

The background of the slide is a low-angle, upward-looking photograph of a cable-stayed bridge. The bridge's dark blue steel structure, including a large pylon and numerous stay cables, dominates the frame against a light, overcast sky. The perspective creates a sense of height and architectural scale.

Integrate SAP S/4HANA with Microsoft Teams via SAP Business Technology Platform

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T&I Strategic Customer Engagement

Agenda

- Introduction to Teams Integration
- Value of Teams Integration
- Introduction to the Business Scenario
- SAP Discovery Center Mission Walkthrough
- End Result Demo
- Questions

How the Tools We Use for Work Have Changed:



Change in Communication Methods

Post-pandemic, platforms for digital communication at work have become more important and more popular than ever. Becoming an integral part of cross-industries daily communication method.



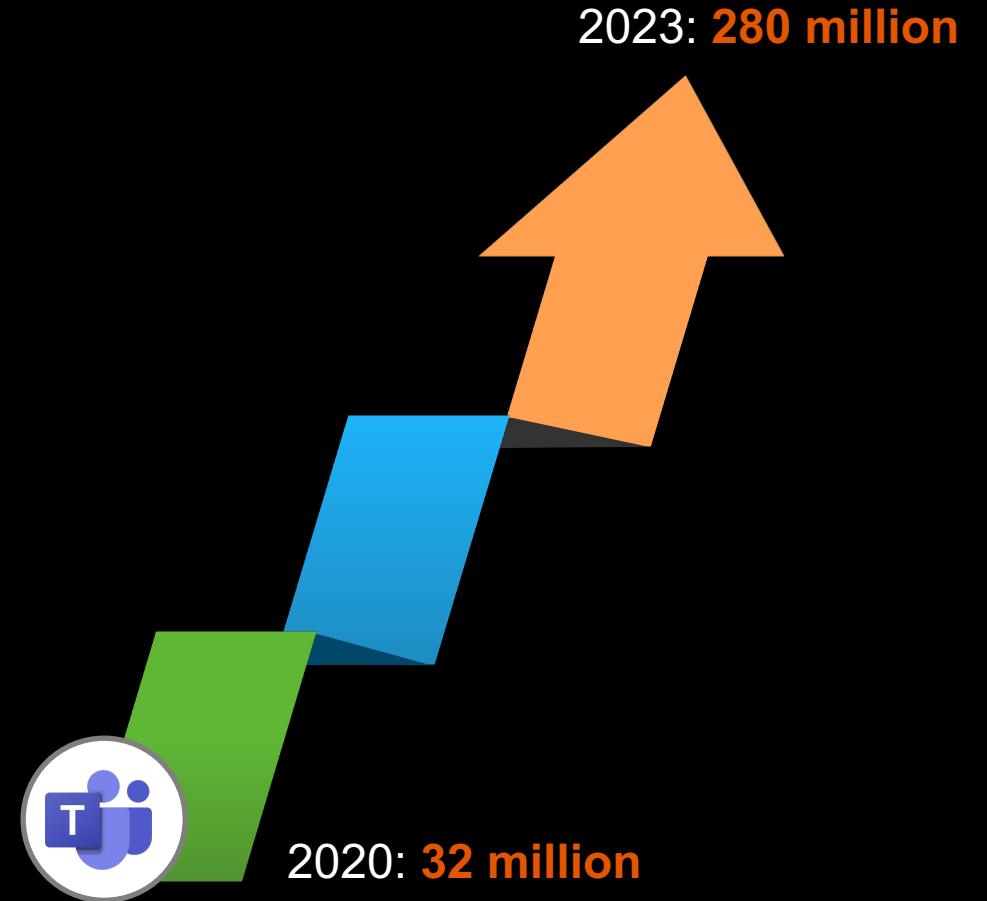
Usage

More than 80% of professionals report spending between **4-12 hours a week** in meetings [\[link\]](#).



Microsoft Teams Users

Microsoft Teams has seen a meteoric rise in usage, from **32 million** daily active users pre-pandemic to **280 million** in 2023 [\[link\]](#).



Integration centered around SAP BTP

Services and Best Practices

We want integration solutions to:

**Fit customer needs and leverage
SAP BTP**

Teams integration is a highly requested feature

**Integration is more important
than ever!**



Building a Bridge Between SAP & Teams – Primary Solution Outcomes



Increase productivity

Simplify complex flows and reduce context-switching to optimize SAP interactions.



Enhance collaboration

Facilitate seamless communication, real-time data sharing, and joint problem-solving without the need to cross-reference business documents across apps.



Leverage Teams data

Harness valuable insights from Teams: leverage chats, transcripts, and generative AI to enable decision-making.



Increase visibility

Gain full transparency of SAP processes in Teams, enabling proactive issue resolution, informed decision-making, and improved overall management.



Business Scenario:

Streamline approval workflows for SAP S/4HANA

Streamline approval workflows for SAP S/4HANA



Overview

Extends S/4HANA approval flows into Teams by providing users with the ability to **approve, reject, or discuss Purchase Orders directly in Teams**. This use case was validated through a customer project with Siemens that is approaching a productive implementation.



Challenges & Motivation

- Productivity loss to context-switching and ineffective collaboration
- Purchase Order approval processes range from:
 - Simple, one-click approvals
 - Complex back-and-forth conversations with stakeholders
- Collaboration is an opaque process from the SAP perspective



Outcome

- **Centralizes** S/4HANA purchase order approval workflow
- **High velocity collaboration** easily referencing relevant SAP data
- **Two-way data flow**, SAP systems benefit from access to communication platforms and vice-versa

The screenshot displays the SAP-Inbox Action Center interface. At the top, there is a search bar and navigation links for 'SAP-Inbox', 'Chat', and 'About'. Below this, a 'View More Details' button is visible. The main content area shows a 'Purchase Order #4500001253' with the following details:

Purchase Order ID	Purchase Order Type	Purchasing Processing Status	Created By User
4500001253	NB	03	I561660
Creation Date	Supplier	Net Payment Days	Purchasing Group
Thu Jul 21 2022	USSU-VSF05	0	003
Address Name	VF Vendor 05		

Below the details, there is a table with columns for 'Item Number', 'Item Text', 'Currency', and 'Net Price Amount':

Item Number	Item Text	Currency	Net Price Amount
10	BKC-990 Seat	USD	11.56
20	BKC-950 Wheels	USD	8.63

At the bottom of the card, there are three buttons: 'Discuss', 'Reject', and 'Approve'. The 'Approve' button is highlighted in blue. Below the card, the 'Priority: Medium' and another 'View More Details' button are visible. The interface is part of a Teams chat window, as indicated by the bottom navigation bar.

SAP Discovery Center Mission

Mission

- [Integrate SAP S/4HANA with Microsoft Teams via SAP Business Technology Platform](#)

GitHub

- [SAP-samples/btp-bridge-framework](#)

Duration

- 2-4 days

Prerequisites

- Basic Familiarity with SAP S/4HANA development
- Basic Familiarity with SAP BTP
- Basic Familiarity with Microsoft Azure

Use Case

Duration: 2-4 days

Enterprise customers of SAP have been using standard SAP desktop applications or web-based alternatives to perform their daily business operations for quite some time. However, the world is always changing, and the way people work and collaborate with each other is changing too. Demands for an improved user experience to increase usability, collaboration and productivity has emerged, especially for people working extensively via the business communication platform - Microsoft Teams.

