



Custom code adaptation for SAP S/4HANA

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Sachin B.



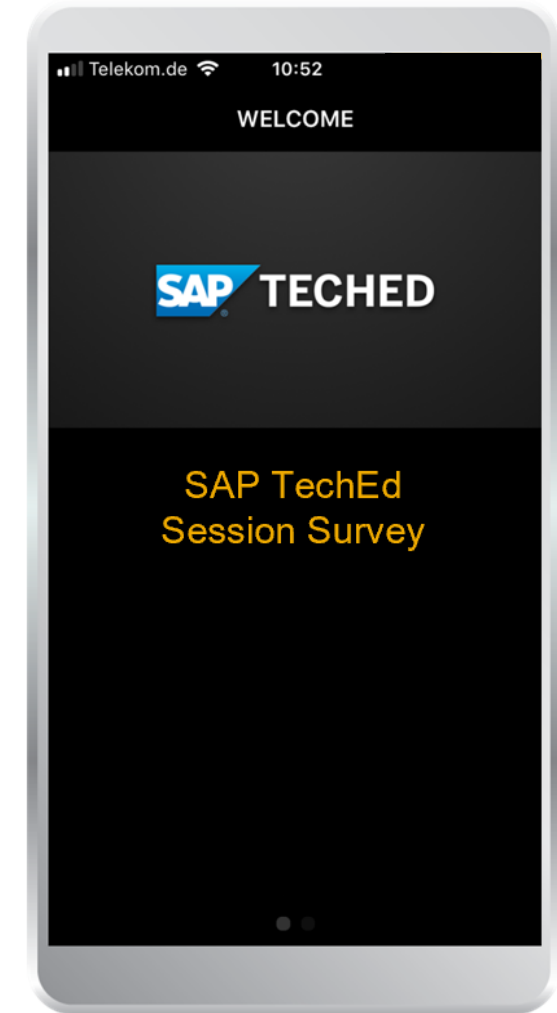
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Agenda

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

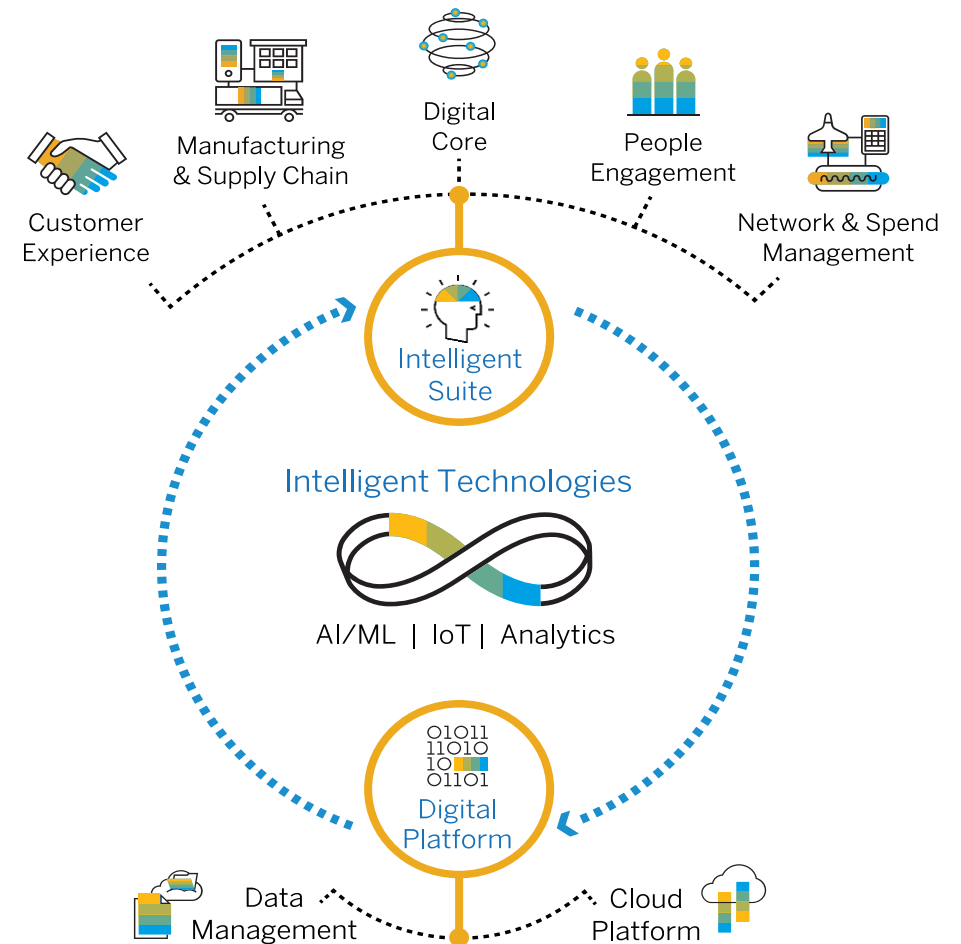
SAP S/4HANA Enterprise Management is SAP's next generation Digital Core

