

# Why you should keep your core clean **and** **how you can do it**

PUBLIC



# Today's Speakers



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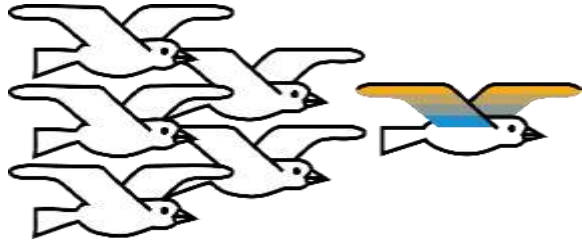
**Senior Technology Consultant  
SAP Services CIS**



**Karsten Klenz**

**Principal Technical Architect  
SAP Services MEE**

# The value



Most **innovative** projects

Most **complex** challenges

Most **creative** solutions

SAP Customers  
SAP Services  
SAP Partners



**Privilege**



**Duty**



**Witness**  
and **share**

Real-life experiences

Difficulties

Solutions

Methods

Accelerators

Tools



Make **SAP**  
innovation  
easy to  
consume

# Let's Build the Intelligent Enterprise Together – H1 2022

## Business Technology Platform



The Good, the Bad and the Ugly: a Thrilling Story About **Embedded Analytics**, **Data Warehousing** and the **Cloud**  
January 25<sup>th</sup>



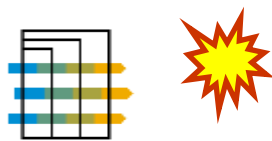
How to **Extend** and **Innovate** Your Business Applications with **SAP Business Technology Platform**  
February 1<sup>st</sup>



**SAP Signavio** - Would You Ever Start a **Transformation Journey** Blind?  
March 8<sup>th</sup>



Real-life experiences: Business Outcomes and Ingredients for **Asset Management**, **Predictive Maintenance** and **Productive Quality Control**  
April 12<sup>th</sup>



Why You Should Keep Your **Core Clean** and How You Can Do It  
May 10<sup>th</sup>



Do Not Waste Your **IoT**: Let IoT Manage Your Waste! **Internet of Things** Applied to **Real Life Waste Management**  
July 12<sup>th</sup>



**Adopting Cloud** Beyond the Implementation: Discover the **Procurement Chatbot** Creating **Delightful User Experiences**  
July 19<sup>th</sup>



Simplify Your **Analytics** on **SAP S/4HANA** in Four Moves!  
October 18<sup>th</sup>

# Let's Build the Intelligent Enterprise Together – H1 2022

## SAP S/4HANA



All Roads Lead to the **Cloud**: the Four Paths to SAP S/4HANA **Private Cloud Edition**  
February 15<sup>th</sup>



Unboxing **SAP RISE** with SAP Services: Discover the **Full Value**  
March 1<sup>st</sup>



**Intelligent Technologies** for **Intelligent ERP**: How to Start **Immediately**  
April 26<sup>th</sup>

## Premium Engagement



**SAP Premium Engagements** for RISE  
June 7<sup>th</sup>

## Customer Experience



Are you ready for **SAP's Customer Engagement Platform with EMARSYS**?  
June 21<sup>st</sup>

## Human Experience Management



**Employee Central** is the **Hearth of Talent**  
May 24<sup>th</sup>



**Adopting Cloud** Beyond the Implementation: **Discover the HXM Journey**  
July 5<sup>th</sup>

## Intelligent Spend Management



**Fast track** to adoption of **SAP Ariba** and **SAP Fieldglass**  
March 15<sup>th</sup>



**Adopting Cloud** Beyond the Implementation: Discover the **Procurement Chatbot Creating Delightful User Experiences**  
July 19<sup>th</sup>

## Webinars Q2 2022

The Power of User Enablement: [link to landing page](#) [link to multi-registration page](#)



[New Skills and enablement approaches in a changed world](#)  
English  
6<sup>th</sup> April



[Building and Sustaining Your Competitive Advantage Through Continuous Learning](#)  
English  
21<sup>st</sup> April



[SAP learning Journeys for RISE with SAP](#)  
English  
7<sup>th</sup> June



[Accelerating User Adoption for RISE with SAP](#)  
English  
14<sup>th</sup> June



[How CONA Services Approaches End User Adoption](#)  
English  
Available- On demand



[Capgemini Lead the Way in Supporting Organizations on their Digital Transformation Journey](#)  
English  
Available – On demand

# Why you should keep your core clean **and** **how you can do it**



**Anna Shestakova**

**Senior Technology Consultant  
SAP Services CIS**



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**Principal Technical Architect  
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# Why you should keep your Core Clean and how you can do it



**Anna Shestakova**  
Senior Technology Consultant  
SAP Services CIS



# Agenda

## What is Clean Core

- Current situation and benefits

## How to Clean Core

- Principles and Extensibility approach

## Demo scenario

## How to Clean the Core now

- General rules and main approach

## SAP Services overview

**What is Clean Core and **benefits****

# A lot of **modifications** and custom developments have brought client's ERP to the point of **no return**

## What is the problem?

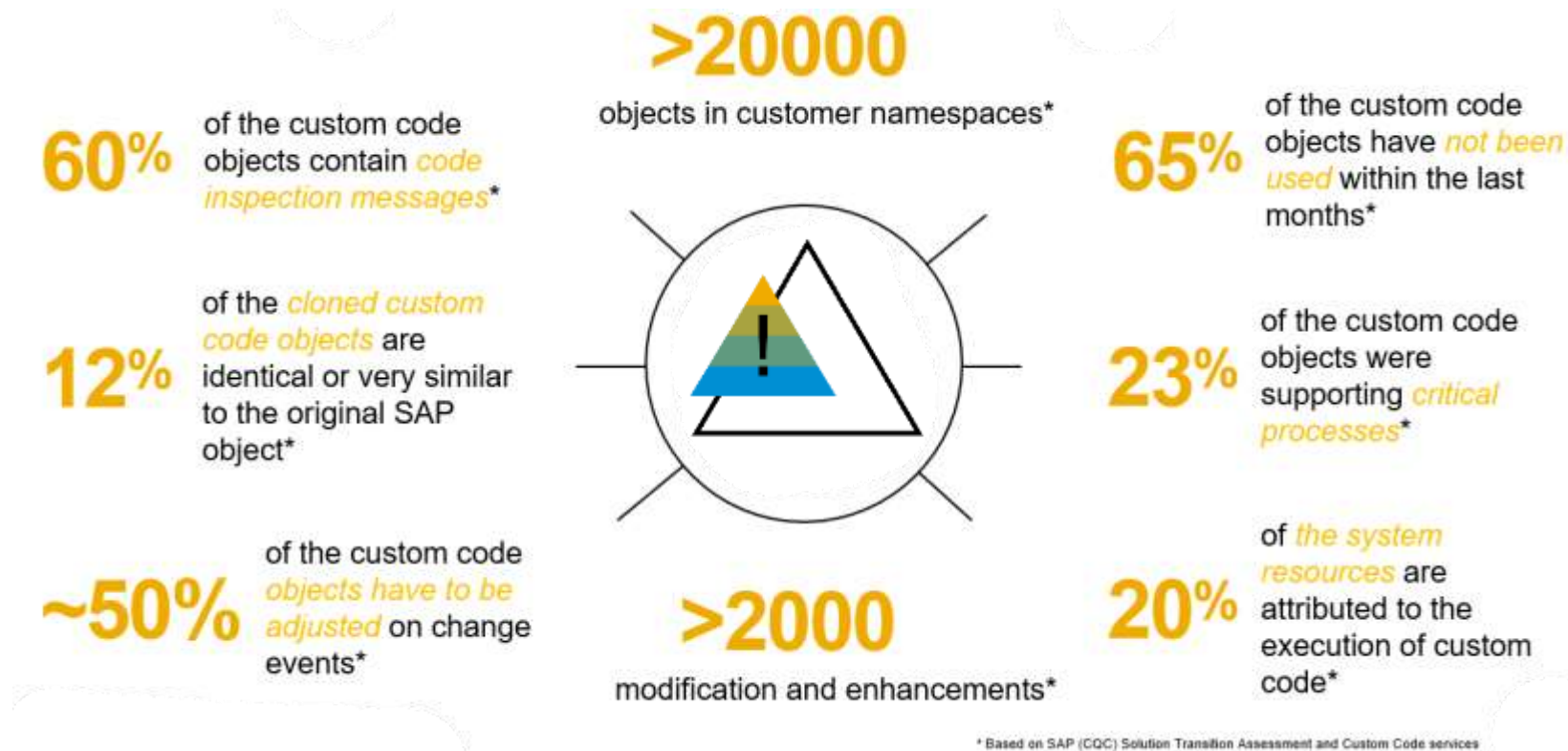
- According to statistics, only 20% of existing modifications are used.
- After analyzing the use of modifications and custom development, there is a risk of hidden dependencies.
  - Unable to remove modifications and back to standard
  - In case of any changes, all related functionality must be tested
  - Lagging or inability to install updates
  - In case of changes in legislation, more custom developments are required
  - A deeply customized system can be removed from SAP support



**Heavily modified systems become unstable because customers spend about 80% of their IT resources just keeping the systems up and running.**

# Current custom code challenges

**Custom code** is used as an **easy and powerful** way to **extend** standard SAP software and implement customer-specific **business requirements**.



