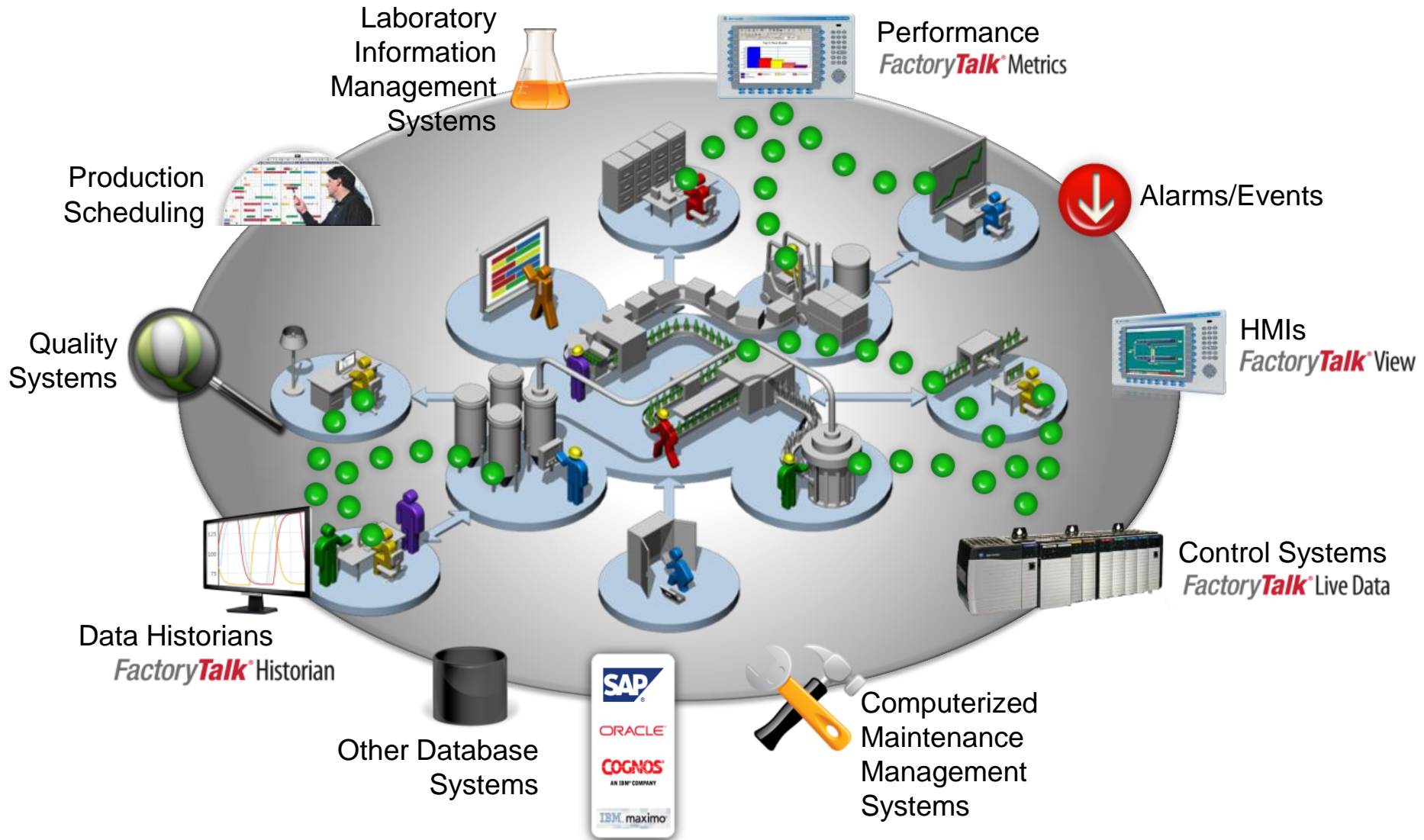
Leveraging Manufacturing Intelligence  
to Improve Efficiencies & Reduce Costs

# Technology & Processes Supporting Manufacturing Today

Approximately what percentage of your organization's manufacturing operations is managed with the following types of technology and processes today?



# Multiple Sources of Manufacturing Data



# Traditional Manufacturing Today

- Plant floor data is typically used only for control & visualization
  - Not typically used to analyze/improve the manufacturing process itself
- Leveraging control system data enables process visibility, analysis, and improvement
  - Simple operator reports & dashboards to identify sources of downtime
- Functional areas within the plant operate autonomously
  - Limited visibility only within a given functional area (i.e. process, packaging, etc.)
  - To truly improve manufacturing, visibility/reporting/dashboards “across the plant” is required to give context

## **EXAMPLE**

Production personnel may know that they produced 100 units, but without quality data, nobody knows there was a 20% scrap rate.

