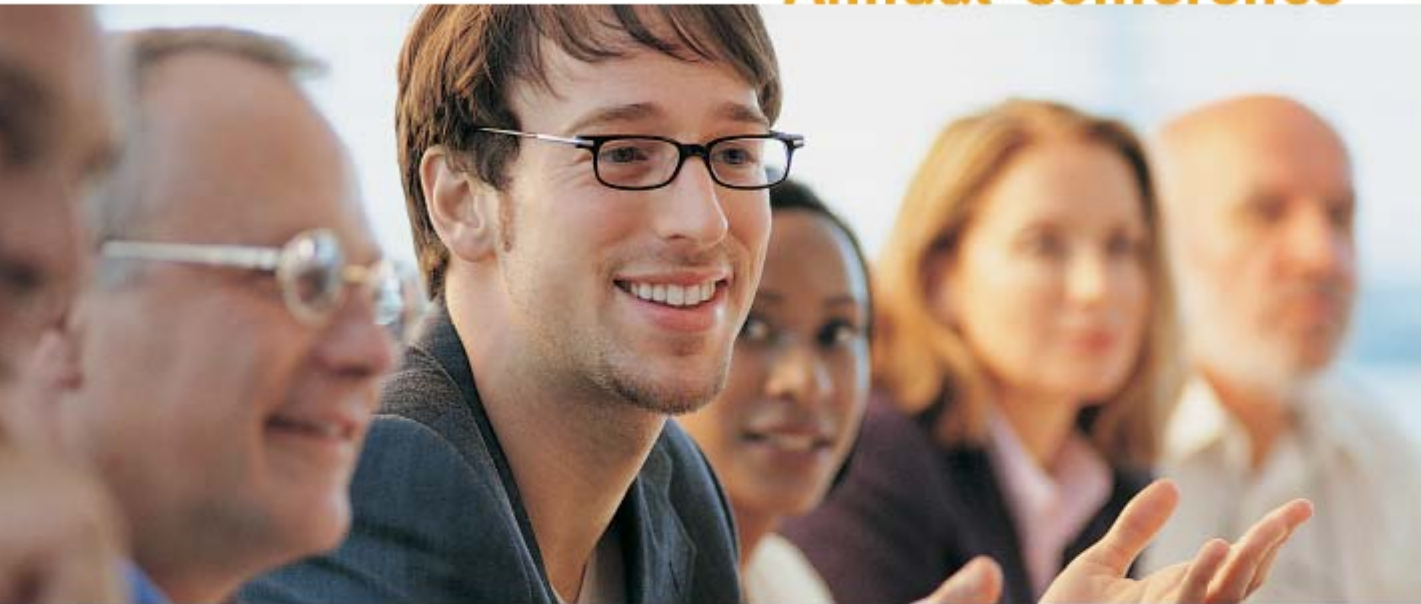


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Workflow Upgrade Experience from 4.6C to 4.7

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UNIVERSITY OF
Nebraska



EDUCATING

NETWORKING

INFLUENCING

Background – University of Nebraska

Four campuses and central administration



- ◆ Over 45,000 students
- ◆ Over 13,700 staff

Workflow environment

- ◆ Modules – Project Systems, Materials Mngt, HR, Time Mngt
- ◆ 2 full time WF Admin/developers & 2 part-time developers
- ◆ Approximately 80 workflow templates
- ◆ 40 'Z' BOR subtypes
- ◆ 30 PFAC rules

Learning Points

Planning for an upgrade

Features of new system

New container

Pitfalls to avoid

Additional Resources



Planning for the Upgrade

- 4.6C to 4.7 potentially five technical upgrades
- Reviewed release notes for each technical upgrade
- Every custom object was assigned to its owner
- Ran 'side effects' tool on OSS to see impact of patch level
- Tested in sandbox region (8 to 9 months prior)
- Tested in pre-development region (3 to 6 months prior)
 - ◆ Forced workflow templates into a new, unique number range for easier identification
- See OSS Note 152871 – 'Release Upgrade considerations for workflow'

Planning for the Upgrade – Outline

Planning Outline

1. Mapped out Scope and extent of workflow environment by client
 - ◆ List all customized Business Objects
 - ◆ List of workflows
 - ◆ Application areas
 - ◆ Listed all workflow transactions in a spreadsheet to tested
2. Listed workflow developers and functional team
 - ◆ Functional business leads to conduct full integration test
 - ◆ Developers performed unit tests

Planning for the Upgrade - Outline

3. Accounted for workflows in development and Quality regions

- ❖ Preferred to move these to production and had a freeze on development

4. Evaluated new functionality in 4.7

- ❖ SMTP e-mail – with support for HTML
- ❖ XML support for web flow capabilities
- ❖ ABAP OO for workflow

