



SAP Workflow and Events - Control the flow!

Day and Time: Thursday, May 16, 2013 - 12:30 PM - 1:30 PM Session 0811

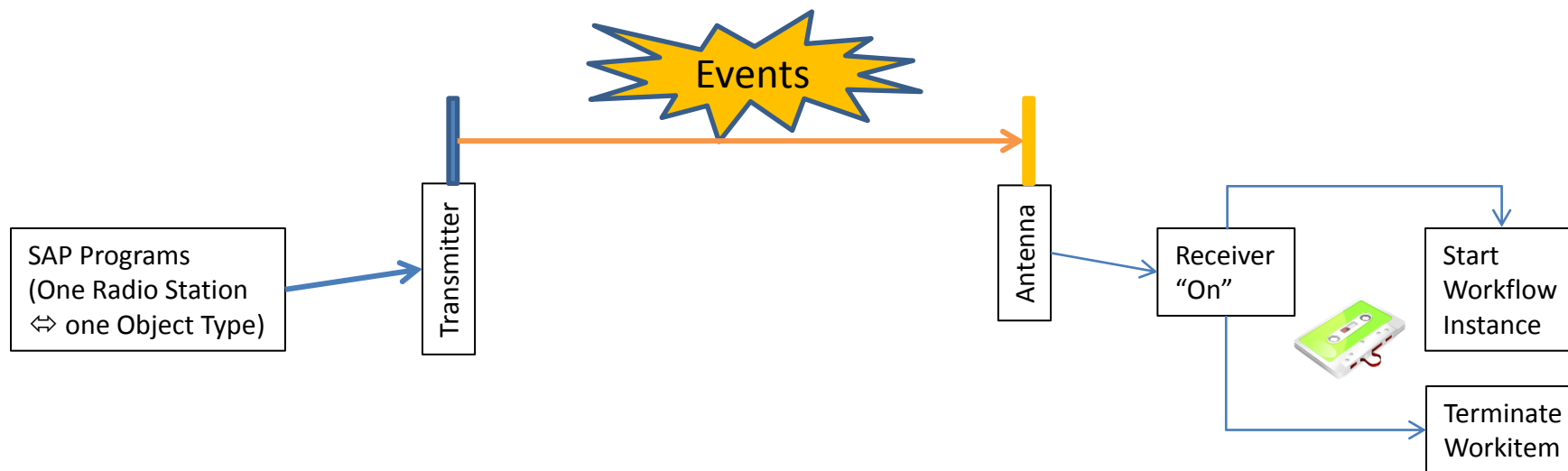
Content Area: Business Integration, Technology and Infrastructure (BITI)

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- How to use an event to control the SAP Business Workflow
- How to trigger an event
 - Standard SAP Methods
- Know about the advantages of using events
 - Traceable
 - Deactivatable/activateable
 - Forward-looking – feeds into Process Observer/SAP Operation Process Intelligence





Transactions to configure events

APAP Program

Events of different Business Objects or ABAP Objects

Trace events SWEL

RFC check SM58

Event Linkage SWETYPV

Trace Workitems SWI1

Simulate event SWUO

Manual (Re) Trigger SWUE

Switch event trace on or off SWELS

Event queue SWEQADM

Instance linkage SWEINST



- Trigger a new instance of a Workflow
 - Select the Workflow to be started
 - Check, if the workflow should be started at all
 - Start Workflow instance immediately
 - Use the event queue to start a Workflow instance
- Terminate a dialog workitem
 - Set the workitem to complete,
so that the workflow instance can continue
- Wait for an event
 - Complete a section of a Workflow instance
 - Complete a whole Workflow instance
- Start a ABAP function module
 - Consume the event without any impact on workflow



- SAP Configuration of Events
 - HR Events
 - Status Management
 - Change Documents
 - Message Control
 - Trigger a BOR event via the ABAP function module
SAP_WAPI_CREATE_EVENT (Commit Work)
 - Transaction SWETYPV



- Triggered by program
 - SAP provided program triggers the event
 - Read SAP Help for Workflow Scenarios, to find the required IMG configuration steps
 - Use the event trace to find events
 - Custom developed program will trigger the event
 - Trigger a BOR event via the ABAP function module `SAP_WAPI_CREATE_EVENT`
 - Note: The event only occurs after the ABAP statement “COMMIT WORK.”



