ABAP
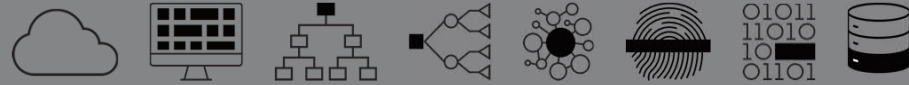
Get the Big Picture of the
ABAP RESTful Programming Model

ABAP Platform Product Management, SAP
November 2019

THE BEST RUN **SAP**

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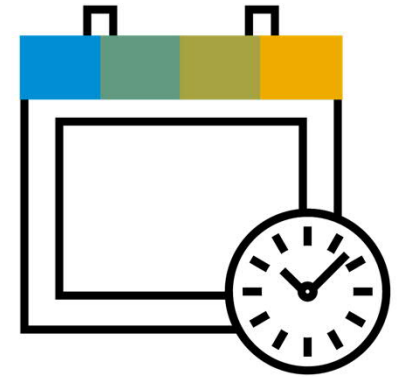
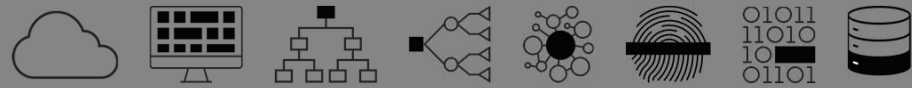# Agenda

Overview

Business Objects
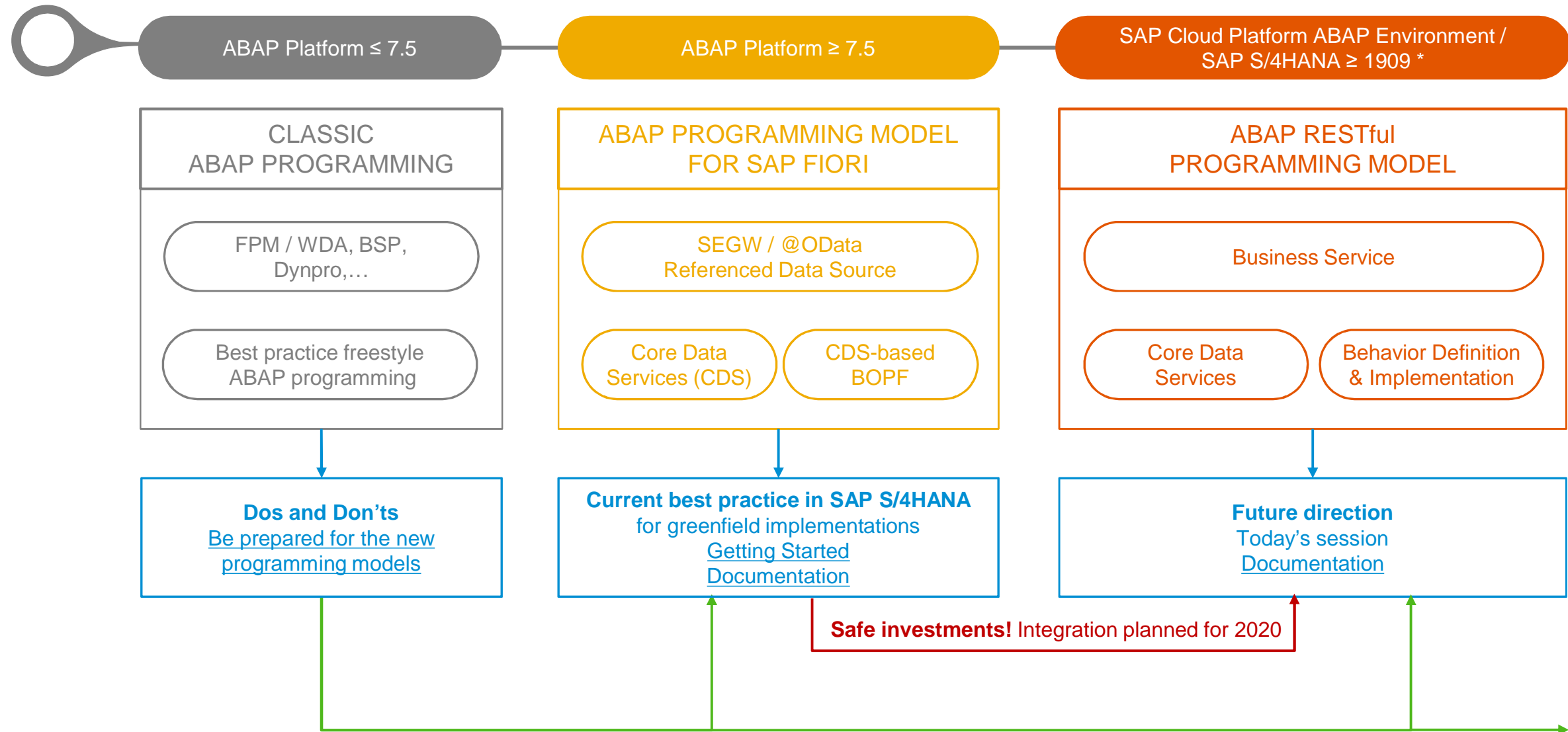
Business Services

Demo

Summary and Outlook

Overview

ABAP

Evolution of the ABAP programming model

ABAP Platform ≤ 7.5	ABAP Platform ≥ 7.5	SAP Cloud Platform ABAP Environment / SAP S/4HANA ≥ 1909 *

