

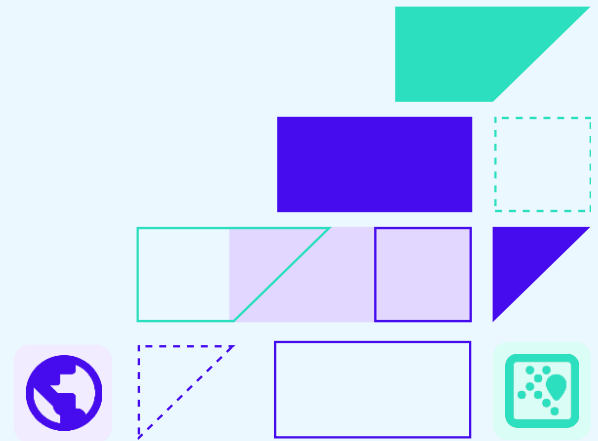
SAP TechEd



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Delve into ABAP Cloud on SAP BTP ABAP environment – AD181v

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November 3, 2023



Agenda



INTRODUCTION

TODAY'S SCENARIO – **OVERVIEW**

TODAY'S SCENARIO – **EXERCISES**

WRAP UP

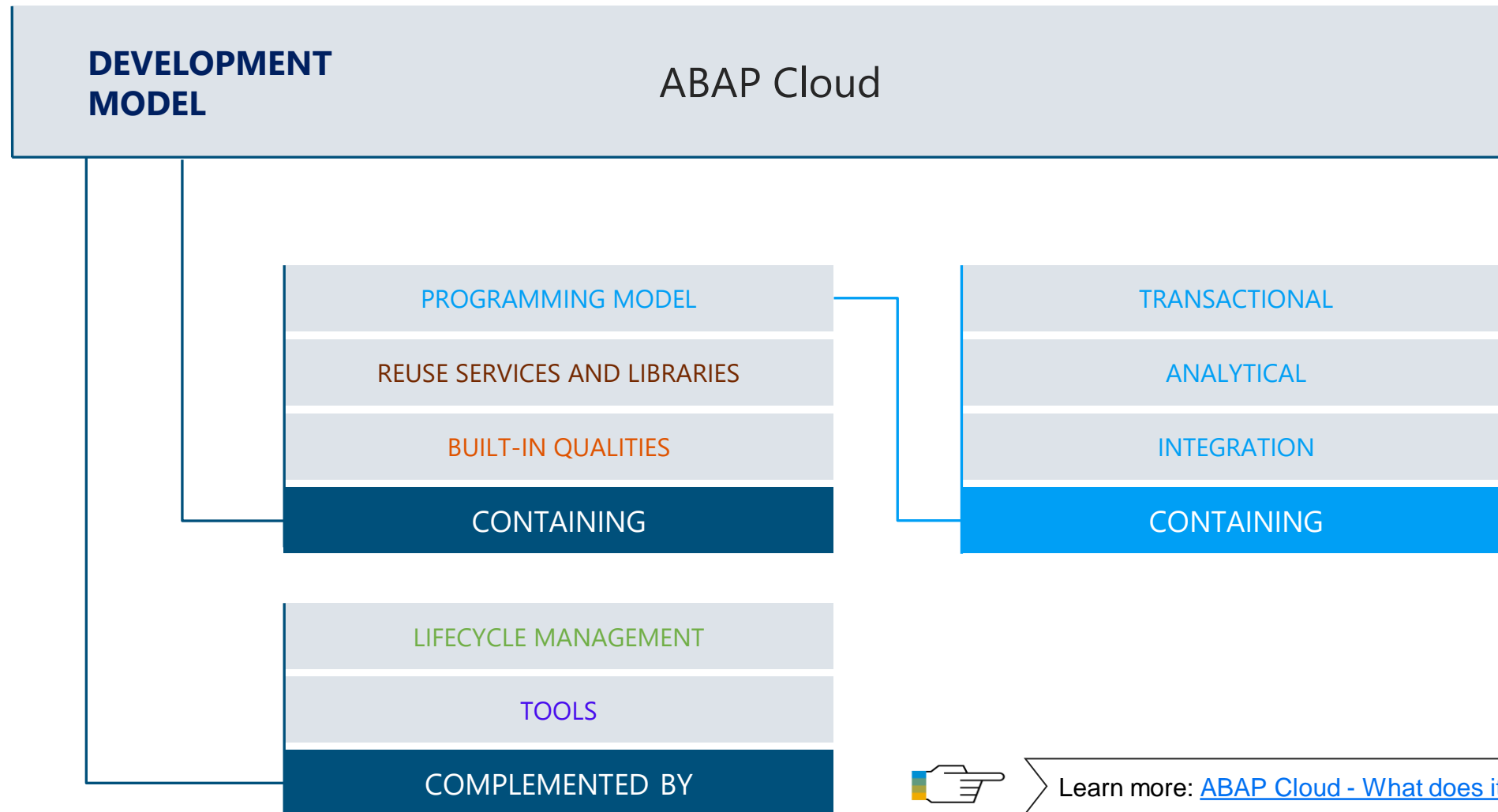
INTRODUCTION



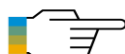