# When is it time to think about **Clean Core**?



Business processes  
have changed



Existing applications  
with advanced  
technologies (IoT,  
chatbot, Analytics,  
etc.)



Business speed is  
much higher than the  
release cycle



The application has  
caused problems in  
the past



You want to be Cloud  
Ready

# How do we define a **Clean Core**

## Avoidance

- Stay as close as possible to standard – without losing the flexibility to adapt the business processes to your needs at a fast rate
  - e.g. applying a zero-modification policy from the project's first day

## Decouple extensions for Upgrade-stability

- Custom extensions do not break an upgrade and upgrades do not break an extension



## Open to “location”

- Leverage the full potential of extension options (In-App-, Side-by-Side- or Hybrid Extensions) which fits best to your needs

## Be aware

- of your *technical debts* and evaluate them on a regular basis
- of your custom code footprint and manage/monitor on a regular basis

# What are the benefits of an **clean core**

Custom extensions do not break an upgrade and upgrades do not break an extension

**Reduce TCO** by making upgrades eventually non-events from a custom code point of view

- Reduce test efforts for business users
- Reduce adaption efforts for developers
- IT service providers being able to offer upgrade projects at a fixed price



**Be cloud ready**

If you run your SAP S/4HANA system on premise – already lay the foundation today to move to the cloud from a custom extension perspective

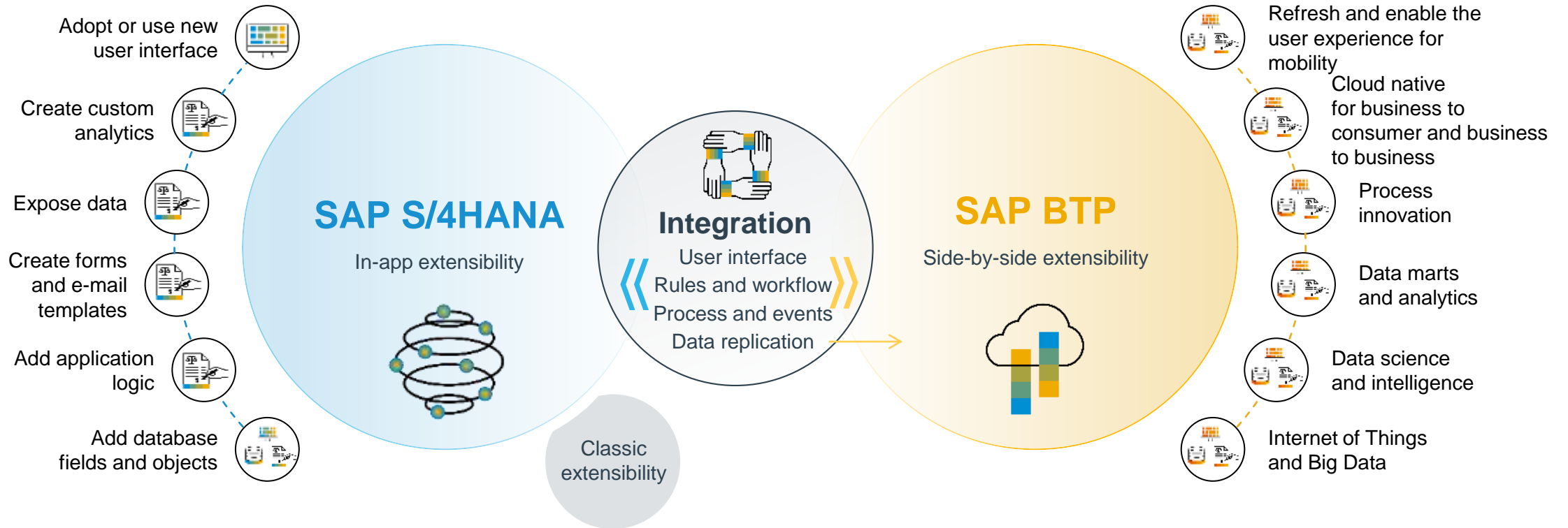
**Speed and Innovation**

- Be able to absorb innovation delivered by SAP at a faster rate
- React fast on changing business requirements

# How to Clean Core



# Extensibility: Big picture



**Comprehensive security and comprehensive lifecycle management**



# Extensibility concepts. What is the difference?

## In-App extensibility

Allows you to adapt standard functions and processes to user requirements without the need for any external platforms:

- **Key user extensibility** - the use of apps that allow key users to make simple changes to Fiori apps on their own ("Custom Fields and Logic" app)
- **Classic extensibility** - classic development tools and techniques (e.g. SE80, BAdIs, etc. including modern ABAP) \*

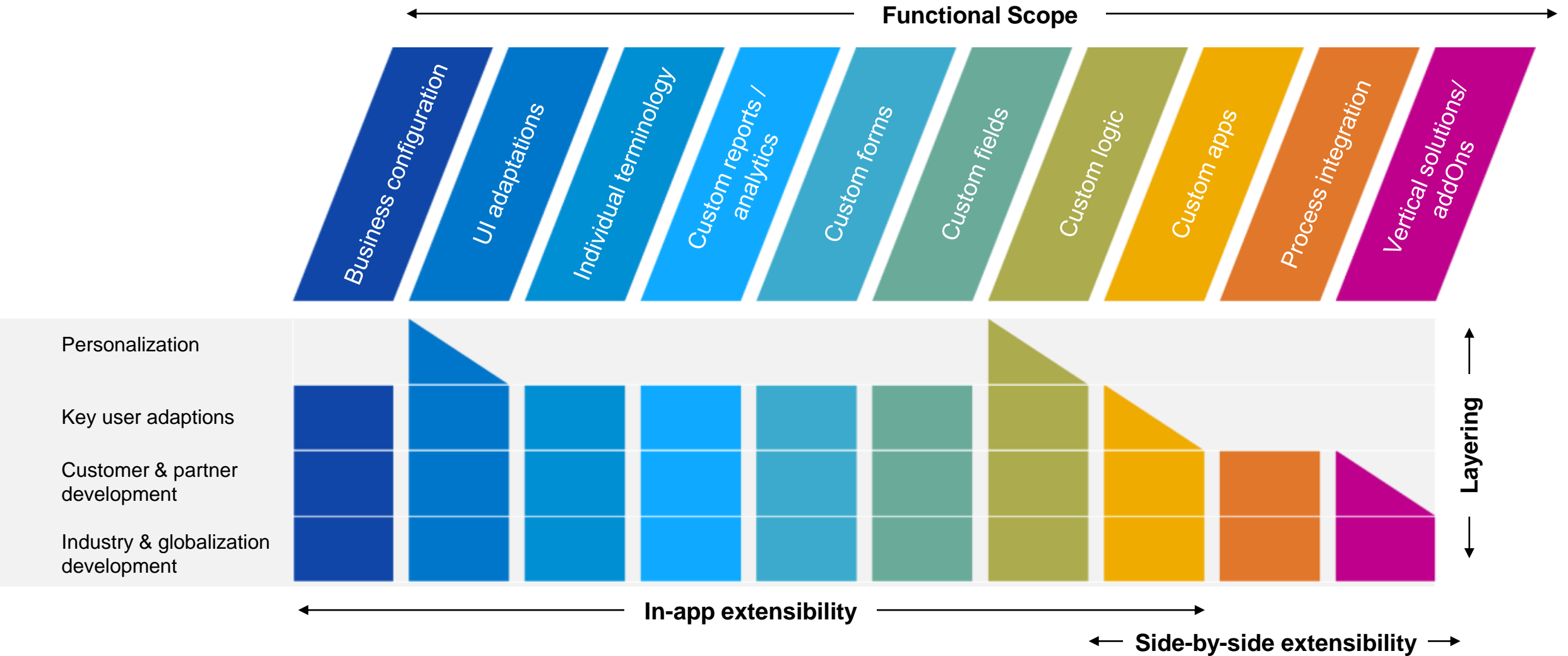
\* not available for S/4HANA Cloud

## Side-by-side extensibility

Extensions were created on a different platform (SAP BTP) but integrated into the client's SAP system. That allows you to expand existing or implement entirely new processes