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

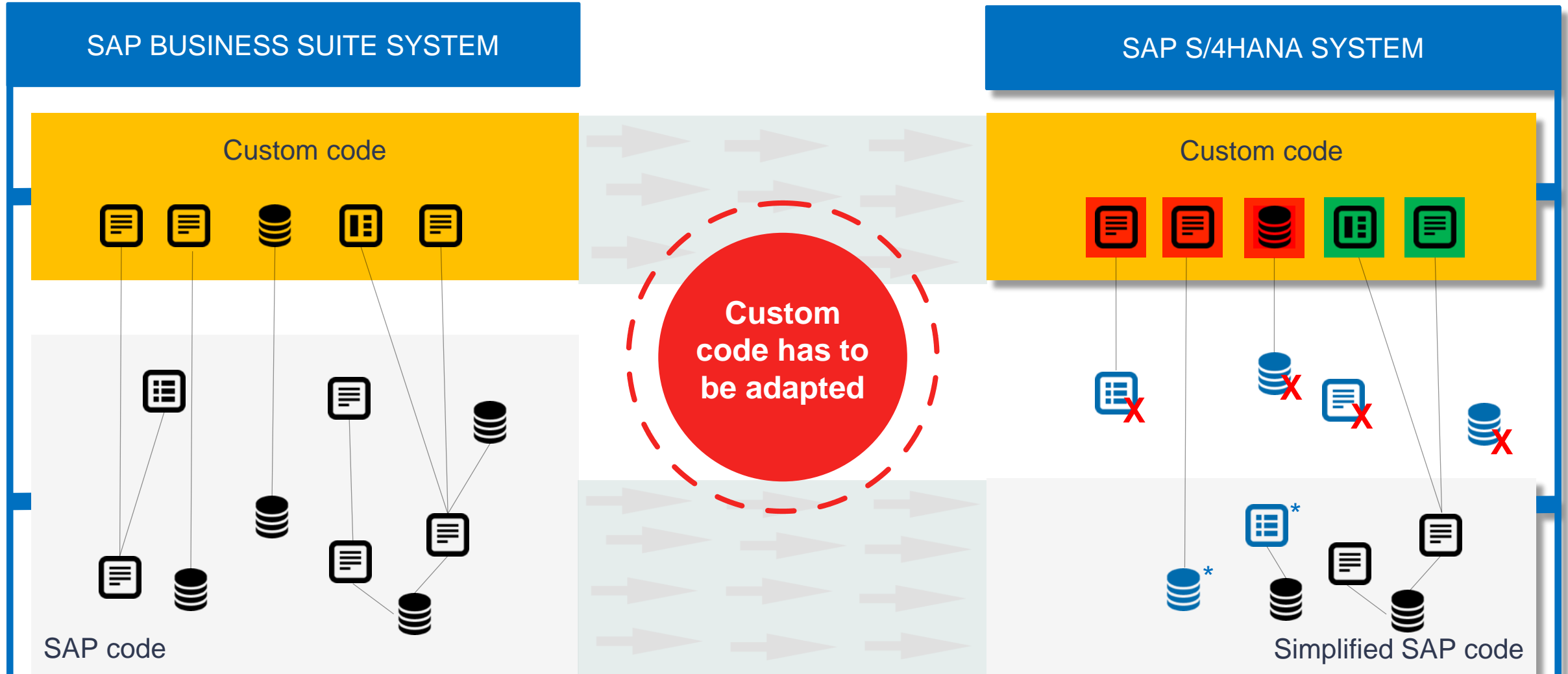
SAP S/4HANA is a *new* product line

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



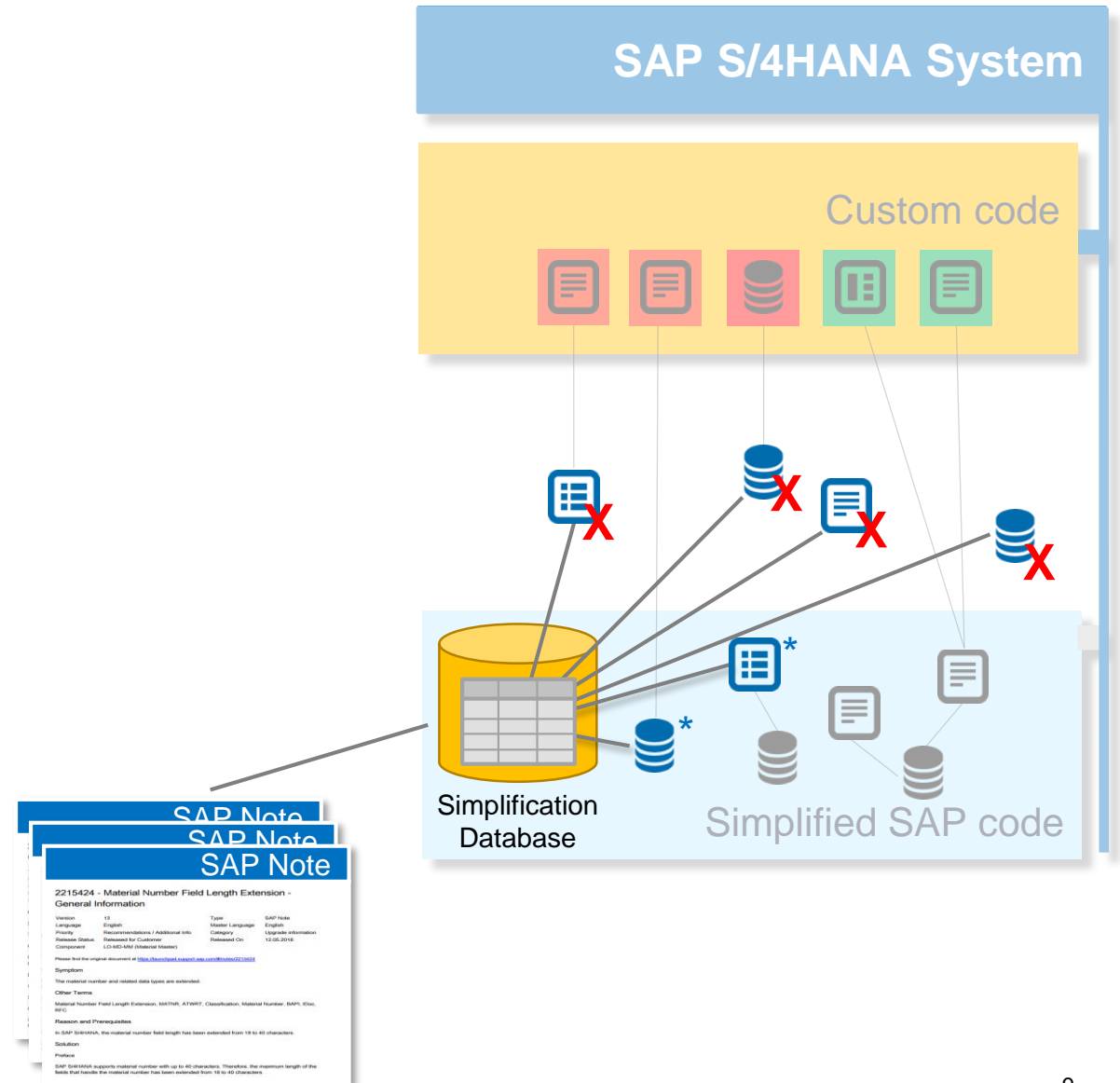
Adapt your custom code using Simplification Database

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

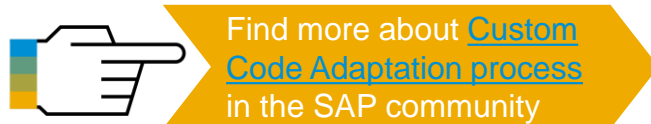
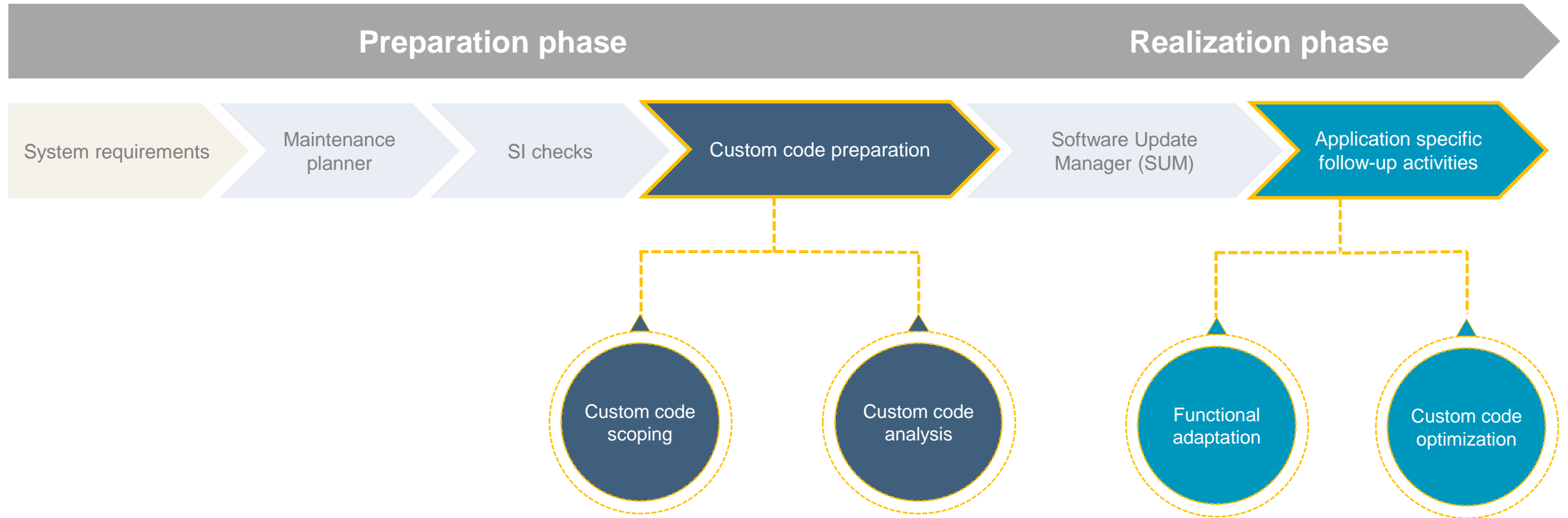