CLASSIC ABAP PROGRAMMING

- FPM / WDA, BSP, Dynpro,…
- Best practice freestyle ABAP programming

ABAP PROGRAMMING MODEL FOR SAP FIORI

- SEGW / @OData Referenced Data Source
- Core Data Services (CDS)
- CDS-based BOPF

ABAP RESTful PROGRAMMING MODEL

- Business Service
- Core Data Services
- Behavior Definition & Implementation

Dos and Don'ts
Be prepared for the new programming models

Current best practice in SAP S/4HANA
for greenfield implementations
Getting Started
Documentation

Future direction
Today's session
Documentation

Safe investments! Integration planned for 2020

* Reduced scope currently shipped on-premise: only brownfield implementations currently supported

ABAP RESTful Programming Model – The key players

ABAP Development Tools in Eclipse for all ABAP development tasks

Easy developer onboarding
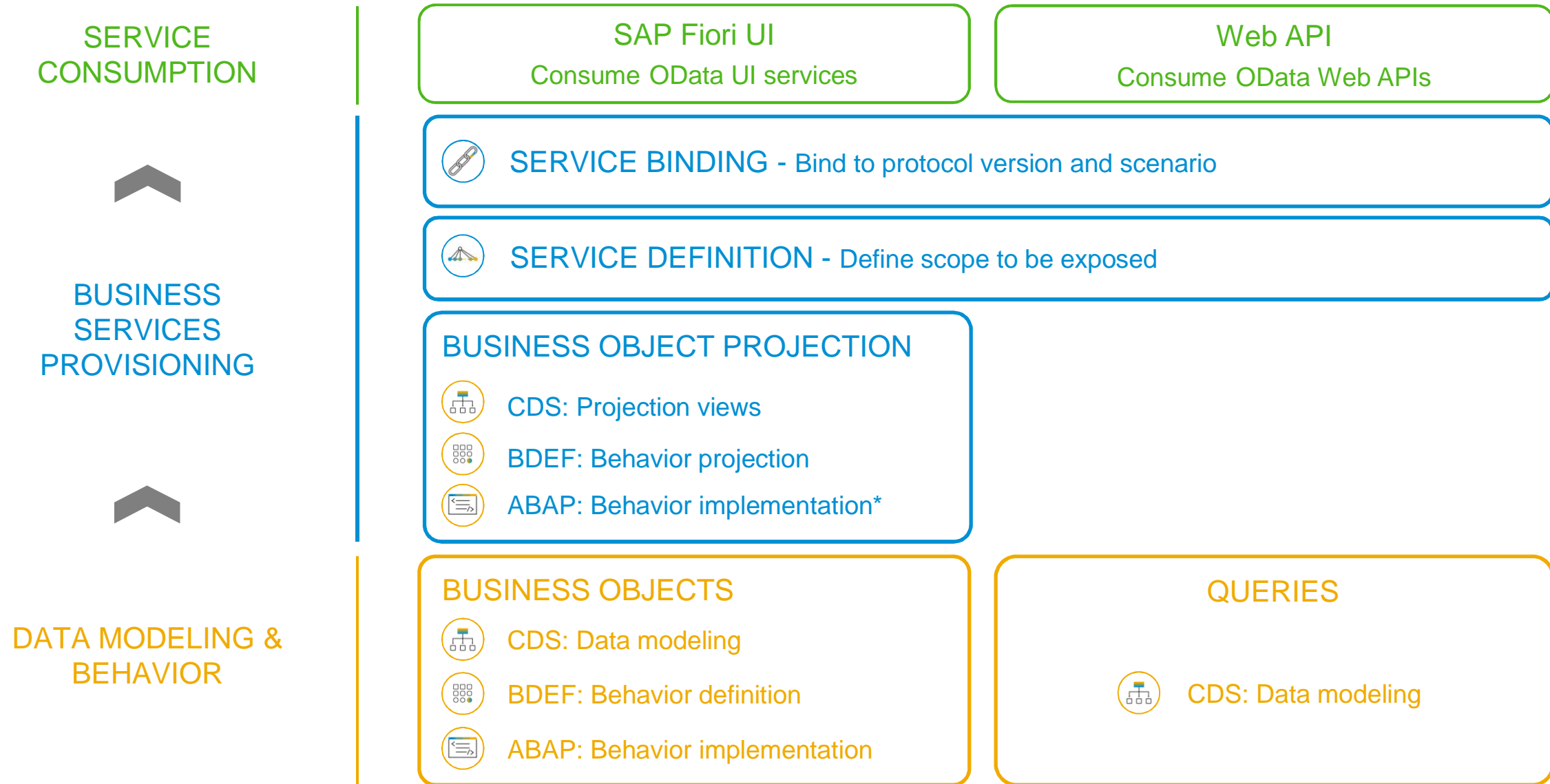End-to-end development flow in Eclipse-based editors

