From Theory to Practice: Embracing Solution Development with SAP Business Technology Platform

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Embracing Solution Development with SAP Business Technology Platform

We are living in an evolving digital era, organizations are experiencing a profound paradigm change, transitioning from buying off-the-shelf software solutions to harnessing the power of development platforms like SAP Business Technology Platform (BTP).

Digital Transformation is organically enabling to divert from the constraints of pre-packaged solutions and embark on a journey of innovation and customization.

Let’s explore how SAP BTP revolutionizes and challenges the way organizations approach software development.

How do we embrace SAP BTP possibilities, agility, scalability, and efficiency in building applications and what changes organizations face.

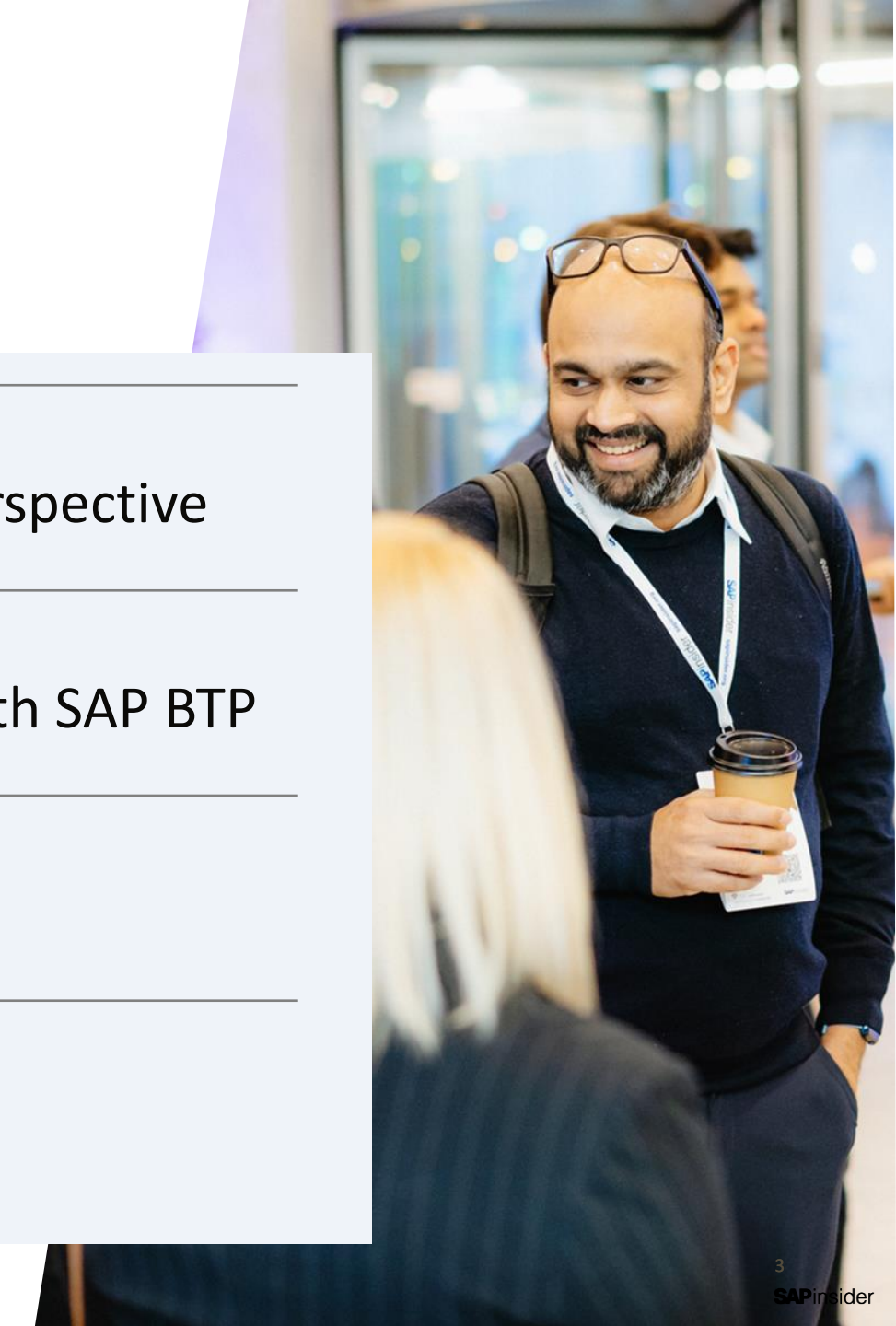
What we will cover

Understanding
SAP BTP adoption from a customer perspective

Inspiration
Enable your digitalization programs with SAP BTP

Impact
Cloud native organizational change

Wrap-up



Understanding

SAP BTP adoption from a customer perspective

- Dynamics of moving to the Cloud
- Turning the organic introduction of cloud platforms to a strategic opportunity
- Relevance, Changes & Challenges of embracing BTP in your IT portfolio

Moving to the cloud

Main Industry Segments:

Infrastructure-as-a-Service (IaaS)