Based on this demand, we build this mission to showcase how to extend the business processes in SAP S/4HANA to the Microsoft Teams app, by using the SAP BTP Bridge Framework.

In this mission, we pick up the S/4HANA purchase order approval as the use case, to illustrate how to use the Bridge Framework to view the S/4HANA purchase order data, update purchase order data if needed, and perform the release purchase order process in the Microsoft Teams.

Current Position - What is the challenge?

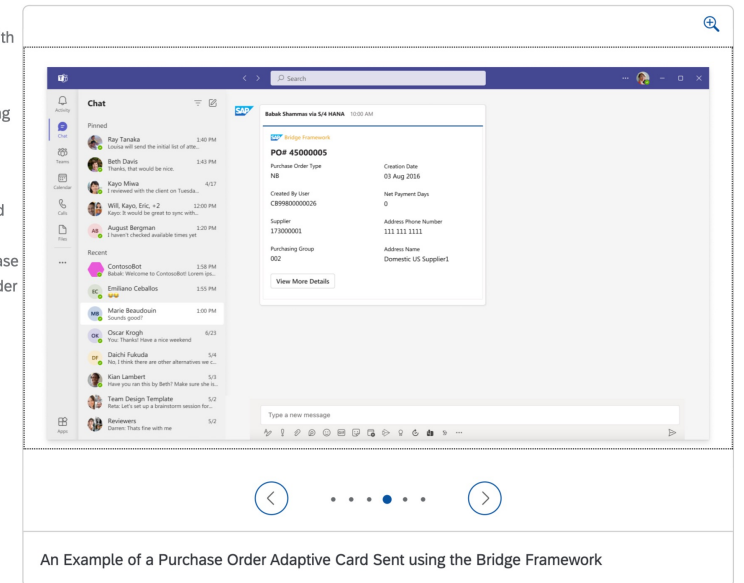
Managing purchase orders can be a time-consuming process for buyers and purchase managers. With purchase order data existing only in the SAP S/4HANA system, accessing, editing, and releasing purchase orders can require logging in and out of multiple systems such as Microsoft Outlook, SAP S/4HANA, SAP S/4HANA Fiori Launchpad, and Microsoft Teams. This can lead to delays in processing requests and a higher likelihood of errors.

Destination - What is the outcome?

With the help of the Bridge Framework, the user (both the buyer and purchase order manager) could easily view, search, and update the purchase order data in the Microsoft Teams after deploying the Bridge Framework in their SAP BTP subaccount with few configurations. When there is a new purchase order created and needs approval, the approver could receive the notification, view the purchase order in detail, and approve or reject the purchase order in the Microsoft Teams app directly.

How You Get There - What is the solution?

If you want to streamline your purchase order management process, reduce the risk of errors, and improve overall efficiency, the Bridge Framework can help. To get started, follow the step-by-step guides included in this mission. These guides will walk you through the process of configuring, deploying, and using the Bridge Framework, enabling you to achieve your goals with ease.



Project Board — Discover

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Mission Story

Goal

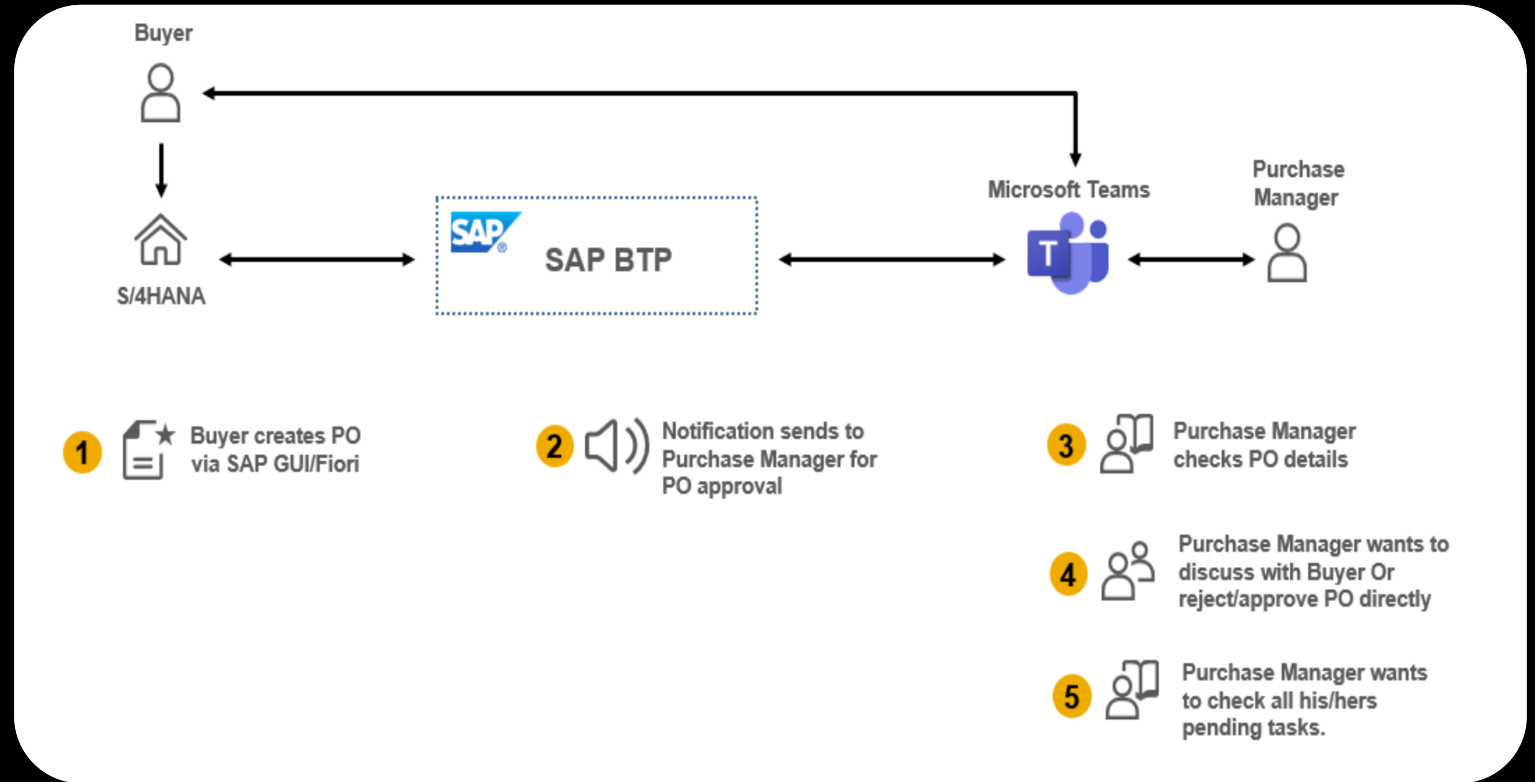
Integrate SAP S/4HANA with Microsoft Teams by building a custom Teams app using the Bridge Framework deployed on SAP BTP.

Outcome

A custom Microsoft Teams app generated by the Bridge Framework on SAP BTP. The app can be used to view SAP data and take actions directly from Microsoft Teams.

Business Scenario

SAP S/4HANA Purchase Order Approval workflow.



