



Clean Core Dimension „Extension“

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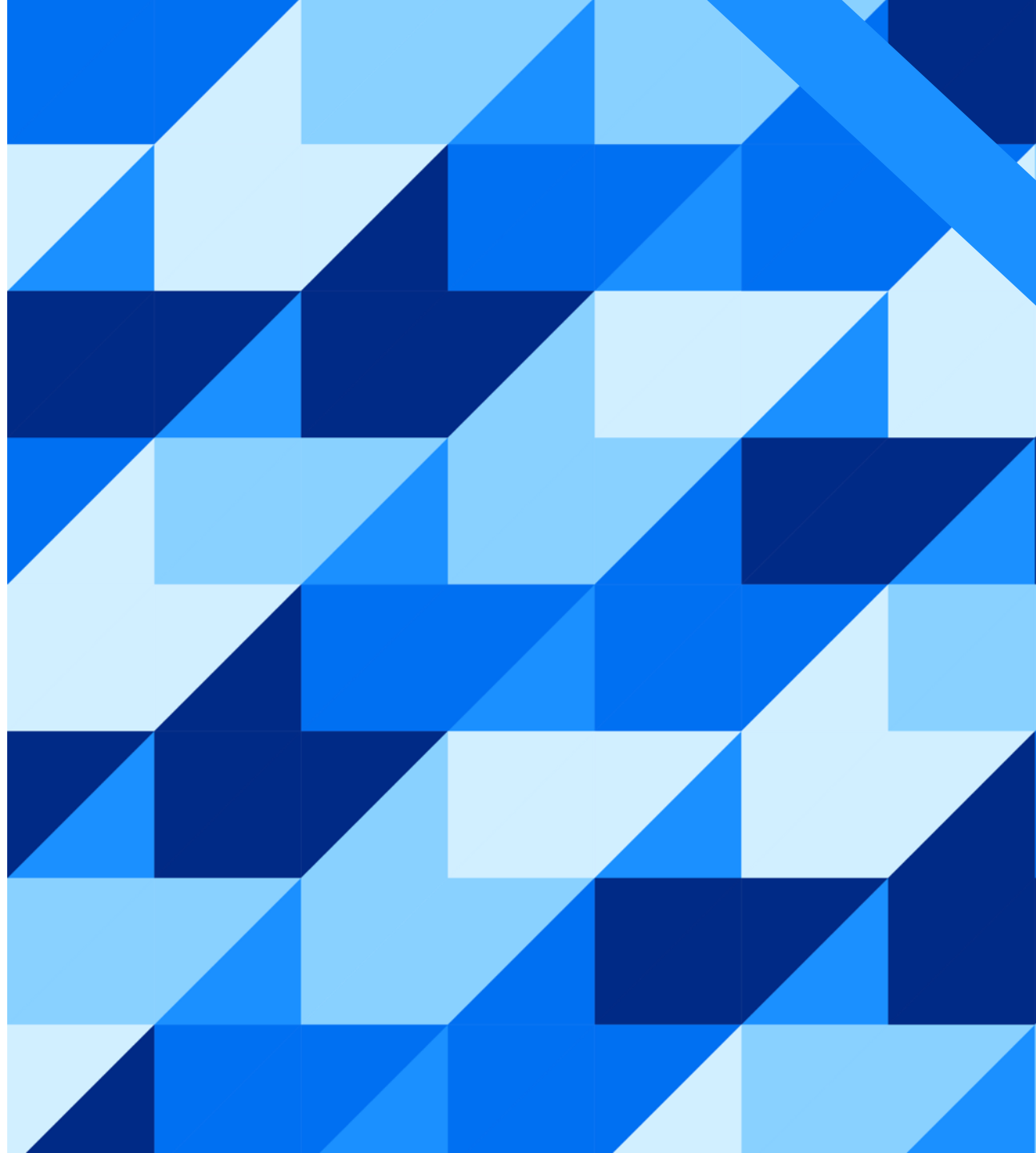
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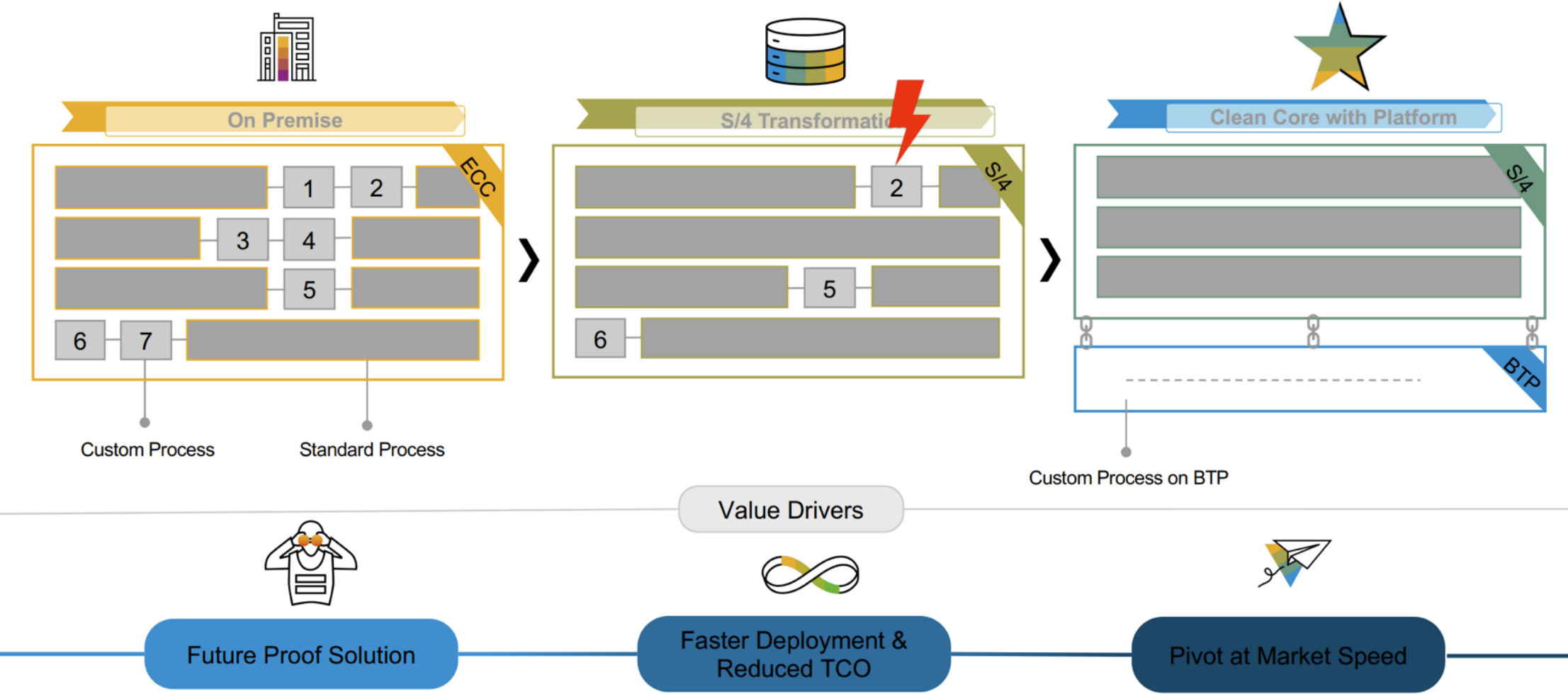
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Escenarios hacia la Innovación estratégica

