

Using XSteps for Integrated Production Scenarios

Process Manufacturing Cockpit MANTHEY

Arbeitsanweisung Change
Production Order: 000060012645 Materialnummer: XS_PROD_03 Charge: 0000001627 >>
Change -> Displ. Save Complete Print Create comment Displ. comment

Operation 0010

Order Data

Please notice:

- Check the order dates (right side)
- Always** wear glasses and gloves!

Start Date: 24.06.2008
Start Time: 13:44:02
End Date: 15.07.2008
End Time: 14:01:09

is a sample ticker for the use inside

Material List

Please check the completeness of all components and enter the consumption quantities.

Material	Description	Planned Qty	Qty	UoM
XS_COMP_01	Komponente 1	10.000	11.0000	pc
XS_COMP_02	Komponente 2	40.000	42.0000	pc
XS_COMP_03	Komponente 3	20.000	26.0000	pc

Dr. Arne Manthey, ASM Manufacturing, SAP AG
Dr. Uwe Dittes, Manufacturing Development, SAP AG

15.09.2008

SESSION CODE: MFG 0905

Agenda



1. New developments in 2008 (EhP4)
2. Easily manage rework by using XSteps
3. Shift note functionality for PI Sheets or electronic work instructions
4. Visual and functional integration of SAP MII in browser-based PI Sheets and electronic work instructions
5. XStep Café

1. **New developments in 2008 (EhP4)**
2. Easily manage rework by using XSteps
3. Shift note functionality for PI Sheets or electronic work instructions
4. Visual and functional integration of SAP MII in browser-based PI Sheets and electronic work instructions
5. XStep Café

New Core Manufacturing Developments in 2008 (EhP4)



Enhanced functionality for Production Order Split

- Fair cost distribution between child order and parent order
- New split methods (split to produce something different, split to stock)
- Calculation of split quantity etc.

Work-in-Process Batch (WIP Batch)

- Track work in process
- Enhanced batch traceability etc.

1. New developments in 2008 (EhP4)
- 2. Easily Manage Rework by using XSteps**
3. Shift note functionality for PI Sheets or electronic work instructions
4. Visual and functional integration of SAP MII in browser-based PI Sheets and electronic work instructions
5. XStep Café

Definition of rework:

The work performed to correct defects in a product after it has been manufactured

Use

- Execute additional operations
 - during or at end of a production process
 - in order to improve components or products with insufficient quality

These **additional processing steps** are referred to as **rework**

Actions:

- Identify cause for rework
- Inform affected parties (shift leader, production supervisor, plant manager)
- Define appropriate additional process steps
- Execute additional process steps (rework)
- Check success of rework
 - Repeat additional process steps
 - Stop reworking
- Insert reworked items into production process again

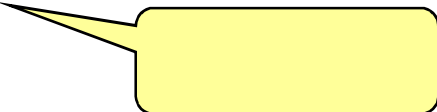
Alert message

Standard
XStep (SXS)

PI Sheet/Work
Instructions for
Rework

Process
Messages

Elements:



Challenges:

- Trigger rework actions during processing of PI Sheets/Work Instructions
 - „First click“
- Select appropriate rework actions
 - „Second click“
- Inform production supervisor/plant manager per email
- Process rework actions

Solution:

- Standard XStep Composite for Rework
 - Dynamic function call
 - Offers Standard Xsteps as rework actions
 - Automatically creates XStep tree for rework
 - Automatically generates corresponding control instruction/recipe
 - Process message for rework alert
 - Automatically send alert email
 - Provide information about the rework process (manufacturing order, time & date, user etc.)

Rework Demo: SXS Composite



Repository for Standard XSteps with Versions, Plant 1000

Change Display

Object	Description
Standard XSteps	Repository for Standard XSteps with Versions
Demo	Arne Manthey
00 ASM 2008 Rework	Created by U. Dittes
Rework: Composite	Contains XS creation and alerting
0001	Version 0001: Released
Standard XStep Rework: Composite, Versio	XStep Tree
Work Instructions/PI Sheet	Plant , control recipe destination , address
Rework: Create XS tree for rework	
PI rework XS	
<Grouping>	
Function ZCMX_XS_PP_CALL_REWORK_XS_CREA	Labeling: Trigger rework Execution: Manual
ZALERT	
Rework: Single Alert Message	
Rework: test	

Properties

Container

Long and Short Text

Optional Subseq.Activities

Message title

Order &MAN_ORDER&: Rework '&REWORK_XS&' triggered

☒ Short Text (SMS, Pager) ☒ Long Text (E-Mail, Fax)

Rework for manufacturing order &MAN_ORDER& was triggered on &DATE& at &TIME&:
User &USER& created XStep tree named '&REWORK_XS&' and corresponding control
recipe/instruction

Rework Demo: Control Instructions

Production Order 60012793 Change: XSteps

 Create     

Object	Description
 XStep Tree - Completely Generated	
 Order 60012793	
 Preparation	Plant 1000, control recipe destination W1, address
 Preparation	
 Layout	Layout-Touchscreen - Exploded
 Operation	
 Operation 0010	Preparation
 Confirmation & Activities	Operation Confirmation & activities - Exploded
 Rework: Composite	Rework: Composite - Exploded
 Standard XStep Rework: Composite	
 Cutting	
 Drilling	
 Assembling	
 Packaging	

Monitor Control Instructions/Recipes: Overview

 Start Send Job  tRFC Log

 Send     

Number of Selected Control Instructions/Recipes 5

Ex...	Control Instructions/Recipe	Manufacturing Ord...	Dest.	Address	Ty...	Status	Created on
	1000000000000005809	000060012793	W1	PREPARATION	4	Sent	12.09.2008
	1000000000000005810	000060012793	W2	CUTTING	4	Sent	12.09.2008
	1000000000000005811	000060012793	W3	DRILLING	4	Sent	12.09.2008
	1000000000000005812	000060012793	W4	ASSEMBLING	4	Sent	12.09.2008
	1000000000000005813	000060012793	W5	PACKAGING	4	Sent	12.09.2008