Languages: ABAP and CDS

Standard implementation tasks via typed APIs supporting static code checks,
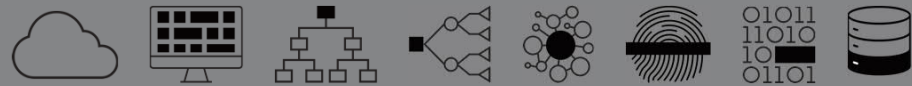auto-completion, element info

Frameworks

Take over technical implementation tasks
Focus on business logic added in code exits on protocol agnostic layers

ABAP RESTful Programming Model – The big picture

SERVICE CONSUMPTION

SAP Fiori UI	Web API
Consume OData UI services	Consume OData Web APIs

SERVICE BINDING - Bind to protocol version and scenario

SERVICE DEFINITION - Define scope to be exposed

BUSINESS SERVICES PROVISIONING

BUSINESS OBJECT PROJECTION

- CDS: Projection views
- BDEF: Behavior projection
- ABAP: Behavior implementation*

DATA MODELING & BEHAVIOR

BUSINESS OBJECTS

- CDS: Data modeling
- BDEF: Behavior definition
- ABAP: Behavior implementation

QUERIES

- CDS: Data modeling

* This is the current state of planning and may be changed by SAP at any time.

Business Objects (BOs)

ABAP

ABAP RESTful Programming Model – What is a business object (BO)?

Data Model

COMPOSITION
TREE
(root, parent and child nodes)