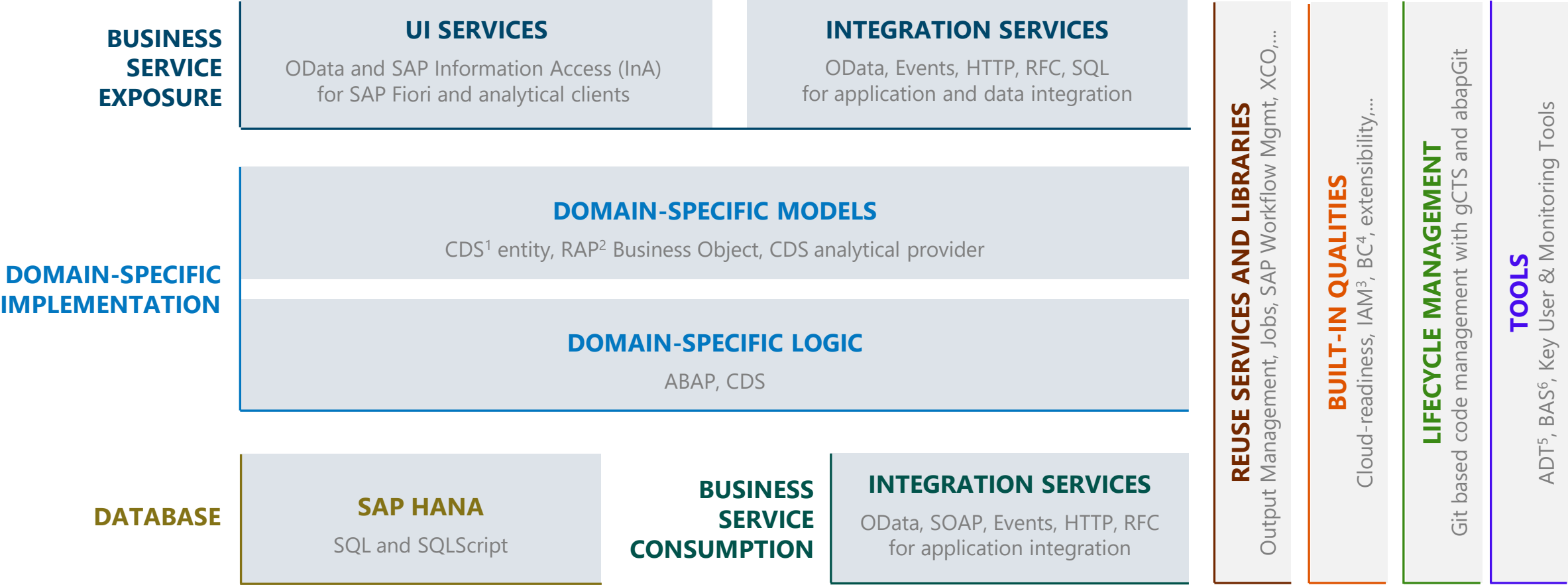
ABAP Cloud

- ... is the ABAP **development model** to build cloud-ready business apps, services, and extensions
- ... comes with SAP Business Technology Platform (SAP BTP) and SAP S/4HANA
- ... works with public or private cloud, and even on-premise

ABAP Cloud – What's in it?



ABAP Cloud map



Related sessions: [AD103v](#), [AD107v](#), [DT187v](#), [DT182v](#), [DT103v](#), [DT200v](#)

