SAP Manufacturing & Interoperability

Jürgen Wettengl
ASM Manufacturing, SAP AG

THE BEST-RUN BUSINESSES RUN SAP™

Agenda : SAP Manufacturing and Interoperability

- What is the situation today ?
- What are the problems ?
- What are the objectives ?
- How can SAP help ?
- What are the benefits?

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Kitchen

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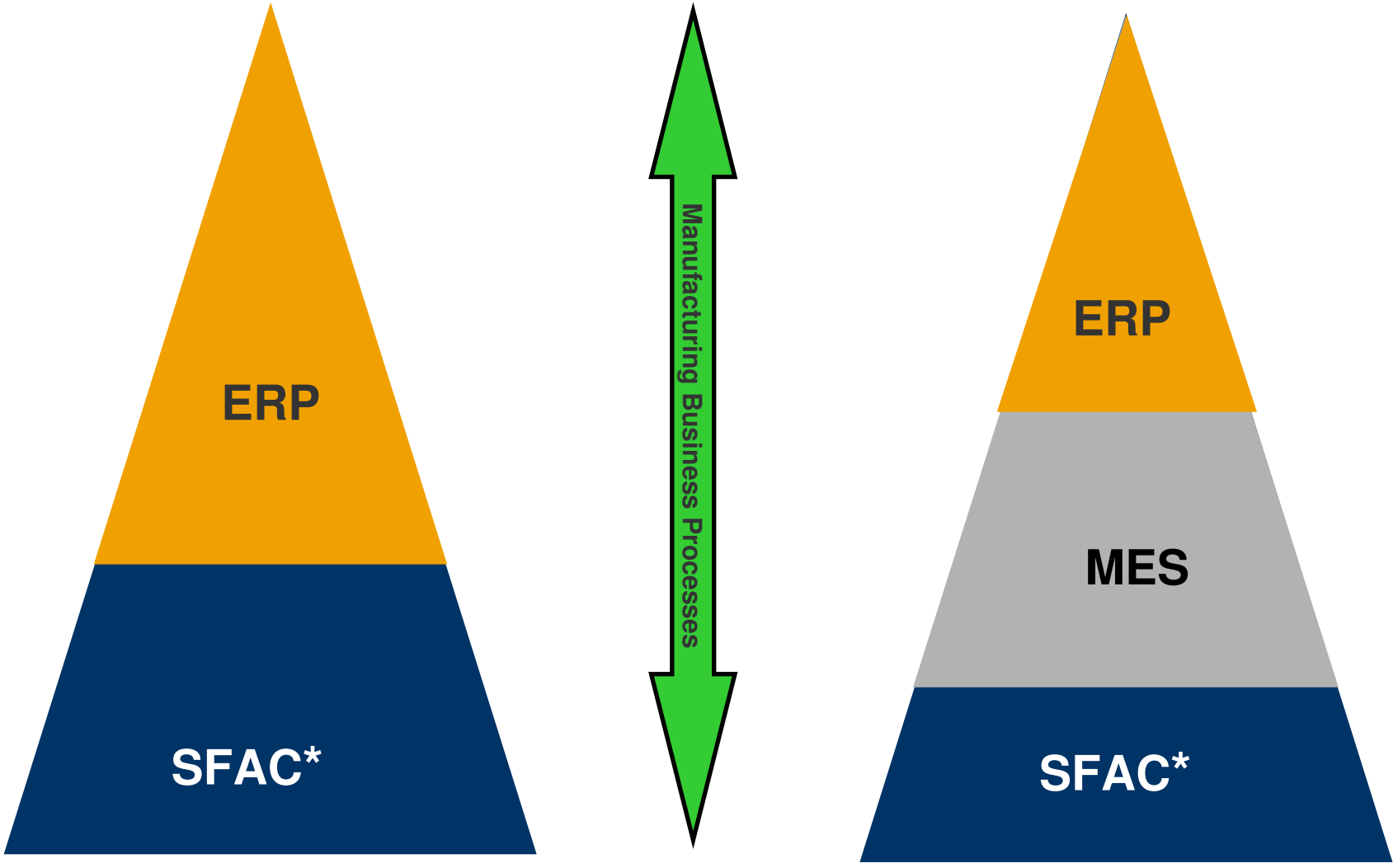
What is the situation today ?



*** Shop Floor Automation and Control Systems**

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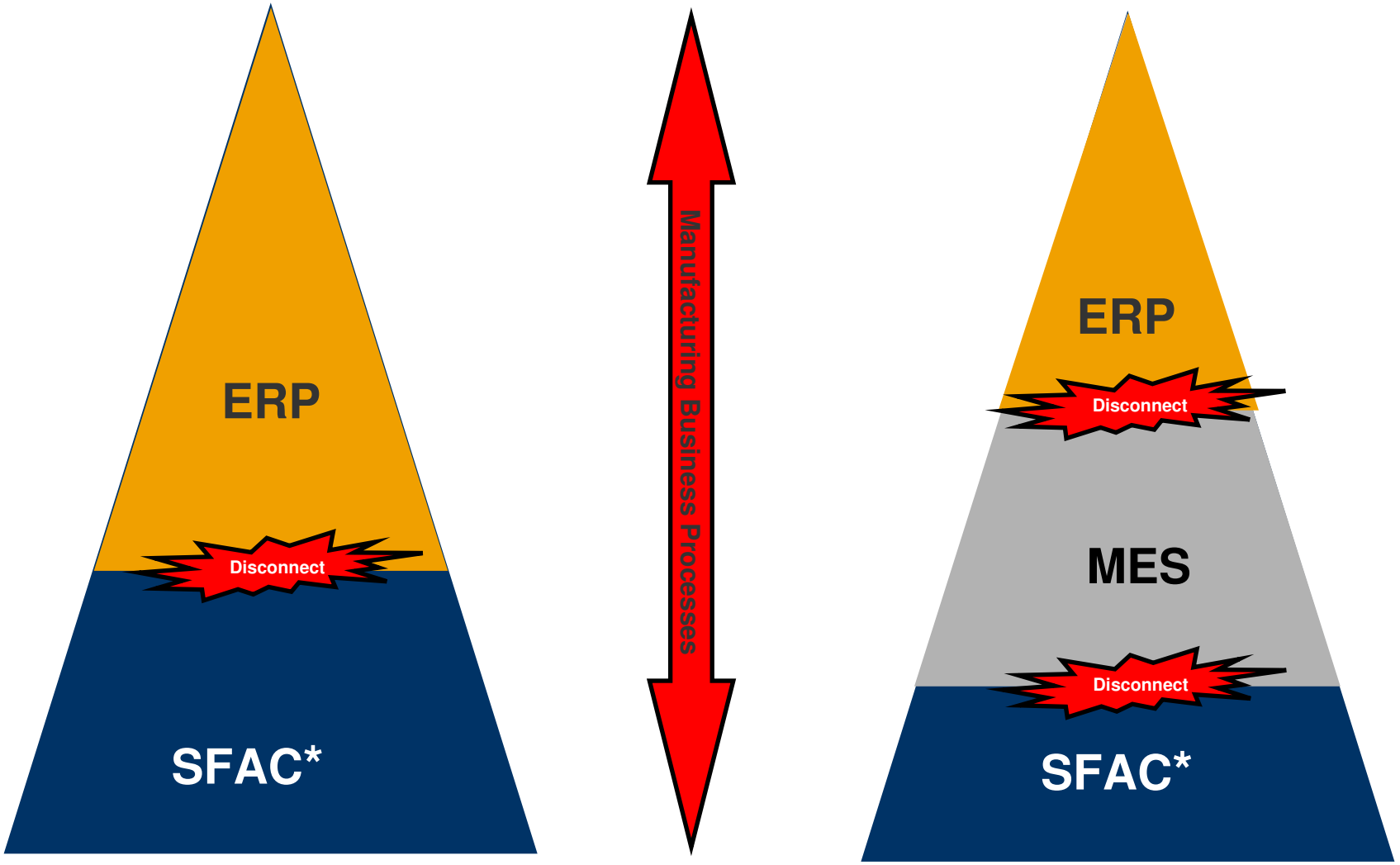
What are the problems ?



*** Shop Floor Automation and Control Systems**

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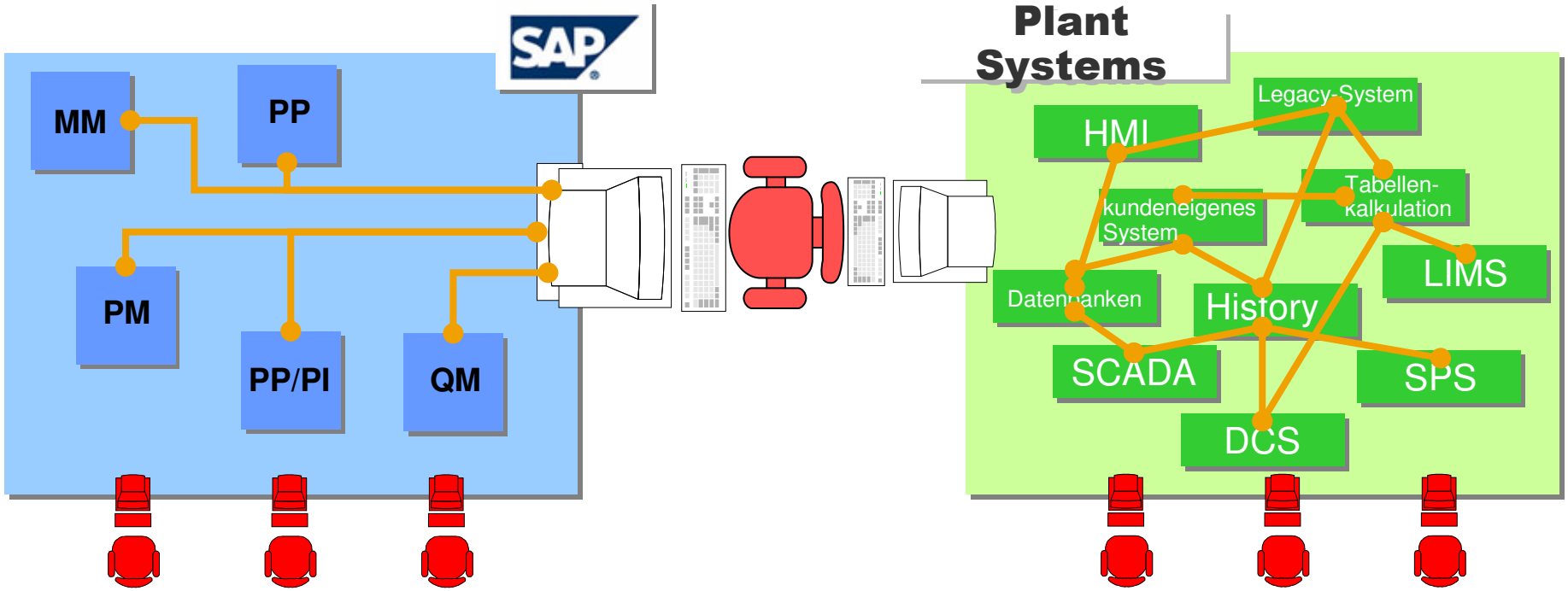
Why use standards like ANSI/S95?



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What are the objectives ?

Cost Reduction per minimizing the number of interfaces, layers and data maintenance.

Standardize the interfaces based on ANSI/ISA-95 B2MML messages.

Logical integration between the ERP and the shop Floor systems to improve the data quality and the business processes.

Improved usability and exception based proactive business process monitoring to control the route of the message transportation.

Visualization and reporting of production relevant data from all involved levels from the shop floor to my SAP Business Suite.

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Agenda : SAP Manufacturing and Interoperability

What is the situation today ?

What are the problems ?

What are the objectives ?

How can SAP help ?

What are the benefits?

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How can SAP help?

Interoperability Scenarios – Best Practices

Proactive Solution Monitoring

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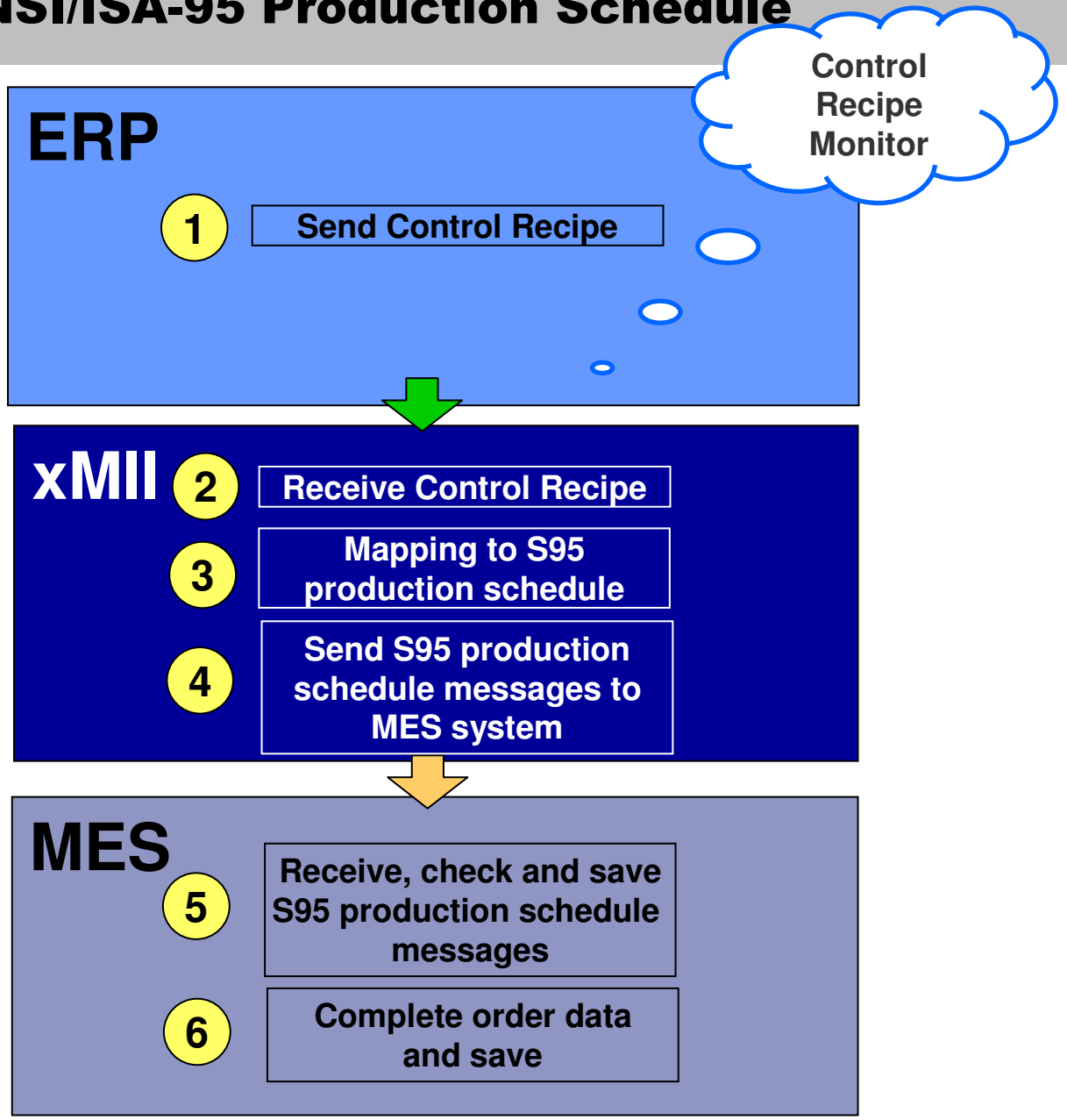
Example ANSI/ISA-95 Production Schedule



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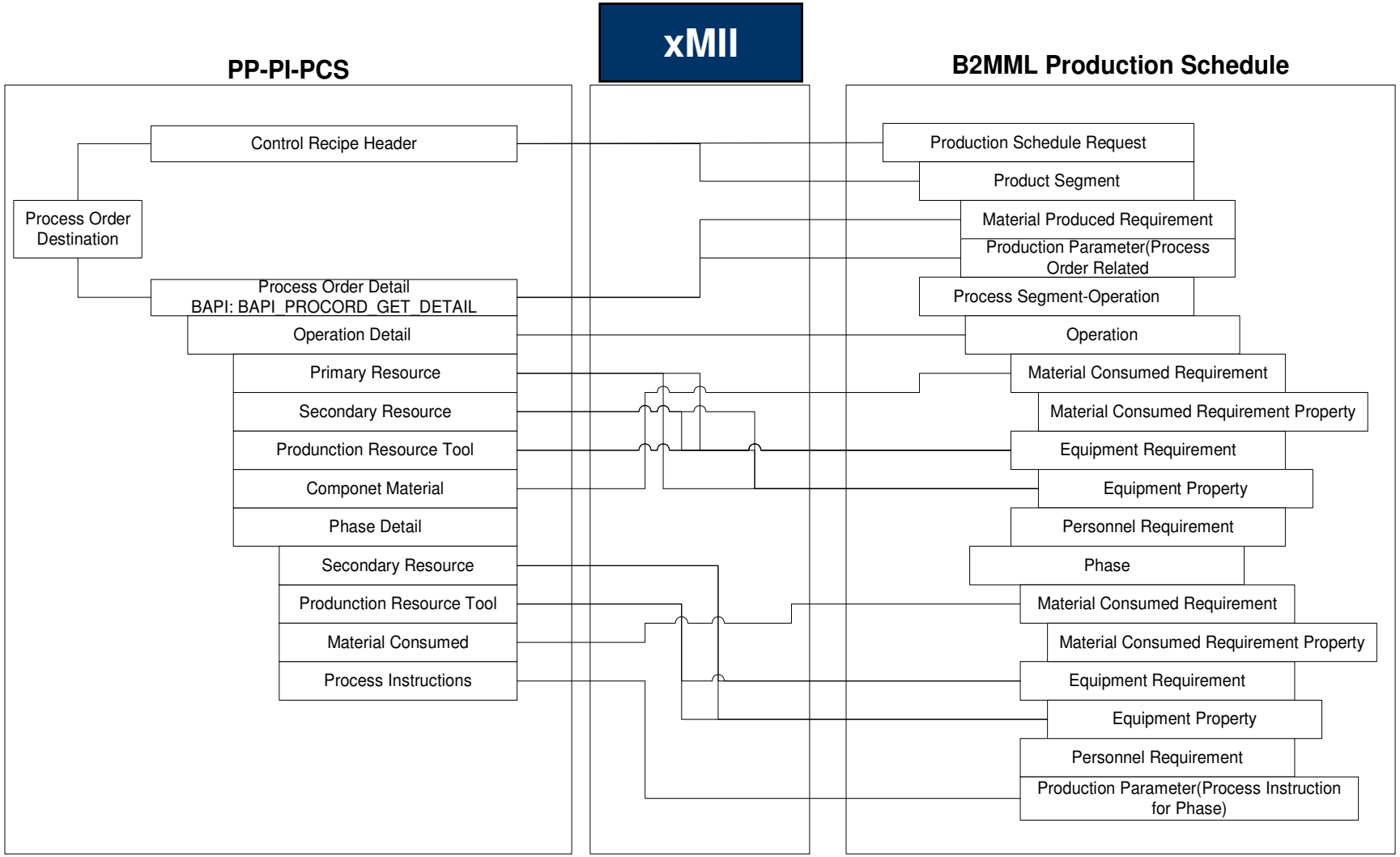
Example ANSI/ISA-95 Production Schedule