7th May 2024, Madrid



Extension Customer Journey

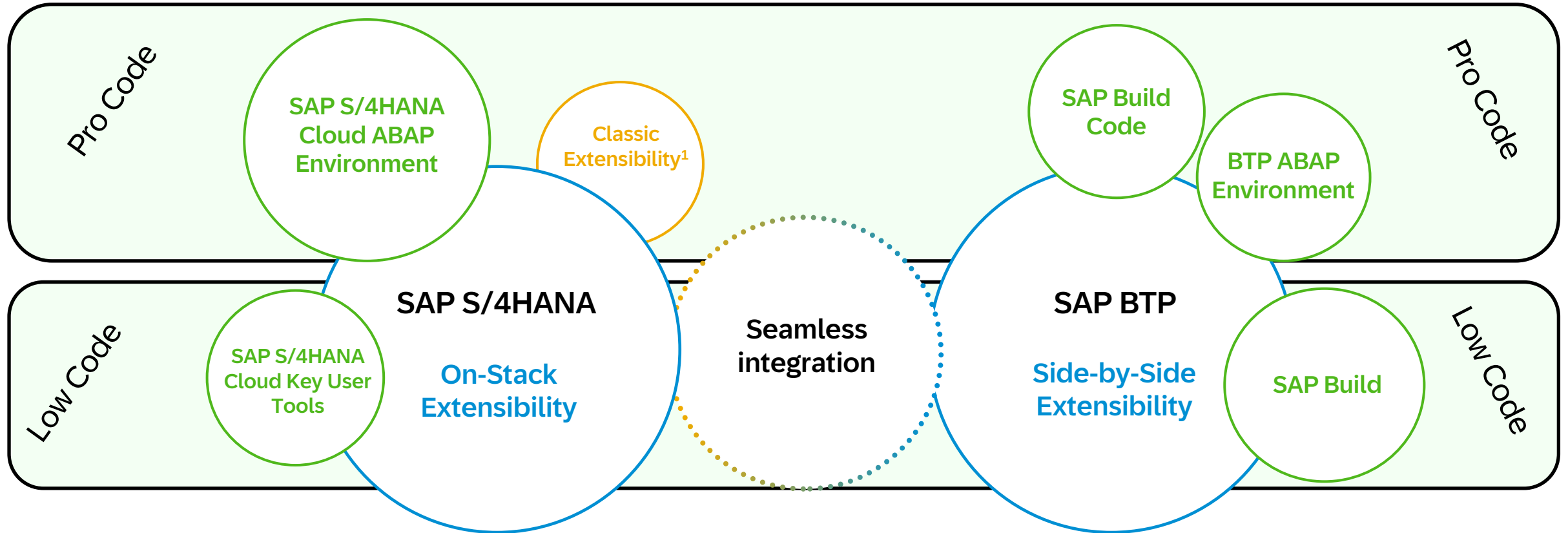


SAP S/4HANA extensibility

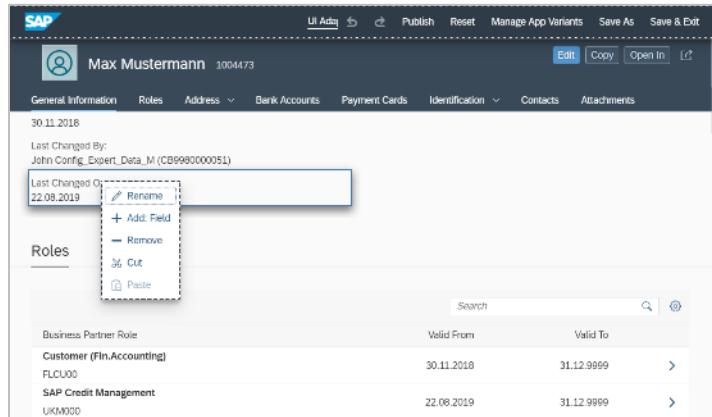
On-Stack Extensions



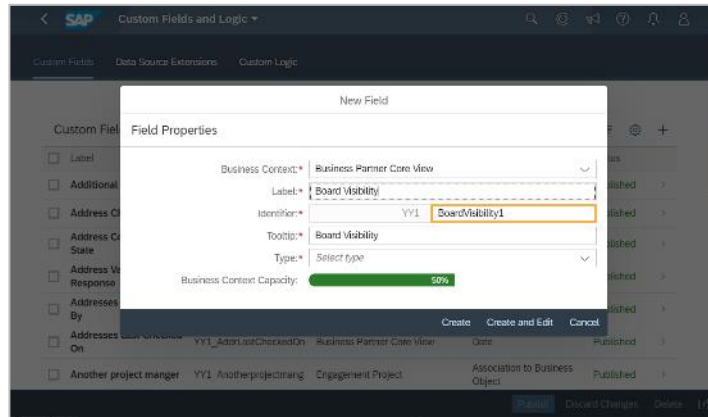
Side-by-Side Extensions



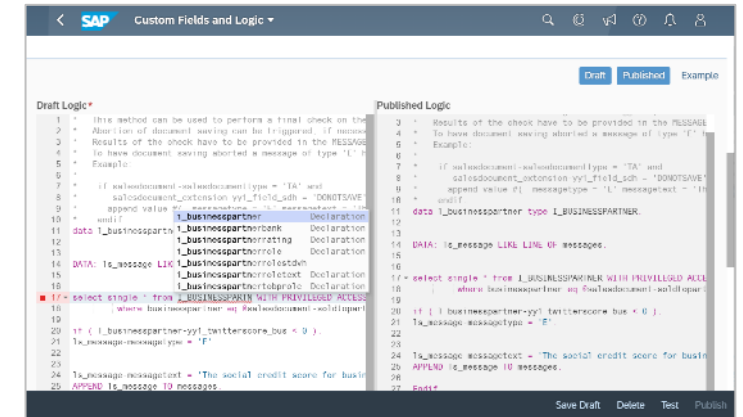
Examples for Key User Extensibility On-stack



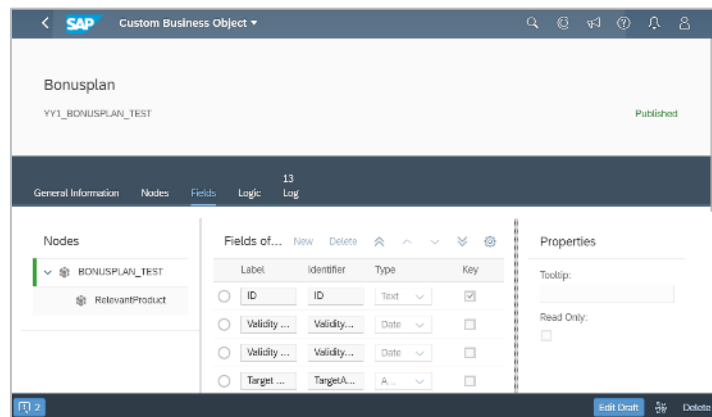
UI adaptation mode – adaptation mode with drag-and-drop configuration