- **Custom Code Backend** - Side-By-Side Extension with Custom Code in S/4HANA Backend
- **Cloud Native** - Side-By-Side Extension with Whitelisted API/data replication usage in S/4HANA Backend

# Extensibility spectrum: In-app versus side-by-side



# How to Clean Core – Demo

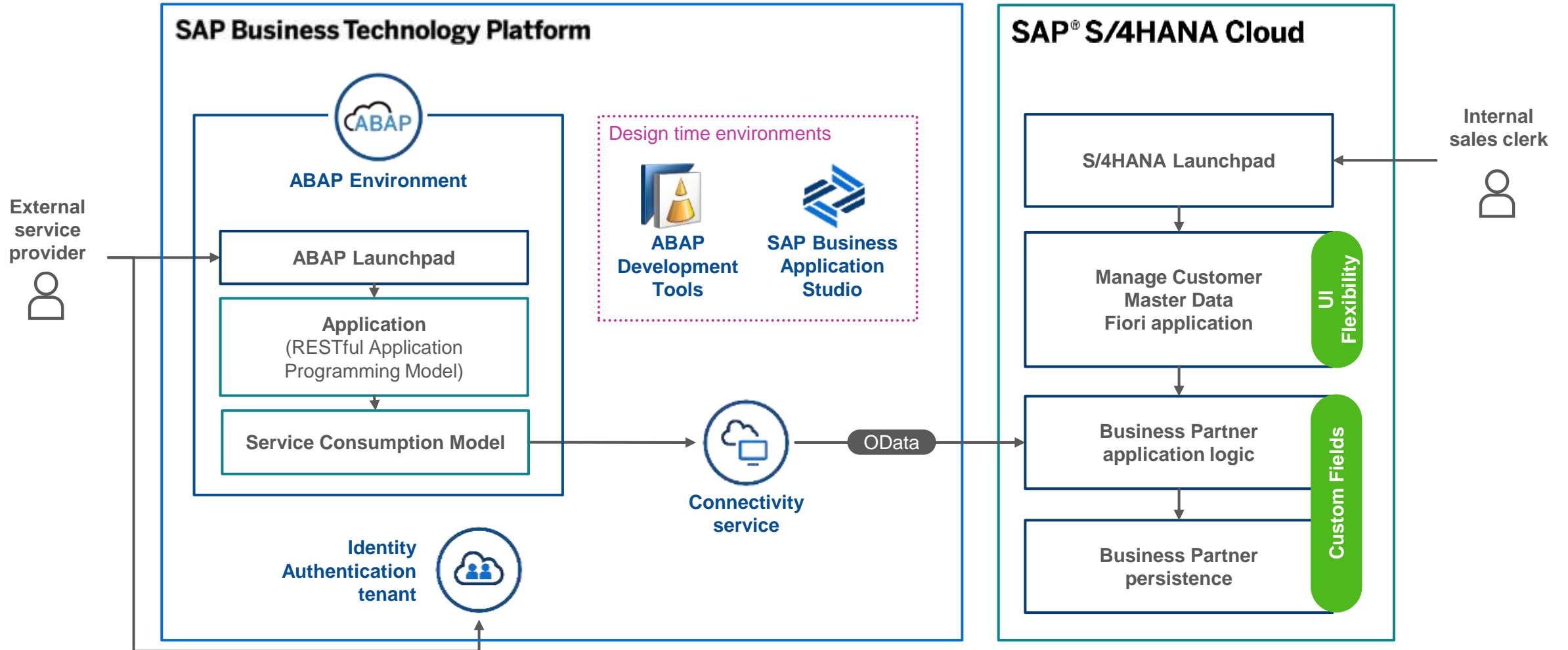
# Scenario

A company has commissioned an external service provider to validate customer master data.

- as of today, the employees of the service provider have to log into the S/4HANA system of the company via SAPGui
  - a custom-developed report lists customer records requiring validation
  - the result of the validation is persisted in a "Z field" appended to an SAP standard database table
- to follow clean core principles, the extension has to be redesigned
  - replacement of classic extensibility (report, database table append) with In-App and Side-by-Side Extensibility
  - the employees of the service provider should no longer require access to the company's S/4HANA system



# Target extension architecture



# Extension tasks

## In-App Extensibility

### Create Custom Field

Create a custom field to persist the validation status in the Business Partner master data

Where?

S/4HANA

Tools used

- Custom Fields Fiori App

# Demo Step 1/6

## Create Custom Field

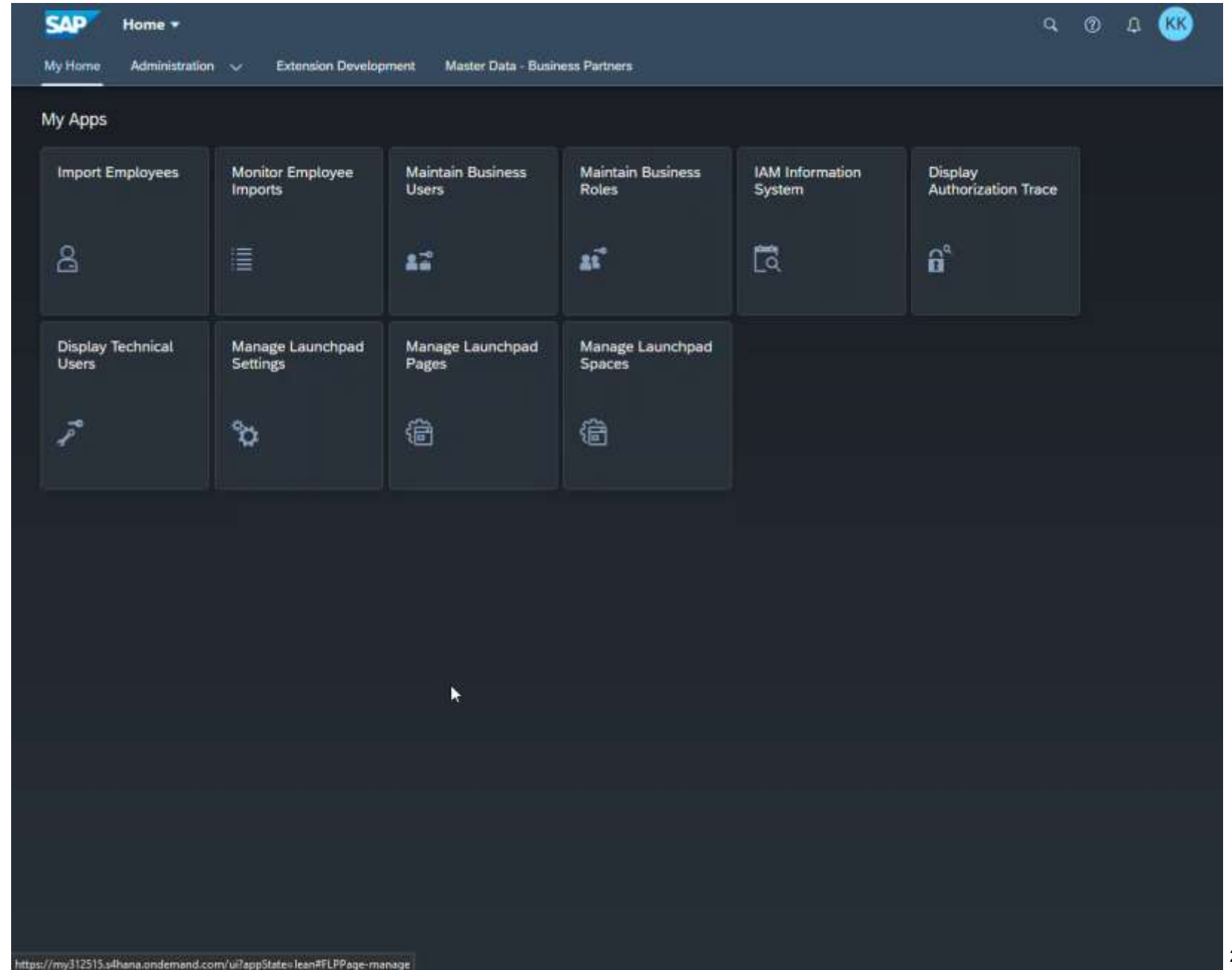
Create a custom field to persist the validation status in the Business Partner master data

Where?

S/4HANA

Tools used

- Custom Fields Fiori App





# Extension tasks

## In-App Extensibility

Create Custom Field

Adapt the UI

Create a custom field to persist the validation status in the Business Partner master data

Add the custom field to the UI of the Manage Customer Master Data Fiori App

Where?

S/4HANA

Where?

