

Key User and Developer Extensibility Options – Best Practices

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Presenters



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Your Input for Our Session

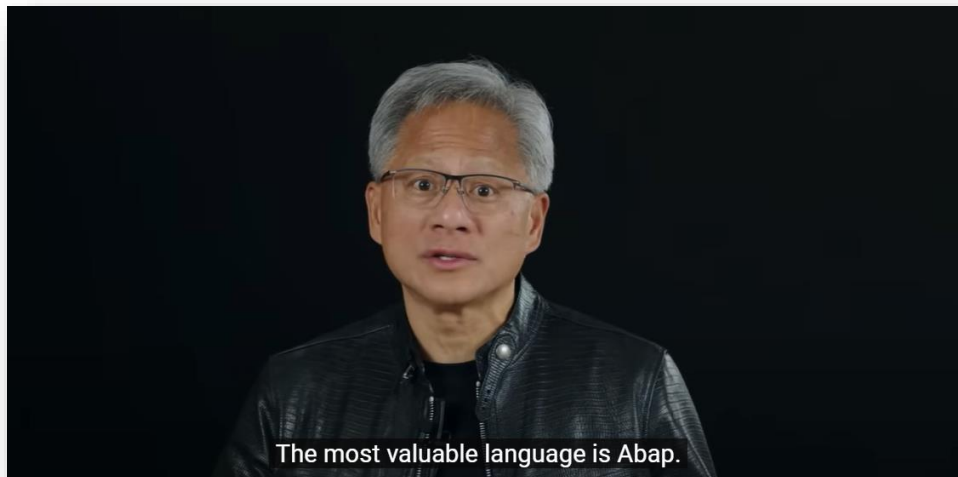
1

Not another sessions about extensibility strategy, as this was already covered by Sapphire, TechEd, and Devtoberfest.

2

Not another sessions about AI, as this was already covered by Sapphire, TechEd, and Devtoberfest.

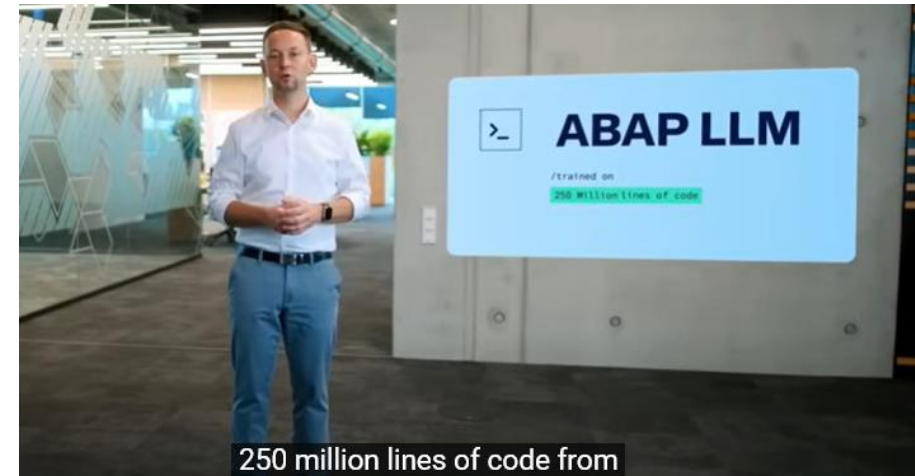
SAPPHIRE Keynote 2024 ([replay](#))



Christian Klein & Jensen Huang: **“The entire world is on our shoulders.”**

Jensen Huang **“At SAP, the most valuable language is ABAP.”**

SAP TechEd 2024 Keynote ([replay](#))



Micheal Ameling: We are **including ABAP Cloud** into SAP Build for both, on-stack and side-by-side development. We **trained our own ABAP LLM** with more than 250 million lines of code from SAP S/4HANA Cloud.