Custom code adaptation



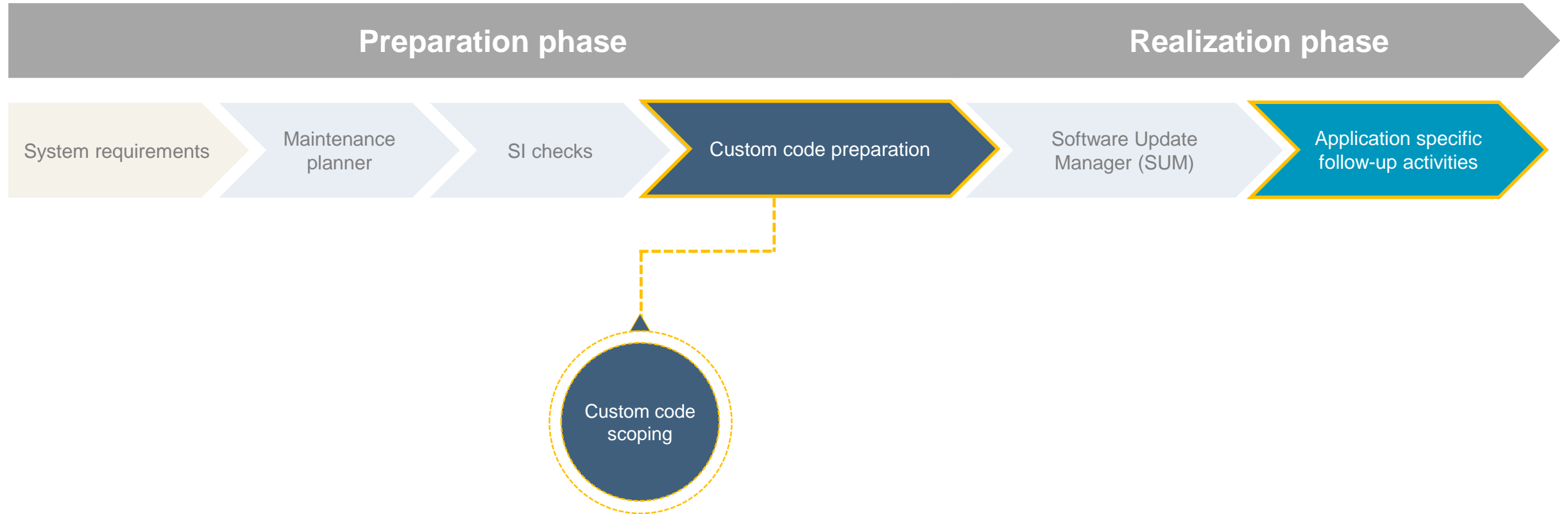
SAP S/4HANA system conversion


Custom code related process



SAP S/4HANA system conversion

Custom code related process



 Find more about [Custom Code Adaptation process](#) in the SAP community

Usage tracking of custom code in production (SCMON/SUSG or UPL)



New SAP Fiori App to detect unused code with automated removal via SUM

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

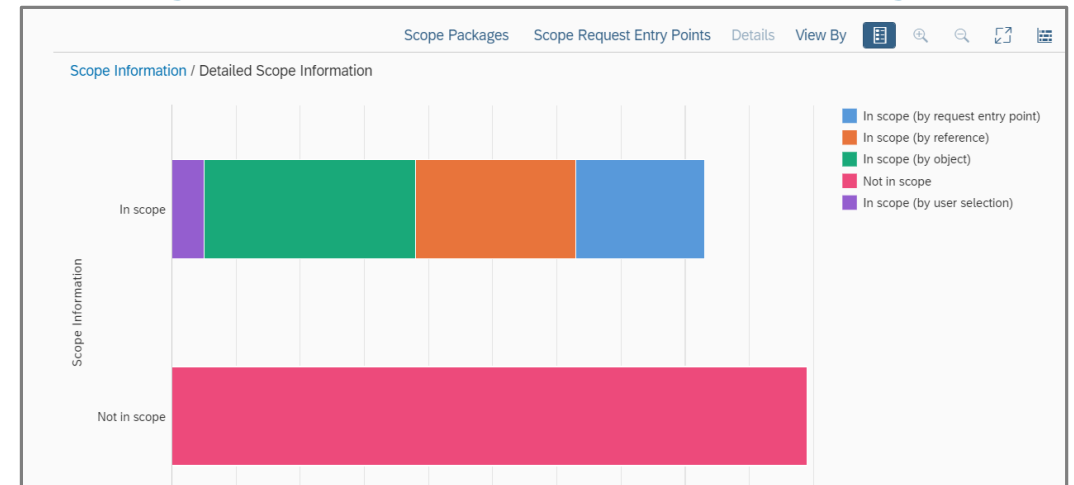
REMOVE unused code during the SAP S/4HANA conversion automatically via SUM

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

Aggregate usage data in SUSG transaction

| Usage Data: Aggregation State | |
|-------------------------------|---|
| Activate | Deactivate |
| Create Snapshot | Manage Snapshots |
| Display Log | Application Help |
| State | |
| Aggregation | Active (Aggregation scheduled at: 26.02.2019 02:30:00) |
| Aggregation Period | From: 13.12.2018 To: 24.02.2019 |
| Aggregated Days | Days available: 74, Days missing: 0 |
| Aggregated Records | Data records: 191.508, Object data records: 41.576, Request data records: 1.017 |
| Aggregation Log | Errors: 0, Warnings: 74, Deactivation Warnings: 0 |
| ABAP Call Monitor | ▲ GET_LOG_STATUS not installed, see note 2701371 |

Scoping in SAP Fiori App Custom Code Migration

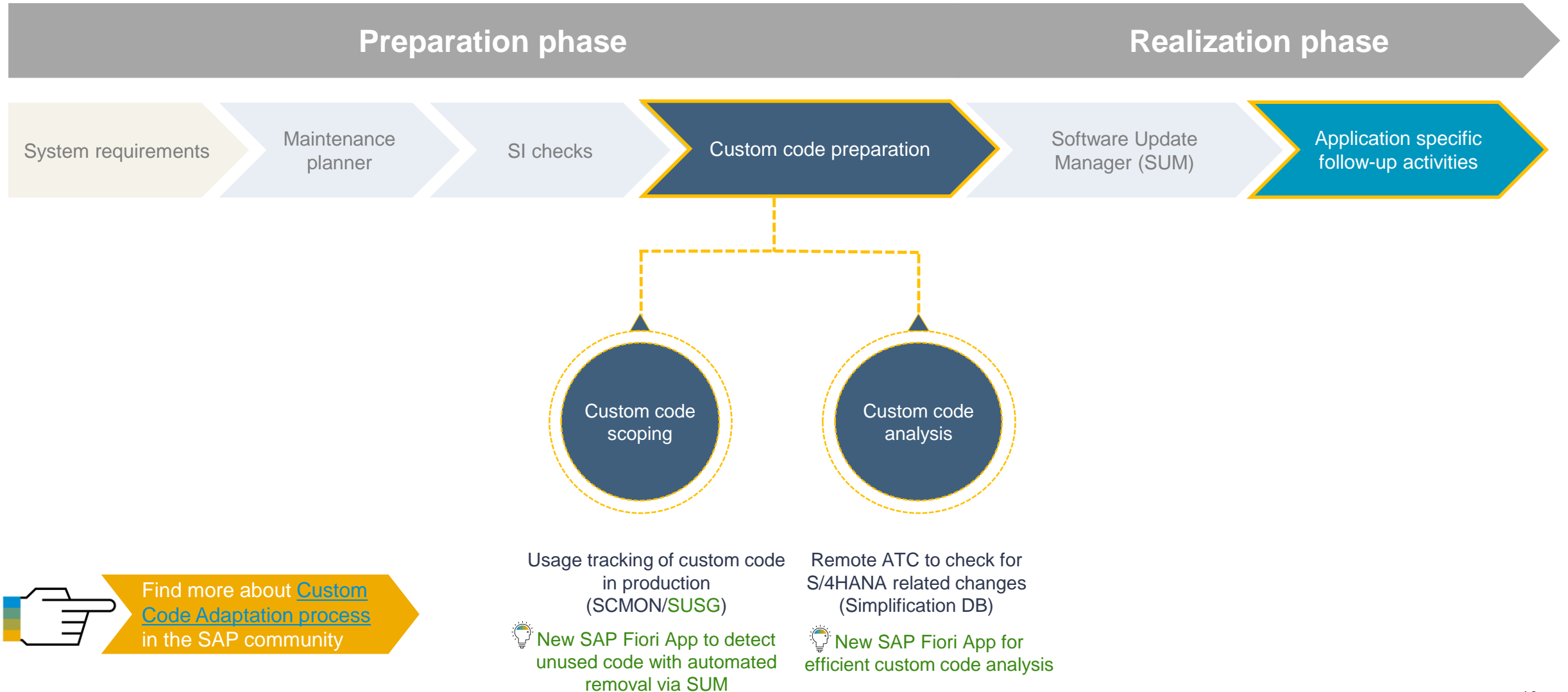


Demo

Analyze custom code usage data (SCMON/SUSG)