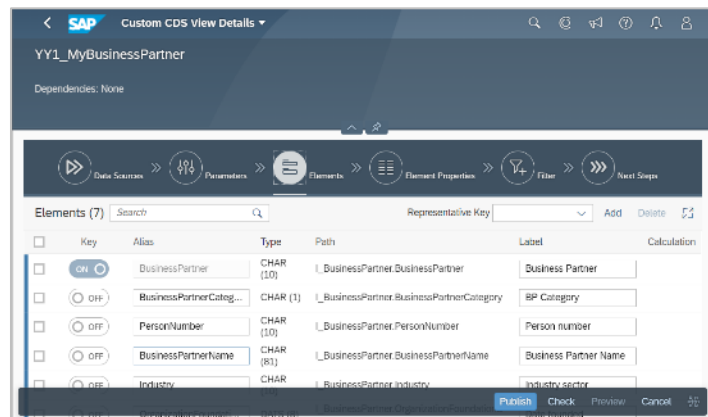
Custom fields SAP Fiori app



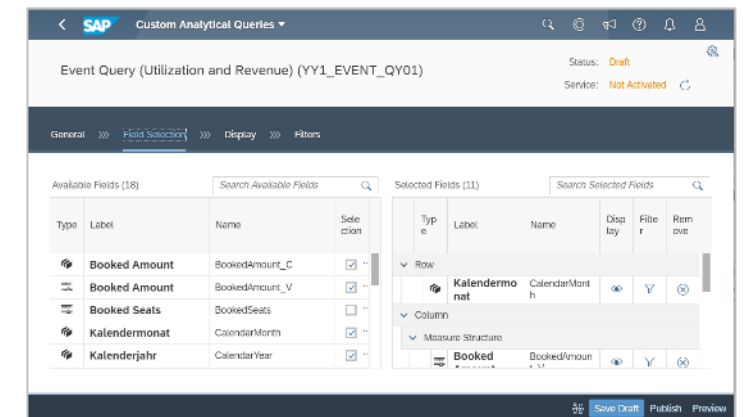
Custom business logic SAP Fiori app



Custom business objects SAP Fiori app



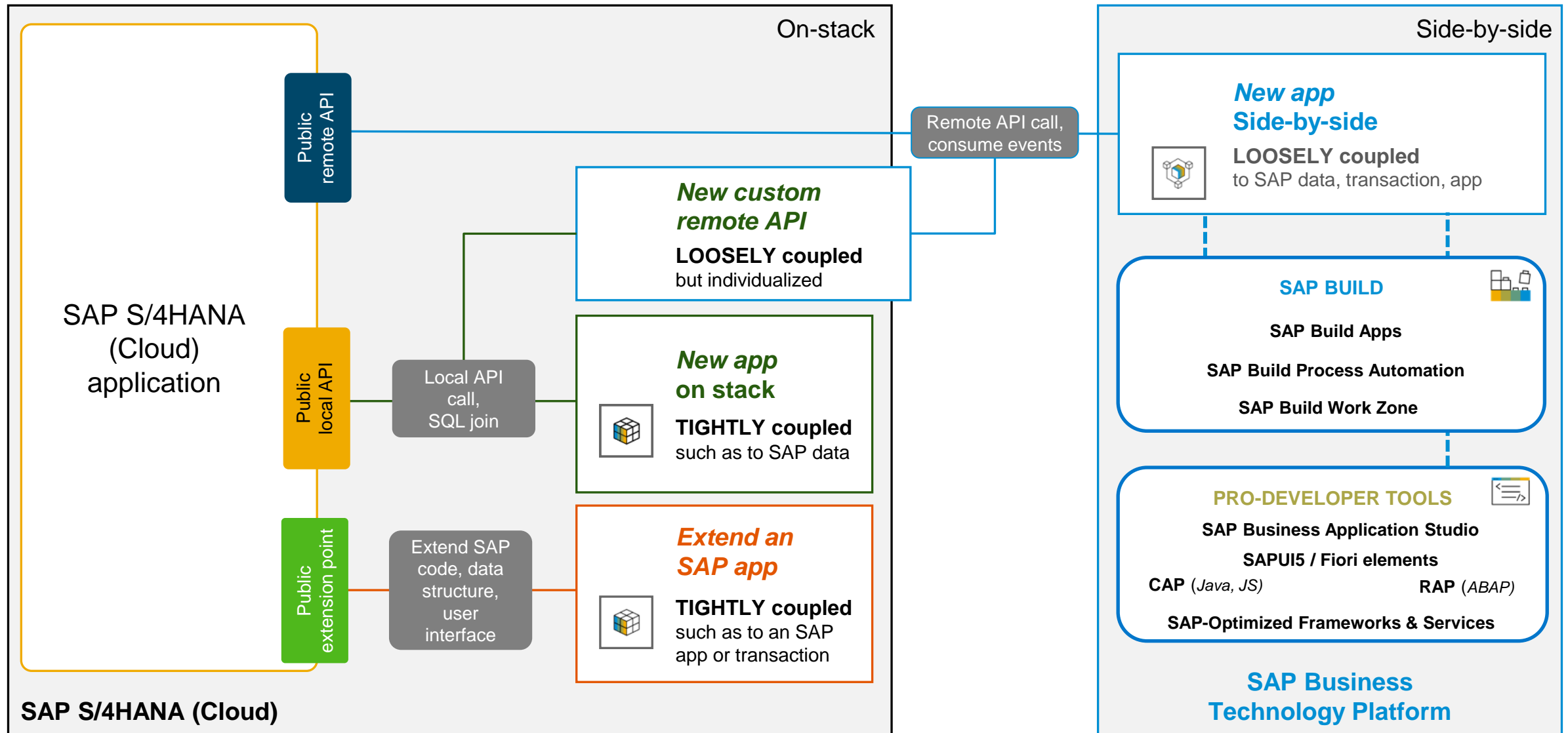
Custom CDS views SAP Fiori app



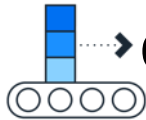
Custom analytical queries SAP Fiori app

<https://blogs.sap.com/2015/09/30/the-key-user-extensibility-tools-of-s4-hana/>
https://www.sap.com/documents/2018/05/606d1ee8-037d-0010-87a3-c30de2ffd8ff.html?need_redirect_to_background_page=false

SAP S/4HANA Cloud extensibility patterns



The cloud equivalent of **ABAP Extensibility** objects **On-stack**



Classic ABAP

Direct table access

BAPIs

BOPF, BOR

Classic programming models/UI technologies like Dynpro, Web Dynpro, BSP

System access via SAP GUI

Customer functions/enhancement frameworks



Clean Core ABAP

Core Data Services (CDS)