S/4HANA

Tools used

- Custom Fields Fiori App

Tools used

- UI Flexibility

# Demo Step 2/6

Adapt the UI

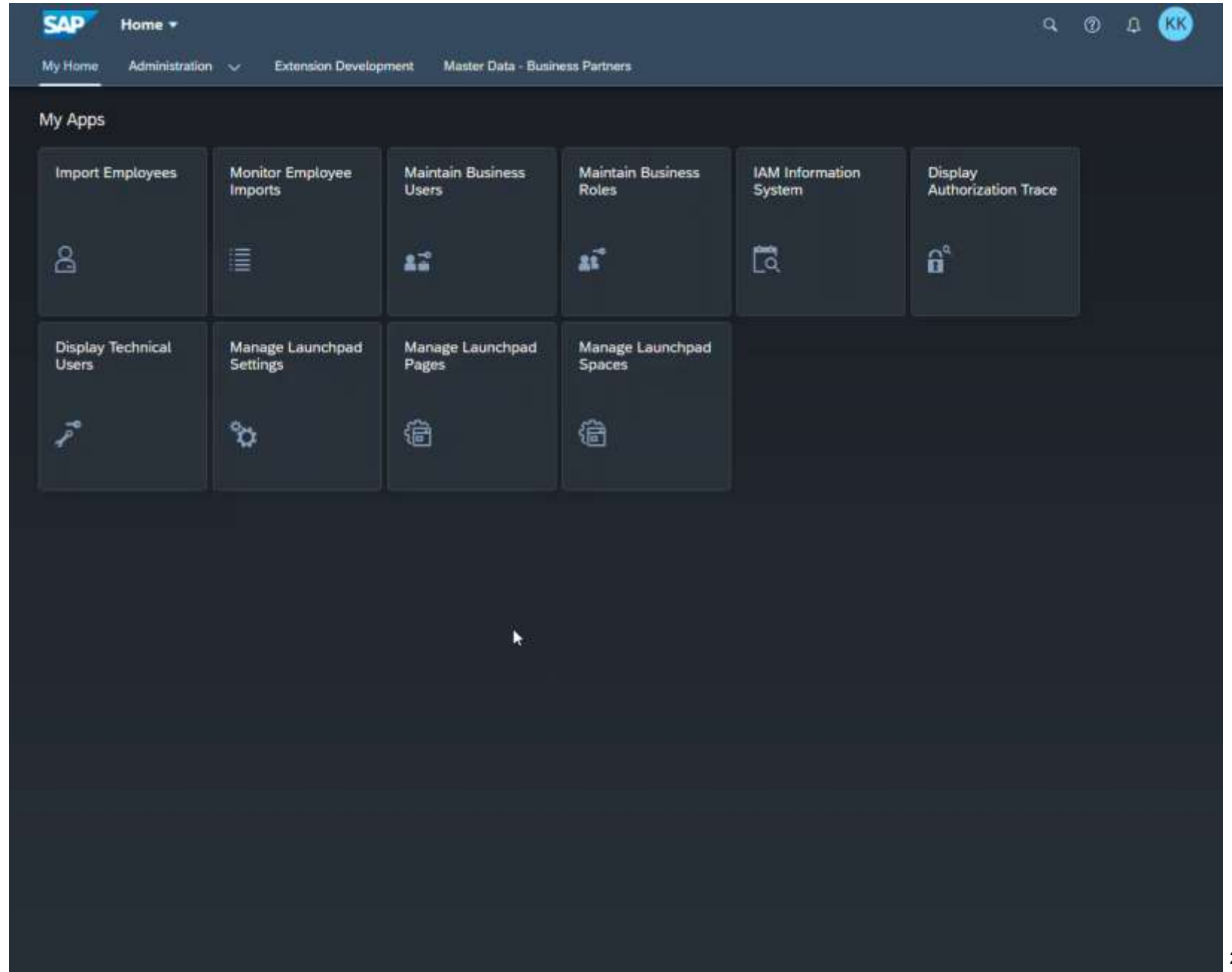
Add the custom field to the UI of the Manage Customer Master Data Fiori App

Where?

S/4HANA

Tools used

- UI Flexibility



# Extension tasks

## In-App Extensibility

Create Custom Field

Adapt the UI

Expose the API

Create a custom field to persist the validation status in the Business Partner master data

Add the custom field to the UI of the Manage Customer Master Data Fiori App

Identify the API for the Business Partner and expose it for consumption in BTP

Where?

S/4HANA

Where?

S/4HANA

Where?

S/4HANA

Tools used

- Custom Fields Fiori App

Tools used

- UI Flexibility

Tools used

- API Business Hub
- S/4HANA Administration

# Demo Step 3/6

Expose the API

Identify the API for the Business Partner and expose it for consumption in BTP

Where?

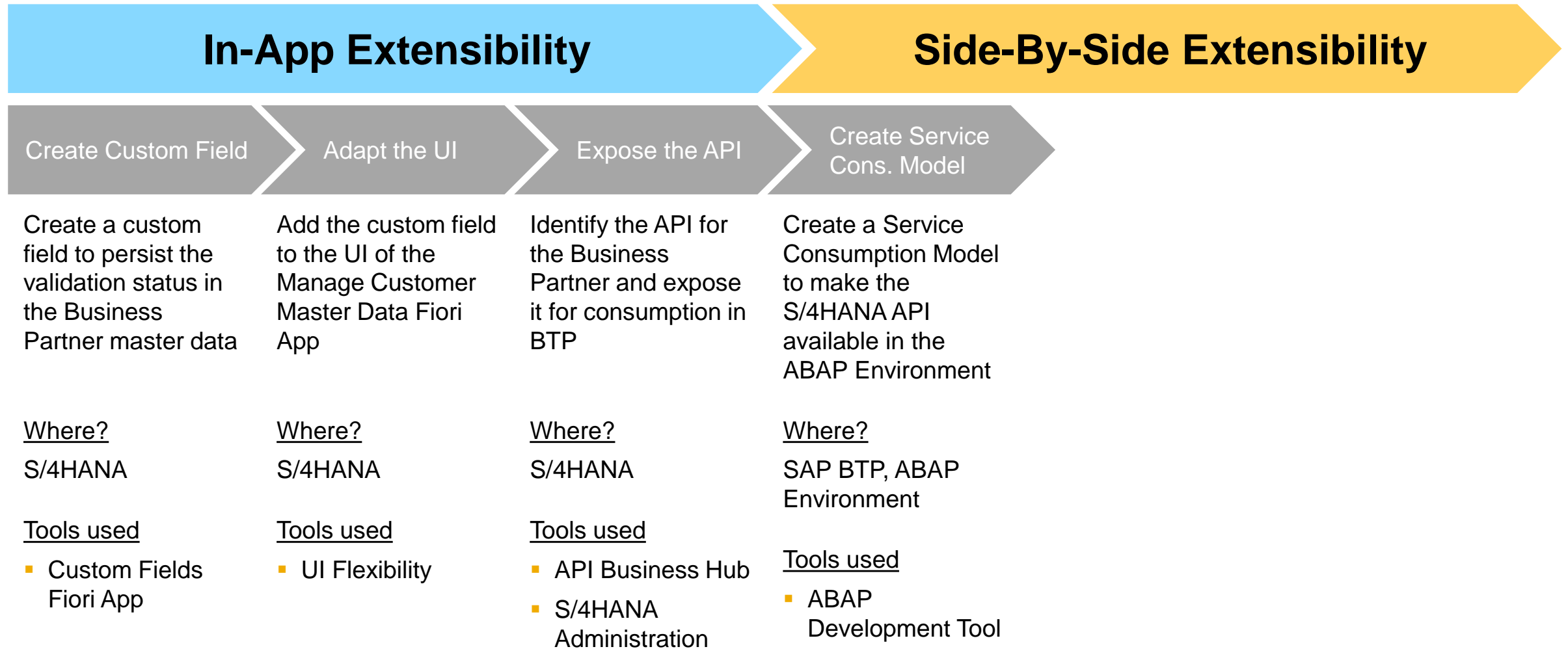
S/4HANA

Tools used

- API Business Hub
- S/4HANA Administration

The screenshot shows the SAP API Business Hub website. The header includes the SAP logo, navigation links (Explore, Resources, Discover Integrations, Partner with Us), a search bar, and a 'Login' button. The main content area features a large banner with the text 'SAP API Business Hub' and 'Accelerate your integrations, extensions, and innovations'. Below the banner is a search bar and a list of categories: Products, Business Processes, Categories, Industries, Partners, and More. The 'Choose a Product to Explore' section is highlighted, showing a grid of product cards. The first row includes 'S/4HANA Cloud', 'S/4HANA', and 'Customer Experience'. The 'S/4HANA' card is currently selected, showing a description: 'A future-ready ERP system with built-in intelligent technologies, including AI, machine learning, and advanced analytics which transforms business processes with intelligent automation.' Below the description are icons for various features and a '+3' indicator. The second row includes 'BTP', 'SuccessFactors', and 'Ariba'. A 'View All Products' link is located in the top right of the product grid. A 'FEEDBACK' button is visible on the right side of the page.

