



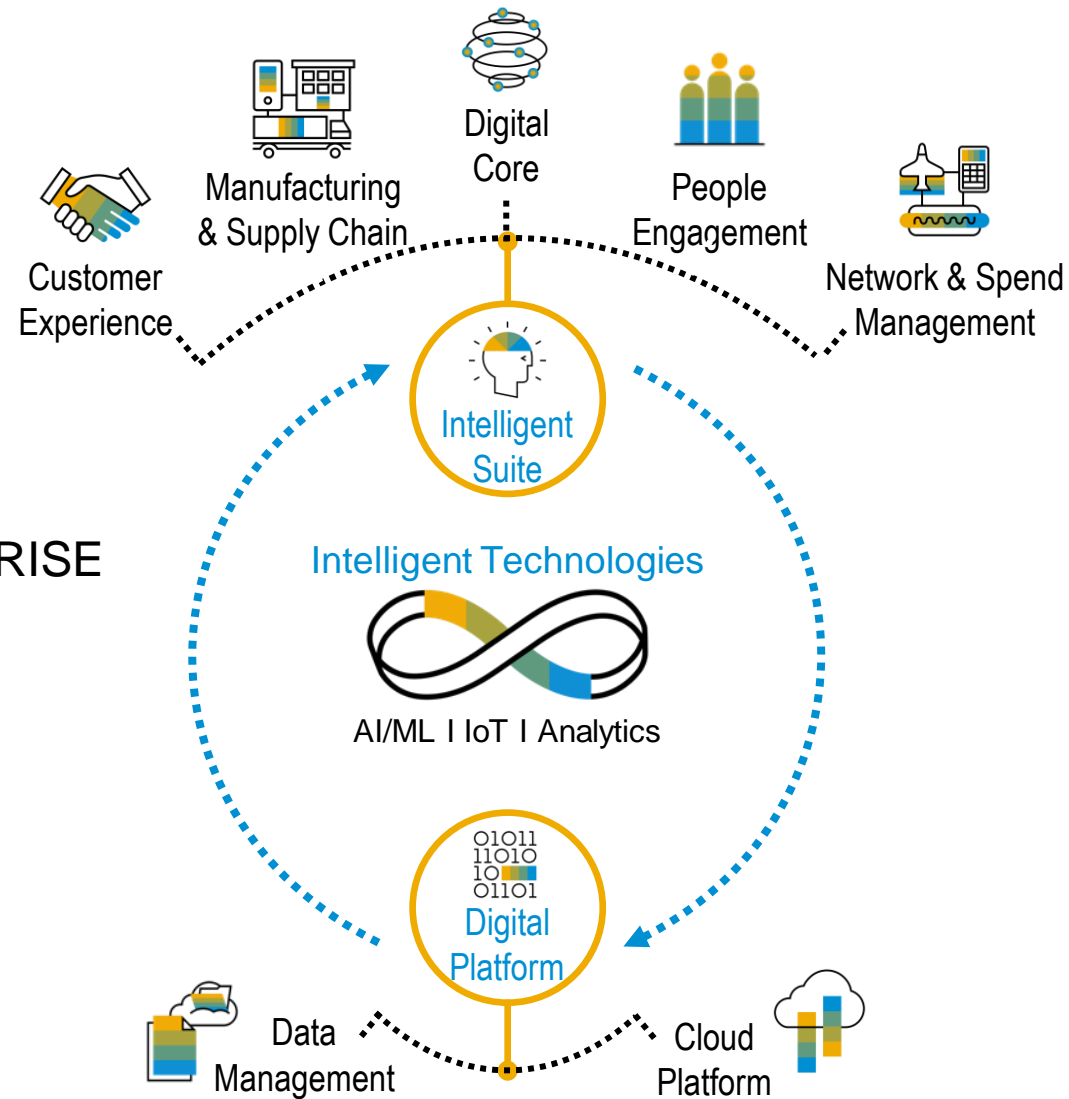
Introduction to ABAP in the Cloud

Unit 2: Introduction to SAP BTP, ABAP Environment

SAP Intelligent Enterprise Framework

THE INTELLIGENT ENTERPRISE

3 KEY COMPONENTS:



1

Intelligent Suite

2

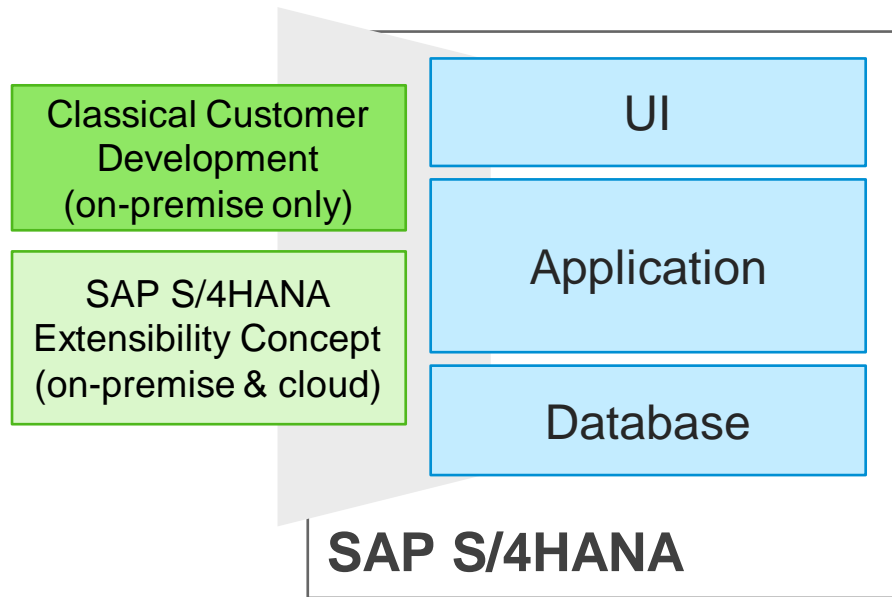
Intelligent Technologies

3

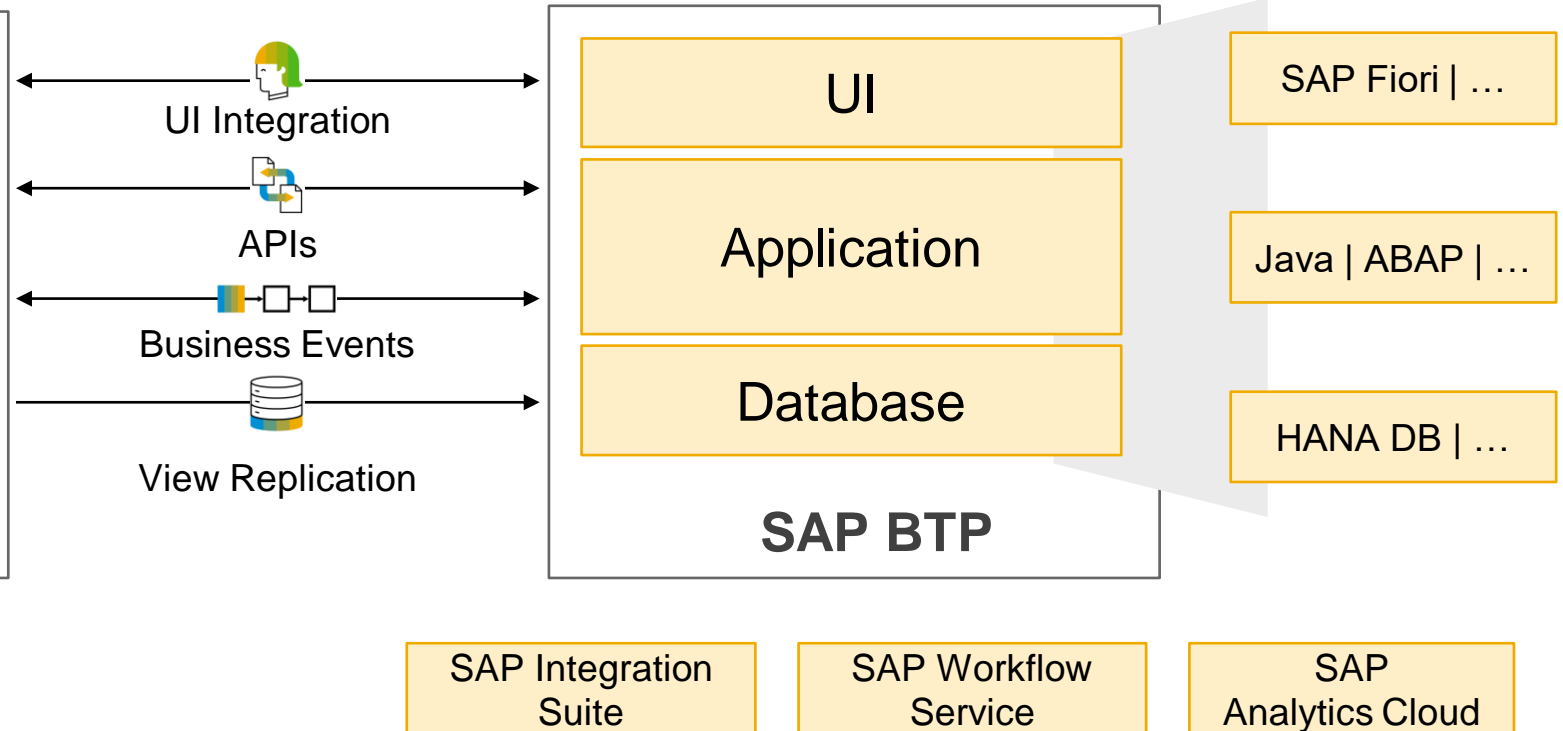
Digital Platform

SAP S/4HANA side-by-side – overview: custom/partner extensions

In-App Extensibility

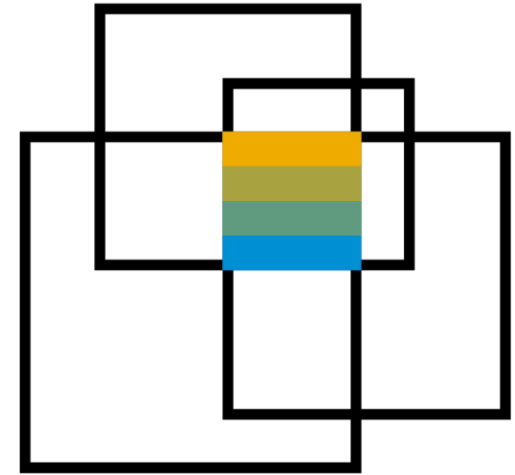


Side-by-Side Extensibility



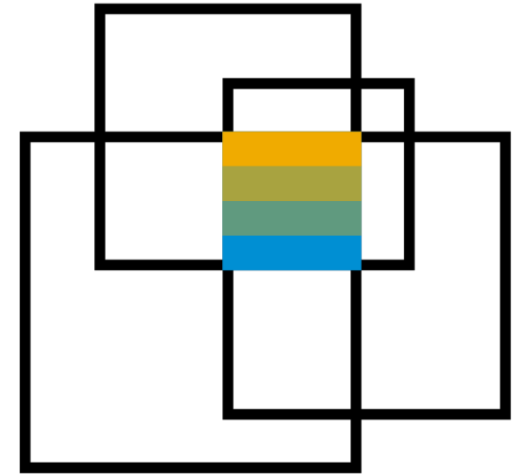
ABAP language feature scope

- Enablement of smooth ABAP PaaS operation through restricted ABAP language feature set intended for developments on SAP BTP, ABAP environment
- Object-oriented
- ABAP language extensions provided for the development of transactional service-based SAP Fiori business applications
- Access only allowed to released development objects and programming interfaces



ABAP SQL feature scope

- Enablement of smooth ABAP PaaS operation through restricted ABAP SQL feature set support on SAP BTP, ABAP environment
- Major restrictions (i.e. not supported)
 - SQL-CONNECTION and SELECT-CONNECTION to avoid unwanted secondary database connection
 - SQL-CONNECTION-DYNAMIC and SELECT-FROM-DYN due to no support for dynamic performance
 - SELECT-CLIENT-SPECIFIED and SELECT-USING-CLIENT to enforce client separation
 - Obsolete statements like SELECT-FOR-UPDATE



Find more details in the SAP Help documentation for SAP BTP, ABAP environment

Introduction to SAP BTP, ABAP environment

SAP BTP licensing

SAP BTP is available as

- Global Account
- Trial

Global Account

- SAP BTP Enterprise Agreement (CPEA) or Pay-As-You-Go for SAP BTP
- All features available

Trial

- <https://account.hanatrial.ondemand.com>
- Free service plans
- Reduced feature set (but still very powerful)

Overview: SAP BTP ABAP service: structure and terminology

Which SAP BTP ?

Global Account or Trial?

Select Specific
ABAP Service Instance

Where exactly?

- Global Account
- Subaccount
- Space
- ABAP Service Instance

Prepare User Accounts

How to log on to ABAP?

- SAP BTP User
- Subaccount Member /
Space Member
- Employee
- Business User

Logon credential prerequisites (to log on to your ABAP service instance)

- Get a **global account** to develop and deploy applications on SAP BTP.
- Set up your account model to get your SAP BTP **global accounts** and **subaccounts** that enable you to access the relevant SAP BTP products within the production landscape.
- Create a space.
- Set up an ABAP service instance.
- Configure your environment to adapt the service instance that represents the ABAP system to your company's needs. For example, you might want to provide user access for the application.