Rework Demo: Trigger Rework



Work Instructions-Change

Production Order: 000060012793 Material Number: XS_PROD_03 Batch: 0000001726 >>

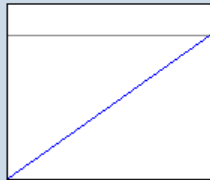
Chnge -> Displ. Save Complete Print Create comment Expand Collapse

Assembling

Operation Confirmation

Activities/Scrap vs. Yield (left), Yield/Scrap/Activity History (right)

30-Nov 00:00 : 9



■ 100%

Planned Yield 10,000

Total yield 0,000

Execute Confirmation

Activities

#	Activity	Status	%	Plan	Total	Conf.	Actual	UoM	Manual	Manual
1	Setup		0	1,000	0,000	0,000	0,000	MIN	Manual	
2	Machine			15,000				MIN	Manual	
3	Labor			10,005				MIN	Manual	

Confirmations

	Yield		Scrap		Activity 1	2	3	4	5	6	Final	Date	Time
	0			0							Final	No	12.09.2008 01:47:38

Trigger rework

Rework Demo: Select Rework Actions (SXS)



Work Instructions-Change

Standard XSteps

Object

- 20 Generated Material Lists
- 30 Document Lists
- 40 Operation Data
 - Basic Operation Data
 - Operation Conf. & activities (Gen. Ops)
 - Operation Confirmation & activities**
 - Parameter Values
 - Parameter Values & PI-Table
 - Special Operation Confirmation
 - Special Operation Confirmation (2)
 - Special Operation Confirmation (TEST)
- 98 TMP
- 99 Archive
- 10 Production Area -A-
- 20 Production Area -B-
- 90 Technical Modules
- 98 Trash
- 99 Preparation / Test
 - 10 Ready to Test
 - 50 Development
 - 60 Sandbox
 - 70 Templates
 - 80 SXS library - FINAL V1.1
 - 99 Unused / Trash

Confirmations

	Yield		Scrap		Activity 1	2	3	4	5	6	Final		Date	Time
	0		0								Final	No	12.09.2008	01:47:38

Execute Confirmation

Trigger rework

Assembling

Planned Yield: 10,000

Actual yield: 0,000

XStep tree created - title: Rework actions (auto-gener.) Used SXS: Operation Confirmation & activities

 Start Send Job tRFC Log

Exception	Plant	Process Message	MessCat	Created on	Created at	Sender	Detailed send status
	1000	1000000000000024883	ZALERT	12.09.2008	01:54:48	ASSEMBLING	Sent

✉ ! 📄 @ Subject

Received

 Order 000060012793: Rework 'Rework actions (auto-gener.)' triggered

Fri 9/12/20

This message was sent with High importance.

From:  Dr. Arne Manthey [arne.manthey@sap.com]

To: Dittes, Uwe; Manthey, Arne

Cc:

Subject: Order 000060012793: Rework 'Rework actions (auto-gener.)' triggered

Alert ID: ##03064##

```
Rework for manufacturing order 000060012793 was triggered on 12.09.2008 at 01:54:49:
User DITTES created XStep tree named 'Rework actions (auto-gener.)' and corresponding control
recipe/instruction
```

Possible Subsequent Activities

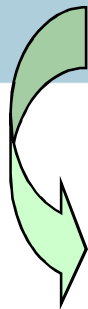
BPX for Manufacturing <https://www.sdn.sap.com/irj/sdn/bpx-manufacturing>

PDF XSteps enhancements <https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/409>

Rework Demo: XSteps for Production Order

Production Order 60012793 Change: XSteps

Create      	
Object	Description
▼ 	XStep Tree - Completely Generated
Order 60012793	
Preparation	Plant 1000, control recipe destination W1, address
▼ Preparation	
▶ Layout	Layout-Touchscreen - Exploded
▼ Operation	
Operation 0010	Preparation
▶ Confirmation & Activities	Operation Confirmation & activities - Exploded
▼ Rework: Composite	Rework: Composite - Exploded
▶ Standard XStep Rework	
▶ Cutting	
▶ Drilling	
▶ Assembling	
▶ Packaging	



Production Order 60012793 Change: XSteps

Create      	
Object	Description
▼ 	XStep Tree - Completely Generated
Order 60012793	
Preparation	Plant 1000, control recipe destination W1, address PREPARATION
▶ Preparation	
▶ Cutting	
▶ Drilling	
▶ Assembling	
▶ Packaging	
▼ Rework actions (auto-gener.)	XStep Tree - Completely Generated
Order 60012793	
Assembling	Plant 1000, control recipe destination W4, address ASSEMBLING
▶ Operation Confirmation & activities	Operation Confirmation & activities - Exploded