- Object Type
- Object Key Value
- Name of the events
 - The event name indicates the status change
- User who triggered the event
 - This user will become the workflow initiator for a workflow start
 - Or the actual agent who completed a workitem
- Additional parameters
 - For example: the required release code of a purchase requisition

What
data
is
delivered ?

How is the data delivered ?

- The Binding definition in the Workflow Builder stores the data in the
 - Workflow Container
 - Task Container



Display Object Type BUS2009

Program Parameters Exceptions

Object type **BUS2009** ✓ Purchase requisition item

- [-] Interfaces
- [-] Key fields
- [-] Attributes
- [-] Methods
- [+] Events**

PurchaseReqItem.released	Requisition Item Released
PurchaseReqItem.reset	Not Used
PurchaseReqItem.rejected	Release of Purchase Requisition Item Refused
PurchaseReqItem.releaseStepCreated	Purchase Requisition Item Release Step Created
PurchaseReqItem.rejection_start	Requisition Rejected
PurchaseReqItem.rejection_stop	Cancel Rejection
PurchaseReqItem.significantlyChanged	Purchase Requisition Item Significantly Changed

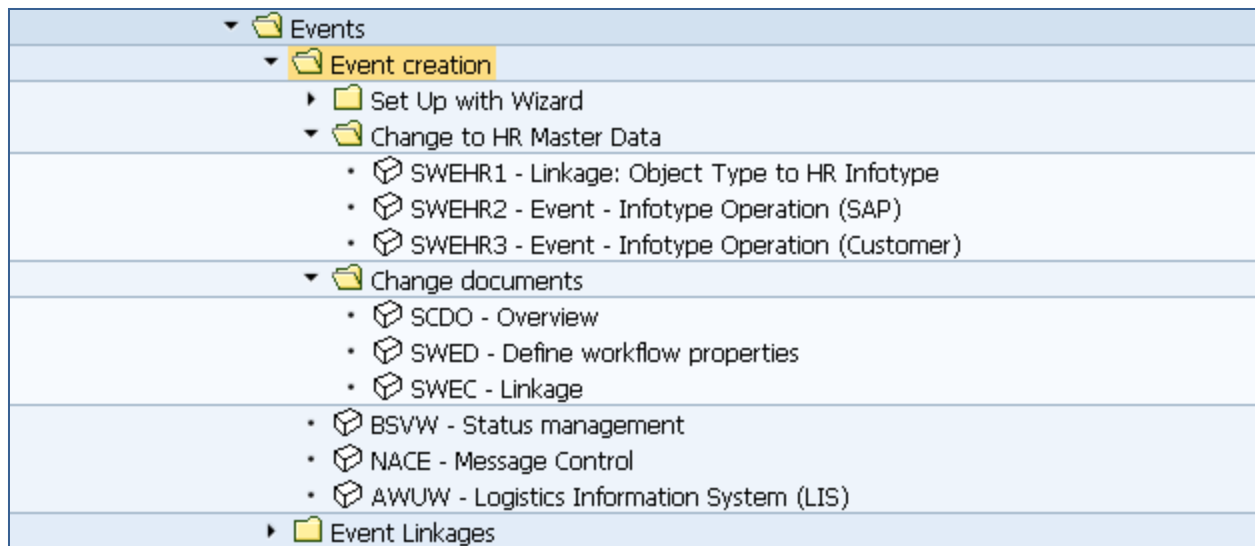
Object Type BUS2009: Display Parameters for Event RELEASESTEP_CREATED

Other View Program

Overview		
Parameter	Obj. Type	First Release
ReleaseCode	BUS2009	30A









- It's all right here (Tools> Business Workflow> Development> Events)



- For HR Events, look at transactions SWEHR1 and SWEHR2 – these are SAP-defined events
- Then, if you need to, configure your own events using SWEHR3