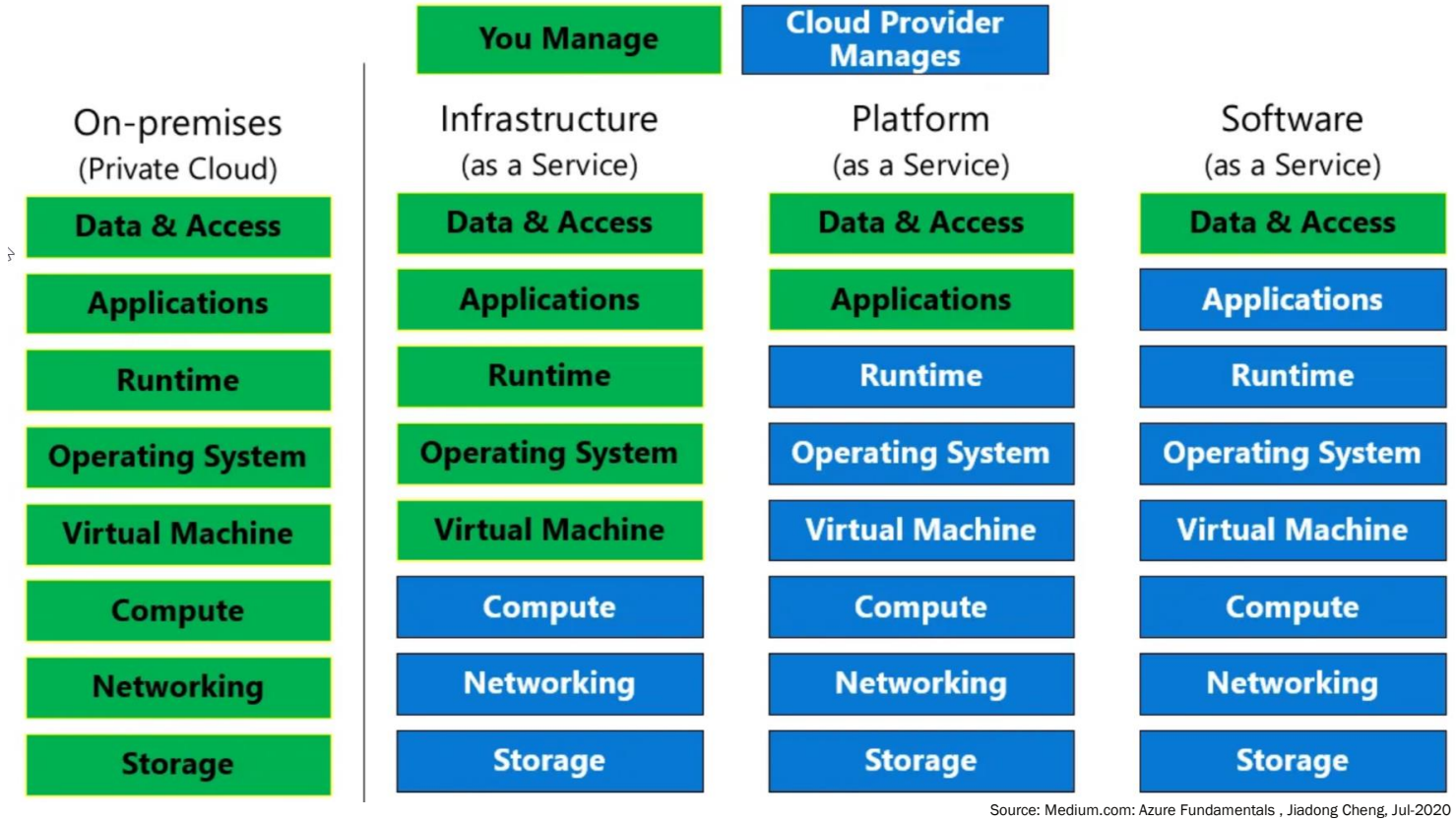
- Reduce exposure to IT infrastructure
- Low hanging fruit

Software-as-a-Service (SaaS)

- Application with clear functional use case
- Pillar for “Cloud First” Strategies

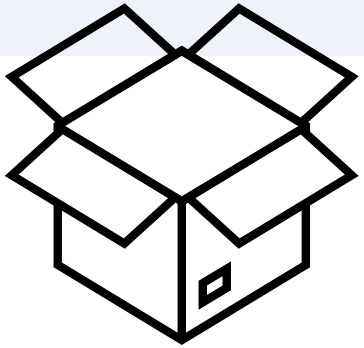
Platform-as-a-Service (PaaS)

- Develop, Manage and Run



Source: Medium.com: Azure Fundamentals , Jiadong Cheng, Jul-2020

Unboxing a cloud application (SaaS)



Outside Packaging

- Core functionality
- Automated provisioning
- Subscription based billing
- High availability
- Elastic Infrastructure
- Data Security
- Application Security
- QoS
- Audit
- Managed Updates

Inside the box

- New architecture
- Managed release cycles
- Limited extensibility and customization
- Functional gaps
- Integration and Orchestration backlog
- A Platform
  - for Extensibility, Development and Operation Services