# Extension tasks



# Demo Step 4/6

Create Service  
Cons. Model

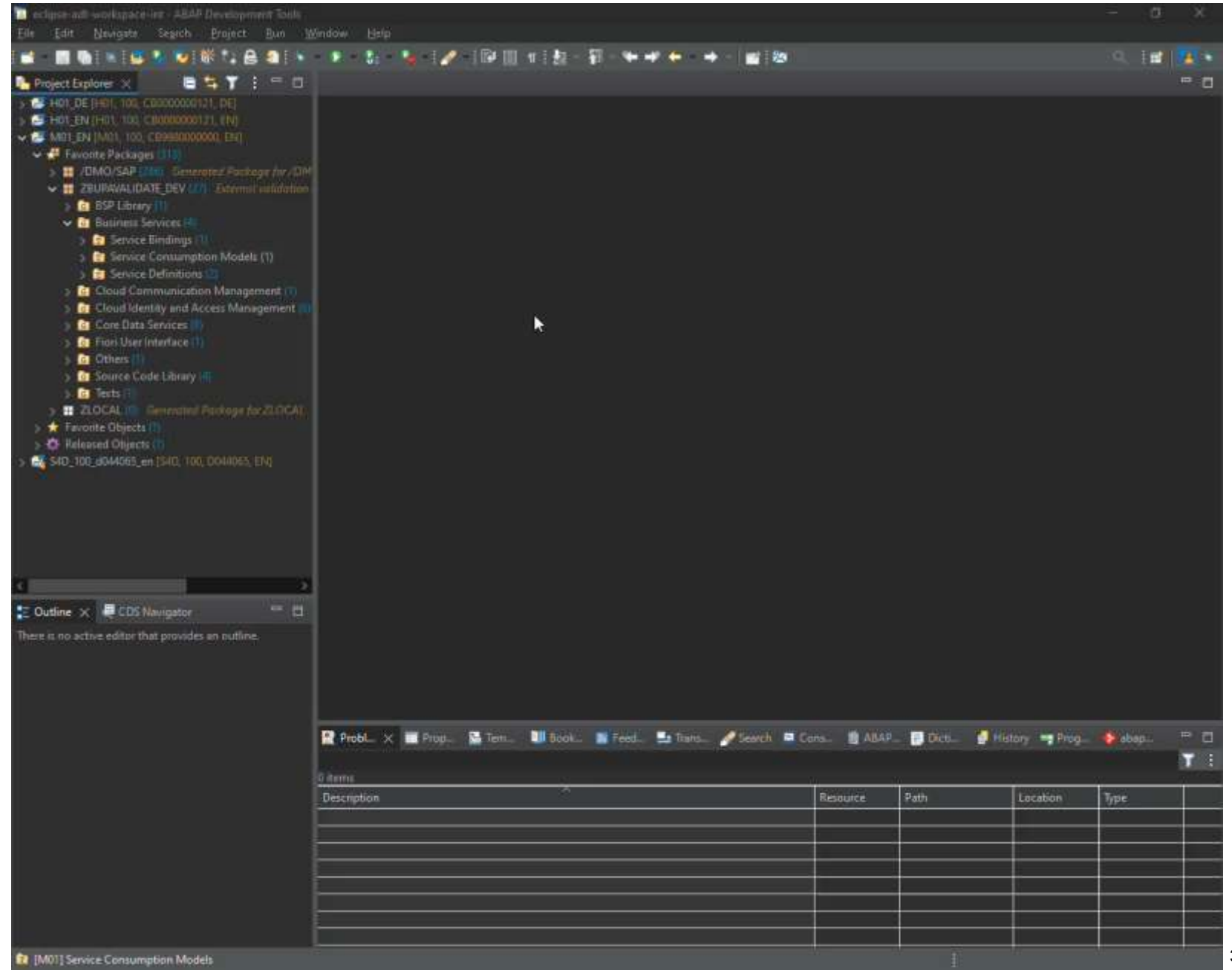
Create a Service  
Consumption Model  
to make the  
S/4HANA API  
available in the  
ABAP Environment

Where?

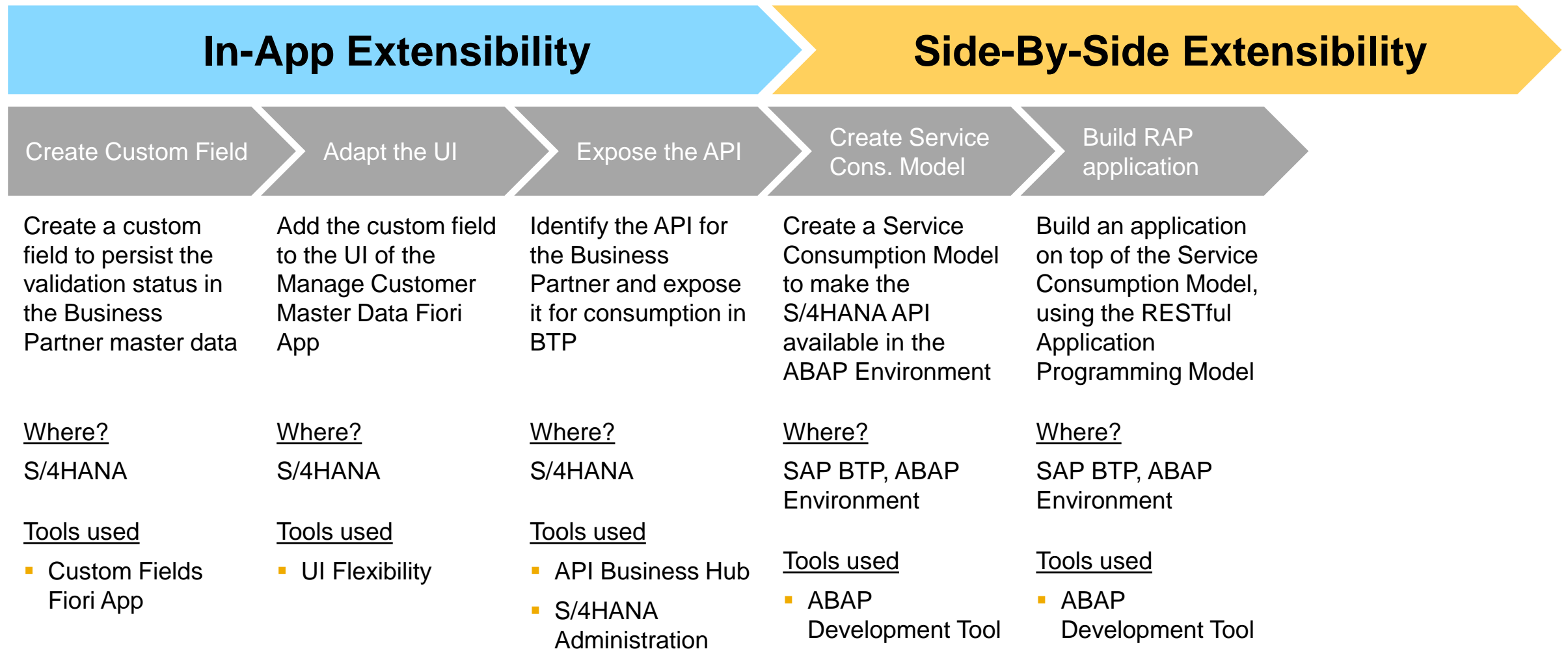
SAP BTP, ABAP  
Environment

Tools used

- ABAP  
Development Tool



# Extension tasks



# Demo Step 5/6

Build RAP application

Build an application on top of the Service Consumption Model, using the RESTful Application Programming Model

Where?