Agenda

SAP S/4HANA Extensibility
Overview

Developer and Key User
Extensibility: Use Cases and Best
Practices

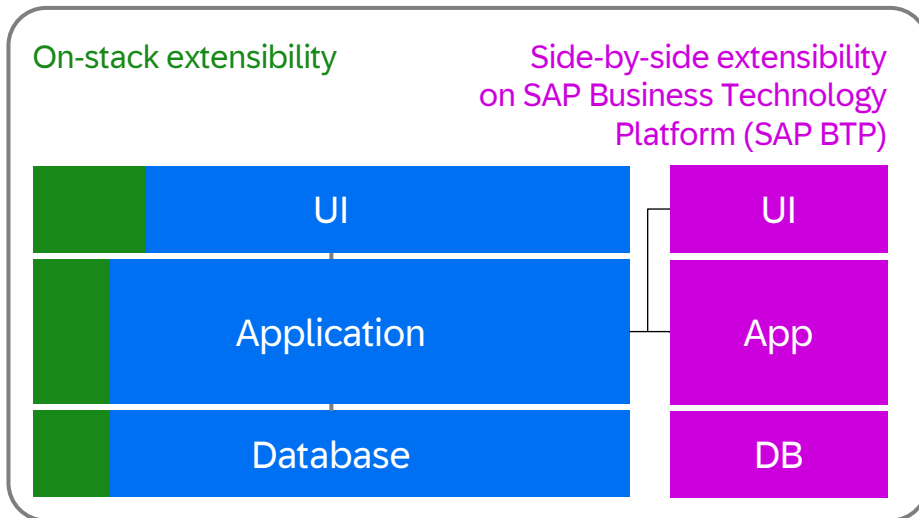


SAP S/4HANA Extensibility Overview



Decoupled and lifecycle-stable extensibility in SAP S/4HANA

Decoupling and lifecycle stability



Decoupled, lifecycle-stable extensions

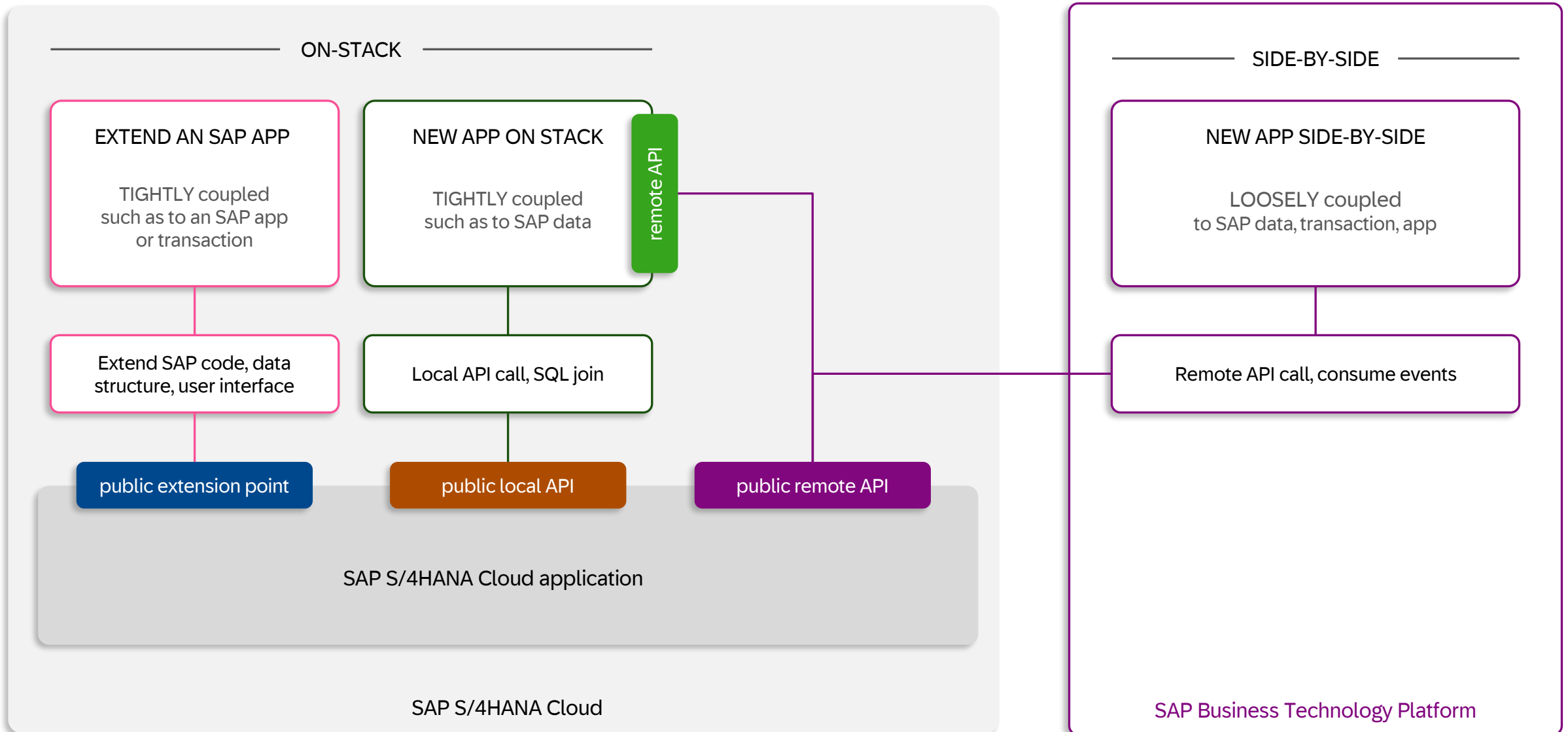
Challenge

- Software is always patched and upgraded based on a fixed schedule and new innovations must be introduced easily.

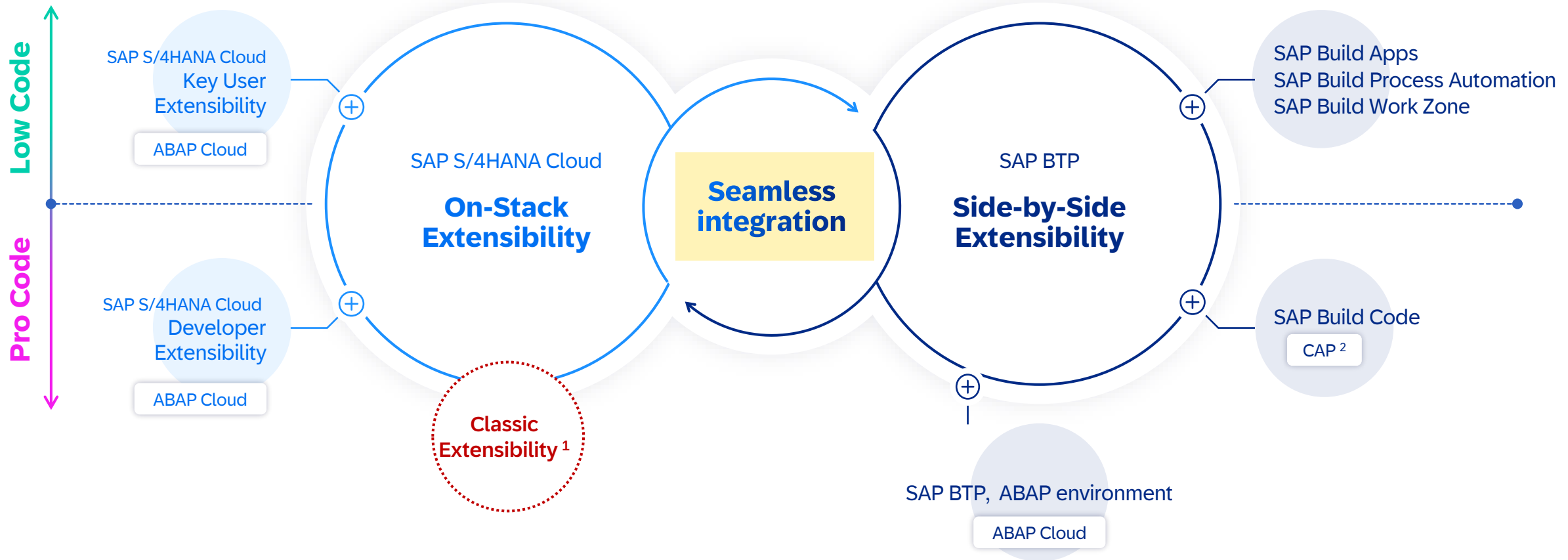
Solution

- Only extensibility that does not block SAP software updates and continues to work after an update without manual steps is allowed
- Custom extensions are lifecycle stable - that is, the software lifecycle of extensions is decoupled from the systems of records (clean core):
 - Modification free
 - Clash free
 - Released APIs, events, and extension points used
 - Compliant with zero-downtime principles