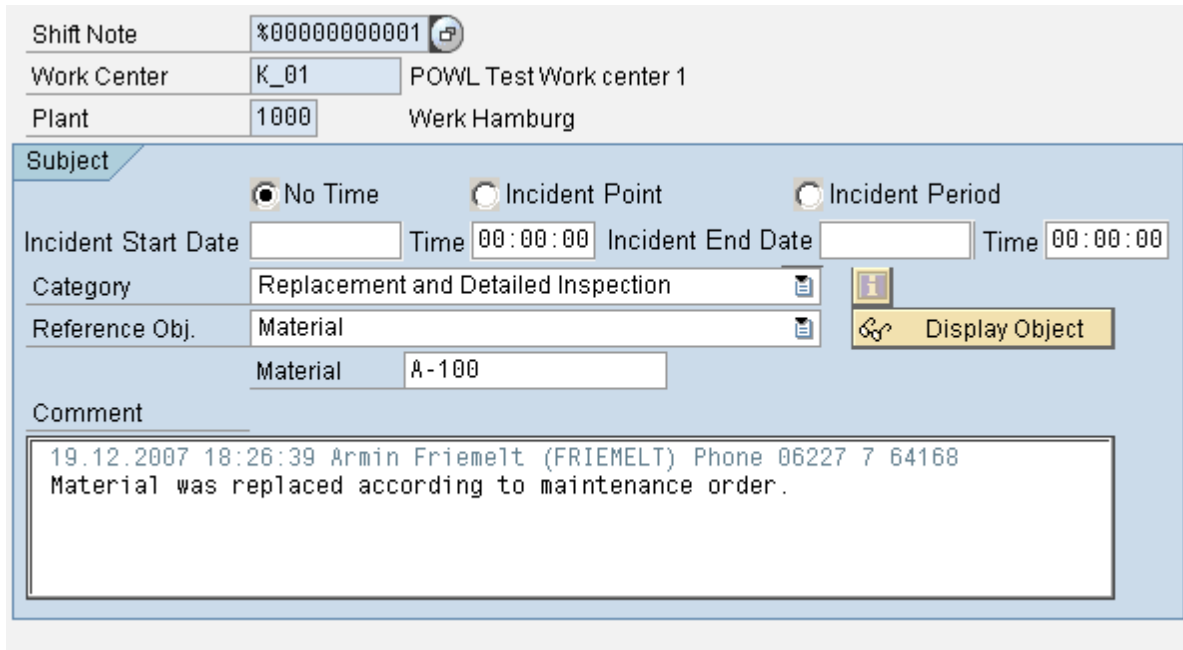
1. New developments in 2008 (EhP4)
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Shift Note Functionality for PI Sheets or Electronic Work Instructions

Definition:

Shift notes are short comments concerning events that can't be recorded differently like confirmations or maintenance notifications. Examples:

- Worker arrived late
- Comments (e. g. activated pump, started MES system)
- Material exchange



The screenshot displays the SAP Shift Note transaction interface. At the top, there are input fields for 'Shift Note' (containing '%000000000001'), 'Work Center' (containing 'K_01' with a description 'POWL Test Work center 1'), and 'Plant' (containing '1000' with a description 'Werk Hamburg'). Below these is a 'Subject' section with three radio buttons: 'No Time' (selected), 'Incident Point', and 'Incident Period'. Under 'No Time', there are fields for 'Incident Start Date' and 'Time' (both set to '00:00:00'), and 'Incident End Date' and 'Time' (both set to '00:00:00'). The 'Category' is set to 'Replacement and Detailed Inspection'. The 'Reference Obj.' is set to 'Material', with a sub-field 'Material' containing 'A-100'. A 'Display Object' button is visible. At the bottom, a 'Comment' text area contains the text: '19.12.2007 18:26:39 Armin Friemelt (FRIEMELT) Phone 06227 7 64168 Material was replaced according to maintenance order.'

Options to create shift notes for PI Sheets/electronic Work Instructions

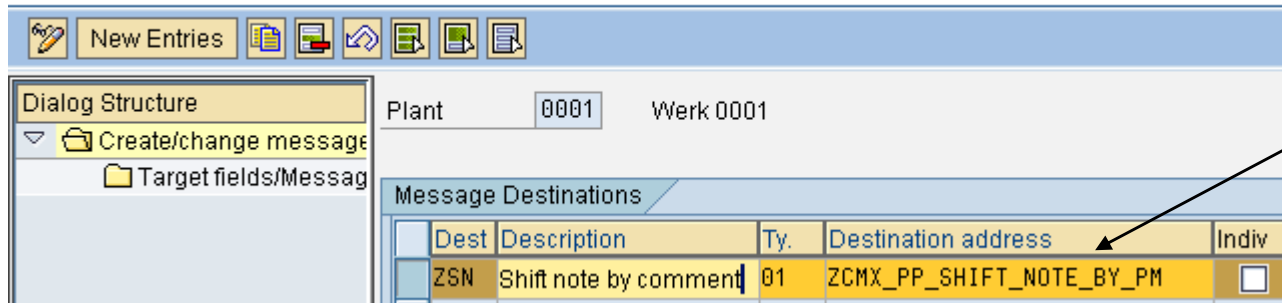
- Dynamic function call
- Process Message (new category)

Alternative Idea, shown on the next slides:

- Create shift notes by creating comments for operations or phases
 - Create additional process message destination
 - Create function module that creates shift notes
 - Enhance process message category PI_COMM
- Prerequisites:
 - Business function for shift note active
 - Shift note customizing maintained
 - Shift note type assigned to work center/resource
 - Work center maintained for operation/phase

