Innovate, Differentiate and Win with SAP Cloud Platform
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Technical Market Trends

Artificial intelligence and machine learning, IoT, insights

By 2018, **75%** of enterprise and ISV development will include AI or ML.
– IDC

Embedded machine learning, analytics providing built-in guidance

By 2019, **APIs** will be the primary mechanism to connect data, algorithms, and decision services.
– IDC

Conversational applications: the new user experience

By 2019, **natural-language generation** will be a standard feature of **90%** of modern BI platforms.
– Gartner
Innovate again and again to be as agile as your customers
Why cloud? → Business Agility

IDEA → minimum viable product → X.Y

Time to market

- Fast innovation cycles

Total cost of development (TCD)

- cloud-native
  - re-use
  - open source
  - APIs
  - microservices

Continuous delivery

- DevOps
- culture

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How to steer your company?

How to run your company?

How to sense?

How to engage?

How to decide?

Setting the foundation

1 0 1 0 1 0 1 1
1 0 1 0 1 0 0 0
Standardization

run / buy

SaaS

Cloud

Differentiating

win / build

Sensors/Things

Business / Social Networks

Business Intelligence

On premise

On premise

(Big) Data Sources

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Use Cases
SAP Cloud Platform

Key Use Cases

**Integrate**
**Apps, Data & Processes**
Connect your cloud and on-prem apps to eliminate data silos and make digital access simple, secure, and scalable.

**Extend**
**Cloud & On-Prem Apps**
Quickly add new functionality to your existing cloud and on-prem apps to optimize your existing investments.

**Build**
**Differentiating Digital Apps**
Rapidly build and run new cloud apps, business services and APIs to solve new problems, engage new customers, and drive new revenue.

**Connect**
**People & Data**
Deliver delightful user experiences across various digital touchpoints enabling innovation, without disrupting core business processes.
The Platform-as-a-Service Powering Enterprise Business

- **7500+** SAP Cloud Platform Customers
- **780+** Partners Building Apps on SAP Cloud Platform
- **50+** SAP Enterprise Apps Delivered on SAP Cloud Platform
- **1,000+** Apps Available on the SAP App Center
Extend Cloud and On-Premise Apps

Extensibility puts innovation & agility in the hands of our customers

Extend your current cloud apps to add new features and personalization unique to your business, your people and goals.

Run your business on all devices, at all times through beautiful, engaging mobile experiences your team can use right now.

Deploy pre-built apps created by SAP and partners to quickly and easily achieve results.

“SAP Cloud Platform is a strong, scalable foundation for agile, composable infrastructure and development. Our success with JobPts from Semos is a perfect example of its powerful support – and just the first step.”

Harish Lade, Vice President for Information Technology, Asian Paints Limited
Integrate your Apps, Data & Processes

Integrate Anything Anywhere

Connect your apps, data, and business processes — regardless of who built them or where they are deployed.

Get the right information into the right hands on the right device at the right time.

Integrate on-premises and cloud applications to deliver hybrid solutions with real-time data and event streams.

“SAP Cloud Platform Integration is becoming increasingly popular among customers, particularly when they have bought an SAP cloud application and are looking to integrate it with their existing cloud and on-premise SAP solutions.”

Ian Vincent, Consulting Director, AgilityWorks Limited
Build differentiating applications

Build modern cloud apps and microservices using open standards and the skills you already have

**Build brand-new apps and microservices** to meet new challenges, attract new customers and drive new business for you and your customers.

**Build on open standards and open-source** to leverage your existing skillset and reduce the total cost of development.

**Leverage low code development tools** to speed up application creation and expand the developer talent pool.

Extend Business Reach and New revenue streams

**Offer value-added services and data to e-commerce partners**

New business models delivering additional digital revenue streams
Connect People and Data

Connecting People to the Digital Business World

Maximize the value of digital experiences with tools and content in one integrated and comprehensive offering.

Manage user engagement across all channels, enabling innovation without disrupting core business processes.

Rapidly deliver new multichannel applications to drive faster processes and deliver delightful user experiences.

