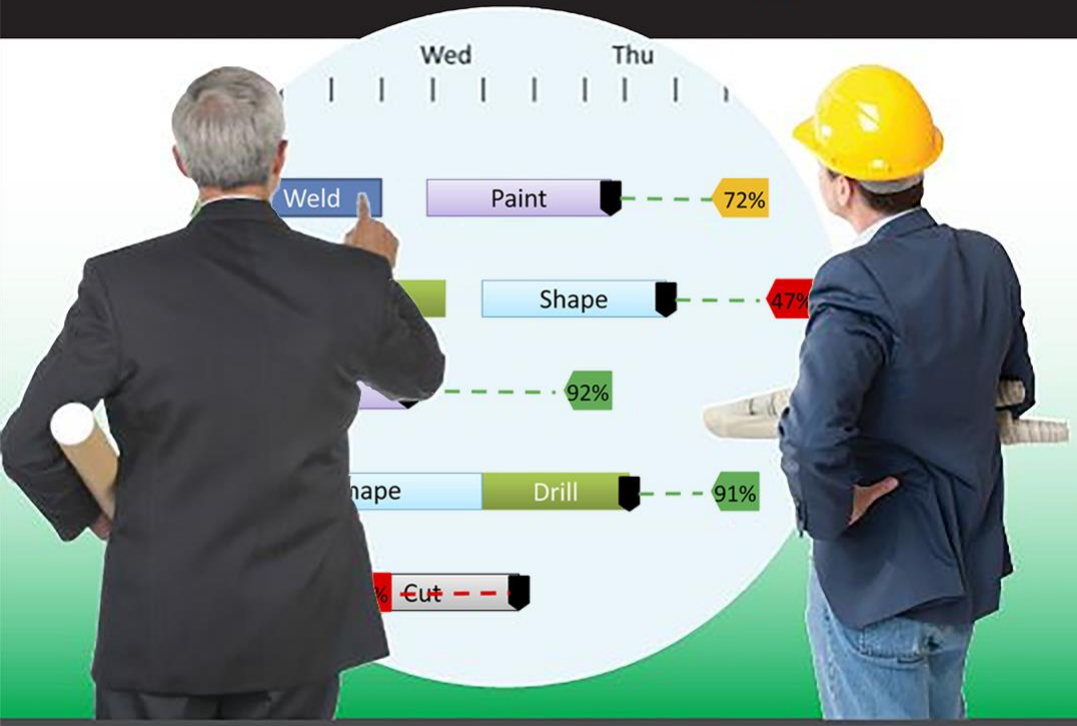
Simio

Forward Thinking

Simio.com

Risk-Based **Planning & Scheduling**

Simulation & **Scheduling** in a single application



KEEP
Key Customers

INCREASE
Market Share

IMPROVE
Processes

DMDII
UI LABS Collaboration

Simio & Industry 4.0

Agenda

- What is Industry 4.0
- Illustrative Example
- Intelligent use of Enterprise Data
- How to enable Industry 4.0
- Concept Demonstration