SAP S/4HANA system conversion

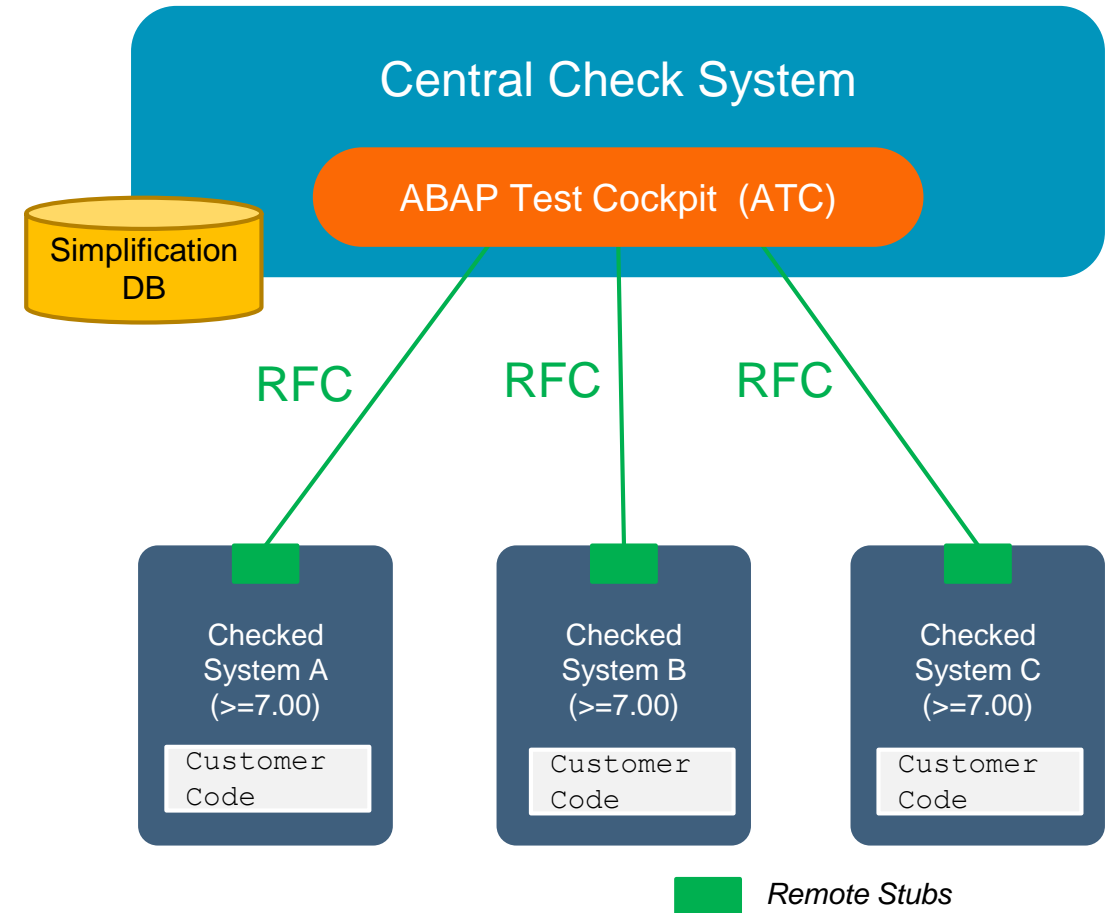
Custom code related process



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



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

SAP S/4HANA checks

| S/4HANA Readiness | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | S/4HANA: Field length extensions |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | S/4HANA: Search for database operations |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | S/4HANA: Search for usages of simplified objects |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | S/4HANA: Search for ABAP Dictionary enhancements |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | S/4HANA: Search for base tables of ABAP Dictionary views |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | S/4HANA: Search for S/4 related syntax errors |

SAP HANA checks

Database

- ☐ ROLLBACK WORK
- ☒ Native SQL
- ☒ DB Hints

Critical Statements

Search DB Operations in Pool/Cluster Tables

Search problematic statements for result of SELECT/OPEN CURSOR without ORDER BY

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

ATC Statistics View with Simplification Item information

| Statistics: SAP | Check | Description | Prio 1 | Prio 2 | Prio 3 |
|--|------------------------|-------------|--------|--------|--------|
| Total | Component ID | Total | 54 | 1 | 10 |
| <No V | Contact Person | Note Number | 11 | | 6 |
| 18048 | nce/decon | Note Number | 5 | | |
| 21986 | Referenced Object | \$ IN SD | 22 | | |
| 22069 | Referenced Object Type | ange of da | 2 | | |
| 22154 | SAP Note Number | nsion - Ge | 4 | 1 | 4 |
| 22200 | | Pricing an | 4 | | |
| 2368680: S4TWL - Article Hierarchy via transactions M | | Note Number | 4 | | |
| 2378796: Material classification: Change in data model | | Note Number | 2 | | |

| Note Number | Short Text | Component ID | ROBT | Referenced Object | Check Message | Check Title | Object Name | Obj. | Ex. |
|-------------|-----------------------------|--------------|------|-------------------|------------------|---------------------------------------|-------------|------|-----|
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUP | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUP | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: SAPMV45A | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUP | DB Operation | S/4HANA: V05A | | FUGR | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: V05A | | FUGR | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUP | DB Operation | S/4HANA: V60A | | FUGR | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: Z IMS LIST COMPL SALES ORDRS | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: Z OD LIST COMPL SALES ORDRS | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: Z S4H LIST COMPL SALES ORDRS | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | TABL | VBUK | DB Operation | S/4HANA: Z SPT LIST COMPL SALES ORDRS | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | DTBL | VBTP | Syntactically in | S/4HANA: Z IMS SHOW SALES DOCUMENT | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | DTBL | VBTP | Syntactically in | S/4HANA: Z OD SHOW SALES DOCUMENT | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | DTBL | VBTP | Syntactically in | S/4HANA: Z OD SHOW SALES DOCUMENT | | PROG | |
| 2198647 | S/4 HANA: DATA MODEL CHANGE | SD-BF-MIG | DTBL | VBTP | Syntactically in | S/4HANA: Z OD SHOW SALES DOCUMENT | | PROG | |

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

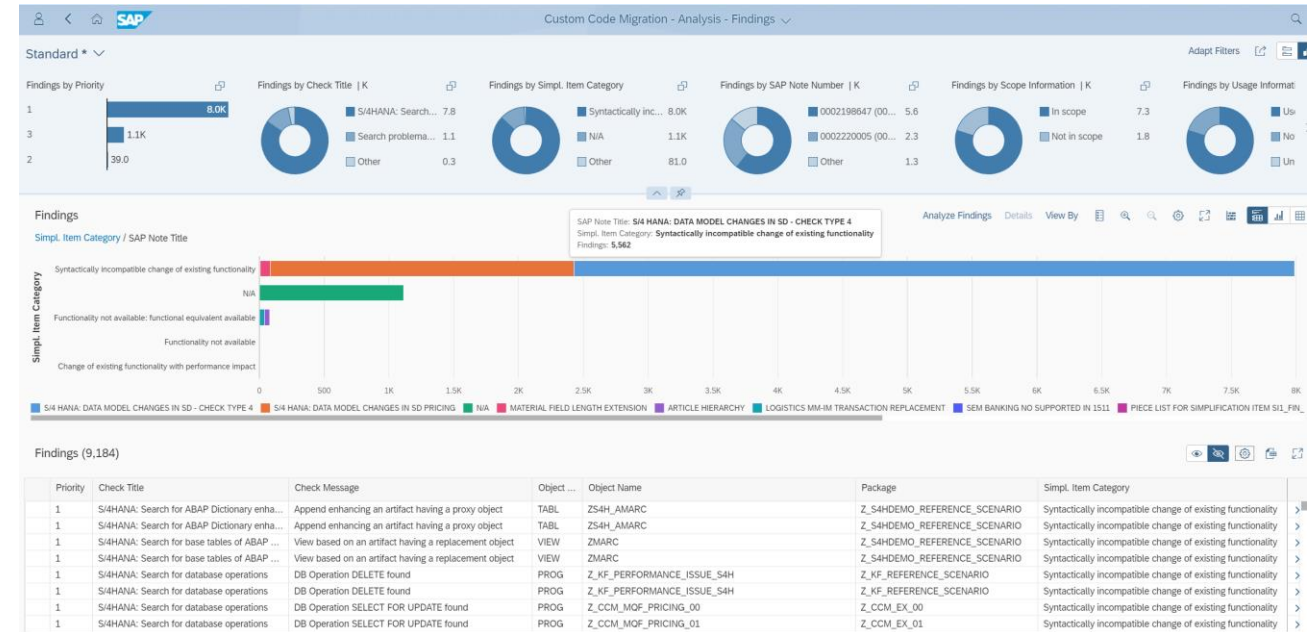
Which findings can be fixed automatically?