The screenshot shows the SAP BTP Cockpit interface. The left sidebar contains the following navigation items: Overview, Services (expanded), Service Marketplace, Instances and Subscriptions (selected), Cloud Foundry (expanded), Spaces, Quota Plans, Org Members, HTML5 Applications, Connectivity, Security, Entitlements, Usage Analytics, Useful Links, and Legal Information. The main content area is titled 'Subaccount: trial - Instances and Subscriptions'. It features a search bar and filters for 'All Services', 'All Plans', and 'All Statuses'. Below this, there are tabs for 'Subscriptions (1)', 'Instances (2)', and 'Environments (2)'. The 'Instances (2)' tab is active, showing a table of service instances created in the subaccount. The table has columns for Instance, Service, Plan, Runtime Environ..., Scope, Credentials, and Status. Two instances are listed: 'default_aba...' (ABAP environment, shared, Cloud Foundry, dev scope, 1 key, Created) and 'uaa-issuer' (Authorization & Trust Management, application, Kyma / Kubernetes, 59CBB745-7263-..., 1 binding, Created). Below the instances table, there is a section for 'Environments (2)' titled 'Environment instances created in this subaccount.' It contains a table with columns for Name, Environment, Plan, Created On, Changed On, and Status. Two environment instances are listed: 'a45a35bdtrial' (Cloud Foundry Runtime, standard, Created 29/10/2020, Changed 26/07/2021) and 'a45a35bdtrial_trial' (Kyma Environment, trial, Created 26/07/2021, Changed 26/07/2021).


Instance	Service	Plan	Runtime Environ...	Scope	Credentials	Status
default_aba...	ABAP environment	shared	Cloud Foundry	dev	1 key	Created
uaa-issuer	Authorization & Trust Management	application	Kyma / Kubernetes	59CBB745-7263-...	1 binding	Created


Name	Environment	Plan	Created On	Changed On	Status
a45a35bdtrial	Cloud Foundry Runtime	standard	29/10/2020	26/07/2021	Created
a45a35bdtrial_trial	Kyma Environment	trial	26/07/2021	26/07/2021	Created


Introduction to SAP BTP, ABAP environment


Registering for SAP BTP


 **SAP** SAP BTP Cockpit


 Overview

 Services

 Useful Links

 Legal Information

 Sign In



SAP BTP

SAP's open platform as a service for developing cloud business applications in a fully provisioned environment.

Using a set of end-to-end services, capabilities, and tools, developers can build, extend, and integrate business applications in the cloud.

[Read more on cloudplatform.sap.com](https://cloudplatform.sap.com)

SAP BTP Cockpit

The central Web-based user interface for administrators, providing access to a number of functions for configuring and managing applications and connecting them to services on SAP BTP.