Project Board — Discover

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System Architecture Walk Through

SAP S/4HANA

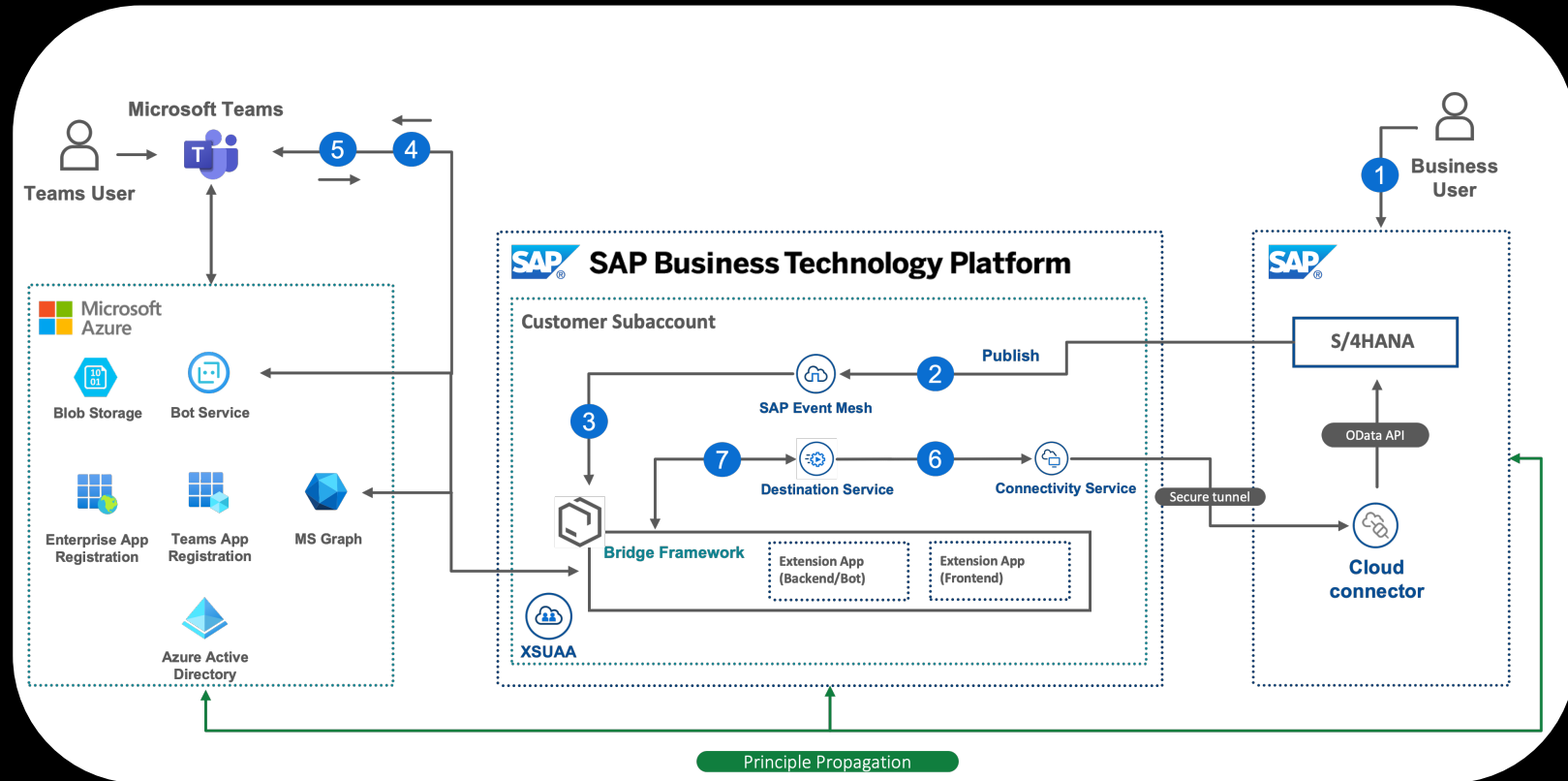
On premise SAP S/4HANA system. Provides communication arrangement for fetching and acting on Purchase Orders (or other documents). ABAP job initiates workflow notifications.

SAP BTP

Provides the communication services, event handling services, and an application runtime to enable custom app development and operation.

Microsoft Teams and Azure

Target system for notifications and source system for user interactions.



Project Board — Discover

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BASICS

Learn the basics of Bridge Framework deployed on SAP BTP

Bridge Framework on SAP BTP

The Bridge Framework is an integration framework on SAP BTP that accelerates and simplifies the development experience for extension apps on communication platforms that integrate with SAP products.

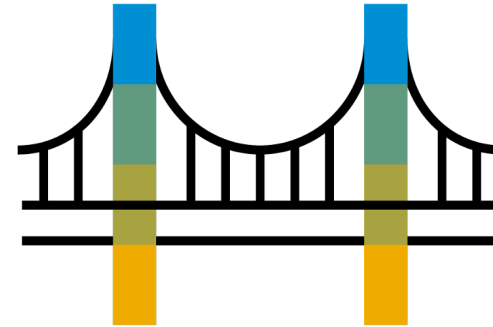
Advantages

- Leverage SAP BTP
- Ready to Deploy w/ Easy Configurations
- Secure Connections
- Curated UI Components
- Automated Set Up