RAP Business Objects

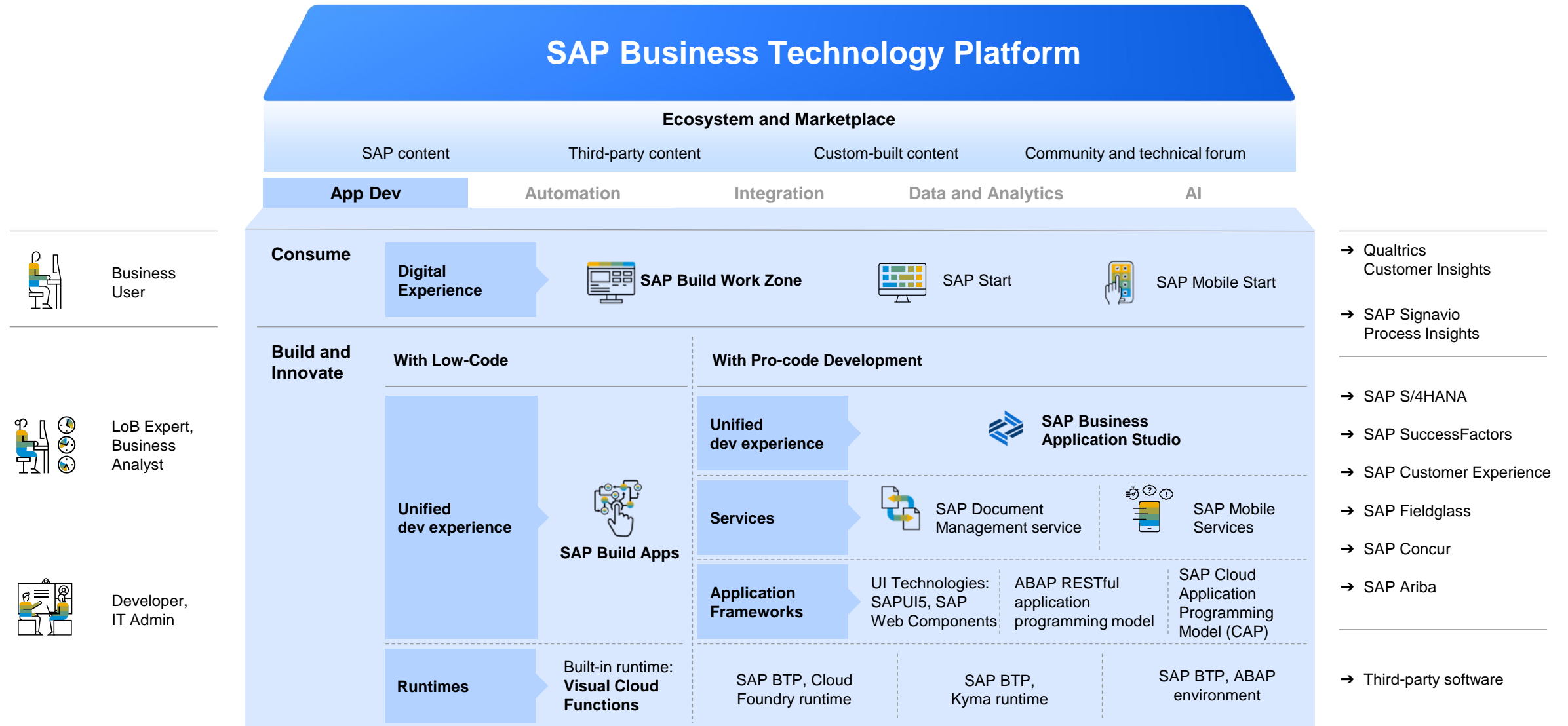
RAP Business Objects

SAP Fiori UIs

System access via ABAP Dev Tools

Released extension points for cloud development

Side-by-side Extensibility using SAP Business Technology Platform



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FEEDBACK

SAP S/4HANA Cloud, public edition

Ready-to-run cloud ERP that delivers the latest industry best practices and continuous innovations. You can also accelerate and grow your business with continuous innovations.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+7

SAP S/4HANA

A future-ready ERP system with built-in intelligent technologies, including AI, machine learning, and advanced analytics which transforms business processes with intelligent automation.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+5

SAP Customer Experience

Bring together customer data, machine learning technology, and microservices to power real-time customer engagements across sales, service, marketing, and commerce.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+6

SAP Business Technology Platform

Accelerate business outcomes with integration, data to value, and extensibility.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+6

SAP SuccessFactors

A global, cloud-based human resource management software system, evolving to help people and businesses thrive in the experience economy.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+4

SAP Ariba

A cloud-based innovative solution that allows suppliers and buyers to connect and do business on a single platform. It provides less costly ways of procurement and makes business simple.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+1

SAP Concur

Provides an integrated online and mobile business travel and expense management software solution that automates your travel expenses.

Integrations

APIs

Accelerators

Workflows

Visualizations

Extensions

Partners

+1

SAP Fieldglass

A cloud-based, open Vendor Management System that helps organizations find, engage, manage, pay, and unlock more value from this growing external workforce - anywhere in the world.

Integrations

APIs

Accelerators

Workflows

Visualizations

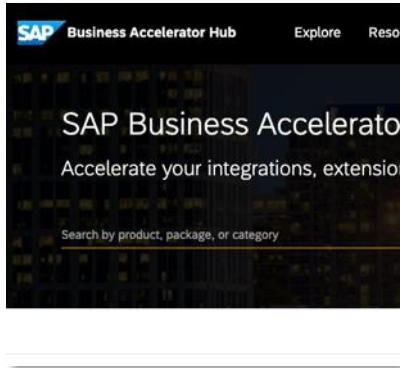
Extensions

Partners

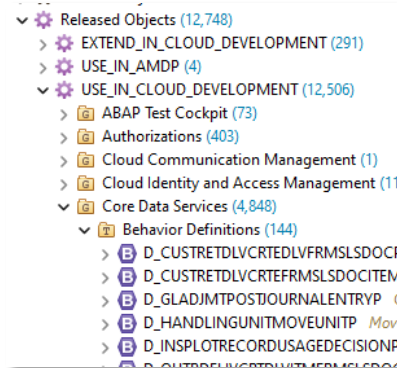
+1

Chat (Beta)

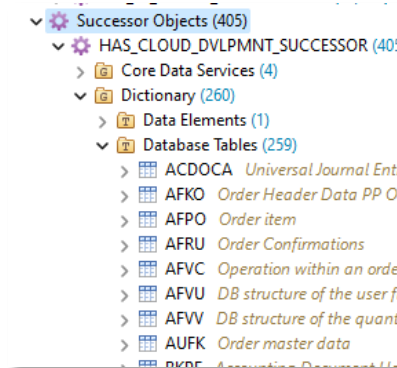
How to identify APIs for SAP S/4HANA



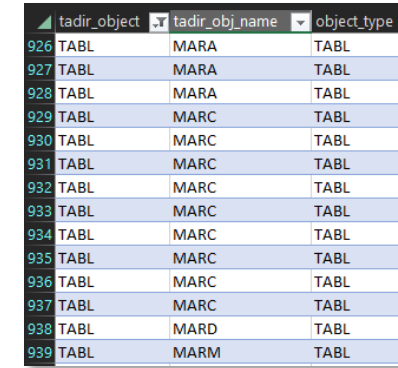
1. Discover APIs on [SAP Business Accelerator Hub](#)