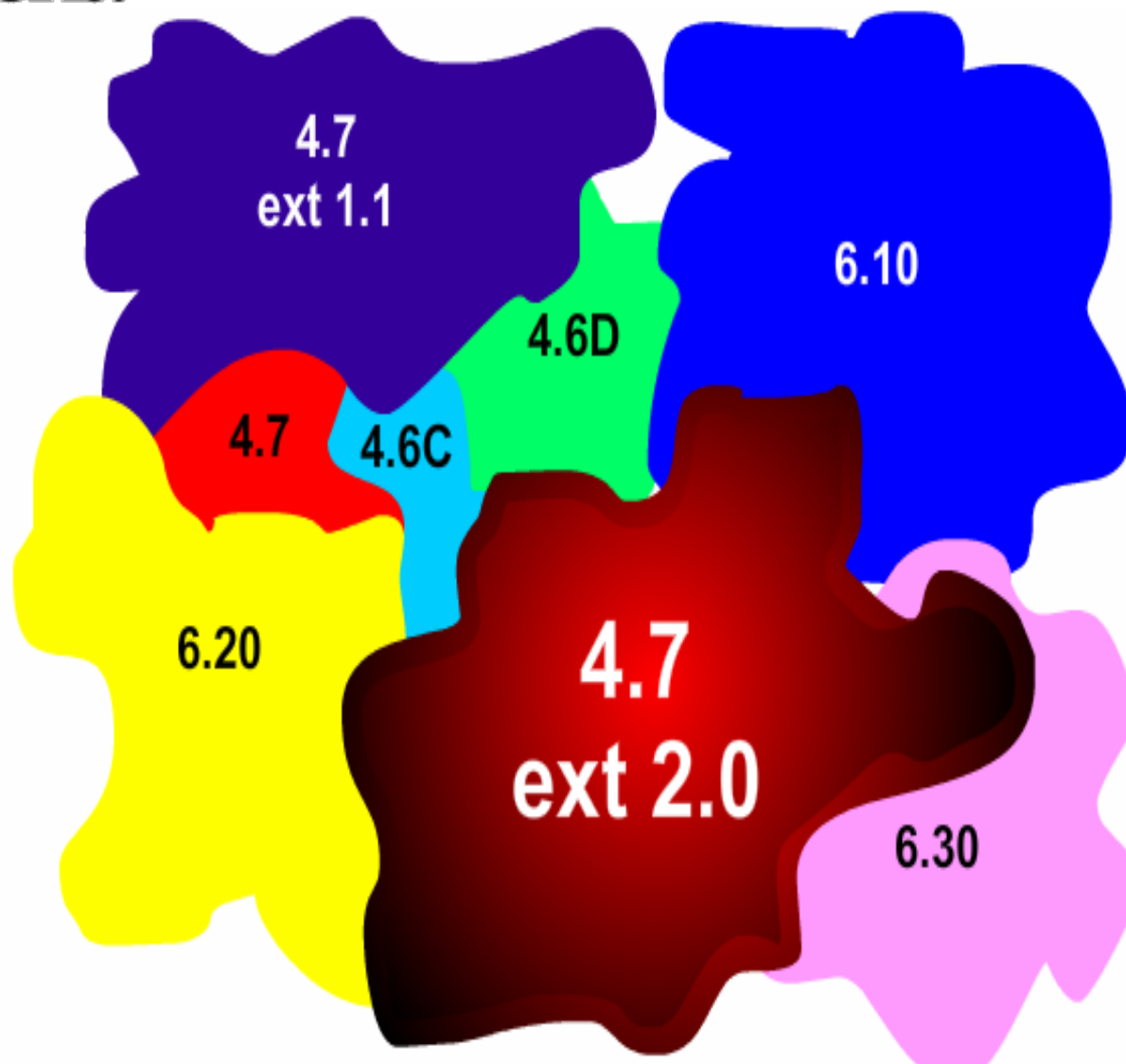
5. Testing plan

- ❖ Created an Excel spreadsheet to track all workflow development objects and their status
- ❖ Created a check list for post upgrade items

Planning for the Upgrade - Outline

6. Resources to identify known issues from 4.6C to 4.7

- ◆ OSS Notes – <http://service.sap.com/notes>
- ◆ Upgrade Site - <http://service.sap.com/upgrade>
- ◆ MIT Workflow Forum – archives (WUG)
<http://mailman.mit.edu/mailman/listinfo/sap-wug>
- ◆ IDES system observations and MINISAP installation
- ◆ Release Notes
- ◆ Online Tutorial CD
- ◆ ASUG/TechEd Presentations