SAP® S/4HANA
SAP SuccessFactors



•
•



Communication
Platforms

SAP Business Technology Platform

Project Board — Discover

BASICS

Learn the basics of SAP BTP

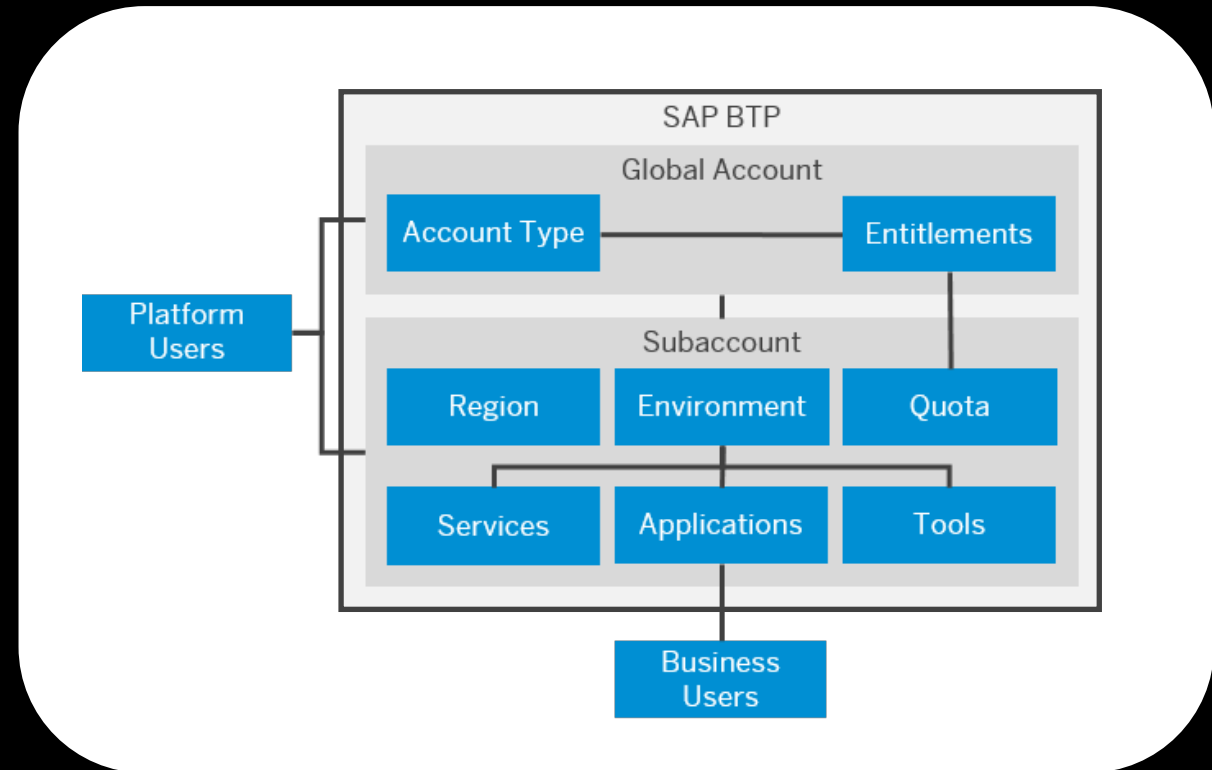
BASICS

Learn the basics of SAP S/4HANA

Info

General familiarity with SAP BTP will help here. This includes the cockpit, subaccounts, entitlements, services, subscriptions, etc.

Basic familiarity with SAP S/4HANA, especially a basic understanding of ABAP development and OData APIs, will also help.



Project Board — Discover

BASICS

Learn the basics of SAP Event Mesh

BASICS

Learn the basics of SAP Connectivity service

BASICS

Learn about the basics of SAP Integration Suite

BASICS

Learn about the concepts behind business events and event-driven architectures

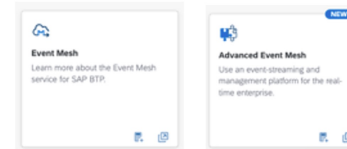
Event sources

SAP S/4HANA
SAP S/4HANA Cloud
SAP ERP
SAP SuccessFactors solutions
SAP Marketing Cloud
SAP Fieldglass solutions
SAP Data Intelligence
SAP CPQ
Other SAP solutions
3rd party

Eventing infrastructure

SAP Integration Suite

- SAP Event Mesh
- Advanced Event Mesh



- Event Bridging
- Event catalogs

Event consumers

SAP Integration Suite
SAP Extension Suite
SAP BTP Services & Apps
SAP back ends
(SAP S/4HANA Cloud and SAP S/4HANA, SAP ECC and SAP S/4HANA using add-on)
Project “Kyma”
SAP Data Intelligence
SAP AppGyver
Azure Event Grid
(Beta Program)
3rd party

Know-How

Guidance (ISA-M ...) and Learning Materials (DC Missions ...)



Project Board — Prepare

IMPORTANT

PREREQUISITES

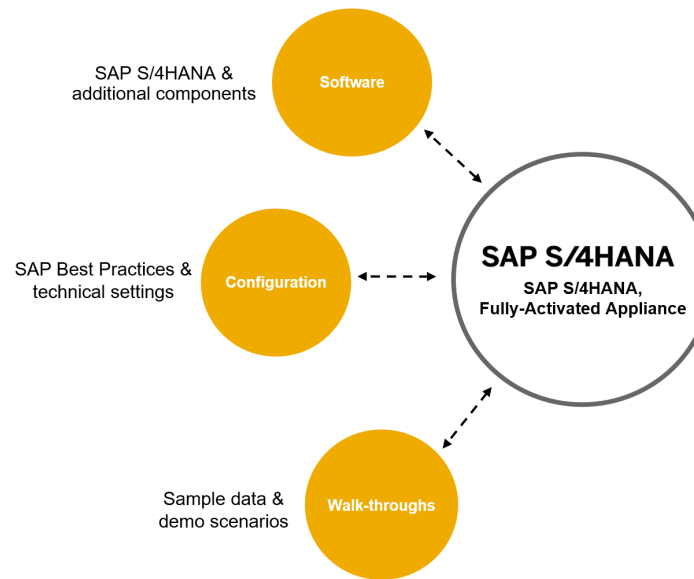
Prepare SAP S/4HANA on premise

Info

For SAP employees, use the SAP Cloud Appliance Library (SAP CAL) to get access to a development system if you do not already have access to such a system.

SAP S/4HANA Fully-Activated Appliance

The Software Appliance Concept



Create your own pre-configured system in a fraction of the usual setup time



In 1-2 hours via SAP Cloud Appliance Library (SAP CAL), hosted in AWS / MS Azure / GCP



In 2-3 days when deploying on own physical hardware



Use cases:
Trial / Sandbox / PoC / Scoping



Open to customers, partners, public users, and SAP employees

Project Board — Prepare

IMPORTANT

PREREQUISITES

Set up your subaccount for SAP Business Technology Platform

Info

Note that trial accounts, as of today, do not have access to SAP Event Mesh. Using a trial account will limit your ability to deliver Microsoft Teams notifications.

In your BTP subaccount, you will use the following services / resources:

- Cloud Foundry Runtime
- Cloud Identity Services – Identity Authentication
- Destination Service
- Cloud Connector & Connectivity Service
- Event Mesh (for notifications)

SAP BTP Cockpit

Sign In

Overview

Services

SAP Business Technology Platform

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

SAP BTP Detailed Breakdown



SAP BTP – Cloud Foundry Runtime

- Lightweight and scalable runtime for all components of the deployed application
 - Client, server, and configuration server



SAP Connectivity Service

- Platform for integrating with various SAP systems and applications
 - Proxy between SAP BTP and Cloud Connector



Cloud Connector

- Provides secure communication channel between cloud applications and on-premise systems
 - Connects SAP BTP (cloud) to SAP S/4HANA (on-premise)

SAP BTP Detailed Breakdown Cont.



SAP Cloud Identity Services – Identity Authentication

- Manage users and access to applications:
 - Enables principal propagation (~SSO) to occur between Teams and SAP S/4HANA



Destination Service

- Define and manage connections to external and SAP applications
 - Configure relevant OData APIs for accessing Purchase Orders from SAP S/4HANA



SAP Event Mesh

- Allows applications to communicate through events
 - Provides ability to listen for Purchase Order creation in SAP S/4HANA and propagate the event to our custom Teams app

Project Board — Prepare

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PREREQUISITES

Obtain a Microsoft Azure Account

Info

If you do not already have an account, an Azure free account will give you access to the services and resources you need to get started with Bridge Framework.

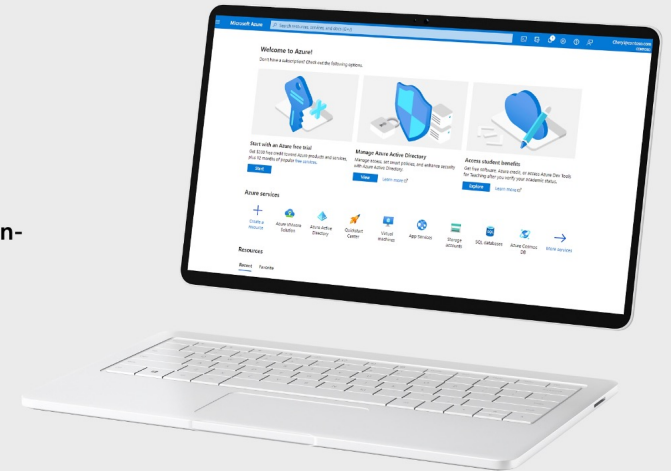
To test in Microsoft Teams you may also want to use a development tenant for which you can get access by joining the Microsoft 365 Developer Program.