# Islands of Information

How many data sources are needed to make a decision?

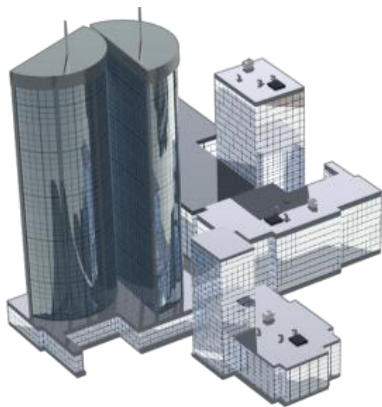


# What is Manufacturing Intelligence ?

- Manufacturing Intelligence

- Software used to bring a corporation's manufacturing data together from many sources for the purpose of reporting, analysis, and visualization.
- As data is combined from multiple sources, it can be given context that will help users find what they need regardless of where it came from.
- The primary goal is to turn data into real knowledge (information), and drive business results based on that knowledge.

Source: Wikipedia [http://en.wikipedia.org/wiki/Enterprise\\_manufacturing\\_intelligence](http://en.wikipedia.org/wiki/Enterprise_manufacturing_intelligence)



**IMPROVED**  
Decision  
Making

# Manufacturing Information System

Role based specific information



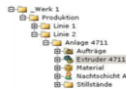
Web access and mobile clients



Business integration



One common production model



Trustful data storage



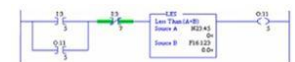
Available production data



One common network



Asset Management



... based on Rockwell Automation technology!

# Varying Information Users

## Operator



What do operators care about?

- Monitoring process to keep production running
- Identifying relationships to optimize the process

## Production



What do production supervisors care about?

- Schedule, track production activity
- Way production is running, ways to improve

## Engineering



What does maintenance/engineering care about?

- Keeping plant running
- Predicative maintenance, asset optimization

## Quality



What does the quality dept. care about?

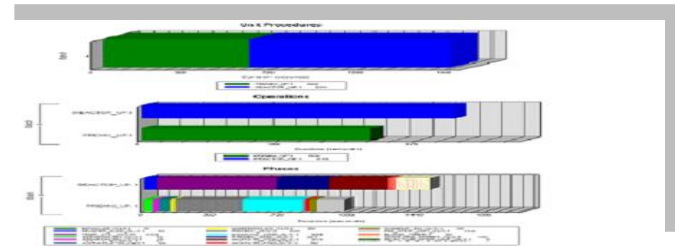
- How product was made, ensure compliance
- Ways to improve product and yield

## Plant Mgmt.



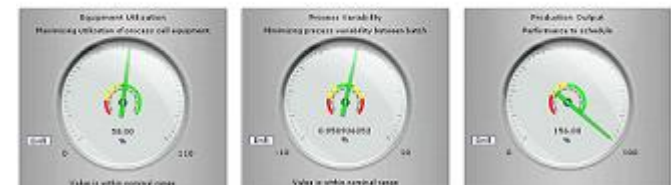
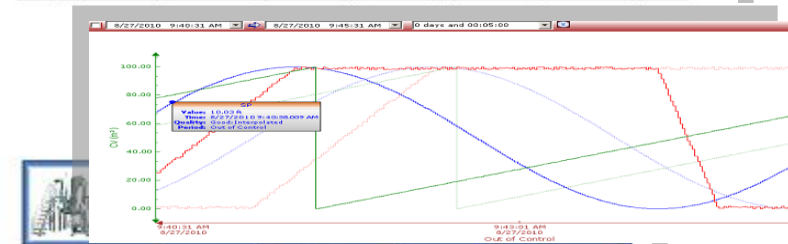
What do business managers care about?

- Costs, schedules, production output
- Financial indicators, sustainability



**Temperature / Pressure Loop - Monitoring**

| Device | Control Variable | Process Variable | SetPoint | Auto Mode | Manual Mode | % in Manual (last 8 hours) |
|--------|------------------|------------------|----------|-----------|-------------|----------------------------|
| TIC116 | 11.12            | 71.18            | 100.00   | FALSE     | TRUE        | 50%                        |
| TIC117 | 50.00            | 71.02            | 200.00   | FALSE     | TRUE        | 50%                        |
| TIC216 | 11.23            | 71.20            | 100.00   | FALSE     | TRUE        | 50%                        |
| TIC217 | 50.00            | 70.50            | 99.71    | FALSE     | TRUE        | 50%                        |
| PIC118 | 0.00             | 1.56             | 20.00    | FALSE     | TRUE        | 50%                        |
| PIC134 | 0.00             | 0.00             | 0.00     | FALSE     | FALSE       | 50%                        |
| PIC218 | 0.00             | 1.98             | 5.00     | FALSE     | TRUE        | 50%                        |

