TEC106

SAP NetWeaver AS ABAP for SAP HANA
The Future of the ABAP Platform

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Agenda

ABAP Platform and SAP HANA

- Business value (“viability”) and target groups (“desirability”)
- The bigger context: SAP NetWeaver planned innovations (“feasibility”)

Optimizing ABAP for SAP HANA: “A step-by-step guide”

- Detect, optimize and exploit
- Guidelines and best practices

ABAP Development Tools for SAP NetWeaver

ABAP Platform capabilities

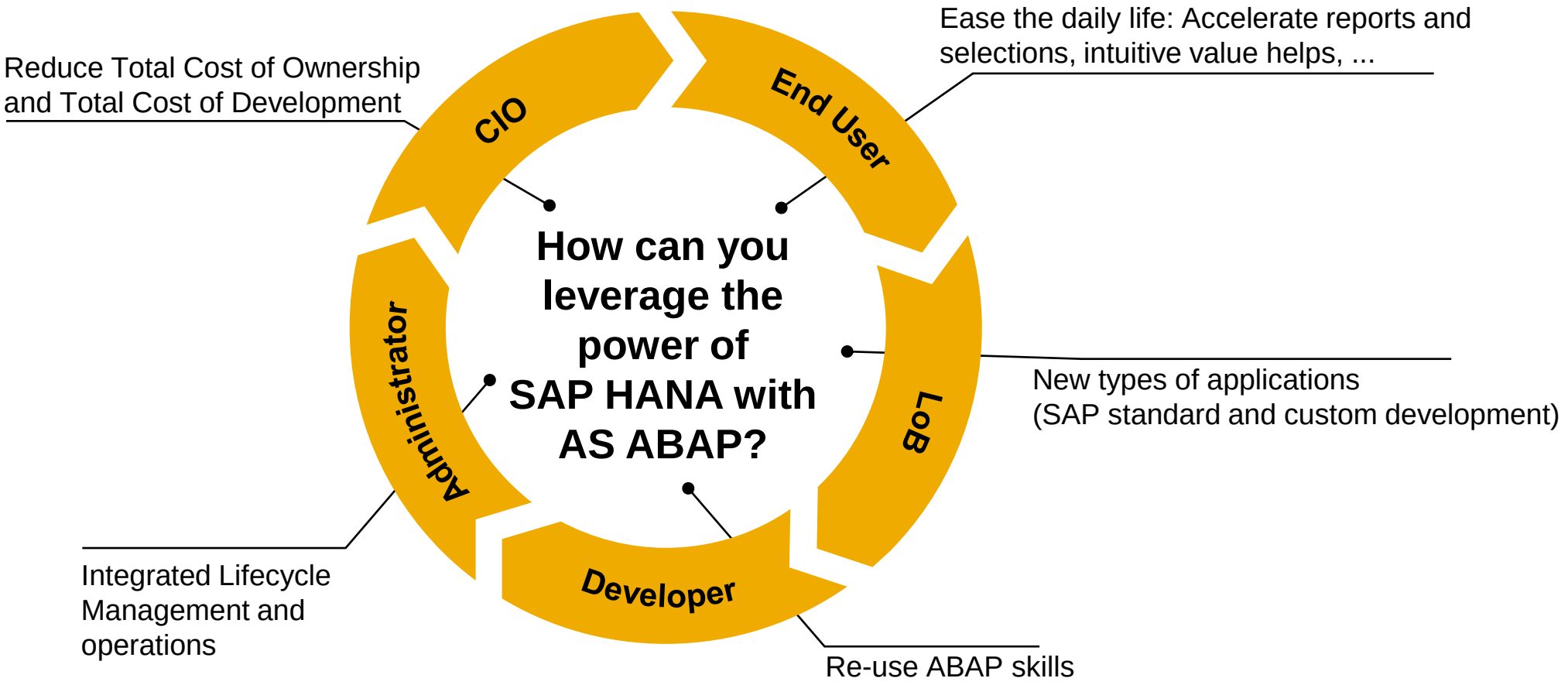
“Behind the scenes”: How do we develop?

ABAP Platform roadmap

How can you engage?

ABAP Platform and SAP HANA

Business values and target groups



The bigger context - SAP NetWeaver planned innovations

SAP NetWeaver – Main constituents

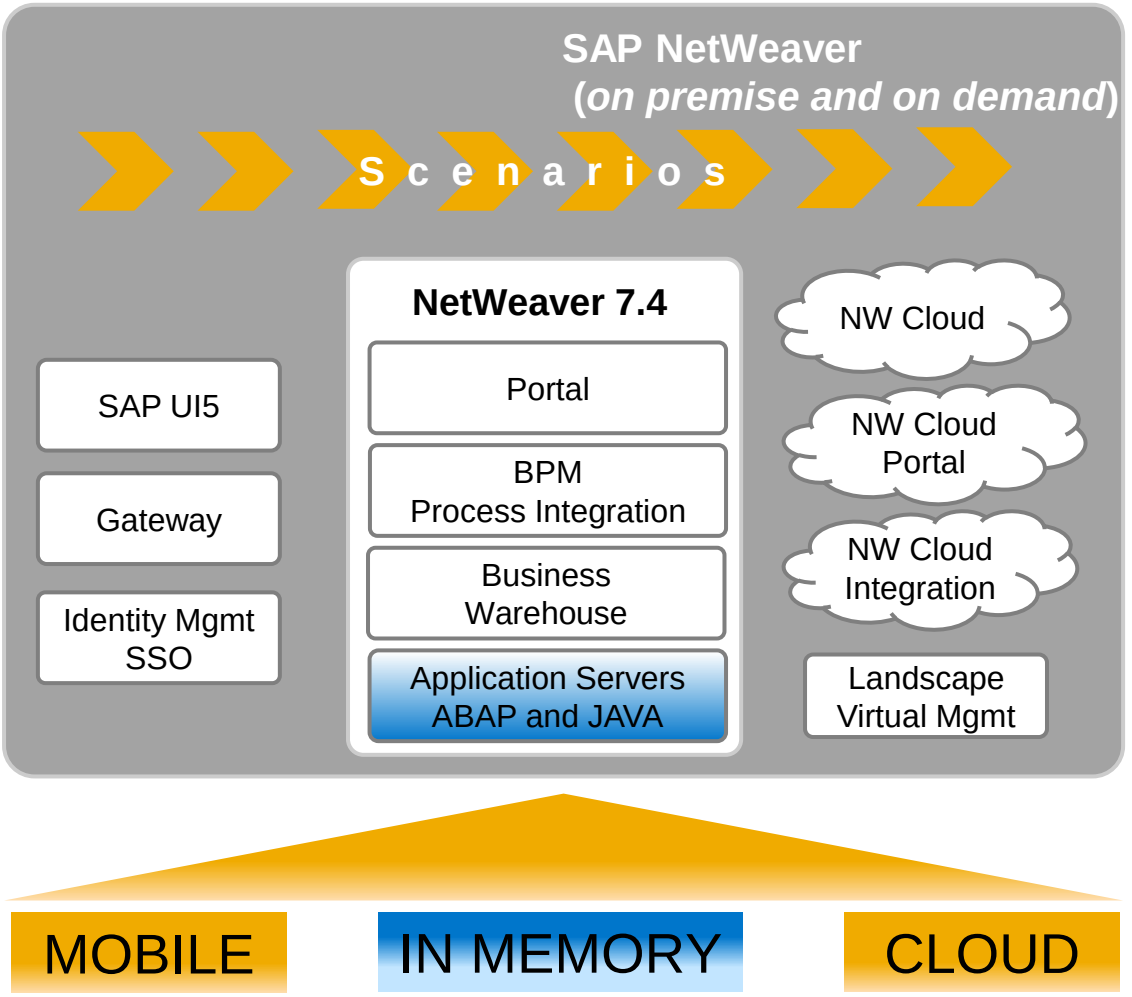
- Coherent technology platform for on-premise and on-demand solutions
- Contains SAP NetWeaver 7.4