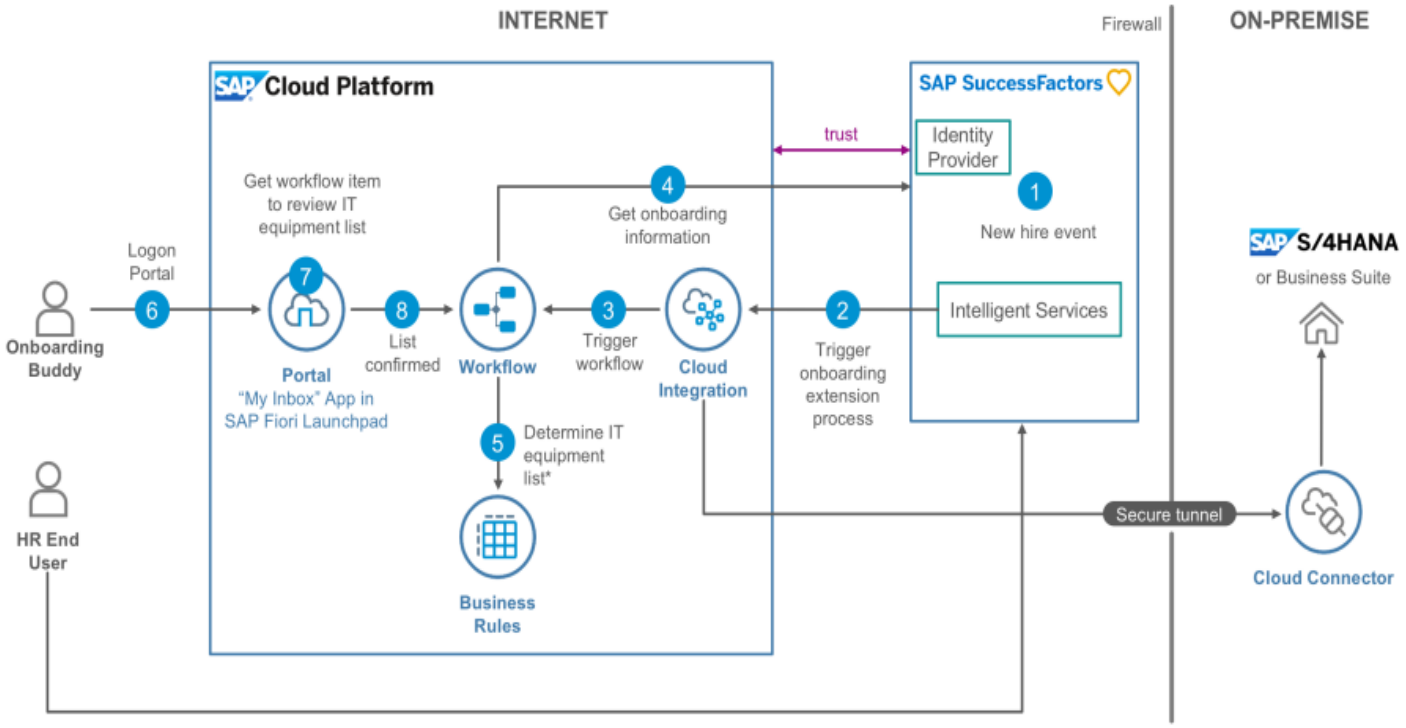
Example Architecture: SuccesFactors (SaaS)

SuccessFactors Application

- Core HR, Talent Management, Employee Cent
- Application Management and Integration Serv

Business Technology Platform

- BTP Cockpit
- Identity service
- Cloud Integration (iPaaS)
- Integration Content
- Workflow Management
- Workflow and Business Rules
- Portal