Release Stack

Release **SAP R/3 Enterprise Release 4.6C**

Release **SAP R/3 Enterprise Release 4.6D**

Release **SAP R/3 Enterprise**
mySAP Technology Components Release 6.10

Release **SAP R/3 Enterprise Release 4.70 SR1**
mySAP Technology Components Release 6.20
Extension Set 1.10

Release **SAP R/3 and R/3 Enterprise 4.70 SR1**
SAP Web Application Server 6.30
Extension Set 2.0

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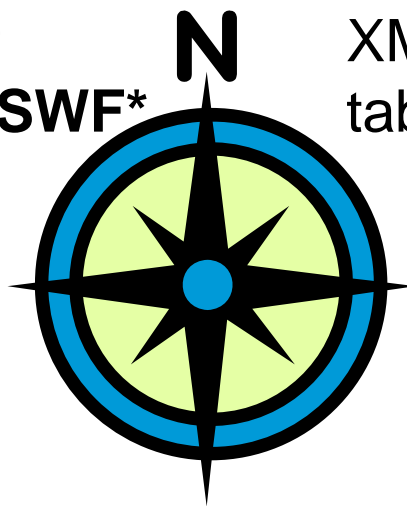
New Places for Workflow Functionality

New macro include
SWFCNTN01

ABAP object
classes **CL_SWF***

XML persistent container
table **SWWCNTPO**

New Package
SWF_BND



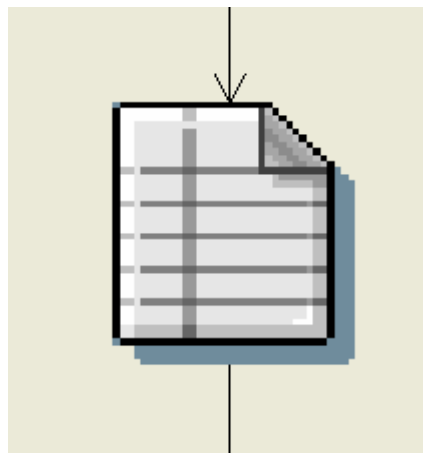
New type
group **SWFBN**

function modules -
package **SWR**

Start Forms (4.6D)

Replacement for start transactions

Use step type – **FORM**



Uses Object – **DYNP_FORM**

- ◆ Method **XML_DOC** – generate form from XML document
- ◆ Method **TO_XML** – generate XML document from form

Business Communication Services (6.10)

BCS Replaces Business Communication Interface (BCI)
which is to be no longer supported in the future

Allows direct external sending of documents

ESMTP protocol integrated into SAP components

MIME functionality is also available

Eliminates SAPconnect and the RFC interface previously
necessary to send mail through an external mail server

Work Item Start/End Conditions (6.10)

Conditions for starting
and ending work
items

- ◆ Activities
- ◆ Web Activities
- ◆ Forms
- ◆ User Decisions
- ◆ Documents from templates

The screenshot shows the 'Change Condition' dialog box in SAP. The 'Logic' tab is active, showing a tree view of system fields on the left and a table for defining the condition on the right. The table has columns for 'Expression 1', 'Operator', 'Expression 2', and 'And/Or'. The 'Expression 1' column contains a list of system fields, including 'Ad Hoc Objects', 'Attachments', 'Workflow Initiator', 'Priority', 'Grouping Characteristic', 'Workflow', and 'TestForm'. The 'Operator' column is currently empty. The 'Expression 2' column contains a 'Choose an Expression...' button. The 'And/Or' column is also empty.

Click here to create a new condition

How do I set the conditions?

The work item for this step can be executed when this condition for work item generation is met. If there is a requested start for this work item, this is checked separately when the condition is met.

The fulfillment of the condition is checked by the background job for condition evaluation that is run periodically.

Ad Hoc Anchor (6.10)



New step type available

- Add one or more executable workflow(s)
- At runtime – executable workflow(s) can be selected for insertion at anchor point

Ad Hoc Anchor 000008 Anchor Step

Control Change Data

Step Name Anchor Step

Outcome name Step Completed

Insertable Workflows

Workflow	Description	Abbreviation
WS16600159	Period-End Closing Mfg Order with WL	1-CM-OBJ-1
WS03100082	Period-End Close Sales Order with WL	1-CM-OBJ-S1

How does an anchor work for ad hoc changes to a workflow?

During execution of the workflow, you can replace this step with one of the workflows listed here. These workflows must have a workplace container that is identical to the workflow container of this workflow.