Shift Note: New Message Destination ZSN

Change View "Create/change message destinations": Overview

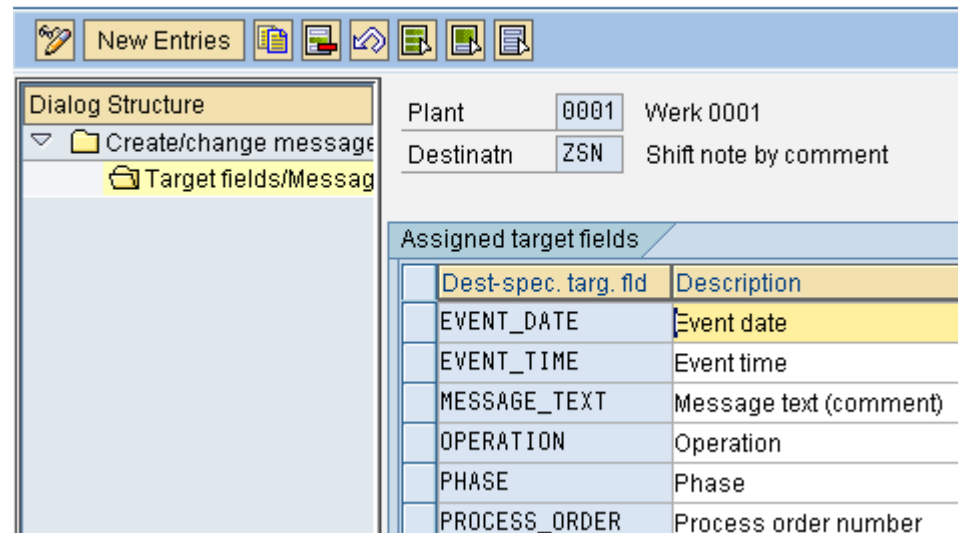


Plant 0001 Werk 0001

Dest	Description	Ty.	Destination address	Indiv
ZSN	Shift note by comment	01	ZCMX_PP_SHIFT_NOTE_BY_PM	☐

Function module

Change View "Target fields/Message destinations"



Plant 0001 Werk 0001
Destinatn ZSN Shift note by comment

Dest-spec. targ. fld	Description
EVENT_DATE	Event date
EVENT_TIME	Event time
MESSAGE_TEXT	Message text (comment)
OPERATION	Operation
PHASE	Phase
PROCESS_ORDER	Process order number

Shift Note: Adopt PI_COMM

Change View "Process message categories": Overview

Plant: 0001 Werk 0001

Process message categories

ProcMessage Cat	Description	SndA
PI_COMM	Comment Message	☒
PI_COMM	Material Consumption	☐

Change View "Destinations/Message categories": Overview

Plant: 0001 Werk 0001

ProcMessage Cat: PI_COMM Comment Message

Assigned Destinations

Dest	Description	Typ	Destination Address
PI01	Process message record	01	COCM_PROCESS_RECORD
ZSN	Shift note by comment	01	ZCMX_PP_SHIFT_NOTE_BY_PM

Shift Note: Creating Comment

Work center WE_1310 assigned to
Shift note type SN

Transition matrix	
☐ Backflush	
Shift Note Type	SN
Shift Report Type	MARTIN_TES



Work center WE_1310 maintained
for operation 10

OperationOverview					
Op.	SOp	Start	Start	Work Ce...	Plant
0010		10.09.2008	07:00:00	WE_1310	1000

Comment created for operation 10

Work Instructions-Change

Production Order: 000060012790 Material Number: XS_PROD_03 Batch: 00000017
Chnge -> Displ. Save Complete Print Create comment Expand Collapse

Operation 0000

Operation 0010

Edit Comments

Memo:

- 1) Signal bulb defect, was replaced
- 2) Container SCRAP-001 almost filled
- 3) Refilled printer paper (printer LP01)

Activities

#	>	Activity
1	>	Setup
2	>	Machine
3	>	Labor

UoM	Manual
MIN	Manu...
s	Manu...
s	Manu...

Shift Note: Process Message Handling

Monitor for Process Messages: Selected Messages

Start Send Job tRFC Log

Send Message

Number of Selected Messages: 1

Exception	Material	Plant	Process Message	ProcMsgCat	Created on	Created at	Sender	Detailed send status	Test	Order
	XS_PROD_03	Plant	1000000000000024869	PI_COMM	09.09.2008	21:12:23	PREPARATION	Sent	☐	60012790

Process Message Monitor: Display Log

Overview

	Numb	Program	Mode
09.09.2008 21:12:24 MANTHEY	7	SAPMSSY1	Dialog processing
09.09.2008 21:12:24 MANTHEY	3	SAPMSSY1	Dialog processing
09.09.2008 21:12:24 MANTHEY	4	SAPMSSY1	Dialog processing

Message Text

Message category: PI_COMM --- Process message: 1000000000000024869 "Send to All Destinations"

Message to be sent to destination:

PI01 COCM_PROCESS_RECORD

ZSN ZCMX_PP_SHIFT_NOTE_BY_PM

=> Message will be sent to destination (check log for destination)

Message category: PI_COMM --- Process message: 1000000000000024869 "Send to All Destinations"

=> Destination PI01 COCM_PROCESS_RECORD can process the message

Message category: PI_COMM --- Process message: 1000000000000024869 "Send to All Destinations"

shift note 000000100735 created

=> Destination ZSN ZCMX_PP_SHIFT_NOTE_BY_PM can process the message

Shift Note (TC SHN3)



Display Shift Note

Shift Note: 100735
Work Center: WE_1310 Production Line A
Plant: 1000 Werk Hamburg

**Values from PI Sheet/
Work Instructions**

Subject

Event: Date/Time: 09.09.2008 21:11:13 ☐ Specify End
Category:
Reference Object: Production order
Production Order: 60012790 Display Object

Comment

09.09.2008 21:12:24 Arne Manthey (MANTHEY)
production order 000060012790 Operation 0010
Comment created by user Uwe Dittes (DITTES):
Memo:
1) Signal bulb defect, was replaced
2) Container SCRAP-001 almost filled
3) Refilled printer paper (printer LP01)

Comment

Attachments

File Name	Created By	Created on	Time
-----------	------------	------------	------

Information about
message proces-
sing (batch job,
send date/time)

Added text lines
(operation, user)