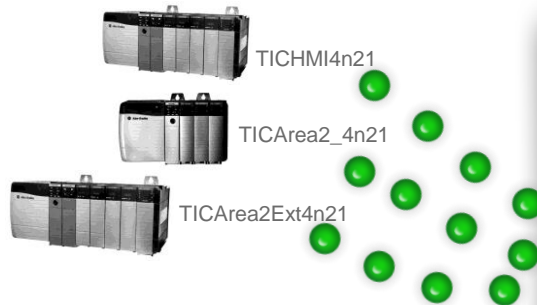


# Unified Production Model (UPM)

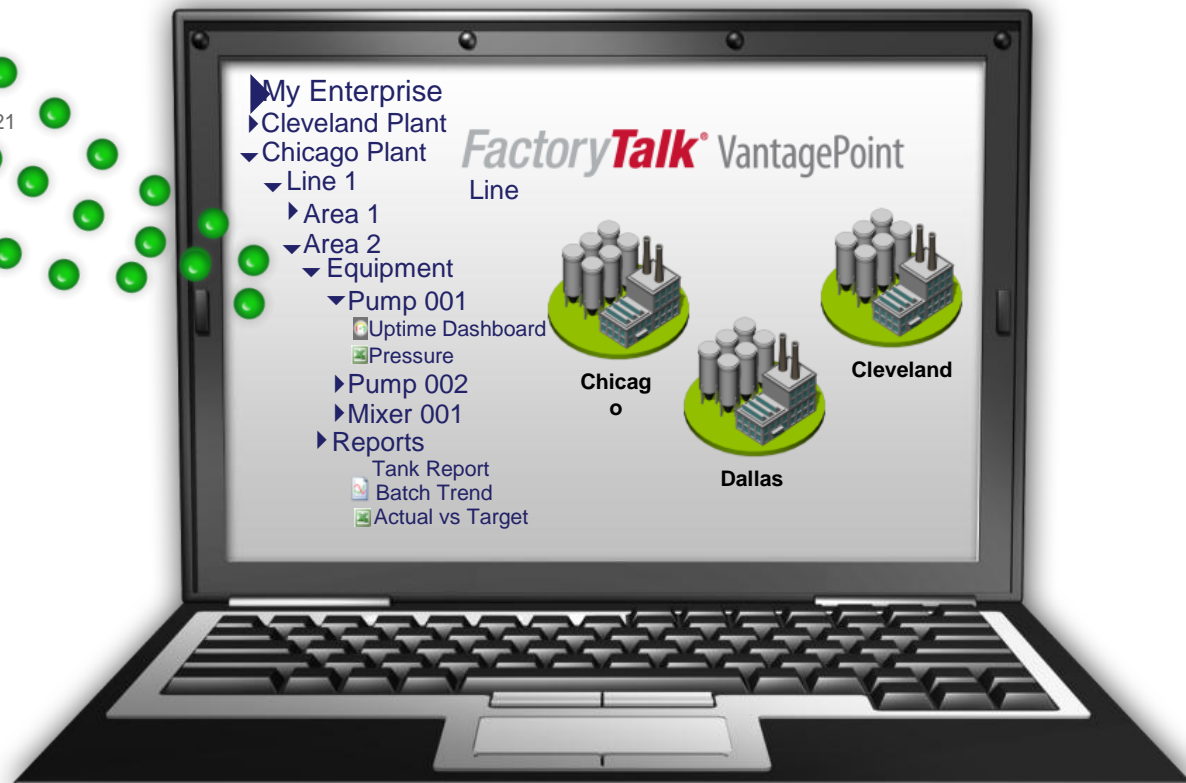
References data directly at its source - “Single Version of the Truth”

Combines relevant data from multiple systems to present the entire story !

Control / Plant Floor  
Operations / Production Scheduling  
Maintenance, Quality, etc.



Maps data from multiple sources into logical units  
Pumps, Valves, etc.  
Plants, Lines, Workcells, etc.  
Products, Ingredients, etc.



# Role-based Reporting and Analytics



## Operator View

- Machine Operations
- Real-time Status from Control System
- Viewable from within HMI



## Maintenance View

- Incorporates Alarm & Event history
- Root Cause Analysis
- Typically viewed as dashboard



## Plant Management View

- Plant-wide performance rollup
- Incorporates financials
- Asset Utilization/yields
- Viewed on desktop or mobile device

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Questions?  
Comments?  
Concerns?

Please ask your lab instructor.

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**Thank you for  
participating!**

Please remember to tidy up your work  
area for the next session.  
We want your feedback! Please  
complete the session survey!