Custom code adaptation for SAP S/4HANA

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Speakers

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Thomas Fiedler

Barcelona
October 8-10, 2019
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Bangalore
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Agenda

Introduction
- What is SAP S/4HANA
- Challenge for your custom code

Custom code adaptation
- Custom code analysis
- Functional adaptation
- Custom code optimization

Summary and Outlook
Introduction
SAP S/4HANA – Digital Core

SAP S/4HANA Enterprise Management is SAP’s next generation Digital Core

- Optimized for SAP HANA
- New architecture and data models
- “Principle of One”
- Renewed applications
- Fiori based User Experience
- Cloud & on-premise deployment models

SAP S/4HANA is a new product line

The classical SAP Business Suite & SAP ERP is a separate product line and will still be available

System conversion including custom code from existing SAP Business Suite or SAP ERP is possible
Challenge for custom code after SAP S/4HANA system conversion

Custom code has to be adapted
Adapt your custom code using Simplification Database

Simplification Database contains a list of SIMPLIFICATION ITEMS

Each simplification item refers to
- An SAP Note that describes the impact and how related custom code can be adapted
- Changed or removed SAP objects

SAP provides TOOLS based on the Simplification Database to detect custom code that needs to be adapted to SAP S/4HANA
Custom code adaptation
SAP S/4HANA system conversion
Custom code related process

Preparation phase
- System requirements
  - Maintenance planner
- SI checks
- Custom code preparation

Realization phase
- Software Update Manager (SUM)
- Application specific follow-up activities
  - Custom code preparation
  - Functional adaptation
  - Custom code optimization
  - Custom code scoping
  - Custom code analysis

Find more about Custom Code Adaptation process in the SAP community
SAP S/4HANA system conversion
Custom code related process

Preparation phase
- System requirements
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Custom code scoping

Usage tracking of custom code in production (SCMON/SUSG or UPL)
New SAP Fiori App to detect unused code with automated removal via SUM

Find more about Custom Code Adaptation process in the SAP community
**Custom code scoping**

**MONITOR** usage of your custom code via the ABAP Call Monitor (transaction **SCMON**)

**AGGREGATE** usage data in your production system with **SUSG** transaction (*

**ANALYZE** usage data in SAP Fiori App Custom Code Migration to define custom code migration scope

**REMOVE** unused code during the SAP S/4HANA conversion automatically via **SUM**

* Custom code evaluation with CCLM/UPL tools of SAP Solution Manager is still possible
Demo

Analyze custom code usage data (SCMON/SUSG)
SAP S/4HANA system conversion
Custom code related process

**Preparation phase**
- System requirements
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- Software Update Manager (SUM)
- Application specific follow-up activities

- Custom code preparation
  - Custom code scoping
  - Usage tracking of custom code in production (SCMON/SUSG)
    - New SAP Fiori App to detect unused code with automated removal via SUM
  - Custom code analysis
    - Remote ATC to check for S/4HANA related changes (Simplification DB)
      - New SAP Fiori App for efficient custom code analysis

Find more about Custom Code Adaptation process in the SAP community
Technical infrastructure for custom code analysis

**CENTRAL ATC SYSTEM TO ANALYZE CUSTOM CODE**
in whole system landscape

- **REMOTE** stubs return a model from custom code
- **CHECK LOGIC** is executed on central system
- **RESULT** is analyzed in central system
- **INTEGRATED** in development environment
- **ALL KINDS OF CUSTOM CODE** are supported (incl. modifications and enhancements)
- **SUPPRESS** false-positive findings with pseudo-comments, e.g. for MATNR findings
- **INSTALL** Simplification DB via OSS Note 2241080

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Find more about **Remote code analysis with ATC** in the SAP community
SAP S/4HANA readiness checks

SIMPLIFICATION USE CASES
- Functionality not available anymore
- Data model changes
- Data type changes

SAP HANA USE CASES
- Use of DB vendor specifics (native SQL)
- DB operations on pool/cluster tables
- SELECT/OPEN CURSOR statements without ORDER BY

Use check variant S4HANA_READINESS_REMOTE which includes SAP S/4HANA and SAP HANA checks
Analysis of SAP S/4HANA findings in ABAP Test Cockpit (ATC)

**USE STATISTICS VIEW** with display criteria
- SAP Note number
- Referenced simplified object
- Application component

**USE SIMPLIFICATION INFORMATION** in ATC result list with filtering and sorting capabilities
- SAP Note number incl. title
- Referenced simplified object
- Application component

**USE DOUBLE-CLICK NAVIGATION** from ATC result
- Navigate to SAP Notes, Referenced Objects, ATC findings
Analysis of SAP S/4HANA findings in SAP Fiori App Custom Code Migration

USE PREDEFINED FILTERS

- Findings by SAP Note
  In which SAP S/4HANA simplification areas you get the most findings?
- Findings by Scope
  How many findings are in the custom code you take over to SAP S/4HANA?
- Findings by Priority
  What are the most important (urgent) findings?
- Findings by Quick Fix Availability
  Which findings can be fixed automatically?