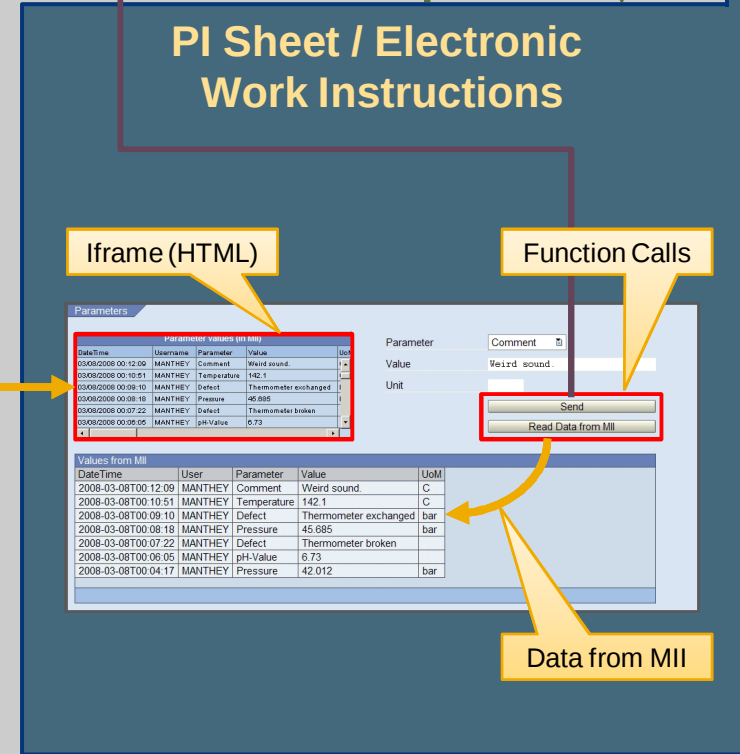
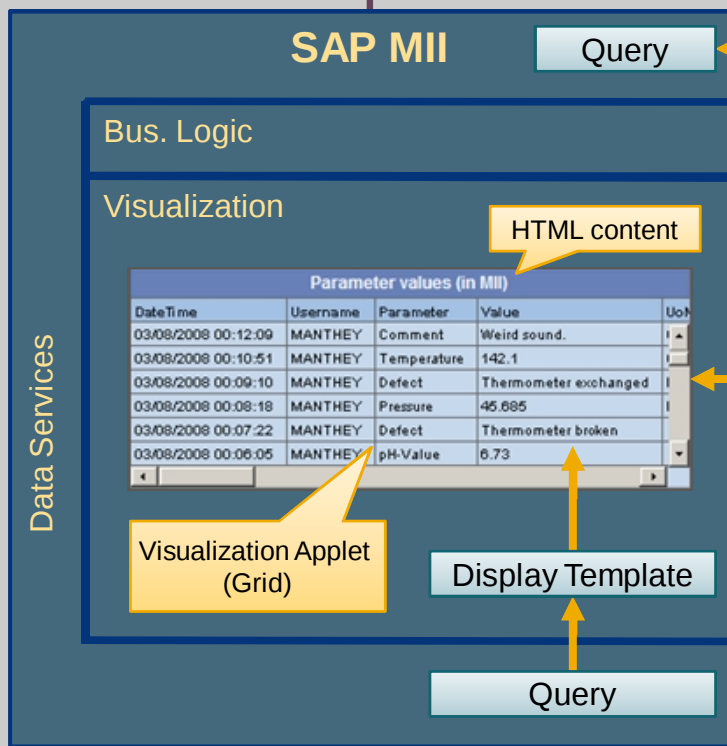
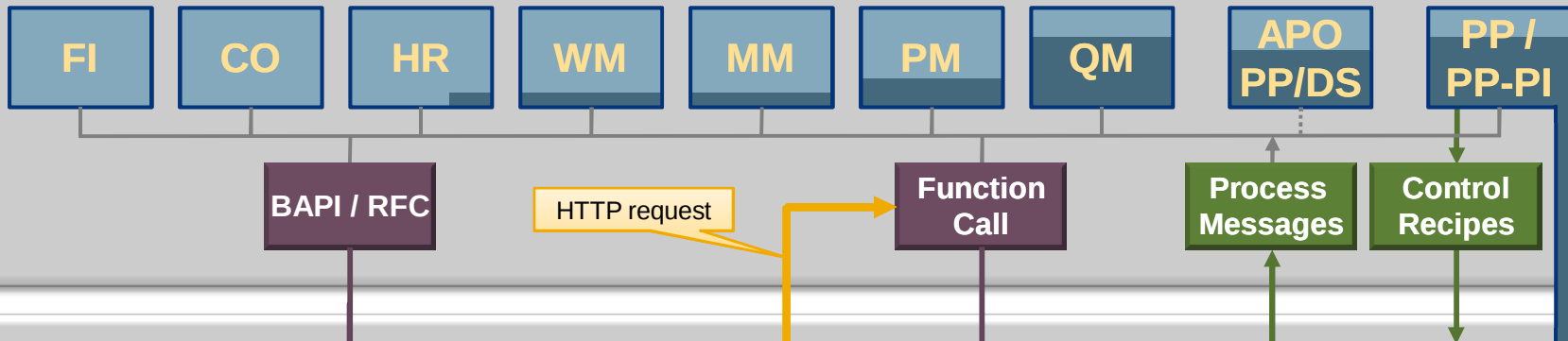
1. New developments in 2008 (EhP4)
2. Easily manage rework by using XSteps
3. Creation of shift notes inside PI Sheets or electronic work instructions
4. **Visual and functional integration of SAP MII in browser-based PI Sheets and electronic work instructions**
5. XStep Café

Connecting MII and PI Sheet / Electronic Work Instructions

SAP

ERP / SCM

MOM



Parameters

MII content

Parameter values (in MII)