With SAP Cloud Platform, NTUC FairPrice has enabled collaboration and contextual engagement for its huge supplier network, and mobilized its workforce, achieving real-time sales visibility and improved productivity.
Architecture Blueprints
High-level Overview

**SAP Cloud Platform**

**Development**
- SAP Web IDE / SAP API Business Hub

**Operations**
- Cockpit

**Commerce**
- Marketplace

**Business Services**
- Commerce
- Localization/Tax
- Data Quality
- ...

**Platform Services**
- Integration
- Analytics
- Mobile
- IoT
- Collaboration
- Security
- UX
- Machine Learning

**Data & Storage Services**
- SAP ASE
- Redis
- (Big) Data Services: SAP HANA, Hadoop, SAP Vora
- PostgreSQL
- MongoDB

**Virtual Machines**

**On-Premise / Managed Cloud**
- SAP S/4HANA
- SAP Business Suite
- SAP Business Warehouse

**Programming models**
- HTML5
- XSJS/XSA
- Java
- Node.js
- Python
- Community buildpacks

**SaaS**
- SAP S/4HANA
- SAP SuccessFactors
- SAP Cloud for Customer
- SAP Ariba
- Concur
- SAP Fieldglass
- SAP Business ByDesign

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1) BETA

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SAP Fiori Cloud

- Enable modern and intuitive user experience for SAP users
- Quickly deploy packaged content for SAP S/4HANA and SAP Business Suite
- Design, develop, extend and mobilize SAP Fiori apps in the cloud
- Extend apps using SAP Web IDE Fiori extension model
- Connect securely via internal or external access point
- Operations and updates by SAP

* OData services via SAP CP OData provisioning or SAP Gateway details about deployment options in SAP Enterprise Architecture Explorer (#11115)
** Internal and External Access Points options are described in the documentation

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Internet of Things Innovation

SAP Cloud Platform
Internet of Things
- Device lifecycle management
- IoT Gateway for data preprocessing
- IoT protocol support

SAP Edge Services
- Compute
- Storage
- Business critical functions

SAP IoT Application Enablement
- Digital twin builder
- IoT app development & mashup
- Data management

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Leverage Cloud Foundry to build new apps & microservices

Leverage a wider range of data storage / messaging options:
- HANA
- MongoDB
- Redis
- Rabbitmq
- Object Store – unstructured storage

Leverage a wider range of programming models:
- XSA
- Java
- Node.js

Leverage open source CF buildpacks - more languages\(^1\)

Embrace a microservices architecture in your applications

\(^1\) Open source CF buildpacks are community supported
\(^2\) Beta component
Extend SAP Cloud Applications

Create custom applications leveraging SAP’s Cloud applications

- SAP SuccessFactors
- SAP Hybris / CEC
- SAP Ariba
- Concur
- SAP Fieldglass

Mash up data from multiple cloud and on-premise data sources

Applications to differentiate your lines of business
How would you like to use computers in 10 years?

**Console**: for more control

**Web Page**: for compatibility between all the devices you use

**Dedicated application** for a single task for a complete functionality

**Digital Assistant** that understands your words and can perform your assignments
Digital assistants for the end-users

Amazon: Alexa
Google: Ok Google
Apple: Siri
Microsoft: Cortana
What is Alexa?

Cloud service for recognizing voice commands

Used by Amazon products:
Echo, Echo Dot, Fire TV, Amazon Tap

Includes numerous skills:
• playing music
• setting up alarms
• calendar and task lists
• searching the Internet
• finding local news and weather forecast

Provides a platform for developing custom skills:
Alexa Skill Kit (ASK)
How does Alexa work?

- Spoken Responses
- Voice commands
- Echo Device
- Amazon Alexa Service Platform
- Custom Skill code (AWS Lambda, or other HTTPS endpoint)
- Voice audio for processing/audio responses
- Tokenized JSON Request/Response
- Alexa Companion Phone App
- Response Cards

- Handless speech recognition
- Handless text to speech
- Map voice commands to JSON intents
Digital assistant with SAP Ariba
Alexa start Ariba

Invocation Name

Alexa

Skill Interface

Skill Service

Send Audio to Skill Interface

Resolve Spoken Words to Intent

OnIntent

AlexaIntent

Resource

outputspeech: "Hello"

Hello
Include the requisition application as a skill

Implementation steps:

Give the skill a name: SAP Ariba Requisition Application

Define an “interface”: what kind of tasks does the skill perform, search a catalog of items and make an order

Develop the application that provides the logic for the skill
  • HTTPS accessible
  • accept and return JSON files

Register the skill in Amazon Developer Portal

Test the result
Try it out

Source:
• https://github.wdf.sap.corp/AribaExtensions/cloud-ariba-alexa-requisition-sample-ext

Deployed application:
• https://alexsamplea9c25ffaf.hana.ondemand.com/AlexaServlet
Integration Layers in Details
SAP Cloud Platform Extensions – Integration Layers