Build in the cloud with an Azure free account

Create, deploy, and manage applications across multiple clouds, on-premises, and at the edge

Start free

Pay as you go



Azure Detailed Breakdown



Application Registration

- Serves as the app-level foundation for defining:
 - Authentication, Authorization, and API access



Enterprise Application Registration

- SAP Cloud Platform Enterprise Application
 - Enables principal propagation (~SSO) to SAP BTP



Azure Active Directory

- Identity and access management, SSO, application integration, etc.

Azure Detailed Breakdown Cont.



Azure Bot Service

- Handles almost all interactions between custom apps and Teams
 - Sends messages and adaptive cards
 - Acts based on app logic and user interactions



Microsoft Graph

- Covers app interaction scenarios not handled by the Bot Service
 - Notifications, accessing user profiles, fetching meeting transcripts, etc.



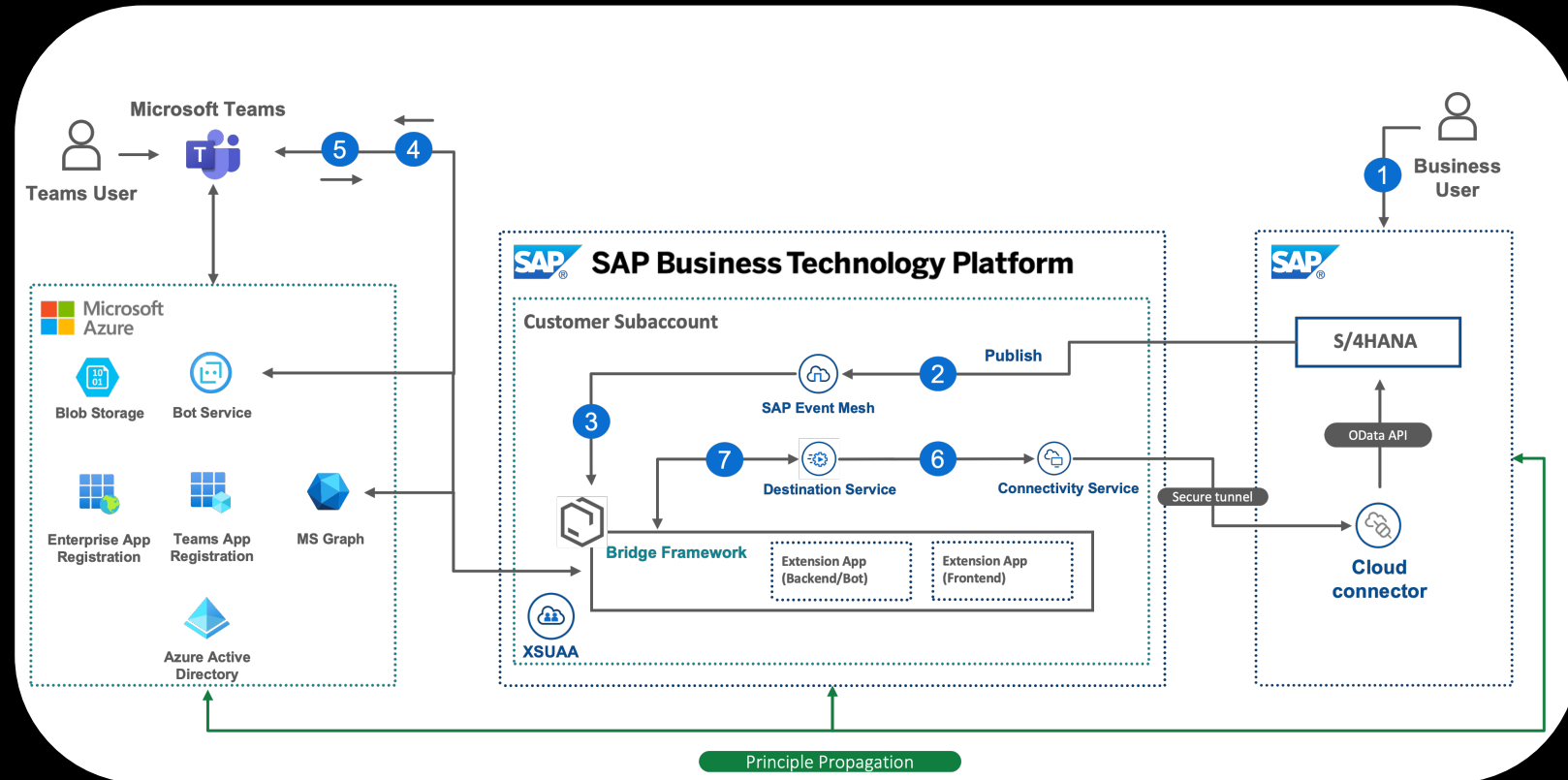
Azure Blob Storage

- We use it to store conversation references and metadata to enable proper notifications

Use Case & System Architecture Review

Review

- The buyer creates a new Purchase Order in the SAP S/4HANA (on premise) system.
- The purchase manager receives a notification in Microsoft Teams in the form of an adaptive card.
- The purchase manager views the details of the Purchase Order in Teams.
- The purchase manager can
 - Approve the purchase order in Microsoft Teams.
 - Reject the purchase order in Microsoft Teams.
 - Forward the purchase order data as an adaptive card to the buyer and request more information.