Behaviour

CRUD, Actions, Functions
Locks, eTag
Authorizations, Feature Control
Draft

Runtime Implementation

INTERACTION PHASE

TX buffer
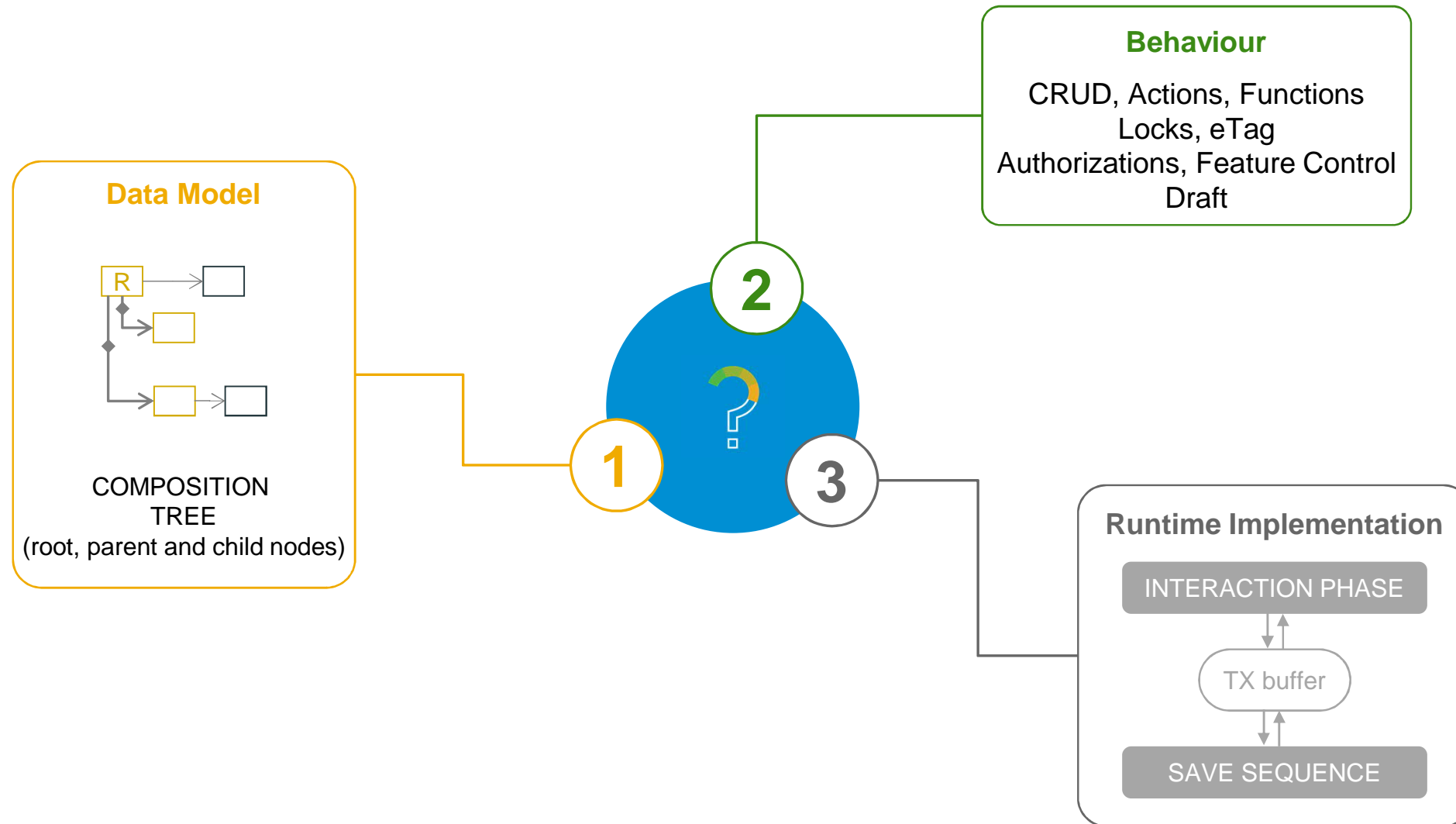
SAVE SEQUENCE

ABAP RESTful Programming Model – Runtime implementation types

INTERACTION PHASE

SAVE SEQUENCE

MODIFY
READ
LOCK

finalize

check_before_save

adjust_numbers

save

Transactional buffer

SAP HANA

BUSINESS OBJECT RUNTIME
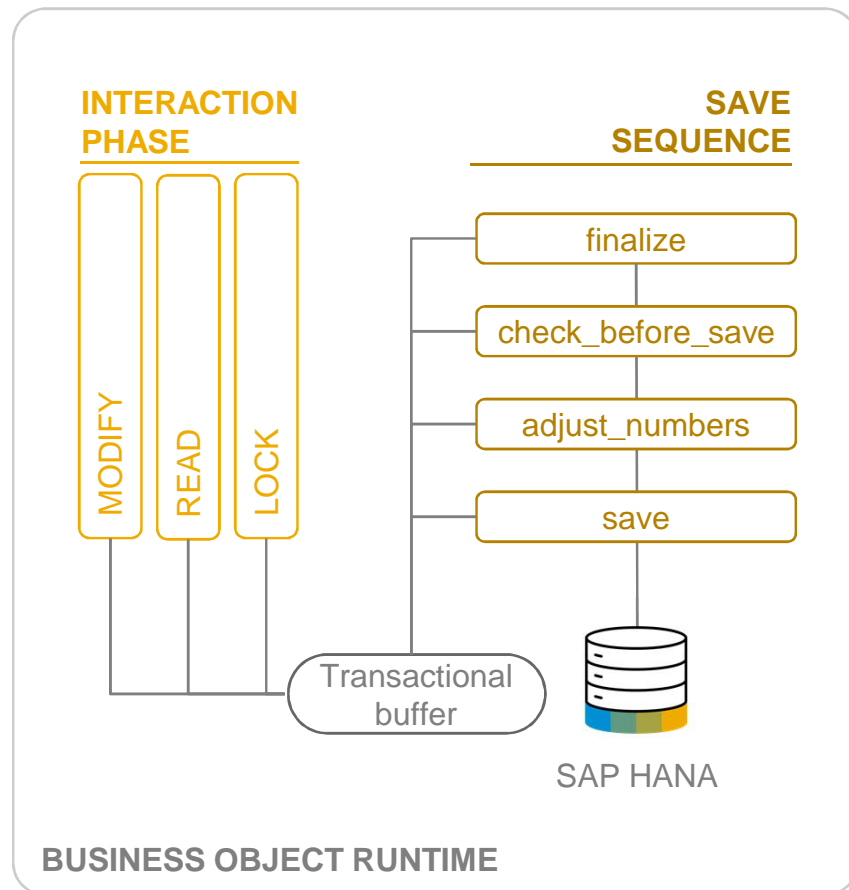
UNMANAGED

Brownfield development with application coding fully available:
Interaction phase + Transactional buffer + Save sequence

MANAGED*

Greenfield development with standard implementation
(opt. unmanaged appl. components: DB tables, lock/PFCG object, update task FM)

* Currently only available in SAP Cloud Platform ABAP Environment

ABAP RESTful Programming Model – Unmanaged implementation

INTERACTION PHASE

SAVE SEQUENCE

MODIFY

READ

LOCK

finalize

checkBeforeSave

adjustNumbers

save

UNMANAGED BO RUNTIME
(APPLICATION CODE)

