Change Control Management – Building the bridge for continuous delivery in agile and hybrid solutions

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Building a bridge between today’s environment and tomorrow’s technology

Central control to adopt Intelligent Suite

Build the foundation to integrate Digital Platform

Process meets Technology

Outlook – What comes next

Summary
Building a bridge between today’s environment and tomorrow’s technology
Where We Need to Go - SAP Change Control Management for the NEW Intelligent Enterprise Framework

Digital Applications | Extensions
| Experimental | Innovation |
Agile → High Pace

Enterprise Applications | Critical Business Process Engine | Tightly Governed → Accelerate Pace

X
Data

Experience

Intelligence

Operations

extend integrate central control

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Opportunities for Change & Release Management

**Intelligent Enterprise Framework** facilitate to govern environment more reliable due to higher degree of automation

Expectation to get products **faster to the market** and **drive growth higher** while at the same time increase efficiencies in deployments

IT will **invest less** in developing specialists and **more in** becoming integrators of IT services. **Change Management** is key to be owned by IT for **control**

Change Management in Intelligent Enterprise environments needs to **fulfill audit requirements**
Central control to adopt Intelligent Suite
SAP S/4HANA dual landscape synchronization with Retrofit - Use cases

Retrofit from SAP ECC to SAP S/4HANA (Migration / Conversion Scenario)

Retrofit from SAP S/4HANA to SAP S/4HANA (Upgrade Scenario)

Retrofit from SAP S/4HANA to SAP S/4HANA (Project Scenario)
Retrofit of workbench objects in SAP S4/HANA conversion or upgrade projects

- ABAP Test Cockpit (ATC) check can automatically be triggered by the Change Request Management workflow, when the transport request is released.
- ATC Check requests technical object information from the SAP S/4HANA Simplification Database.
- Result of ATC Check is provided to Retrofit tool and determines the Retrofit classification for the workbench object to be retrofitted.
- The Retrofit executes the ATC check variant `S4HANA_READINESS_<target release>` in the remote ATC Hub for the transport request to be retrofitted.
ABAP Test Cockpit check: Automatic execution and display of results

- Automatic execution of the ABAP Test Cockpit check when releasing a transport request

Manual Execution of Transport-Related Checks

- ABAP Test Cockpit Check: Results: Overview Section
- ABAP Test Cockpit Check: Results: Details
Retrofit of **customizing** objects in SAP S/4HANA conversion or upgrade projects

**Pilot Solution for Retrofit of Customizing**

- Check the Simplification Database (SimDB) for customizing entries. If a customizing table or view is listed in the SimDB, then the entry is not transportable.

- Create and maintain a blacklist for objects which are missing in the SimDB. The blacklist will be initially populated by the customizing entries in the post upgrade delta customizing transports.

- Optional: Create and maintain a whitelist for objects which are in the SimDB, but can still be transported.
More reliable with less human error and higher flexibility
Foundation of continuous deployment for ABAP based systems

Define – Measure – Analyze

Improve

Control

is based on customers overall task list provided by the new Early Watch Alert

is based on build-in Transport Checks per System

is based on Guided Self Services & Change Diagnostics

TX SE38 -> /SDF/CMO_TR_CHECK

Source and Target System

List of transports to be checked

Type of check

Transport Execution Analysis for SAP S/4 HANA and Analytics

Transport Execution Analysis for Projects

Transport Process Reporting
Speed up and improve software logistics - Transport Check report ABAP

A set of transport requests can be checked for import errors before the import into a target system is done.

- Following checks are available:
  - **Cross Reference**: Return Code 8 prediction
  - **Sequence Check**: Wrong transport sequence
  - **Software Component**: Wrong software component for SAP standard objects and SAP Notes
  - **Import Time in Source System**: Sums up the import time of the individual transports in the source system
  - **Online Import Check**: Checks the criticality of the transported objects and dependent objects when they are imported during productive system usage

TX SE38 -> /SDF/CMO_TR_CHECK

‘Online Import Check’ Available with ST-PI SP6
Build the foundation to integrate Digital Platform
SAP Intelligent Enterprise Framework - Hybrid architectures

**SAP S/4 HANA**

- S4D (ABAP)
- S4Q (ABAP)
- S4P (ABAP)

**SAP HANA XSA**

- XSD (Non-ABAP)
- XSQ (Non-ABAP)
- XSP (Non-ABAP)

**SAP Cloud Platform**

- DEV Account
- QAS Account
- PRD Account

**SAP Data Hub**

- DEV Account
- QAS Account
- PRD Account
SAP Intelligent Enterprise Framework - Hybrid architectures

SAP S/4 HANA
- S4D (ABAP)
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Solution Manager

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Take advantage of new technology while leveraging existing investments

SAP Transport & Deployment options

**CTS / CTS+**
- Hybrid landscape (on-prem & Cloud) with ABAP/No ABAP /No SAP based systems
- Integration with SAP Solution Manager Change Control Management

**Transport Service**
- No ABAP-based system customer landscape, no CI setup/usage @ customer
- Content development
- Integration with SAP Solution Manager Change Control Management

**Continuous Integration**
- CI infrastructure available @ customer
- Mainly source-code based development
- Integration with SAP Solution Manager Change Control Management possible
Development toolsets