Project Board — Set Up

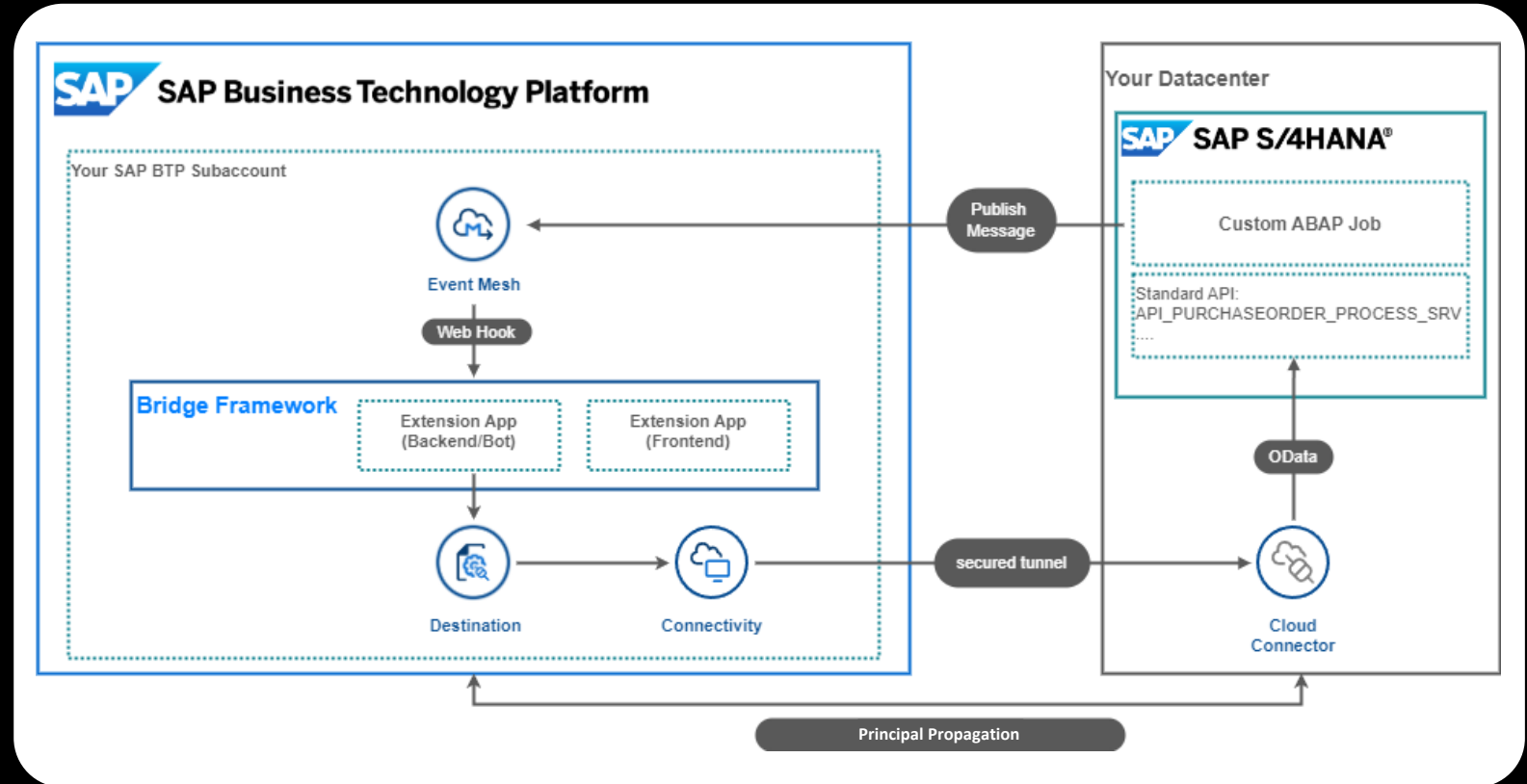
IMPORTANT

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Principal Propagation between SAP BTP and SAP S/4HANA on premise

Info

Principal propagation is “ability to forward the user context of a message unchanged from the sender to the receiver. It enables authentication of a message in the receiver system with the same user that issued the message in the corresponding sender system. [\[link\]](#)”



Project Board — Deploy

IMPORTANT

MUST-READ

Create Customized Extension Application by using Bridge Framework

Info

Customize the UI of the extension application in Microsoft Teams by modifying JSON configuration files.

Find more information about the syntax of Bridge Framework JSON configuration file in the mission cards.

From Configuration

```
PurchaseOrderObject.json X
config > public > frontend > simpleConfig > PurchaseOrderObject.json > ...
1  {
2    "pageType": "Object",
3    "businessObject": "PurchaseOrder",
4    "title": "Purchase Order",
5    "properties": [
54  ],
55  "table": {
56    "title": "Purchase Order Items",
57    "tableObject": "PurchaseOrderItem",
58    "columns": [
59      {
60        "content": "Item Number",
61        "key": "PurchaseOrderItem"
62      },
63      {
64        "content": "Item Text",
65        "key": "PurchaseOrderItemText"
66      },
67      {
68        "content": "Currency",
69        "key": "DocumentCurrency"
70      },
71      {
72        "content": "Net Price Amount",
73        "key": "NetPriceAmount"
74      }
75    ]
76  }
77 }
```



...to Deployment

PO# 45000005 Approved!

Purchase Order Type: Standard PO
Creation Date: 03 Aug 2016
Created By: Babak Shammam
Net Value: 11.26 USD

PO # 45000005

Purchase Order Type	Creation Date	Comapny Code
Standard PO	03 Aug 2016	05
Created By User	Supplier	Net Value
CB99800000026	173000001	11.56 USD
Purchasing Group	Purchasing Organization	Payment Terms
002	Domestic US Supplier1	14 Days 2%, 30 Net

Item Number	Item Text	Currency	Net Price Amount
4500000001	1710	USD	148.00
4500000001	1710	USD	105.00
4500000001	1710	USD	228.00

This PO is approved on 8 Jun 2022 11:00PM EST

Project Board — Deploy

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SAP BTP and Microsoft Azure resources creation and Bridge Framework Deployment

Info

The Bridge Framework Automation Pipeline is a pre-built docker image. It will help you:

- Create the service instances on SAP BTP and MS Azure.
- Deploy Bridge Framework's components on your SAP BTP subaccount.
- Configure the Principal Propagation between MS Azure and SAP BTP Subaccount.

Powershell Regular Pre-release

PowerShell version of the automation tool. This will work for regular BTP accounts. **Note: this version of the container will not run on apple silicon chips!**

Make sure to follow the setup guide for configuring the docker container with your information!

Quick Start

1. Start Docker
2. Navigate to where the zipped docker image is
3. Run the following command to load the image:

```
docker load -i ./bridge-automation-pipeline.tar.gz
```



4. Run the following command to start the container:

```
docker container run -e BTPSA_VERSION_GIT="$(git describe --long --tags --always)" --rm -it -d --
```



▶ Assets 3



Project Board — Deploy

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Configure the SAP S/4HANA purchase order approval workflow

Info

The flexible workflow is a general function that allows you to define condition-based workflows for approval processes. For purchase orders, you can set up automatic, one-step, or multi-step approval workflows.

You can assign one or more approvers to each step. You can define approvers by role, or you can assign individual users or teams as approvers.

Workflow for Purchase Order / Purchase Order Approval Workflow - Adarsh /

Adarsh Approval Step

Release of Purchase Order

[Recipients](#) [Step Conditions](#) [Deadlines](#) [Exception Handling](#)

Assignment:
Adarsh Hedge
(One of the recipients)

STEP CONDITIONS

Only start the step if all of the following preconditions are met:

Total net amount of purchase order is greater than 100.00 USD

DEADLINES

Time Constraints

Time	Action
The below timeline after start of the approval workflow +2 Hour(s)	Mark step as overdue

EXCEPTION HANDLING

Name	Required Action	Action Result
Purchase Order Rejected	Do nothing	Cancel workflow