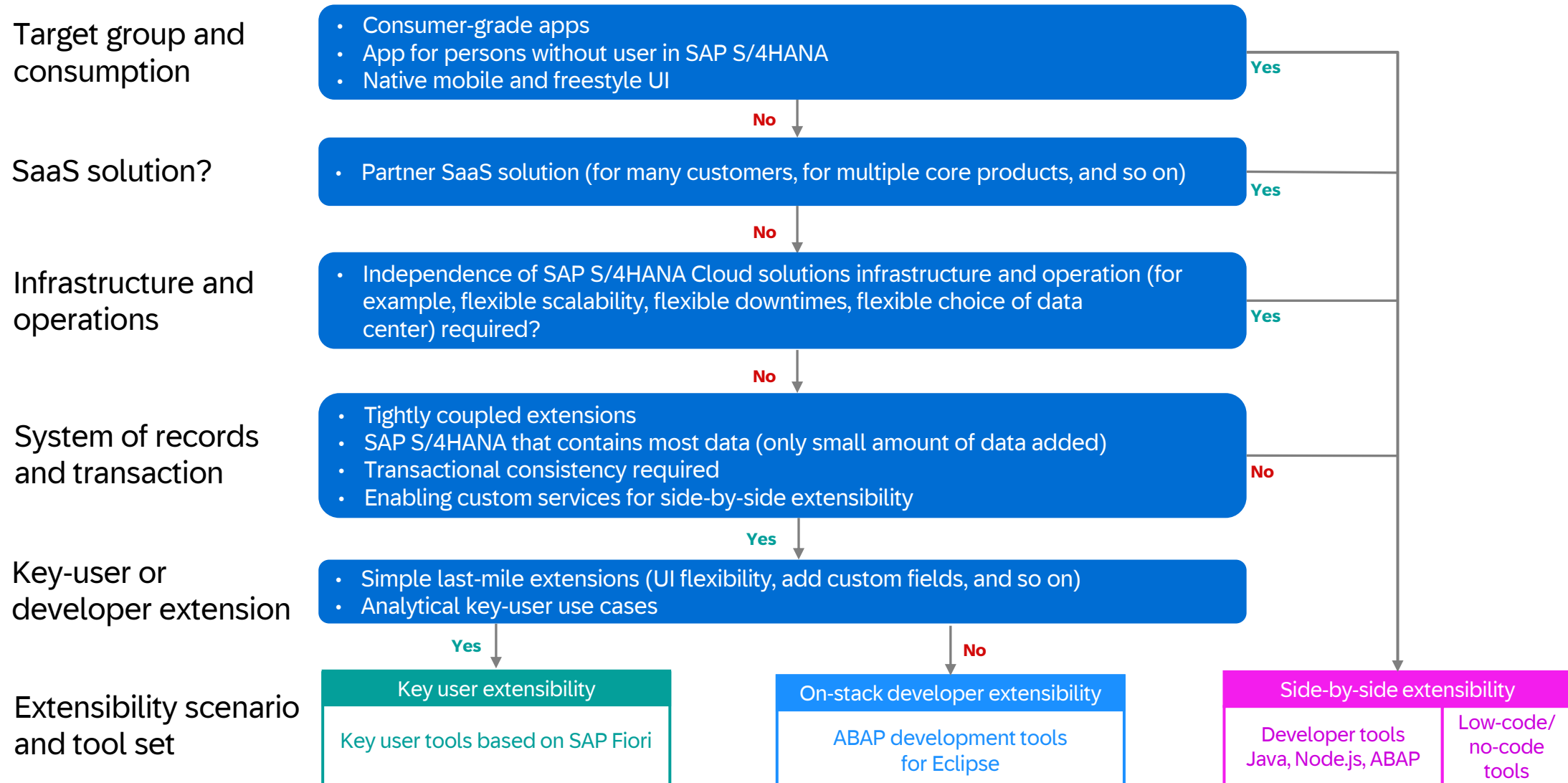
SAP S/4HANA Cloud extensibility patterns



Extensibility portfolio for SAP S/4HANA Cloud Public Edition



How to find the right extensibility option



Developer and key-user extensibility: Motivation

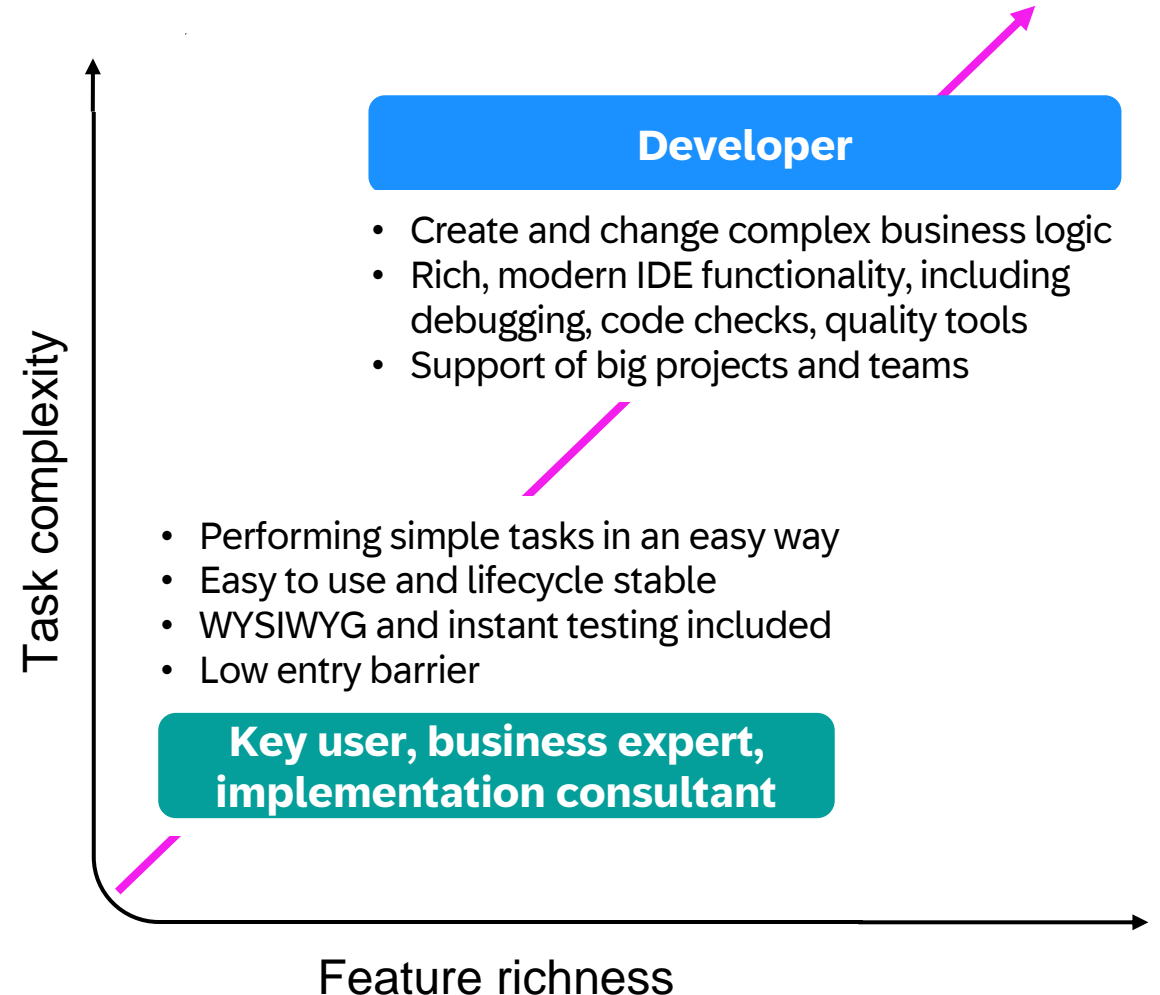
Empowering the key user

Challenge

- Line-of-business departments drive the implementation of (cloud and IT) services.