SAP BTP, ABAP Environment

Tools used

- ABAP Development Tool

The screenshot displays the SAP ABAP Development Tools interface for configuring a Service Consumption Model. The main window shows the 'Service Consumption Model: ZBUSINESSPARTNER' configuration. The 'General Information' section indicates the consumption type is OData and the service definition is ZBUSINESSPARTNER. The 'Service Entity Sets' section shows a table with the following data:

Service Entity Set	Etag Support
A_Customer	<input type="checkbox"/>
A_BusinessPartnerRole	<input type="checkbox"/>
A_BusinessPartner	<input type="checkbox"/>

The 'Service Entity Set Details' section shows the data definition is ZA\_CUSTOMER and the behavior definition is ZA\_CUSTOMER. A code sample for entity set access is provided, showing the following code:

```
Operation: Read
Copy to Clipboard

* In http_client = cl_web_http_client_manager->create_by_http_destination(
io_destination ).

io_client_proxy = cl_web_odata_client_factory->create_v2_remote_proxy(
EXPORTING
iv_service_definition_name = 'ZBUSINESSPARTNER'
io_http_client             = io_http_client
iv_relative_service_root   = '<service_root>' ).

* Set entity key
ls_entity_key = VALUE #(
customer = 'Customer' ).

* Navigate to the resource
io_resource = io_client_proxy->create_resource_for_entity_set( 'A_CUSTOMER'
)>navigate_with_key( ls_entity_key ).

* Execute the request and retrieve the business data
io_response = io_resource->create_request_for_read( )->execute( ).
io_response->get_business_data( IMPORTING es_business_data = ls_business_data
).
```

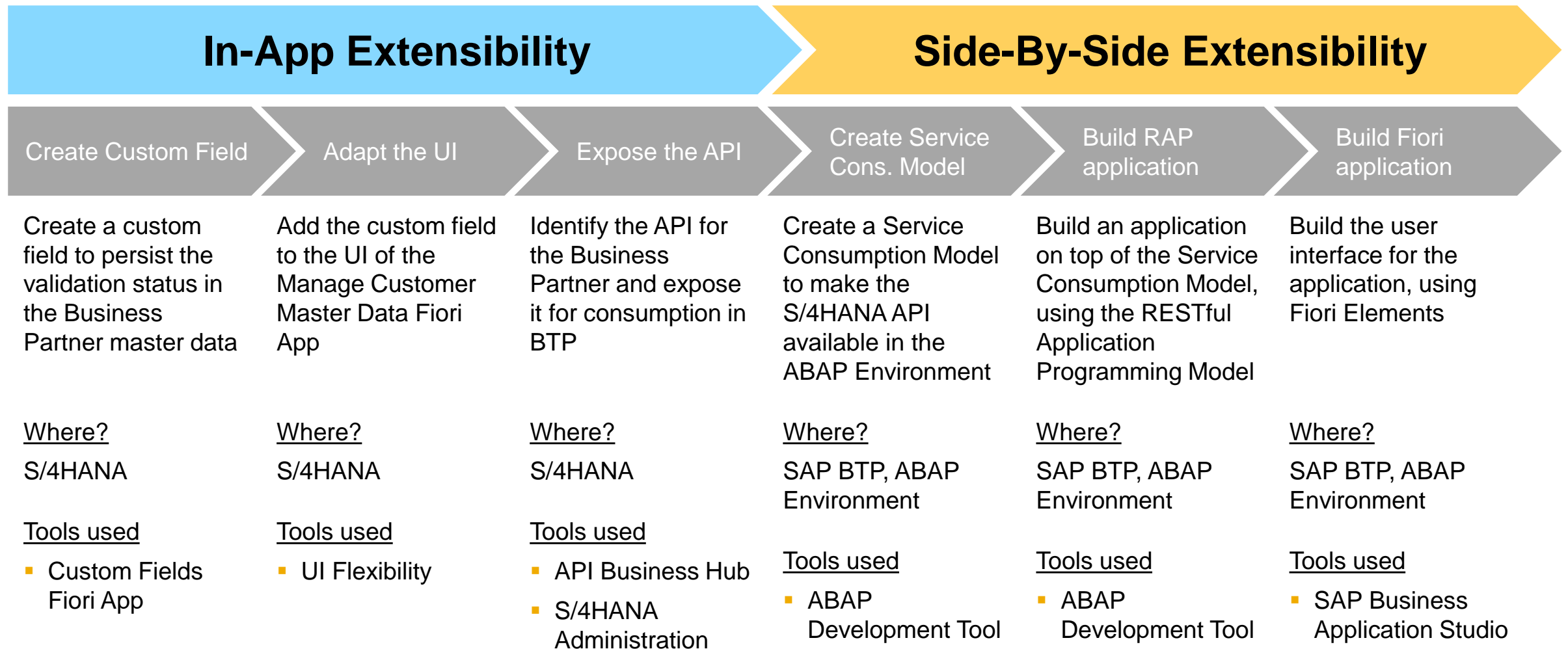
The bottom of the screenshot shows the 'Overview' section with a table for Service Metadata:

Description	Resource	Path	Location	Type
0 items				

The status bar at the bottom shows the project name and URL: M01, 100, https://5ccc46b9-4e91-4c80-af26-1e9685b06f72.abap.eu10.hana.endemand.com, CB998000000, EN



# Extension tasks



# Demo Step 6/6

Build Fiori application

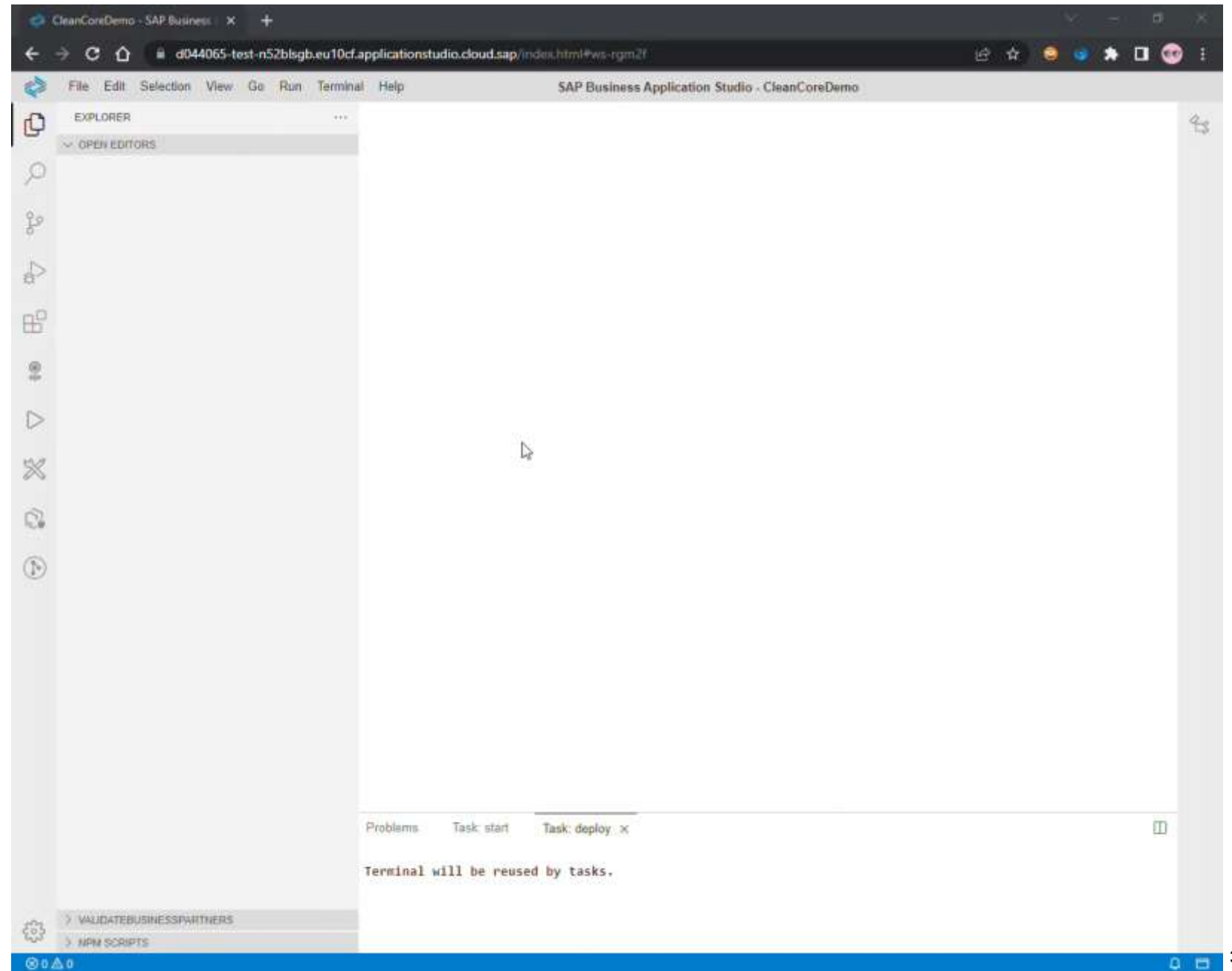
Build the user interface for the application, using Fiori Elements

Where?