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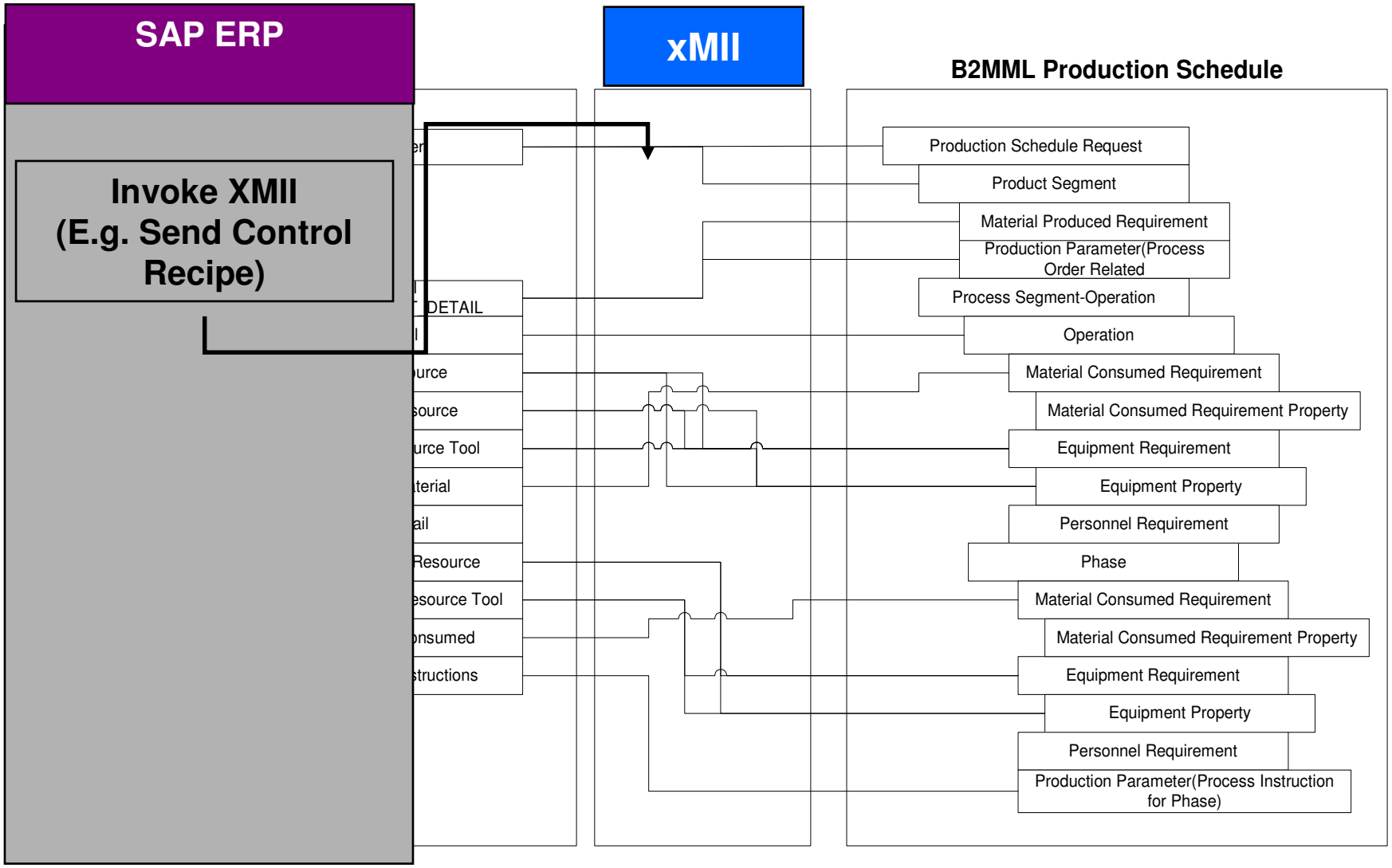

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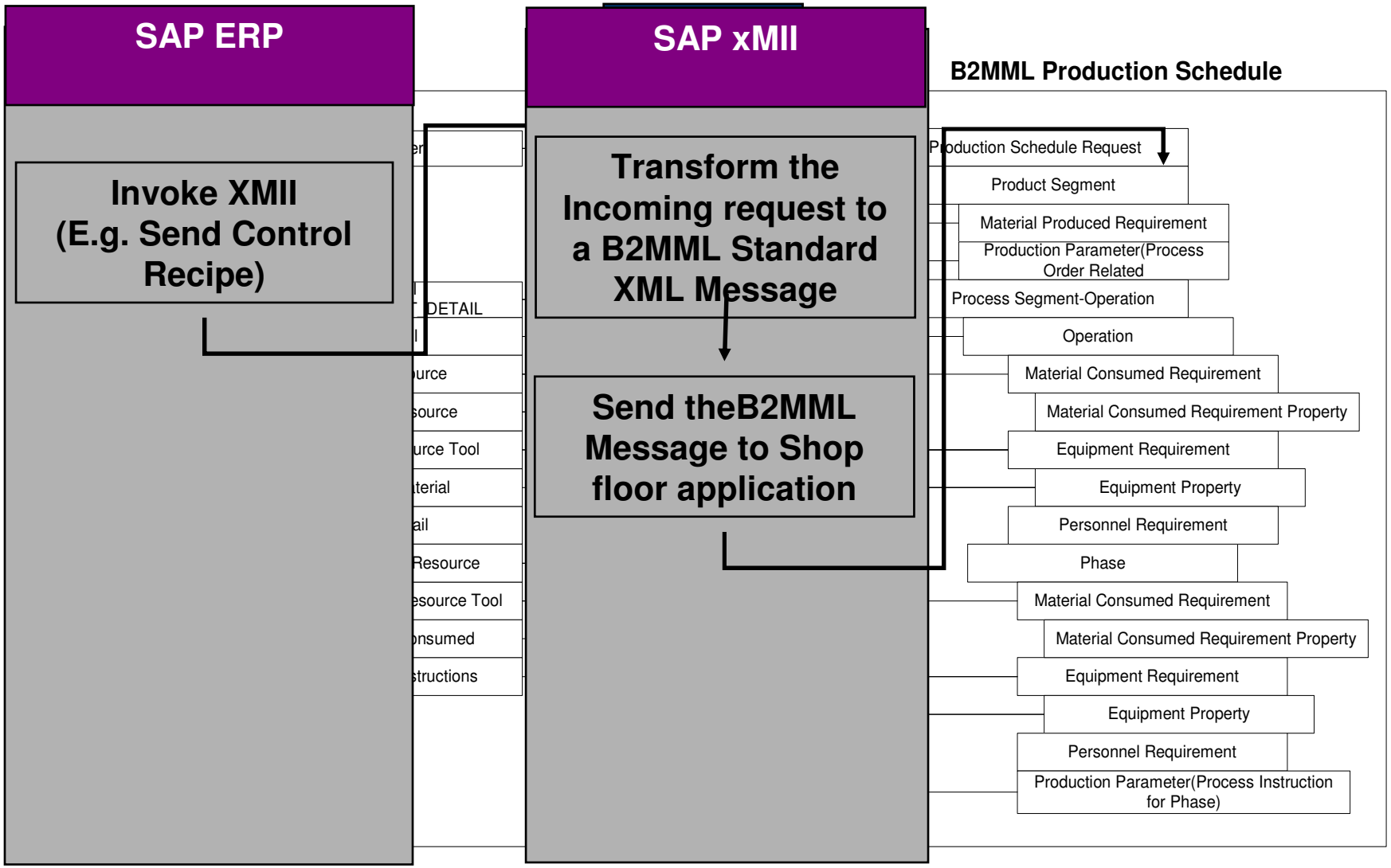

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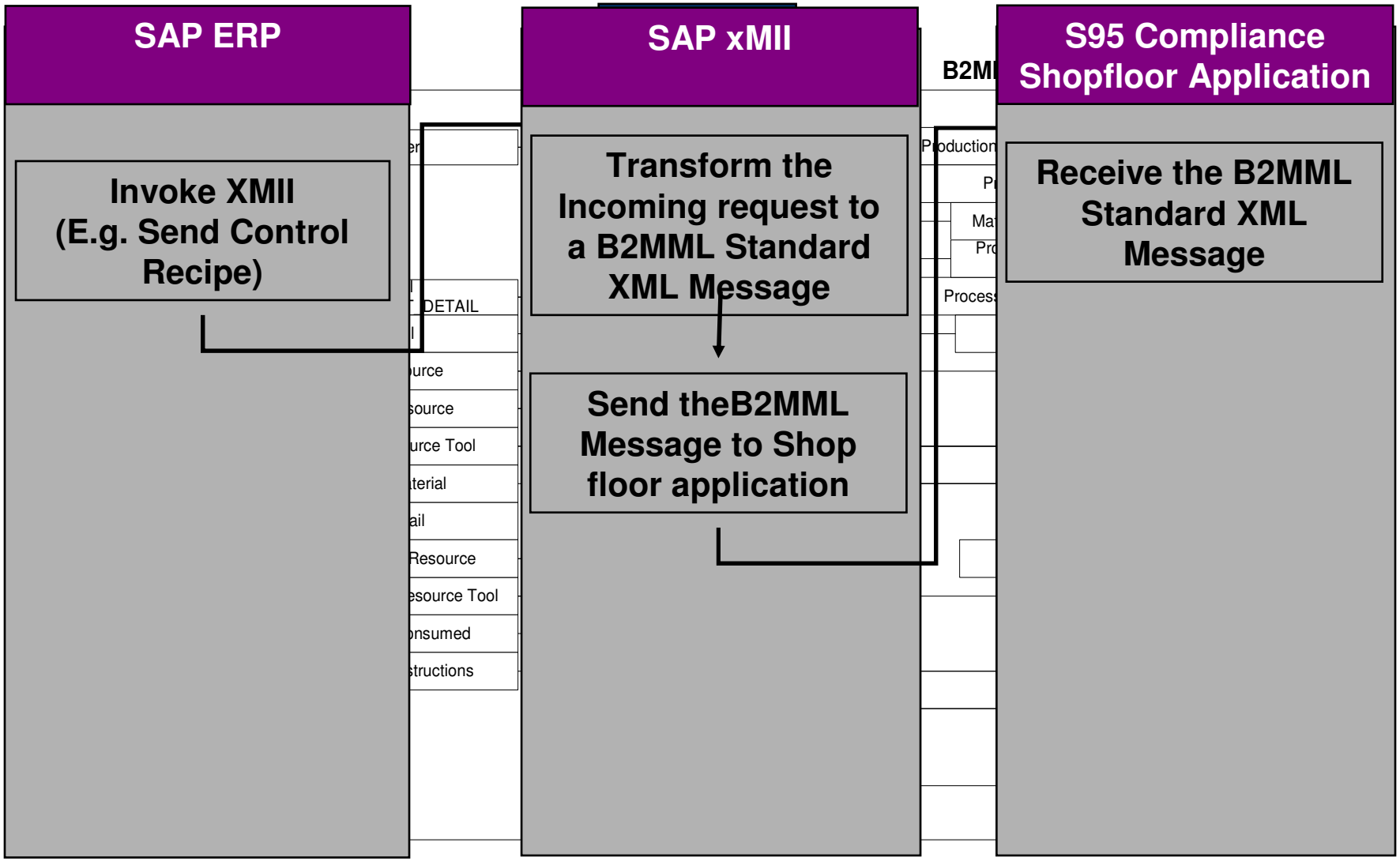

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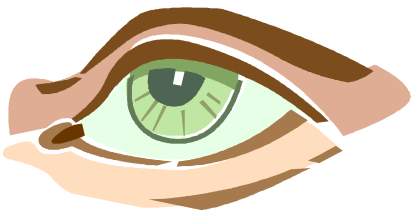
Example ANSI/ISA-95 Production Performance



Process Message Monitor

ERP

5 Receive, check and save Process Messages

RFC

xMII

4 Send Process Messages to ERP

3 Mapping to ERP Process Messages

2 Receive S95 Production Performance

XML

MES

1 Send S95 Production Performance

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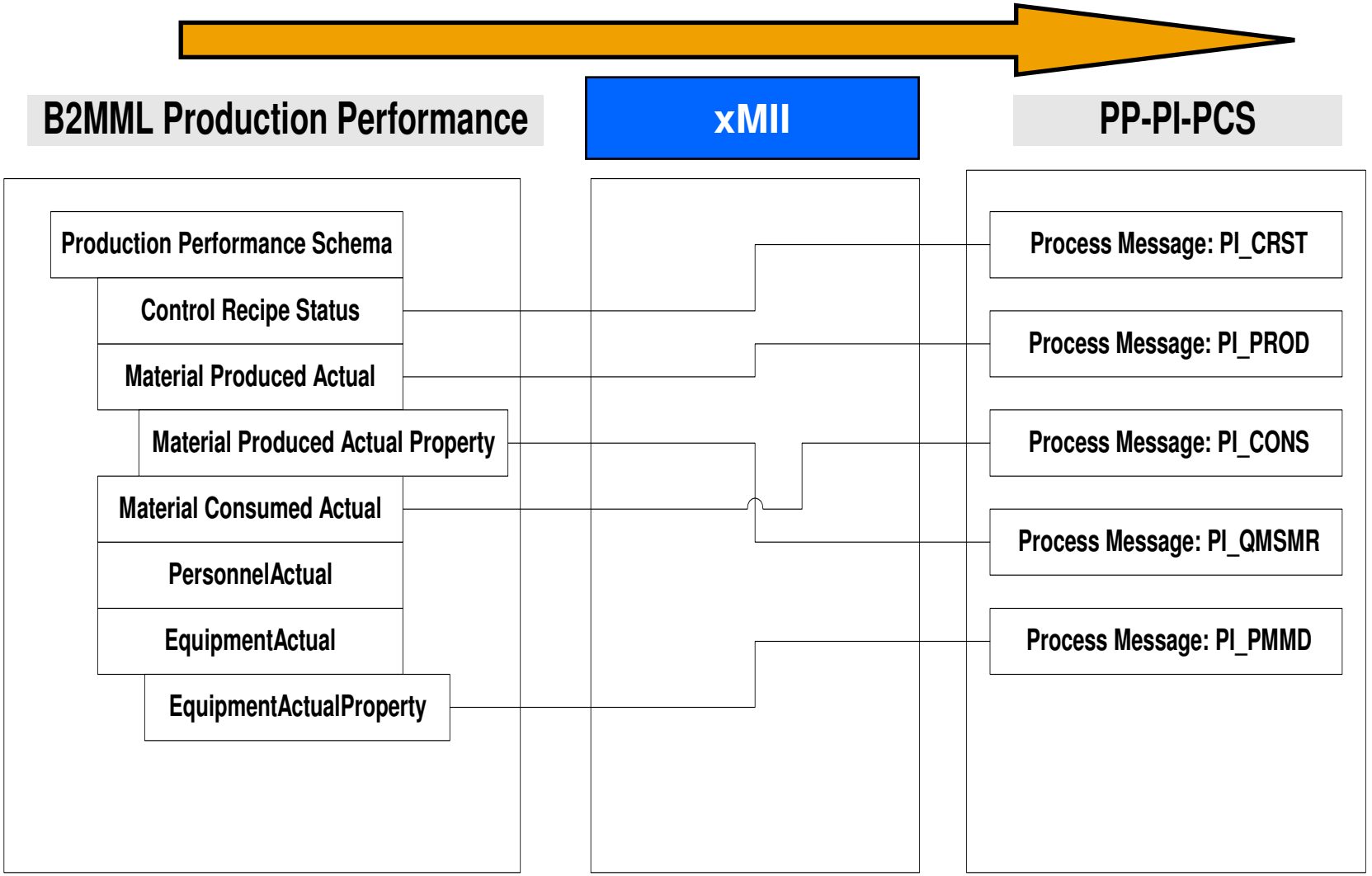
Example ANSI/ISA-95 Production Performance



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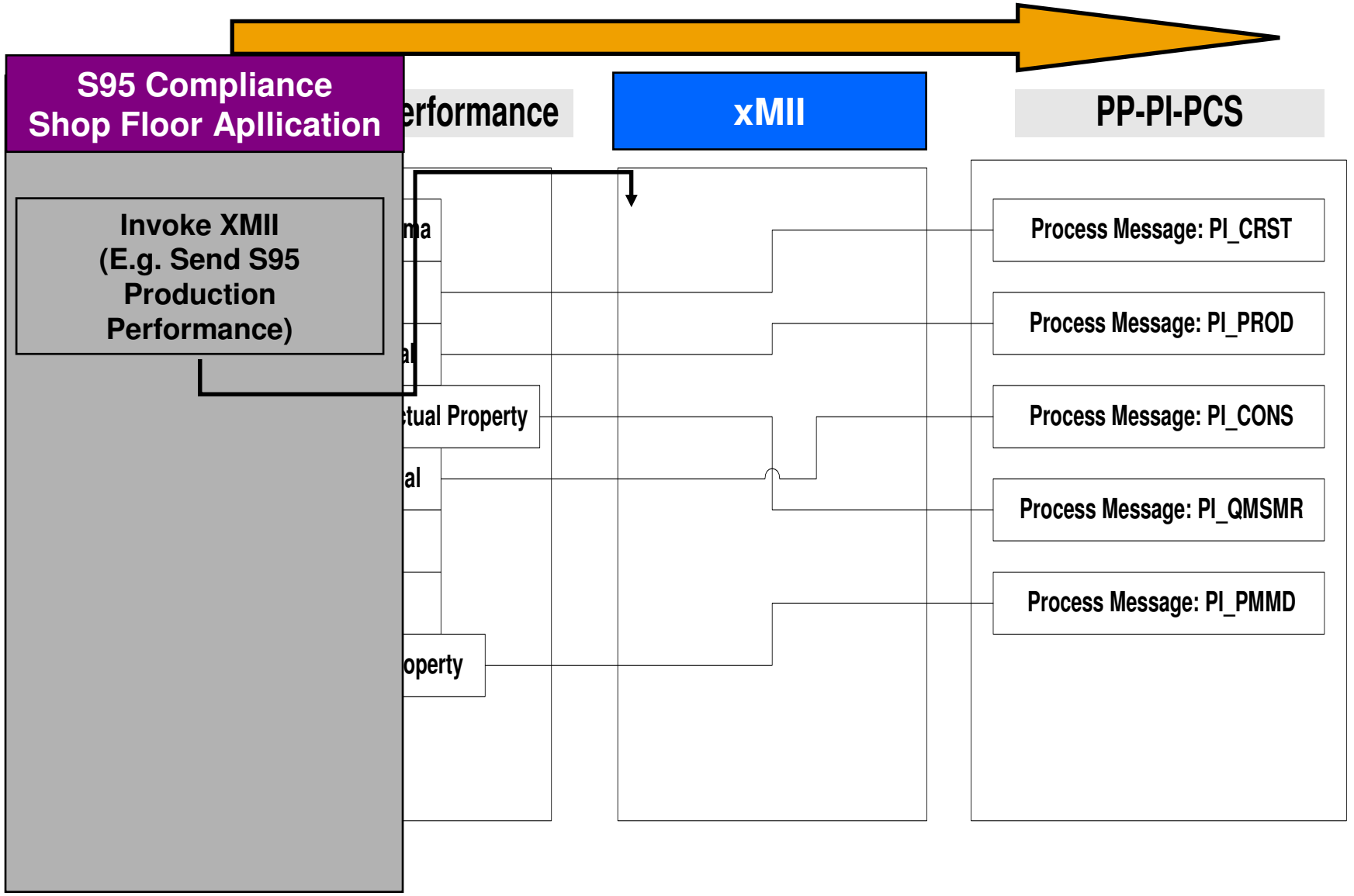