Scenarios

- Support and leverage HANA
- Bridge between on premise and on demand offerings
- End to end product and user experience

Platform capabilities

- Business Continuity
- Cloud provisioning
- One login



Value Proposition

Why bring your SAP system to SAP HANA?

Accelerate – Innovate – Simplify

SAP NetWeaver BW

- Boosted Performance
- Lower TCO: replace BWA and traditional DB by SAP HANA
- Simplified modeling

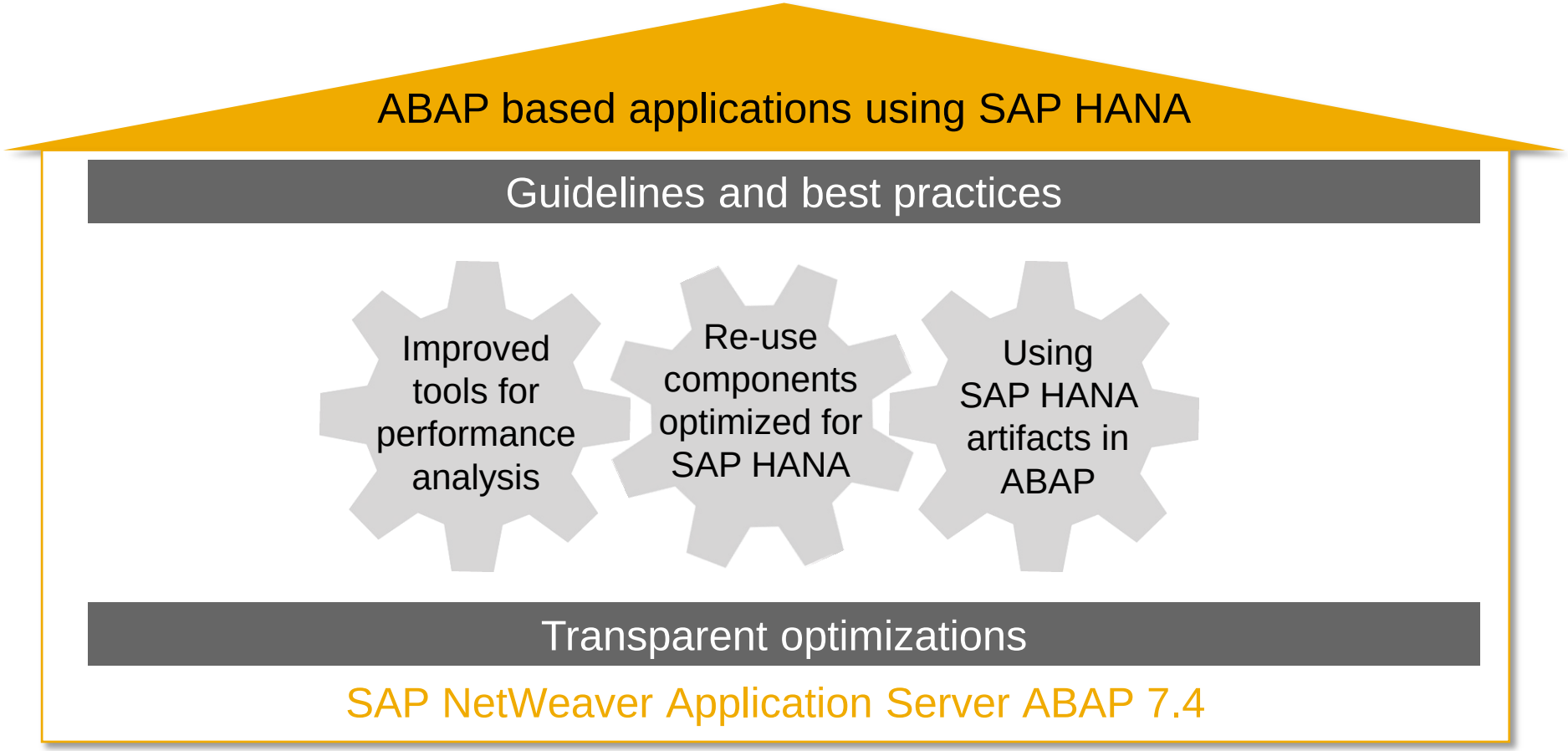
ABAP Custom Development

- Speed up existing customer programs
- Develop new applications that leverage SAP HANA optimally

SAP NetWeaver 7.4 Hubs

- Extended Product Availability Matrix
- Support system-wide SAP HANA deployments