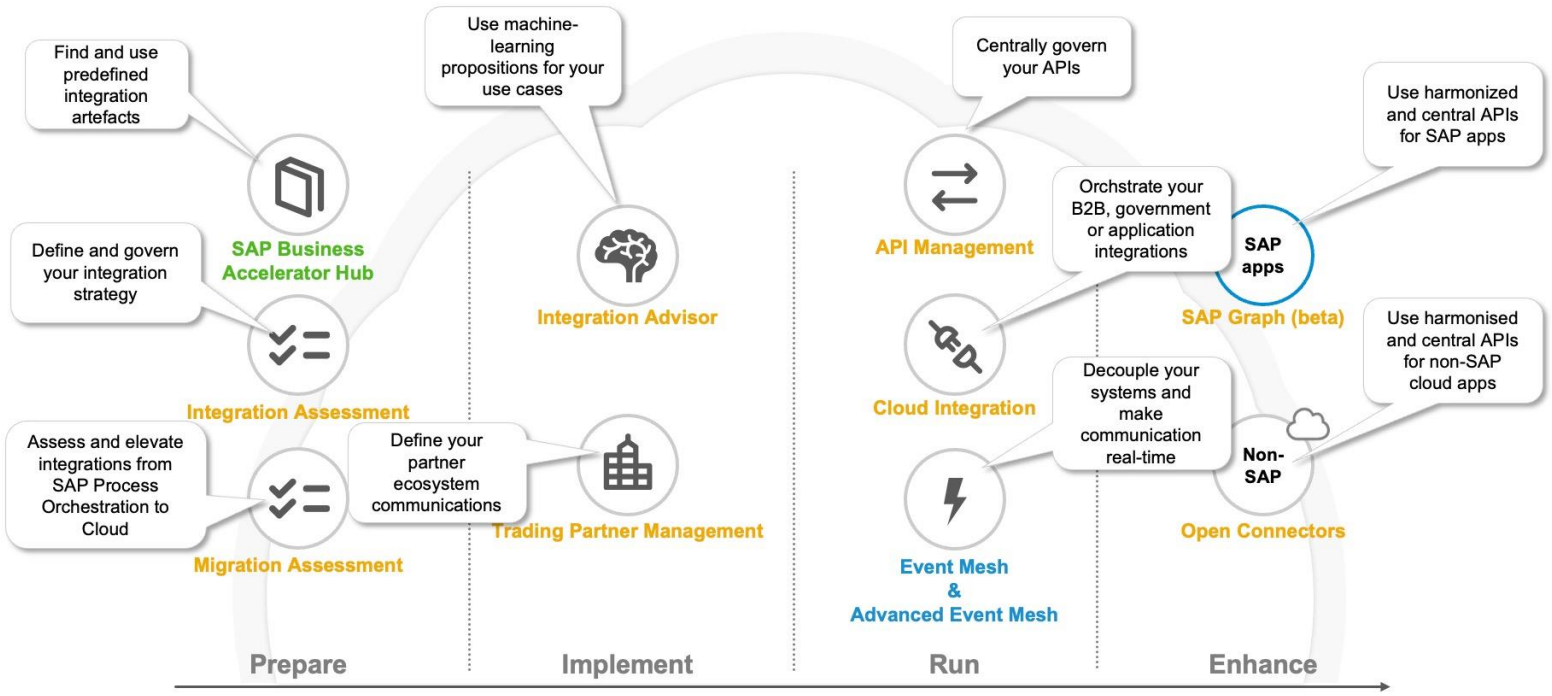


Source: SAP Blogs, Extend SuccessFactors with SAP Cloud Platform (2017)

Example Architecture: Integration Suite

Integration Suite (iPaaS)
- Orchestration
- Integration
- Connectivity
- API
- Events

Business Technology Platform
- BTP Cockpit
- Identity service
- Connectivity Service
- Alert Management
- Transport Management
- Cloud Application Lifecycle Management



Source: SAP Blogs, SAP Integration Suite – Pragmatic Overview

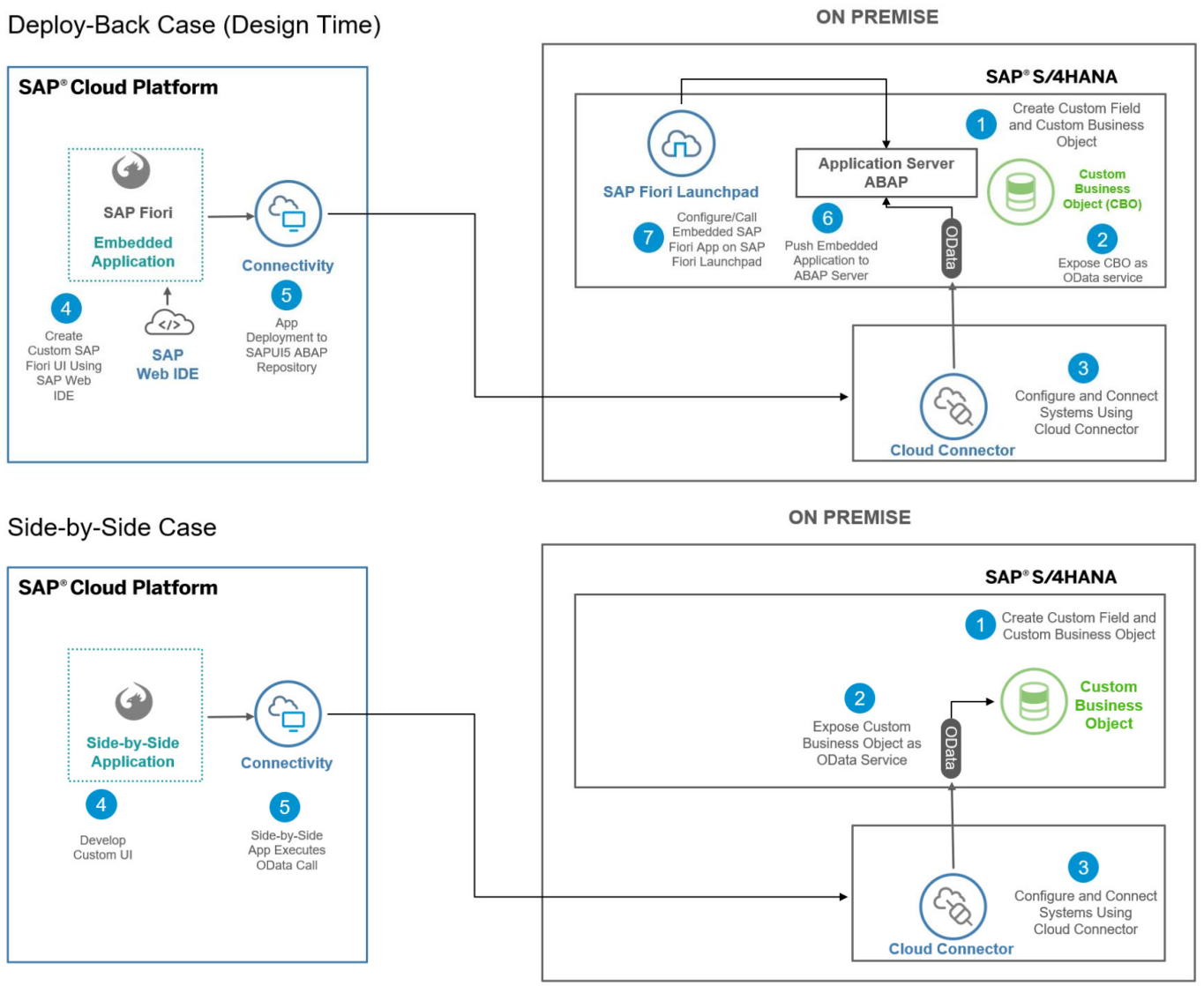
Example Architecture: S/4 HANA Extensibility