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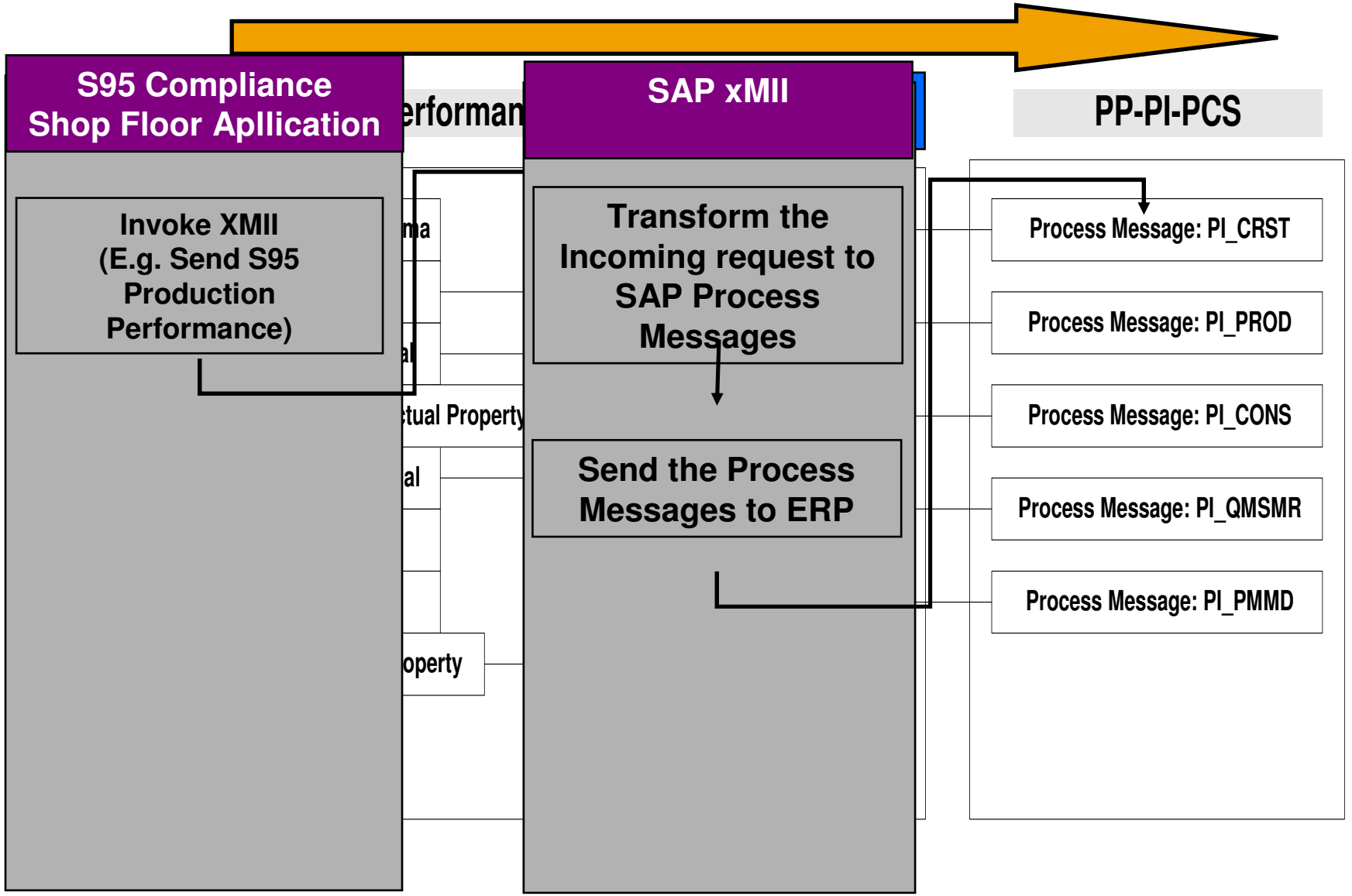

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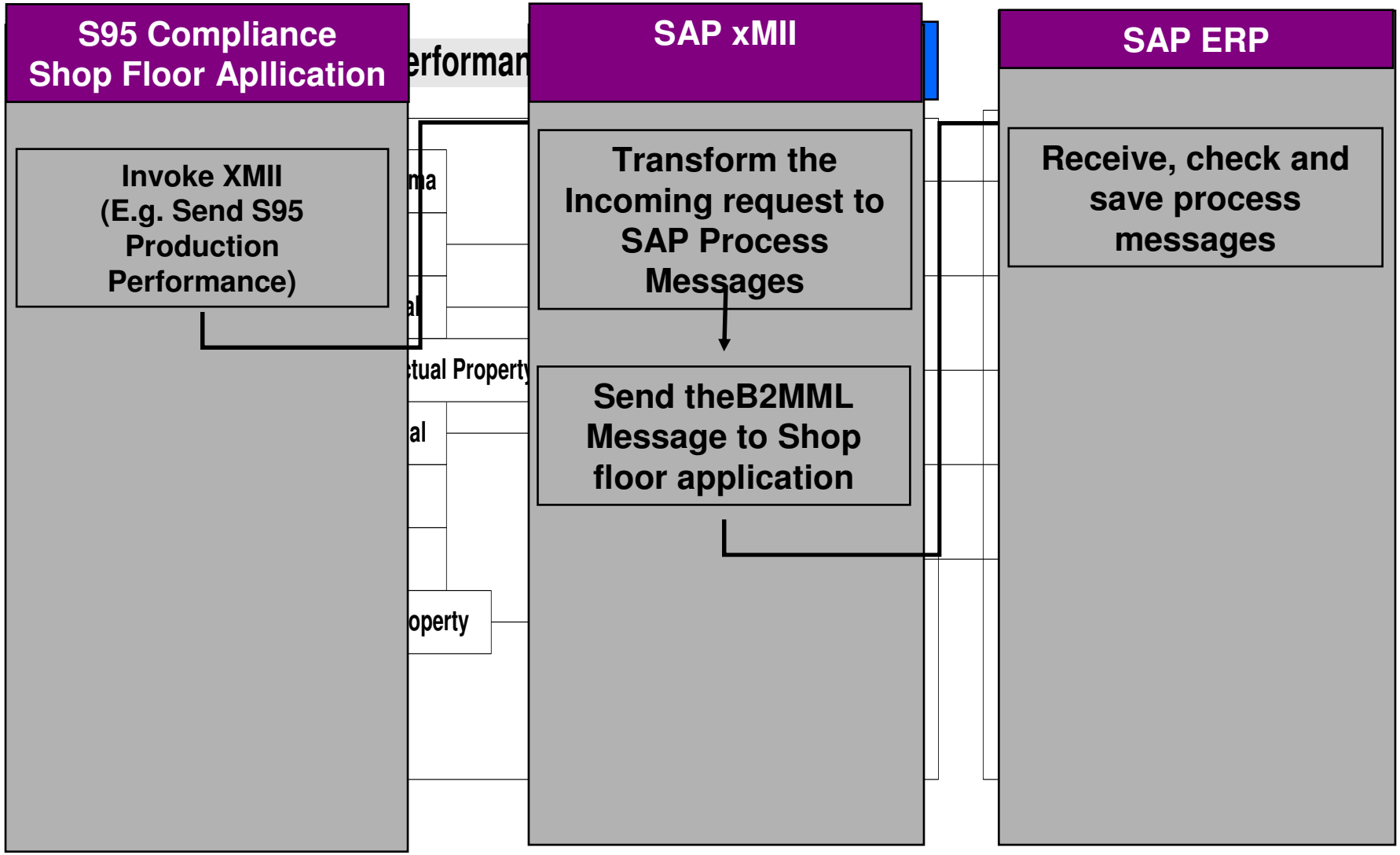

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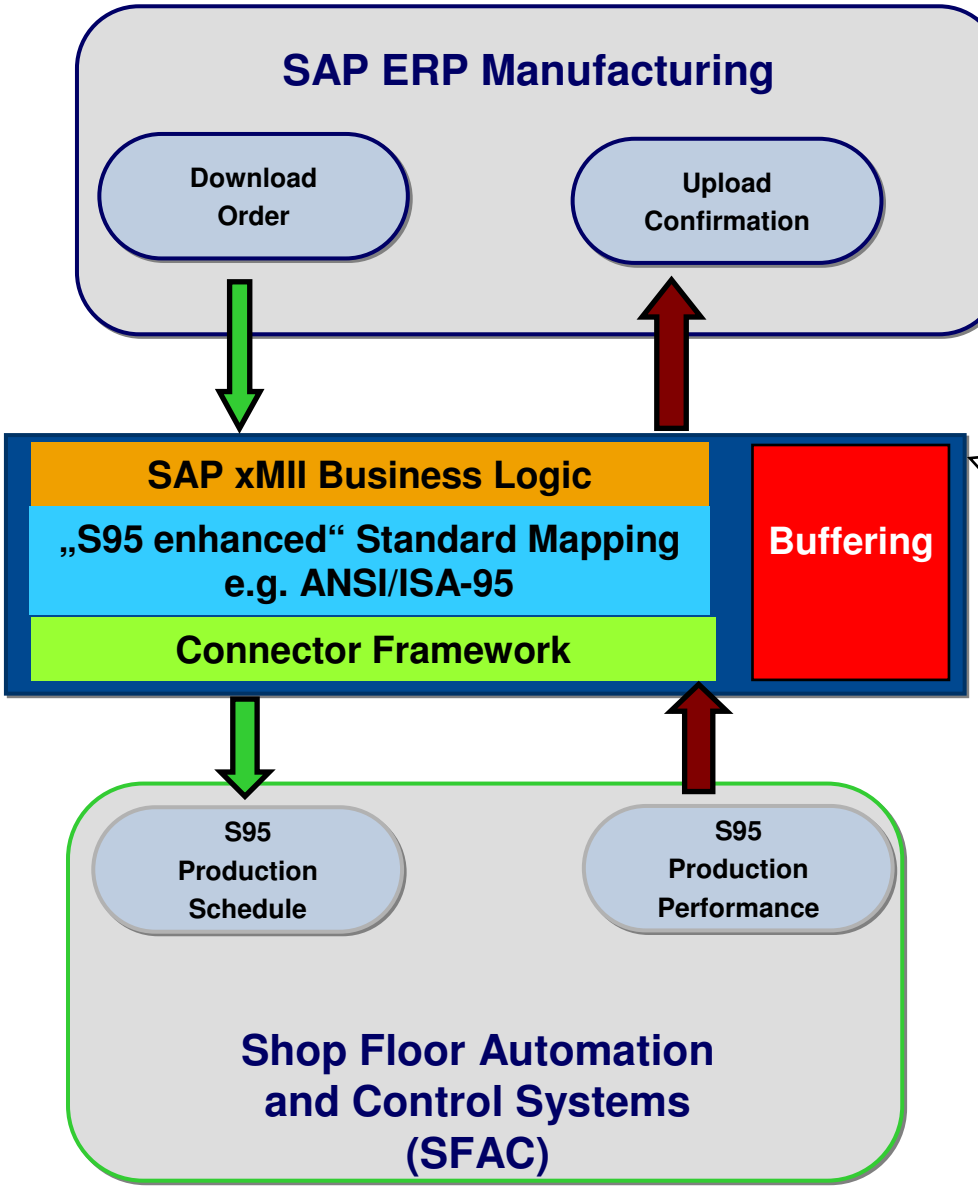
Example A: Directly Integrate „Production Line“ using xMII



SAP xMII: Business Content

- Business Logic for triggering messages and data checks (Logical Integration)
- Monitoring (Business View)
- Data Buffering (e.g. Orders per shift)

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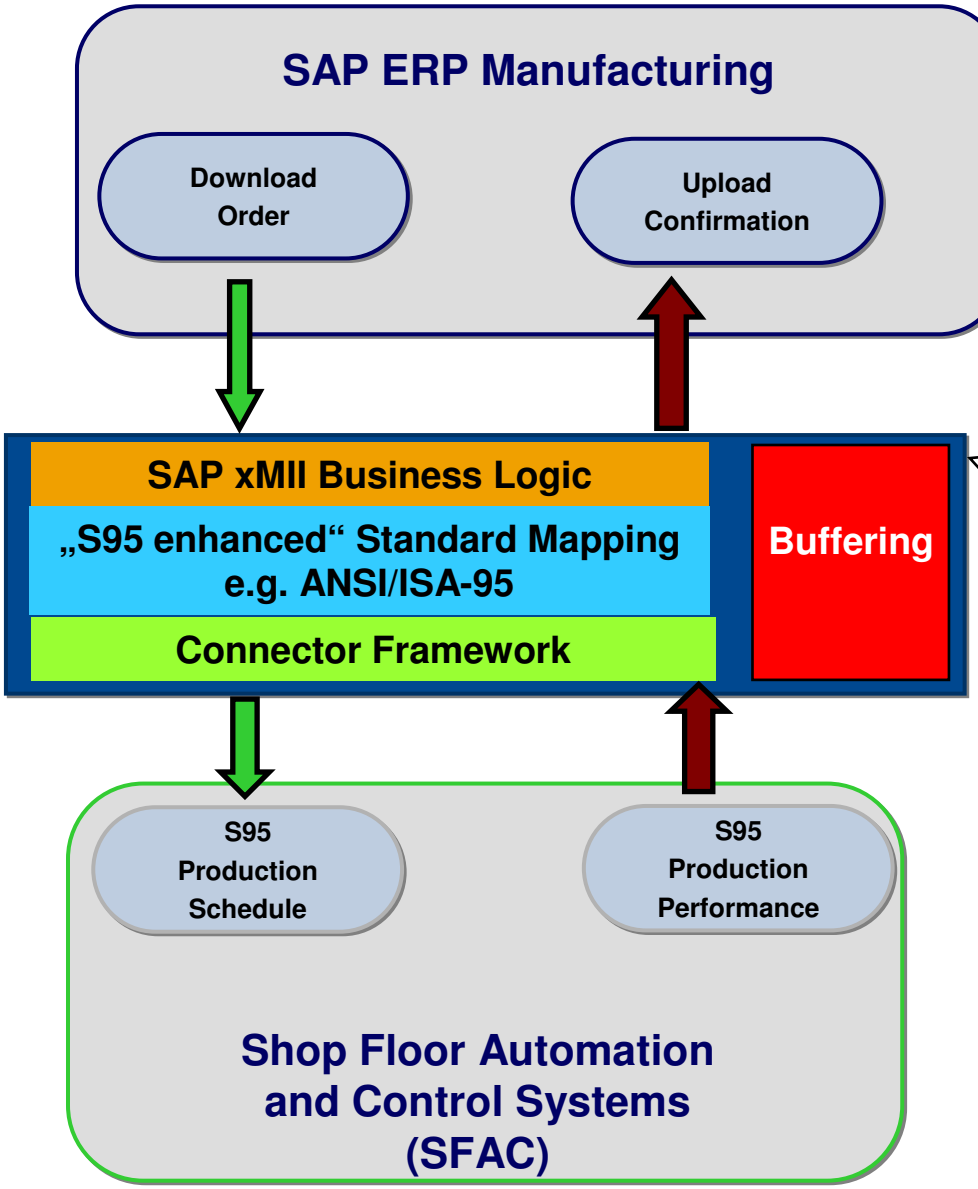
Example A: Directly Integrate „Production Line“ using xMII



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- Message Queuing and Logging
- Used for Synchronous and Asynchronous Message Transfer
- Visualization and Retry Capabilities

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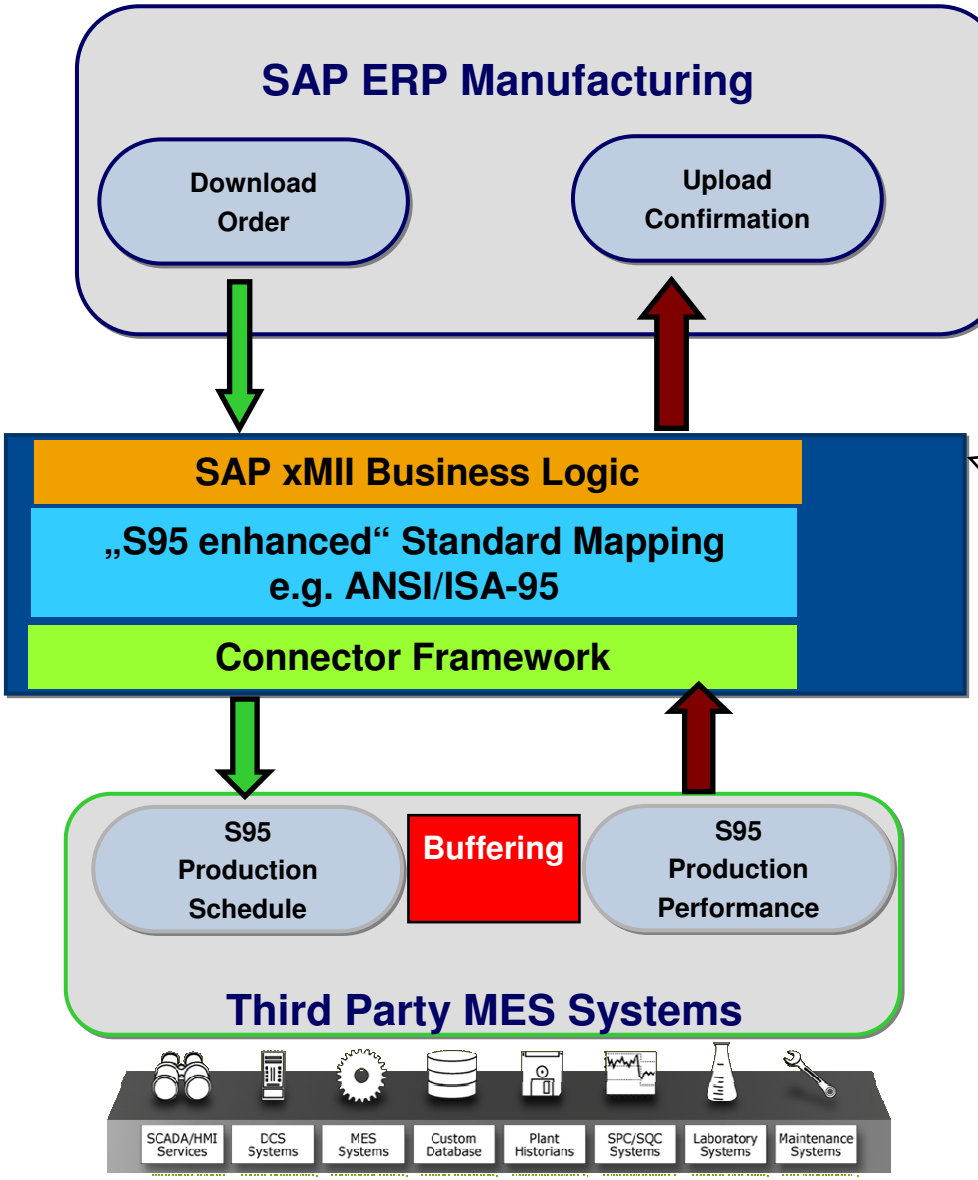
Example B: Integrate „Third Party MES System“ using xMII