DateTime	Username	Parameter	Value	UoM	

Parameter

Value

Unit

Send

Read Data from MII

Values from MII

DateTime	User	Parameter	Value	UoM

Parameters

Parameter values (in MII)					
DateTime	Username	Parameter	Value	UoM	

Parameter

Value

Unit

- Pressure
- Temperature
- pH-Value
- Color
- Defect
- Comment

Values from MII

DateTime	User	Parameter	Value	UoM



Parameters

Parameter values (in MII)					
DateTime	Username	Parameter	Value	UoM	

Parameter

Pressure

Value

42.012

Unit

bar

Send

Read Data from MII

Values from MII				
DateTime	User	Parameter	Value	UoM

Parameter values (in Mll)

DateTime	Username	Parameter	Value	UoM	
03/08/2008 00:04:17	MANTHEY	Pressure	42.012	bar	

Pressure

42.012

bar

Read Data from MII

DateTime	User	Parameter	Value	UoM

Parameter values (in MII)

[illegible]

Pressure

42.012

bar

Send

Read Data from MII

DateTime	User	Parameter	Value	UoM
2008-03-08T00:04:17	MANTHEY	Pressure	42.012	bar

Parameters

Parameter values (in MII)

DateTime	Username	Parameter	Value	UoM	
03/08/2008 00:06:05	MANTHEY	pH-Value	6.73		▲
03/08/2008 00:04:17	MANTHEY	Pressure	42.012	bar	■
◀ ▶					▼

Parameter

pH-Value 

Value

6.73

Unit

Send

Read Data from MII

Values from MII

DateTime	User	Parameter	Value	UoM
2008-03-08T00:06:05	MANTHEY	pH-Value	6.73	
2008-03-08T00:04:17	MANTHEY	Pressure	42.012	bar

Parameters

Parameter values (in MII)

DateTime	Username	Parameter	Value	UoM	
03/08/2008 00:07:22	MANTHEY	Defect	Thermometer broken		▲
03/08/2008 00:06:05	MANTHEY	pH-Value	6.73		■
03/08/2008 00:04:17	MANTHEY	Pressure	42.012	bar	

Parameter

Defect 

Value

Thermometer broken

Unit

Send

Read Data from MII

Values from MII

DateTime	User	Parameter	Value	UoM
2008-03-08T00:07:22	MANTHEY	Defect	Thermometer broken	
2008-03-08T00:06:05	MANTHEY	pH-Value	6.73	
2008-03-08T00:04:17	MANTHEY	Pressure	42.012	bar

Parameters

Parameter values (in MII)

DateTime	Username	Parameter	Value	UoM	
03/08/2008 00:08:18	MANTHEY	Pressure	45.685	bar	▲
03/08/2008 00:07:22	MANTHEY	Defect	Thermometer broken		■
03/08/2008 00:06:05	MANTHEY	pH-Value	6.73		
03/08/2008 00:04:17	MANTHEY	Pressure	42.012	bar	

Parameter

Pressure 

Value

45.685

Unit

bar

Send

Read Data from MII

Values from MII

DateTime	User	Parameter	Value	UoM
2008-03-08T00:08:18	MANTHEY	Pressure	45.685	bar
2008-03-08T00:07:22	MANTHEY	Defect	Thermometer broken	
2008-03-08T00:06:05	MANTHEY	pH-Value	6.73	
2008-03-08T00:04:17	MANTHEY	Pressure	42.012	bar

Different example: MII Analytics during Confirmation

Work Instructions-Change

Production Order: 000060012866 Material Number: XS_PROD_03 Batch: 0000001732 >>

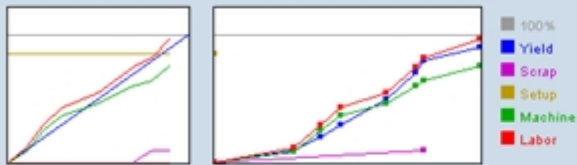
Change -> Displ. Save Complete Print Create comment Expand Collapse

Preparation

Operation 0010

Operation Confirmation

Activities/Scrap vs. Yield (left), Yield/Scrap/Activity History (right)