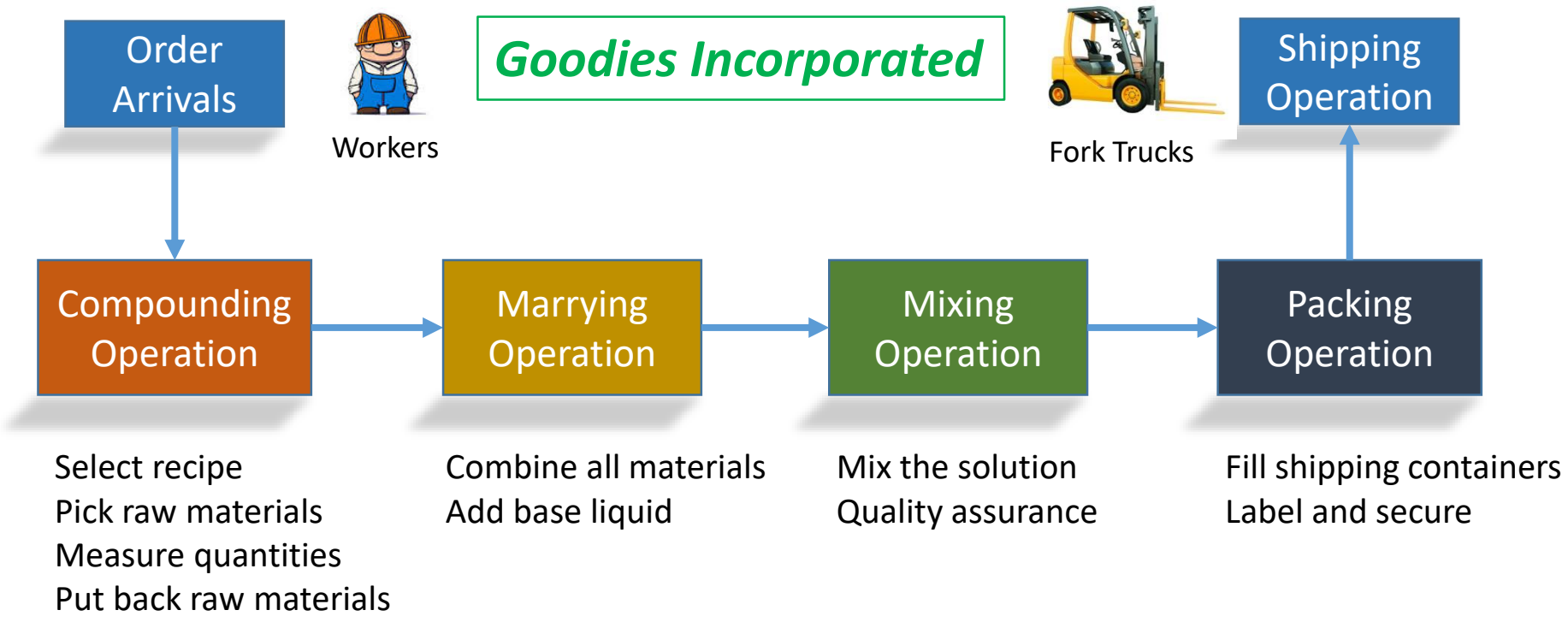
What is Industry 4.0

Smart Manufacturing

The Smart Factory

Connecting the dots…..

Illustrative Example



Before

-Few orders (large min order Qty)
-Few large batches (10 ton)
-Long lead times (14 to 21+ days)
-Few WIP orders
-Long order lead
-1 or 2 large factories

Current Requirements

-Many orders (small – no min order Qty)
-Many small batches (<1 ton)
-Short lead times (48 hours)
-100% Due date performance
-Many WIP orders
-Many factories around the world