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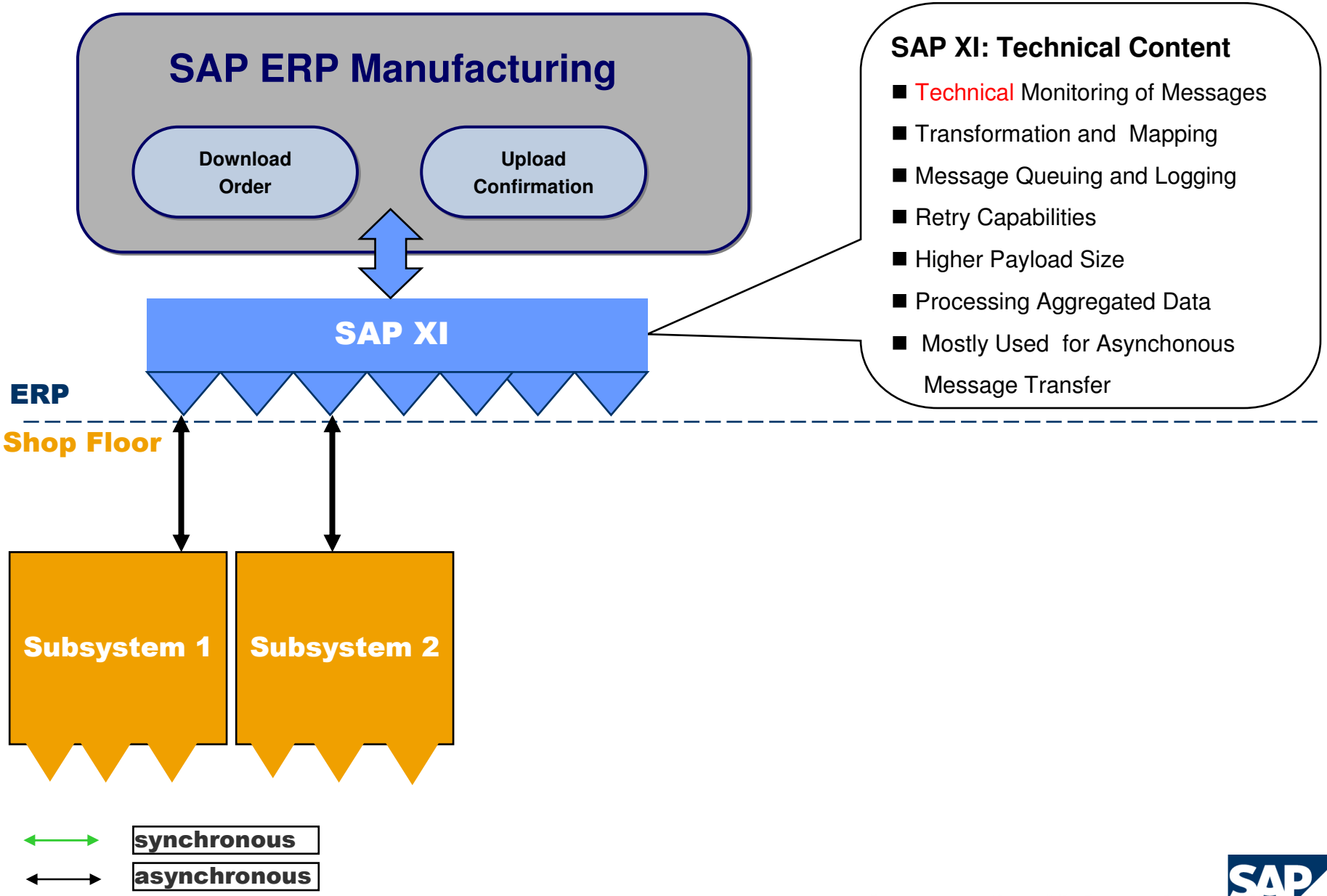
Example C: „Integrate Plant Systems“ using XI and xMII



SAP XI: Technical Content

- Technical Monitoring of Messages
- Transformation and Mapping
- Message Queuing and Logging
- Retry Capabilities
- Higher Payload Size
- Processing Aggregated Data
- Mostly Used for Asynchonous Message Transfer

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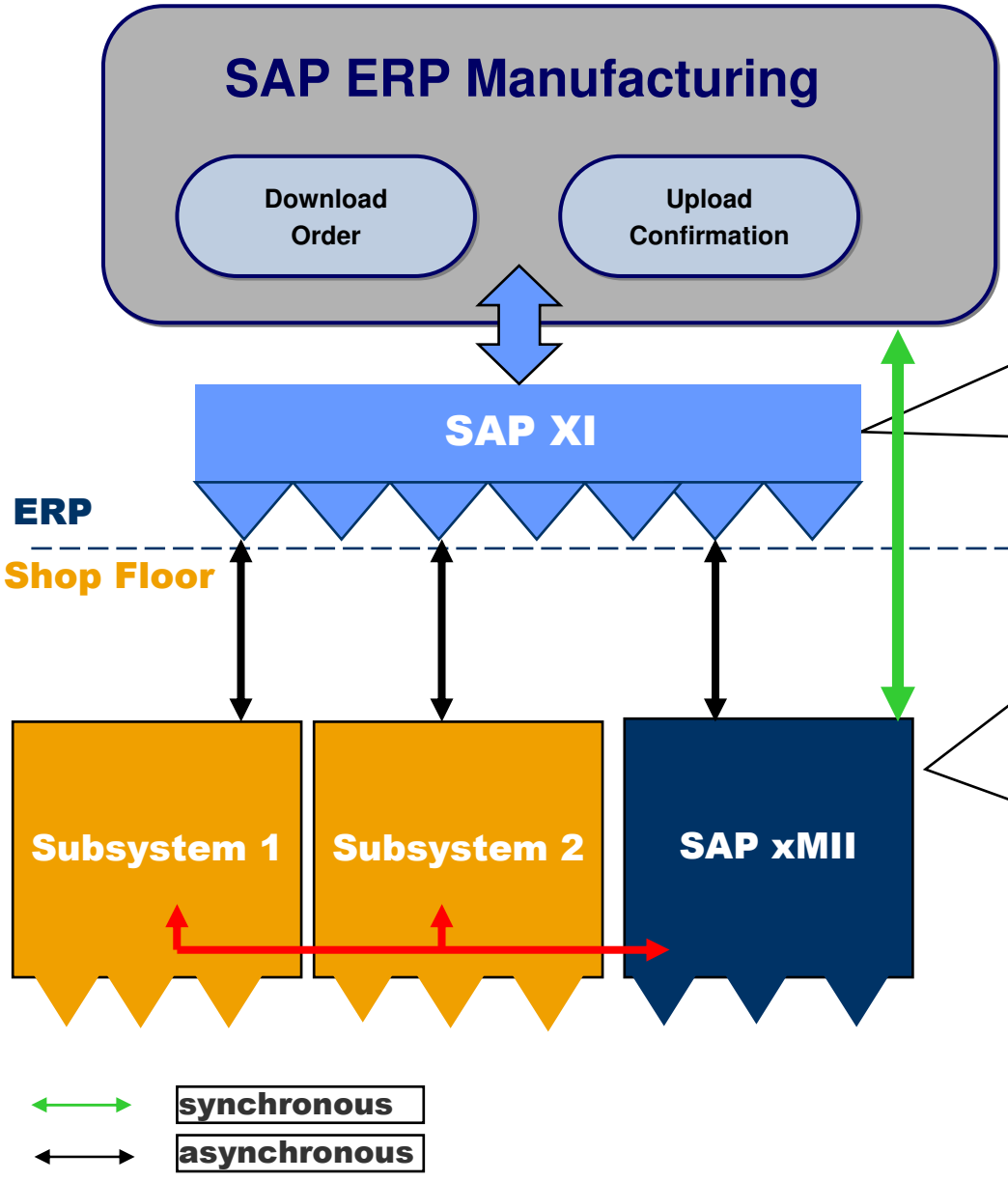
Example C: „Integrate Plant Systems“ using XI and xMII



SAP XI: Technical Content

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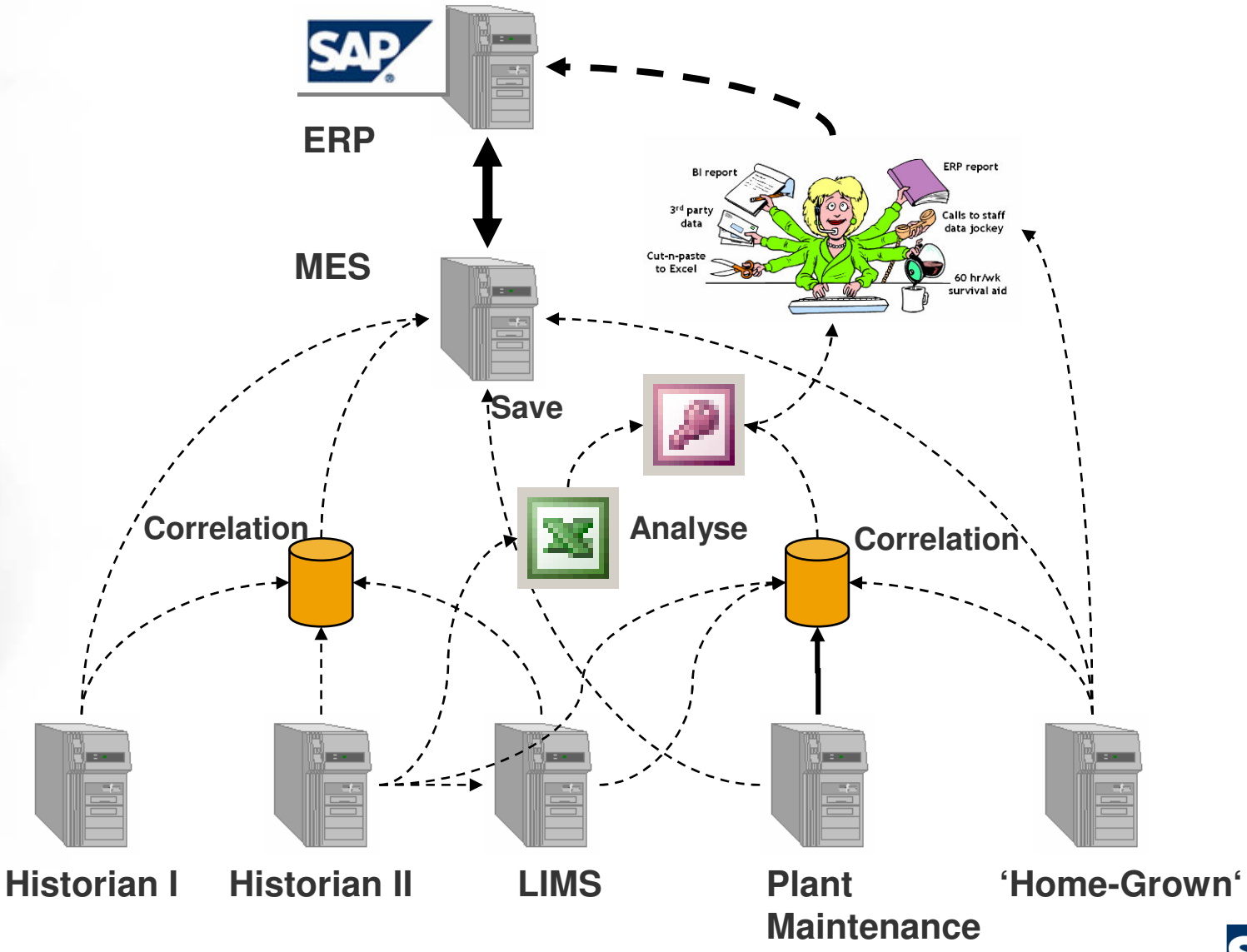
Interfaces in production?



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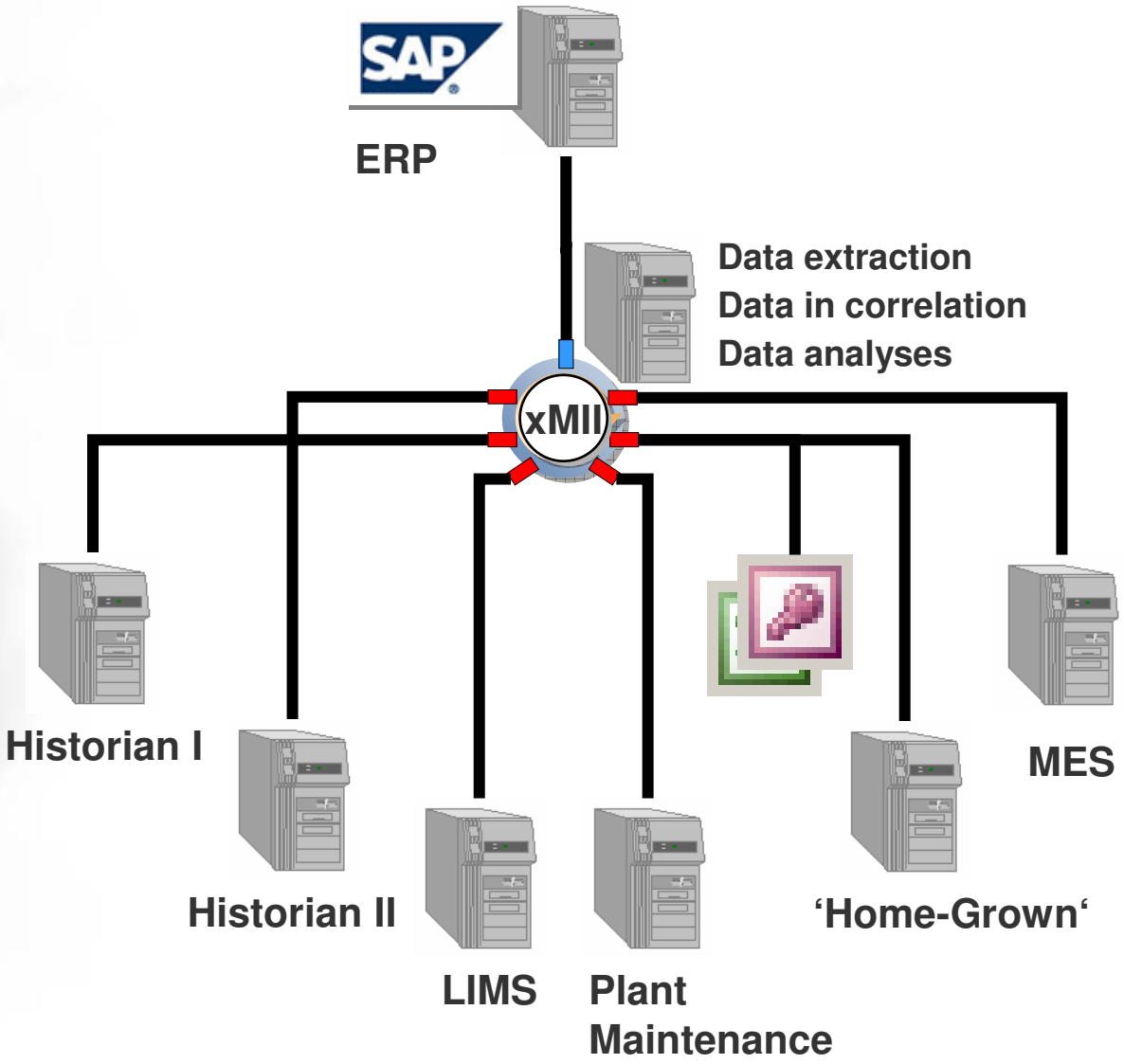
Integration of the production with SAP xMII



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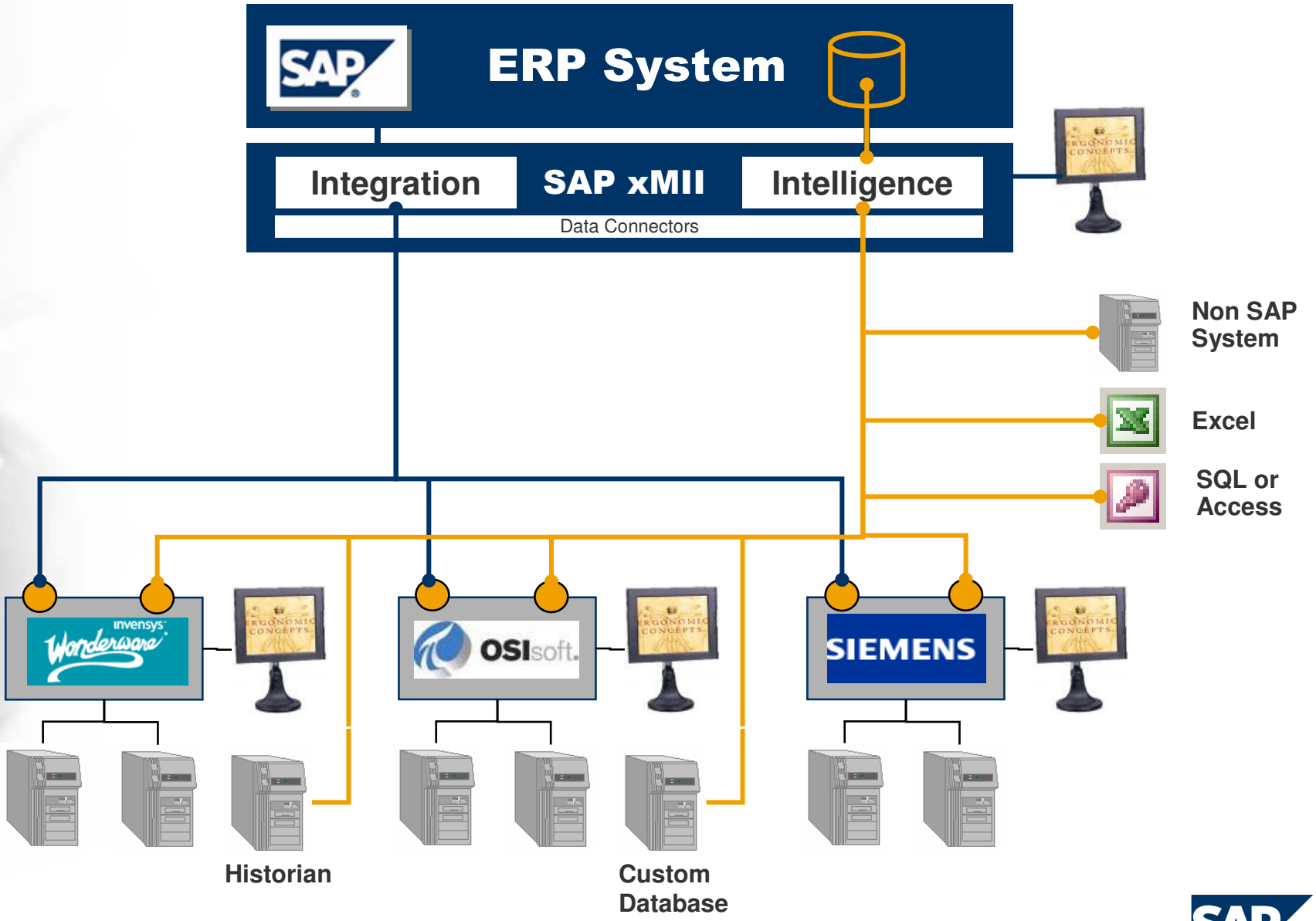
SAP xMII functionality in comparison with MES systems



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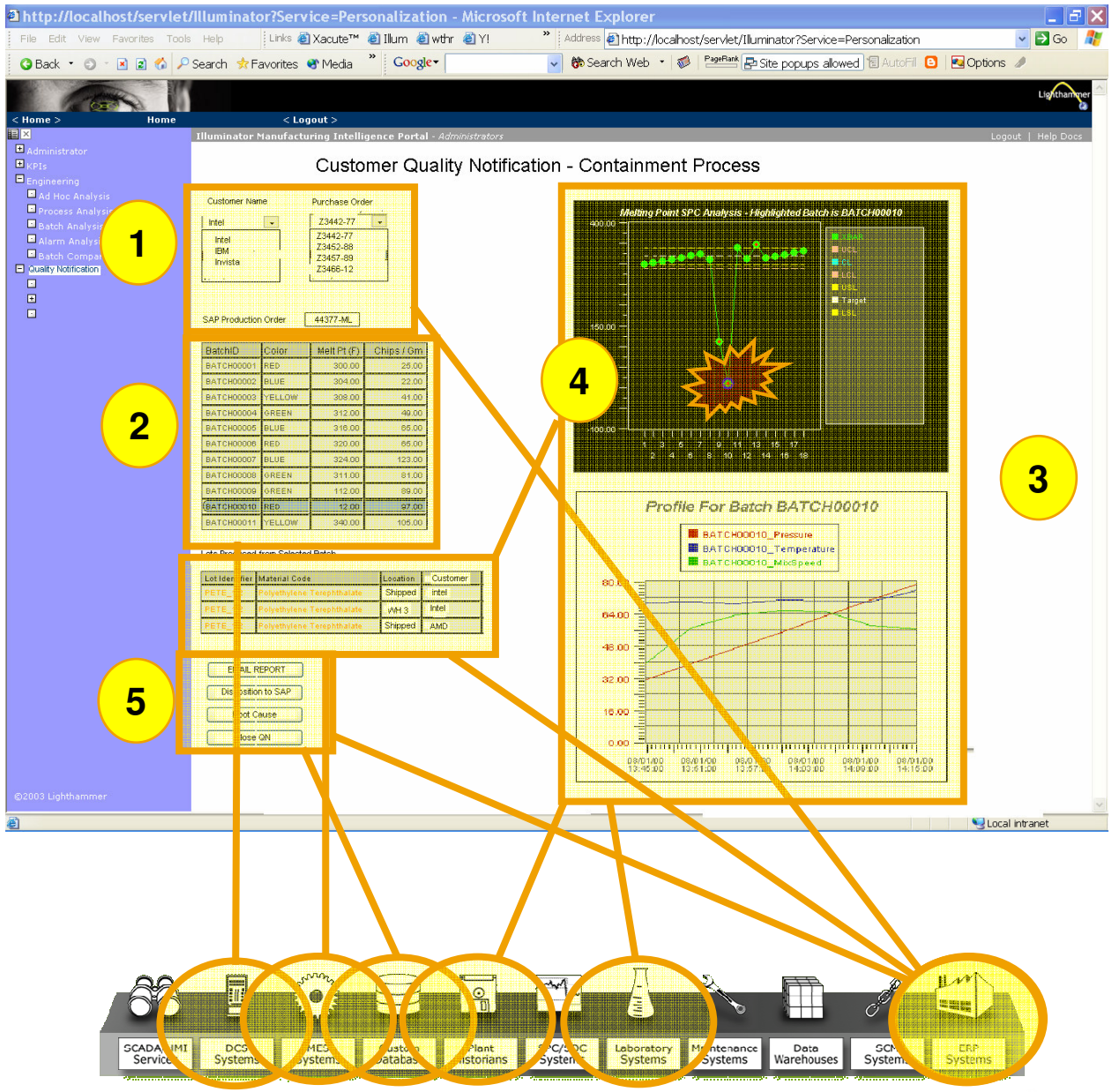
Correlation of Data from Different Sources



1. Look up customer SO from ERP & return ERP Production Order
2. Find Batch(es) created to satisfy Production Order
3. Get Historian and LIMS data for batches, run xMII Analytics
4. If SPC Alarm it is a Batch production problem – provide aggregate view of LOTS & CUSTOMERS
5. Email report to Product Manager, Disposition to SAP QM, Close record in QN System

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How can SAP help?