Change View "Allowed Business Object Types per Object Type/Infotype/Su


New Entries      

	OT	Object type text	IT	Infotype Name	STy.	Subtype text	Obj.type	Name
	S	Position	1001	Relationships	A003	Belongs to	BUS7030	Dev. Subprofile
	S	Position	1001	Relationships	A003	Belongs to	PD0TYP ...	Position
	S	Position	1001	Relationships	A003	Belongs to	PD0TYP ...	HR Position
	S	Position	1001	Relationships	A008	Holder	BUS7030	Dev. Subprofile
	S	Position	1001	Relationships	A008	Holder	PD0TYP ...	HR Position
	S	Position	1001	Relationships	B008	Holder	PD0TYP ...	HR Position
	S	Position	1001	Relationships	B032	Is fulfilled by	BUS7030	Dev. Subprofile



Change View "HR-CA: Event Linkage for Customer": Overview

  New Entries     

O.	Object type text	IT	Infotype Name	STy.	Subtype text	Updat	Acty	Seq...	Obj. type	Event	Function Module
S	Position	1001	Relationships	A003	Belongs to	INS		0	PDOTYPE S		ZWF_EVENT_OT_1001_A003_
S	Position	1001	Relationships	A008	Holder	DEL		0	BUS7030		Z_HR_EVENT_FOR_PURCH_10
S	Position	1001	Relationships	A008	Holder	INS		0	BUS7030		Z_HR_EVENT_FOR_PURCH_10
S	Position	1001	Relationships	A008	Holder	UPD		0	BUS7030		Z_HR_EVENT_FOR_PURCH_10

- SWEHR3 uses the same Object Type, Infotypes, etc as SWEHR2
- You define the Rules for when your event is raised in custom functions – make sure you follow the templates!



- Change Documents are useful to trigger events when you know a Change Document is written if Master Data changes
- Quick Check - go to TX SE12 and check for the 'Change Document' flag on the data element

If the Change Document box is not ticked, you may have to use a different method

Dictionary: Display Data Element

Data element: PRCTR Active
 Short Description: Profit Center

Attributes | Data Type | Further Characteristics | Field Label

Search Help

Name: PRCTR_EMPTY
 Parameters: PRCTR

Parameter ID: PRC

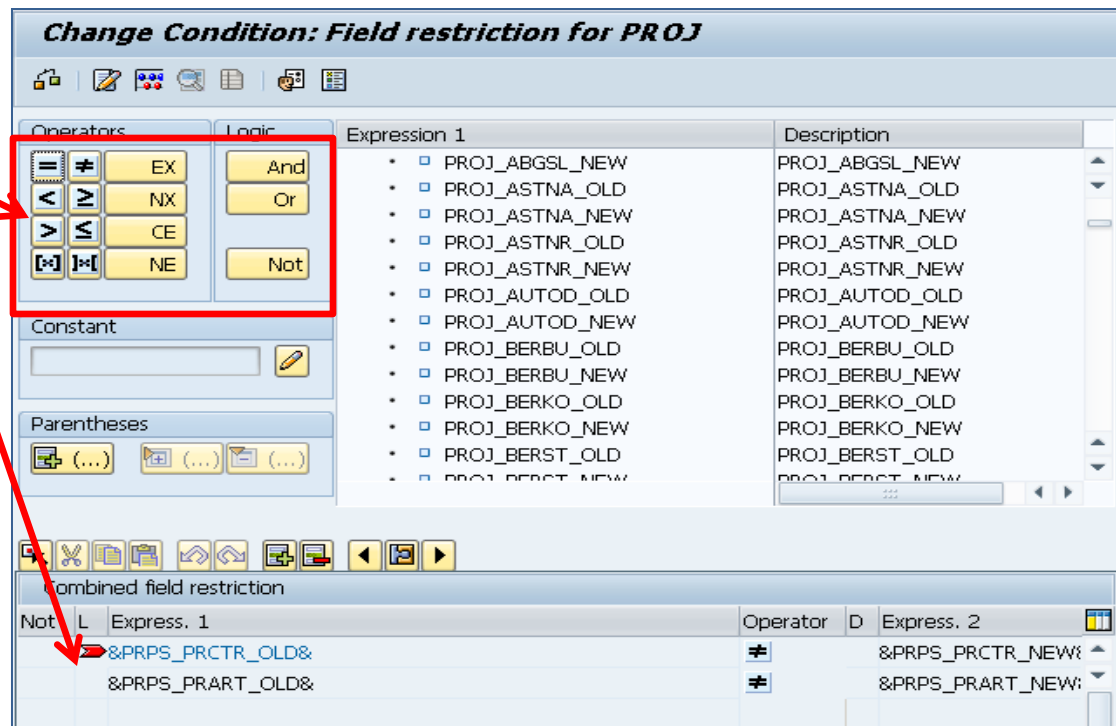
Default Component Name: PROFIT_CTR

Change document
 No input history



- If you can use Change Docs, there is a nice condition editor to help you complete your mission

After you select the Field(s) which you need to trigger the event from, you have the ability to format complex conditions prior to raising the event



- Many objects in SAP already use Status Management – Quality Inspection, Projects, Engineering Change Requests...

