

Mobile Work Clearance Management

Release ERP 6.0

WCM GmbH

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wcm

Motivation

Switching technical objects can be a very time-consuming process.

Mobile processing offers the following:



- Time saving

- Employees do not have to collect operational lists on site and return them after processing.



- Higher Safety

- You only need to confirm ONCE on the mobile device that the activities have been performed. This prevents errors that could arise from transcribing operation lists.
 - The use of bar codes or RFIDs ensures that switching is only possible for the selected object.

Process Description

- The feed water pump needs to be repaired. To do this, the pump has to be isolated (lockout/tagout). Information regarding the switching will not be printed in a operational list, but will be distributed over the SAP Mobile Infrastructure onto the respective mobile devices.
- On site the switching's are carried out and will be confirmed on the mobile devices.
- The person in charge of the switching's synchronizes the data with the backend.
- The planner receives the information that all switching's have been completed.
- Now the maintenance person is able to enter the save area and to carry out the repair.

Roles

These user roles are involved in this process:

- Maintenance planner



- Safety planner



- Safety engineer



- Operation



Detailed Process Multilevel List Editing



Multi-Level List Editing - Change

1200

- 817500 Repair Feedwater Pump System 1 13.10.2008-31.10.2008 80LAC20 Valuation
WCM VAL REL NMAT SETC
- 100000000200 Work Approval Feedwater Pump System 1 13.10.2008-31.10.2008 80LAC20
PREP
- 100000000300 WCA Feedwater Pump System 1 13.10.2008-31.10.2008 80LAC20
PREP
- 300000000300 80LAC20 Isolate Feedwater Pump System 13.10.2008-09.04.2009 80LAC20
PREP ITG

A maintenance order has been created. The necessary lockout/tagouts are defined as WCD template in the task list and have been automatically created. The assignment is shown in the multilevel list.

Detailed Process Switching Screen of the Operational WCD



Operational WCD Edit Goto Extras Switch System Help

Change Operational WCD: Switching Screen

WC Document: 80000000300 80LAC20 Isolate Feedwater Pump System 1 / 1

Status: PREP ITG

CONF ITG BTG ETG BTUG ETUG BUG EUG MOBI PROT

0 4 0 0 0 0 0 0 0 0

1	2	Counter	IC	Technical Object	Short Text	OG	Tag. Cond.	TT	TS	Untag. Cond.	UT	US	System status
		10	F	80LAC20AA004	Valve before Feedwater PUM		CLOSED	A	0	OPEN	A	0	ITG
		20	F	80LAC20AA006	Valve after Feedwater PurrM		OPEN	A	0	CLOSED	A	0	ITG
		30	F	80LAC20AS041	Gliding Valve	M	CLOSED	A	0	OPEN	A	0	ITG
		40	E	10005685	Electric pump 001	E	OFF	A	0	ON	A	0	ITG

In the work clearance document, the information is shown that 4 switching's have to be carried out. Furthermore, the Operational WCD is *prepared*, i.e. it has been checked and authorized for use (system status "PREP") already.

Detailed Process

Start of the Mobile Processing



Operational WCD Edit Goto Extras Switch System Help

Change Operati

Tagged

WC Document: 300000000300 80LAC20 Isolate Feedwater Pump

Status: PREP PROC BTG

CONF ITG BTG ETG BTUG ETUG BUG EUG MOBI PROT

0 0 4 0 0 0 0 0 0 0

1 /

Mobile Processing

- Overview of Operational Lists
- Tagging List
- Untagging List

1	2	Counter	IC	Technical Object	Short Text	O	Tag. Cond.	TT	TS	Untag. Cond.	UT	US	System status
		10	F	80LAC20AA004	Valve before Feedwater PLM		CLOSED	A	0	OPEN	A	0	BTG
		20	F	80LAC20AA006	Valve after Feedwater PurrM		OPEN	A	0	CLOSED	A	0	BTG
		30	F	80LAC20AS041	Gliding Valve	M	CLOSED	A	0	OPEN	A	0	BTG
		40	E	10005685	Electric pump 001	E	OFF	A	0	ON	A	0	BTG

Via menu function “Extras - Mobile Processing – Tagging List”, single items of the Operational WCD are assigned to the mobile devices according to the definition in the selection variants for the devices (→ customizing settings).