New Workflow Builder (SWDD) Objects (6.10)

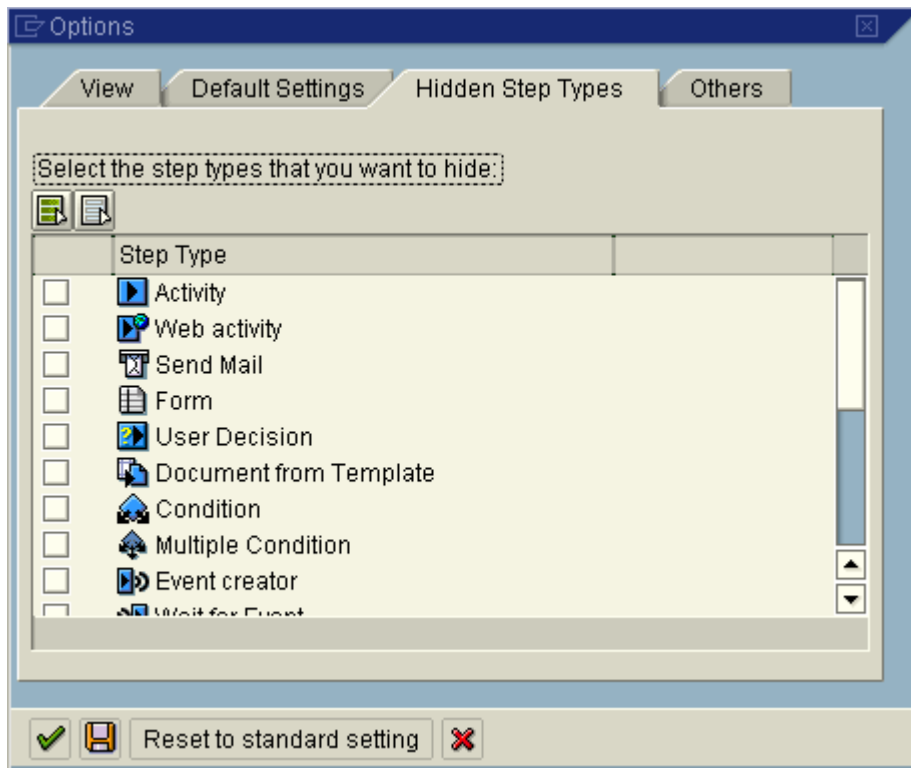
New members of the objects section in Workflow Builder

- ◆ Workflow Wizards
- ◆ Teamworking
- ◆ Workflows of This Definition

The screenshot shows the SAP Workflow Builder (SWDD) interface. The left pane displays a tree view of the object hierarchy, with 'Workflow Wizards' and 'Teamworking' highlighted. The main area shows the 'Find Steps' search criteria and a table of 'Workflows of Current Version [Outbox] (Since 03/...)'. The table lists several workflow entries with titles like 'Process notification of absence'.

W...	Title	Status	Creation D...	Creation ...	Att...
	Process notification of absence		02/13/2006	11:09:38	
	Process notification of absence		02/13/2006	11:03:05	
	Process notification of absence		02/13/2006	11:02:16	
	Process notification of absence		02/13/2006	10:59:15	

Hide Step Types (6.10)