SAP NetWeaver AS ABAP 7.4 optimized for SAP HANA

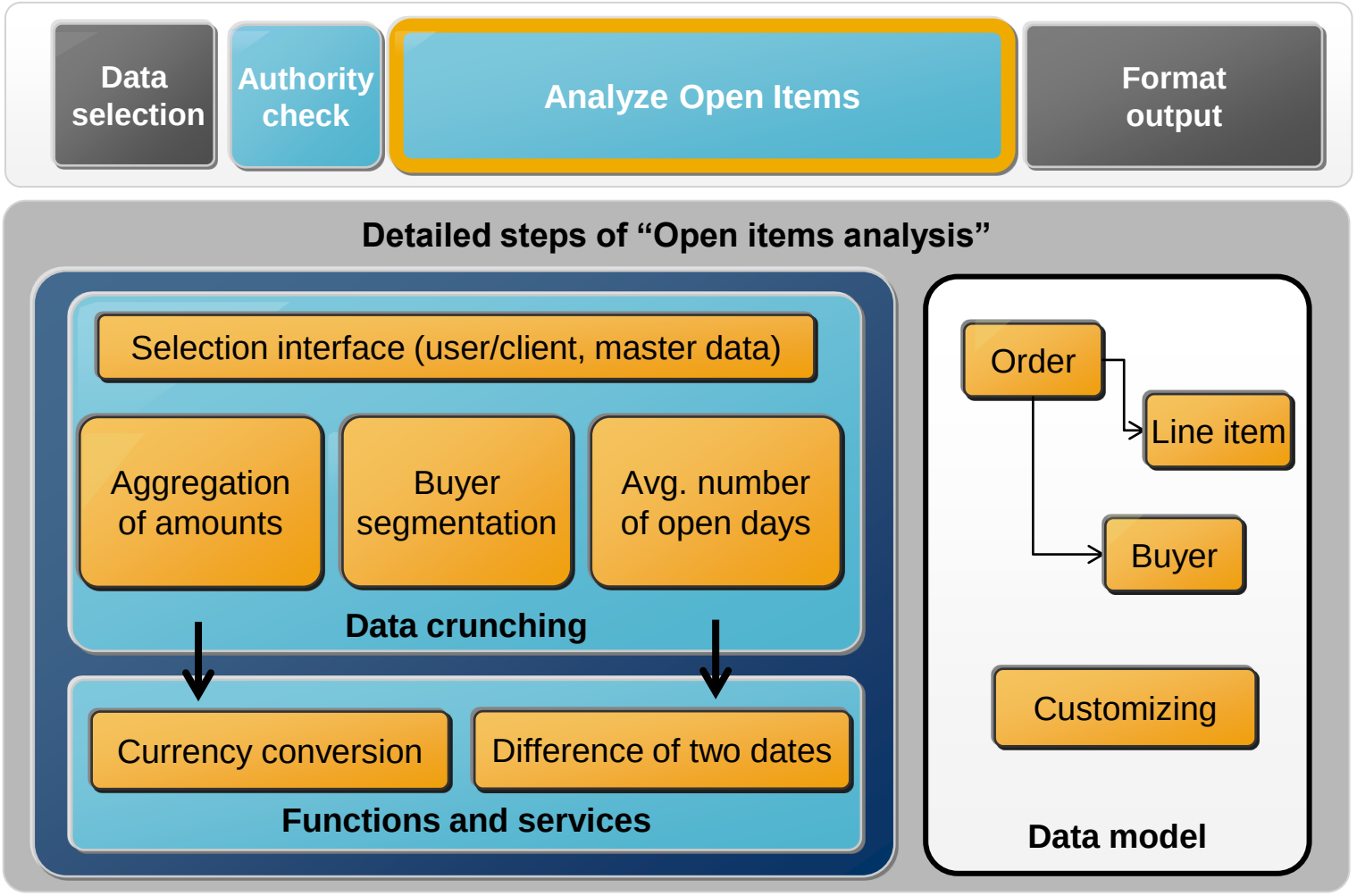


Optimizing ABAP for SAP HANA: “A step-by-step guide”

Based on a concrete example scenario (simplified “*Open Items Analysis*”)

Consider the following questions

- How can I ***detect*** optimization potential on SAP HANA?
- How can I ***optimize*** my existing code with minimal investments?
- How can I fully ***exploit*** the power of SAP HANA?
- What are ***guidelines*** and ***best practices***, and how do they differ from existing recommendations?



Step 1: Detect the optimizing potential of SAP HANA

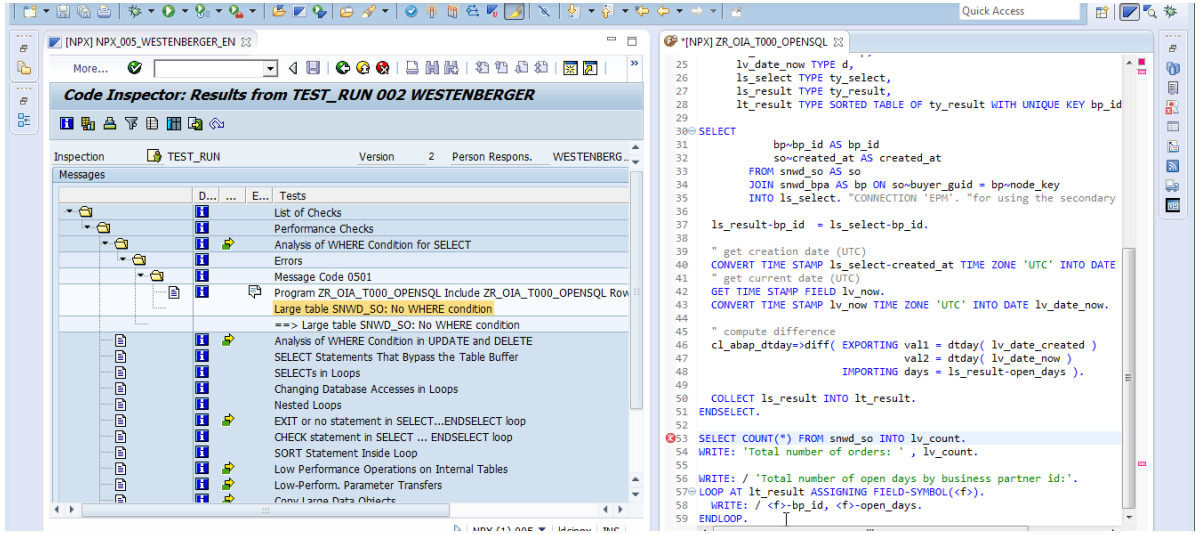
Performance tools in AS ABAP

Tools for runtime analysis

- New ABAP profiler in Eclipse based on SAT* (enriched with graphical representations)
- Proven SQL Trace, STAD, DBA Cockpit