¹ Core Data Services

² ABAP RESTful application programming model

³ Identity & Access Management

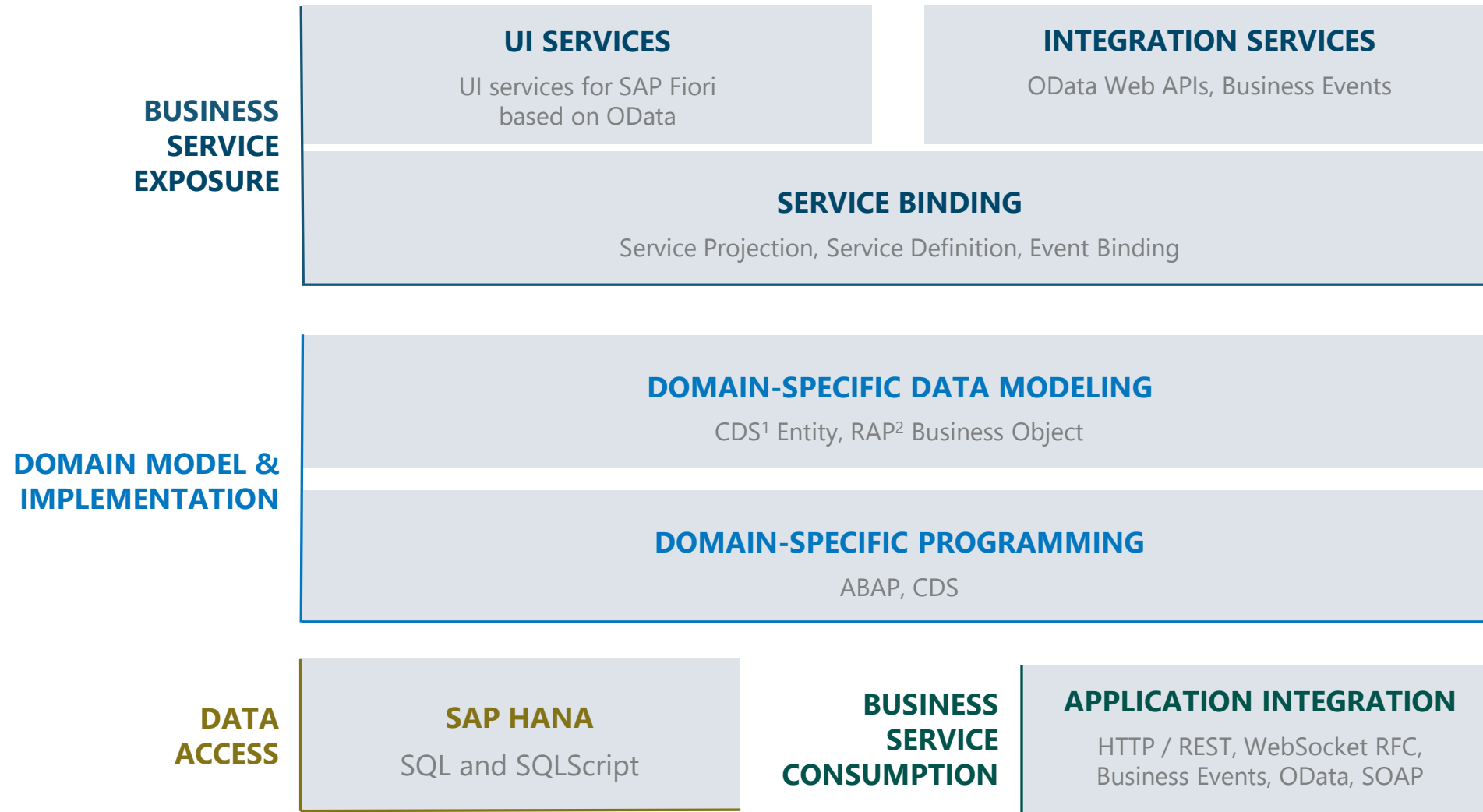
⁴ Business Configuration

⁵ ABAP Development Tools

⁶ SAP Business Application Studio

ABAP Cloud – Transactional scenarios

The ABAP RESTful application programming model (RAP)



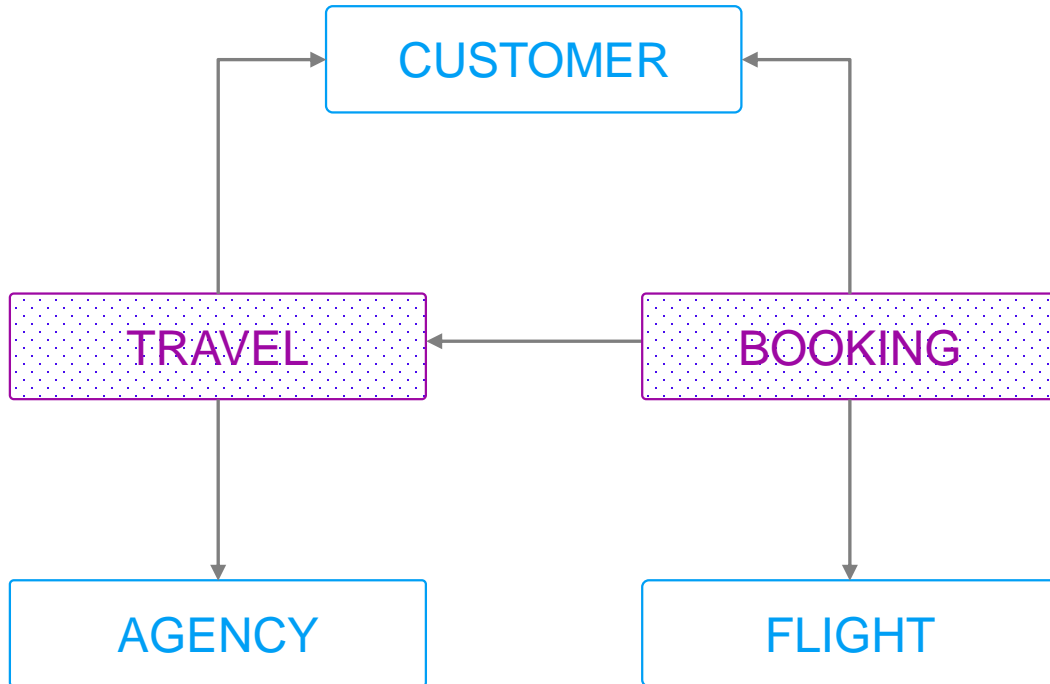
¹ Core Data Services



² ABAP RESTful application programming model

TODAY'S SCENARIO – OVERVIEW

Building transactional SAP Fiori apps with RAP

Underlying simplified Flight data model



-  Main business entities in current scenario
-  Secondary business entities in current scenario

A **Travel entity** defines general travel data, such as the agency ID or customer ID, the overall status of the travel booking, and the total price of the travel.