Project Board — Deploy

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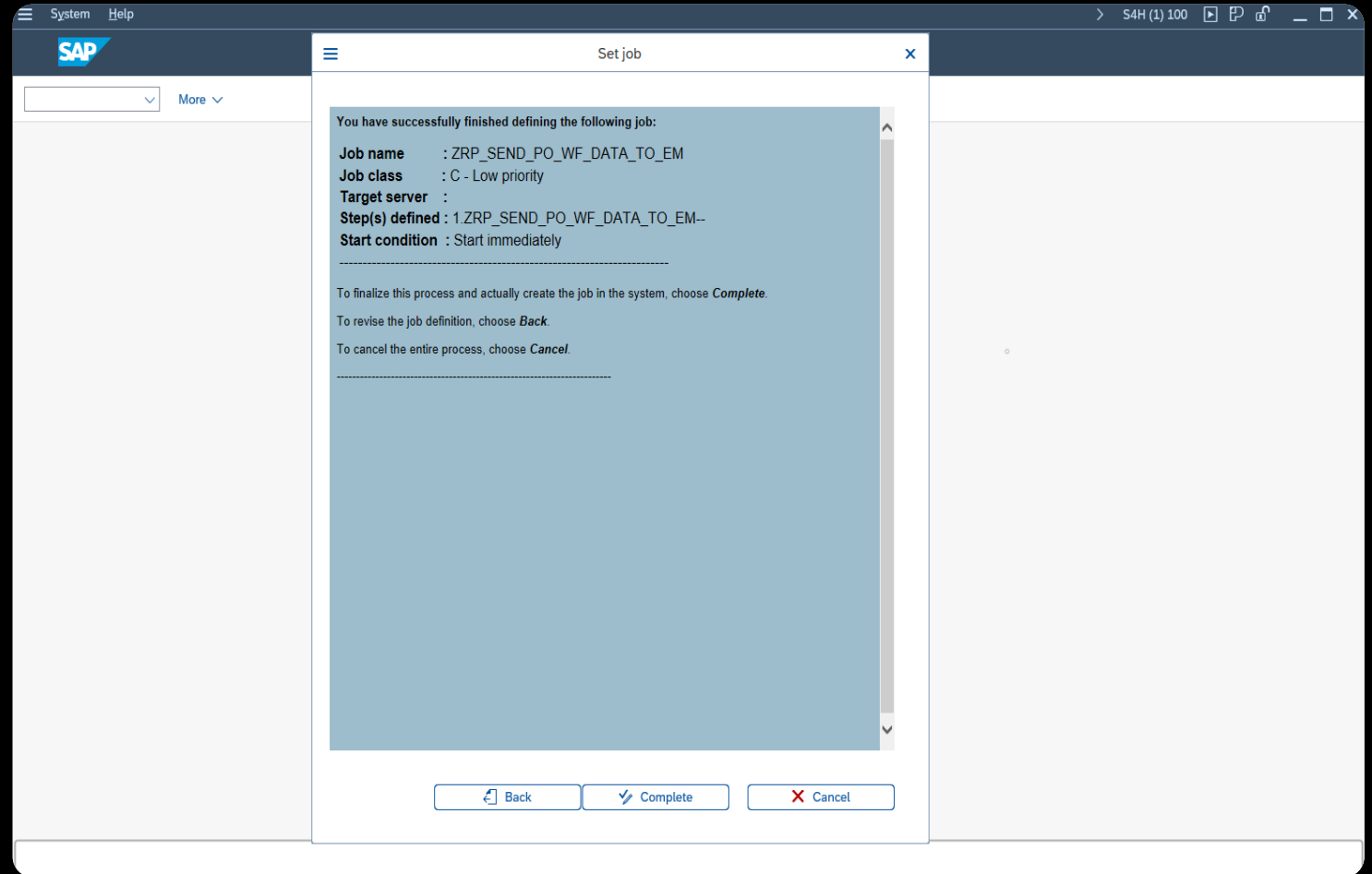
MUST-READ

Schedule the SAP S/4HANA ABAP job

Info

Create a custom ABAP Job running in the SAP S/4HANA On-Premise system. The functionalities of this ABAP job are:

- Fetch purchase order and workflow data from the DB in the S/4HANA
- Blend purchase order and workflow data into together
- Send constructed data to the MQ in Event Mesh on SAP BTP



Project Board — Deploy

IMPORTANT

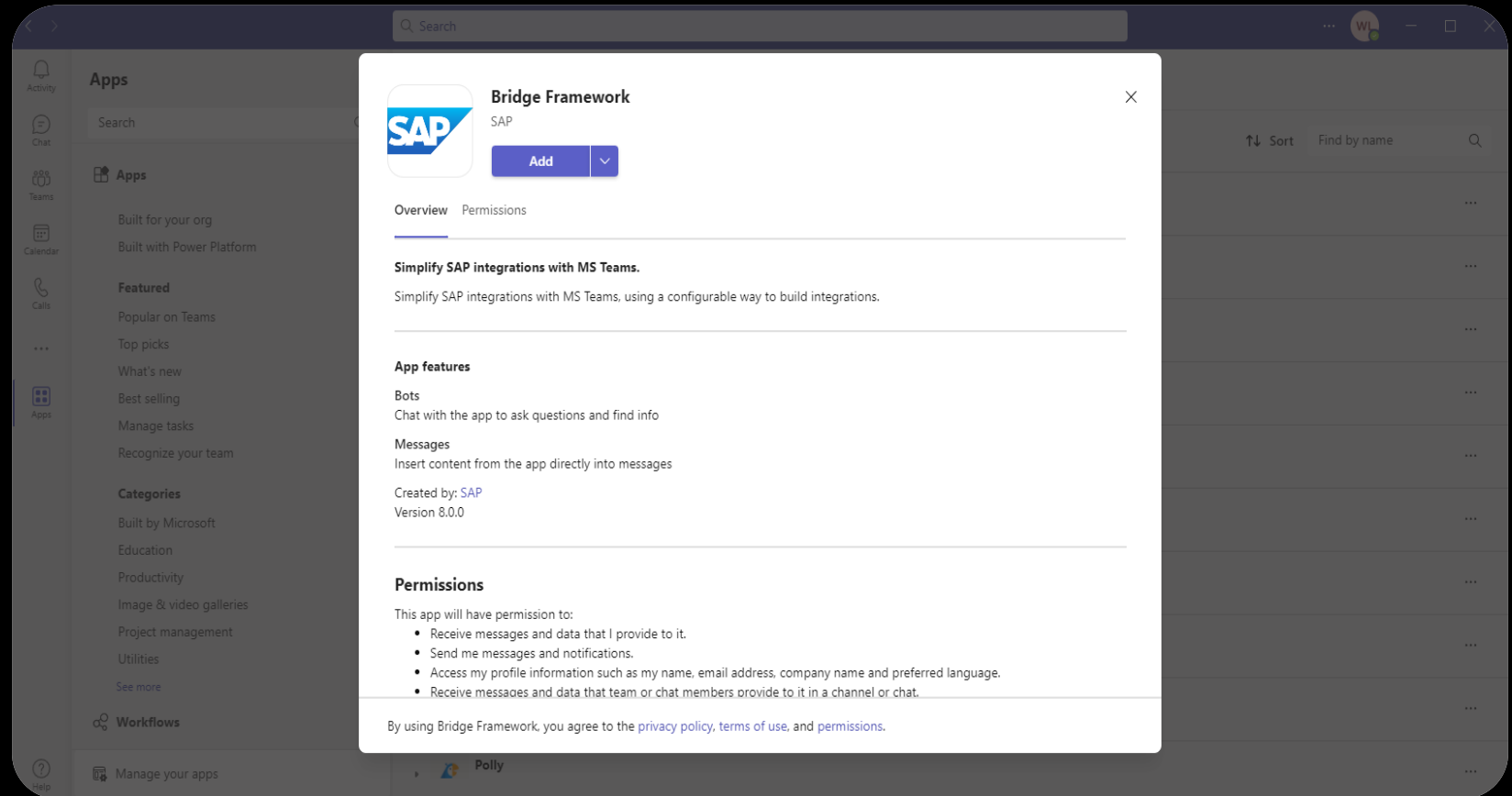
MUST-READ

Install the SAP S/4HANA Extension Application in Microsoft Teams

Info

Once all previous steps have been completed, installing your custom app is as simple as uploading the zip file created by the automation pipeline to Microsoft Teams.