Static code checks and guidelines

- Detect certain anti-patterns in DB access (reported with priority based on table size, etc.)
- Integrated improvement proposals and guidelines



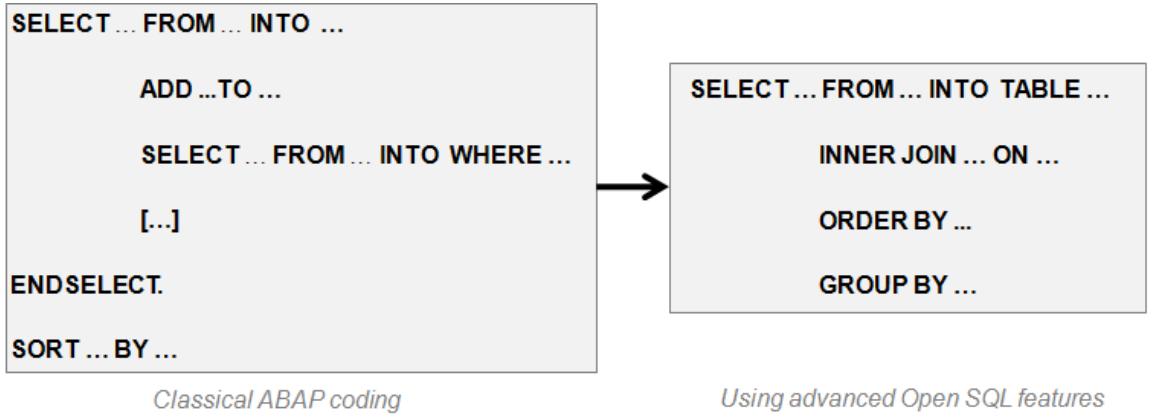
* SAT = Single Activity Trace (Runtime Analysis tool)

Step 2: Optimize existing ABAP code for SAP HANA

Two concrete examples

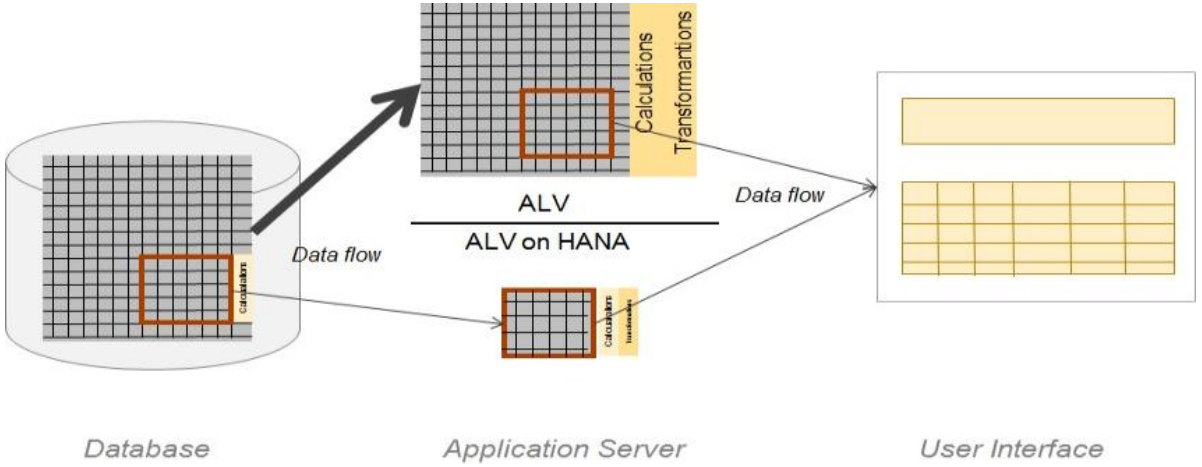
Use the power of Open SQL

- Use sorting, aggregations, joins, sub-selects, etc.
- Reduce database roundtrips and transferring too much data to the application server
- Allows implicitly to benefit from parallelization on SAP HANA



Leverage „ALV“ optimized for SAP HANA

- Option to describe data declaratively instead of passing large internal tables
- Optimized HANA database access based on user interface needs
- Usable in SAP GUI and Web Dynpro / Floorplan Manager



Step 3: Exploit the power of SAP HANA

Code-2-Data (aka „*code pushdown*“)

Classical ABAP implementation

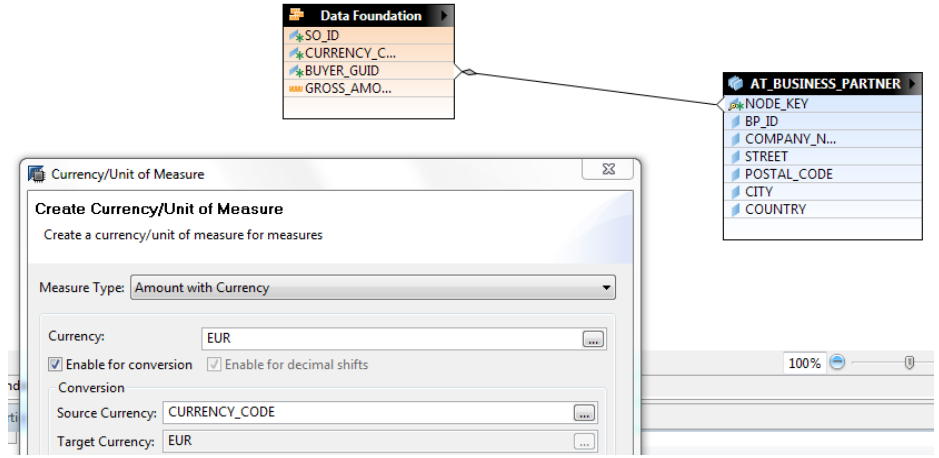
- Select data from database into application server
- Calculations and conversions done in ABAP (usually via CALL FUNCTION within a loop)

```
SELECT * FROM snwd_so INTO TABLE orders.

LOOP AT orders ASSIGNING <order>.
  CALL FUNCTION 'CONVERT_TO_LOCAL_CURRENCY'
    EXPORTING
      date             = sy-datum
      foreign_amount   = <order>-gross_amount
      foreign_currency = <order>-currency_code
      local_currency   = 'EUR'
    IMPORTING
      local_amount     = amount.

  READ TABLE result WITH KEY buyer_id = <order>-buyer_guid ASSIGNING <line>.
  IF ( sy-subrc <> 0 ).
    APPEND INITIAL LINE TO result ASSIGNING <line>.
    <line>-buyer_id = <order>-buyer_guid. <line>-gross_amount = amount.
  ENDIF.

  ADD amount TO <line>-gross_amount.
ENDLOOP.

SORT result BY gross_amount.
```