2. Dive into the [released objects](#) in your [system](#)
Property filter:
USE_IN_CLOUD_DEVELOPMENT



3. Look for successor objects in your [system](#)
Property filter:
HAS_CLOUD_DVLP_MNT_SUCCESOR



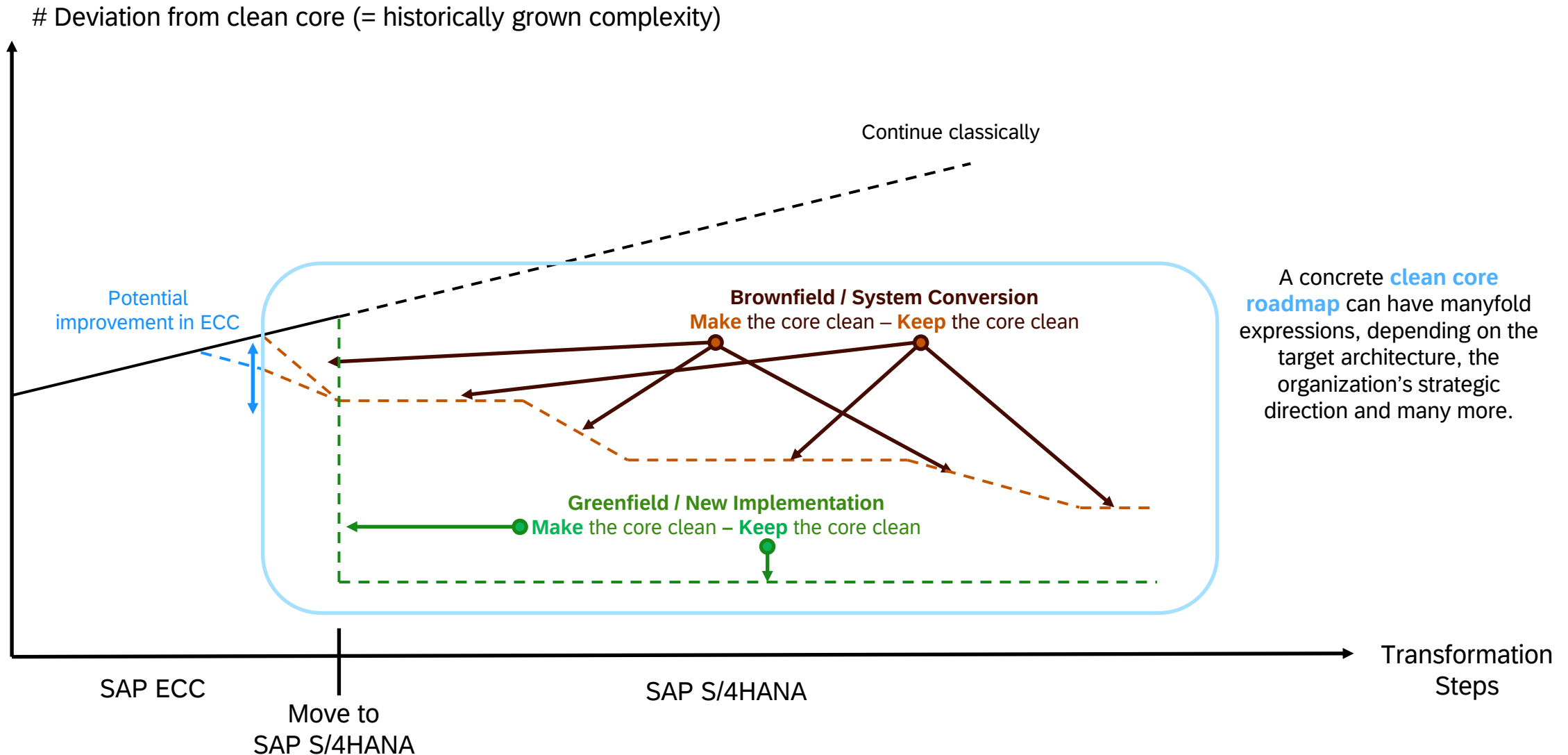
tadir_object	tadir_obj_name	object_type
926	TABL	MARA
927	TABL	MARA
928	TABL	MARA
929	TABL	MARC
930	TABL	MARC
931	TABL	MARC
932	TABL	MARC
933	TABL	MARC
934	TABL	MARC
935	TABL	MARC
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937	TABL	MARC
938	TABL	MARD
939	TABL	MARM