Solution

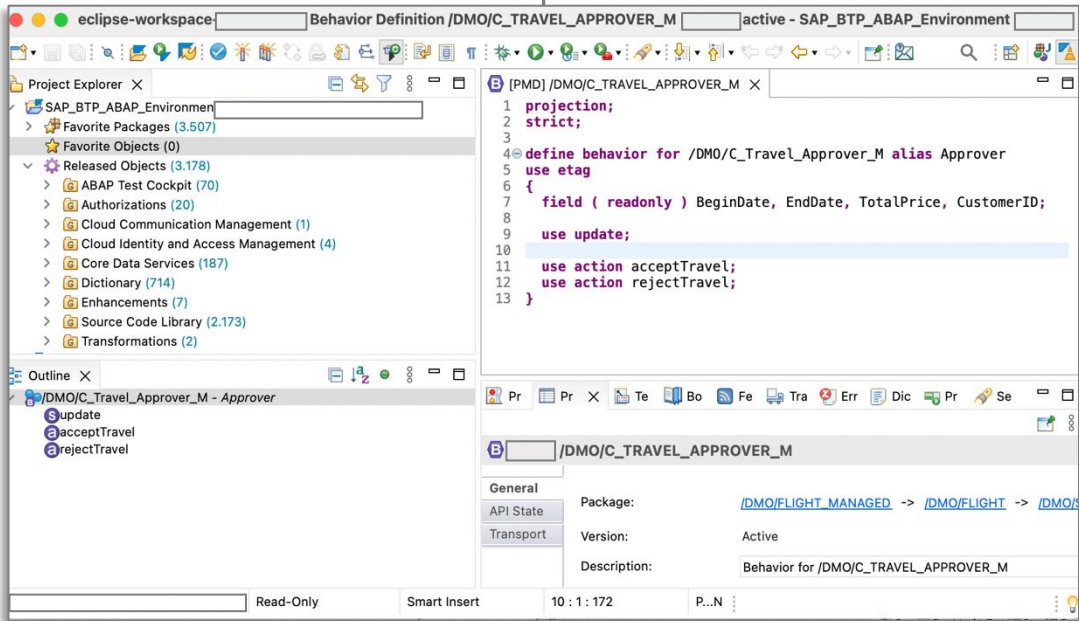
- Key-user extensibility tools are used by business departments that should easily apply non-disruptive extensibility tasks without risk.



Extensibility personas

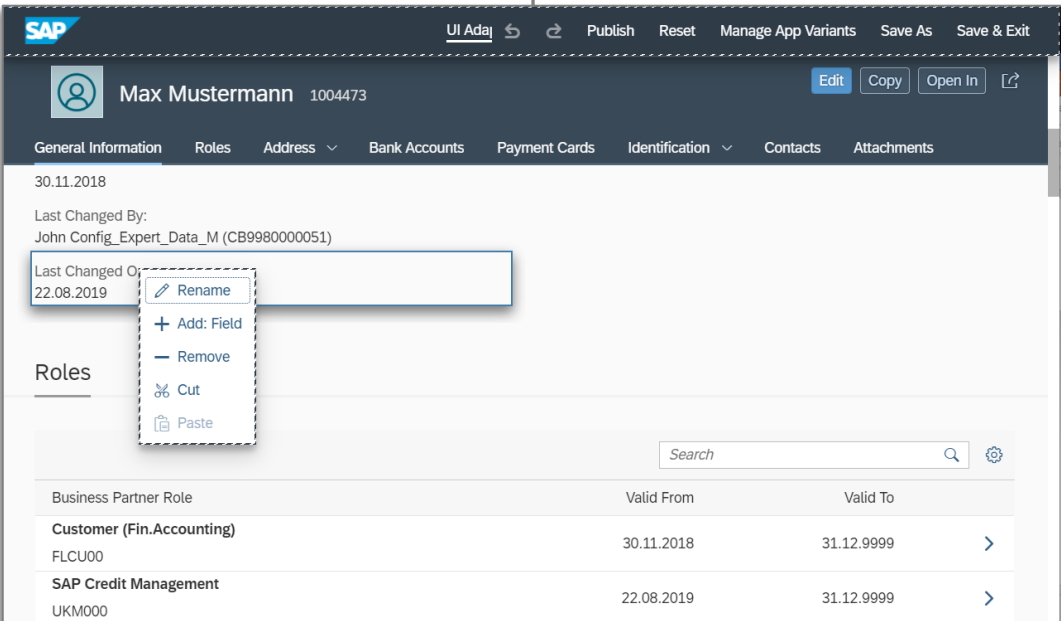
Developer

Integrated development environment (IDE)



Business expert,
implementation consultant,
key user

Low-code/no-code tools



Developer and key-user extensibility: Feature overview

Developer extensibility

UI adaptation project
(SAP Business Application Studio)

Extension field
(ABAP development tools – editors and wizard)

Custom Logic: BAdIs and BDEF extensions
(ABAP development tools – editor)

RAP Business Object
(ABAP development tools – editors and wizard)

CDS view and OData service
(ABAP development tools – editors and wizard)

Analytical query and applications
(ABAP development tools – editor; SAP Analytics Cloud)

...

Key-user extensibility

UI adaptation mode
(SAP Fiori Launchpad)

Extension field
(Custom Fields SAP Fiori app)

Custom Logic: BAdIs and BDEF extensions
(Custom Logic SAP Fiori app)

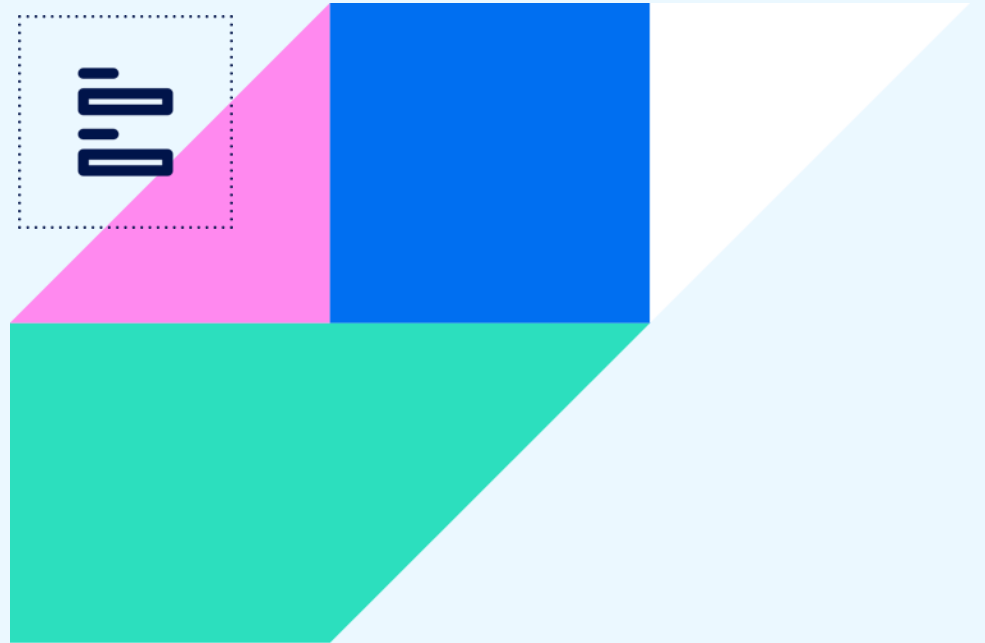
Custom business object
(Custom Business Objects SAP Fiori app)

CDS view and OData service
(Custom CDS views SAP Fiori app)

Analytical query and applications
(SAP Fiori apps, SAP Analytics Cloud)

...