Please follow the mission instructions to complete this step.



Project Board — Run Scenario

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End-to-end testing

Info

You have now completed the mission and can test your scenario by simply utilizing the custom Microsoft Teams app.

The screenshot shows a Microsoft Teams chat interface. On the left is a navigation pane with icons for Activity, Chat, Teams, Calendar, Calls, and Files. The main chat area is titled 'Chat' and shows a list of recent messages from various contacts. A message from 'Babak Shammass via S/4 HANA' is highlighted, showing a 'SAP Bridge Framework' card. The card displays the following details:

PO# 45000005	
Purchase Order Type: NB	Creation Date: 03 Aug 2016
Created By User: CB99800000026	Net Payment Days: 0
Supplier: 173000001	Address Phone Number: 111 111 1111
Purchasing Group: 002	Address Name: Domestic US Supplier1

Below the card is a 'View More Details' button. At the bottom of the chat window is a text input field labeled 'Type a new message' and a row of icons for sending messages, including emojis, attachments, and links.

End Result Demo

The screenshot shows the Microsoft Teams interface. On the left, the navigation pane includes Activity, Chat, Teams, Calendar, Calls, Files, and Apps. The 'Teams' section is expanded to show 'Your teams' with 'Bridge Framework', 'C4C - Sales', and 'C4C - Service'. The main chat area is for the 'C4C - Service' team. At the top, there's a search bar and a 'Meet' button. The chat content includes a welcome message: 'Let's get the conversation started' with a subtext 'Try @mentioning people you want to collaborate with, or add some tabs to customize your space.' Below this are tabs for 'Polly', 'Freeha...', 'Kahoot!', and 'Add tab'. A card is shared from 'Adarsh Hegde via BridgeFramework' at 12/9, 12:07 PM. The card is titled 'Ticket' and contains the following details:

ID:	261	Name:	Laptop not working
Category:		Created By:	Kyungwoo Hyun
Creation Date:	Mar 21 2022	Customer:	AB InBev
Priority:	Normal	Escalation:	Not Escalated

Below the card is a 'View More Details' button. The chat history shows a message from Adarsh Hegde (AH) at 12/9, 12:07 PM: 'Please take a look at above ticket. What do you think the issue could be?'. A reply from Jonathan Harris (JH) at 12/9, 12:46 PM says: 'Looks like an issue in BIOS.' At the bottom, there's a text input field with the placeholder 'Start a new conversation. Type @ to mention someone.' and a rich text toolbar.

Example Use Cases

Approval Flows

S/4HANA: Approve Purchase Order, Sales Orders, etc.

SuccessFactors: Approve Leave Request

Information/Collaboration

Teams Notifications for Actions Taken in SAP Products

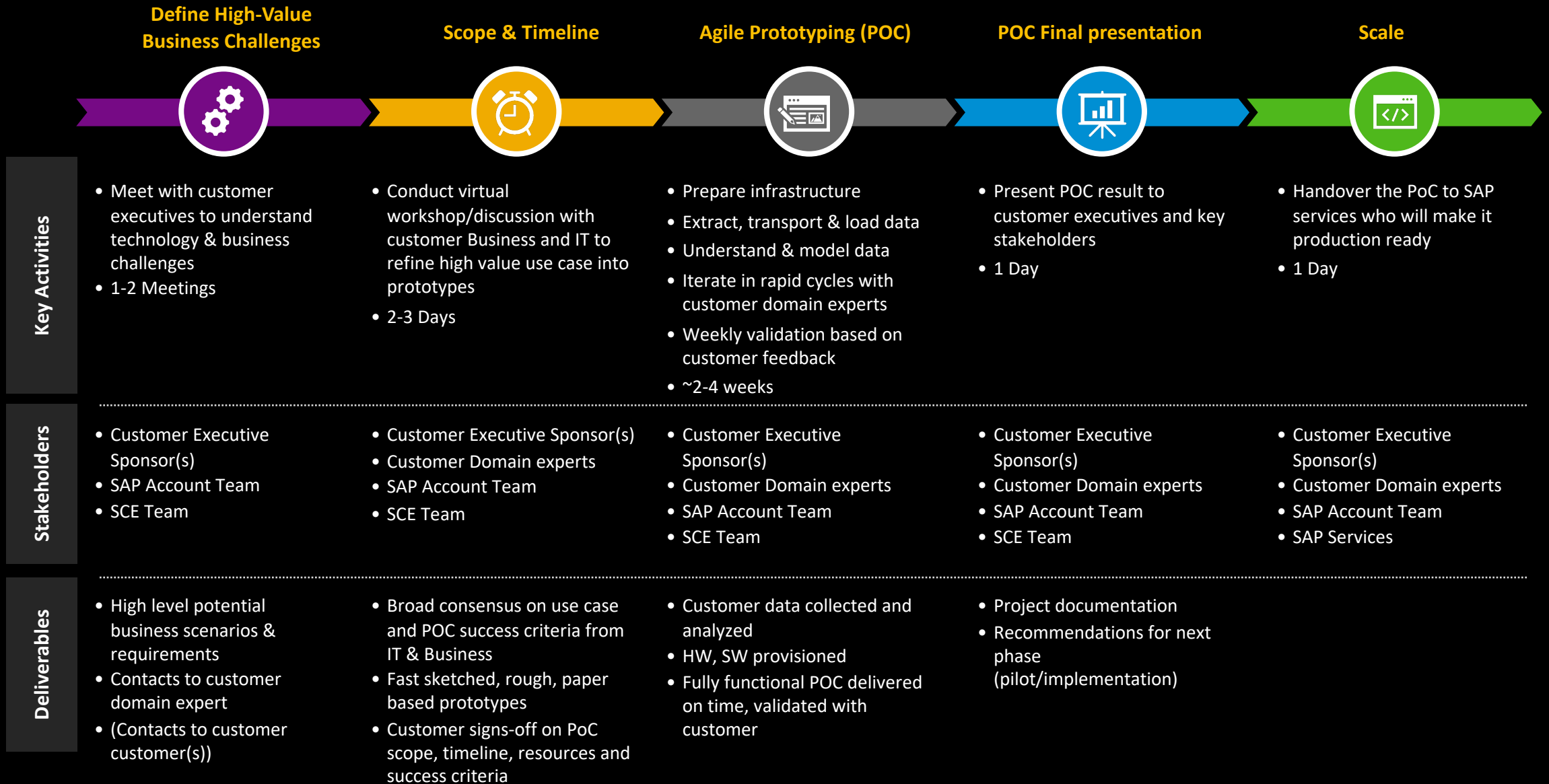
Share and Collaborate with Visual Summaries of Business Documents

Leverage Teams data

Export Teams chats to Service Cloud

Attach Summarized Meeting Transcripts Using ChatGPT-like Models

POC timeline



A vertical orange bar is positioned to the left of the "Thank You" text.

Thank You

For more details contact:

Alex Bishka alex.bishka@sap.com

Victor Iancu victor.iancu@sap.com

Weikun Liu weikun.liu@sap.com