AGGREGATION AND FILTERING OF FINDINGS

FOCUS ON USED CUSTOM CODE




DRILL-DOWN TO ATC RESULTS

Analysis in SAP Fiori Custom Code Migration App



Find more about [SAP Fiori App Custom Code Migration](#) in the SAP community

Custom code analysis options

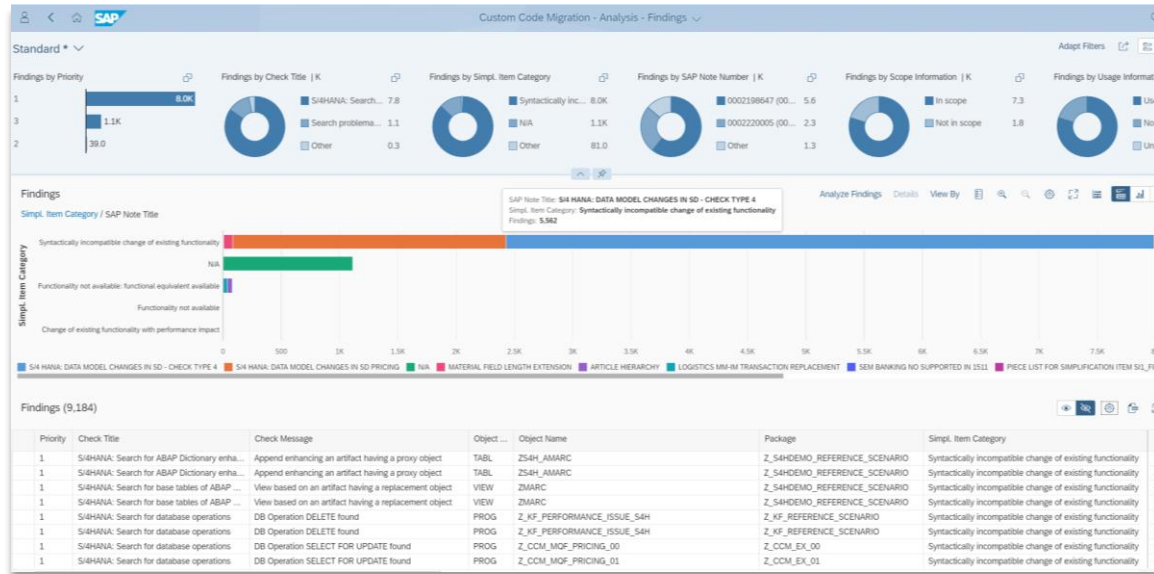
| |  Remote ATC with SAP GUI |  SAP Fiori Custom Code Migration App |  SAP Fiori Custom Code Migration App in SAP Cloud Platform |
|--|--|---|---|
| Required system | Central ATC check system (SAP_BASIS 7.52) | Central ATC check system (SAP S/4HANA 1809) | SAP Cloud Platform, ABAP Environment |
| System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

Demo

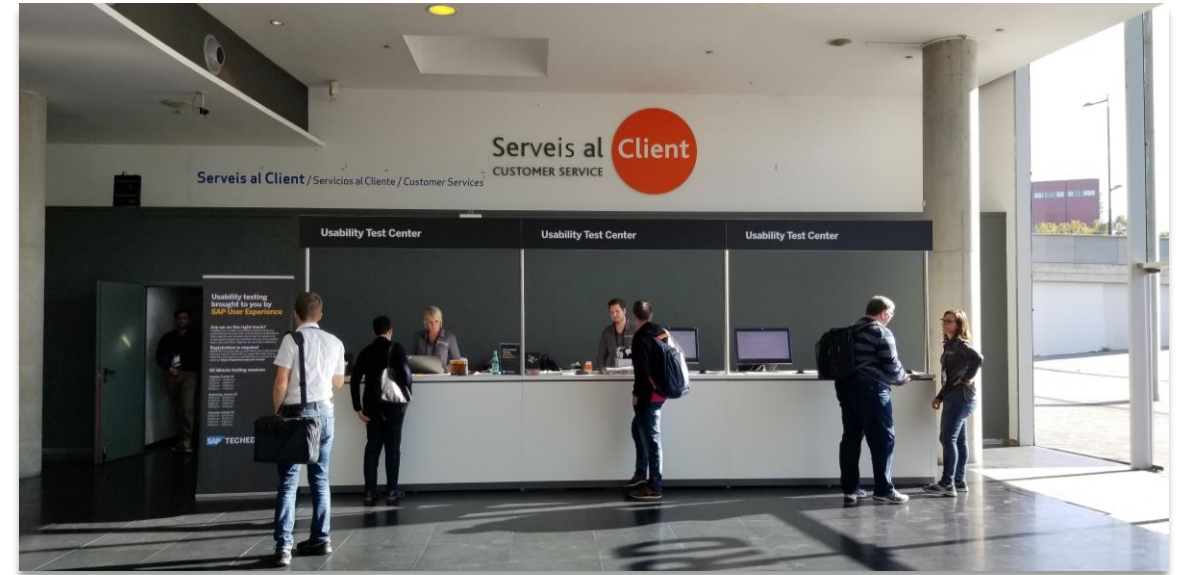
Custom code analysis with SAP Fiori App Custom Code Migration

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



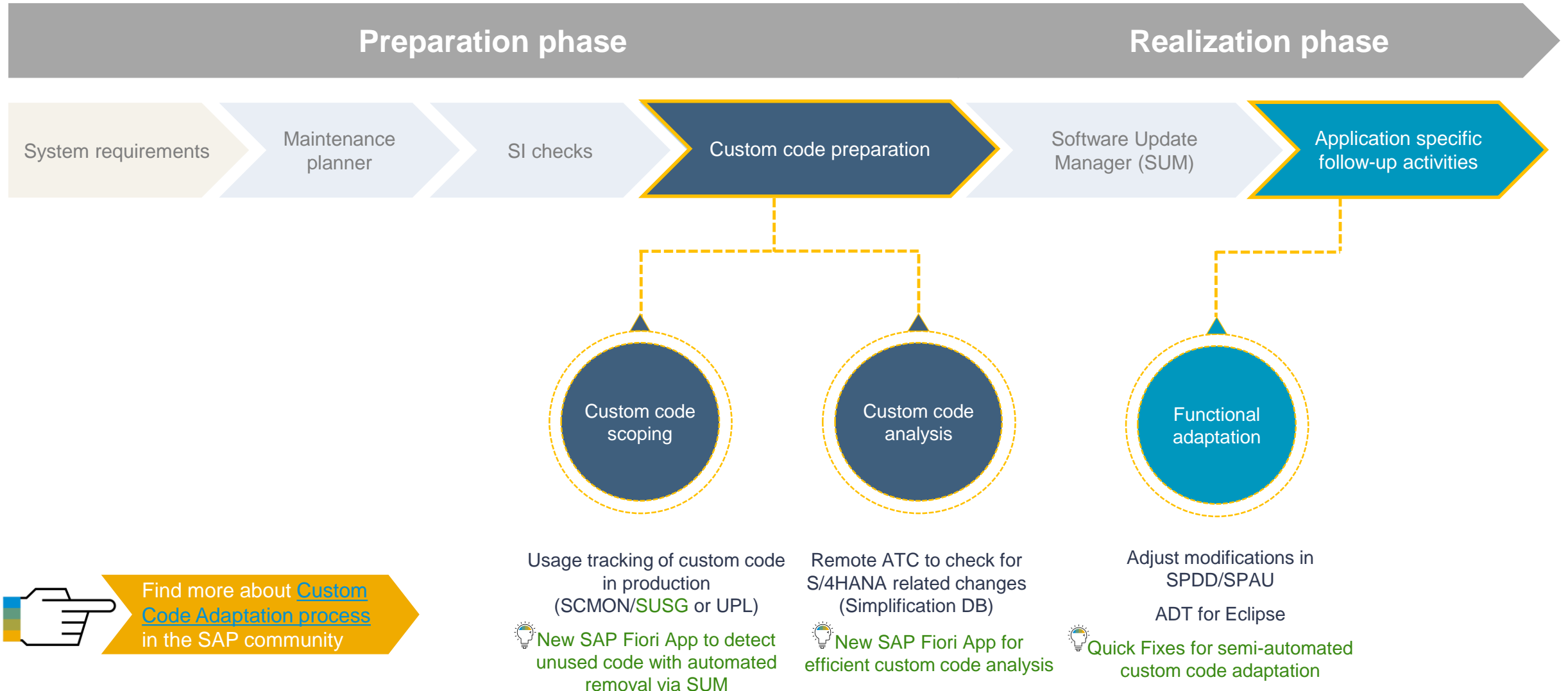
Register now for Topic 3 – Custom Code Migration app at Usability Test Center in hall 8 or register online