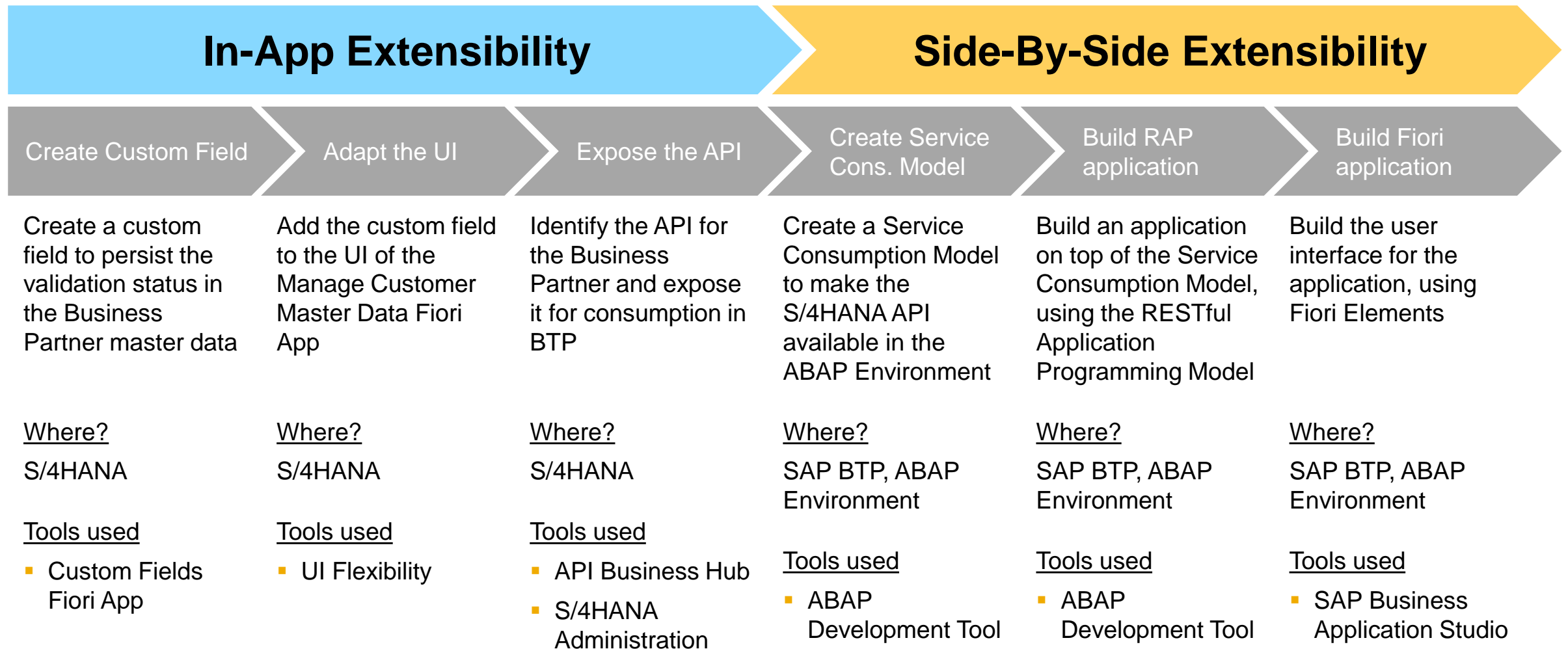
SAP BTP, ABAP Environment

Tools used

- SAP Business Application Studio



# Extension tasks



# Demo – The result

The screenshot displays the SAP Master Data Maintenance interface for Business Partners. The top navigation bar includes the SAP logo, a 'Home' dropdown menu, and search, help, and notification icons. The breadcrumb trail shows the path: My Home > Administration > Extension Development > Master Data - Business Partners.

The main content area is organized into three sections:

- Master Data Maintenance:** Contains four tiles: 'Manage Business Partner Master Data', 'Manage Customer Master Data', 'Manage Supplier Master Data', and 'Maintain Business Partner'. Each tile features a person icon.
- Mass Maintenance:** Contains four tiles: 'Manage Mass Maintenance Business Partners', 'Export Master Data Business Partners', 'Manage Mass Maintenance BP Relationships', and 'Export Master Data BP Relationships'. The first and third tiles have document icons, while the second and fourth have download icons.
- Mass Load:** Contains two tiles: 'Manage Consolidation... Mass Load Business ...' and 'Manage Consolidation... Mass Load BP Relati...'. Both tiles feature document icons.

**How to Clean the Core now**

# Best point in time to make and keep the Core Clean

Pre SAP S/4HANA  
transformation (Plan)



SAP S/4HANA  
transformation



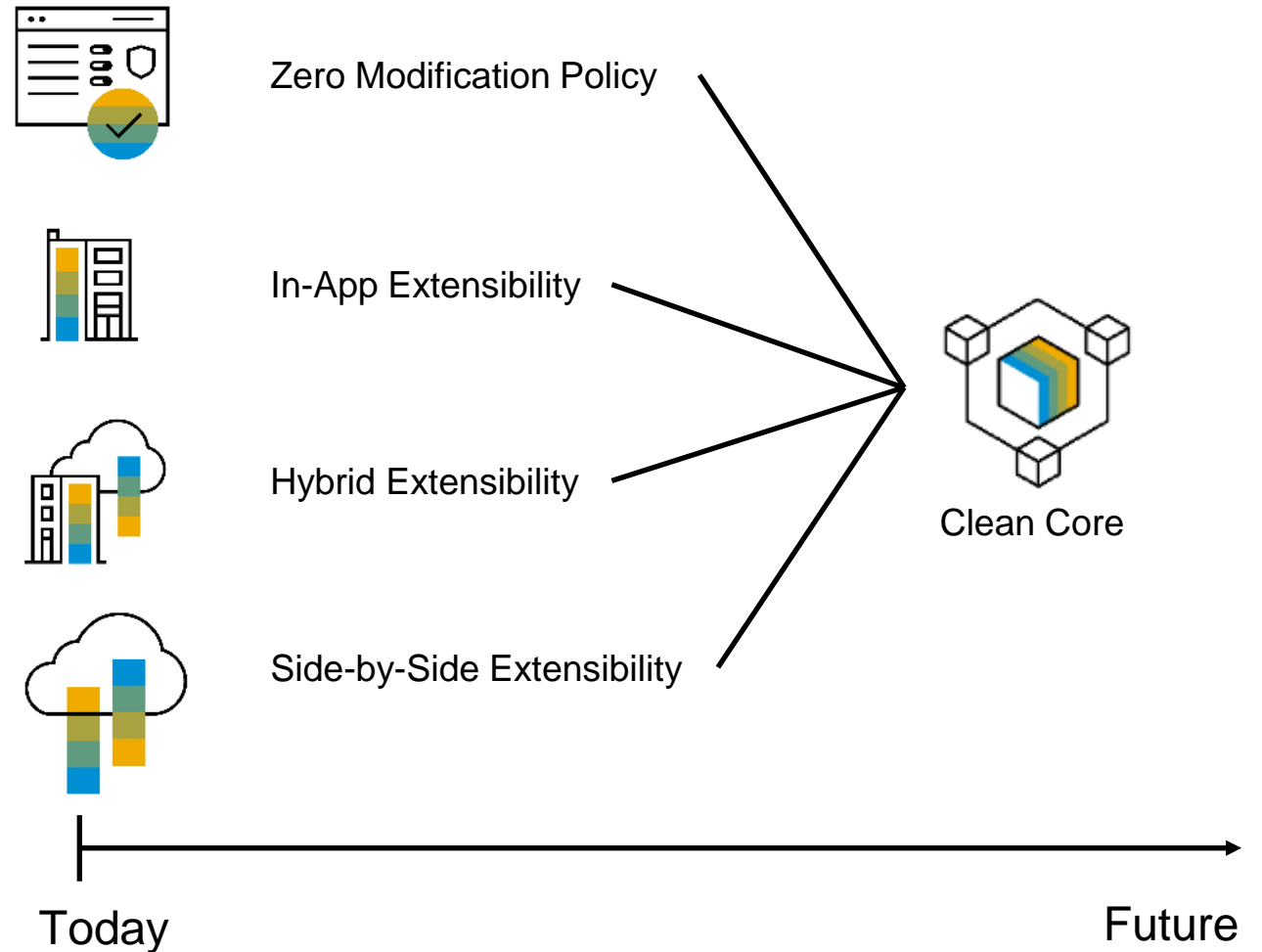
Post SAP S/4HANA  
implementation (Run)