Developer and key-user extensibility best practices



Developer and key-user extensibility: Guidance

Developer extensibility

UI adaptation project
(SAP Business Application Studio)

Demo: add button, change table settings and text arrangement type with SAPUI5 adaptation project

Key-user extensibility

UI adaptation mode
(SAP Fiori Launchpad)

Demo: Adapt UI labels and rearrange UI fields using adaptation with UI adaptation mode

Guidance for creation of UI adaptations

1. Use the UI adaptation mode in SAP Fiori Launchpad (key user extensibility), if the functional scope is sufficient.
2. Use UI adaptation project (developer extensibility).
Use UI adaptation project (classic extensibility).



Developer and key-user extensibility: Guidance

Developer extensibility






Extension field
(ABAP development tools – editors and wizard)

Key-user extensibility

Extension field
(Custom Fields SAP Fiori app)

For demos, see ABAPConf session by G. Wilhelm and D. Wachs and [Devtoberfest session by T. Schneider](#)

Guidance for creation of extension fields ([more information](#)):

1. Use the Custom Fields app (key user extensibility).  
2. Use ABAP Development Tools (ADT) with ABAP language version *ABAP for Cloud Development* (developer extensibility)  
3. Use ADT or SAPGUI tools with ABAP language version Standard (classic extensibility), e.g. if the corresponding SAP application is not enabled for the key user extensibility or developer extensibility. 

Developer and key-user extensibility: Guidance

Developer extensibility

Custom Logic: BAdIs and BDEF extensions
(ABAP development tools – editor)

Key-user extensibility

Custom Logic: BAdIs and BDEF extensions
(Custom Logic SAP Fiori app)

Guidance for creation of custom logic:

1. Use developer or key user tools according to your role (developer or key user).



Note: The functional scope of ABAP for Key Users is smaller than for ABAP for Cloud Development

Note: If an BAdI is released for key user extensibility, but not for developer extensibility, open an influence request.

- SAP S/4HANA Cloud Public Edition, Key User and Developer Extensibility
<https://influence.sap.com/sap/ino/#/campaign/2759>
- SAP S/4HANA Cloud for Extensibility and Integration (APIs), private edition
<https://influence.sap.com/sap/ino/#/campaign/3516>
- SAP BTP ABAP Environment: <https://influence.sap.com/sap/ino/#/campaign/2911>

Developer and key-user extensibility: Guidance

Developer extensibility

RAP Business Object
(ABAP development tools – editors and wizard)

Demo: Create a Consulting Team RAP business object with developer tools

Key-user extensibility

Custom business object
(Custom Business Objects SAP Fiori app)

Demo: Create a Consulting Team custom business object with key user tool

Guidance for creation of business objects:

1. Use developer or key user tools according to your role (developer or key user).



Note: The functional scope of key user extensibility is smaller than for developer extensibility

Example

- Integration capabilities in development extensibility are much broader than in key user extensibility

Developer and key-user extensibility: Guidance

Developer extensibility

CDS view and OData service
(ABAP development tools – editors and wizard)

Key-user extensibility

CDS view and OData service
(Custom CDS views SAP Fiori app)

Guidance for creation of CDS views and OData services

1. Use developer or key user tools according to your role (developer or key user).



Note: The functional scope of key user extensibility smaller than for developer extensibility

Example:

- In the Custom CDS View key user app, only read-only OData services can be created. For write-enabled OData service, you need developer extensibility

Developer and key-user extensibility: Guidance

Developer extensibility

Analytical query and applications
(ABAP development tools – editor; SAP Analytics Cloud)

Demo: See Devtoberfest session [Major Updates for Embedded Analytics in ABAP Cloud](#)

Analytical application

Protocol:

Fiori App
Analytical table,
card controls

OData

Fiori App
Multi-Dimensional
Analysis control

INA

SAP Analytics
Cloud

INA

Multidimensional
Report “player” &
Review Booklet

INA

KPI and Report
(Smart Business)

OData

CDS

Query

Cube view

Basic views or entities

Database table

Key User Extensibility
Developer Extensibility
SAP

Key-user extensibility

Analytical query and applications
(SAP Fiori apps, SAP Analytics Cloud)

Developer and key-user extensibility: Guidance

Developer extensibility

Analytical query and applications
(ABAP development tools – editor; SAP Analytics Cloud)

Key-user extensibility

Analytical query and applications
(SAP Fiori apps, SAP Analytics Cloud)