S/4 HANA (on-premise)

- Core Functionality
- Application Server
- Events
- API

Business Technology Platform

- BTP Cockpit
- Identity service
- Connectivity Service
- UI5 Runtime
- Business Application Studio
- BTP Launchpad
- SAP Build Apps & Process Automation

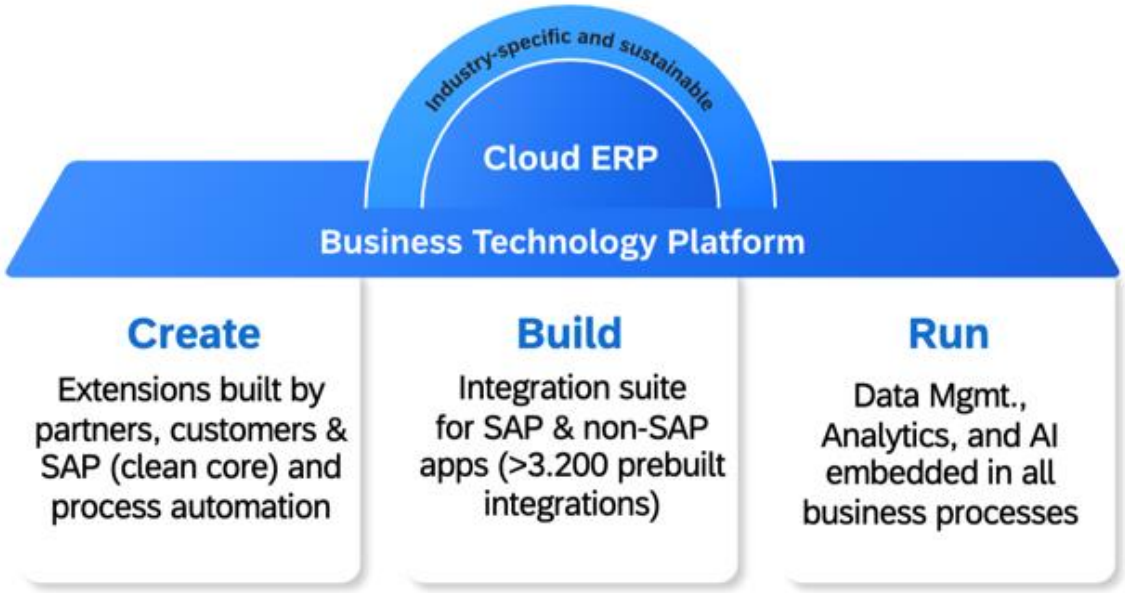


Source: SAP Help, SAP Extensibility Explorer

Observation

SAP BTP is a PaaS, often organically introduced

*PaaS by definition; Managed hardware, software, and infrastructure—for **developing**, **running**, and **managing** applications*



>80% BTP attach rate to RISE with SAP in 2022

>45% PaaS Growth Rate Q1 2023 (YoY)

Source: SAP Saphire Financial Analyst and Investor Conference, May 2023

Platform-as-a-Service (PaaS) Strategic Relevance

PaaS as the technical foundation and enabler for Innovation and Digital Transformation programs.

Clean Core

- Side-by-Side Enhancement of Cloud Solutions

Modernization

- Replacing legacy homebrew solutions with cloud native solutions
- Improve security, maintainability and access to data

Innovation/Digitalization

- Fast/Low-Cost MVP and PoC,
- Modern technologies, ML, AI, Analytics

Integration

- Orchestrate business logic
- Expose data and logic
- Build rich hybrid solutions based open-standards

Adopting a Software Culture

Digital Transformation

- **Digital focus** in your IT strategies
- **Commitment** to organization and process changes
- **Investment**
  - People skills and culture
  - Technology
  - Governance and change management
- **Build** solutions on top of your digital core fitting your business needs

Are we software houses?

We **are** developing more **in-house specialized software**

- Proliferation of tools and Methodologies
  - No-Code/Low-Code/Pro-Code
  - DevOps/Agile/SAFe/Kanban
- Software engineering practices adoption
  - CI/CD
  - Automated Testing
  - Faster feedback loops

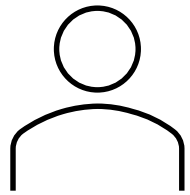
"Build better software faster"

David Farley, Continuous Delivery.