Display View "System status events": Overview

Dialog Structure

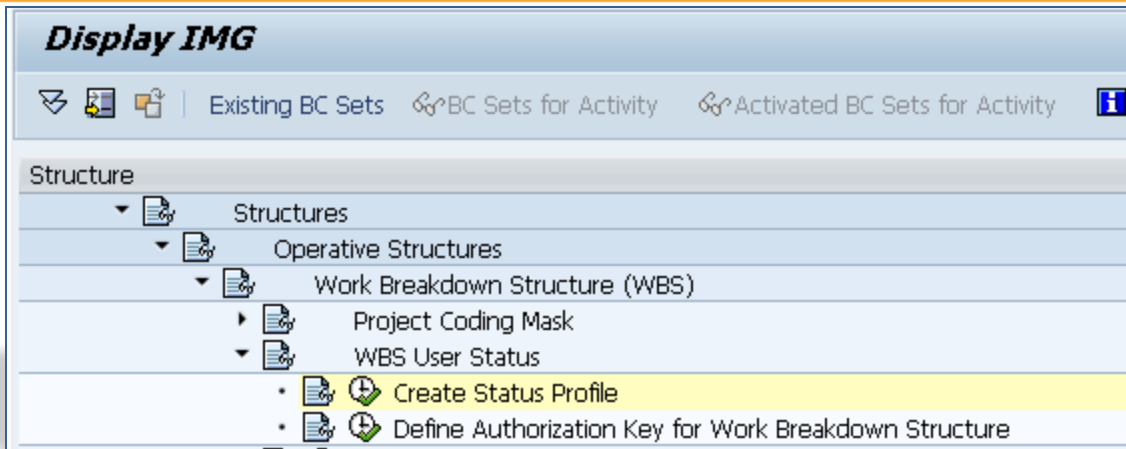
- System status events
 - Status restrictions

StatusOT	BusinessOT	Event	Name
CDM	ECM	LOCKED_BY_SYSTEM	Locked by System
CDM	ECM	LOCKED_BY_USER	Locked by User
CDM	ECM	OBJ_CHG_INCORRECT	
CDM	ECM	REJECTED	
CDM	ECM	RELEASED	
CDM	ECM	TO_BE_PROCESSED	
CDM	ECM	UNLOCKED_BY_USER	
CDM	ECM	WITHDRAWN	
CDO	ECO	CHG_INCORRECT	

Status Obj.Type	CDM
Business Obj.Type	ECM
Event	WITHDRAWN

Status	Inact.	
I0252	CHKD <input checked="" type="checkbox"/>	ECR Checked
I0253	ECRA <input checked="" type="checkbox"/>	ECR Approved





For customer statuses, you define the status (or use a system (ie: I) status, and it can be in conjunction with others.

Display View "System/user status events": Overview

Dialog Structure

- System/user status even
 - Status restrictions

S...	Schema	BusinessOT	Event	Name
PRN	000002	BUS2054	BUDGETCHANGED_APPR	BudgetChanged_App
PRN	LL000002	BUS2054	BUDGETCHANGED_REJ	BudgetChanged_REJ
PRN	LL000002	BUS2054	BUDGETENTERED	BudgetEntered
PRN	LL000002	BUS2054	CREATED	WBS element create
PRN	LL000002	BUS2054	STATUS_OP_OFF	Status_OP_Off
PRN	LL000002	BUS2054	STATUS_OP_ON	Status_OP_On
PRN	LL000002	BUS2054	STATUS_SHUT_OFF	Status_SHUT_Off
PRN	LL000002	BUS2054	STATUS_SHUT_ON	Status_SHUT_On
PRN	LL000002	BUS2054	SYSTEMSTATUSDELETED	SystemStatusDeletec