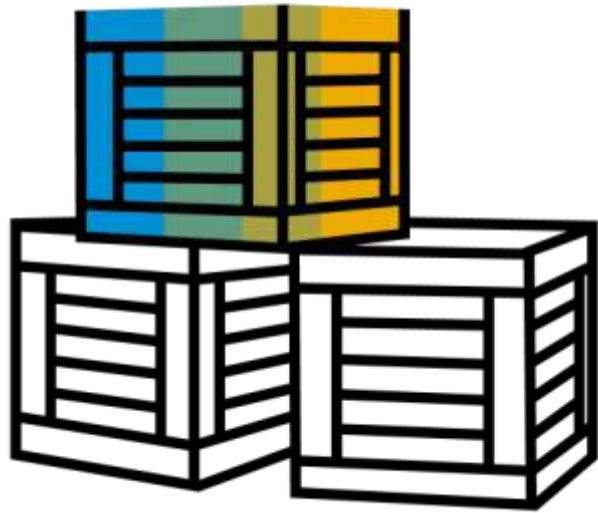
Clean Core is NOT a one time action item – its an philosophy that requires

- Clear extension guidelines
- Ongoing analysis

# Even if we (strive to) keep the Core Clean...



# ... there is some dead wood



Zero Modification Policy



In-App Extensibility



Hybrid Extensibility



Side-by-Side Extensibility



Clean Core

Past

Today

Future



# Custom Code Adaptation vs. Clean Core

Take the **S/4HANA transition** as an **opportunity** to clean up your system without losing flexibility

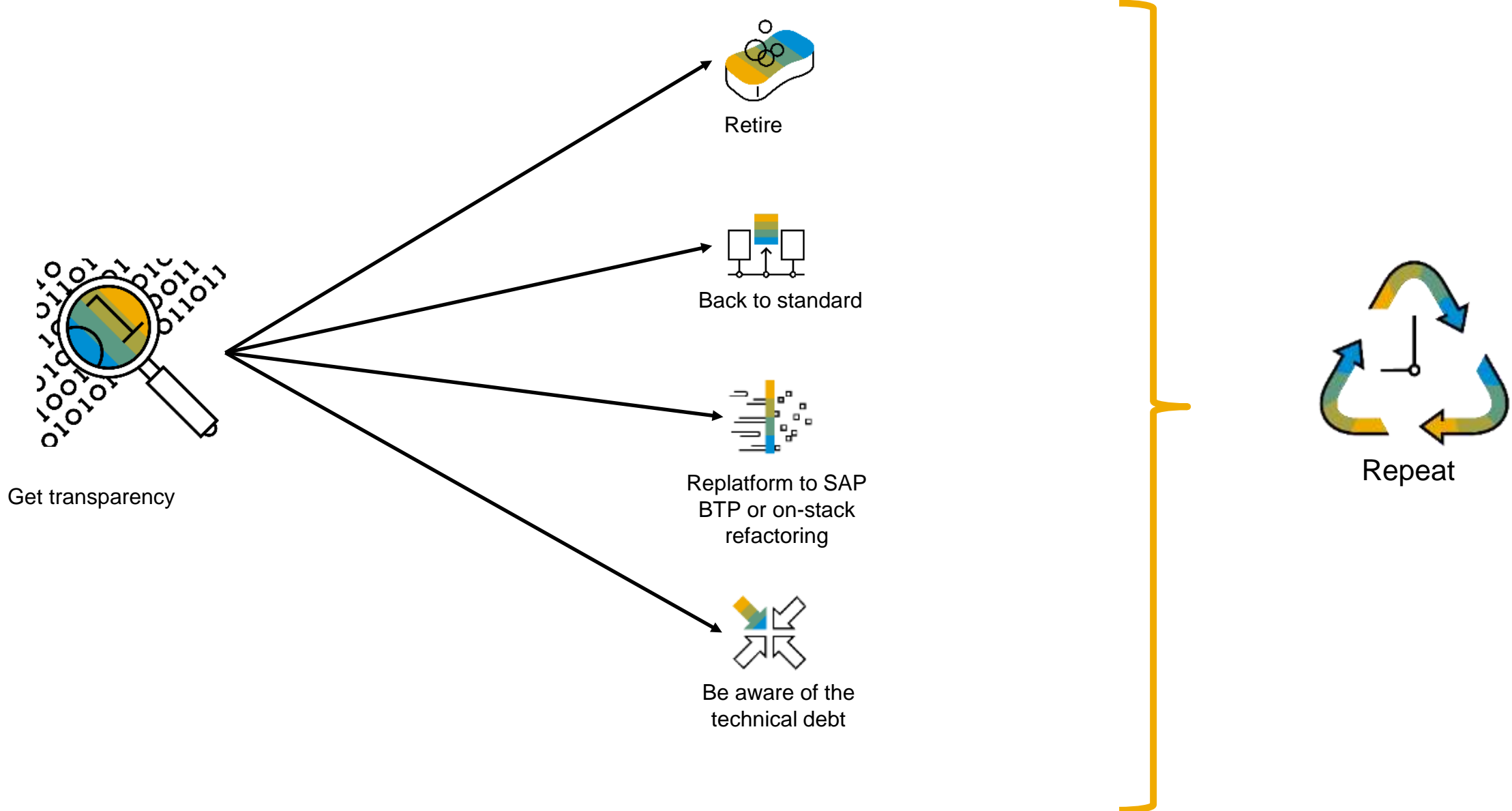
## Only Custom Code Adaptation

- Removal of unused code
- Automated and manual code adaptation
- Review of modifications, clones, and implicit enhancements
- Replace with SAP standard functionality

## Transition to Clean Core

- All Custom Code Adaption +
- Applying a zero-modification policy
- Using white-listed APIs only
- Leveraging SAP S/4HANA in-app extensibility
- Employing the capabilities of the SAP BTP

# How to clean the core



# General Rules in S/4 HANA to develop “clean core”

- ✓ Utilize Key User Extensibility first to create custom fields and custom logic
- ✓ Create de-coupled extensions in Side-by-Side approach
- ✓ Access standard objects via released Whitelisted APIs / Objects (e.g. I\_Product instead of MARA)
- ✓ Consider abstraction layer in case of missing APIs / released objects to minimize technical debts
- ✓ Avoid modifications and clones
- ✓ Valuable sources are [Custom Extensions in SAP S/4HANA Implementations - A Practical Guide for Senior IT Leadership](#), [Extensibility Guide for SAP S/4HANA Cloud, extended edition](#) and [SAP Application Extension Methodology](#)



Consider these recommendations in SAP ECC already for *new developments* (limitations possible)

**Services**

# SAP Services



## Replatforming service for SAP BTP ([50150964](#))

Replatforming service provides a **structured approach** to decide on Replatforming for on-premise applications to SAP Business Technology Platform (SAP BTP). In the process model for replatforming, **steps and artefacts for replatforming** are provided. Furthermore, tools supporting the replatforming process will be explained. Suitable applications are identified and assessed based on the customers' criteria and SAP's best practices.

## Application extension service for SAP BTP ([50151507](#))

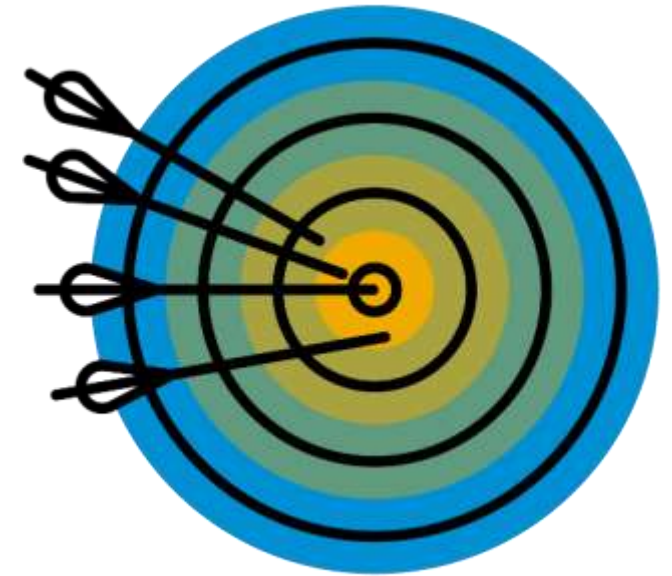


The application extension service for SAP BTP **guides and supports customers** to establish extension best practices for SAP BTP. This service provides **individualized recommendations** to select the right technologies, enable development teams, and plan extension projects to accomplish strategic IT and business goals.

**...in combination with SAP Premium Engagement and IBSO services and delivery units!**

# Key Takeaways

- ✓ Start thinking about Clean Core right now
- ✓ Check custom developments and custom objects
- ✓ Clean all unused and obsolete custom objects
- ✓ Avoid modifications and clones
- ✓ Moving back to standard
- ✓ Use In-app, Side-by-Side or Hybrid extensibility and White-listed API



**Feel free to ask us to help you to Keep the Core Clean and be Cloud-ready!**

# Thank you.

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