TX Buffer

Adapter for existing application code

SAP HANA
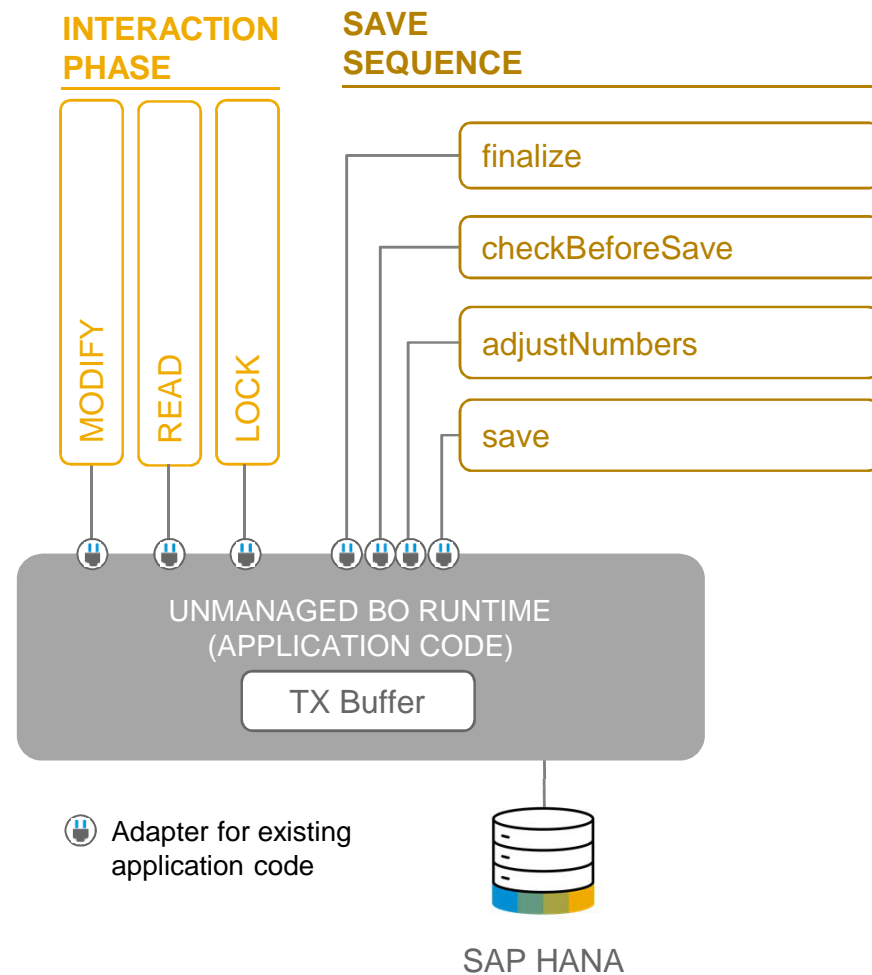
Application coding

▶ Already available

▶ For interaction phase, transactional buffer and save sequence

▶ Decoupled from UI technology

Examples

▶ Sales Order, Purchase Order

ABAP RESTful Programming Model – Managed implementation*

INTERACTION PHASE

SAVE SEQUENCE

MODIFY   READ   LOCK

finalize

checkBeforeSave

adjustNumbers

save

MANAGED BO RUNTIME

TX Buffer

Business logic via determinations, validations, …

SAP HANA
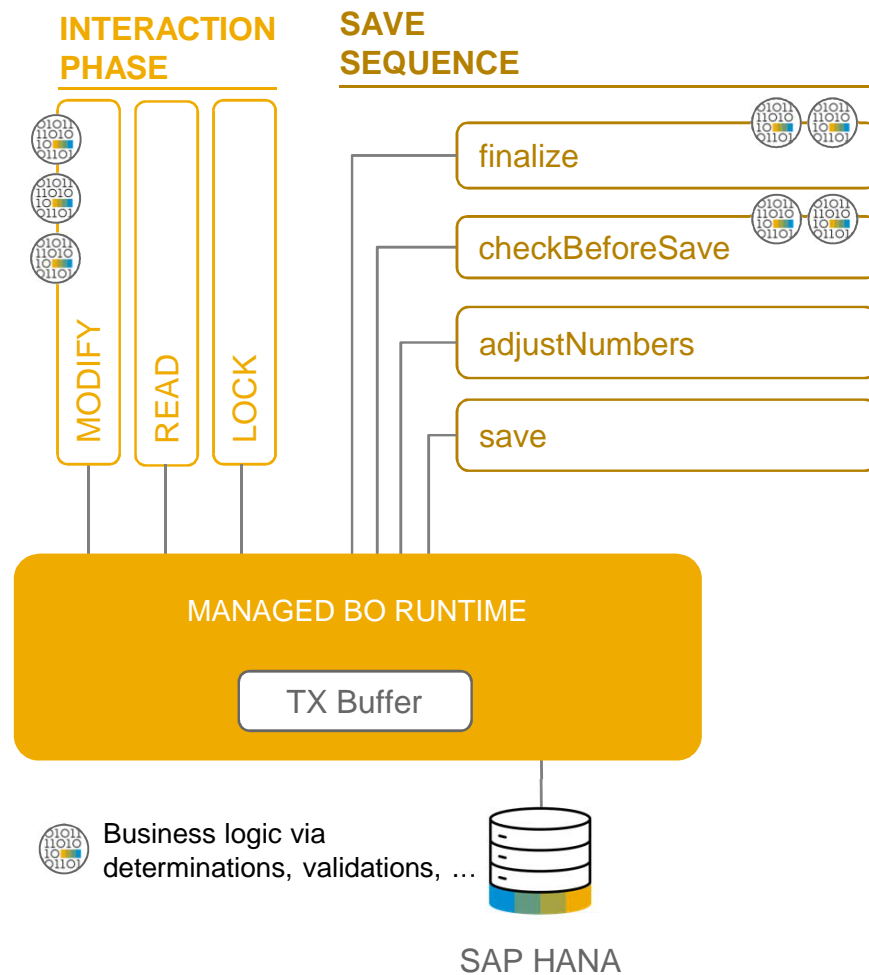
Application coding

- Not yet available or fine granular reusable code available

- Technical implementation tasks taken over by BO infrastructure

- Developer focus on business logic, implemented via code exits: determinations, validation, actions,…

Examples

- New applications in SAP Cloud Platform ABAP Environment

* Currently only available in SAP Cloud Platform ABAP Environment