Illustrative Example

MES Systems

Data Warehouses

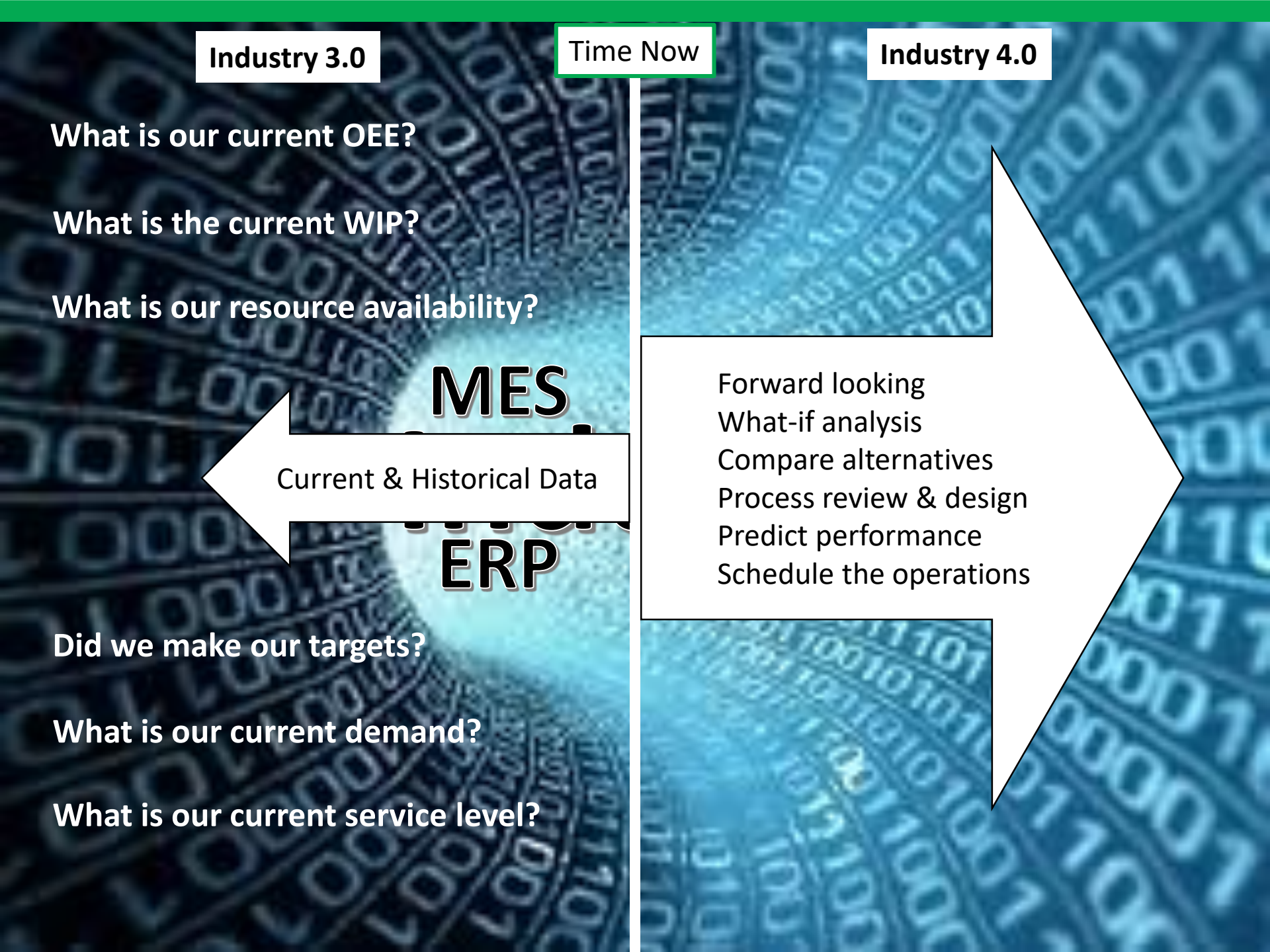
ERP Systems

This is still Industry 3.0

User Based Systems

Automation

Corporate Networks

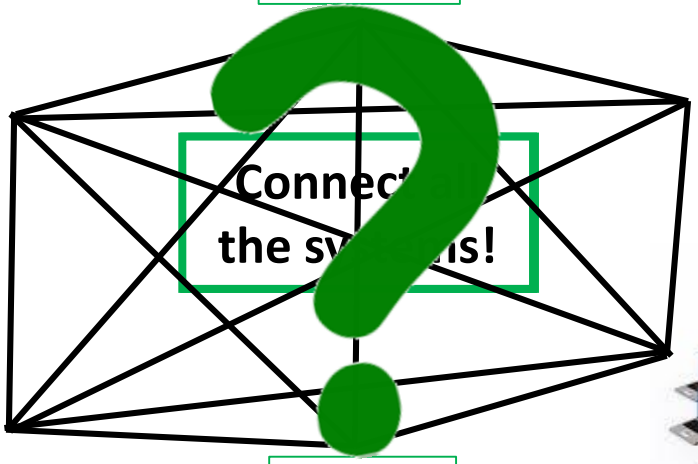

Industry 3.0
Time Now
Industry 4.0
What is our current OEE?
What is the current WIP?
What is our resource availability?
MES
ERP
Current & Historical Data
Forward looking
What-if analysis
Compare alternatives
Process review & design
Predict performance
Schedule the operations
Did we make our targets?
What is our current demand?
What is our current service level?