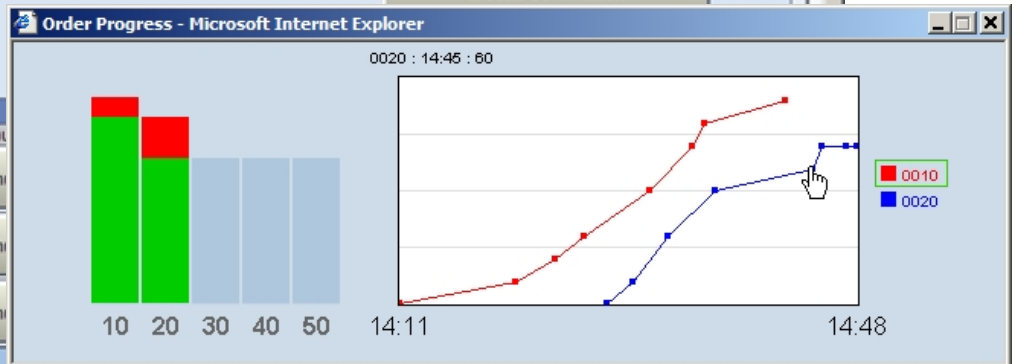
Planned Yield 10,000

Total yield 9,000

Execute Confirmation

Activities

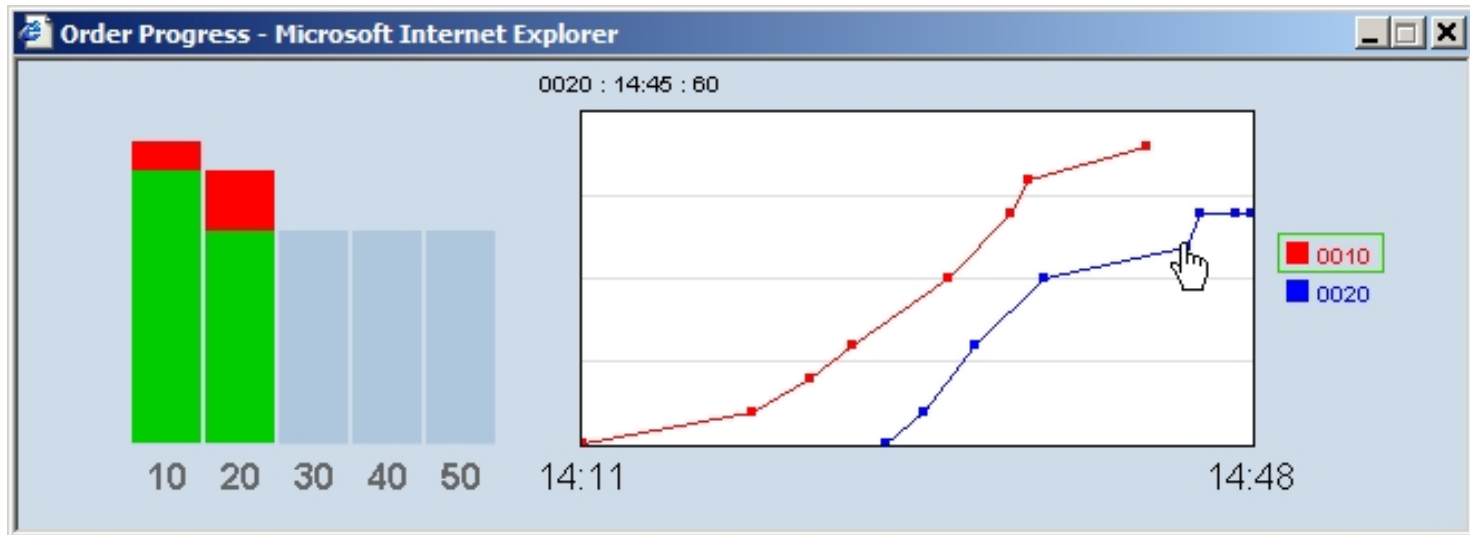
#	Activity	Status	%	Plan	Total	Conf.	Actual	UoM	Manu
1	Setup	Stopped	85	1,000	0,853	0,853	0,000	MIN	Manu
2	Machine	Stopped	75	19,980	15,050	15,050	0,000	MIN	Manu
3	Labor	Stopped	97	15,000	14,531	14,531	0,000	MIN	Manu



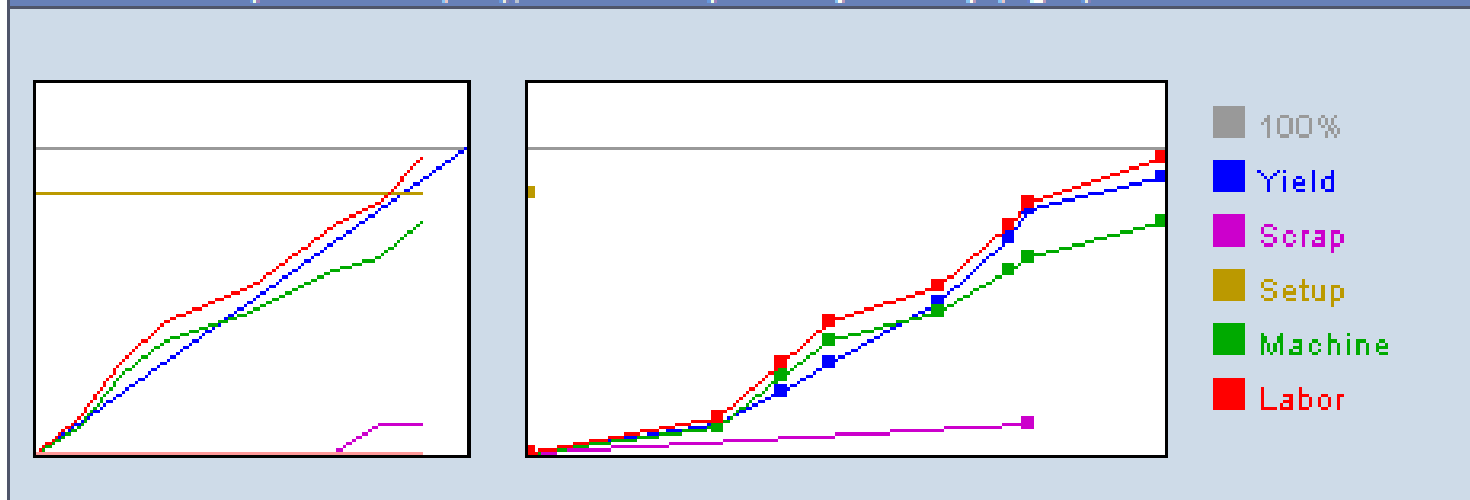
Confirmations

	Yield	Scrap	Activity 1	2	3	4	5	6	Final	Date	Time
2	0	0		2.733 MIN	2.984 MIN				Final	No	12.09.2008 14:35:10
1	1	1		0.817 MIN	0.966 MIN				Final	No	12.09.2008 14:36:08
1	0	0		2.283 MIN	2.299 MIN				Final	Yes	12.09.2008 14:42:52

Detail: MII Analytics during Confirmation



Activities/Scrap vs. Yield (left), Yield/Scrap/Activity History (right)



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5. **XStep Café**

XStep-Café



What is it?

- Regular informal web meeting to spread the know how on XSteps, PI Sheets and Electronic Work Instructions
- Live demos
- Schedule: Every first Wednesday of a month
- World-wide access
- Recordings available
(Links can be found in the SCM-PP forum)

Rules

Do's:

- Exchange of experience
- Discussion on common problems
- Share of tips and tricks

Don'ts:

- Consulting on specific customer issues
- Training replacement
- OSS replacement

Contact / Information

- <mailto:arne.manthey@sap.com>
- Thread in SCM-PP forum:
,*Invitation to the XStep Café*'
<https://www.sdn.sap.com/irj/sdn/thread?threadID=855471>

Audience

- Customers (13): Process and discrete industries
- SI Partners (34)
- SAP internals (17)
- Global: US, Europe, India, Japan

Thank You for Participating !