Step types can be hidden from view in Workflow Builder SWDD

Menu path

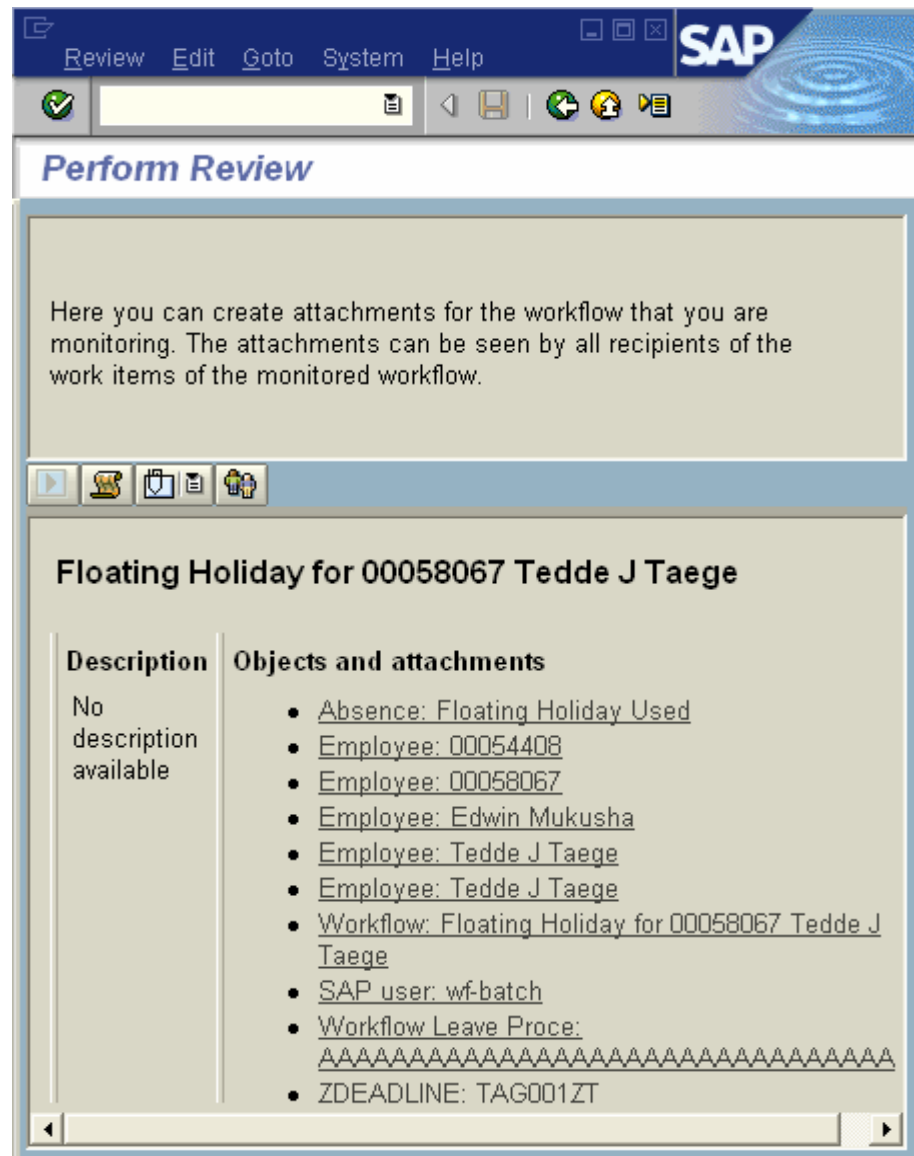
- ◆ Extras
 - ◆ Options
 - ◆ TAB Hidden Step Types

Review Workflow (6.10)

Can be defined to create
attachments to the workflow
being reviewed

Independent workflow

- ◆ Object REVIEW
- ◆ Method EXECUTE



Learning Points

Planning for an upgrade

Features of new system

New container

Pitfalls to avoid

Additional Resources



New Container

What is it & what's new about it?

Event Manager

What can I do with it?

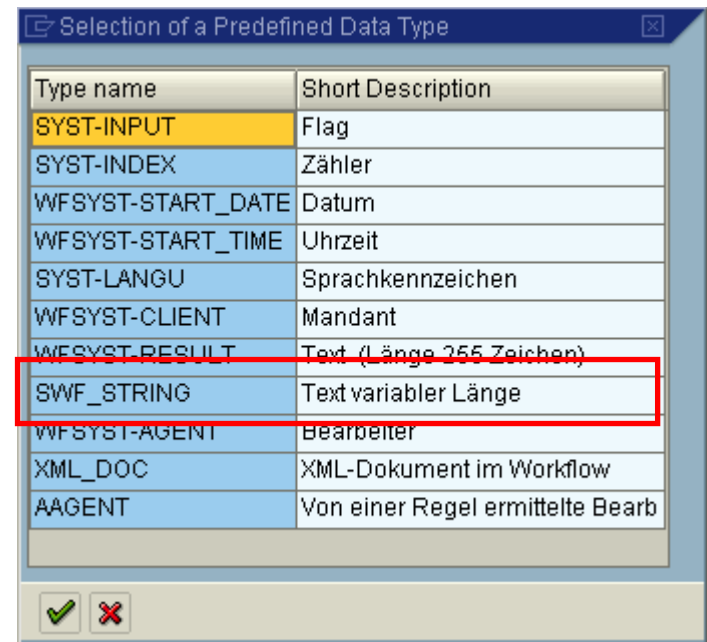
Findings listed



New Container - 2

What is it & what's new about it?

- ◆ A new container exists now that is saved in XML tables (table **SWWCNTP0**)
- ◆ It offers better performance when executing the workflow
- ◆ Standard elements are available when defining new elements



New Container - 3

Effects on existing workflows

- ◆ The new container is now in a different table so you have to be careful running reports that may process the old container tables.
- ◆ Initial value for container elements moved from the first screen to within the element definition. This caused us problems.
- ◆ Before 6.xx, the select options were stored in the workflow container with the enhancement "_%L" (for LOW) and "_%H" (for HIGH). As of 6.xx, the "%" character is no longer valid in select options for technical reasons. Remove the "%".