Optimized for SAP HANA

- Create views/procedures in HANA using built-in capabilities for calculations and conversions
- Only minimal result set transferred to ABAP

```
SELECT company_name SUM( converted_gross_amount ) AS gross_amount INTO TABLE result
  FROM av_sales_view GROUP BY company_name.
```



Optimizing ABAP for SAP HANA

Guidelines and best practices

1 **Most general guidelines remain valid …**

E.g.: reduce transfered data (rows/colums), usage of array selects, table buffer, etc.

2 **… but some get a different priority**

E.g.: access to non-indexed columns (not as bad), nested SELECT statements within loops (worse)

3 **There are new optimization patterns and entirely new possibilities …**

E.g.: Embedded authority checks in SELECT statements, avoidance of manifested aggregates, using HANA views/procedures/text search

4 **… which require ABAP developers to rethink some design patterns of the past**

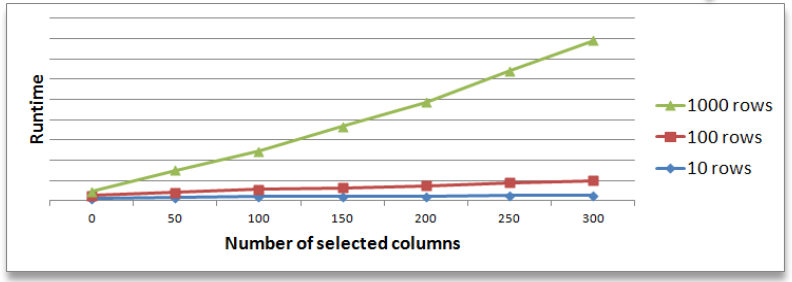
New paradigm: „Code to Data“ (instead of „Data to Code“)

Some concrete best practices for optimization

Qualitative only

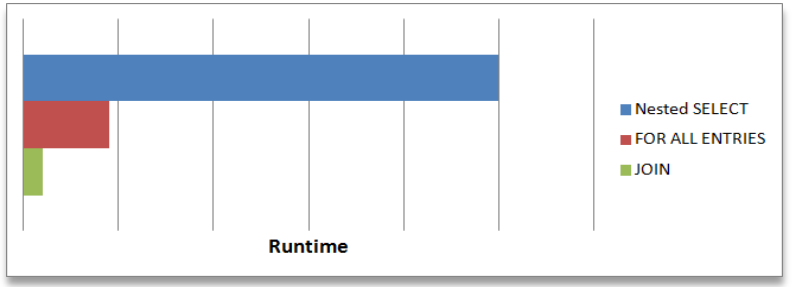
Field list optimization
SELECT … FROM … WHERE …
UP TO n ROWS

The more rows are selected, the more important becomes the optimization for field lists. Large factors (>20) are possible for 1000+ rows.



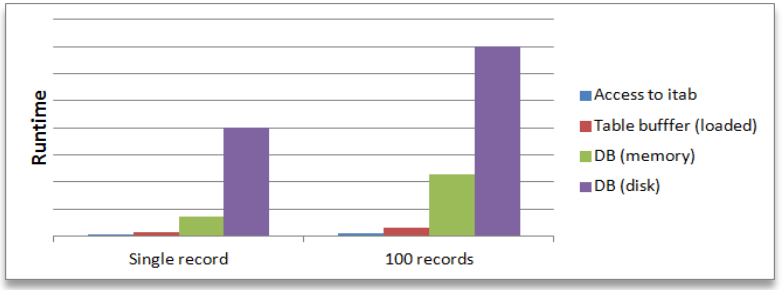
Usage of joins instead of nested SELECT statements
(or FOR ALL ENTRIES)

Proper usage of JOINs becomes more important on HANA due to column storage. General rule: runtime for JOIN << FOR ALL ENTRIES << Nested SELECT



Usage of ABAP table buffer
according to existing guidelines

Basic rules still apply in general
Access times in ABAP coding:
Internal table << table buffer <<
DB cache / HANA << standard DB disk



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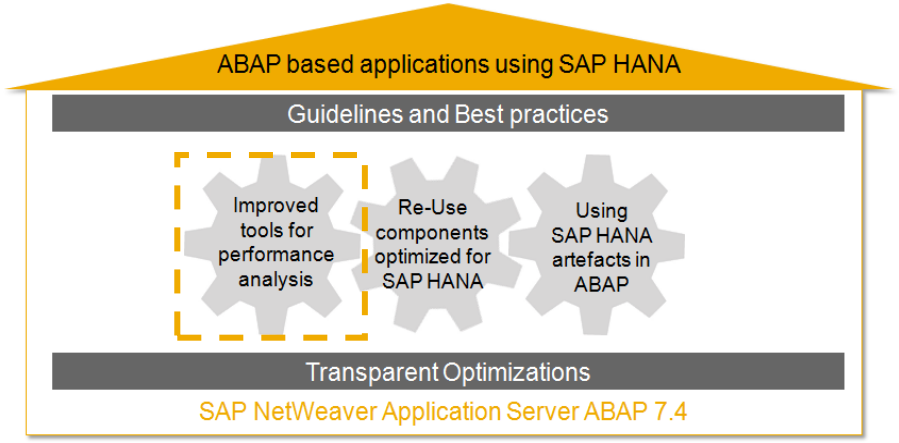
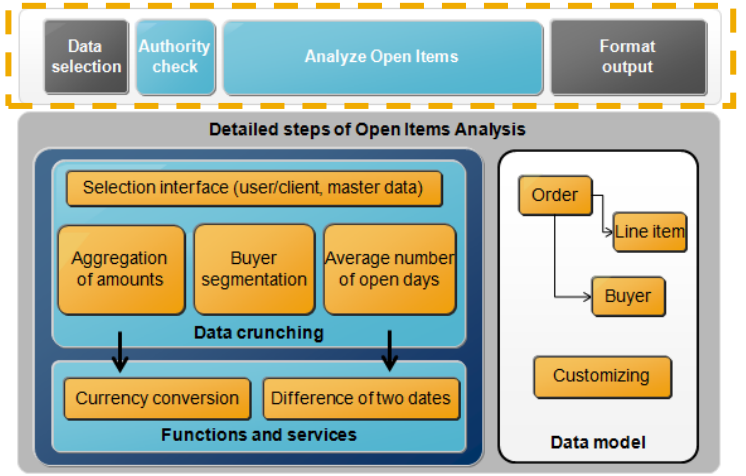
More best pratices and guidelines can be found at: http://scn.sap.com/community/abap