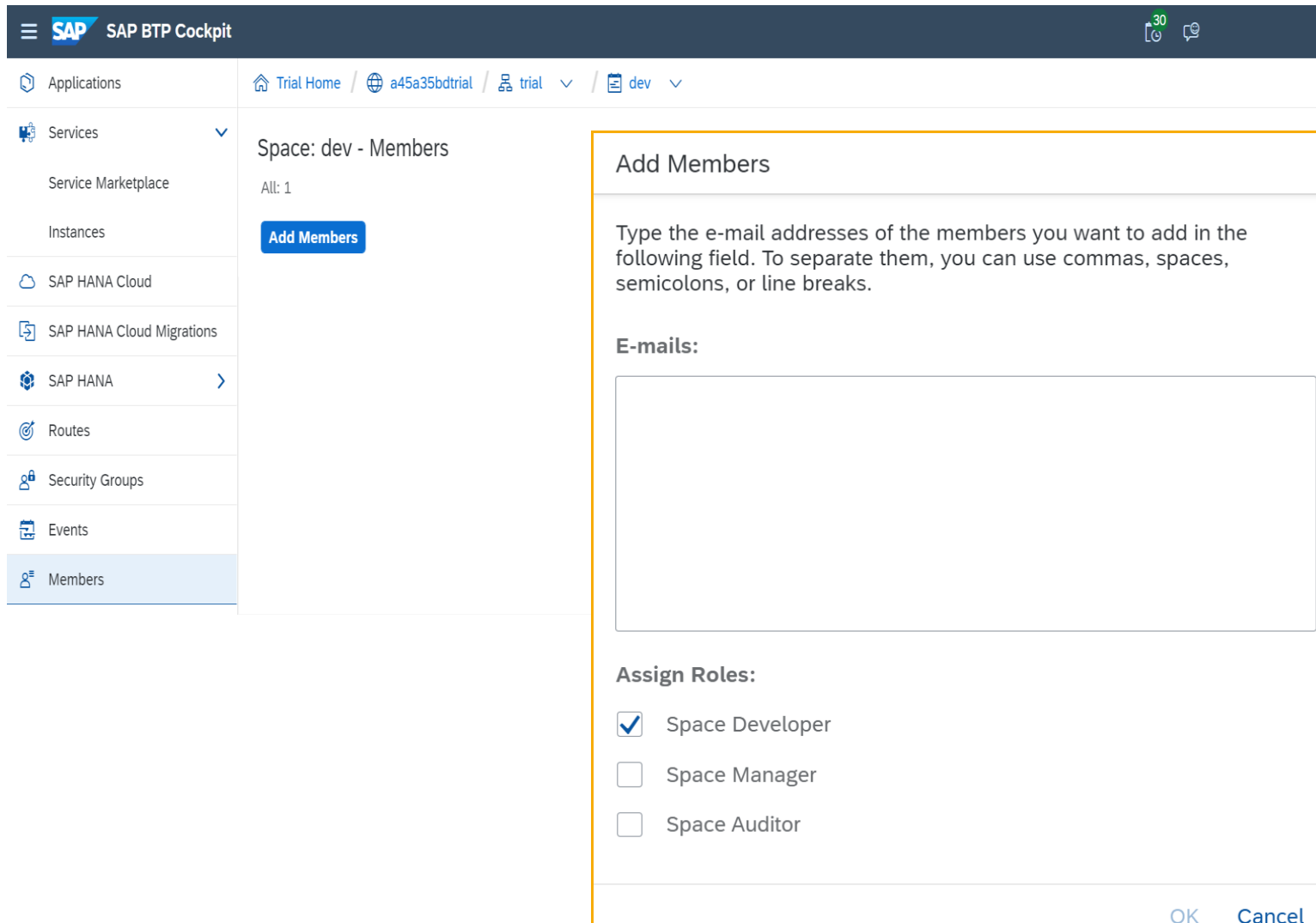
Use the cockpit to manage resources, services, security, monitor application metrics, and perform actions on cloud applications.

Sign In

Register

Introduction to SAP BTP, ABAP environment

Creating subaccount / space members



The screenshot shows the SAP BTP Cockpit interface. On the left is a navigation menu with options: Applications, Services (selected), Service Marketplace, Instances, SAP HANA Cloud, SAP HANA Cloud Migrations, SAP HANA, Routes, Security Groups, Events, and Members. The main area displays 'Space: dev - Members' with 'All: 1' and an 'Add Members' button. An 'Add Members' dialog box is open, featuring a text input field for email addresses and a section for assigning roles. The roles listed are 'Space Developer' (checked), 'Space Manager' (unchecked), and 'Space Auditor' (unchecked). The dialog has 'OK' and 'Cancel' buttons at the bottom right.

Add Members

Type the e-mail addresses of the members you want to add in the following field. To separate them, you can use commas, spaces, semicolons, or line breaks.

E-mails:

Assign Roles:

- ☒ Space Developer
- ☐ Space Manager
- ☐ Space Auditor

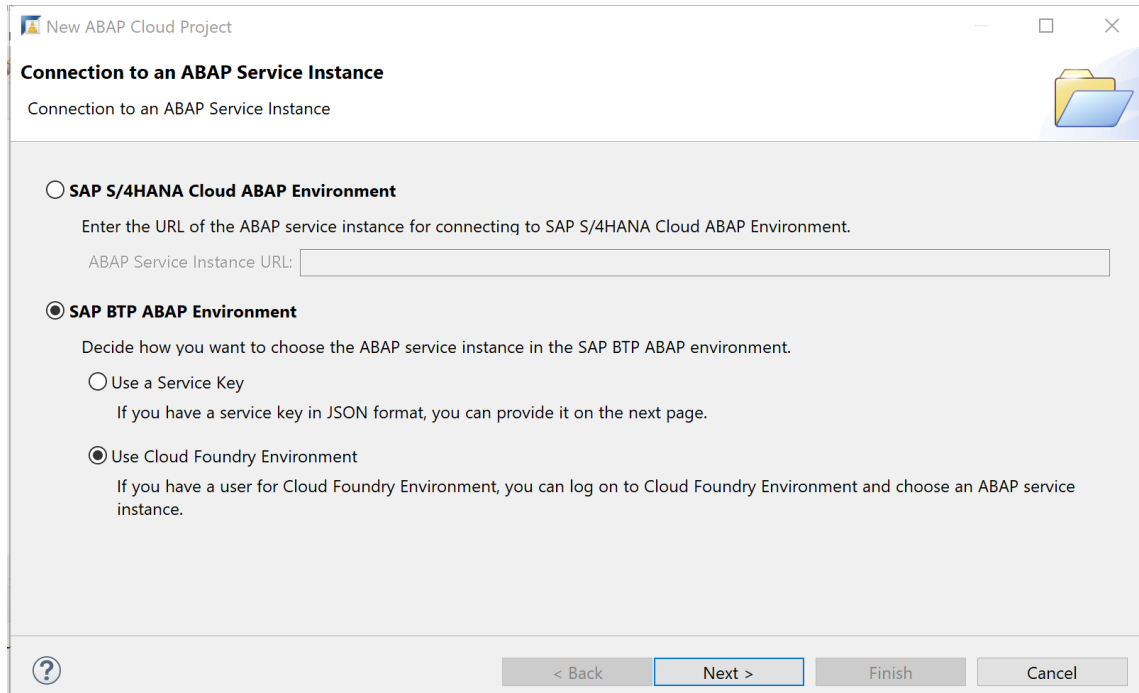
OK Cancel

When creating a space member, a subaccount member will be created implicitly as well.

The user should be a valid SAP BTP user, otherwise they cannot log on to the ABAP service later.

Logging on to ABAP service from Eclipse with logon credentials

When creating cloud project



New ABAP Cloud Project

Connection to an ABAP Service Instance

Connection to an ABAP Service Instance

☐ **SAP S/4HANA Cloud ABAP Environment**

Enter the URL of the ABAP service instance for connecting to SAP S/4HANA Cloud ABAP Environment.

ABAP Service Instance URL:

☒ **SAP BTP ABAP Environment**


Decide how you want to choose the ABAP service instance in the SAP BTP ABAP environment.