Guidance for creation of analytical queries and applications

1. Use developer or key user tools according to your role (developer or key user).



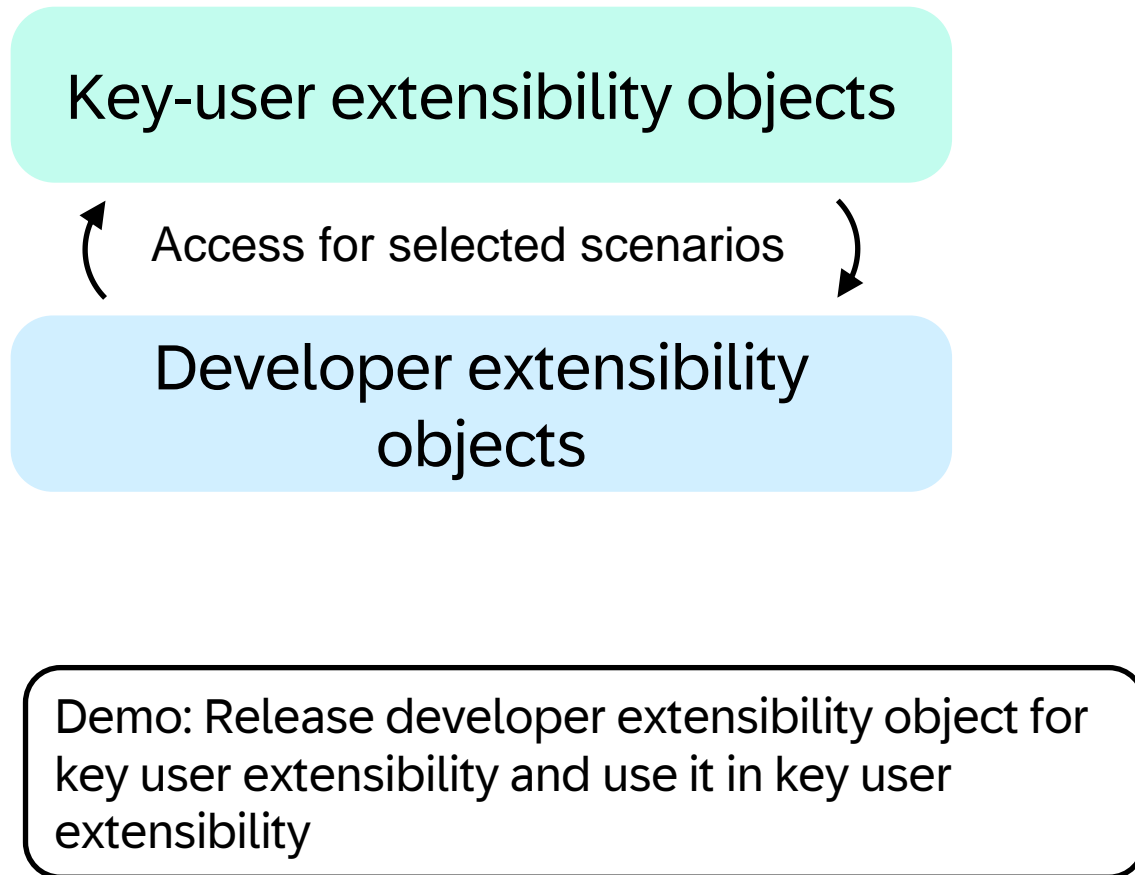
Note: The functional scope of key user extensibility smaller than for developer extensibility, in particular for creating basic and cube CDS views.

Note: Queries created with developer extensibility, support exposure for INA protocol only. Smart Business applications are not available for developer extensibility.

Example

- Create cube view with developer extensibility, and query and analytical application with key user extensibility (analytical experts)

Developer and key-user extensibility: Layering



Key-user objects

- Are fully managed by key user extensibility tools
- Can be displayed and debugged, but cannot be edited with ABAP development tools
- Are separated by name range, software component, and ABAP package

Access between key user and developer extensibility objects is restricted.

- Developer extensibility objects can be released use in key user extensibility apps
- Key user extensibility objects cannot be accessed by developer extensibility objects
- Exception: custom fields created with key user extensibility
- see [documentation](#) and [blog](#).

Developer and key-user extensibility: Guidance for partners

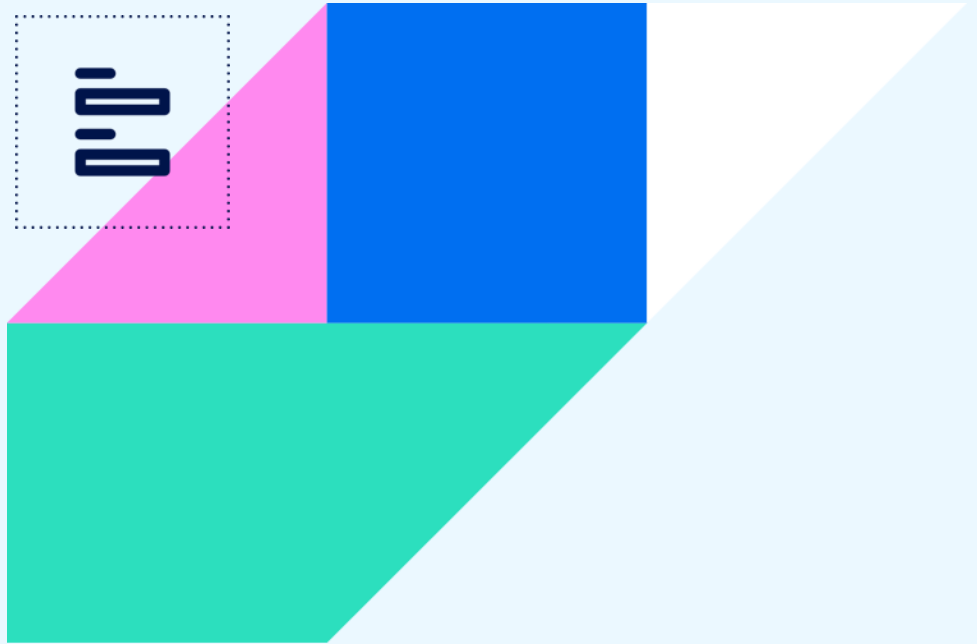
Guidance for partners

1. Key user extensibility objects are not supported in add-ons. Therefore, partners must use developer extensibility for their add-on development.

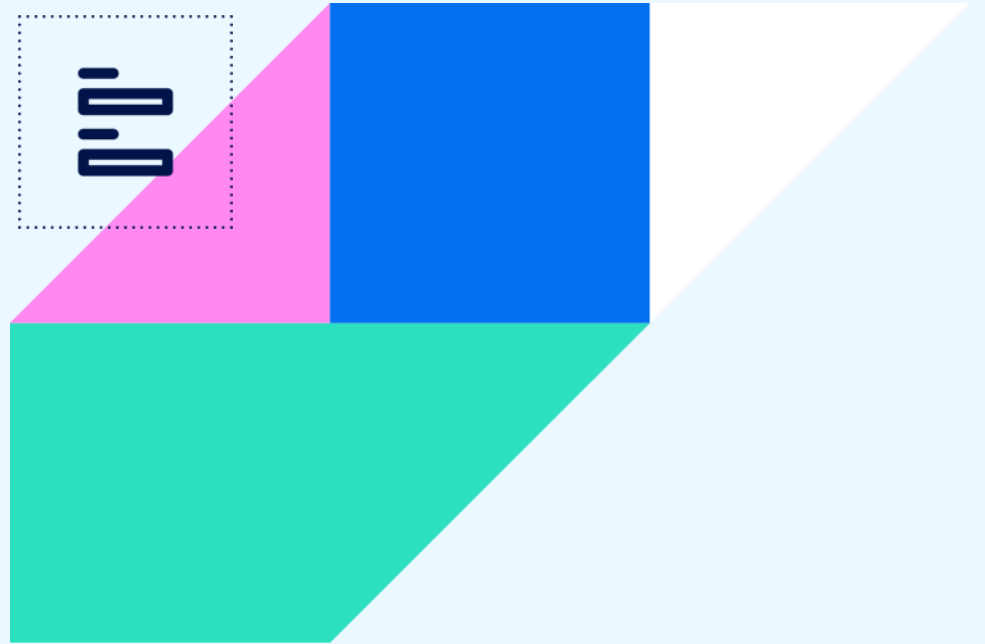
Labs preview: Custom fields created with key user extensibility are planned to be available in add-ons.