A **Booking entity** comprises general flight and booking data, the customer ID for whom the flight is booked as well as the travel ID to which the booking belongs.

A **Customer entity** provides a detailed description of a flight customer, or passenger, such as the name, the address, and contact data.

An **Agency entity** defines travel agency data, such as the address and contact data.

A **Flight entity** defines the general flight data for each connection.

Building transactional SAP Fiori apps with RAP

with search, filter, and draft capabilities

LIST REPORT PAGE

Standard ▾

Editing Status: Travel ID: Agency ID: Customer ID:

Search [Q] All [v] [] [] []

Go Adapt Filters (1)

Travels (12)

Reject Travel Accept Travel Create Delete

<input type="checkbox"/> Travel... ≡	Agency ID	Customer ID	Overall Status	
<input checked="" type="checkbox"/> 11 Draft	Burns Nuclear (70008)	Buchholm	⚠ Open	>
<input type="checkbox"/> 10	Fly High (70002)	Buchholm	✅ Accepted	>
<input type="checkbox"/> 9	Sunshine Travel (70001)	Vrsic	✅ Accepted	>
<input type="checkbox"/> 8	Ben McCloskey Ltd. (70012)	Buchholm	⚠ Open	>
<input type="checkbox"/> 7 Draft	Ben McCloskey Ltd. (70012)	Vrsic	⚠ Open	>
<input type="checkbox"/> 6	Flights and More (70049)	Neubasler	❌ Rejected	>
<input type="checkbox"/> 5	Hot Socks Travel (70007)	Mechler	✅ Accepted	>

Some of the used RAP features:

- ❖ OData Stream
- ❖ Virtual elements
- ❖ Late numbering
- ❖ Internal and determine instance actions
- ❖ Static (default) factory action
- ❖ Side effects
- ❖ Functions
- ❖ Business events
- ❖ etc.

Navigation
to object page

Building transactional SAP Fiori apps with RAP

Travel list report app >> Object page

OBJECT PAGE

EditDeleteAccept TravelReject Travel

11

TravelBooking

Travel ID: 11

Agency ID: Burns Nuclear (70008)

Customer ID: Buchholm

Last Name: Buchholm

Starting Date: May 11, 2023

End Date: May 25, 2023

Booking Fee: 0.00 EUR

Total Price: 0.00 EUR

Overall Status:

Open

Description: Own Create Implementation

Upload a File:

282556_Rocket_R_blue.png

Booking

Bookings (1)Standard

Travel ID	Booking Nu...	Booking Date	Customer ID	Airline ID
11	10	May 11, 2023	3 (Buchholm)	American Airlines Inc. (AA)

Flight Date: Feb 3, 2023

Flight Price: 3,823.00 USD

Booking Status:

Booked

Remaining Days to Flight: 0 of 0

Draft

11

HeaderTravelBooking

Travel

Travel ID: 11

Agency ID: Burns Nuclear (70008)

Customer ID: Buchholm

Last Name: Buchholm

Starting Date: May 11, 2023

End Date: May 25, 2023

Booking Fee: 0.00 EUR

Total Price: 0.00 EUR

Overall Status:

Open

Description: Own Create Implementation

Upload a File:

282556_Rocket_R_blue.png

Booking

Bookings (1)Standard

Search

CreateDelete

Travel ID	Booking Nu...	Booking Date	Customer ID	Airline ID
-----------	---------------	--------------	-------------	------------

Draft updated

SaveDiscard Draft


Edit, Delete, Actions

Edit mode

Draft

TODAY'S SCENARIO – EXERCISES

The AD181v hands-on exercises

 Exercises [↗](#)

[^Top of page](#)

Follow these steps to enhance an existing OData UI service developed with RAP for a transactional SAP Fiori elements-based Travel Processing app.

Exercises	Boosters
Getting Started	--
Exercise 1: Inspect your Exercise Package - Generated RAP BO & UI Service	--
Exercise 2: Enhance the Data Model of the Base and Projected BO	--
Exercise 3: Enhance the BO Behavior Definition and Projection	💡
Exercise 4: Implement the Base BO Behavior - Late Numbering	--
Exercise 5: Adjust the UI Semantics in the Metadata Extensions	💡
Exercise 6: Implement the Base BO Behavior - Validations	💡
Exercise 7: Implement the Base BO Behavior - Actions	💡
Exercise 8: Implement the Base BO Behavior - Determinations	--
Exercise 9: Enhance the BO Behavior with Side Effects	--
Exercise 10: Implement the Base BO Behavior - Functions	--
Exercise 11: Enhance the BO Behavior with Business Events	--
Exercise 12: Implement the Base BO Behavior - Dynamic Feature Control	--

BO: Business Object
EML: Entity Manipulation Language
💡 Exercises with *Boosters* offer an accelerated way of doing them.

01

Access to the exercises:

<https://github.com/SAP-samples/teched2023-AD181v>

02

Set up your development environment.

1. [Install and set up your ABAP Development Tools for Eclipse](#)
2. [Onboarding to the SAP BTP ABAP environment Trial](#)

03

Move at your own speed!