How Do We Enable Industry 4.0?

MES Systems

Data Warehouses

ERP Systems



Automation

User Based Systems

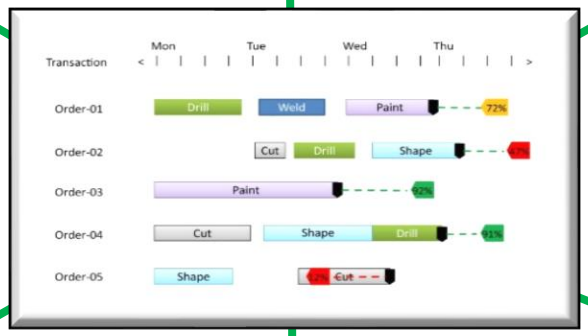
Corporate Networks

Intelligent Use of the Enterprise Data

MES Systems

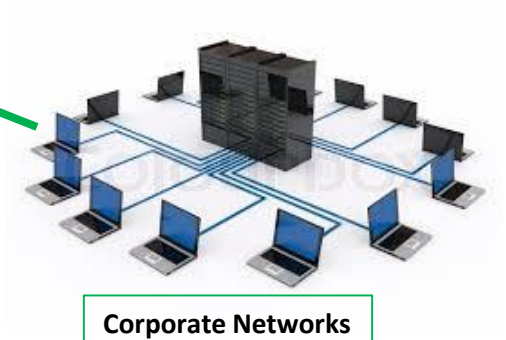
Data Warehouses

ERP Systems



User Based Systems

Automation



Corporate Networks

How can this Schedule be Utilized?