<https://experience.sap.com/teched>



SAP S/4HANA system conversion

Custom code related process



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*

Run ATC in ABAP Development Tools in Eclipse



ATC Problems View

The screenshot shows the 'ATC Problems' view in Eclipse ADT. The view displays a list of findings from an ATC check run. The findings are categorized by type (Errors, Warnings, Infos) and include details such as the description, object name, and the specific error or warning message.

| Description | Object Name |
|---|-------------------------------|
| Findings: 9 Errors, 1 Warnings, 1 Infos | |
| S/4HANA: Field length extensions (1 Warnings, 1 Infos) | |
| Structure-Component MATNR (DOMA MATNR, Note: 0002215424) type conflict C(40) -> C(18) | ZDEMO_LIST_MARA_RECORDS |
| Type DOMA MATNR, Note: 0002215424 -> Generic Parameter T_TABLE of Class CL_SALV_TABLE, Method FACTORY | ZDEMO_LIST_MARC_RECORDS |
| S/4HANA: Search for database operations (4 Errors) | |
| DB Operation SELECT found (KONV, see Note(s): 0002220005) | ZDEMO_ADJUST_CURRENCY_CODE |
| DB Operation SELECT found (VBUK, see Note(s): 0002198647) | ZDEMO_LIST_COMPLB_SALES_ORDRS |
| DB Operation SELECT found (VBUK, see Note(s): 0002198647) | ZDEMO_LIST_COMPL_SALES_ORDRS |
| DB Operation UPDATE found (KONV, see Note(s): 0002220005) | ZDEMO_ADJUST_CURRENCY_CODE |
| S/4HANA: Search for usages of simplified objects (3 Errors) | |
| Functionality not available: functional equivalent available (TRAN MATGRP03, see Note(s): 0002368680) | ZDEMO_DASHB_SAP_TRANSACTIONS |
| Functionality not available: functional equivalent available (TRAN MB11, see Note(s): 0001804812) | ZDEMO_DASHB_SAP_TRANSACTIONS |
| Syntactically incompatible change of existing functionality (DTEL VBTP, see Note(s): 0002198647) | ZDEMO_SHOW_SALES_DOCUMENT |
| Search problematic statements for result of SELECT/OPEN CURSOR without ORDER BY (1 Errors) | |
| READ .. BINARY SEARCH for result of statement at Include ZDEMO_LIST_COMPL_SALES_ORDRS line 12 | ZDEMO_LIST_COMPL_SALES_ORDRS |
| Test Existence of a Program (1 Errors) | |
| Syntax error in program ZDEMO_SALES_DOCUMENT_COUNTER. | ZDEMO_SALES_DOCUMENT_COUNTER |

Semi-automatic custom code adaptation in ADT via Quick Fixes

QUICK FIXES to minimize adaptation efforts

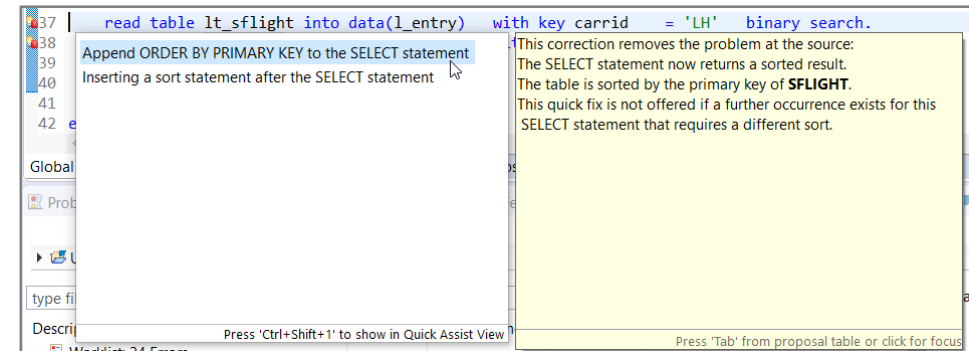
- Order By
- MATNR and Amount Field Length Extension
- Data Model Changes, e.g.
 - KONV
 - VBUK/VBUP
 - BSEG