► Use the provided 💡 boosters if you are already familiar with a particular topic

04

Feel free to ask questions via GitHub issues!

► Provide screenshots to facilitate the support

The AD181v hands-on exercises – Working on GitHub (1)

Follow the step-by-step instructions provided on [GitHub](#).

Exercise 6: Implement the Base BO Behavior - Validations

Introduction

In the previous exercise, you've enhanced the UI semantics of your *Travel* app by enhancing the metadata extensions (see [Exercise 5](#)).

In the present exercise, you're going to implement back-end validations, `validateCustomer`, `validateAgency`, and `validateDates`, to respectively check if the customer ID and the agency name that is entered by the consumer are valid, and if the begin date is in the future and if the value of the end date is after the begin date. These validations are only performed in the back-end (not on the UI) and are triggered independently of the caller, i.e. Fiori UIs or EML APIs.

Similar validations were already handled in RAP100. Therefore, you will simply adopt the provided source code. We will use the validations for playing around with features such as determine actions and side effects.

Exercises:

- [6.1 - Implement the Validations of the *Travel* BO Entity](#)
- [6.2 - Implement the Validations of the *Booking* BO Entity](#)
- [6.3 - Preview and Test the enhanced Travel App](#)
- [Summary](#)
- [Appendix](#)

Reminder: Do not forget to replace the suffix placeholder `###` with your chosen or assigned group ID in the exercise steps below.

About Validations

► Click to expand!

Exercise 6.1: Implement the Validations of the *Travel* BO Entity

[^Top of page](#)

Enhance the behavior implementation class of the *travel* entity with the business logic for the validation methods `validateCustomer`, `validateAgency`, and `validateDates`.

There are two (2) ways to complete exercise 6.1:

- Option 1: This is the recommended option. Replace the whole content of your behavior implementation class of the *travel* entity `ZRAP110_BP_TRAVELTP_###` with the provided source code document linked below and replace the placeholder `###` with your group ID. Save and activate the changes, then proceed directly with Exercise 6.2.
Source code document: [Behavior Implementation Class ZRAP110_BP_TRAVELTP_###](#)
- Option 2: Carry out the steps described below (6.1) in sequence.

► Click to expand!

Exercise 6.1.1: Implement the Validation `validateCustomer` of the *Travel* BO Entity

Implement the validation `validateCustomer` which checks if the customer ID (`CustomerID`) that is entered by the consumer is valid. An appropriate message should be raised and displayed on the UI for each invalid value.

► Click to expand!

1. In your implementation class of the *travel* entity `ZRAP110_BP_TRAVELTP_###`, replace the current method implementation of `validateCustomer` with following code snippet.


Replace all occurrences of the placeholder `###` with your group ID.

```
METHOD validateCustomer.  
  *read relevant travel instance data  
  READ ENTITIES OF ZRAP110_BP_TRAVELTP_### IN LOCAL MODE  
  ENTITY Travel  
  FIELDS ( CustomerID )  
  WITH CORRESPONDING #( keys )  
  RESULT DATA(travel).
```

The **AD181v** hands-on exercises – Working on GitHub (2)



Use provided booster exercises to speed of the steps of familiar exercises

- 3.1 - How to handle this exercise 
- 3.2 - Define the Late Numbering and the Static Field Control
- 3.3 - Define the Validations
- 3.4 - Define the Actions
- 3.5 - Define the Determinations



Make use of Copy raw contents button to easily copy code snippets

```
@Semantics.largeObject: { mimeType: 'MimeType',    //case-sensitive  
                           fileName: 'FileName',    //case-sensitive  
                           //acceptableMimeTypes: ['image/png', 'image/jpeg'],  
                           contentDispositionPreference: #ATTACHMENT }
```



The AD181v hands-on exercises – Working on GitHub (3)

###

Always replace all occurrences of ### with your assigned suffix in code snippets

ABAP Console

RAP110 exercise generator

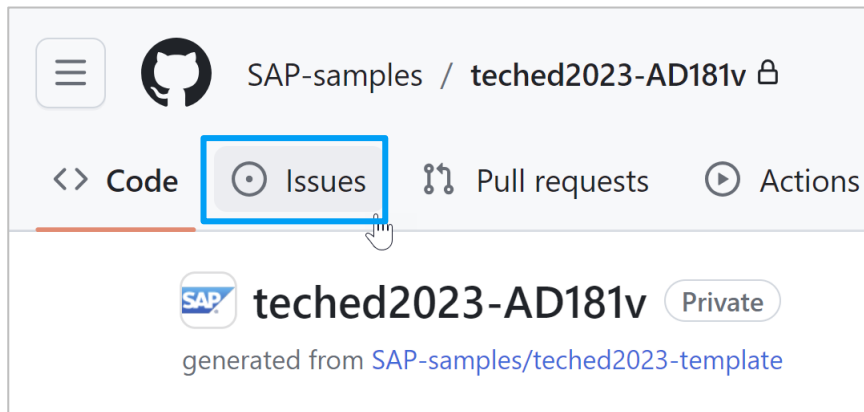
Use transport D23K901012

Info: Suffix "810" will be used.