New Container - 4

Effects on existing workflows

- ◆ When changed during upgrade, check function modules need to conform to the new XML container standards. You may receive an error when attempting SWE2 linkages like "Check FM {fm name}: Parameter SENDER not available. The linkage will need to use receiver function module **SWW_WI_CREATE_VIA_EVENT_IBF** instead of SWW_WI_CREATE_VIA_EVENT for new linkages.

New Container - 5

Effects on existing workflows

- ◆ When using programmed bindings you cannot use the BOR programmed binding if your container contains a non-bor compatible data reference.
- ◆ For container correction read OSS note **434660** & **910573**. We had to run report "**RSWF_CNT_MAINTENANCE**". Be careful and run the report in 'test mode' and read the output of this report since you have may to handle any changes to your existing workflows!
- ◆ We had binding into tables the sequence can be different from 4.6C to 6.20. Resulting in unexpected results. See OSS note **889892**

Container Tip – When trying to extract single values to copy & paste, export the container to a file and open in browser.

Learning Points

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Our Findings

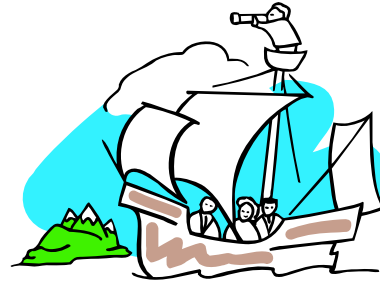
Event Log

- ◆ Event log table SWELOG is now obsolete. **SWFREVTLOG** replaces it.
- ◆ Previous log delete program RSWELOGD is replaced by **RSWFEVTLOGDEL**.

Workflow log (SWI2_FREQ) container view picks up data **by reference instead of by value.**  



Findings (continued)



Business Objects

- ❖ Material business object BUS1001 events are no longer triggered by the system. **BUS1001006** has replaced BUS1001.
- ❖ Travel Business Object **BUS2089** has new events. The **REQUESTED** event is now **obsolete**.
- ❖ **Unicode checks** could **not** be **turned off** on Z programs for Business Objects. OSS note **563417** which allows you to enable unicode checks but not disable.
- ❖ WebAS version 6.2/6.3 BOs **do not handle string types**

Findings (continued)



Generic Object Services

- GOS Object History table entries can be reorganized with report **RSSGOSHIRE**. See OSS Note **492756**.
- Generic object services attachments are now stored in table **SOOD** and were previously put into SRRELROLES.

User decision buttons are reset in their sequence possibly because of unicode checks.

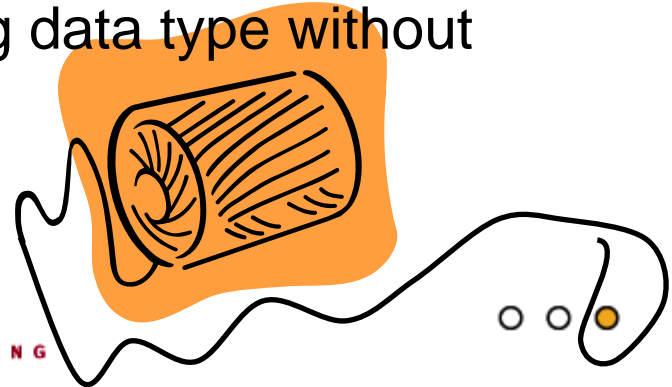
WAPI to read workitems SWW_WL_CREATE is now obsolete. Use **SWR_WL_CREATE**.

Findings (continued)

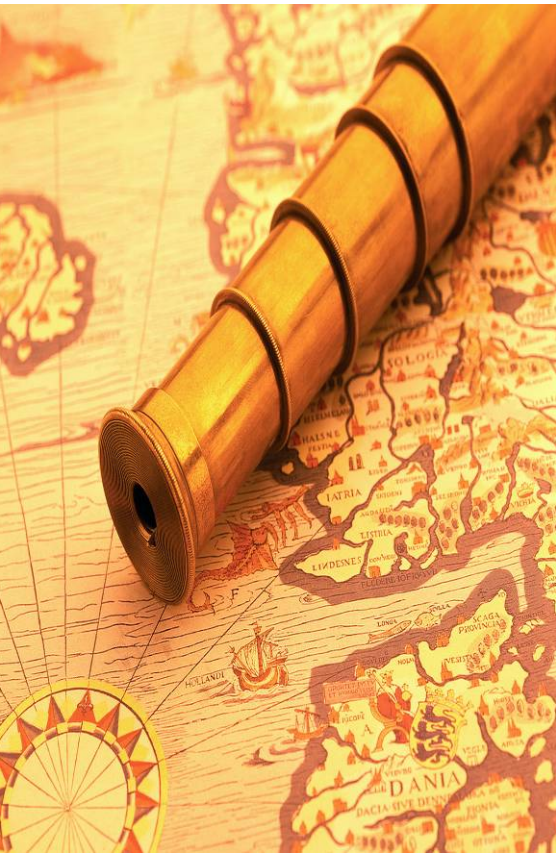
Mandatory container elements (and mandatory method inputs) were ignored when not filled in.