Platform-as-a-Service (PaaS) Adoption Challenges

Platform Owner Responsibilities

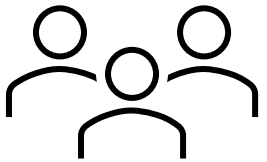
- New Technology
- New Competences
- New Governance approach



Platform Architect

Cost Management

- Billing Models: Subscriptions/CPEA/PAYG
- Utilization / Service Governance



Cloud Solutions Architect

New Architecture

- Cloud Applications
- Cloud Services
- Security and Trust

In perspective

*Cloud based software delivery **platforms** are effectively part if modern IT landscapes*

Building specialized in-house software goes hand-by-hand with adoption a software culture

Therefore…

Adjust to treat software engineering as a business while keeping your core business running and in focus

Opportunity to adopt Engineering Excellence in your innovation practices and technology adoption

Inspiration

Enable your digitalization programs with SAP BTP

- Components Architecture

Case of building rich custom solutions

- Enabling the Platform
- Prepare Services and Tools
- Build and Test, Automate
- Operate and Expand

SAP BTP – High Level Component View

SAP Business Technology Platform, Cockpit

Managed

Computing Resources

Geographic Location

Provider:

aws

Google Cloud

Microsoft Azure

Alibaba Cloud

The Cloud Fabric

Platform Resources As-a-Service

Runtime

CLOUD FOUNDRY

kubernetes

Platform Services and Tools

Trust

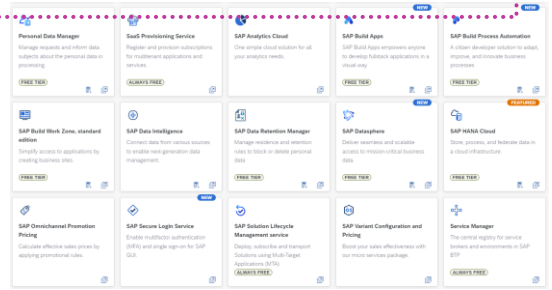
Access, Identity and Security

Consumption Services

- Foundation / Cross Services
  - App Dev, Integration, Data and Analytics
  - AI / Automation

Subscriptions

Software-as-a-Service & Tools



Customer Applications

- Monitor
- Application Lifecycle
- Expose and Analyze Data
- Integrate

Scenario – Digitalize Quality Assurance Process

Issue: Improve long and expensive quality assurance process

- A manual process to do quality assurance of the products
- Users need to look for data in multiple systems
- Some of those system are legacy, difficult to integrate and access to data
- Some are on-premise, cloud-systems,
- Several data points for systems need to be aggregated and interpreted
- Progress and results documented manually, prone to error.
- Finding an issue will result of restarting the process as data could have changed

Business Case:

- Reduce the lead time for finished product to market.
- Reduce quality assurance errors and deviations

Solution objective:

- Enable data access from backend systems
- Consolidate data in central integrated applications
- Modernize legacy homebrew applications to cloud native applications
- Produce documentation automatically and stored in corporate CMS
- Integrate results to backend ERP.

Enabling the Platform

Service Architecture:

- Define an initial collection of services that could help to achieve the objective

Billing Model: Enterprise Agreement (CPEA/BTPEA)

- Commitment upfront for a minimum spend
- Access to all services

SAP Integration Suite

Simplify and accelerate enterprise integration.

SAP BTP, Cloud Foundry Runtime

Operate polyglot applications.

SAP Business Application Studio

Develop, debug, test, and deploy SAP business applications.

SAP HANA Cloud

Store, process, and federate data in a cloud infrastructure.

SAP Build Work Zone, standard edition

Simplify access to applications by creating business sites.

Always Free

SAP Authorization and Trust Management Service

Manage application authorizations and connections to identity providers.

SAP Connectivity Service

Establish connections between cloud applications and on-premise systems.

Platform Architecture Blueprint

Integration Suite (iPaaS)

- Central Service, to be used across projects
- Own Subaccount string
- Alert Management and Transport Management

Project Subaccounts

- HANA Cloud instance central for the program
- Share across application
- Applications segregated under different Cloud Foundry Spaces
- Development teams assigned to each space

Security

- User Authentication: SSO against Corporate IDP
  - Both for BTP cockpit and application
- Propagation Principal toward SAP backend services
  - Maintain access control and comply with digital access licensing
- Application Access controls leverage on the corporate IAM security groups

SAP Cloud Connector

- Secure Access to backend systems

Solution Development Principals

Applications Data Model

- CAP (Cloud Application Programing Model)
  - Data model
  - Odata CRUD Services

Frontend

- Freestyle UI5 application
- Follow Fiori Design Guidelines

Business Application Studio (IDE)