ABAP RESTful Programming Model – Managed impl. with unmanaged appl. Components*

INTERACTION PHASE

MODIFY READ LOCK

SAVE SEQUENCE

finalize

checkBeforeSave

adjustNumbers

save

MANAGED BO RUNTIME

TX Buffer

Function module for UPDATE TASK

Business Logic via determinations, validations, …

Adapter for existing application code

SAP HANA
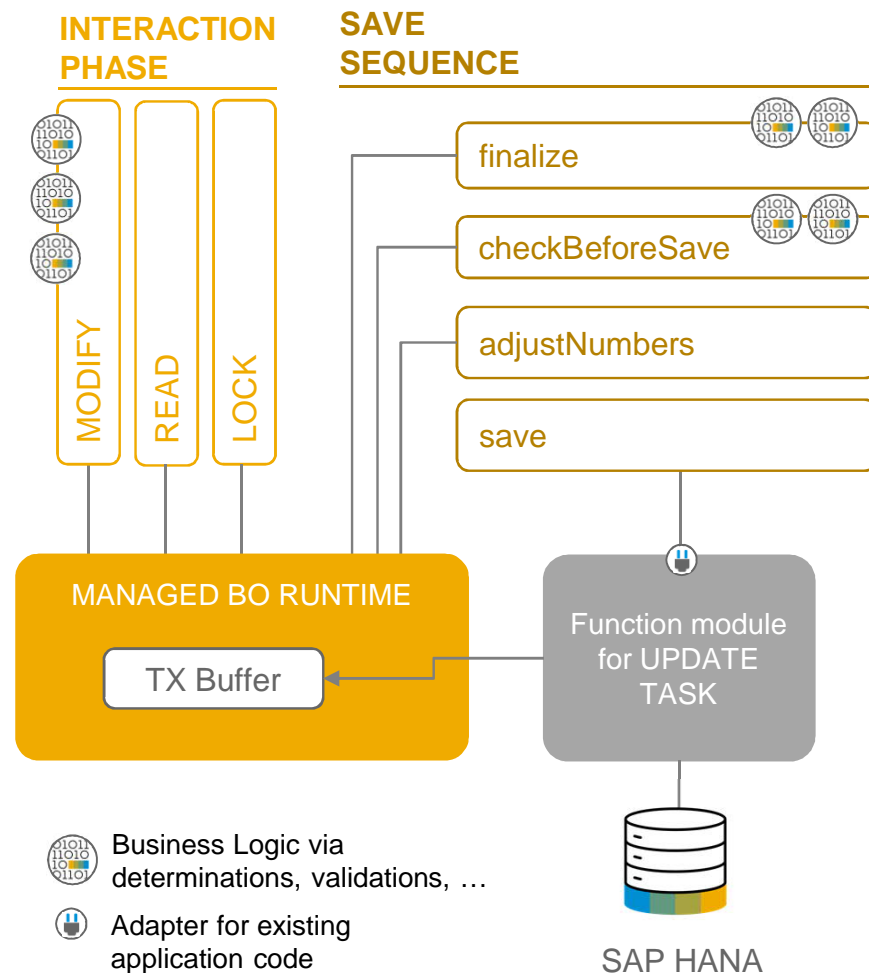
Application coding

- "update-task function module" available

- Coding for interaction phase not available
  (e.g. highly coupled in older UI technology: DYNP - PBO / PAI)

- Technical implementation aspects to be taken over by BO infrastructure

Examples

- Business Partner, Product

Optional unmanaged application components

- Update task FM: *unmanaged save*

- Own lock object: *unmanaged lock*

- Mapping between old and new world (e.g. DB tables): type mapping

- Old PFCG Object: *authorization master*

* Feature not yet supported. This is the current state of planning and may be changed by SAP at any time without notice.