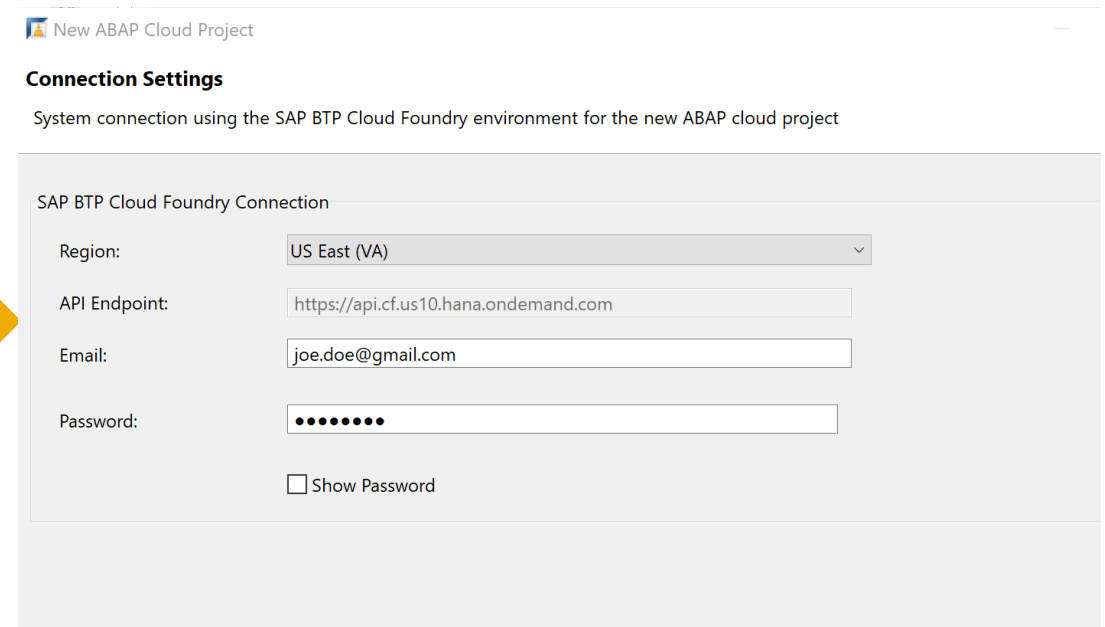
☐ Use a Service Key

If you have a service key in JSON format, you can provide it on the next page.

☒ Use Cloud Foundry Environment

If you have a user for Cloud Foundry Environment, you can log on to Cloud Foundry Environment and choose an ABAP service instance.





New ABAP Cloud Project

Connection Settings

System connection using the SAP BTP Cloud Foundry environment for the new ABAP cloud project

SAP BTP Cloud Foundry Connection

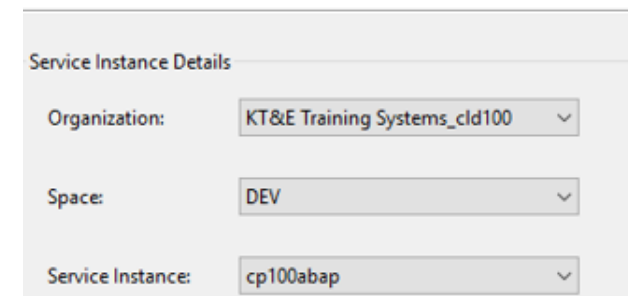
Region:

API Endpoint:

Email:

Password:

☐ Show Password



Service Instance Details

Organization:

Space:

Service Instance:

ABAP Development Tools in Eclipse – high developer productivity

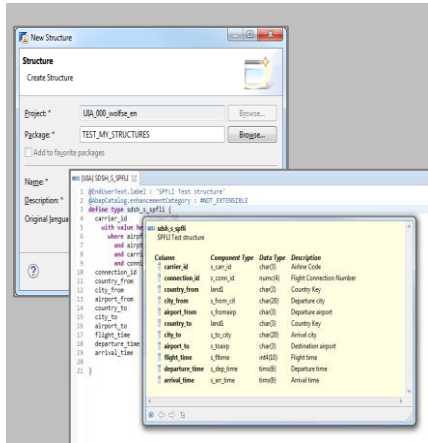
- Full ABAP for SAP HANA support
- SQL tools, incl. data preview and SQL console
- Troubleshooting tools like debugger, tracing, dump analysis
- Quality tools for static code checks and unit testing
- ...

Superior ABAP toolset provided in Eclipse

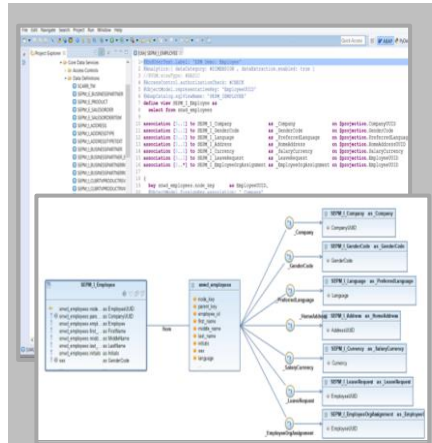
Open and extensible

- SAP's central Eclipse update site on <https://tools.hana.ondemand.com>
- SDK for partner and customer extensions
- Eclipse marketplace & community

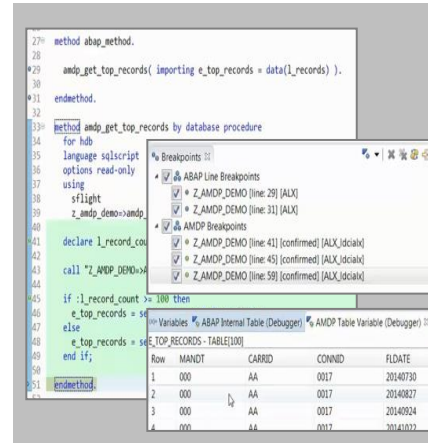
ABAP Development Tools in Eclipse – major enhancements in ABAP 7.50



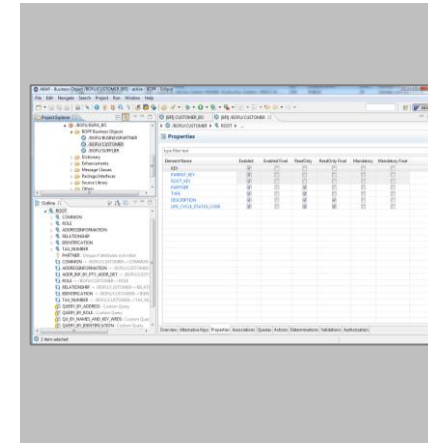
New source-based structure editor



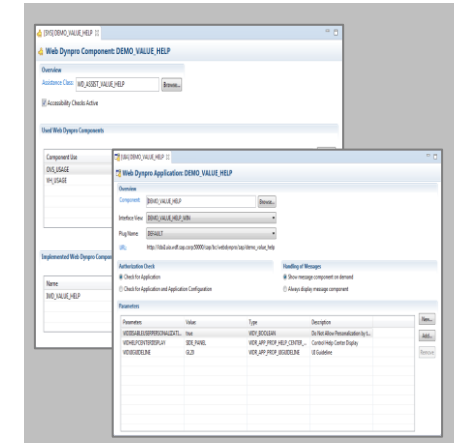
Enhanced CDS tools support



Autonomous AMDP debugger



Native BOPF business objects editor*



New editors for Web Dynpro ABAP components and applications*



More about: [ADT 2.51 for AS ABAP 7.50](#), [ADT 2.64 for AS ABAP 7.50](#)

* Not available in ABAP environment

ABAP Development Tools in Eclipse – major enhancements in ABAP 7.51

Domain: CFD_EUI_ENABLING_STATUS

Format Output Characteristics

Data Type: * CHAR Output Length: 10

Length: * 10 [Conversion Routine](#)

☐ Case-sensitive

Fixed Values

Define the single fixed values or interval of values

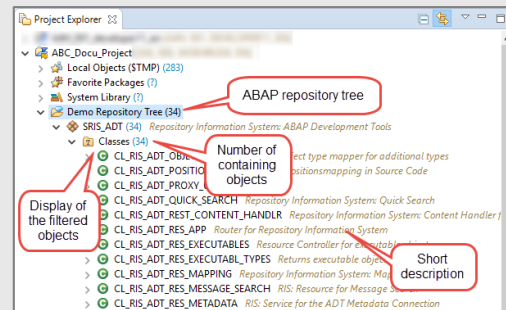
☐ Intervals

type filter text

Fixed Value	Description
ENABLED	Enabled
POSSIBLE	Can Be Enabled
IMPOSSIBLE	Cannot Be Enabled
PREPARE	Preparation Required
FAILED	Enabling Failed
DIS_FAILED	Disabling Failed
ENABLING	Enabling...
DISABLING	Disabling...
UNDEFINED	Undefined