**SAP S/4HANA**
- SAP GUI, ABAP in Eclipse
- SAP Web IDE, Git, Jenkins

**SAP Cloud Platform**
- SAP Web IDE, Eclipse, Git, Jenkins

**SAP HANA XSA**
- SAP Web IDE, Eclipse, Git, Jenkins

**BYOL**
- Eclipse, Git, Jenkins

**Transport tool: CTS** (including CTS+ for non-ABAP/SAP)
Continuous integration in SAP environments

1. Write Code
   - SAP Web-IDE, Eclipse...

2. Push to central Source Code Management System (e.g., Git)

3. SCM triggers CI Server (Jenkins)

4. Automated Build & Tests

5. Provide Feedback

6. Deploy
   - DEV Account
   - QAS Account
   - PRD Account

7. Attach to Change and Transport System
   - CTS / CTS+

8. Release of Transport Requests
9. Virtual transport route
   - Import to Quality system
   - Import to Productive system

SAP DevOps – CM Client

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Continuous integration in SAP environments & CTS+ deploy scripts

1. Write Code
   SAP Web IDE, Eclipse...

2. Push to central Source Code Management System (GIT)

3. SCM triggers CI Server (Jenkins)

4. Automated Build & Tests

5. Provide Feedback

6. Deploy

7. SAP DevOps – CM Client
   Attach to Change and Transport System

8. Release of Transport Requests

9. Import to Productive system

How To...Implement CTS+ for Your Application

- Non ABAP/SAP
- Non ABAP/SAP
- Non ABAP/SAP

Virtual transport route
- DEV
- QAS
- PRD

Integrate your own language
Jenkins pipelines

Ready-to-use pipelines for SAP Development Processes and integration with SAP Solution Manager

- SAP Cloud Platform Cloud Foundry
- SAPUI5/Fiori on ABAP Frontend Server

https://github.com/SAP/jenkins
https://github.com/SAP/jenkins-pipelines
SAP Cloud Platform Transport Management Service

- Handle transports without the need for an ABAP on-premise system, other additional infrastructure or any third-party services.
- Manage transports between SAP Cloud Platform accounts in Neo and Cloud Foundry environments, such as from DEV to QAS and PRD accounts.
- Transport development artifacts (in form of Multi-Target Application archives) and application-specific content, such as SAP Cloud Platform Integration content.
- Transport delivery units of SAP HANA XS classic model between different SAP HANA instances assigned to cloud accounts.
Continuous integration / continuous delivery / continuous deployment tool set

Best Practices Guide

Source Code Management (Git)

Code review

Nexus Repository

Build artifacts

Build & Test

Persist

CI Server (Jenkins)

Deploy

Production Runtime

&

Development Runtime

&

Quality Runtime

&

Write Code

SAP Web IDE, Eclipse...

Commit

Checkout

Pull

Push

Local Git Repository

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Process meets Technology
Process meets technology

Quality Gate Management

Change Request Management

SAP Transport Management &

SAP Cloud Platform Transport Management Service
Mapping TMS transport landscape with SAP Solution Manager

Description

- Enable Transport Management Service (TMS)
- Configure nodes and routes in Transport Management Service
- Read out transport nodes and routes from TMS into Change Request & Quality Gate Management

Benefits

- Prepared for future cloud products
- Central Control & transparency over change execution
- Similar look and feel like CTS/CTS+ integration
- Governance and auditability
SAP Solution Manager collects TMS transport requests

Search Cloud TMS Transport requests within the change of Change Request or Quality Gate Management

Assign transport request to Change Request or Quality Gate Management

Trigger import of transport requests via Change Request or Quality Gate Management in the Transport Management Service for SAP Cloud Platform
SAP S/4HANA with ABAP runtime

**SAP S/4HANA**
- Main product of SAP
- Provides many solutions for various business requirements
- Based on ABAP as a programming language

**ABAP**
- Provides early integration by nature
- Works based on database tables
- Fast and easy data processing

**CTS**
- System landscapes (e.g. S4D → S4Q → S4P)
- Development will be stored in transport requests
- Propagate changes through the landscape with the help of serialized database content (binaries)
The software landscape

Git is an open source distributed version control system

Separated development in branches

Readable files in repositories

Source code can easily be accessed and shared
Source code can easily be accessed and shared

CI processes can be set up for most development environments

Integrated for most modern programming language

But what about ABAP?
Our idea…

Development

CTS* = gCTS

Target

* Change and Transport System
Planned use cases

**Distributed Development**
- Decentralized development environment
- One project, One system

**Continuous Integration**
- Every change will be automatically tested
- Developer gets immediately feedback
- Just stable changes will be deployed

**Branch-based Development**
- Support various releases
- Separated feature development
- Fast maintenance
Use case: Feature development and maintenance in parallel

One branch for feature development

One branch for maintenance

No doubled system landscape needed

Deploy the latest commit of one or the other branch to develop new features or to do maintenance
Use case: Distributed development

Two Dev Teams can work on the same object

Commit changes to repository

Merge into master branch, deploy to QA

Deploy to Production after test

TEAM A

TEAM B

DEVELOPMENT

QUALITY

TEST/INTEGRATION

PRODUCTION

LIVE SYSTEM
Timeline and features

**Recent Innovation**

- SAP S/4HANA 1909
- Git-based distribution of custom development
- Full support of Continuous Integration
- Automatic Continuous Deployment

**Planned Innovation**

- Feature development and maintenance in parallel
- Distributed development
- Customizing support
- Docker support
- Git-based versioning control inside of SAP S/4HANA
- Merge user interface for ABAP objects
Outlook

- Change Control with git enabled CTS (gCTS)
- Customer Connection Program (Backlog)
- **Extend** Experience Management Change Control capabilities
- Further onboarding new SAP products
Summary
NEW Intelligent Enterprise Framework
Change Control Management supports today’s environment and tomorrow’s technologies

Digital Applications | Extensions
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Enterprise Applications | Critical
Business Process Engine | Tightly
Governed → Accelerate Pace

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