Optimizing ABAP for SAP HANA: “A step-by-step guide”

Summary (1)

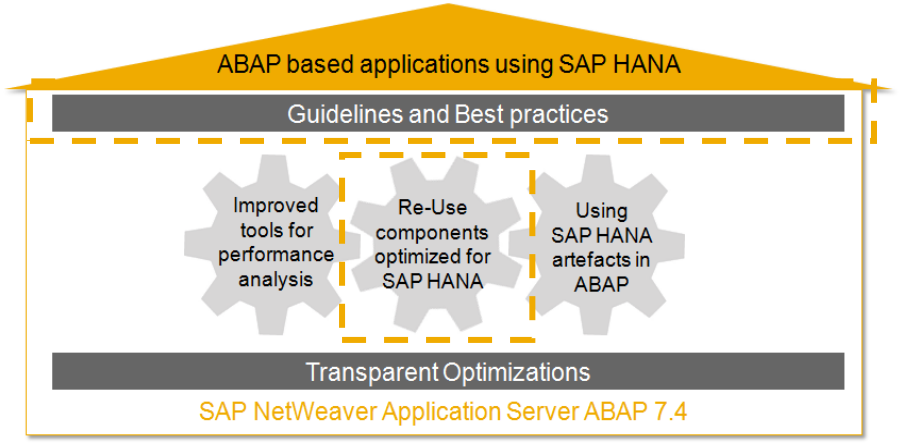


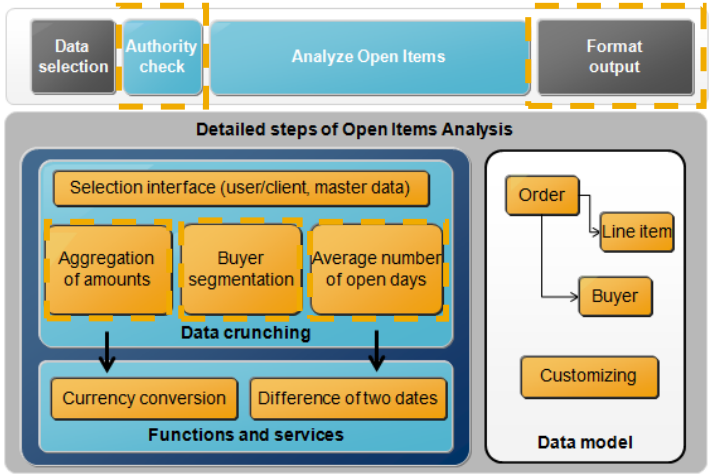


How can I ***detect*** optimization potential?

1. Ask the right questions first (identify business need)
2. Use the performance and code analysis tools to localize performance critical steps
3. Decide scope of optimization project (e.g. pure acceleration vs. extension)

Optimizing ABAP for SAP HANA: “A step-by-step guide”
Summary (2)

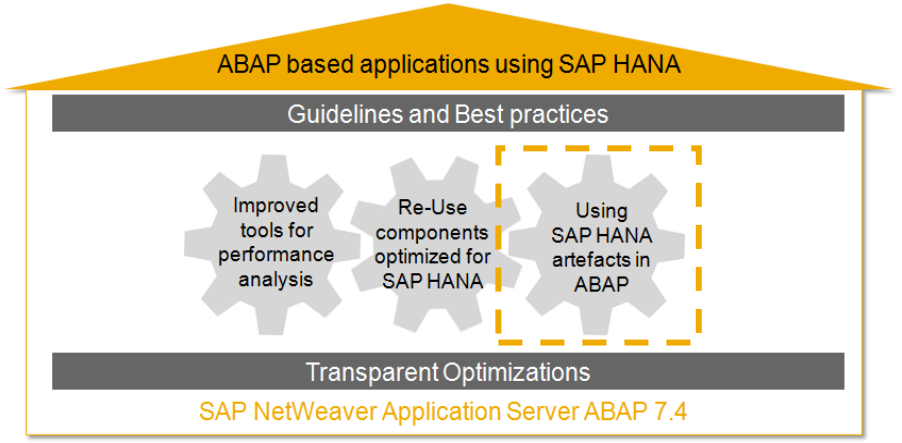


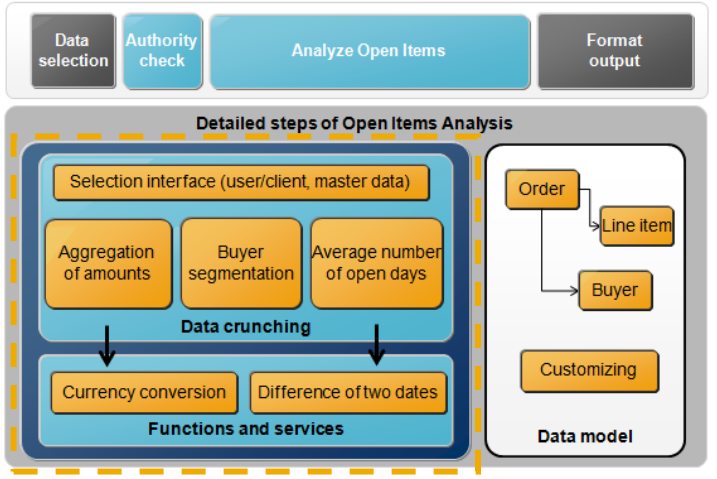


How can I ***optimize*** my existing code?