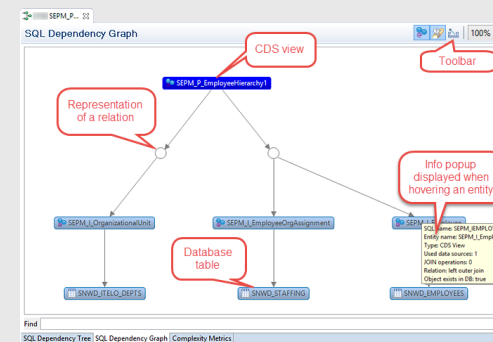
Form-based domain editor

Define your own view on ABAP repository

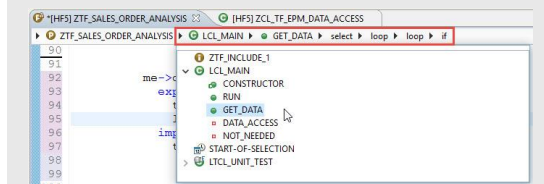


Next generation Project Explorer

Dependency analyzer



Enhanced CDS development tools

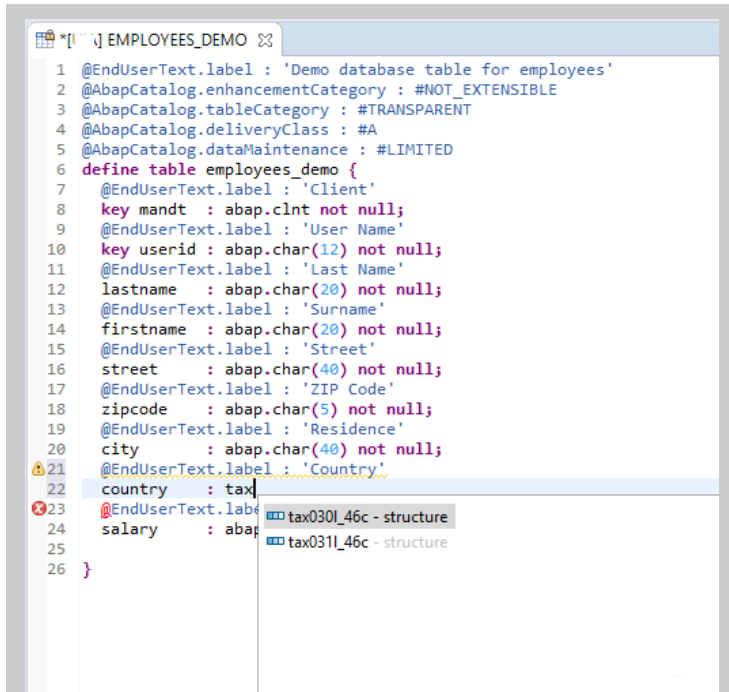


Breadcrumb with nested statement information



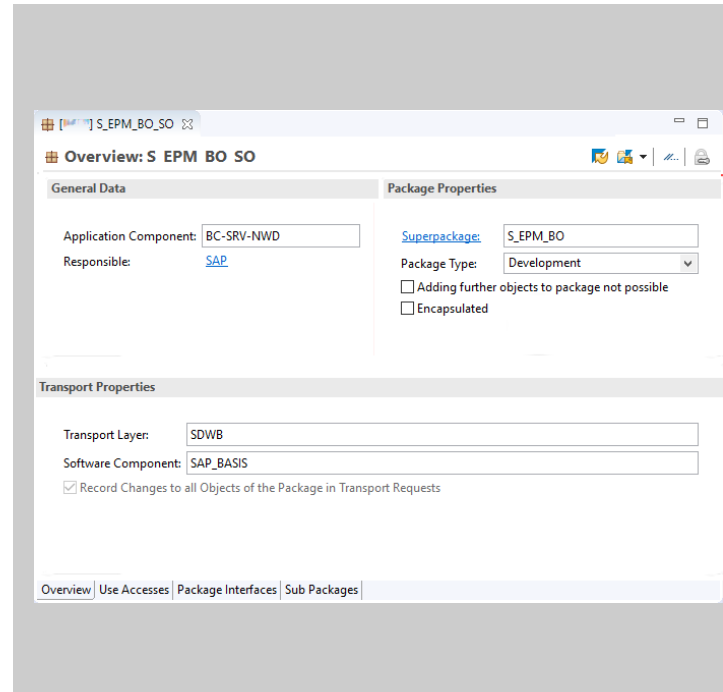
More about: [ADT 2.68 for AS ABAP 7.51](#), [ADT 2.73 for AS ABAP 7.51 SP01](#)

ABAP Development Tools in Eclipse – major enhancements in ABAP 7.52 (1)



```
1 @EndUserText.label : 'Demo database table for employees'
2 @AbapCatalog.enhancementCategory : #NOT_EXTENSIBLE
3 @AbapCatalog.tableCategory : #TRANSPARENT
4 @AbapCatalog.deliveryClass : #A
5 @AbapCatalog.dataMaintenance : #LIMITED
6 define table employees_demo {
7   @EndUserText.label : 'Client'
8   key mandt : abap.clnt not null;
9   @EndUserText.label : 'User Name'
10  key userid : abap.char(12) not null;
11  @EndUserText.label : 'Last Name'
12  lastname : abap.char(20) not null;
13  @EndUserText.label : 'Surname'
14  firstname : abap.char(20) not null;
15  @EndUserText.label : 'Street'
16  street : abap.char(40) not null;
17  @EndUserText.label : 'ZIP Code'
18  zipcode : abap.char(5) not null;
19  @EndUserText.label : 'Residence'
20  city : abap.char(40) not null;
21  @EndUserText.label : 'Country'
22  country : tax0301_46c - structure
23  @EndUserText.label : 'Salary'
24  salary : tax0311_46c - structure
25
26 }
```

New source-based
database table editor



Overview: S EPM BO SO

General Data

Application Component: BC-SRV-NWD

Responsible: SAP

Package Properties

Superpackage: S_EPM_BO

Package Type: Development

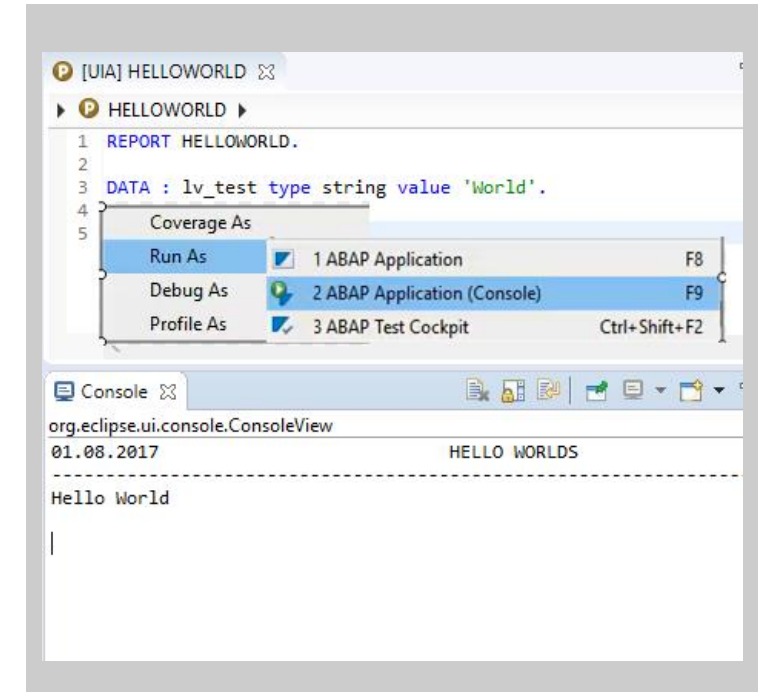
Transport Properties

Transport Layer: SDWB

Software Component: SAP_BASIS

Record Changes to all Objects of the Package in Transport Requests

New form-based
ABAP package editor



```
1 REPORT HELLOWORLD.
2
3 DATA : lv_test type string value 'World'.
4
5
```