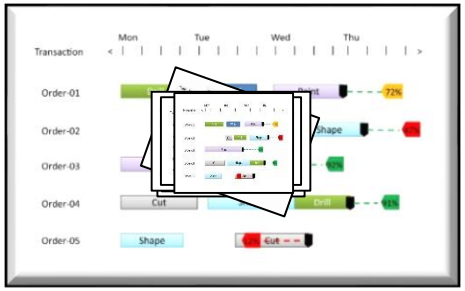
Public Portal

MES Systems

Printer

Data Warehouses

ERP Systems



User Based Systems

Automation

Corporate Networks/Private Portal

Value of a Real-time Data Driven **Simulation-based Scheduling**

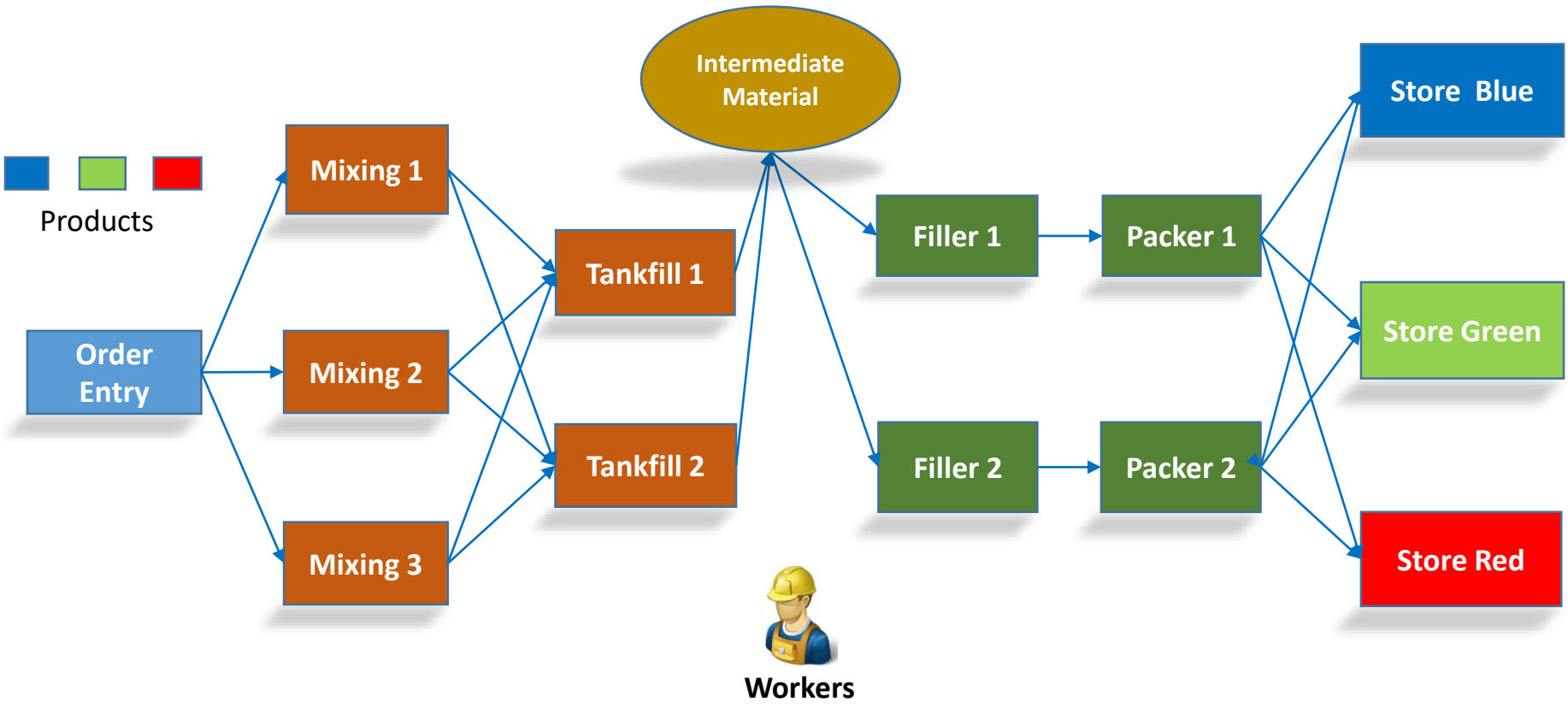
- Visualize the production process
- Standardize & Harmonize the data and processes
- Predict future performance
- Evaluate alternatives
- Generate feasible schedules
- Validate & correlate the operational data
- Understand the impact of changes
  - New product introduction
  - Adding production capacity to the line
  - Changing worker shift patterns
  - Material availability and inventory

Making informed decisions about the future, based on the current status and planned events

Example to Illustrate the Concept

Industry 4.0 Example

- This example will illustrate a data generated and driven scheduling model integrated to SAP, Wonderware MES and Excel. This is an Order based process producing intermediate material through a mixing and tank fill process for final consumption by the filling and packing lines.



Industry 4.0 Example

MES Systems

Data Warehouses

ERP Systems

Step1:

Import the production process and order data from MES. Generate the model and produce a detail production schedule

User Based Systems

Automation

Corporate Networks

Industry 4.0 Example

MES Systems

Data Warehouses

ERP Systems

Step 2:

Import new order data from SAP using IDOCS. Update the orders in the model and produce a new detail production schedule

User Based Systems

Automation

Corporate Networks

Industry 4.0 Example

MES Systems

Data Warehouses

ERP Systems

Step 3:

Import additional order data from SAP HANA. Update the orders in the model and produce a new detail production schedule

User Based Systems

Automation

Corporate Networks

Industry 4.0 Example

MES Systems

Data Warehouses

ERP Systems

Step 4:

Import the worker schedules from Excel. Update the model and produce a new detail production schedule

Workers

User Based Systems

Automation

Corporate Networks

Industry 4.0 Example

MES Systems

Data Warehouses

ERP Systems

Step 5:

Publish the updated detail production schedule on the portal to share and distribute the model and scheduling results.

Workers

User Based Systems

Automation

Corporate Networks

Let’s show you…..

How Do We Enable Industry 4.0?

- Data Generated
- Data Driven
- Event Based
- Manually Driven

- Process Model
- "What-if" Analysis
- Detailed Schedule
- Fully Automated

MES Systems

Data Warehouses

ERP Systems

Simio

Forward Thinking

User Based Systems

Automation

Corporate Networks

Thank you!