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

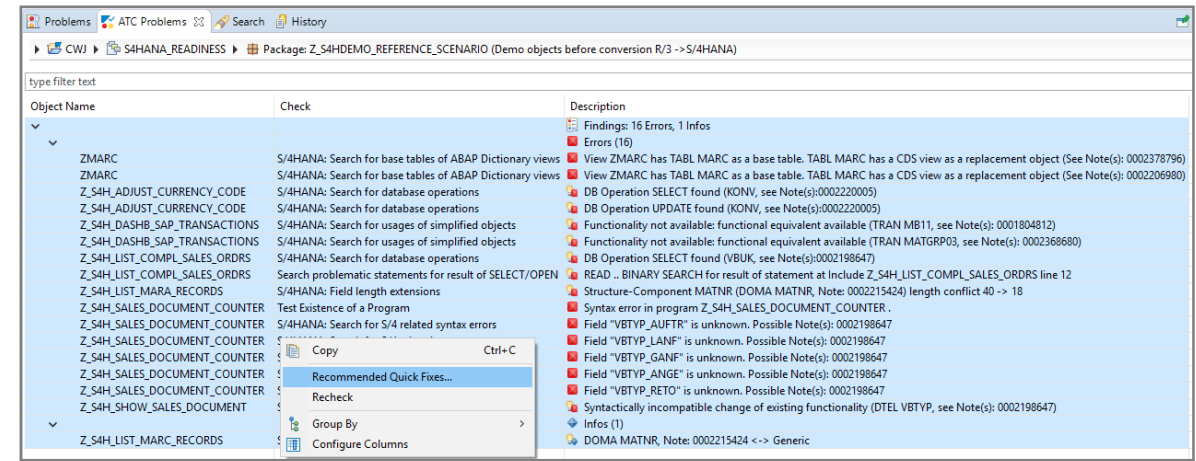


Find more about [Semi-automatic custom code adaptation](#) in the SAP community

Quick Fixes in the Source Code Editor



Mass-enabled Quick Fixes in the ATC Problems View

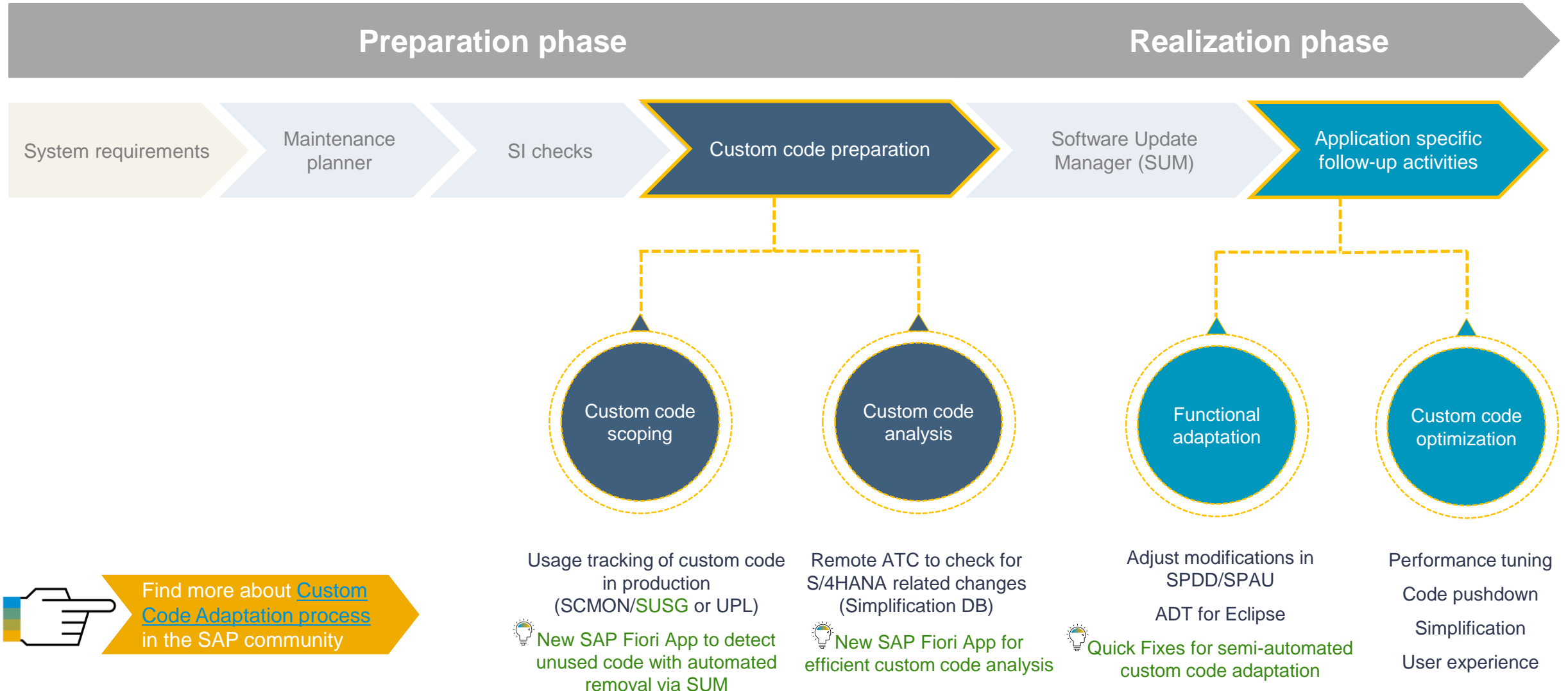


Demo

Custom code adaptation with Quick Fixes in ADT

SAP S/4HANA system conversion

Custom code related process



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%**)

| Request Entry Point | DB statements | DB Max T | DB Min T | DB Dvtn T | Max Rcrds |
|----------------------|---------------|------------|----------|-----------|-----------|
| /IWBEP/SB | 6.968 | 3.541.8... | 1,000 | 303,972 | 100.000 |
| /IWFND/MAINT_SERVICE | 3.114 | 63.841,... | 0,000 | 44,516 | 38.344 |
| BOBX | 3.348 | 328.106... | 0,003 | 212,253 | 15.441 |
| BP | 10.143 | 1.801.4... | 0,000 | 1.359,184 | 86.749 |
| LTMOM | 2.521 | 38.252,... | 0,412 | 25,140 | 274.006 |
| MM01 | 6.082 | 1.800.0... | 0,002 | 1.060,292 | 409.950 |
| MWB | 6.027 | 366.905... | 0,000 | 118,044 | 274.127 |
| OS_APPLICATION | 7.674 | 103.838... | 0,000 | 108,758 | 89.057 |
| SACC2 | 982 | 24.122,... | 0,218 | 26,210 | 380.232 |
| SCWB | 7.389 | 1.349.7... | 0,000 | 597,504 | 117.354 |
| SE01 | 5.168 | 372.356... | 0,003 | 309,018 | 497.853 |
| SE09 | 6.903 | 3.636.7... | 0,000 | 833,215 | 360.629 |
| SE11 | 20.752 | 3.616.9... | 0,000 | 814,769 | 4.709.072 |
| SE18 | 7.803 | 982.535... | 0,005 | 412,379 | 42.695 |
| SE19 | 5.689 | 256.192... | 0,009 | 185,794 | 50.344 |
| SE24 | 15.820 | 3.623.5... | 0,000 | 819,320 | 199.983 |
| SE37 | 12.194 | 362.198... | 0,002 | 227,158 | 71.882 |
| SE38 | 15.332 | 1.875.3... | 0,000 | 767,321 | 1.114.076 |
| SE54 | 10.000 | 56.620,... | 0,002 | 53,512 | 97.509 |
| SESSION_MANAGER | 2.155 | 3.644.6... | 0,000 | 2.367,225 | 42.399 |
| SEU_INT | 34.526 | 3.627.8... | 0,000 | 703,336 | 9.867.019 |
| SFW5 | 833 | 7.674,482 | 0,178 | 9,091 | 3.177 |
| SM30 | 21.616 | 387.754... | 0,000 | 212,450 | 1.977.959 |
| SM34 | 16.872 | 89.307,... | 0,000 | 64,274 | 97.500 |
| SPRO | 29.208 | 377.131... | 0,002 | 184,303 | 558.727 |
| SU22 | 3.042 | 443.424... | 0,003 | 154,133 | 122.463 |