The following package got created for you and includes everything you need:
In the "Project Explorer" right click on "Favorite Packages" and click on "
Enter "ZRAP110_810" and click OK.

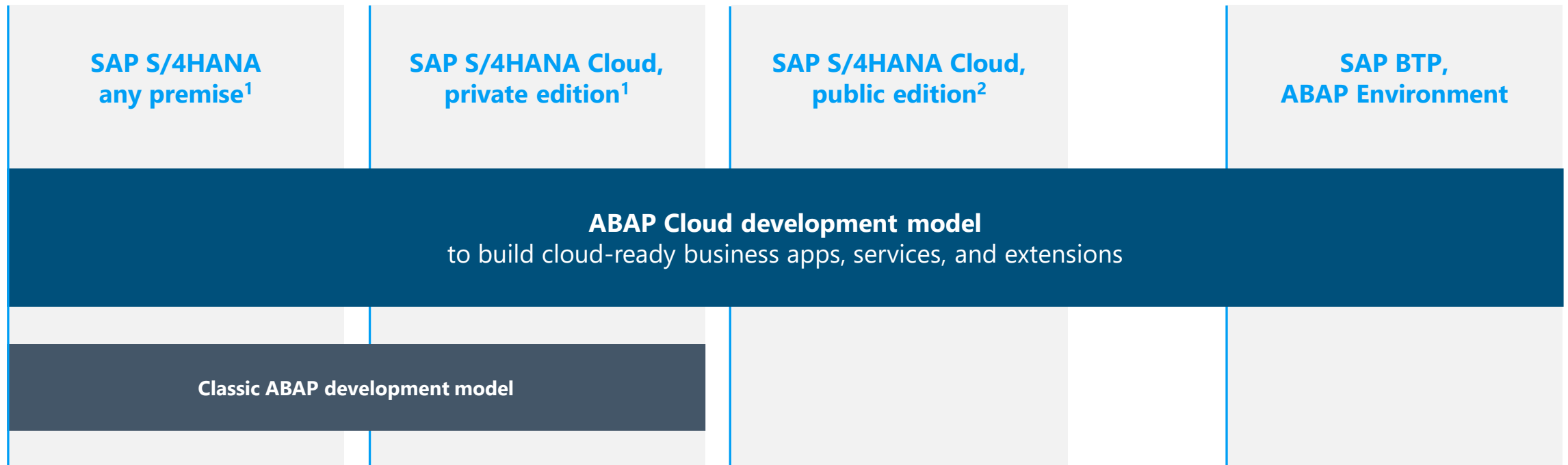
Issues

Open GitHub Issues to get help from the SAP experts



SUMMARY

ABAP Cloud – One development model for SAP S/4HANA and SAP BTP



¹ SAP S/4HANA any premise or SAP S/4HANA Cloud, private edition release \geq 2022

² SAP S/4HANA Cloud, public edition release \geq 2208, 3-system landscape required

Key takeaways

ABAP Cloud is the development model provided to build cloud-ready enterprise services, apps, and extensions on SAP BTP ABAP environment and all editions¹ of SAP S/4HANA, in the cloud and on-premises.

The **ABAP RESTful application programming model** (RAP) is the **centerpiece of ABAP Cloud** for building efficiently **transactional** OData-based services and SAP Fiori apps with built-in cloud qualities.

RAP best support **SAP HANA** and **SAP Fiori elements**.

RAP is available on **SAP BTP ABAP Environment**, **SAP S/4HANA Cloud**, and **SAP S/4HANA** as of edition 1909.

The **RAP feature set** is enhanced **quarterly** in SAP BTP ABAP environment, **twice a year** in SAP S/4HANA Cloud ABAP environment, and **every two years** in SAP S/4HANA.