Change View "Event Type Linkages": Overview

  New Entries      

Event Type Linkages

Object Category	ObjectType	Event	Receiver Type	Type linka...	Enable ev...	Status
BOR Object T...	LIKP	CHANGED	WS96600200	<input type="checkbox"/>	<input type="checkbox"/>	No errors
BOR Object T...	LIKP	CREATED	WS96600200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No errors
BOR Object T...	LIKP	CREATED	WS98800048	<input type="checkbox"/>	<input type="checkbox"/>	No errors

Change View "Event Type Linkages": Details

  New Entries      

Object Category

Object Type

Event

Receiver Type

Linkage Setting (Event Receiver)

Receiver Call

Receiver Function Module

Check Function Module

Receiver Type Function Module

Destination of Receiver

Check Function Modules - define specific criteria that must be met in order to raise the event.

Receiver Type Function Modules will dynamically determine which workflow you need to start



Change View "Event Type Linkages": Overview

New Entries

Object Category	ObjectType	Event	Receiver Type
BOR Object T...	BUS2081	PARKED	SU18094
BOR Object T...	BUS2081	PARKED	US96600193

UserID as Receiver

You get mail in your SAPOffice inbox, and can see the Event Parameters too

Change View "Event Type Linkages": Details

New Entries

Object Category: BOR Object Type
Object Type: BUS2081
Event: PARKED
Receiver Type: SU18094

Linkage Setting (Event Receiver)


Receiver Call: **Function Module**
Receiver Function Module: SWE_EVENT_MAIL
Check Function Module:
Receiver Type Function Module:
Destination of Receiver:
Event delivery: Using tRFC (Default)
 Linkage Activated

Notification from Event Manager

Created Workflow System RD1 210
Changed Workflow System RD1 210

Event Received:
BO LIKP 0080001919
SHIPORDERCHANGED

The Parameter Container of the Event Is Added as Attachment.

 [Event Container](#)



- Output documents are created using SAP's output determination procedure
- Access output management for applications via SAP Reference IMG (TAC SPRO)
- Generally, output is created based on condition table for communication purposes between business partners, e.g. print, fax, EDI, or between systems, e.g. ALE
- Instead of creating an output document, SAP raises an event in the system



New Entries: Details of Added Entries

Purchase Order
Output Type: ZNEU ASUG Event

General data | **Default values** | Time | Storage system | Print | Mail | Sort order

Dispatch time: Send immediately (when saving the application)

Transmission Medium: Events (SAP Business Workflow)

Partner Function: VN Vendor

Communication strategy: []

Create output type with transmission medium '9'

Change Condition Records (New PO printout): Fast Change

Communication [icon] [icon]

Maintain condition record and define

Condition Recs.

D...	Name	Fu...	Part
EC	Purch.requis. EBP	VN	
FO	Framework requis.	VN	
GNB	GTS Standard PO(old)	VN	
NB	Purch.requis. Stand.	VN	
UB	Stock transport ord.	DP	

Change Condition Records (New PO printout): Communication

Variabler Key

Purchasing Doc. Type	Description
NB	Purch.requis. Stand.

Object type: BUS2012

Event: CANCELED



- “Publish & Subscribe” interface available for FI-GL, FI-AP, and FI-AR
- Business transaction event linked to business object event, i.e. 00000130 Post Document -> BKPF.CREATED
- Template function modules for event processing with parameter interface available for supported relationships
- Transaction to access business transaction events is SWU_EWBTE for BTE wizard; you can use special TAC for custom development, e.g. FIBF



Set up event creation (Business Transaction Event)

This wizard helps you to define the creation of an event. To do this, you link an event of a business object type with a Business Transaction Event. The occurrence of this Business Transaction Event results in the creation of a business object type.

Choose a Business Transaction Event:

- Start Screen
- Specify Business Transaction Event
- Complete

Set up event creation (Business Transaction Event)

For linkage with an event of a business object type, enter the required Business Transaction Event and a product that you identify your extension with. The product cannot exist yet. It is created automatically.

Set up event creation (Business Transaction Event)

Specify the system creation of the business object type.