Find more about [SQL Monitor Guide and Best Practices](#) in the SAP community

SQL Monitor - Example

BUSINESS PROCESS LIST RANKED BY TOTAL DB TIME

| Total DB Time | Total Time | DB T... | Tot. DB E | Total Records | DB Mn T | Sessi... | Request Type | Request Entry Point | DB stmn... | DB Max T | DB Min T | DB Dvtn... | Max Rcrds | Min Rcrds | Mean R... | Dvtn Rc... |
|------------------|------------------|---------|-------------|----------------|---------|----------|----------------|------------------------|------------|------------|----------|------------|-----------|-----------|------------|------------|
| 880.399.164,4... | 1.507.934.919... | 58,38 | 148.713.640 | 1.018.292.1... | 5,920 | 527 | Batch Job | ZSQLM_TEST | 149 | 9.870,1... | 0,089 | 20,433 | 100.000 | 0 | 6,847 | 751,439 |
| 454.645.987,6... | 530.479.364,2... | 85,70 | 74.191.995 | 495.636.853 | 6,128 | 6.287 | Remote Func... | ZSQLM_CALLBACK RFC | 36 | 15.081,... | 0,229 | 53,717 | 100.000 | 0 | 6,680 | 750,966 |
| 441.514.573,5... | 447.770.339,2... | 98,60 | 74.626.760 | 369.032.400 | 5,916 | 520 | Batch Job | ZSQLM_TEST3 | 6 | 11.323,... | 0,376 | 16,223 | 100.000 | 0 | 4,945 | 651,831 |
| 144.984.946,4... | 156.231.746,6... | 92,80 | 236.797.836 | 2.840.340.7... | 0,612 | 3.156 | Batch Job | ZSQLM_TEST11 | 3 | 214.15... | 0,300 | 13,951 | 75.000 | 0 | 11,995 | 908,016 |
| 14.423.850,765 | 14.484.963,817 | 99,58 | 69.432 | 473.415.780 | 207,741 | 3.156 | Batch Job | ZSQLM_TEST11 OPT | 3 | 12.440,... | 0,292 | 1.023,9... | 75.000 | 0 | 6.818,4... | 21.561,... |
| 3.492.813,580 | 58.553.884,853 | 5,97 | 22.360 | 119.797.600 | 156,208 | 520 | Batch Job | ZSQLM_TEST3 OPT | 5 | 9.865,5... | 10,521 | 729,088 | 100.000 | 0 | 5.357,6... | 20.941,... |
| 1.997.205,874 | 2.032.910,598 | 98,24 | 430.539 | 2.129.610 | 4,639 | 3 | Submit Report | ZSQLM_TEST3 | 6 | 3.613,6... | 0,393 | 8,855 | 100.000 | 0 | 4,946 | 651,934 |
| 1.785.592,073 | 3.065.212,992 | 58,25 | 287.938 | 1.955.274 | 6,201 | 284 | Unknown | INITIAL ROOTID | 225 | 7.015,5... | 0,144 | 22,117 | 100.000 | 0 | 6,791 | 751,869 |
| 1.137.344,454 | 1.165.832,179 | 97,56 | 618.893 | 6.993.684 | 1,838 | 9 | Submit Report | ZSQLM_TEST11 | 3 | 547.32... | 0,340 | 748,489 | 75.000 | 0 | 11,300 | 889,157 |
| 715.917,334 | 899.285,486 | 79,61 | 262.216 | 969.077 | 2,730 | 22 | Transaction | BC_TOOLS_USER | 392 | 1.358,1... | 0,050 | 15,274 | 6.948 | 0 | 3,696 | 121,438 |
| 601.603,538 | 1.231.812,011 | 48,84 | 601.094 | 355.779 | 1,001 | 42.7... | Batch Job | SAPMSSY2 | 94 | 4.638,6... | 0,174 | 7,507 | 38 | 0 | 0,592 | 0,563 |
| 590.491,030 | 602.329,819 | 98,03 | 139.673 | 730.590 | 4,228 | 2 | Transaction | ZTRIGGER_TEST | 43 | 1.141,8... | 0,306 | 5,786 | 100.000 | 0 | 5,231 | 660,846 |
| 348.633,241 | 1.373.833,686 | 25,38 | 345.576 | 2.135.053 | 1,009 | 10.5... | Remote Func... | SADT_REST RFC ENDPOINT | 1.666 | 998,170 | 0,006 | 5,540 | 130.295 | 0 | 6,178 | 225,599 |
| 341.178,962 | 29.718.391,239 | 1,15 | 353.678 | 4.797.625 | 0,965 | 4.844 | Submit Report | SAPMSSY8 | 184 | 1.061,1... | 0,178 | 3,408 | 3.926 | 0 | 13,565 | 58,993 |
| 340.130,032 | 695.698,023 | 48,89 | 30.326 | 12.289.442 | 11,216 | 404 | Batch Job | RSQLM_UPDATE_DATA | 64 | 574,488 | 0,175 | 20,865 | 15.213 | 0 | 405,244 | 1.124,2... |

DRILL DOWN



SQL PROFILE OF REPORT ZSQLM_TEST3 RUNNING AS BATCH JOB (6 SQL STATEMENTS)

| Total DB Time | DBTime[%] | DB Tm/TT | DB Exctns | DB Exct[%] | Total Records | Records[%] | DB Mn T | Table Names | SQL Operation Type | Obj. | Object Name | Include Name | Include Li | ABAP Source Code Fragment |
|-----------------|-----------|----------|------------|------------|---------------|------------|-----------|------------------|--------------------|------|-------------|--------------|------------|--|
| 438.268.499,380 | 99,26 | 97,88 | 74.620.000 | 99,99 | 5.137.600 | 1,39 | 5,873 | ZSQLM_TEST_ORDER | SELECT (Open SQL) | PROG | ZSQLM_TEST3 | ZSQLM_TEST3 | 59 | SELECT SINGLE * FROM ZSQLM_TEST_ORDER INTO WA WHERE ORDER_ID = DETAILS |
| 2.668.066,669 | 0,60 | 0,60 | 520 | 0,00 | 52.000.000 | 14,09 | 5.130,897 | ZSQLM_TEST_ORDER | INSERT (Open SQL) | PROG | ZSQLM_TEST3 | ZSQLM_TEST3 | 101 | INSERT ZSQLM_TEST_ORDER FROM TABLE ITAB. |
| 402.158,996 | 0,09 | 0,09 | 2.600 | 0,00 | 233.997.400 | 63,41 | 154,677 | ZSQLM_TEST_ORDER | SELECT (Open SQL) | PROG | ZSQLM_TEST3 | ZSQLM_TEST3 | 33 | SELECT * FROM ZSQLM_TEST_ORDER INTO TABLE ITAB WHERE ORDER_ID < 90000. |
| 76.519,161 | 0,02 | 0,02 | 520 | 0,00 | 51.900.000 | 14,06 | 147,152 | ZSQLM_TEST_ORDER | DELETE (Open SQL) | PROG | ZSQLM_TEST3 | ZSQLM_TEST3 | 93 | DELETE FROM ZSQLM_TEST_ORDER. |
| 72.053,510 | 0,02 | 0,02 | 2.600 | 0,00 | 25.997.400 | 7,04 | 27,713 | ZSQLM_TEST_ORDER | SELECT (Open SQL) | PROG | ZSQLM_TEST3 | ZSQLM_TEST3 | 36 | SELECT * FROM ZSQLM_TEST_ORDER APPENDING TABLE ITAB WHERE ITEM_NAME LI |
| 27.275,880 | 0,01 | 0,01 | 520 | 0,00 | 0 | 0,00 | 52,454 | <NO_TABLE> | Commit | PROG | ZSQLM_TEST3 | ZSQLM_TEST3 | 102 | COMMIT WORK. |

CODE

```
method get_details.
  data details type t_order_details.
  data wa_type zsqlm_test_order.
  Simple Nested Reading DB OP (SELECT) found: Search DB Operations in loops across modularization units
  loop at important_order_details into details.
    select single * 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 sy-subrc = 0.
```

NAVIGATE

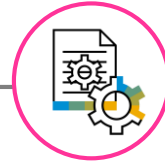
Summary and Outlook



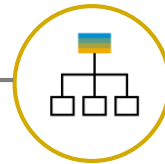
Key takeaways



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



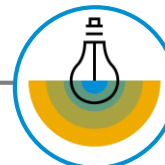
Remote ATC is the technical infrastructure for all static checks on your ABAP custom code



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>



Custom code adaptation for SAP S/4HANA

Find out how to adapt your custom code for SAP S/4HANA and which tools to use.

[Read the blog](#)

[Read the FAQ](#)

[Remote Code Analysis with ATC](#)

[SAP Fiori App Custom Code Migration](#)

[Recommendations for customers](#)

[Experiences from customers](#)



Custom code analysis using SAP Cloud Platform

Learn how to analyze your custom code for SAP S/4HANA and for Cloud using SAP Cloud Platform ABAP environment

[ABAP custom code analysis using SAP Cloud Platform](#)

[ABAP custom code analysis for SAP S/4HANA](#)

[ABAP custom code analysis for Cloud](#)

[Semi-automatic ABAP custom code adaptation for Cloud](#)



Usage analysis for your custom code

Learn how to collect and aggregate usage data for your custom code. Collected usage data is the basis for transition of your custom code to SAP S/4HANA.

[Collect usage data with ABAP Call Monitor \(SCMON\)](#)

[Aggregate usage data with SUSG](#)

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More information



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- CAA3 – Move to SAP S/4HANA
 - CAA9 – Take your ABAP skills to SAP HANA and the Cloud
 - CAA4 – Get to SAP S/4HANA Cloud
-

Related SAP TechEd sessions

- CAA364 – Custom Code Adaptation for SAP S/4HANA
 - CAA260 – Move Your ABAP Code to the Cloud
 - CAA114 – Paths for Transitioning to SAP S/4HANA
 - CAA101 – Overview SAP Cloud Platform, ABAP Environment
 - CAA103 – Get the Big Picture of the ABAP RESTful Programming Model
-

Public SAP Web sites

- SAP Community: <https://www.sap.com/community/topics/abap-testing-analysis.html>
- SAP Community: <https://www.sap.com/community/topics/abap.html>
- SAP S/4HANA Movement: <https://www.sap.com/products/s4hana-movement.html>



Thanks for attending **this session.**



Feedback

Please complete your session evaluation for **CAA203**.

Contact for further topic inquiries

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