AGGREGATION AND FILTERING OF FINDINGS

FOCUS ON USED CUSTOM CODE

DRILL-DOWN TO ATC RESULTS

Find more about SAP Fiori App Custom Code Migration in the SAP community.
# Custom code analysis options

<table>
<thead>
<tr>
<th>Required system</th>
<th>Remote ATC with SAP GUI</th>
<th>SAP Fiori Custom Code Migration App</th>
<th>SAP Fiori Custom Code Migration App in SAP Cloud Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central ATC check system (SAP_BASIS 7.52)</td>
<td>Central ATC check system (SAP S/4HANA 1809)</td>
<td>SAP Cloud Platform, ABAP Environment</td>
<td></td>
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<tr>
<td>System location</td>
<td>in customer landscape</td>
<td>in customer landscape</td>
<td>cloud</td>
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<tr>
<td>Remote connectivity</td>
<td>via RFC</td>
<td>via RFC</td>
<td>via RFC and SAP Cloud Connector</td>
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<td>Analyze SAP S/4HANA findings</td>
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<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Simplification information in ATC result</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Filter results by scope and Quick Fix availability</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Define custom code migration scope based on usage data</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Remove unused code during system conversion via SUM</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Demo

Custom code analysis with SAP Fiori App Custom Code Migration
Join SAP Usability Testing @ 2019 TechEd Barcelona Conference

Custom Code Migration app - Topic 3

Evaluate your custom code and make it ready for SAP S/4HANA and SAP Cloud Platform ABAP Environment

Register now for Topic 3 – Custom Code Migration app at Usability Test Center in hall 8

or register online

https://experience.sap.com/teched
SAP S/4HANA system conversion

Custom code related process

**Preparation phase**
- System requirements
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**Realization phase**
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**Custom code preparation**
- Custom code scoping
- Custom code analysis

**Usage tracking of custom code**
- in production (SCMON/SUSG or UPL)
- New SAP Fiori App to detect unused code with automated removal via SUM

**Remote ATC to check for**
- S/4HANA related changes (Simplification DB)
- New SAP Fiori App for efficient custom code analysis

**Functional adaptation**
- Adjust modifications in SPDD/SPAU
- ADT for Eclipse
- Quick Fixes for semi-automated custom code adaptation

Find more about Custom Code Adaptation process in the SAP community

New SAP Fiori App for efficient custom code analysis
Functional adaptation in ABAP Development Tools (ADT) in Eclipse

**ABAP TEST COCKPIT IN ADT**

- Tightly integrated in development ("Run As..." menu)
- Browse all ATC check runs of the system (filter by users) using ATC Result Browser
- Display Simplification Item information (e.g. SAP Notes, Referenced Objects) incl. navigation
- Integrate checks in your on-going development activities, e.g. during transport release
- Change contact person to transfer findings

*Functional adaptation in ABAP Workbench (SE80) still possible with limitations: no automatic code adaptation, CDS and AMDP not supported*
Semi-automatic custom code adaptation in ADT via Quick Fixes

QUICK FIXES to minimize adaptation efforts
- Order By
- MATNR and Amount Field Length Extension
- Data Model Changes, e.g.
  - KONV
  - VBUK/VBUP
  - BSEG

MASS-ENABLED Quick Fixes to adapt whole work packages in one step

Quick Fixes in the Source Code Editor

Mass-enabled Quick Fixes in the ATC Problems View

Find more about Semi-automatic custom code adaptation in the SAP community
Demo

Custom code adaptation with Quick Fixes in ADT
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Custom code preparation

Find more about Custom Code Adaptation process in the SAP community

- New SAP Fiori App for efficient custom code analysis
- Quick Fixes for semi-automated custom code adaptation
- Adjust modifications in SPDD/SPAU
- ADT for Eclipse
- Performance tuning
- Code pushdown
- Simplification
- User experience
Custom code optimization & modernization

… is not only about new applications. You also get a RENEWED TECHNOLOGY STACK

- **OPTIMIZE TOWARDS SAP HANA**
  (code pushdown, performance tuning)

- **EMBEDDED ANALYTICS**
  Execute reporting directly on your transactional data

- **DECOUPLE CUSTOM CODE**
  from SAP standard to prepare the code for the cloud

- **USE MODERN ABAP LANGUAGE**

- **ABAP RESTful PROGRAMMING MODEL**
  To easily develop SAP Fiori-based Apps
Performance tuning using SQL Monitor

SQL Monitor allows to get performance data for all SQLs executed in your productive system

- What are the most expensive and most frequently executed SQLs?
- Which SQL reads/writes millions of records?
- What is the SQL profile of transaction VA01?