Detailed Process System Status "MOBI"



Operational WCD Edit Goto Extras Switch System Help

Change Operational WCD: Switching Screen

WC Document: 300000000300 80LAC20 Isolate Feedwater Pump System 1 /

Status: PREP PROC MOBI BTG

CONF ITG BTG ETG BTUG ETUG BUG EUG MOBI PROT

0 0 4 0 0 0 0 0 4 0

1	2	Counter	IC	Technical Object	Short Text	O	Tag. Cond.	TT	TS	Untag. Cond.	UT	US	System status
		10	F	80LAC20AA004	Valve before Feedwater PUM		CLOSED	A	0	OPEN	A	0	MOBI BTG
		20	F	80LAC20AA006	Valve after Feedwater Pumm		OPEN	A	0	CLOSED	A	0	MOBI BTG
		30	F	80LAC20AS041	Gliding Valve	M	CLOSED	A	0	OPEN	A	0	MOBI BTG
		40	E	10005685	Electric pump 001	E	OFF	A	0	ON	A	0	MOBI BTG

The switching items get system status „MOBI“.

Thus it is guaranteed that the items and the switching's cannot be changed by the backend system. The confirmation of the switching's takes place on the mobile devices.

Detailed Process Overview of Operational Lists



The screenshot displays the 'Operational WCD' software interface. The main window is titled 'Change Operational WCD: Switching Screen'. Below the title bar, there is a menu bar with options: 'Operational WCD', 'Edit', 'Goto', 'Extras', 'Switch', 'System', and 'Help'. A toolbar contains various icons for file operations and system functions. The main content area shows the 'Overview of Operational Lists' window, which contains the following information:

WC Document: 300000000300 80LAC20 Isolate Feedwater Pump System

Status: PREP PROC MOBI BTG

Aim of Operational Lists

Oper. List	Created by	Created on Time	Changed by	Changed on	Last Chg	Status
1	CHWOBBE	13.10.2008 15:21:46			00:00:00	

At the bottom of the window, there are icons for a checkmark and an information symbol.

From the Operational WCD a operational list for tagging is generated. According to the selection criteria, the switching's can be distributed onto different mobile devices, e.g.: Electricians get the electronic switching's which have to be carried out, mechanics the mechanical switching's.

Detailed Process Mobile Operational List 1



Counter	Tech.	Obj.	Short Text	Long Text	Document
	Tag.	Cond.	TT	TS	Lock Tag
	Comment	Status	Processing	Step	Changed by Changed on
10	80LAC20AA004	Valve before Feedwater Pump			
	CLOSED	A			
20	80LAC20AA006	Valve after Feedwater Pump			
	OPEN	A			
30	80LAC20AS041	Gliding Valve			
	CLOSED	A			
40	10005685	Electric pump 001			
	OFF	A			



The operational list 1 contains four active items. This is shown by icon . The list uses two further icons:

- means that the item has been released for the lockout/tagout.
- means that the item has been allocated to a mobile device.

Detailed Process Operational List on the Mobile Device



Internet Explorer 11:18

SAP Operational Lists

Overview of Operational Lists

WCD	Op. List	Aim of Op. List	Ref. Obj	Status
300000002104	000003	Untagging List	80LAC30	
mWCM Test 100505_03				
300000002200	000002	Tagging List	80	
mWCM Test 110505_01				
300000002200	000001	Tagging List	80	
mWCM Test 110505_01				
<< < > >>			Total: 3 Page: 1/1	

On the mobile device the operational lists have been allocated according to the selection criteria.



Detailed Process

Editing of a Switching Position



Internet Explorer 11:21

SAP Operational Lists

Item 60 for WCD 300000002200 - Tagging List 2

Tech. Obj. / Comment 80PBK20
Short Text Condensor Supply System
Operational Group E
Location 1

Data	Tagging	Untagging
Condition	AUS	AN
Type	A	A
Sequence		

Feedback

Status  Action On Site

[Action Executed](#) [Action Rejected](#)

View Tools 

The person in charge has the following options:

- He can confirm the execution of the switching.
- He can reject the execution of the switching and file a short reason why (feedback).

Detailed Process Confirmation of Execution on Site



Internet Explorer 11:22

SAP Operational Lists

Item 60 for WCD 300000002200 - Tagging List 2

Tech. Obj. / 80PBK20
Comment
Short Text Condensor Supply System
Operational Group E
Location 1

Data	Tagging	Untagging
Condition	AUS	AN
Type	A	A
Sequence		

Feedback Status  Action On Site Executed

Completed Yes

View Tools 

The person in charge has confirmed the execution of the switching. Now he synchronizes his mobile device with the SAP system.
This means the confirmation of the switching will be transmitted to the planner.