- Leverage **built-in database support** (e.g. Open SQL) in optimal way (good SQL knowledge is key)
- Fetch only data needed for **user interface** or **process step** (e.g. apply paging where possible)
- Follow ***guidelines*** and ***best practices*** for ABAP development on SAP HANA

Optimizing ABAP for SAP HANA: “A step-by-step guide”
Summary (3)





How can I fully ***exploit*** the power of SAP HANA from ABAP?

- **Pushdown data crunching** to SAP HANA using views and procedures
- Leverage **advanced features of SAP HANA** (e.g. text search) for new user experiences

Demo

“ALV on HANA”

ABAP Development Tools for SAP NetWeaver

SAP's new ABAP IDE built on Eclipse™

The ABAP Development Tools integrate tightly with all Eclipse-based development tools of SAP's strategic product areas cloud, mobility and in-memory providing a highly productive E2E development environment.

Highlights

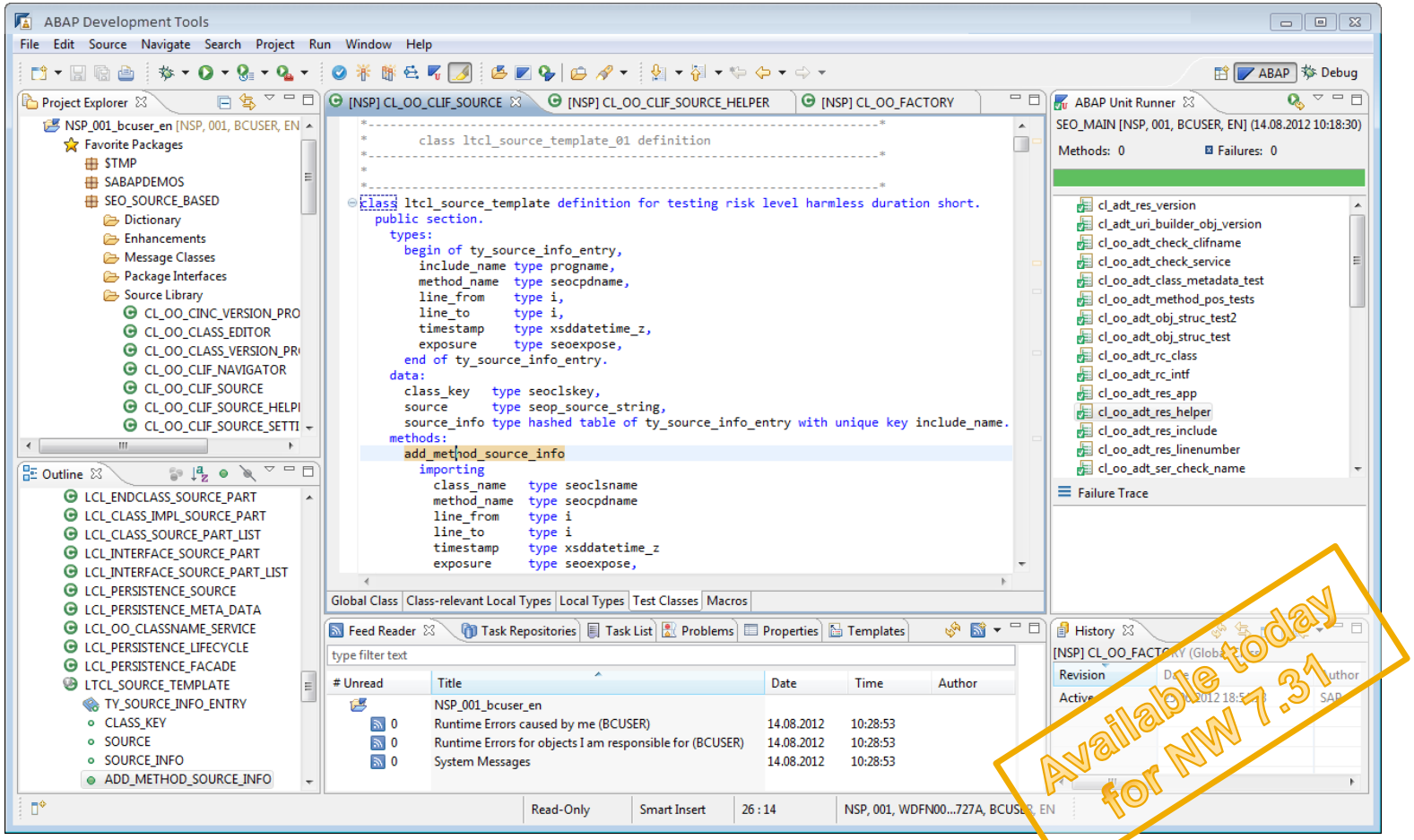
- Evolution of the ABAP workbench built on Eclipse offering excellent user experience and assistance
- One IDE for all development tasks: SAP HANA modeling, ABAP development, HTML5 UI, ...
- Powerful search and navigation, advanced source code editing and refactoring capabilities
- Built-in extensibility: ADT SDK (lab preview)

More Information

- SCN: http://scn.sap.com/community/abap/eclipse
- Trial: http://scn.sap.com/docs/DOC-29607
- YouTube: http://youtu.be/BXg7xXrEAUw

Related Sessions

- CD201: ADT Overview (1h)
- CD164: ADT Hands-on (4h)
- CD206: ADT SDK Preview (1h)



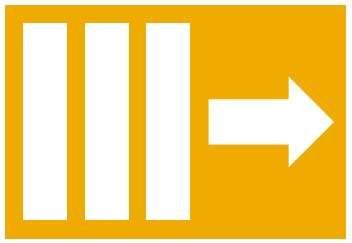
ABAP Platform Capabilities: The complete picture