Please remember to complete and return your
evaluation form following this session.

For ongoing education on this area of focus, visit the Year-Round
Community page at www.asug.com/yrcc

SESSION CODE: MFG 0905

[

Appendix



- Technical basis: SAP ECC 6.00 (ERP 2005) -> „stable core“
- **Implementation of EHP doesn't change the system behaviour**
- **Activation** of new functionality by switching on corresponding business function
- Business Functions do have detailed documentation
- Business Functions have test cases that are shipped also
- Adaptivness („Fine tuning“) via Customizing
- **Please note:**

„Deactivation of an activated business function not possible“

Example: Enterprise Business Function (transaction SPRO)

SAP



Switch Framework: Display Business Function Status

 Check Changes

Business Function Set

Name	Description	Plan...	De...	Documentation	Release...	Release	SAP Test ...	Te...	Activated on
 LOG_PP_WIP_BATCH	Work-In-Process Batch					604			11.02.2008 18:22:28
 LOG_PP_XS_RTG_PO	XSteps for Routing and...					603			17.01.2008 08:44:58
 LOG_SDMM_EANUCC	EAN.UCC Compliance...					603			17.01.2008 08:44:58
 LOG_SD_ADVORD	Logistics SD Advanced...					603			17.01.2008 08:44:58
 LOG_SD_CI_01	Sales & Distribution					603			17.01.2008 08:44:58

Business
Fuction

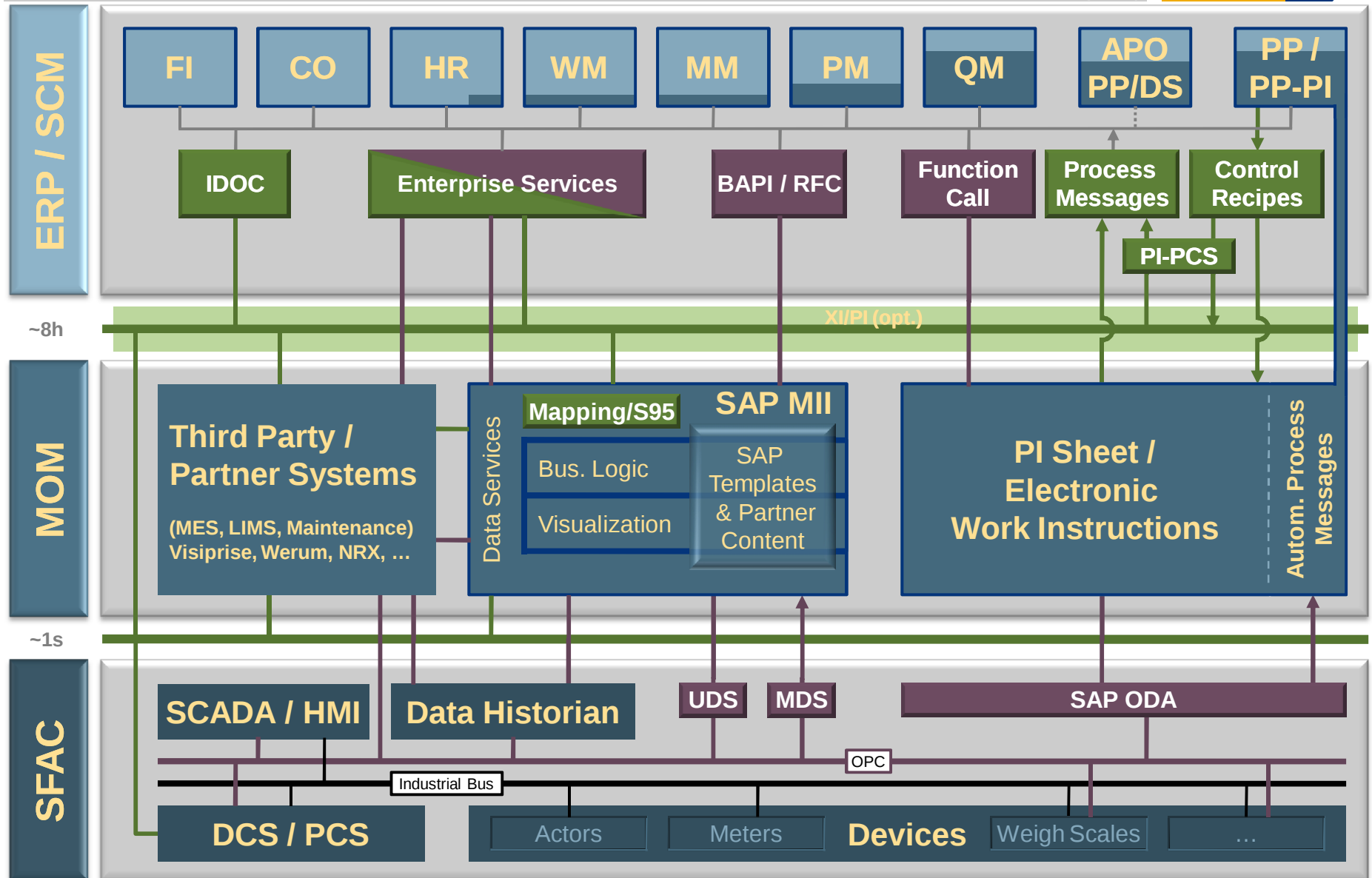
Documentation

Release
Information

Test Case

Manufacturing Landscape

SAP



Thank you!