Detailed Process System Status “Tagged”



Multi-Level List Editing - Change

Multi-Level List Editing - Change

Orders Work Approvals Applications Operational WCDs Edit

- 1200
 - 817500 Repair Feedwater Pump System 1 13.10.2008-31.10.2008 80LAC20 Valuation
WCM EXEC REL NMAT SETC
 - 100000000200 Work Approval Feedwater Pump System 1 13.10.2008-31.10.2008 80LAC20
PREP ○○
 - 100000000300 WCA Feedwater Pump System 1 13.10.2008-31.10.2008 80LAC20
PREP ○○
 - 300000000300 80LAC20 Isolate Feedwater Pump System 13.10.2008-09.04.2009 80LAC20
PREP PROC ETG ○○

As soon as data has been transmitted from the mobile device to the backend system, the application registers that all switching's have been completed (the WCD gets system status: "ETG" – "Tagged") and the traffic lights are changed to „green“.

The order gets system status "EXEC" ("Released for execution"). Now the maintenance persons can start repairing the feed water pump.



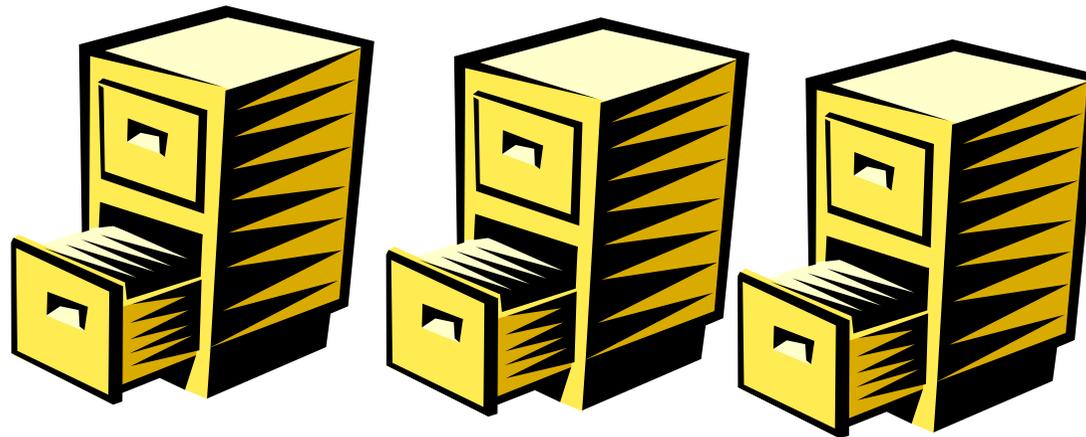
Detailed Process End

After completing maintenance, the reverse process starts: The technical objects can be switched back.

Operational lists are transferred for untagging onto the respective mobile devices, the operation switches the technical objects back and confirms the untagging.

This information is synchronized with the backend system; the order and the assigned WCM objects can be completed.

Finally, all operational lists will be archived.



Other Functions of the Mobile Processing Monitoring

The screenshot shows a software interface with a menu bar (Program, Edit, Goto, System, Help) and a toolbar with various icons. Below the toolbar is a section titled "List Editing - Change Operational Lists". This section contains a "Mobile Device" area with a "User" field set to "CHWOBBE" and a lock icon. Below that is a "List Editing" area with two rows of input fields. The first row is for "WC Document" and the second for "Operational List". Each row has a "to" field and a swap icon (two arrows pointing in opposite directions).

If a confirmation of switching on the mobile device is not possible, the operational list can be changed with the transaction „WCLG“ also in the backend system.

Other Functions of the Mobile Processing Change of Operational List

Op. WCD	Oper. List	Aim of Operational Lists	Created by	Created on	Status
300000000301	1	Tagging	CHWOBBE	13.10.2008	
<input type="checkbox"/>	10	80LAC20AA004 Valve before Feedwater Pump			
		CLOSED	A	OPEN	A
<input type="checkbox"/>	20	80LAC20AA006 Valve after Feedwater Pump			
		OPEN	A	CLOSED	A
<input type="checkbox"/>	30	80LAC20AS041 Gliding Valve			
		CLOSED	A	OPEN	A
<input type="checkbox"/>	40	10005685 Electric pump 001			
		OFF	A	ON	A

The change of the operational lists from the backend should take place only in exceptional cases, e.g. if the mobile device is not working and a confirmation of switching on site is not possible.