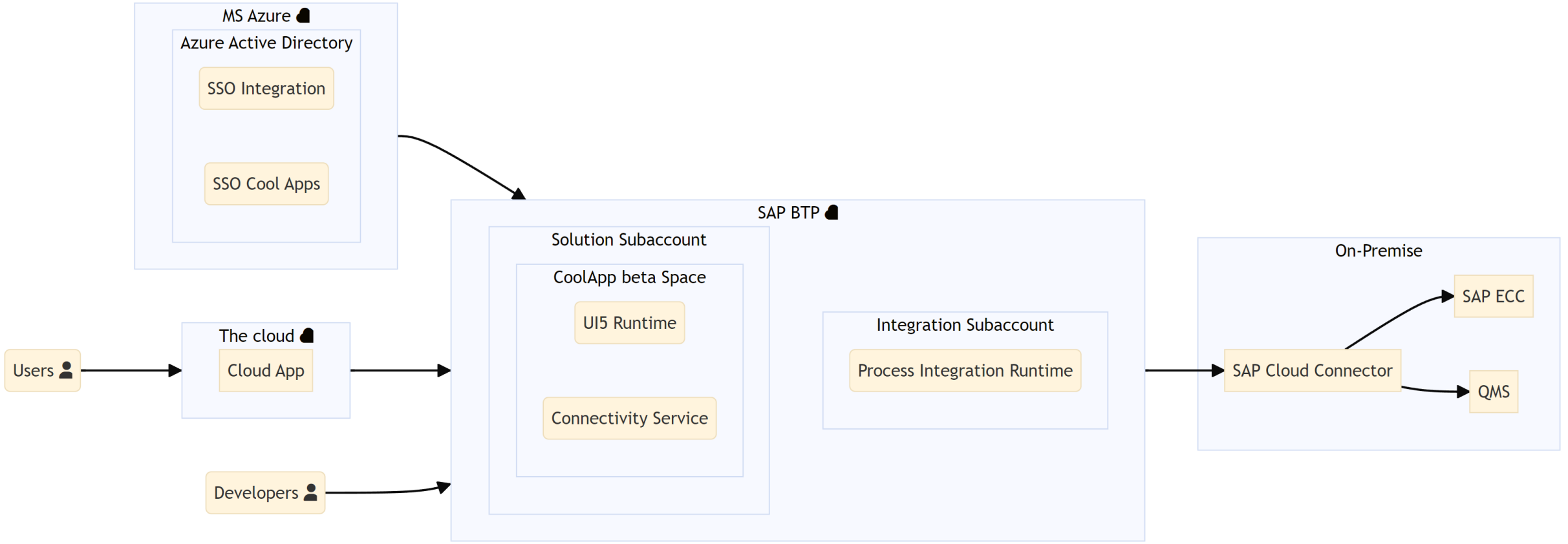
- Integration to Azure DevOps
  - GIT
  - Test and Release pipelines

*Note: SAP BTP also has GIT, Pipelines(CI/CD) and other services supporting Application lifecycle

Application Access

- Application and services controlled by Roles
- App Roles grouped in Role collections
- Role Collection mapped to groups inherited in the Trust configuration against Corporate IAM security groups.

Building a Cloud Solution – MVP



Get Buy-In from the users, with 10% of the functional requirement and effort

Operational Excellence & Innovation

MVP Learnings

- New Technical Skills
- New Delivery Methodology
- Continuous evolving services and functionality
- Where did blueprinting go?
  - Not all the design and architecture will be in place from the start
  - Re-factoring and re-design will be part of the lifecycle

Improve the ability to react to change

- Fast Delivery
- Fast Reaction to Error
- Smooth adoption of new tools and services

Continuous Delivery

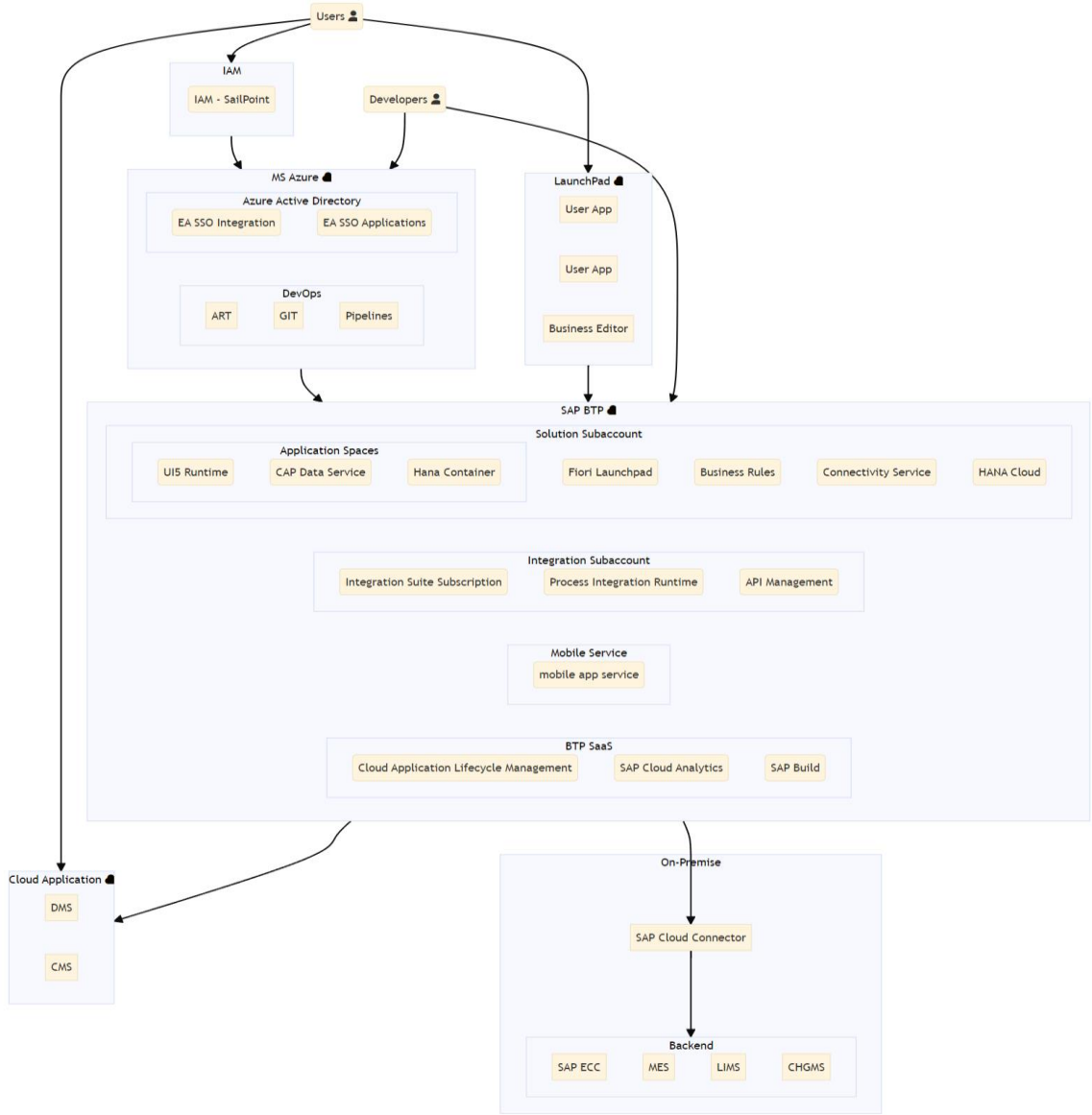
- *Build Better software faster*
- Feedback loops
- Test Automation
  - Integrity Testing
  - Regression Testing
  - Functional Test
- Impact on Design and Architecture
  - Application
  - Integration Design