ABAP RESTful Programming Model – Development flow
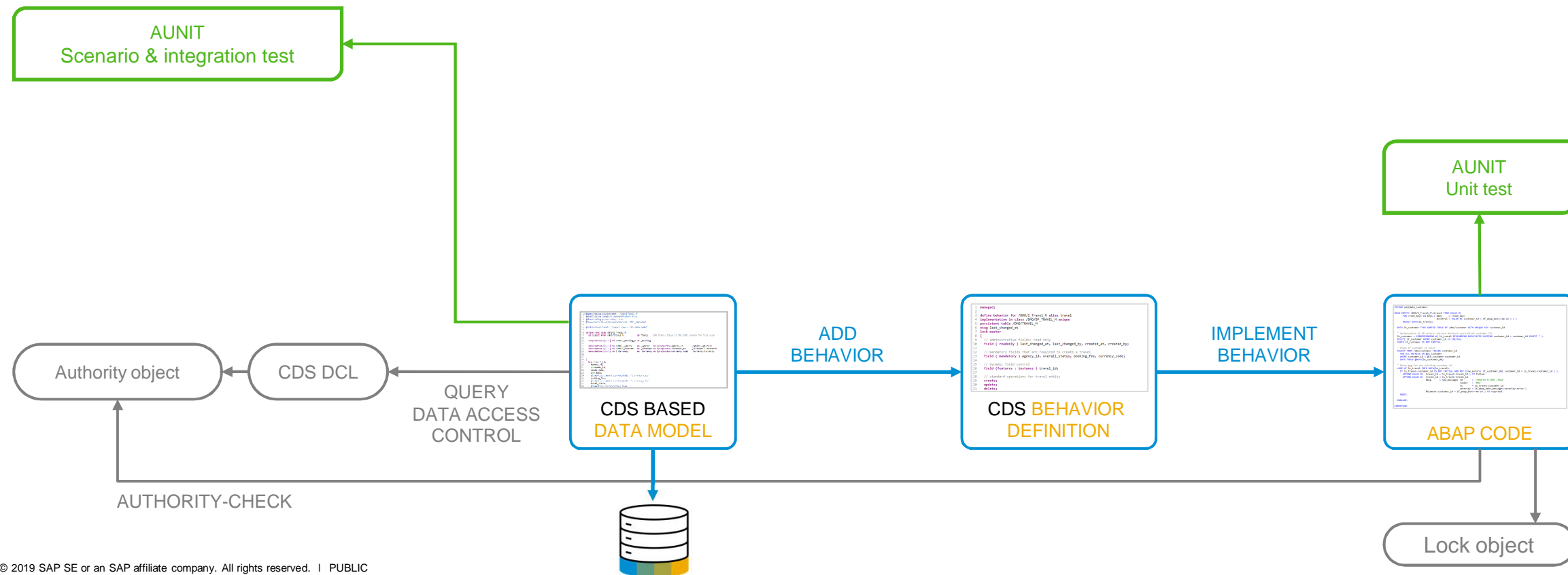
Business Services

ABAP
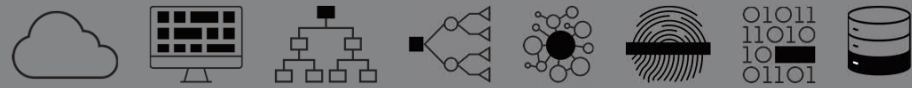
ABAP RESTful Programming Model – What is a business service?

Service Binding

Protocol: OData V2 or OData V4?

Scenario: Web API or UI?

Web API Lifecycle

Release

Versioning

Deprecation

2

3

1

4

Tool support

UI: SAP Fiori Elements preview

Web API: Swagger UI preview

Service Definition: which entities?

BO Projection View: which elements?

Behavior Projection: which behavior?