4. Utilize [repository](#) of released objects

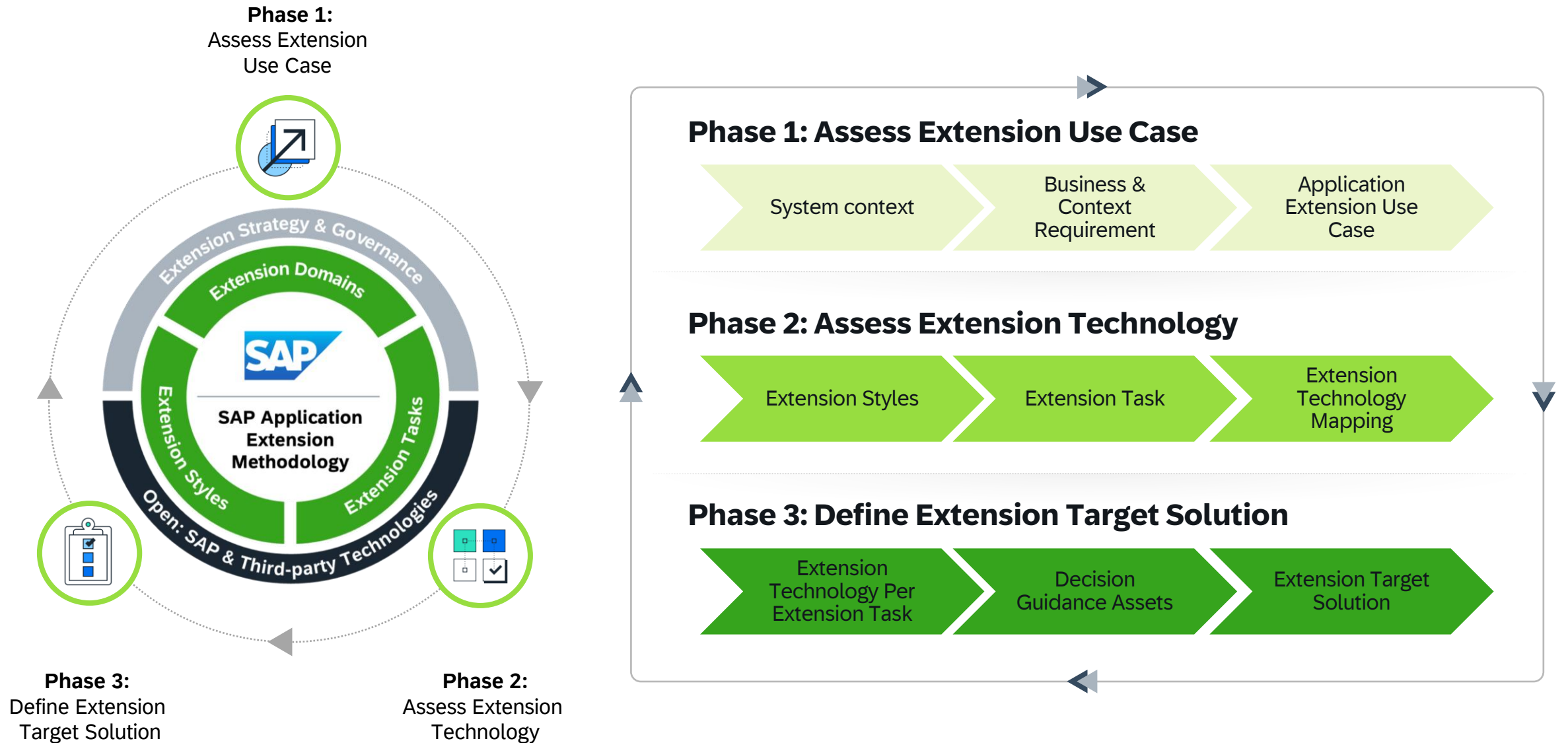


5. Request APIs for [public](#) / [private](#) cloud

SAP S/4HANA transformations and clean core

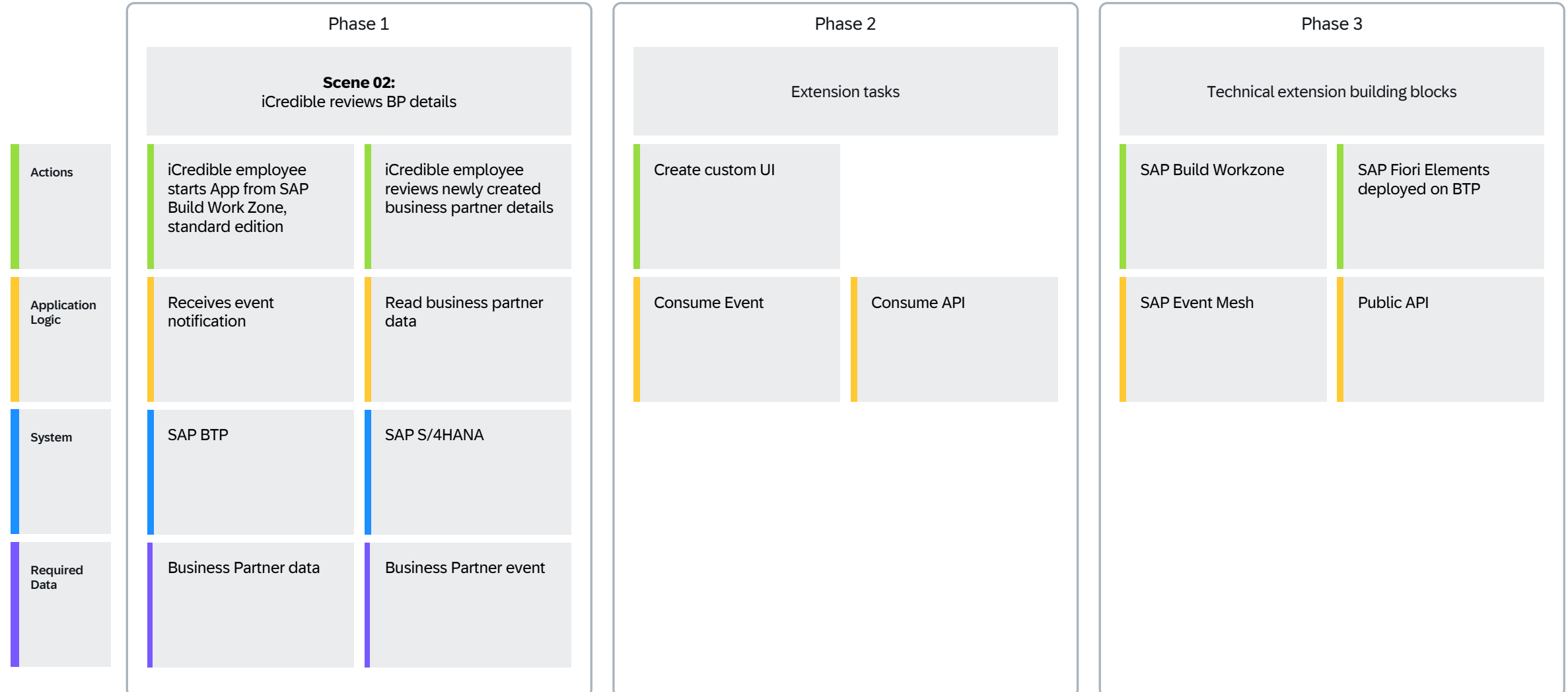


SAP Application Extension Methodology



Extension Technology per Extension Task Mapping – Template

Example



Project specific guidelines

Examples based on SAP Application Extension Methodology

P03: Create custom UI

Phase 3: Define Extension Target Solution

ILLUSTRATIVE

Code	Extension Domain	Technical Building Block	Explanation
Core		SAP Key-User In-App Extensibility: Generated UI based on custom business object	Usage only for CBO-based extensions, comparable to Fiori Elements deployed on S/4
Core		SAP Fiori Elements deployed on S/4HANA	Default for all core extensions with business users
Core		SAPUI5 Freestyle deployed on S/4HANA	Only if Fiori Elements not suitable
Side-by-Side		SAP Fiori Elements deployed on BTP	Default for all side-by-side extensions
Side-by-Side		SAPUI5 Freestyle deployed on BTP	Only if Fiori Elements not suitable
Side-by-Side		SAP Launchpad Service (BTP)	Recommended Access&Collection for Side-by-Side UIs
Side-by-Side		SAP Task Center	Recommended UI Framework for approval UIs
Side-by-Side		SAP AppGyver (No-Code)	Recommended Framework for no-code use cases
Core		SAP Classic Dynpro & SAP WebDynpro ABAP	Only usable in case of temporary extensions based on "classic" technology

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A01: Add business logic/pre-fill/validate fields before/within/after existing business process