Introduction of services, maintains excitement, important to keep balance

- API Management
- Mobile Services
- SAP Build Apps/Process Automation
- Event Mesh

Building a Cloud Solution & Continuous Improvement

Platform Features	Approach
IAM Integration	Corporate IAM used to request Application Roles
Authentication	All application and tools are SSO enabled, and Principal Propagation to ECC
Central Accessibility and Access control	Fiori Launchpad leveraging access roles from IAM
API First	Integration Suite brokering to API from backend and cloud applications
User Centric	Business Rules to control features and decision logic Mobile Services enabling native IOS applications
Data modelling and CRUD services	HANA Cloud and CAP
Application Life Cycle	CALM, Azure DevOps
Analytics	SAP Cloud Analytics
No-Code/Low-Code	SAP Build Apps, Process Automation



Impact

- Cloud native organizational change
- Let's talk cloud native
- Skills, Roles and culture in the organization

Cloud Native:
Management in the new paradigm

Cloud Native more than a buzzword and technology, is and organizational journey

"A set of practices that empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, or hybrid clouds." - The Cloud Native Computing Foundation

- Accepting a software culture brings some complexity technical and organizational
- Remember Digital Transformation: **Commitment** and **Investment**

  - **Management need to be agile**, able to adapt to rapid changes in technology, business demands, and team dynamics.
  - **Teams require autonomy** to make quick decisions, especially in a DevOps environment where change is frequently and desired
  - **Failure is a learning** opportunity, open communication and support is a must.
  - Encourage and facilitate **ongoing learning and training opportunities** for their teams.
  - **Handle pragmatically new types of risks** which new technologies and methodologies may introduce
  - **Guide teams** through significant organizational change

Organizational Impact

New Skills:
Platform Expertise (BTP)

Platform Owner
- Manage Global Account(s)
- Cost Management
- Subscription and Entitlements

Platform Architect
- Platform Architecture
- Cockpit Access, Subaccounts
- **Identity management**
- **On-Premise Access (SCC)**

Platform Support Team
- Solution Architecture/Subaccounts
- Delivery Framework Support
- Seed Ownership in the projects
- Licensing Support

Modernize:
Cloud Architecture Adoption

Security Officers
- Embrace Cloud/hybrid systems security
- Document and communicate with project (Platform ITRA)
- **Trust Management**

QA & Compliance
- Qualification of Cloud Platforms
- **Software Application Lifecycle**
  - Challenge Change management processes

Central IT Operations
- Central Services Operations
- Alert Management
- Platform Lifecycle
- **Software Delivery methodology**

Align Objectives
Software Culture

PM/Team Leader/Scrum Masters
- **Software Delivery methodology**
- DevOps Teams and tools
- **Feedback Loops**
- Software Release and Test management

Developers
- Open-Standards
- Code Management
- CI/CD Technology -> Academic foundation
- **Test Automation - Feedback Loops**
- Alert Automation and process visibility

Business Side Experts
- Product Ownership
- Citizen Development
- **Test - Feedback Loops**
  - Functional and Automated Regressions

Wrap up

- We have understood the strategic relevance of cloud platforms as enablers of digital transformation and innovation.
- We got inspiration when looking at the approach at implementing cloud native solutions with SAP BTP.
- We captured some of the the impact of accepting a software engineering practice and living a cloud native in our teams and organization.

Where to Find More Information

SAP BTP and Services:

- **SAP Discovery Center – Missions and Services ,** https://discovery-center.cloud.sap/

Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation

- Book by David Farley and Jez Humble, 2010

Fiori Design Guidelines

- https://experience.sap.com/fiori-design/

CAP Model

- https://cap.cloud.sap/docs/

The Cloud Native Computing Foundation

- https://www.cncf.io/

Key Points to Take Home

- Organizations must be prepared for the introduction of cloud platforms **(PaaS) in the IT landscape**
  - Technical and Leadership skills
- Identify **technical and organizational opportunities** on having a strategic approach to the introduction of cloud platforms
- Cloud Platforms (PaaS) are **strategic technical enablers** of digital transformation programs
- We are becoming software house
  - Treating software as a business require **engineering excellence**
- Adoption of **software culture** require significant organizational change management
  - The proper **commitment**, **investment** and **support** is essential for your delivery team and business to harmonize and build a positive cloud native organization

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