The business specified Business Transaction Event is:

- Function module
- Function group
- Business transaction
- Business Transaction Event
- Business object type
- Event of business object type

Set up event creation (Business Transaction Event)

All entries required for the creation of an event have been made. Choose *Complete* to make the required changes in the database.

- The function module is created in the function group Z001.

Event linkage is entered for:

- Product ZASUG with event 00001030
- Business object type BKPF, event CREATED

You may have to specify the package or a change request when creating the individual components.

Back Complete Cancel



- SAP application creates business transaction event
- Function module processes data to be passed on to business object event
- Business object event is raised
- Event manager determines available active link(s) and starts corresponding workflows



Class Builder: Display Class CL_HRASR00_WF_PROCESS_OBJECT

Class Interface: CL_HRASR00_WF_PROCESS_OBJECT Implemented / Active

Properties Interfaces Friends Attributes Methods **Events** Types Aliases

Parameters

Event	Type	Visibility	Description
TRIGGERED	Instance Event	Public	
WITHDRAWN	Instance Event	Public	
CREATED_BY_XI_MESSAGE	Instance Event	Public	
DRAFT_CREATED	Instance Event	Public	

Class Interface: CL_HRASR00_WF_PROCESS_OBJECT Implemented / Active

Properties Interfaces Friends Attributes Methods **Events** Types Aliases

Event parameters: DRAFT_CREATED

Events

Parameters	Optional	Typing	Associated Type	Default
STEP_OBJECT	<input type="checkbox"/>	Type Ref To	CL_HRASR00_WF_STEP_OBJECT	

The Event Parameter can be an object of another type



Change View "Event Type Linkages": Overview

New Entries

Object Category	ObjectType	Event	Receiver Type	Type linkage active	Enable event queue
ABAP Class	CL_HRASR00_WF_PROCESS_OBJECT	COMPLETED		<input type="checkbox"/>	<input type="checkbox"/>
ABAP Class	CL_HRASR00_WF_PROCESS_OBJECT	COMPLETED	HR ADMINISTRATIVE SERVICES	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ABAP Class	CL_HRASR00_WF_PROCESS_OBJECT	COMPLETED	WS17900015	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Object Category: ABAP Class
 Object Type: CL_HRASR00_WF_PROCESS_OBJECT
 Event: COMPLETED
 Receiver Type: HR ADMINISTRATIVE SERVICES

Linkage Setting (Event Receiver)
 Receiver Call: **Function Module**
 Receiver Function Module: HR_ASR_START_PERSFILE_CREATION

Object Category: ABAP Class
 Object Type: CL_HRASR00_WF_PROCESS_OBJECT
 Event: COMPLETED
 Receiver Type:

Linkage Setting (Event Receiver)
 Receiver Call: **Method**
 Class Name: CL_HRASR00_CREATE_PERS_FILE
 Interface Name: BI_EVENT_HANDLER_STATIC
 Method Name: ON_EVENT

Change View "Event Type Linkages": Details

New Entries

Object Category: ABAP Class
 Object Type: CL_HRASR00_WF_PROCESS_OBJECT
 Event: COMPLETED
 Receiver Type: WS17900015

Linkage Setting (Event Receiver)
 Receiver Call: **Function Module**
 Receiver Function Module: SWW_WI_CREATE_VIA_EVENT_IBF
 Check Function Module:
 Receiver Type Function Module:
 Destination of Receiver:

Event delivery: Using tRFC (Default)

Linkage Activated
 Enable Event Queue

Behavior Upon Error Feedback: System defaults



Event Queue Administration

Event trace | Browser | Delete events

Overview | Basic data | Activation | **Background job** | Event delivery | Linkages with errors

Configuration

Operation Mode of Background Job	Periodic
Number of events per read access	20
Time interval between two read accesses	2 Minutes

Event queue background job is active

Unschedule background job | Display Background Job

Background job for processing the event queue

The event queue is read by a background job at regular intervals. The events found are delivered to the registered event receivers.

Transaction SWEQADM is used to schedule the event queue in every system. By spreading out the events, this job provides a better system performance. Based on the size of your system, you can double or triple the number of events per minute.



Workflow Template: Display

Workflow template: 38 wf_req_rel
 Name: Workflow for requisition release
 Package: ME Applicatn Component: MM-

Standard events table:

Binding	Object Category	Object Type	Event	Name
<input checked="" type="checkbox"/>	BOR Object Type	BUS2009	RELEASESTEP_CREATED	REQUISITION ITEM RELEASE...