Interoperability Scenarios – Best Practises

Proactive Solution Monitoring

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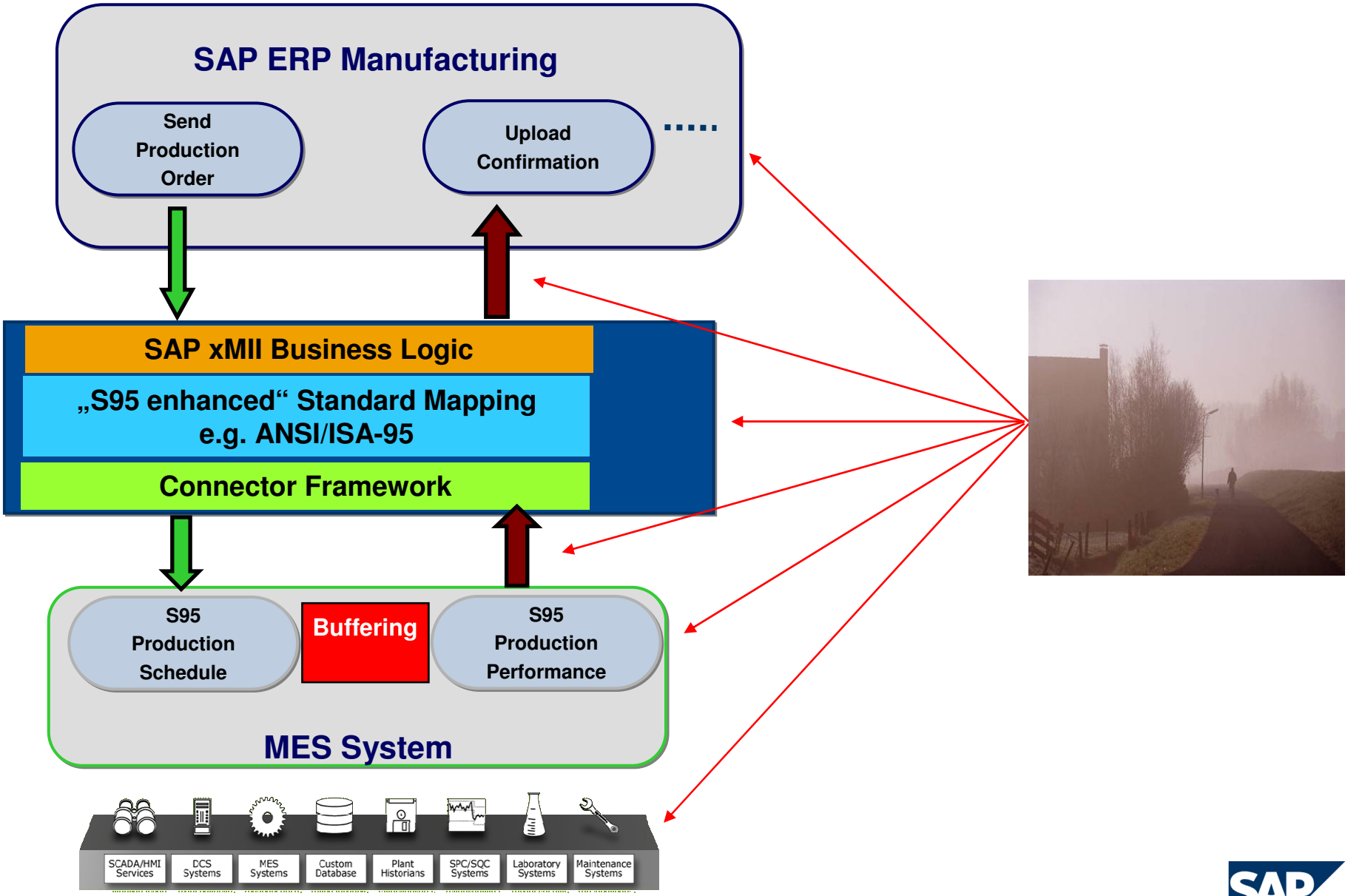
What are the problems ?



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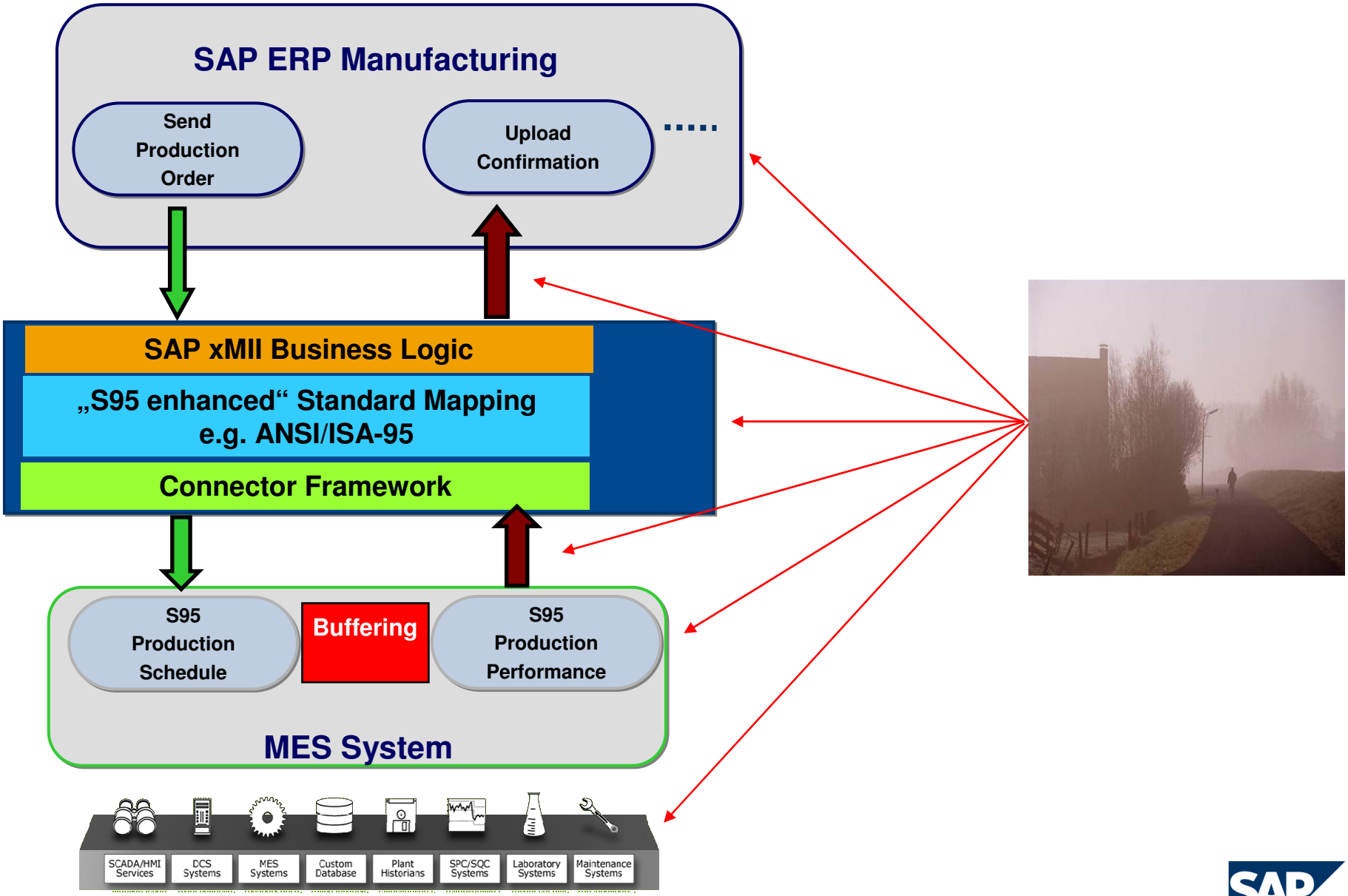
What are the problems ?



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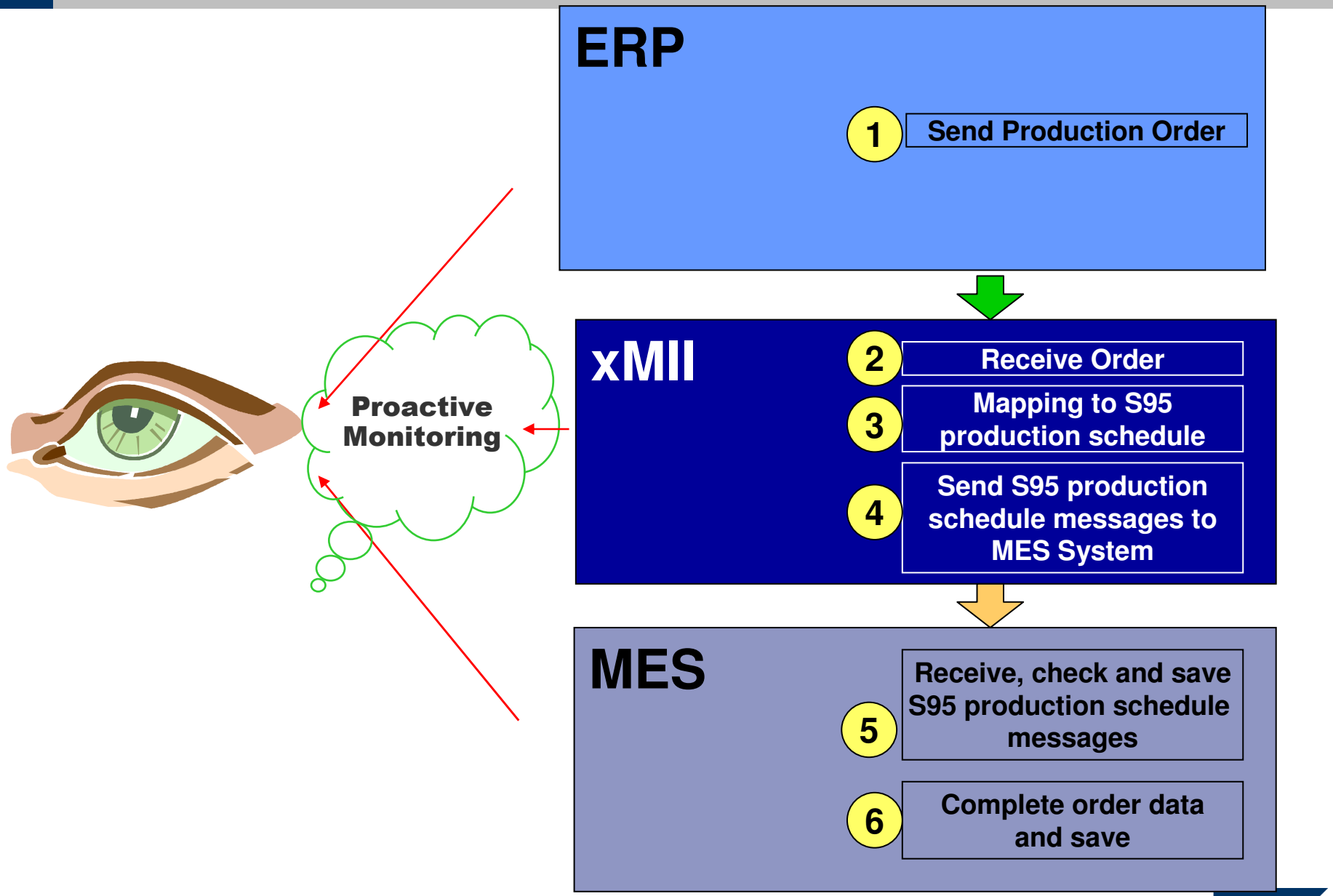
What are the requirements ?



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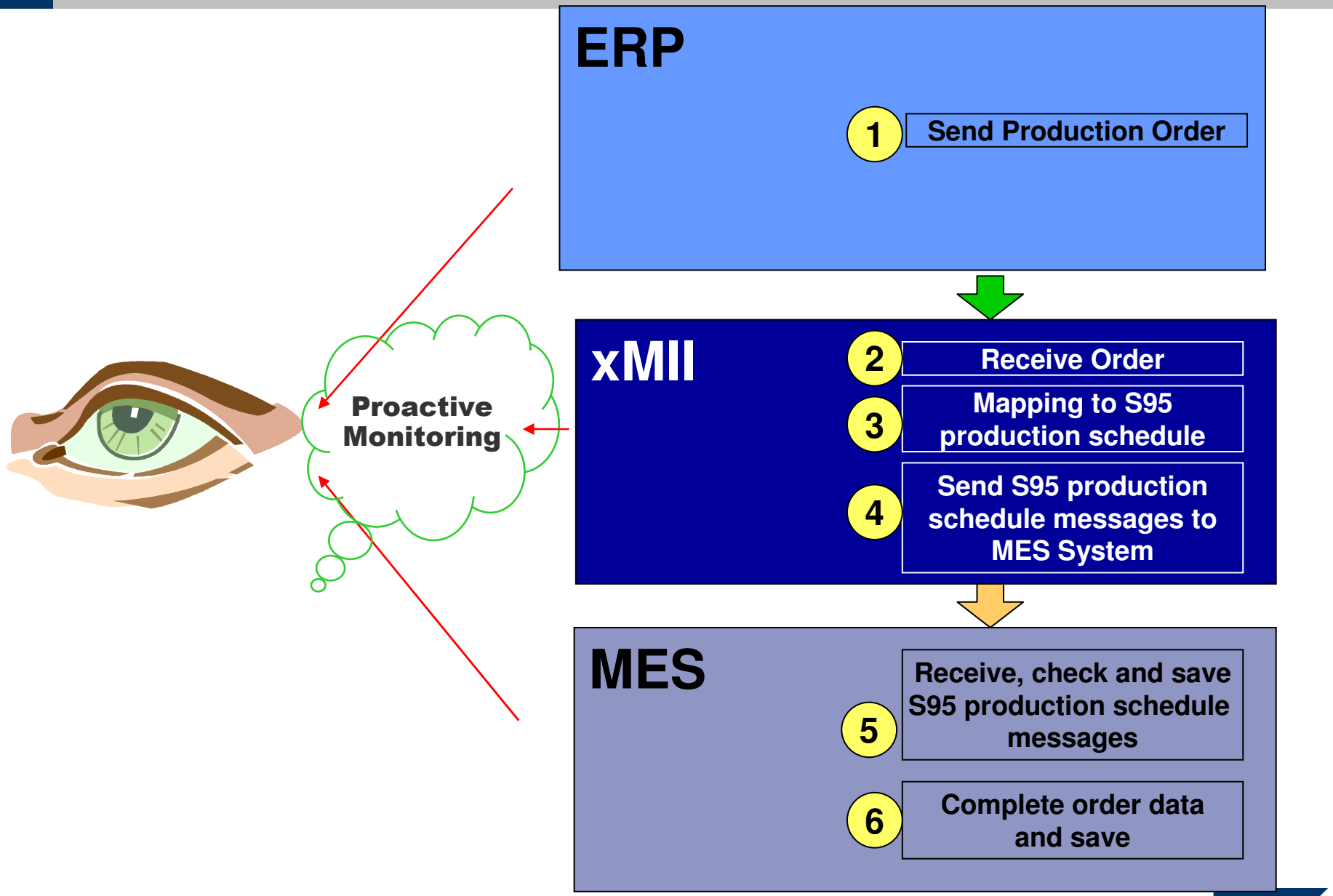

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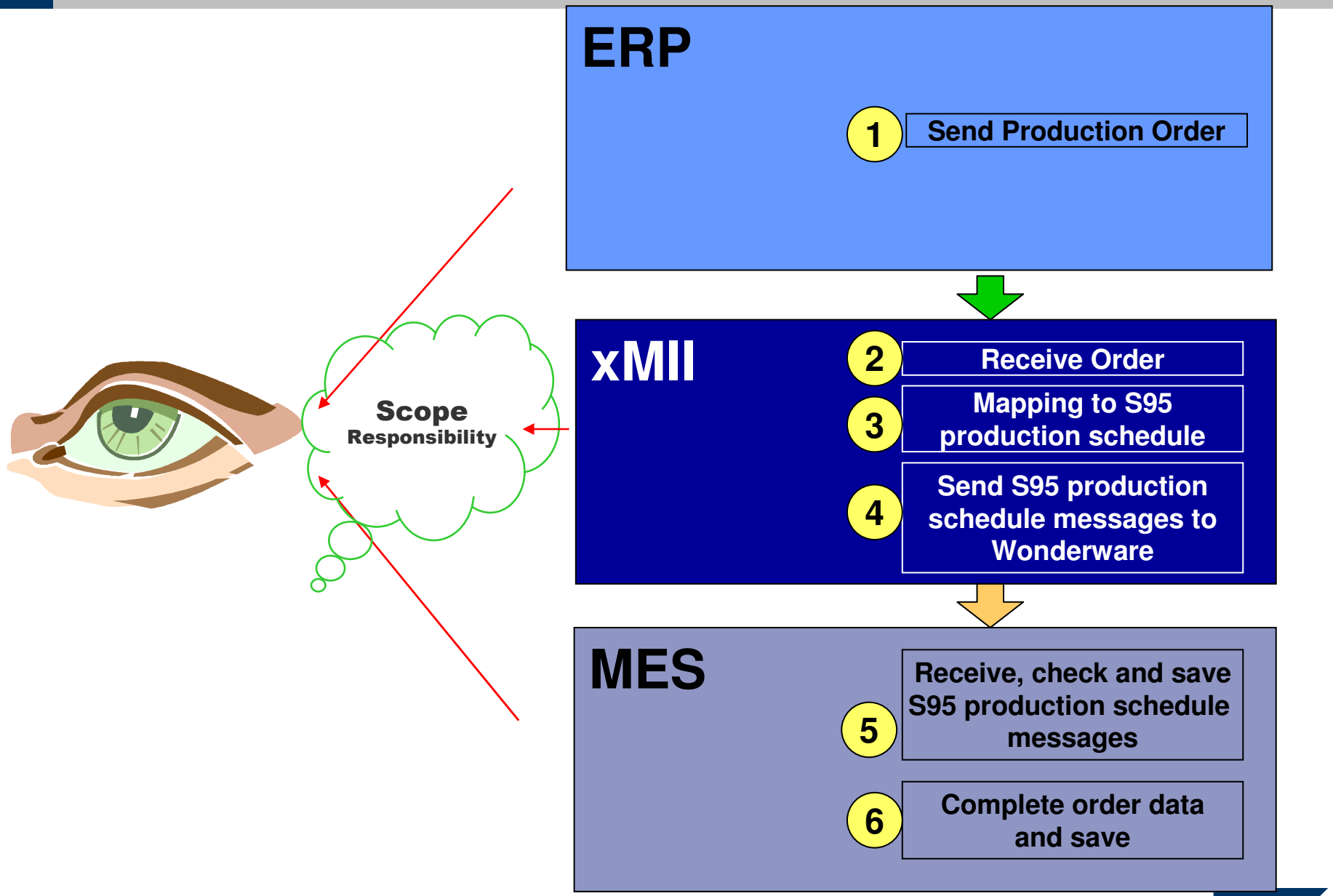

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What are the requirements ?