Bindings of sub-object 'magically' vanished from the workflow event container and had to be manually put back in (EPAF four event bindings for SOFM).

Standard tasks & business objects do not and will not handle the string data type in version 4.7. Workflow definitions and containers handle the string data type without problem.



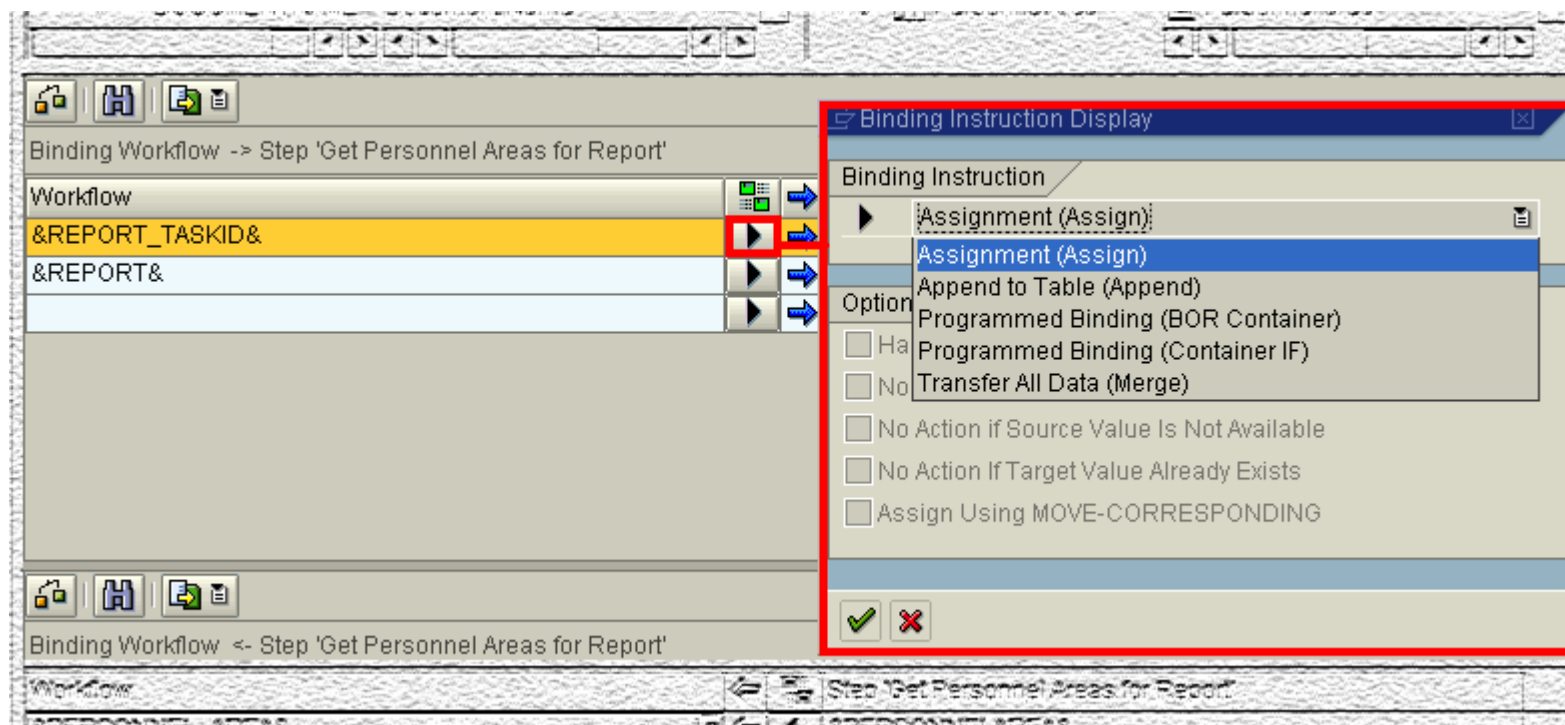
Findings (continued)



- ◆ "Just the first line" in a multi-lined container (i.e. &WF2_VENDOR&) to work using only row 1 data - it now behaves as if you requested "All lines continuously" (&WF2_VENDOR[]&) Instead use => **&WF2_VENDOR[1]&**
- ◆ Error messages to the administrator now do not show detailed error information as before. e.g. problem with role resolution 'AC90500014.'