Display Binding For Workflow dialog:

Event	Workflow
&RELEASECODE&	&RELEASECODE&
&_EVT_OBJECT&	&REQUISITION&
&_EVT_OBJECT.AGGREGATE&	&REQUISITIONHEADER&
&_EVT_CREATOR&	&_WF_INITIATOR&

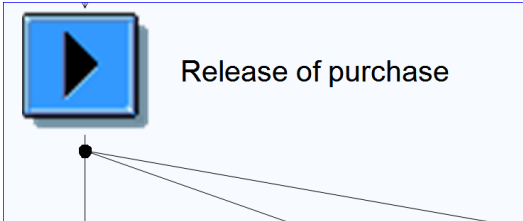
Diagram illustrating the triggering event mechanism:

- Purchase Requisition** (represented by a radio tower icon) triggers the **Trigger** event.
- The **Trigger** event leads to the **Release requisition** step (represented by a play button icon).
- The **Release requisition** step results in the **Workflow started** event (represented by a radio tower icon).

Hint:

- The standard binding is for “_EVT_OBJECT” and “_EVT_CREATOR”
- The release-code is an extra parameter
- The “Aggregate” is an attribute of the object





Hint:
One outcome for each
(activated) terminating event

Possible outcomes of step					
	Cgy	Act./Inact.	Not in Workflow Log	Outcome	Name
	»)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Purchase Order Released</u>	<u>Purchase order released</u>
	»)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Not Used</u>	<u>Release of purchase order cancelled</u>
	»)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Purchase Order Changed Significantly</u>	<u>Purchase order changed significantly</u>

Standard task 20000166 mm_po_rel
Name Release of purchase order
Package ME Applicatn Component MM-PUR

Basic data Description Container Triggering events Terminating events Default rules SAPphone

Standard events

Binding	Object Category	Object Type	Event	Name	Element
<input checked="" type="checkbox"/>	BOR Object Type	BUS2012	RELEASED	PURCHASE ORDER RELEASE PO	_WI_OBJECT_ID