R

ABAP RESTful Programming Model – Development flow

Role

DEFINE ROLES

SERVICE
BINDING

PREVIEW

DEFINE SCENARIO and PROTOCOL

SERVICE
DEFINITION

AUNIT
Scenario & integration test

DEFINE SCOPE

DATA MODEL
PROJECTION

ADD
BEHAVIOR

BEHAVIOR
PROJECTION

AUNIT
Unit test

PROJECT ELEMENTS & ENRICH

PROJECT BEHAVIOR

Authority object

CDS DCL

QUERY
DATA ACCESS
CONTROL

CDS BASED
DATA MODEL

ADD
BEHAVIOR

CDS BEHAVIOR
DEFINITION

IMPLEMENT
BEHAVIOR

ABAP CODE

AUTHORITY-CHECK

Lock object

Modern ABAP development in Eclipse

MODERN DEVELOPMENT TOOLSET

Fully eclipse-based
Syntax check, Code completion
Syntax highlighting, Pretty printing
Navigation, Search, Quick Fixes

QUALITY ASSURANCE

Static code checks (CVA, ATC) with remote and local scenarios
Unit testing incl. isolation frameworks
Test seams and injections

SUPPORTABILITY

Debugging, profiling
Static and dynamic logging
Runtime monitoring and analysis

Summary and Outlook

ABAP

Summary – Key takeaways

The **ABAP RESTful Programming Model** is available as of SAP Cloud Platform, ABAP Environment 1808: Cloud-first delivery.

The **ABAP RESTful Programming Model** is now available on-premise with SAP S/4HANA 1909 – with reduced feature scope: *UNMANAGED BO IMPLEMENTATION.*

The feature scope of the **ABAP RESTful Programming Model** is enhanced on a quarterly basis in SAP Cloud Platform ABAP Environment and on a yearly basis in SAP S/4HANA.

The **ABAP Programming Model for SAP Fiori** *WITH DRAFT SUPPORT* is available as of AS ABAP 7.51 and remains the current best practice in SAP S/4HANA for greenfield implementations.

Outlook – Next steps planned for SAP Cloud Platform ABAP Environment
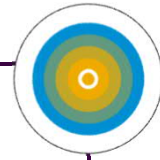
Business objects

Enhanced managed scenario: unmanaged appl. components, draft handling, managed early numbering, late numbering
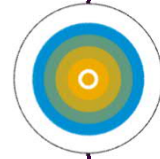
Business Services
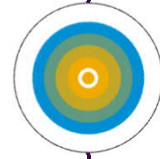
Service binding for OData V4 Web APIs

Web API consumption

Support for OData V4, REST

Actions & functions

Cross topics

Extensibility

Supportability

Documentation

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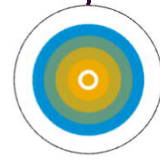
Outlook – Next steps planned for SAP S/4HANA
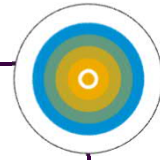
Business objects

Managed scenario with CRUD based on determinations, validations, actions and functions, eTag, locks, feature control, authorization, draft

Migration of existing CDS-BOPF based BOs
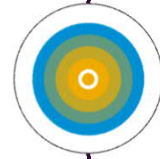
Business Services
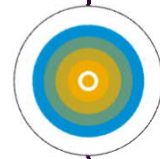
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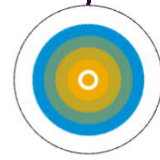
Further information

► Getting Started with the ABAP RESTful Programming Model

► Evolution about the ABAP Programming Model

► Be prepared for the ABAP Programming Model for SAP Fiori

► Getting Started with the ABAP Programming Model for SAP Fiori

► ABAP Platform Developer Center

► ABAP Development Community

► SAP Cloud Platform ABAP Environment

► SAP TechEd Online (e.g. session CAA103, CNA215)

► SAP Training & Certifications Opportunities
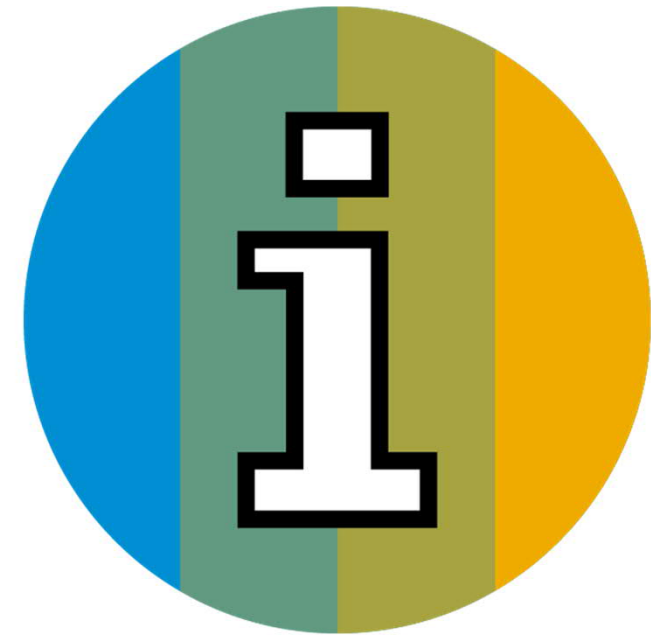
Thank you.

Contact information:

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