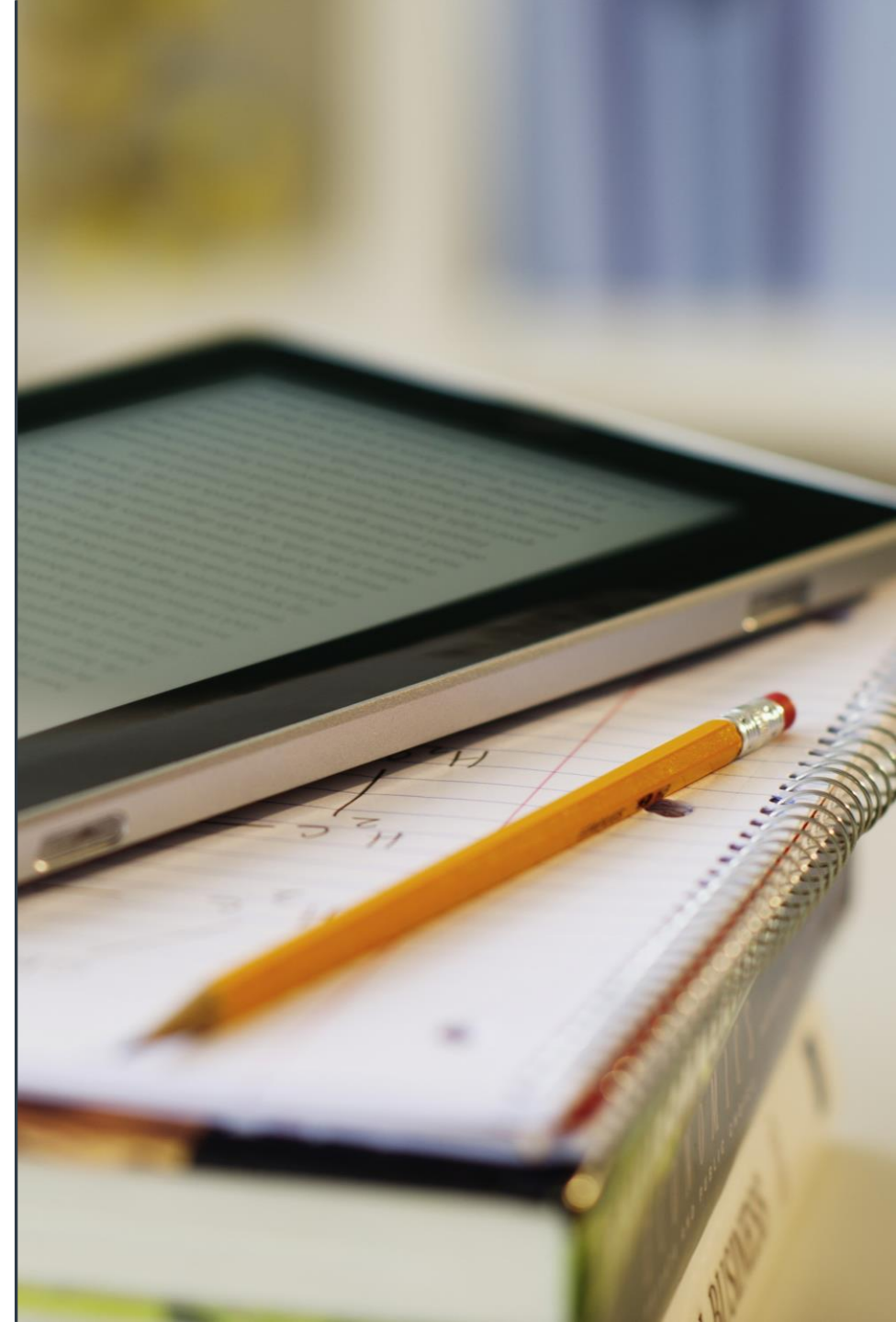
What's New: [SAP BTP ABAP environment](#) | [SAP S/4HANA](#) | [SAP S/4HANA Cloud](#)



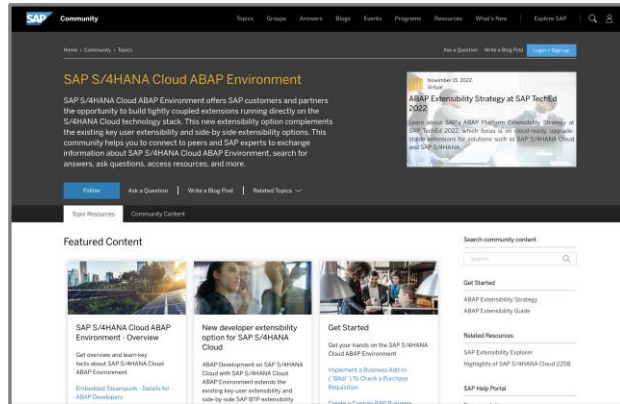
What's Next: [ABAP Platform Roadmap Information](#) for all products

¹ - SAP S/4HANA any premise or SAP S/4HANA Cloud, private edition release ≥ 2022

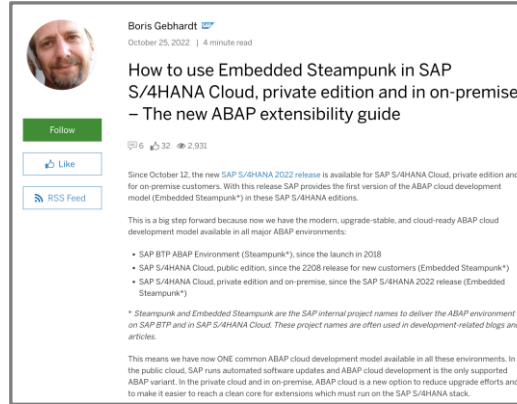
- SAP S/4HANA Cloud, public edition release ≥ 2208, 3-system landscape required