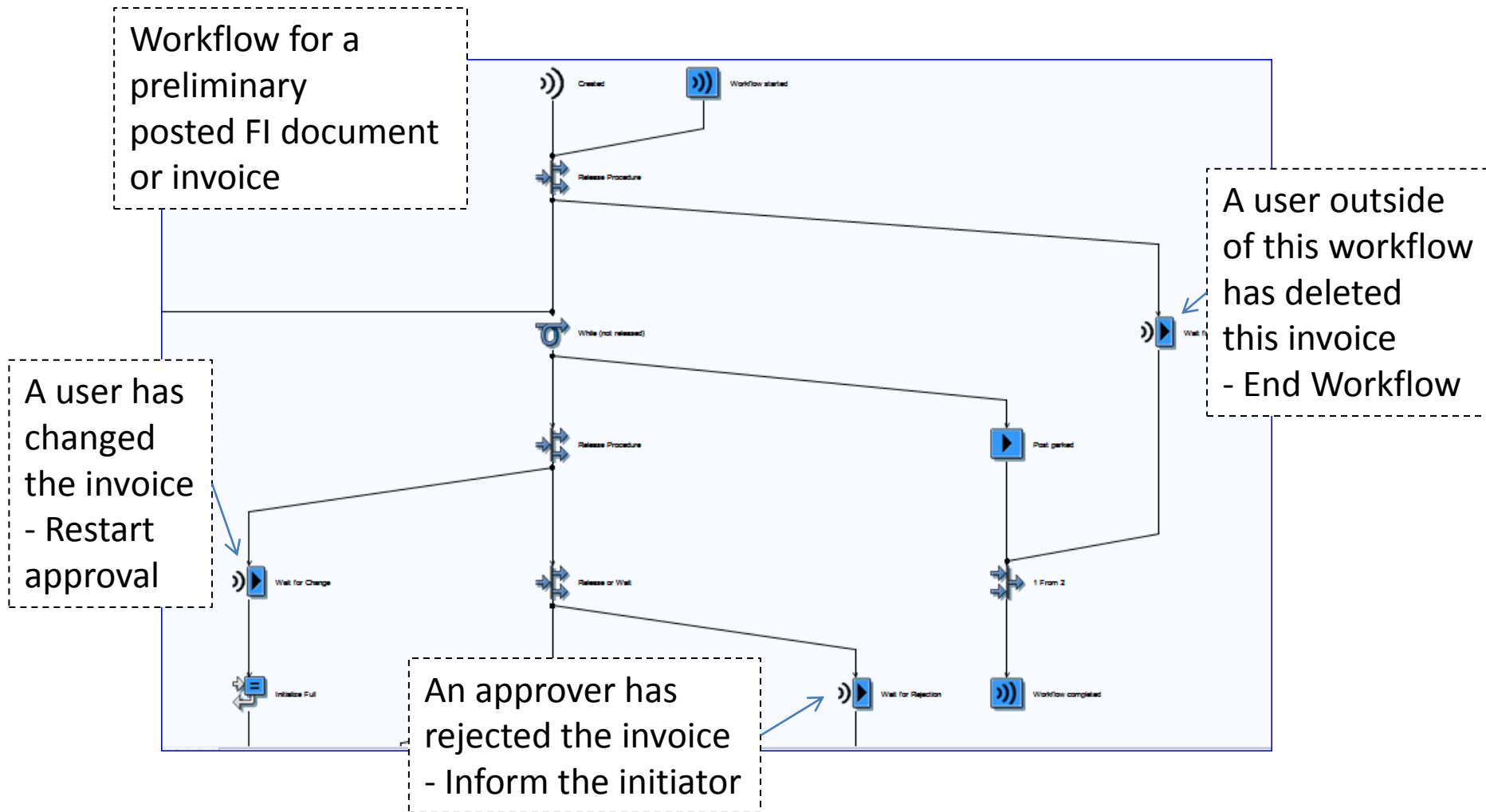
Display Binding For Task

Binding Event 'Release PO' -> Task

Event	Task
'Release PO'	Task
&RELEASECODE&	&RELEASECODE&
&EVT_OBJECT&	&_WI_OBJECT_ID&

Note:
Binding to bring data back to the task container.
Another binding defines the transport from the task to the workflow container.





- Workflow start conditions allow to implement the evaluation of predefined criteria before a workflow instance is started
- Conditions are defined by event container elements and logical operators and evaluated every time a start mechanism tries to trigger the corresponding workflow
- If the condition is not fulfilled, the workflow instance is not started
- Transaction to access workflow start conditions is SWB_COND



Start condition in client 800

Select start conditions

Start condition	*
Business Object	BOR Form: Notification of Absence
Event	All events ...
Workflow	All workflows ...

Start condition: Workflow-Start WS90600027 No default currency

Event: CREATED

&Agents& = USTEAM-20

- True → Start workflow: AF_process20
- False → No action

Select existing start conditions based on standard criteria

Review and change details of start condition



Workflow with events	Workflow without events
<p>No delay for the triggering program. Advantage: No impact on triggering program</p>	<p>Triggering program waits for the workflow instance to start. Problems could have an impact on the outside transaction</p>
<p>Dialog Workitem is completed, when one of the terminating events has occurred. Advantage: Less risk of completing a workitem too early.</p>	<p>Dialog Workitem is completed, when the user backs out the launched transaction or (if configured) clicks on the 'Complete Workitem' button.</p>
<p>Use the "Wait for event" step to react on object status changes, which occurred outside of the workflow process</p>	<p>Users can only influence the process, by executing a workitem.</p>
<p>Trigger events to communicate with other workflows</p>	



- Connect your SAP Business Workflow to SAP via events
 - Trigger of a new workflow instance
 - Example: A certain Sales Order status was applied
 - Re-act on object status changes, which were caused by activities outside of your workflow
 - Example: Purchase requisition was changed
- Use events to complete a workitem
 - Example: Specific System or User Status was set on a plant maintenance order
- Use the event queue for events, which could occur too often within a short period of time



- Use events where ever possible in your workflow design
 - Trigger Workflow
 - Terminate a workitem
 - Wait for an outside event
- Activate the Workflow Event Trigger (customizing transport)
- Check the events in the test system
- Turn off the event trace in the production system





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