Phase 3: Define Extension Target Solution

ILLUSTRATIVE

Code	Extension Domain	Technical Building Block	Explanation
Core		Developer Extensibility „BAdI“ implementation	Developer extensibility preferred due to better Developer Experience (e.g. debugging)
Core		SAP Key-User In-App Extensibility: Custom Logic App (BAdIs)	
Core		SAP Classic ABAP BAdIs (SE18/SE19)	Necessity to check / request API for S/4 cloud; still better than classic exits
Core		SAP Classic: SMOO/CMOD (Customer exits)	Approval needed due to loss of "cloud readiness"
Core		SAP Classic: User Exits	Approval needed due to loss of "cloud readiness"
Core		SAP Classic: Modification	Special approval needed, still better than "clone"

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D03: Add custom field to existing business object

Phase 3: Define Extension Target Solution

ILLUSTRATIVE

Code	Extension Domain	Technical Building Block	Explanation
Core		SAP Key-User In-App Extensibility: Custom Fields App	
Core		SAP Classic: Customizing Include (CI_*)	Only if no suitable business context in Key User Tools available; Necessity to check / request API for S/4 cloud; manual addition to APIs&UIs needed
Core		SAP Classic: Append Structure	Only if no suitable business context in Key User Tools available; Necessity to check / request API for S/4 cloud; manual addition to APIs&UIs needed
Core		SAP Classic: Extension Includes	
Core		SAP Classic: Table modification	

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Code	Explanation
	Recommended Solution in future landscape
	Restricted allowance in general, should only be considered if no "green" aspect can be used (e.g. no BAdI available, no released API-View available etc.) Decision can be taken on Architect Level
	Only allowed with special approval from Architecture Council.
	Generally prohibited in future landscape

Example: Guidance Assets in AEM Projects

A05: Create API

Technical Building Block	Explanation	Reasoning (why to choose)	Link (Documentation / Mission / Tutorial)
SAP Key-User In-App Extensibility: Custom CDS View	Custom CDS views can serve as external APIs to be consumed in	Elegant and easy approach to combine existing released	https://help.sap.com/viewer/ed0e11412f9841e7ac5cd9a6799368d4/late

P02: Add custom field to standard UI

Developer Extensibility: RAP based oData Service	Technical Building Block	Explanation	Reasoning (why to choose)	Link (Documentation / Mission / Tutorial)
Side-by-Side: CAP based oData Service	SAP Key-User In-App Extensibility: Custom Fields App	Enable fields to be made available in standard UIs via "Custom Fields" Application.		https://help.sap.com/docs/ABAP_PLATFORM_NEW/b5670aaaa2364a29935f40b16499972d/3a713139e548434e8a50800e7a7c8172.html?locale=en-US
Side-by-Side: RAP based oData Service	API enablement	see Task A04 for details to add a custom field to ODATA Service) to UI (e.g. Fiori Appli		
SAP Key-User In-App Extensibility: Custom Business Objects				
SAP Classic: iDoc				
SAP Classic: RFC				
SAP Classic: oData				

Mapping of Extension Task to Technical Building Block

A01: Add business logic/pre-fill/validation

Standard

Technical Building Block	Explanation
Developer Extensibility: "Cloud" BADls	Search
SAP Key-User In-App Extensibility: Custom Logic (BADls)	You, as applica
SAP Classic ABAP BADls (SE18/SE19)	Implem
SAP Classic: SMOD/CMOD (Customer exits), User Exits	
SAP Classic: Modification	Modific

processing logic for this data structure.

The data structure is the IDoc. The IDoc is th to all the communicating systems. You can s the SAP Business Workflow, with IDocs, with to exist as SAP application documents.

Communication between applications of diffe environment includes connections between SAP systems and non-SAP system (RFC) is the standard SAP interface for com systems. RFC calls a function to be executed

SAP Gateway Service Builder (transaction S use set of tools for creating OData services.

Search	Q	Editing Status: All	Three-Tier Architecture:	Extension Style: (New User Int... x)	Extension Domain:	Clean Core Extensibility Tier:	Go
Working View Overview							
Technical Extension Building Block	Extension Domain	Sequence	1	Clean Core Extensibility Tier	Reasoning		
Extension Task: Create custom UI							
SAP Mobile Services	Side-by-Side	1		Tier 1 - Cloud Extensibility Model	Use Case: Mobile Scenario needed; Usage of native mobile capabilities or e.g. offline scenarios	>	
SAP Fiori Elements	Core - Side-by-Side	1		Tier 1 - Cloud Extensibility Model	Floorplan matched -> fiori elements	>	
SAP Build Apps	Side-by-Side	1		Tier 1 - Cloud Extensibility Model	Limited scope; pure LC-NC-tool (feature availability, business critical, future requirements, no Fiori UI integration, no Launchpad integration)	>	
UIS Webcomponent	Side-by-Side	2		Tier 1 - Cloud Extensibility Model	Only if no supported floorplan matches and need for non-SAPUI5 UI framework	>	
SAPUI5	Core - Side-by-Side	2		Tier 1 - Cloud Extensibility Model	Only if no supported floorplan matches	>	
WebDynpro ABAP	Core	3		Tier 3 - Classic ABAP Extensions	Only to be used if process that is extended is running on web dynpro and no launchpad is used within the process.	>	
Dynpro	Core	3		Tier 3 - Classic ABAP Extensions	Only to be used if process that is extended is running on classic dynpro and no launchpad is used within the process.	>	

Decouple extensions from standard

Main Aspects:

- ✿ Extensions should be **avoided** when possible
- ✿ Create **decoupled Extensions**, i.e. in a way that they would work in the cloud (3-Tier Model) by setting up a **strong governance**
- ✿ **Custom extensions** do not break an upgrade and **upgrades** do not break an extension* - separate extensions by leveraging released APIs
- ✿ Leverage the full capabilities of extensibility **on the stack** as well as side-by-side **with SAP BTP**
- ✿ Create **technical debts** only as informed decision

Keep **competitiveness** while **reducing complexity**.

1

Business Processes

Decouple extensions from standard.

2

Extensibility

Control data according to **latest standards**.

3

Data

Keep the landscape **reliable and flexible**.

4

Integration

Keep the operations **effective and efficient**.

5

Operations

Thank you.

Contact information:



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