1. **Allow supervision of configurable manufacturing processes** from ERP to Shop floor (or Shop Floor to EP) including message exchange and message processing in the affected systems.

2. **Trigger alerts** for processes which either show errors or show 'hanging' steps. Alerts should be visible in a dashboard.

3. **Allow follow-up action** on individual processes either as drill down or corrective action.

4. **Support high data volumes** of process messages to be usable in shop floor scenarios.

5. Must be **easy** to configure and easy to use .

6. Should run on existing mySAP ERP or on **separate SAP instance**

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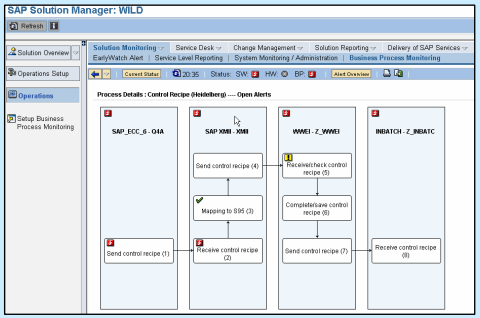
Customer Prototype:

SAP Solution Manager

System Monitoring
Business Process Monitoring
Service Level Reporting



ERP

Process Monitoring Package

RFC

System Monitoring

1 Send Control Recipe

xMII

System Monitoring

2 Receive Recipe

3 Mapping to S95 production schedule

4 Send S95 production schedule messages to the MES-system

WEB Service

MES

System Monitoring

5 Receive, check and save S95 production schedule messages

6 Complete order data and save

Status & Info Reporting

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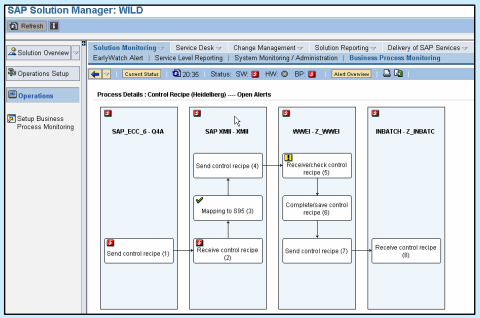

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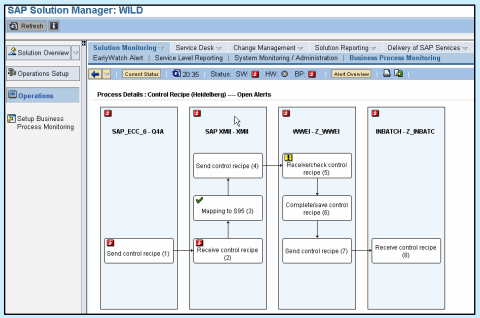

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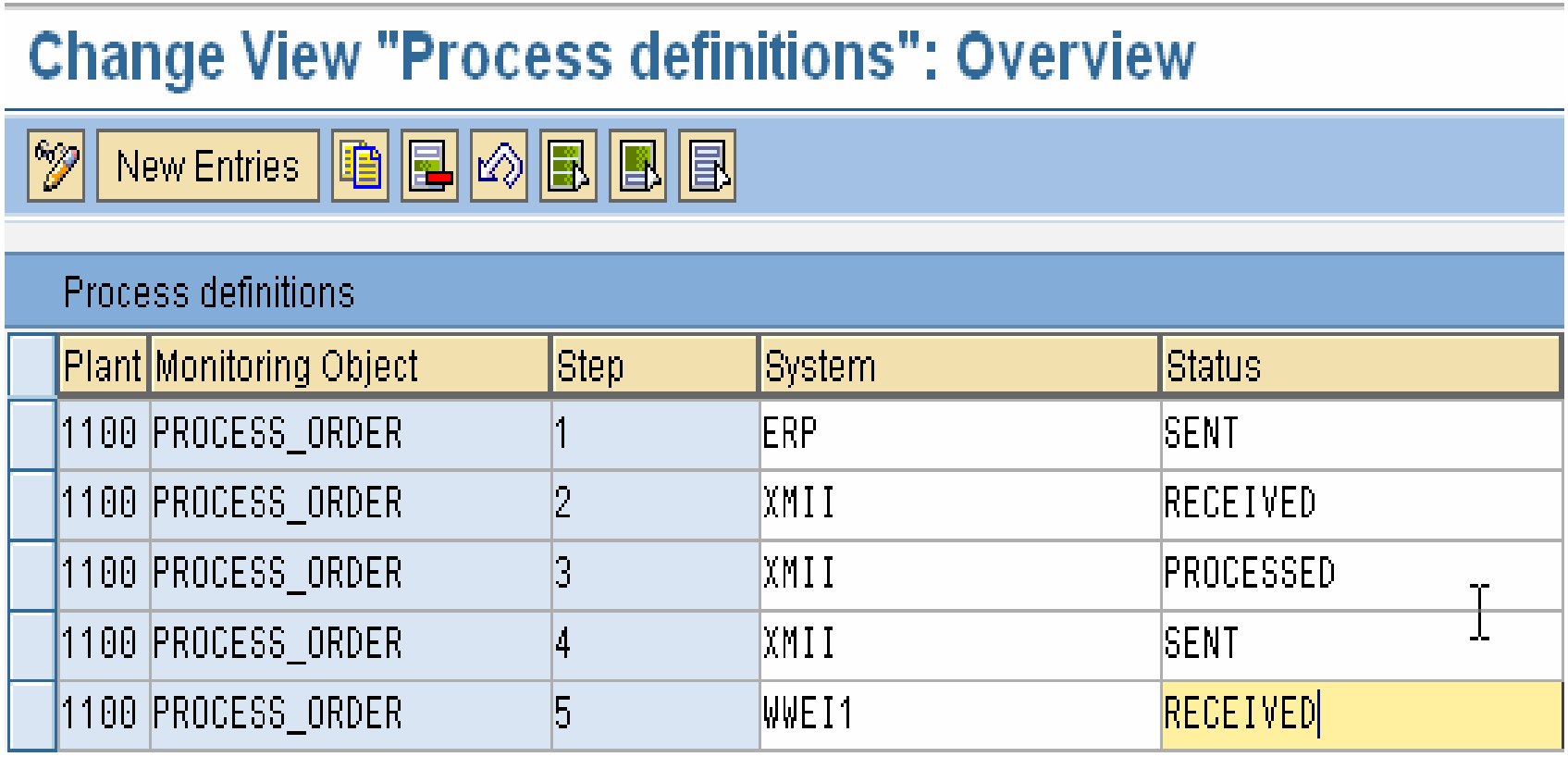
Example Process Definition



Plant	Monitoring Object	Step	System	Status
1100	PROCESS_ORDER	1	ERP	SENT
1100	PROCESS_ORDER	2	XMII	RECEIVED
1100	PROCESS_ORDER	3	XMII	PROCESSED
1100	PROCESS_ORDER	4	XMII	SENT
1100	PROCESS_ORDER	5	WWEI1	RECEIVED

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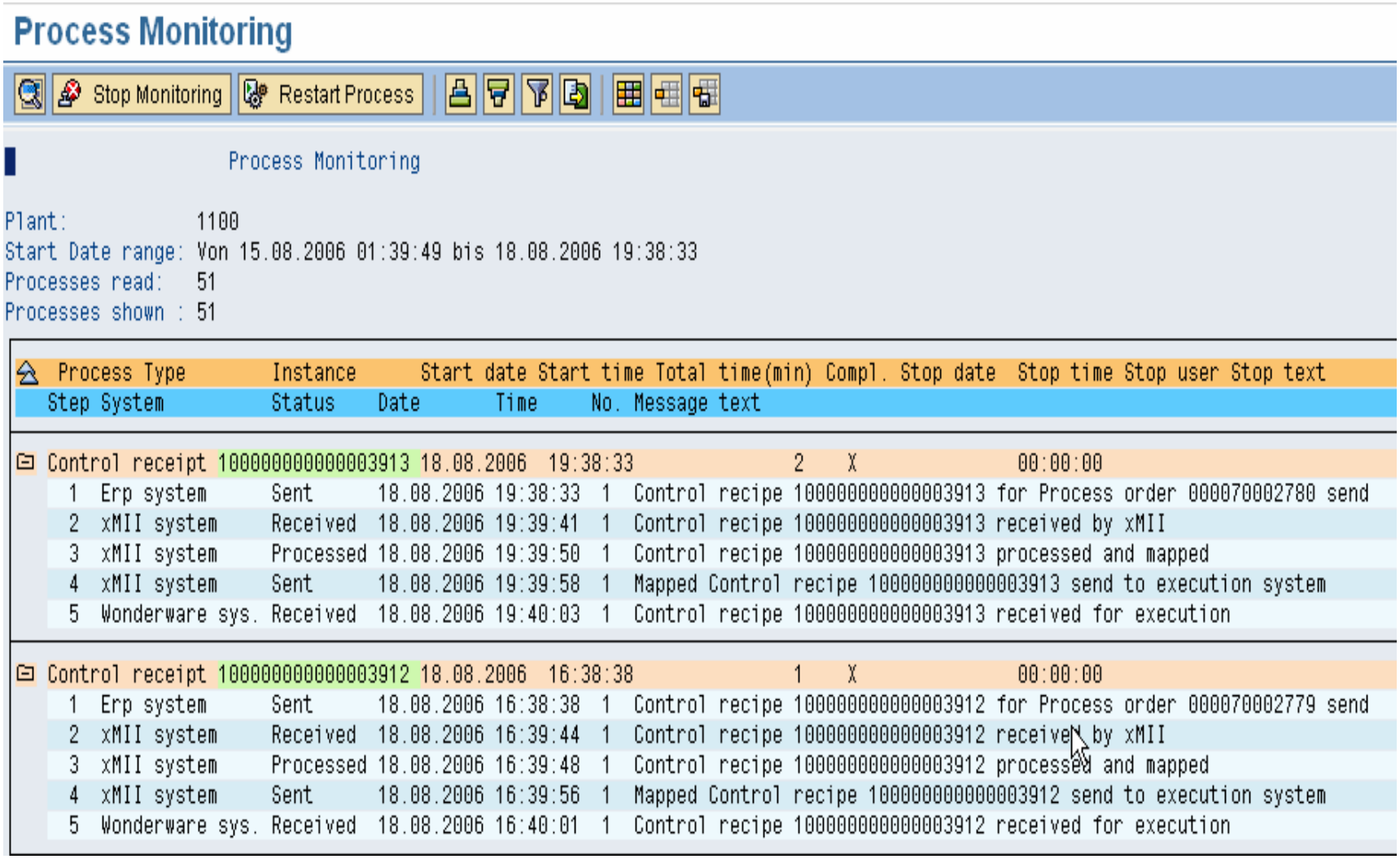
Process Monitoring Cockpit



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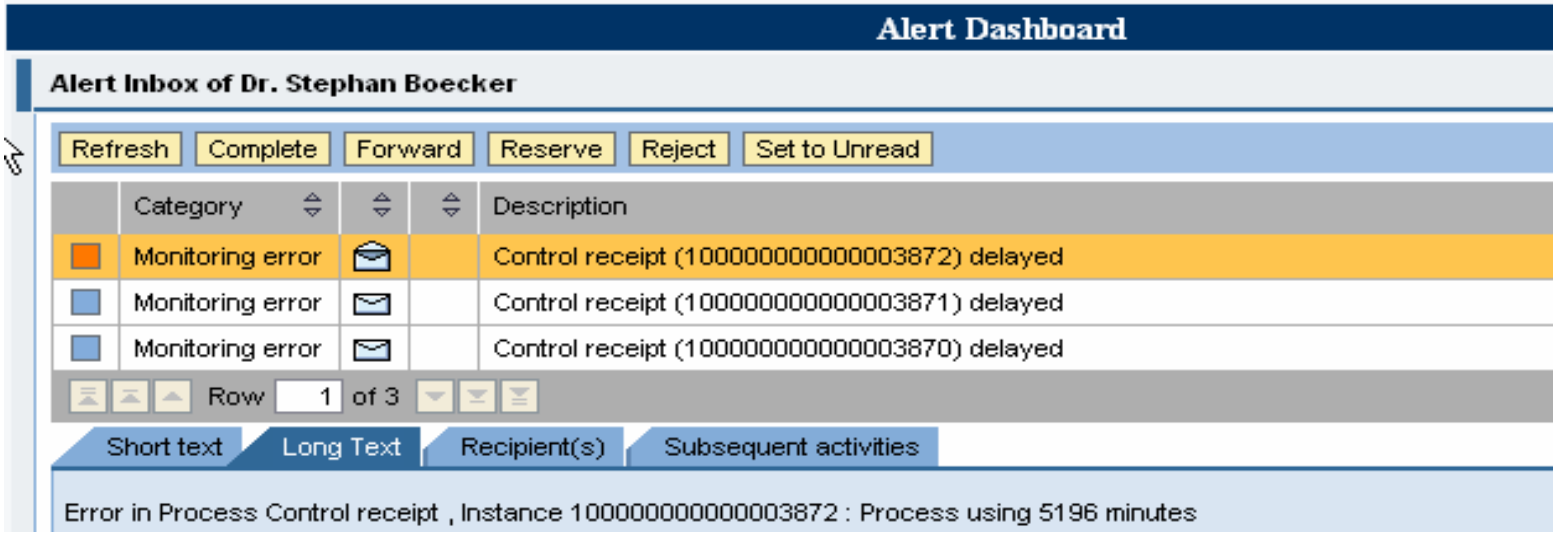
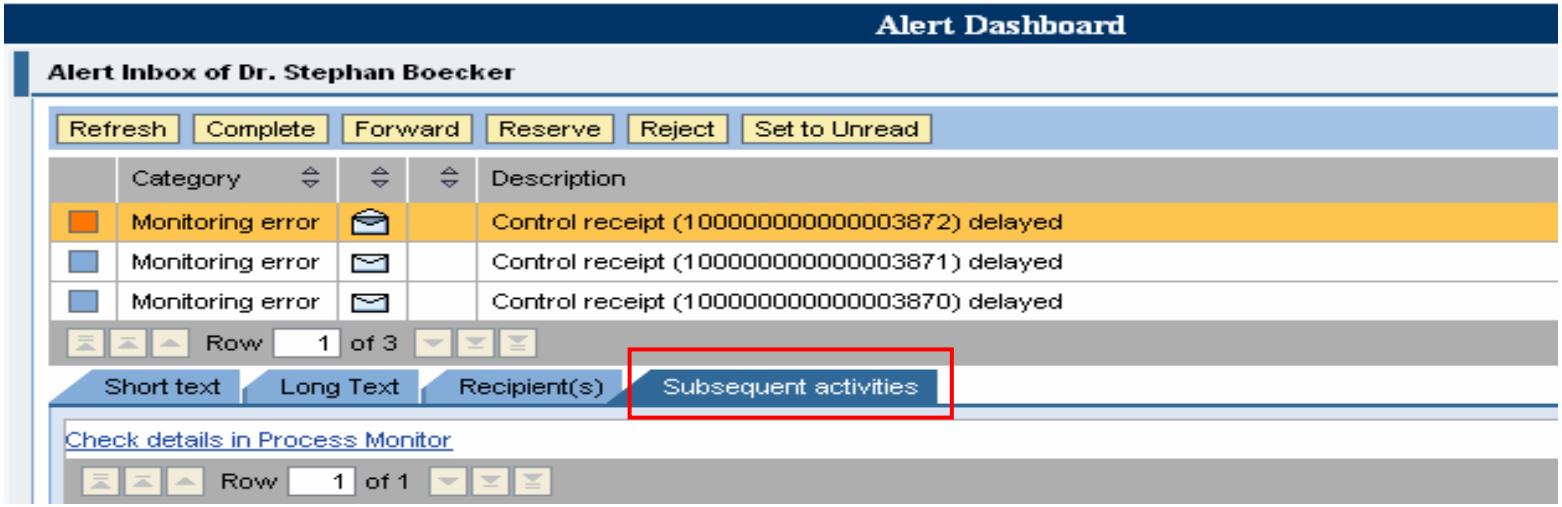
Central Alert Handling

Alert Dashboard in xMII:





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THE BEST-RUN BUSINESSES RUN SAP™

Agenda : SAP Manufacturing and Interoperability

What is the situation today ?

What are the problems ?

What are the objectives ?

How can SAP help ?

What are the benefits?

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Value to Customers

Cost Reduction per minimizing the number of interfaces, layers and data maintenance.

Standardize the interfaces based on ANSI/ISA-95 B2MML messages.

Improved usability and **proactive** solution monitoring.

Visualization and reporting of production relevant data from **all involved levels** from the shop floor to my SAP Business Suite.

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Summary

Interoperability is the ability of production applications and manufacturing business applications to share information and exchange services with each other based on **standards.**

Depending on the required scenarios and the size of the company SAP XMII alone or complementary used together with SAP XI can help to improve the interoperabilty**.**

A **proactive** solution monitoring can help to monitor the systems and to control the route of the message transport.

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Example?