org.eclipse.ui.console.ConsoleView

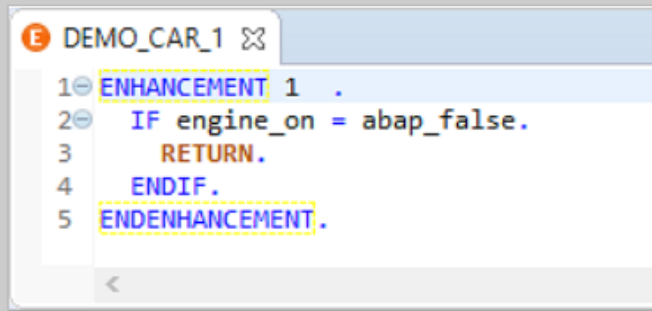
01.08.2017 HELLO WORLDS

Hello World

Run ABAP program on console

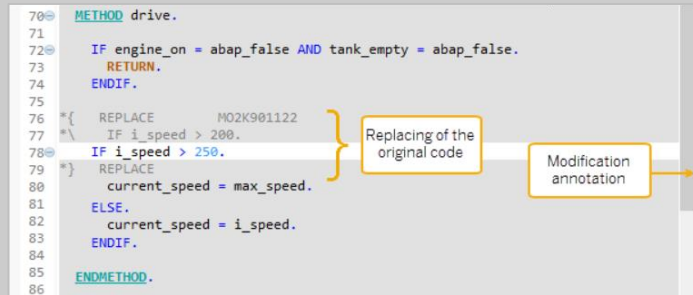
ABAP Development Tools in Eclipse – AS ABAP 7.53 features overview (1)

Enhancement Implementation Editor



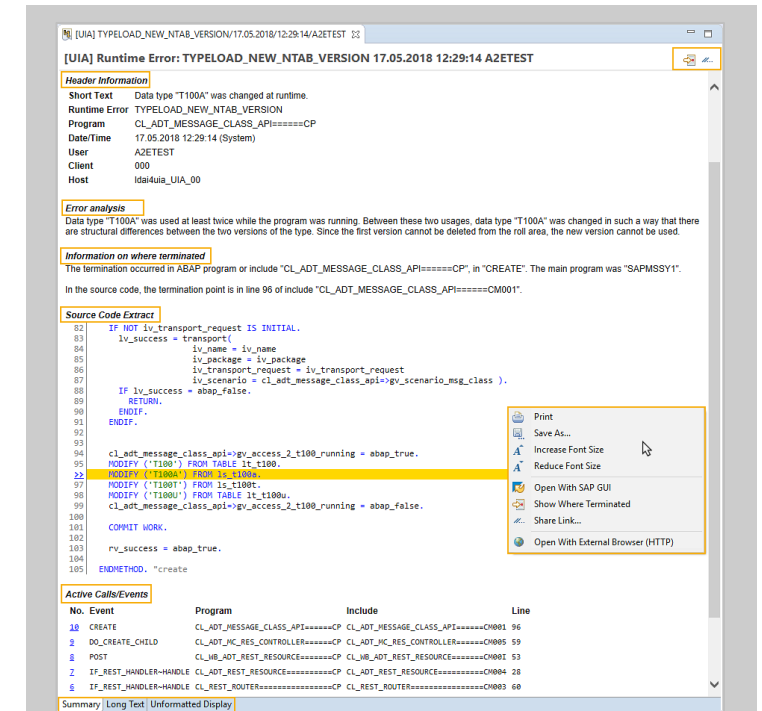
```
1- ENHANCEMENT 1 .
2- IF engine_on = abap_false.
3-   RETURN.
4- ENDIF.
5- ENDENHANCEMENT.
```

Change customer enhancements*



```
70- METHOD drive.
71-
72- IF engine_on = abap_false AND tank_empty = abap_false.
73-   RETURN.
74- ENDIF.
75-
76- *{ REPLACE MO2K901122
77-   IF i_speed > 200.
78- *} REPLACE
79-   current_speed = max_speed.
80- ELSE.
81-   current_speed = i_speed.
82- ENDIF.
83-
84- ENDMETHOD.
85-
86-
```

Modify development objects in the SAP namespace*



[UIA] Runtime Error: TYPELOAD_NEW_NTAB_VERSION 17.05.2018 12:29:14 AZETEST

Header Information

Short Text: Data type "T100A" was changed at runtime.
Runtime Error: TYPELOAD_NEW_NTAB_VERSION
Program: CL_ADT_MESSAGE_CLASS_API=====CP
Date/Time: 17.05.2018 12:29:14 (System)
User: AZETEST
Client: 000
Host: Idai4ua_UIA_00

Error analysis

Data type "T100A" was used at least twice while the program was running. Between these two usages, data type "T100A" was changed in such a way that there are structural differences between the two versions of the type. Since the first version cannot be deleted from the roll area, the new version cannot be used.

Information on where terminated

The termination occurred in ABAP program or include "CL_ADT_MESSAGE_CLASS_API=====CP", in "CREATE". The main program was "SAPMSY1". In the source code, the termination point is in line 96 of include "CL_ADT_MESSAGE_CLASS_API=====CM001".

Source Code Extract

```
82 IF NOT iv_transport_request IS INITIAL.
83   iv_success = transport(
84     iv_name = iv_name
85     iv_package = iv_package
86     iv_transport_request = iv_transport_request
87     iv_scenario = cl_adt_message_class_api->gv_scenario_msg_class ).
88   IF iv_success = abap_false.
89     RETURN.
90   ENDIF.
91 ENDIF.
92
93
94 cl_adt_message_class_api->gv_access_2_t100_running = abap_true.
95 MODIFY ('T100') FROM TABLE it_t100.
96
97 MODIFY ('T100') FROM IS_t100t.
98 MODIFY ('T100') FROM TABLE it_t100u.
99 cl_adt_message_class_api->gv_access_2_t100_running = abap_false.
100
101 COMMIT WORK.
102 rv_success = abap_true.
103
104 ENDMETHOD. "create
```

Analyze runtime errors

* Not available in ABAP environment

ABAP Development Tools in Eclipse – AS ABAP 7.53 features overview (2)