SAP NetWeaver AS ABAP	What's NEW	What's NEXT
SAP HANA	• SAP Kernel 7.20 allows usage of SAP HANA as secondary persistence • SAP NetWeaver Business Warehouse 7.3 supports SAP HANA as primary persistence	• Next enhancement package for AS ABAP is optimized for SAP HANA • SAP Business Suite and other standard applications adapt the new enhancement package
Development Environment	• ABAP Development Tools for SAP NetWeaver (aka ABAP in Eclipse) 1.0 released June 2012	• Improved and additional tools for Eclipse-based ABAP development (Web Dynpro ABAP, native debugger, transport management, Web Services)
Connectivity	• Central Web Service Configuration • SAP NetWeaver Gateway released October 2011	• Enhanced connectivity programming model • Basic OData support as part of AS ABAP
Business Continuity	• SAP Certified HA-Solutions of partners • Near zero Downtime Management	• Further HA-awareness in MMC, LVM… • Further reductions of downtime
Security	• SMIME support • Security Policy	• Support for OAuth2, SPNego • Read Access Logging • Unified user management for ABAP on SAP HANA
Trial Systems	• SAP NetWeaver AS ABAP 7.03 Trial version released June 2012	• SAP NetWeaver AS ABAP 7.4 Trial version running on SAP HANA (delivered in the Cloud)

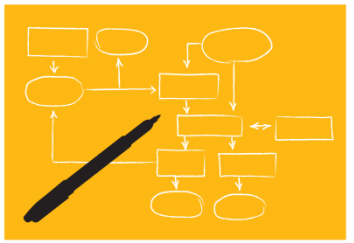
“Behind the scenes”: How do we develop?

CO-INNOVATION

AGILITY



OPENNESS



Examples

- Customer Engagement Initiatives
- Collaboration with SAP Mentors
- SCN ABAP Community

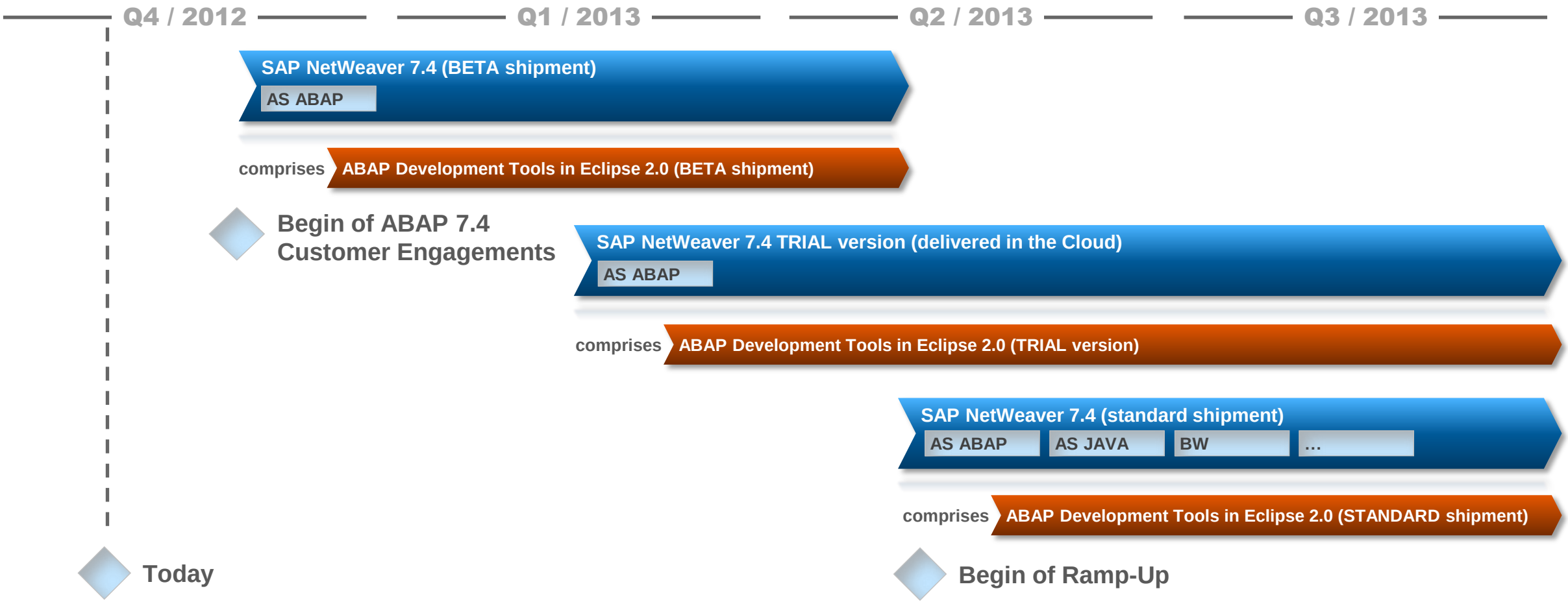
- Scrum as development methodology
- Increased flexibility due to lean principles

- Support of open standards, e.g. OData protocol
- New Eclipse-based IDE
- SDK for ABAP Development Tools*

* currently under development

ABAP Platform Roadmap

planning - may be changed without prior notice



Demo

“A glimpse into the future”

How can you engage?

Are you interested in a TRIAL version* of SAP NetWeaver AS ABAP 7.4 (delivered in the Cloud)?

Check our ABAP for SAP HANA Community in SCN for news: http://scn.sap.com/community/abap-for-hana

Do you want to take part in a BETA shipment* of SAP NetWeaver AS ABAP 7.4 and be able to validate ABAP for SAP HANA use cases early?

Write an eMail to us: ABAP.On.HANA@sap.com

Are you interested to participate in the Ramp-Up* of SAP NetWeaver AS ABAP 7.4 and to go live with the new technology as soon as possible?

Write an eMail to us: ABAP.On.HANA@sap.com

* terms and conditions apply

Further Information

SAP Public Web

http://scn.sap.com/community/abap
http://scn.sap.com/community/abap-for-hana
http://scn.sap.com/community/abap/eclipse

SAP Education and Certification Opportunities

www.sap.com/education

Related Workshops/Lectures at SAP TechEd 2012

CD101 The Brand-New ABAP Test Cockpit – A New Level of ABAP Quality Assurance
CD162 Accelerating ABAP Applications Using the Best Features in SAP HANA
CD164 Modern ABAP with ABAP Development Tools for Eclipse
CD201 ABAP Development Tools for Eclipse – Develop Like Never Before
CD202 ABAP for SAP HANA: Building Business Applications Optimized for In-Memory
CD206 Enhancing ABAP Development Tools in Eclipse

Feedback

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