Example ANSI/ISA-95 Production Schedule

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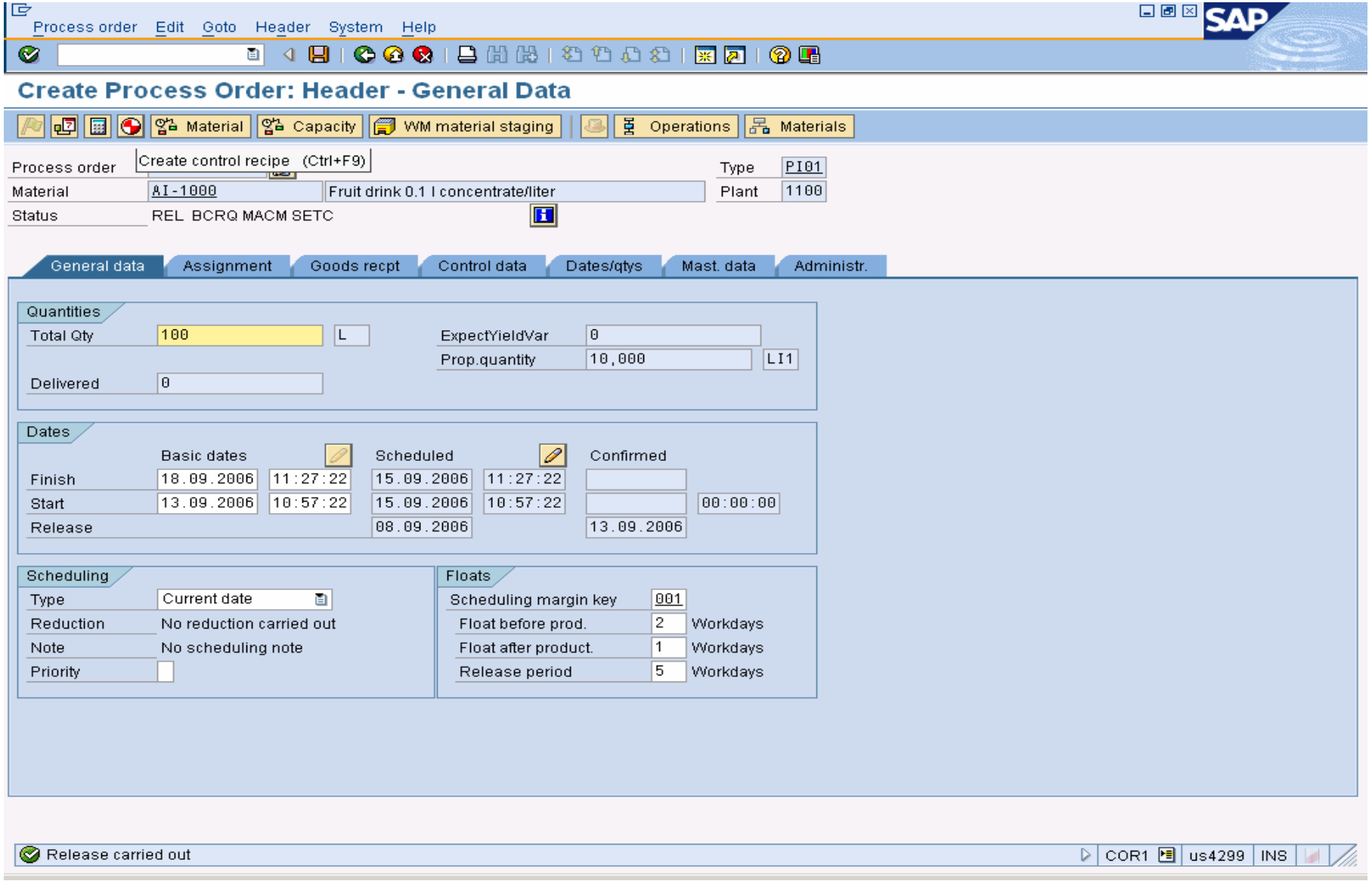
Create Control Recipe



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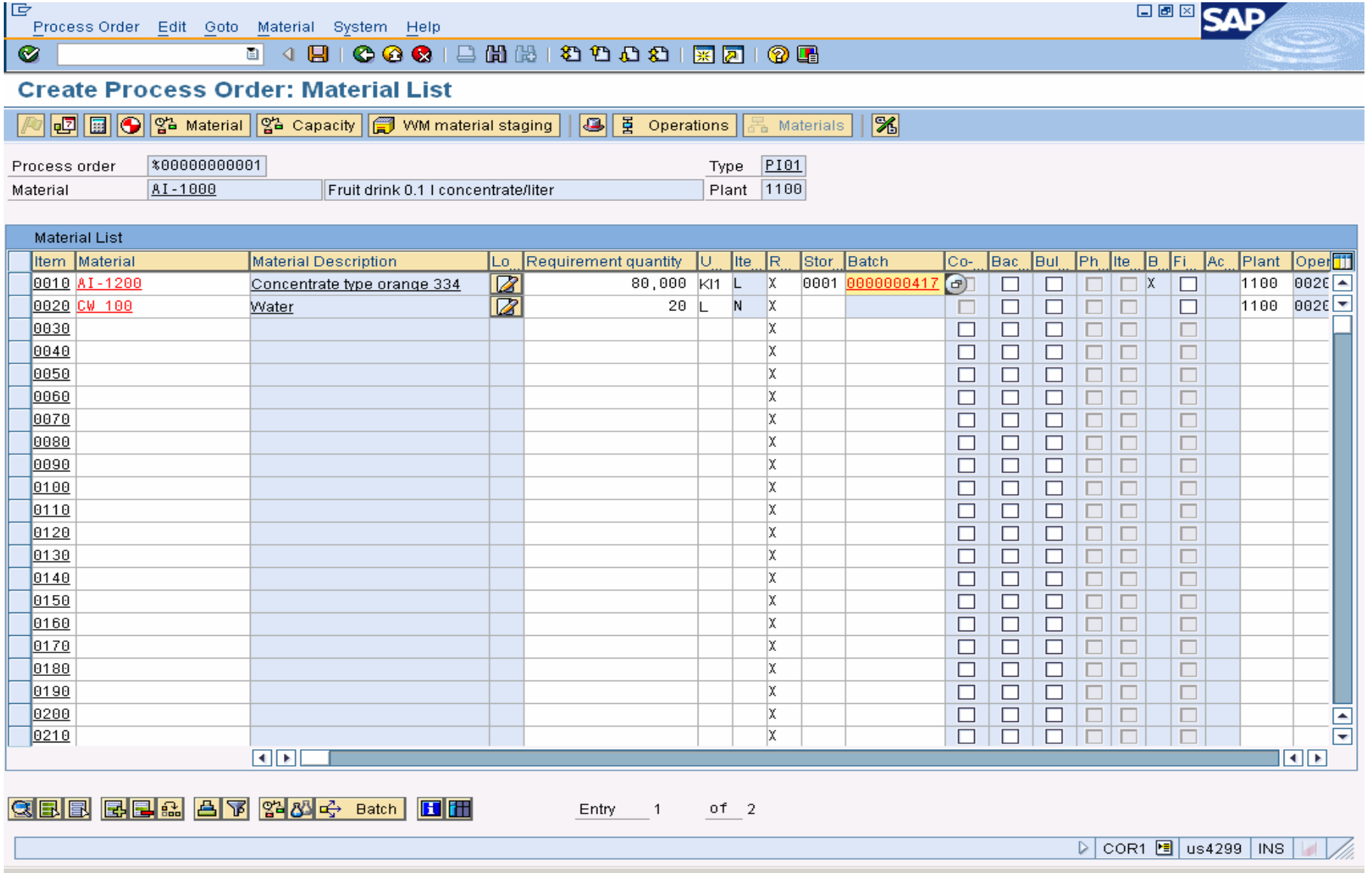
Material List



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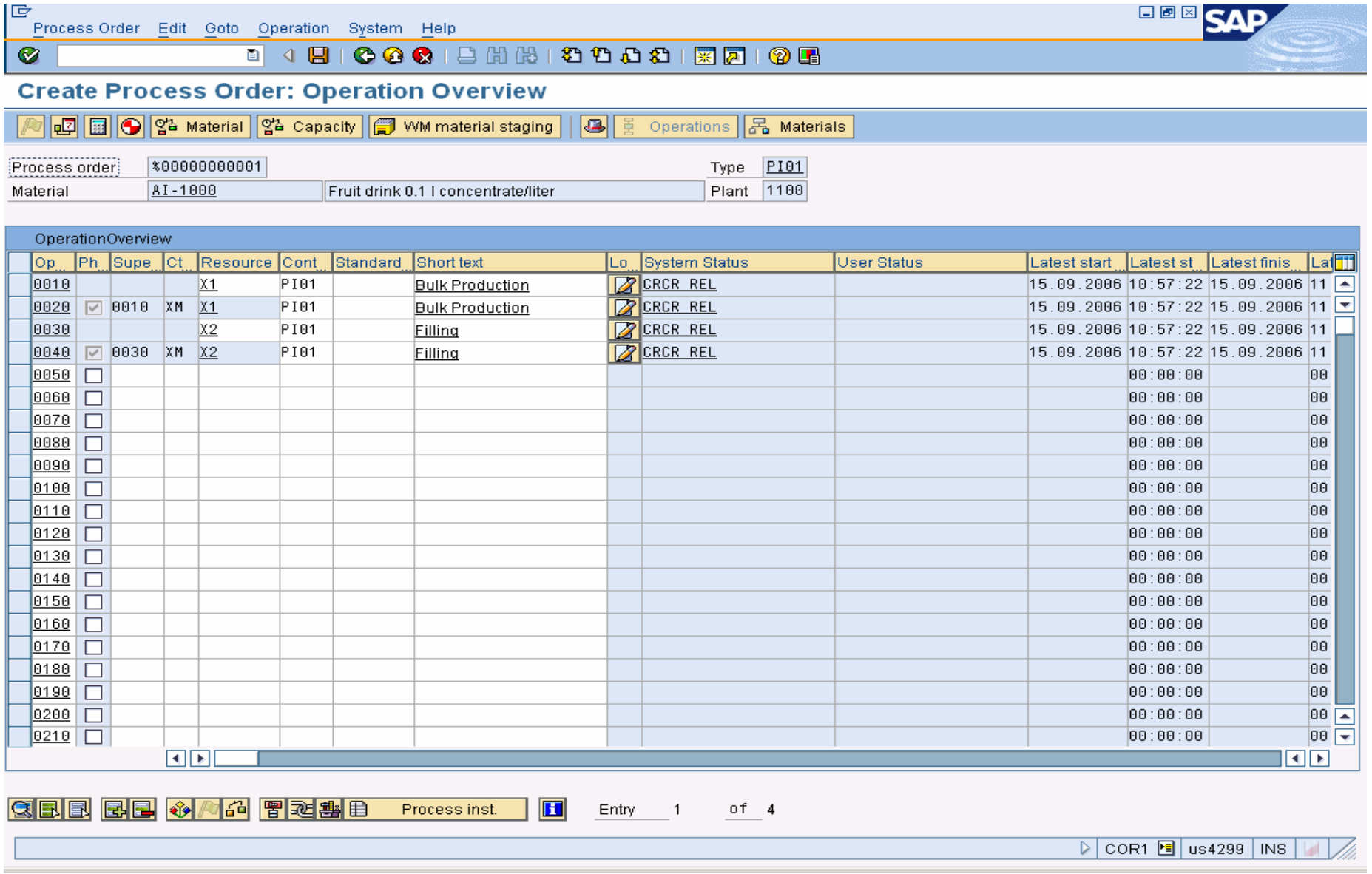
Operations



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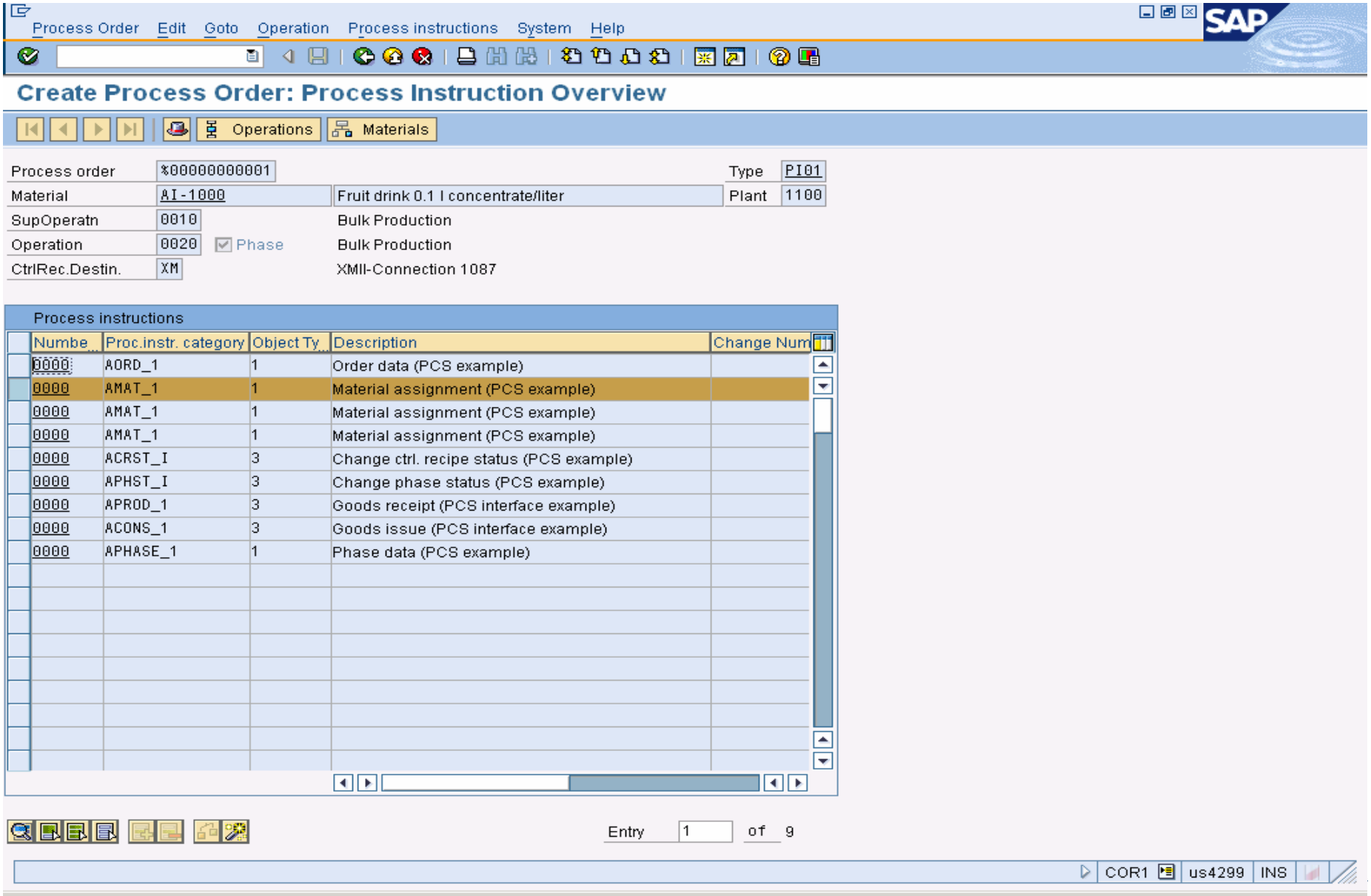
Process Instructions



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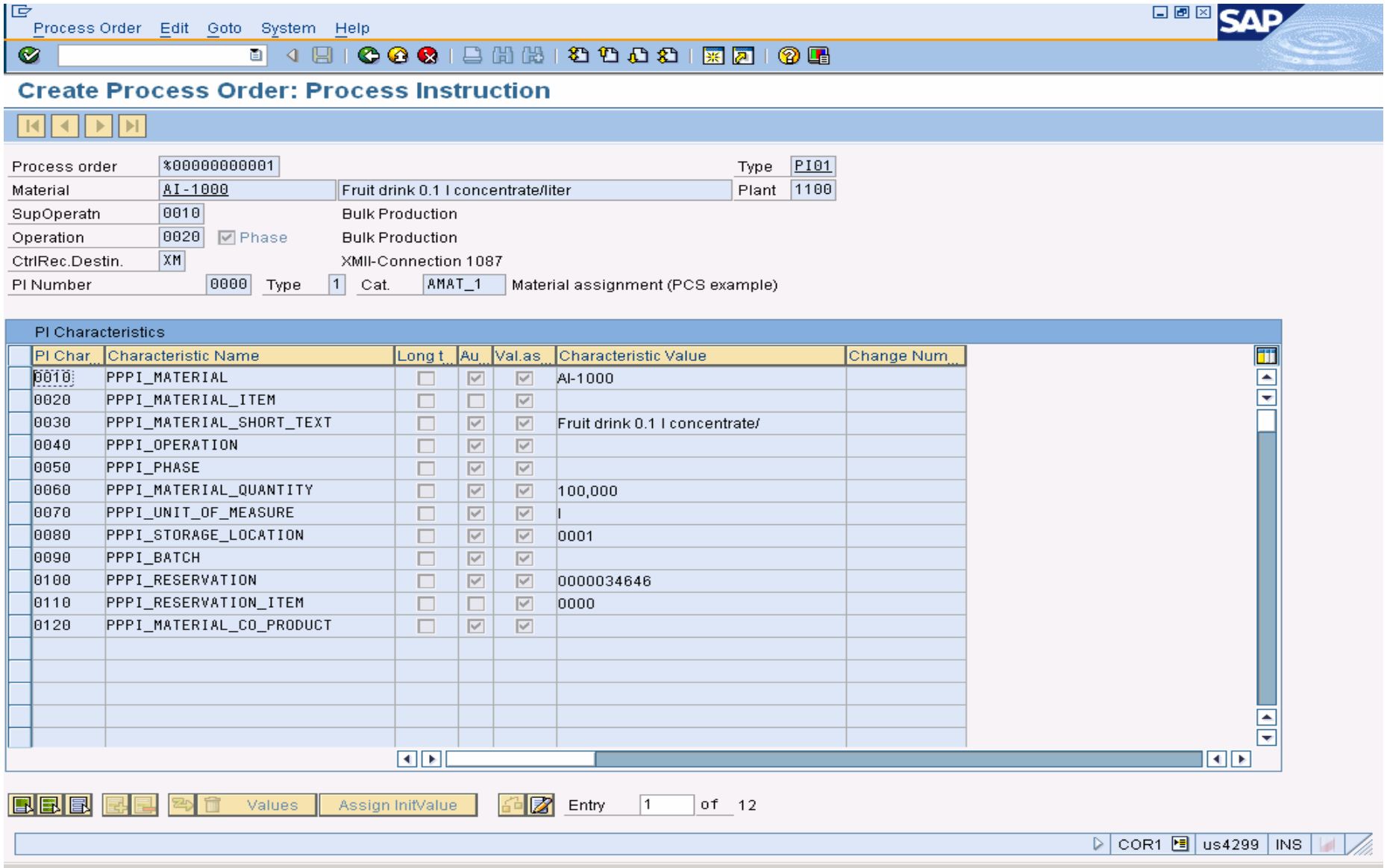
Process Instructions