WCM Customizing

Table View Edit Goto Selection Utilities(M) System Help

Change View "Maintain Usages": Details

New Entries

Planning plant 1000 Dresden
Usage 001
Short Text Complete tagging and test cycle

Operational Cycle
Specification Tagging cycle with temporary untagging phase

Tagging Phase
 Tag
 Print Tag

Temporary Untagging Phase
 Untag Temp.
 Print Test Tag

Untagging Phase
 Untag

Approval-Based Switching

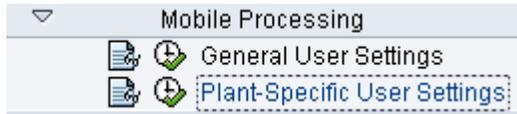
Phase-Specific
Bl. Appr. Tag
Bl. Appr. TU
Bl. App. Untag

For All Phases
Block Approval SFS

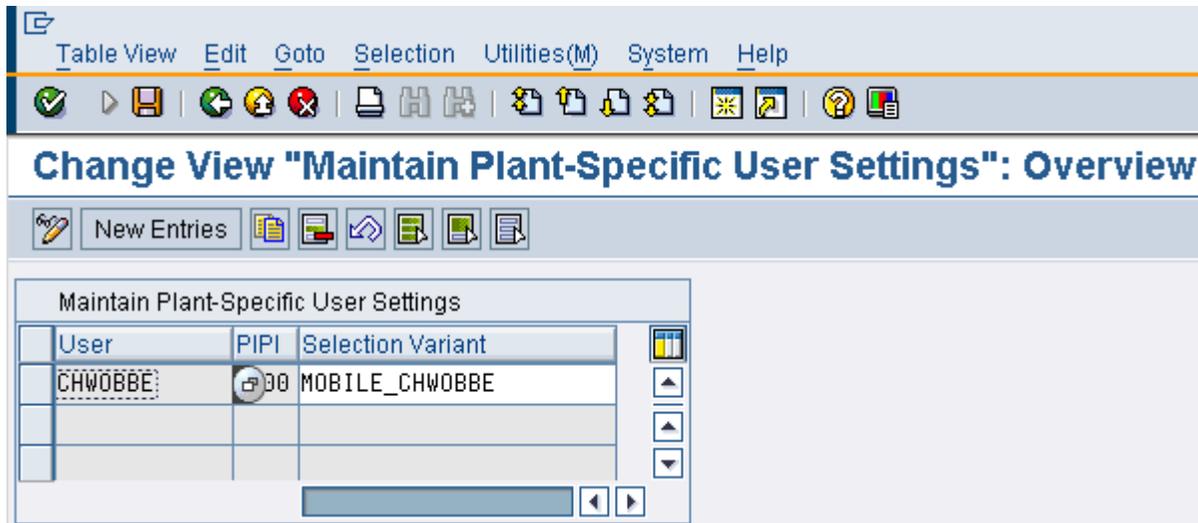
Other
 Optn Protection
 Multiple Tag
 Mob. Processing
 MD Tagging

The activation of mobile processing takes place per usage (planning plant dependent) of the Operational WCD.

WCM Customizing



Furthermore, the corresponding selection variants have to be defined for every mobile user, in order to allocate the correct switching's during the process.



Technical basis

Front End

- Pocket PC 2003 / (SE), Win CE, and Win 32 based devices with 128MB RAM
- MI Client:
 - MI 2.5 (w/ WebAS 6.40)
- mWCM or MAM client application (w/ RFID, Mobile Alert, and Signature Capture client components)
- Light DB