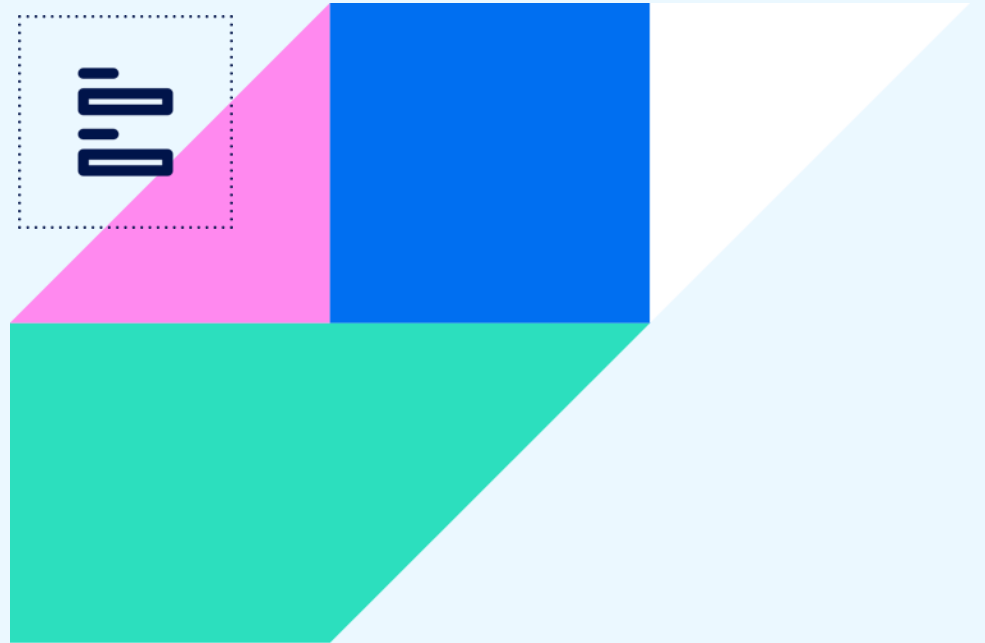
Outlook



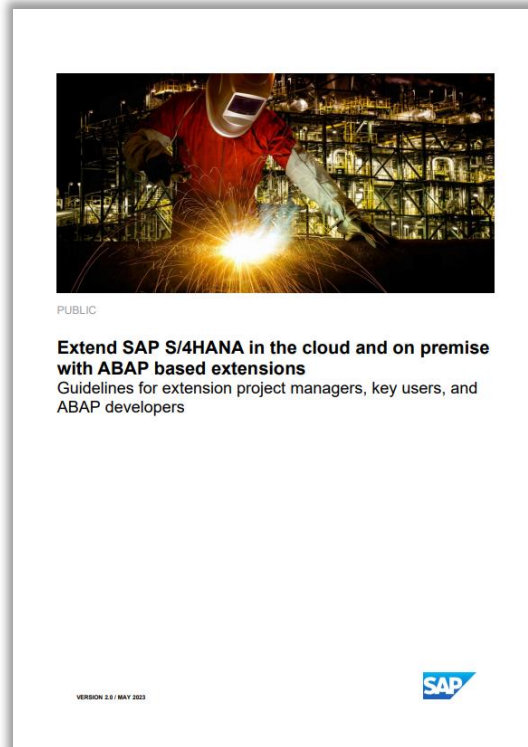
Wrap-up



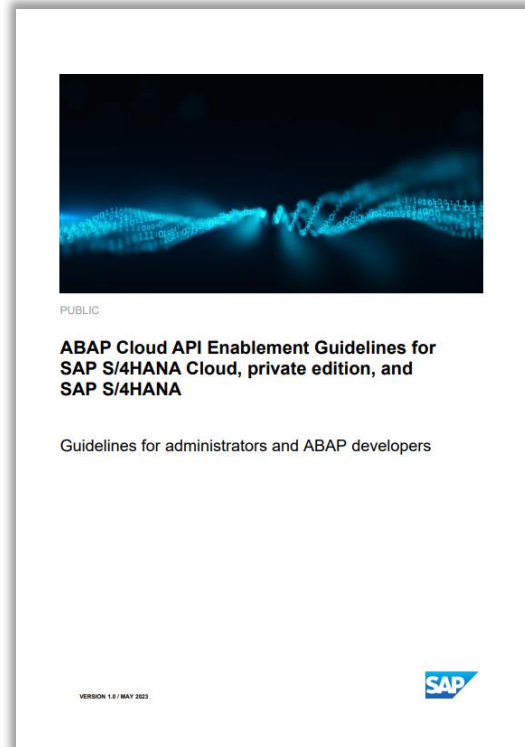
Further material



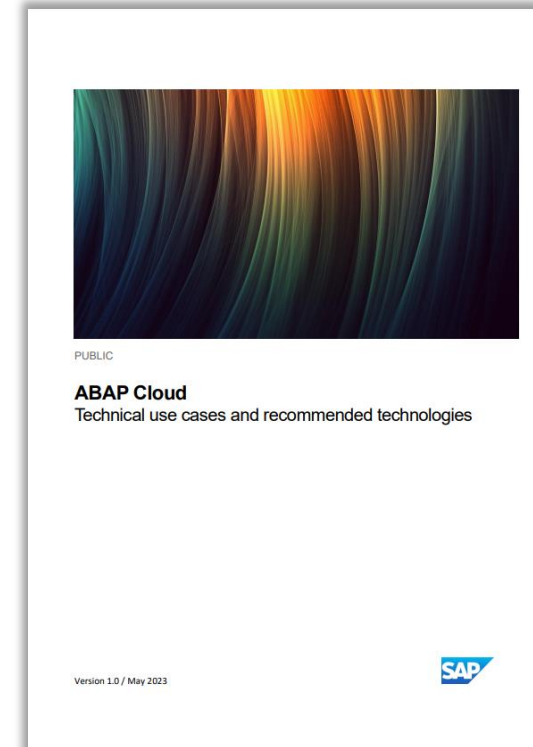
Important **ABAP Cloud development model**: related guides



Overview, comparison of extensibility options, introduction to ABAP Cloud, and three-tier extensibility model



How to leverage tier 2 of the three-tier extensibility model



How the old world of tier-3 and classic ABAP maps to the new, tier-1 and ABAP Cloud development model world

Further information and blog posts linked at <https://community.sap.com/topics/s4hana-cloud-abap-environment> and <https://community.sap.com/topics/abap>.