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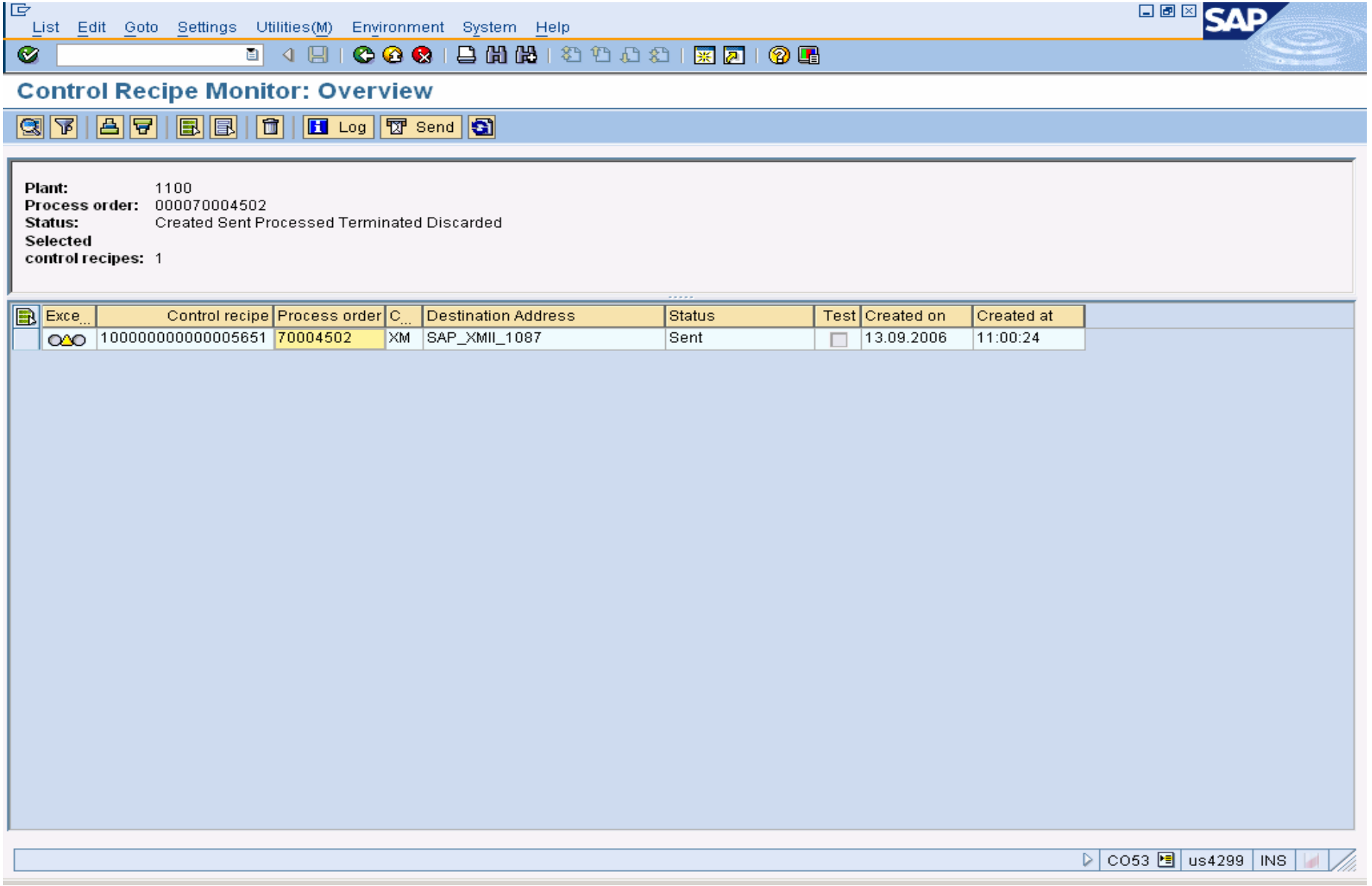
Control Recipe Monitor



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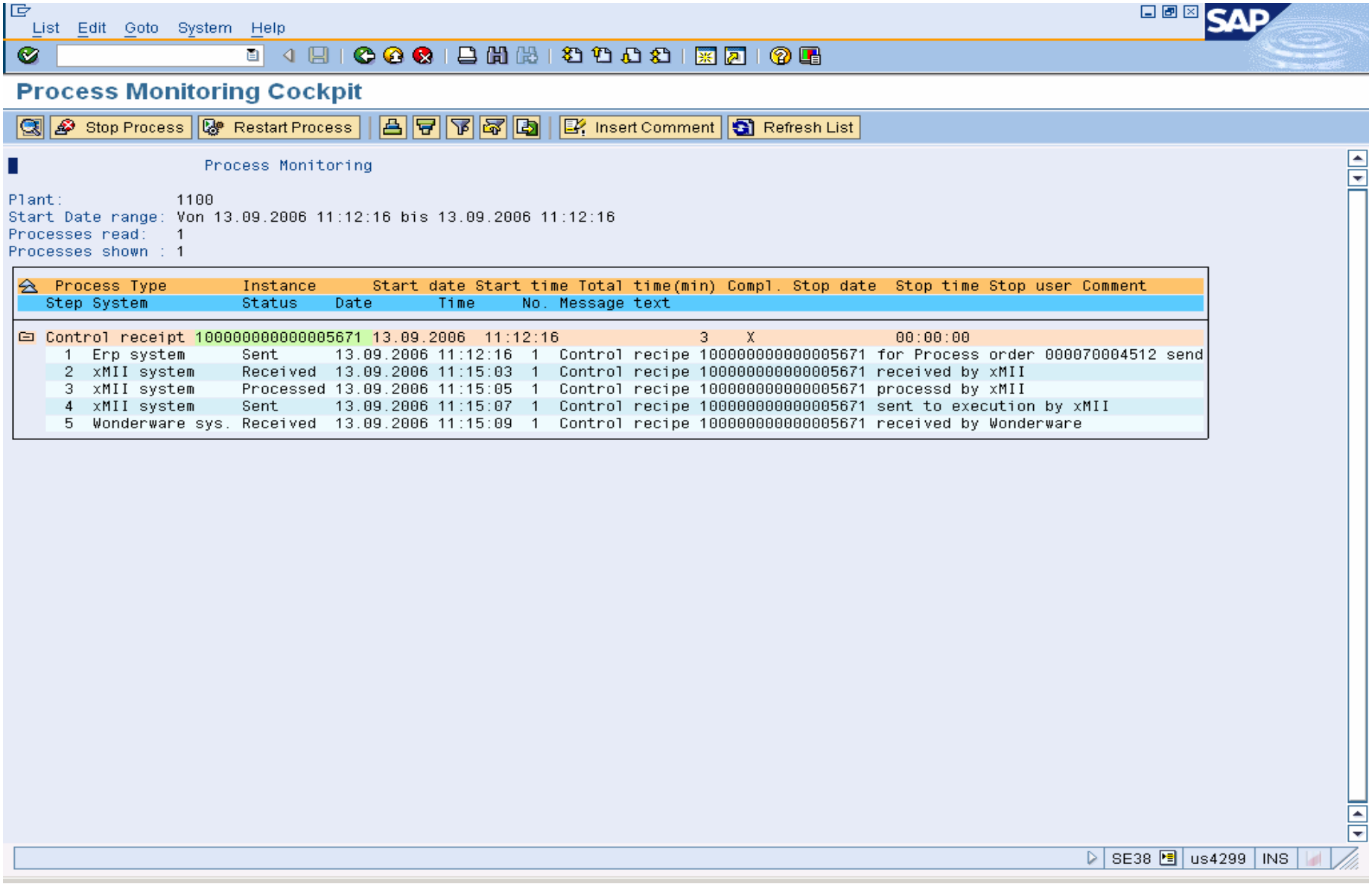
Process Monitoring Cockpit



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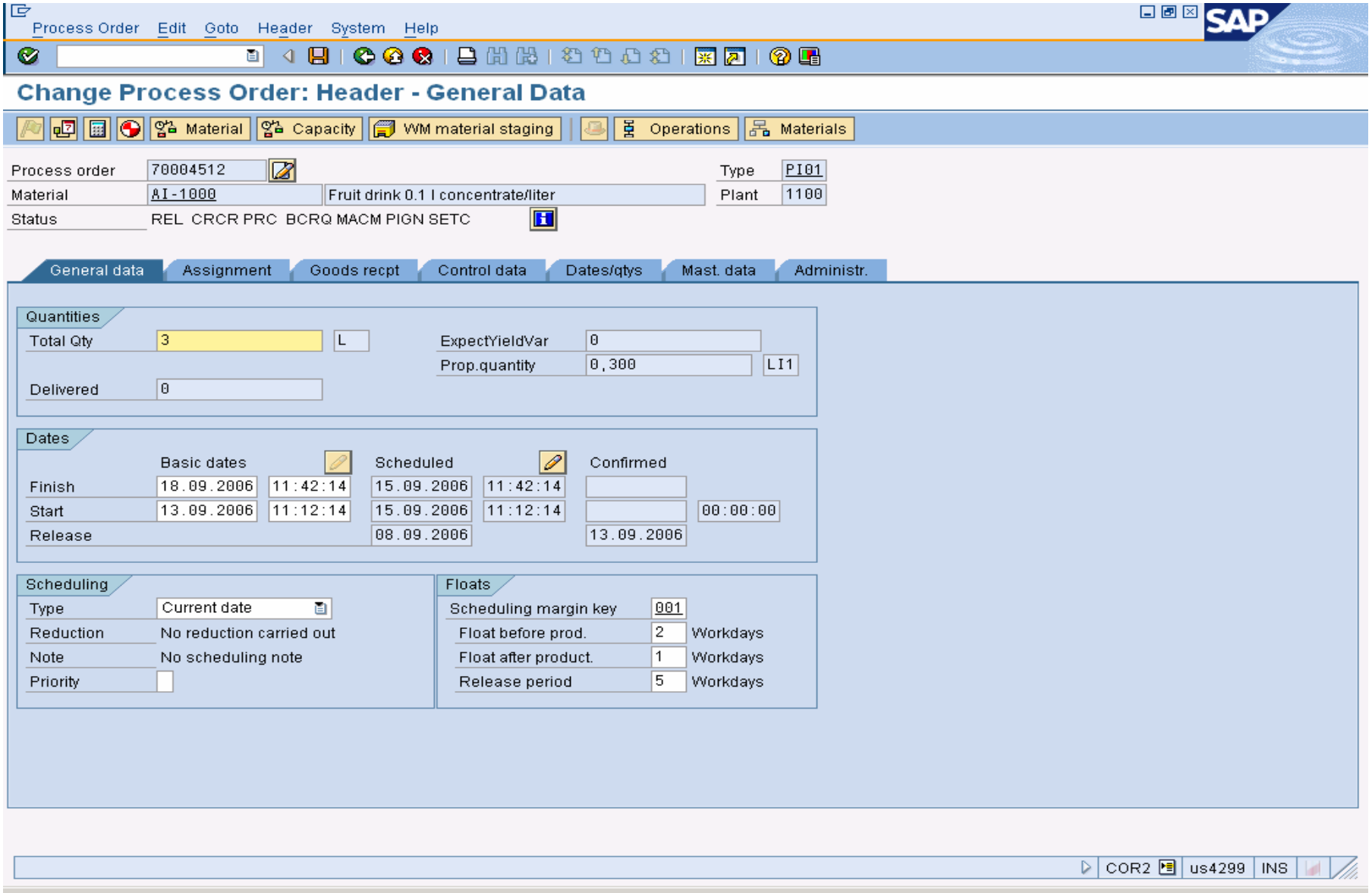
Process Monitoring Cockpit – Drill Down in ERP



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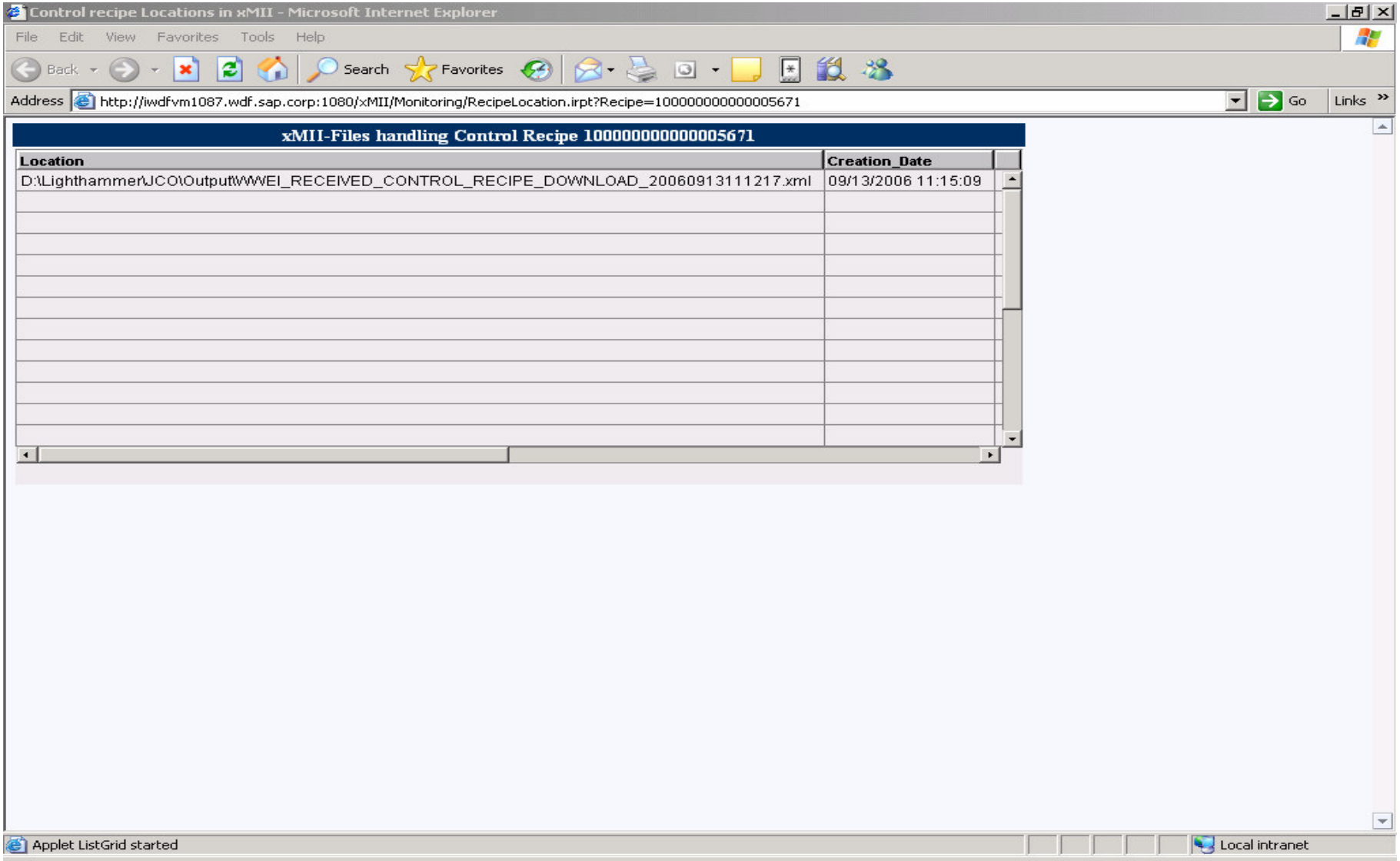
Process Monitoring Cockpit – Drill Down in xMII



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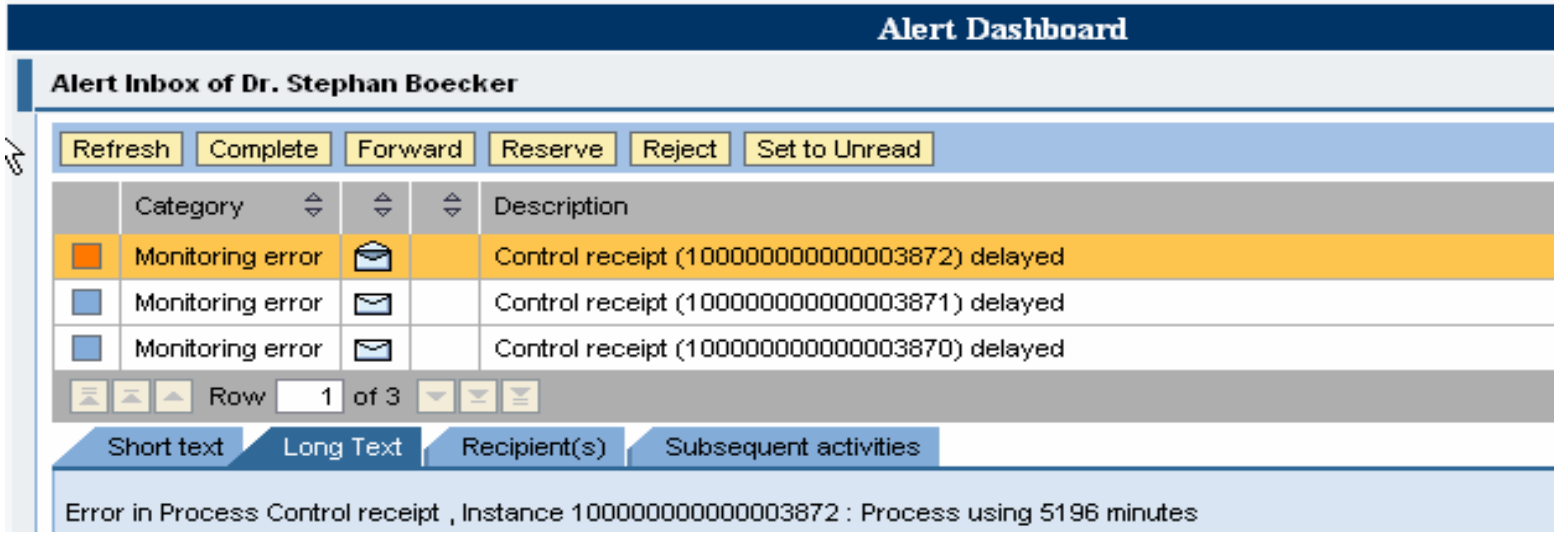
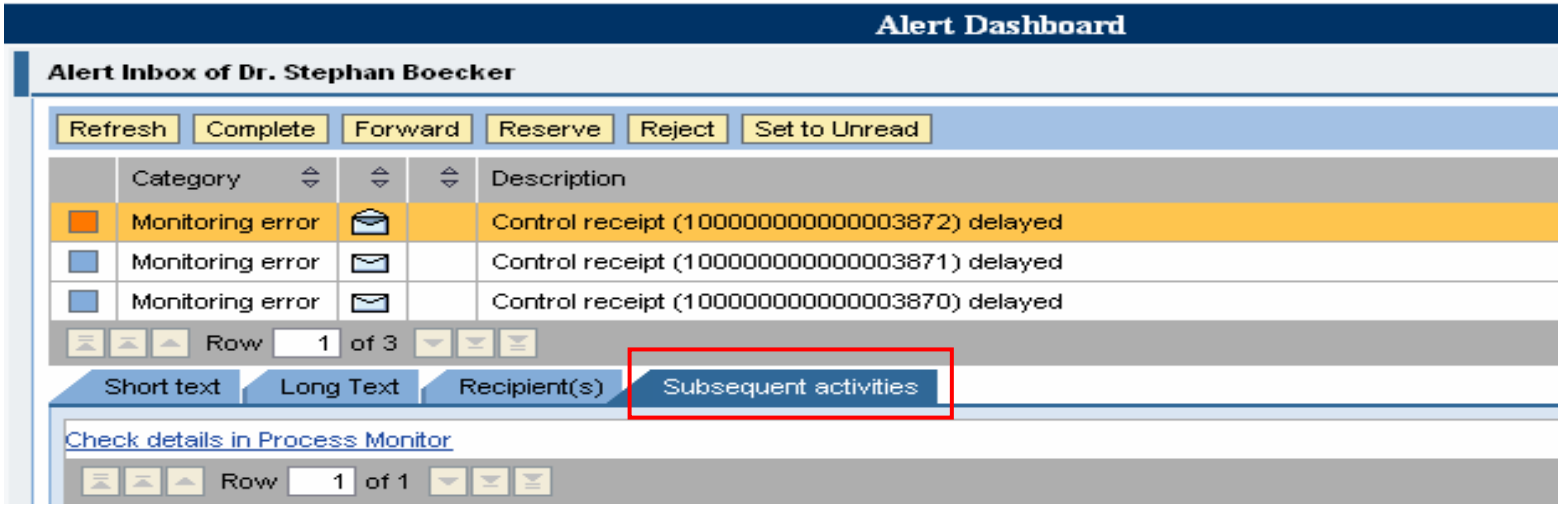
Central Alert Handling

Alert Dashboard in xMII:





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