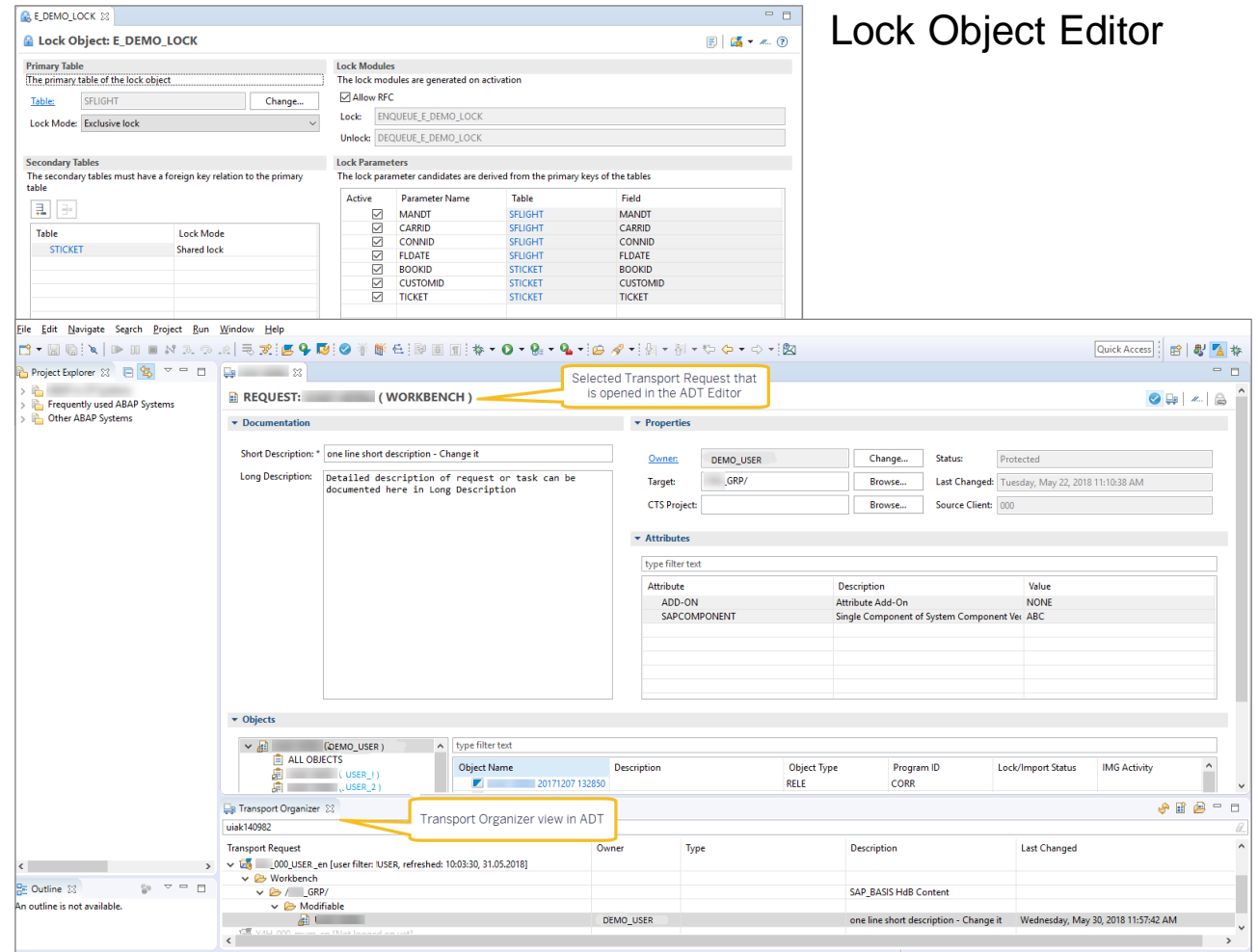
Classic objects in ABAP Dictionary

- Create and edit lock objects

Transport Organizer

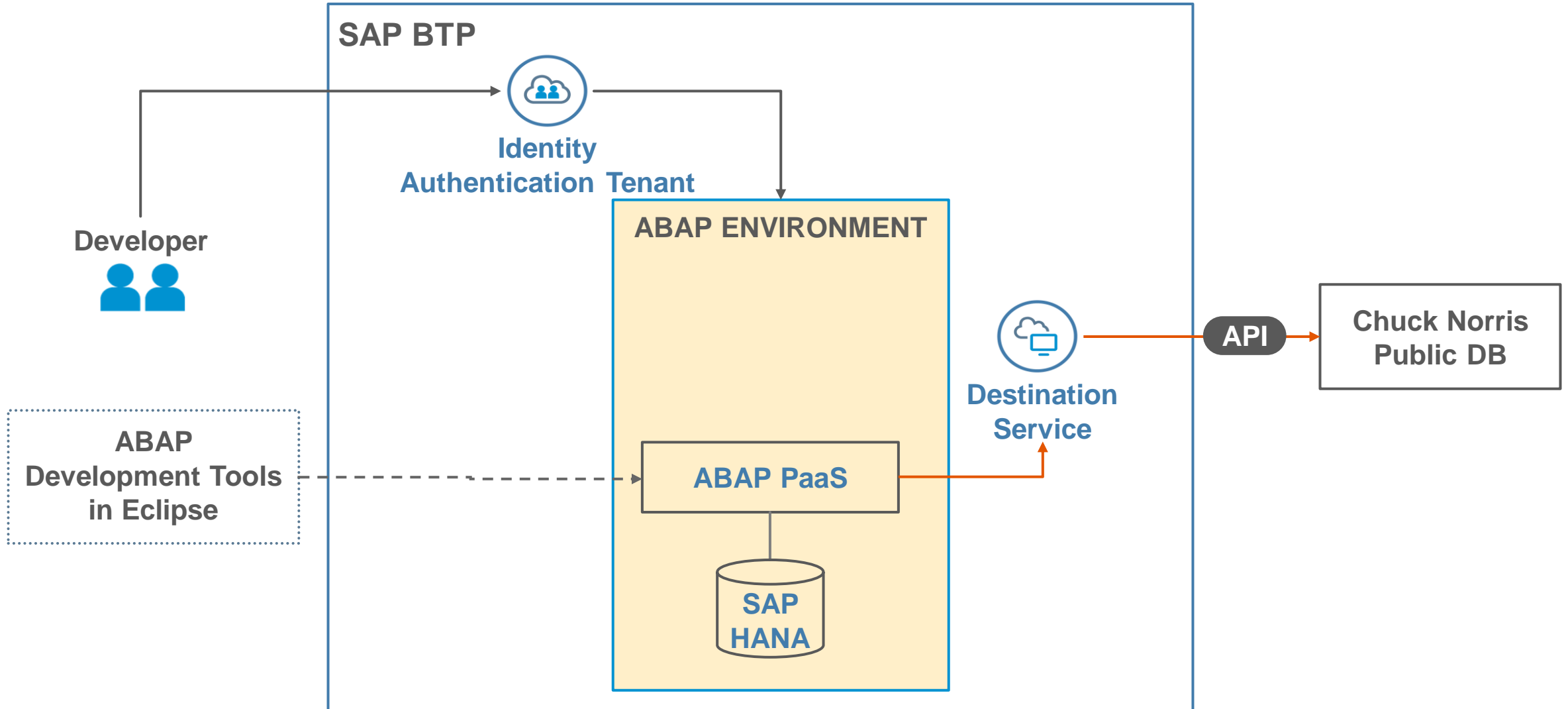
- View and edit details of a transport request