SQL Monitor allows to link the monitored SQL to the driving transaction

Available for SAP NetWeaver >= 7.00

SQL Monitor does not harm your business processes (performance overhead < 3%)

Find more about SQL Monitor Guide and Best Practices in the SAP community
SQL Monitor - Example

**BUSINESS PROCESS LIST RANKED BY TOTAL DB TIME**

<table>
<thead>
<tr>
<th>Total DB Time</th>
<th>Total Time</th>
<th>Est. DB T</th>
<th>Est. DB E</th>
<th>Total Records</th>
<th>DB Min T</th>
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<th>Request Time</th>
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<th>DB Max T</th>
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**SQL PROFILE OF REPORT ZSQLM_TEST3 RUNNING AS BATCH JOB (6 SQL STATEMENTS)**

<table>
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<tr>
<th>Total DB Time</th>
<th>DB Time (%)</th>
<th>DB Time/T</th>
<th>DB ExeT</th>
<th>DB ExeX (%)</th>
<th>Total Records</th>
<th>Records (%)</th>
<th>DB Min T</th>
<th>Table Names</th>
<th>DB Operation Type</th>
<th>Obj.</th>
<th>Object Name</th>
<th>Include Name</th>
<th>Include U</th>
<th>ASAP Source Code Fragment</th>
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<td>3,027</td>
<td>ZSQLM_TEST3</td>
<td>SELECT (Open SQL)</td>
<td>SQL</td>
<td>ZSQLM_TEST3</td>
<td>ZSQLM_TEST3_1</td>
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</table>

**CODE**

```sql
method get_details.
data details type t_order_details.

Simple Nested Reading DB OP (SELECT) found. Search DB Operations in loops across modularization units

loop at important_order_details into details.
select select * from zsqlm_test_order into wa where order_id = details.order_id and order_details_id = details.order_details_id and item_name like pattern. (Check existence.
if my-subcc = 0 .
```

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Summary and Outlook
Key takeaways

- **SAP S/4HANA is a new product** and your custom code has to be adapted to its changes stored in Simplification Database.

- **Start your SAP S/4HANA journey today and switch on usage analysis with SCMON/SUSG**.

- **Remote ATC** is the technical infrastructure for all static checks on your ABAP custom code.

- **SAP Fiori App Custom Code Migration** guides you through the custom code adaptation process for SAP S/4HANA and supports you to remove unused code.

- **ADT with mass-enabled Quick Fixes** is the tool of choice for semi-automated custom code adaptation for SAP S/4HANA in a highly efficient way.

- Optimize your custom code for SAP S/4HANA using code pushdown, performance tuning, ABAP RESTful Programming Model (RAP).
Outlook: Planned features

**SAP FIORI APP CUSTOM CODE MIGRATION**
- Integration of effort estimation capabilities
- Analysis of source code complexity
- Integration of modification data (SPAU) to detect reset candidates (“Back to Standard”)
- Integration of SQLM data for performance analysis
- Support for “Greenfield” projects

**QUICK FIXES FOR SAP S/4HANA ON PREMISE**
- Additional Quick Fixes for SAP S/4HANA findings
- Quick Fixes for non-source code artifacts, e.g. DDIC
- Quick fixes for code modernization, e.g. new SQL syntax, usage of whitelisted APIs
What you can do today in your SAP Business Suite landscape
Get your custom code prepared for SAP S/4HANA

YOU SHOULD

Collect productive usage and SQL execution data
- Switch on SCMON/SUSG (recommended) or UPL
- Switch on SQL Monitor

Create new code “SAP S/4HANA ready”
- Setup remote ATC
- Use SAP S/4HANA ATC checks in your dev system

Make your developers “SAP S/4HANA ready”
- Gain practical skills in ADT in Eclipse
- Get familiar with SAP S/4HANA must-have technologies (e.g. CDS, BOPF, OData)

YOU COULD

Start to adapt your code in your dev system
- Convert to Unicode
- Fix SAP HANA ATC findings (e.g. NO ORDER)
- Optimize performance critical SQLs found in SQL Monitor

Estimate custom code adaptation efforts
- Run SAP S/4HANA ATC checks for all custom code
Further information

SAP Community for ABAP Testing and Analysis: https://www.sap.com/community/topics/abap-testing-analysis.html
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Access replays
- Keynotes
- Live interviews
- Select lecture sessions
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Continue the conversation
- Read and reply to blog posts
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Thanks for attending this session.

Feedback
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Contact for further topic inquiries
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