Findings (continued)

Workflow builder bindings - new arrow for assign / append / program bindings.

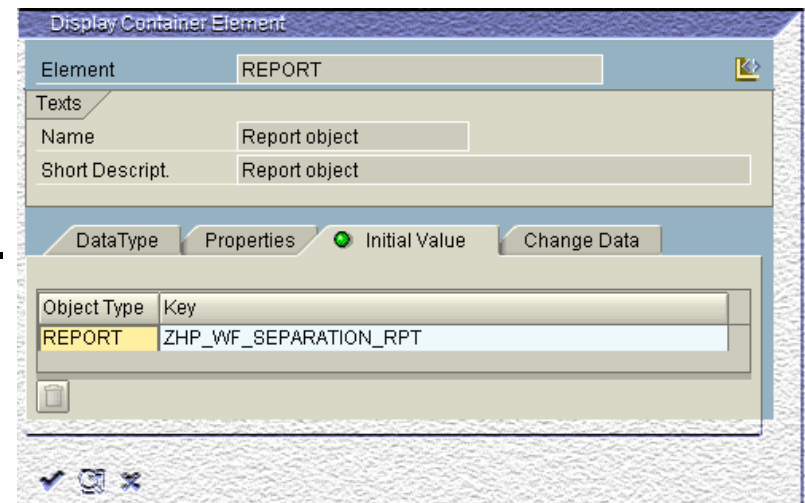


Findings (continued)

Usage of ABAP object classes is not available "out of the box" but can be made available.

- ◆ Run **RSWF_CATID** – release dependant prior to 6.40 before ABAP OO can be used for workflow
- ◆ Searches for ABAP objects in methods weren't available.
- ◆ Test tools did not show tables of ABAP instances, virtual attributes are not available.
- ◆ Key length differences 70 for BOR & 32 for OO (for longer use globally unique identifiers).

Container initial value now on its own tab.

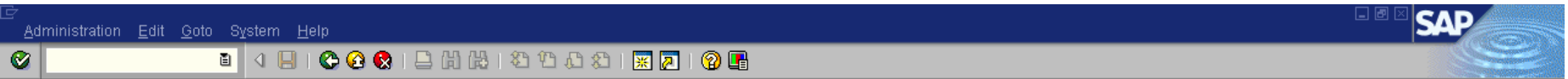


SWUF
SWUG
SWUZ



SWF3
SWUH





Administration of Workflow Runtime System

Monitoring

- Utilization of runtime tables
- Top-level work items with error
- Work items without agents
- Locked top-level work items

Work items

- Execute without agent check
- Error selection

Deletion reports

- Delete work items
- Delete work item history
- Delete 4.6C event log
- Delete 4.7 event log

Workflow Utilities

- Generic Object Services Report
- Resubmit Notices
- Login Exit is Enabled Modify
- Check Business Object Status
- Check Workflow Status

We chose to create our own SWUF in the form of a custom transaction ZSWUF which we modified with additional functionality.

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Learning Points

Planning for an upgrade

Features of new system

New container

Pitfalls to avoid

Additional Resources



Additional Resources

OSS Notes

◆ <http://service.sap.com/notes>

Upgrade Site

◆ <http://service.sap.com/upgrade>

Solution Manger

◆ <http://service.sap.com/solutionmanager>

Release Notes for each Incremental Upgrade

◆ <http://service.sap.com/notes> click Release & Upgrade Info tab

Online Tutorial CD

Additional Resources

MIT Workflow Forum – archives (WUG)

- ◆ <http://mailman.mit.edu/mailman/listinfo/sap-wug>

ASUG/TechEd Presentations

- ◆ Tomas Jung's ERP Upgrade 4.6C to ECC 5.0: An ABAP Developer's Perspective – Session Code 0900
- ◆ Many others

Ginger Gatling's Back to Best Basics (6.2 & 6.4 new features)

- ◆ <http://www.asug.com/forums/messageview.cfm?catid=29&threadid=22571>

Best Practices

Plan for the upgrade cut-over

- ◆ Review release notes
- ◆ Allow enough time for testing
- ◆ Install an IDES 4.7 system for comparison and easy testing
- ◆ Create a written upgrade script/plan

Practice the upgrade cut-over

- ◆ Practice on a recent copy of the production system
- ◆ Technical upgrade steps and estimate cut-over timings
- ◆ Functional process testing
- ◆ Configuration fixes
- ◆ Custom development testing and fixing (if necessary)

Practice acceptance/validation

- ◆ Validate results from test scripts and test data on custom development
- ◆ Achieve consistent, repeatable testing results

Key Learnings

1. Plan for your upgrade
2. Features of the new system
 - New container
3. Potential problems to avoid
4. Source of Information Available