Further information about ABAP platform

SAP Help Portal site:

- [What's New in ABAP Platform in SAP S/4HANA 2023](#)

SAP Community

- ABAP development
<https://community.sap.com/topics/abap>
- ABAP testing and analysis
<https://pages.community.sap.com/topics/abap-testing-analysis>
- ABAP connectivity
<https://community.sap.com/topics/abap-connectivity>
- ABAP extensibility
<https://community.sap.com/topics/abap-extensibility>
- SAP BTP, ABAP environment
<https://community.sap.com/topics/btp-abap-environment>
- SAP S/4HANA Cloud, ABAP environment
<https://community.sap.com/topics/s4hana-cloud-abap-environment>

Related resources

- Tutorials
<https://developers.sap.com/tutorial-navigator.html?search=abap>

The screenshot displays the SAP ABAP Development community page. At the top, the header 'ABAP Development' is shown in orange. Below it, a description states: 'This is a community for learning, sharing, getting help and keeping your ABAP skills up to date. Join the conversation about the ABAP programming and its integrated development environment used for creating large-scale business applications.' Navigation links include 'Following', 'Ask a Question', and 'Write a Blog Post'. A sidebar on the right promotes 'ABAP Cloud at SAP TechEd in 2023' with a 'Virtual' icon and text about watching replays of SAP TechEd 2023 virtual sessions. The main content area is titled 'Featured Content' and contains three columns of featured articles with images and titles. On the right side of the featured content, there is a search bar and several categorized lists: 'Browse this topic' (including ABAP Development, ABAP Cloud FAQ, ABAP for Newbies, Introduction to Business Object Processing Framework, SAP NetWeaver 7.5 Maintenance Strategy, and State-of-the-Art ABAP Development with the ABAP RESTful Application Programming Model (RAP)), 'Latest Releases' (including ABAP Platform 2022, ABAP Platform 2021, SAP NetWeaver AS ABAP 7.52, and SAP NetWeaver AS ABAP 7.50), 'Free Trial Resources' (including Guides and Tutorials, Set up in the Cloud, and Get all free trial versions), and 'Related Resources' (including SAP Tutorial Navigator for ABAP, ABAP Channel on YouTube, SAP Training for ABAP, ABAP on SAP Learning Hub, ABAP on SAP Support Portal, and ABAP on GitHub). At the bottom, there is an 'Expert Content' section featuring a 'Developer Discussion: ABAP Cloud' and a 'Featured Developer Discussion: ABAP Cloud'.

Extensibility of SAP S/4HANA – Helpful links

Blog posts

- [Key User Extensibility Tools of SAP S/4HANA](#) last update 2021
- [SAP S/4HANA Extensibility Use Case Overview](#) (2016)
- [SAP S/4HANA Extensibility: All You Need to Know](#) last update 2024
- [Building Low Code Extensions with Key User Extensi... - SAP Community](#) 2024

SAP S/4HANA Cloud Public Edition – Documentation

- SAP S/4HANA Cloud: Extend and integrate your SAP S/4HANA Cloud solutions-> [Extensibility](#)
- SAP Fiori – Extensibility documentation: [Personalizing and adapting apps](#)
- Inside the user assistance documents, see the videos with a tour on the available extensibility tools:
 - [Creating custom fields](#)
 - [Creating customer applications](#)

SAP S/4HANA and SAP S/4HANA Cloud Private Edition – Feature description

- https://help.sap.com/docs/SAP_S4HANA_ON-PREMISE > Product Assistance (English) > SAP S/4HANA Enterprise Technology > ABAP Platform > Developing on the ABAP Platform > Development Concepts and Tools > [Extensibility](#)
- SAP Fiori – Extensibility documentation: [Personalizing and Adapting Apps](#)
- In the SAP Fiori app library ([SAP Fiori apps library](#)) you can find the information on the extensibility for SAP Fiori apps. Open the **App Details** and go to **Implementation Information, Extensibility**.

Week 1 - Monday, September 23

9:00 - 10:00	Clean core extensibility with ABAP Cloud in SAP S/4HANA Cloud Private Edition
11:00 - 12:00	Understand the clean core extensibility options for SAP S/4HANA Cloud
13:00 - 14:00	Building partner products on SAP BTP ABAP Environment
15:00 - 16:00	Major updates for embedded analytics in ABAP Cloud
17:00 - 18:00	Data integration in ABAP Cloud with SQL services and CDS external entities

Week 2 - Monday, September 30

9:00 - 10:00	Data modelling with the latest features of ABAP Core Data Services
11:00 - 12:00	Tools for Clean ABAP
13:00 - 14:00	SAP Forms by Adobe
15:00 - 16:00	Test double mechanisms with ABAP Unit - Your friend in achieving effective test automation

Week 3 - Monday, October 14

8:00 - 9:00	What software developers should know about key user extensibility
9:00 - 10:00	Boost your coding efficiency: Explore Joule's ABAP Developer capabilities
11:00 - 12:00	Developing and transforming your ABAP custom code for clean core in SAP S/4HANA
14:00 - 15:00	How to extend the different SAP S/4HANA editions effectively and clean core compliant

Week 4 - Monday, October 21

9:00 - 10:00	Overview of reuse services in ABAP Cloud
11:00 - 12:00	ABAP Development Tools - News and Roadmap
13:00 - 14:00	DevOps with SAP BTP ABAP Environment
15:00 - 16:00	SAP Business Client & SAP GUI - The Journey Continues

DEVTOBERFEST 2024

Enjoy and learn more about ABAP
Cloud related topics



KEYNOTES

Tuesday, October 8

9:00 - 10:30 AM CEST & 4:00 - 5:30 PM CEST	[Executive Keynote] SAP TechEd in 2024 Launch – Where ideas get real
10:30 - 10:55 AM CEST & 5:30 - 5:55 PM CEST	[Developer Keynote] Keynote recap + Community welcome
3:30 - 3:55 PM CEST & 9:00 - 9:25 PM CEST	[Developer Keynote Deconstructed] Keeping the promise

TRACK OVERVIEWS

Tuesday, October 8

10:30 - 11:15 AM CEST	Unlocking the intelligent enterprise: Cloud ERP innovations for the future
6:00 - 6:45 PM CEST	Unlock SAP Build and ABAP Cloud interoperability to elevate your extensions

TechEd 2024

Join the free, engaging virtual event



LECTURES

Tuesday, October 8

6:00 - 6:45 PM CEST	Enhance your fusion team collaboration with ABAP Cloud and SAP Build
9:00 - 9:30 PM CEST	Boost your coding efficiency: Explore Joule's ABAP Developer capabilities

Wednesday, October 9

7:00 - 7:25 PM CEST	Clean core extension of SAP S/4HANA with the latest ABAP Cloud features
2:30 - 2:55 PM CEST	Extensibility for SAP S/4HANA Cloud Public Edition
3:00 - 3:25 PM CEST	Clean Core Extensibility for SAP S/4HANA Cloud Private Edition
3:30 - 3:55 PM CEST	Revolutionize ABAP development with Joule, our generative AI copilot

JUMP STARTS

Tuesday, October 8

3:30 - 3:55 PM CEST	Build SAP Fiori Apps with ABAP Cloud powered by Joule's ABAP Developer capabilities
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Wednesday, October 9

3:30 - 3:55 PM CEST	Building Clean Core Extensions with ABAP Cloud for SAP S/4HANA Cloud
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/thank you



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SAP Bring out your best.