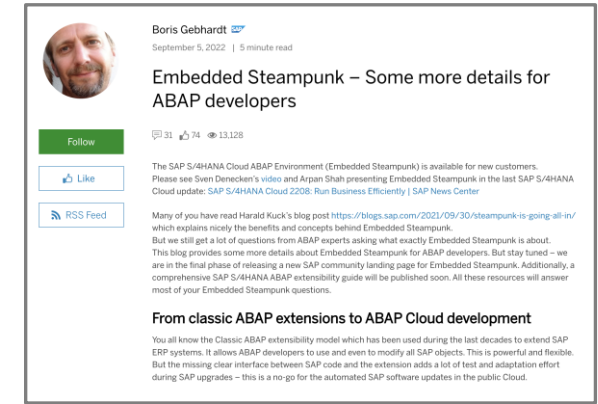
More information on ABAP Cloud



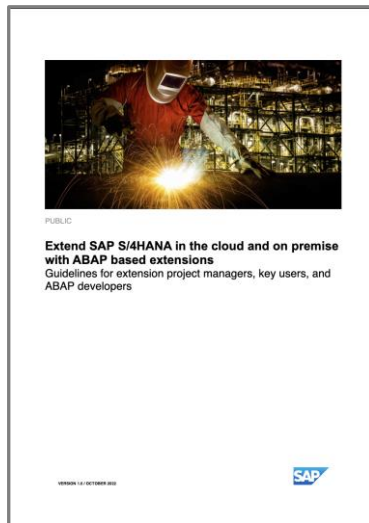
[SAP Community](#)



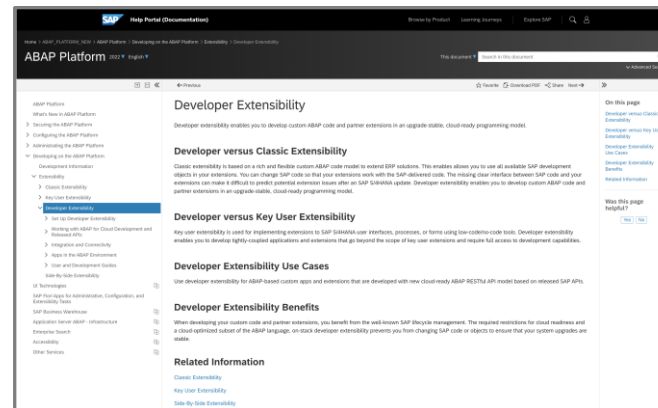
[How to use Embedded Steampunk in SAP S/4HANA Cloud, private edition and in on-premise – The new ABAP extensibility guide | SAP Blogs](#)



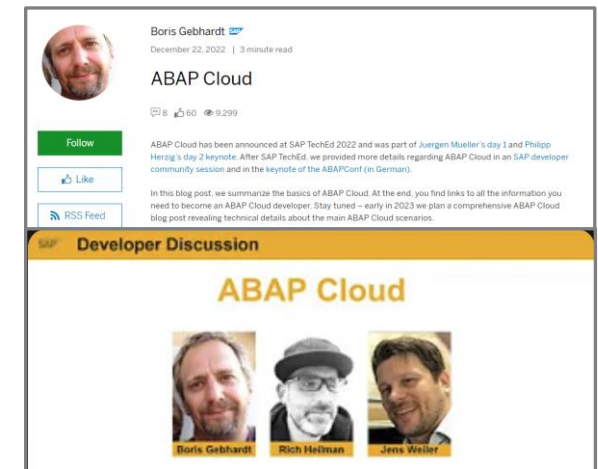
[Embedded Steampunk – Some more details for ABAP developers | SAP Blogs](#)



[The new ABAP extensibility guide](#)



[SAP documentation](#)



[ABAP Cloud | SAP Blogs](#)
[Developer Discussion: ABAP Cloud](#)

More information on RAP

Further information

[State-of-the-Art ABAP Development with the ABAP RESTful Application Programming Model \(RAP\)](#) | SAP Community

[Modernization with RAP](#) | SAP Blogs

[Acquire Core ABAP Skills](#) | [Practicing Clean Core Extensibility for SAP S/4HANA Cloud](#) | SAP Learning Journey

 [ABAP Cloud at SAP's Devtoberfest in 2023](#) |  [ABAP Cloud sessions at SAP TechEd 2023](#)

[SAP Fiori elements Feature Showcase App with RAP](#)

What's New in RAP: [SAP BTP ABAP Environment](#) | [SAP S/4HANA](#) | [SAP S/4HANA Cloud](#)

Outlook: [ABAP Platform Roadmap Information](#) | [SAP BTP ABAP Environment@interactive SAP Road Map Explorer](#)

Public SAP Web sites

ABAP Development Community: www.sap.com/community/topic/abap.html

SAP BTP ABAP Environment Community: <https://community.sap.com/topics/btp-abap-environment>

SAP S/4HANA Cloud ABAP Environment Community: <https://community.sap.com/topics/s4hana-cloud-abap-environment>

ABAP Testing and Analysis Community: <https://community.sap.com/topics/abap-testing-analysis>

SAP products: www.sap.com/products

SAP training and certification opportunities

www.sap.com/education – e.g. trainings S4D437, S4D430, HA400, and S4D400

learning.sap.com/learning-journey – e.g., search for ABAP or ABAP Cloud

Learn more about ABAP Cloud at SAP TechEd 2023

Check the virtual Session Catalog: [SAP TechEd Virtual in 2023](#)

Join us for these insightful virtual sessions to learn more about accelerating development with pro-code tools: [AD103v](#), [AD107v](#), [DT187v](#), [DT182v](#), [DT103v](#), [DT200v](#)



See blog post [ABAP Cloud at SAP TechEd 2023](#)



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