Middleware

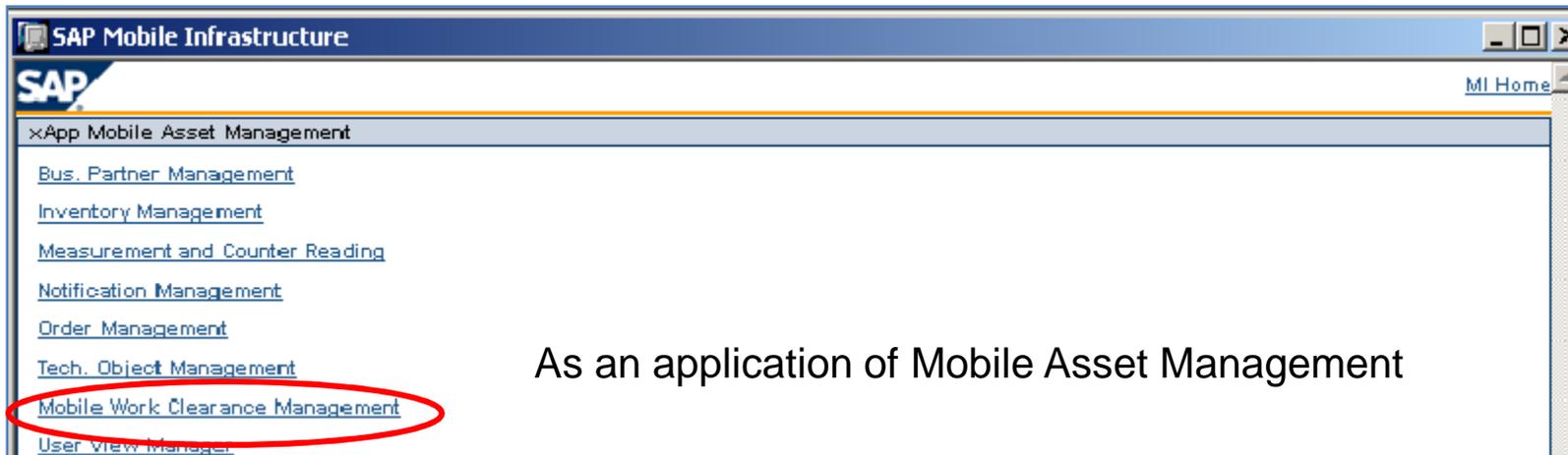
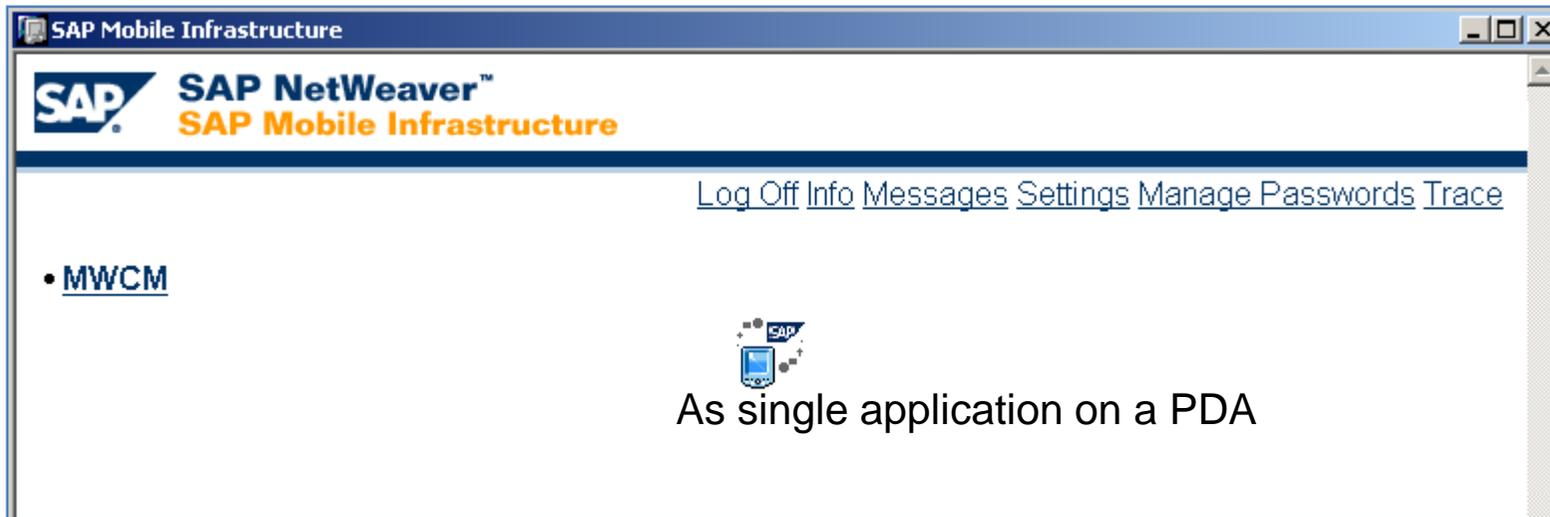
- MI Server:
 - WebAS 6.40 (MI 2.5), part of NW 04
- mWCM Middleware component (Sync BO definition) or
- MAM Middleware component (Sync BO definition)

Backend

- ERP 6.0



Application alternatives of „mobile WCM”



Questions and Answers



Christoph Wobbe

Managing Director

Phone +49 (0) 6227 54558 83

Fax +49 (0) 6227 54558 98

Mobile +49 (0) 151 1265 5304

christoph.wobbe@wcm-it.com

www.wcm-it.com

WCM GmbH · Industriestr. 44 · D-69190 Walldorf



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