Lock Object Editor

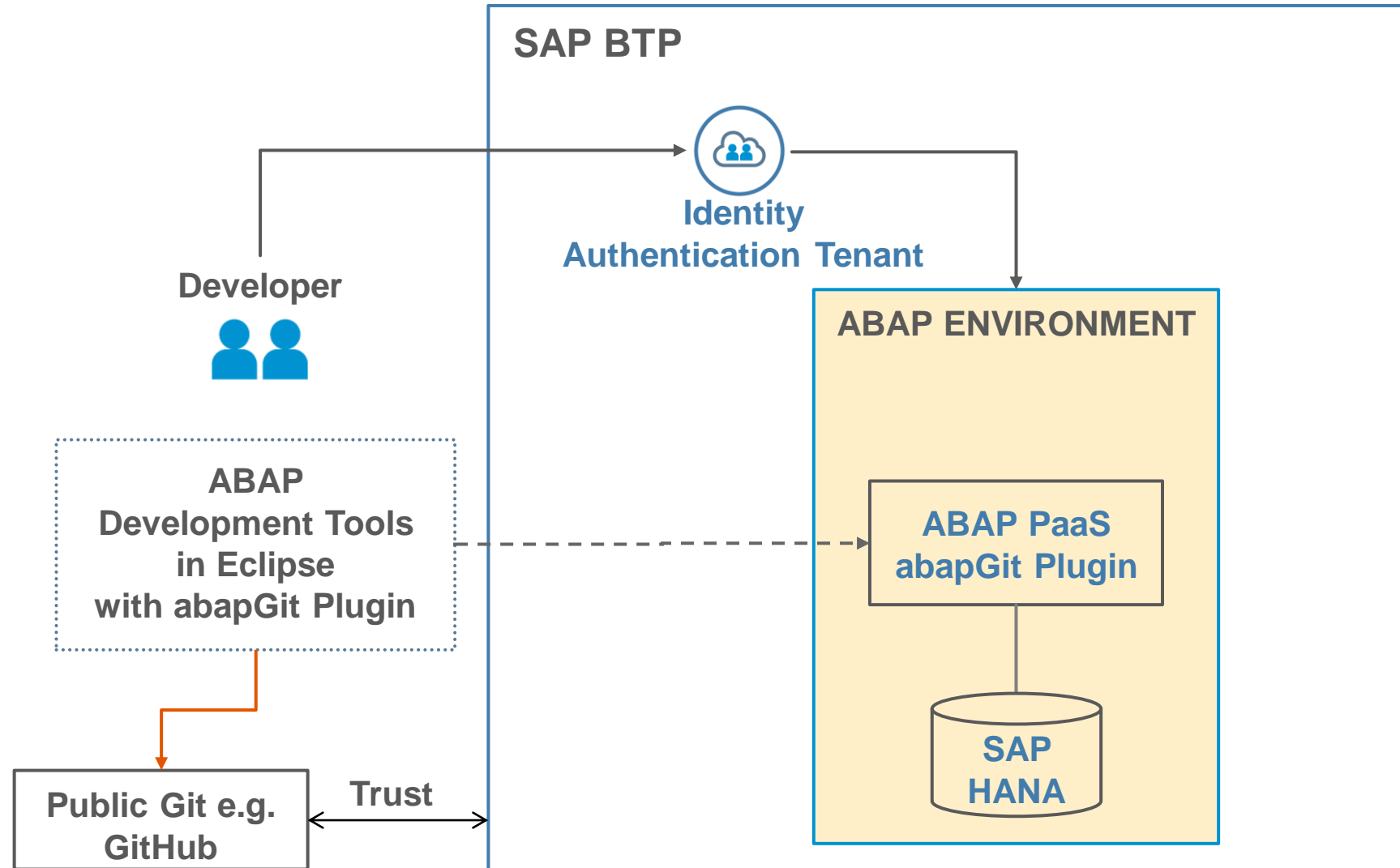


Transport Request Editor

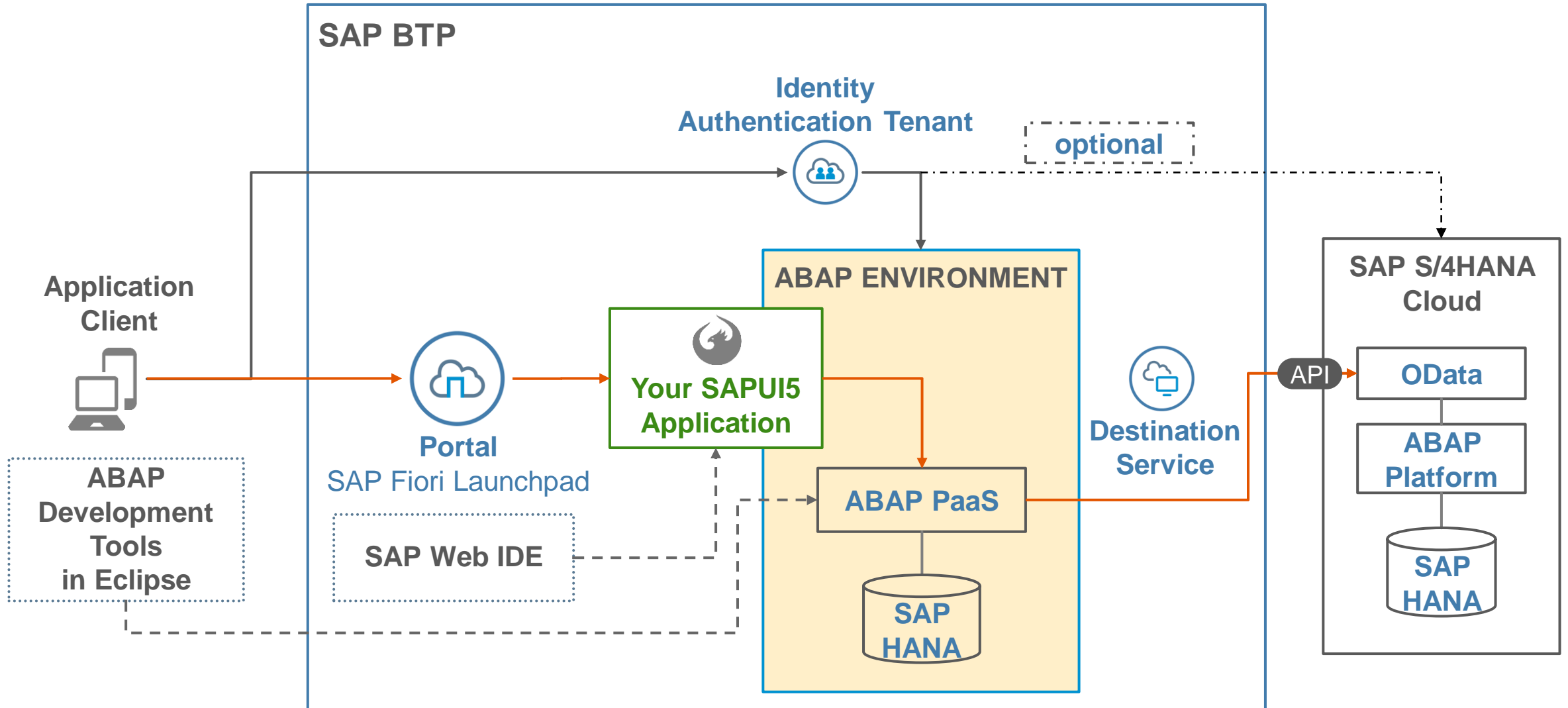
Scenario 1: call an external HTTP service



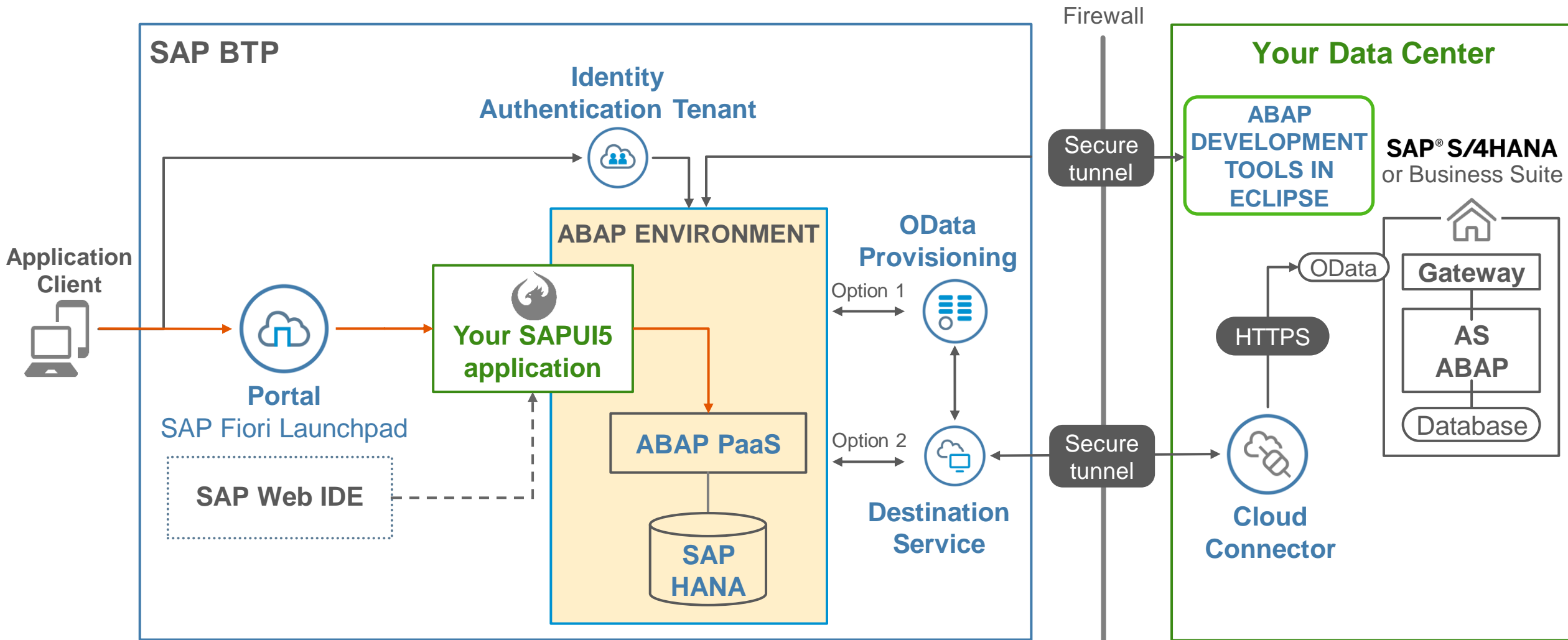
Scenario 2: import sources via abapGit



Scenario 3: SAP S/4HANA Cloud extension



SAP S/4HANA on-premise extension architecture (coming soon)



Thank you.

Contact information:

open@sap.com

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