1:1

UI

Embedding | Dynamic Rebranding

Connectivity
API Keys | Principle Propagation

Security
Trust | Single Sign-On | Roles & Permissions

Infrastructure
Technical Onboarding | Lifecycle Management | Administration

Extensions Service

Portal Service

Connectivity Service

Security Service | SCI | IPS

Data Layer (APIs)

Security Components

Technology Stack

UI
SAP Cloud Platform Extensions – Building Blocks

Extension Solution’s Layers

- Front End (UI)
- Business Logic
- Persistency
- Connectivity
SAP Cloud Platform Extensions – Building Blocks

Connectivity

- Front End (UI)
- Business Logic
- Persistency
- Connectivity

SAP Cloud Platform Applications

Destinations

ID Propagation & Authorization

SAP Cloud Connector

SAP App being extended

SAP & 3rd Party Services

SAP & 3rd Party On-premise systems
SAP Cloud Platform Extensions – Building Blocks

Persistency

- Front End (UI)
- Business Logic
- Persistency
- Connectivity

SAP Cloud Platform Applications

Other Storage Options

Structured Storage
(SAP HANA, ASE, ...)

Unstructured Storage
(CMIS, KM, On-premise)

Keys / certificates

Configurations

Unstructured Storage
(SAP Cloud Platform Applications)

Other Storage Options

Structured Storage
(SAP HANA, ASE, ...)

Unstructured Storage
(CMIS, KM, On-premise)

Keys / certificates

Configurations

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SAP Cloud Platform Extensions – Building Blocks

Business Logic

- Front End (UI)
- Business Logic
- Persistency
- Connectivity

- OData / REST APIs
- Roles & Permissions
- Initial Configurations
- SAP Cloud Platform Applications
- Structured / unstructured Storage
- Destinations

- HTML5 UI
SAP Cloud Platform Extensions – Building Blocks

Front End (UI)

- Connectivity
- Persistency
- Business Logic
- Front End (UI)

- Pages
- Templates
- Themes

- Sites
- Tiles
- Metadata & Configurations

- HTML5 UI
- Extended App Native UI

- Extensions Apps
- SAP Extended App
Ready to Use Development Environment
Domain Model
Current Scope

Cloud Platform

User account
Home
Region

Global Account*

Cloud Foundry
Environment

Subaccount
Organization
Application Subscriptions

Space
Cloud Foundry applications
Cloud Foundry services

Neo Environment

Subaccount
Neo application subscriptions
Neo applications
Neo services

*Note: Global accounts can be two types: trial and enterprise
Understanding SAP Cloud Platform Subaccounts

Each subaccount holds:

- **Resources** that can be consumed by apps
- **Users** allowed to work in the subaccount
- **Apps** deployed and running in the subaccount
- **Data** written by apps running in the subaccount
- **Configuration** for apps running in the subaccount

Each subaccount is assigned to a **Global account** and resides in a **Region**.

Apps can be **subscribed** from other subaccounts.
Landscape Design

Cloud Platform

Region

Global Account

Subaccount - DEV
- Resources
- Apps
- Data
- Users
- Configuration

Subaccount - QA
- Resources
- Apps
- Data
- Users
- Configuration

Subaccount - PROD
- Resources
- Apps
- Data
- Users
- Configuration

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Ready to use development environment for every company
SAP Customers use the platform to develop and run applications

Custom solution:
- Developed by: Customer
- IP owned by: Customer
- Deployed by: Customer
- Running in: Customer subaccount
- Platform resources managed by: Customer
- Configurations and User Management controlled by: Customer
- Operated by: Customer
SAP Customers use the platform also to run SAP Partner solutions

Partner solution deployed and running in the customer subaccount:

- Developed by: SAP Partner
- IP owned by: Customer or SAP Partner
- Deployed by: Customer or SAP Partner
- Running in: Customer subaccount
- Platform resources managed by: Customer
- Configurations and User Management controlled by: Customer
- Operated by: Customer or SAP Partner

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SAP Partners develop and host their solutions on the platform

Partner solution offered as SaaS:

- Developed by: SAP Partner
- IP owned by: SAP Partner
- Deployed by: SAP Partner
- Running in: SAP Partner subaccount
- Platform resources managed by: SAP Partner
- Configurations and User Management **inherited** from the subscribed Customer subaccount
- Operated by: SAP Partner
Provider – Consumer deployment model
Pairing Subaccounts

Automatic subaccounts pairing:
✓ Extension subaccount create
✓ Certificate exchange & SSO
✓ Destination configuration

New subaccount is created
Extension subaccount is a customer or partner SAP Cloud Platform subaccount which is configured to interact with a particular SAP solution through standardized connectivity configuration.

Configuration settings that are important for the extension solutions are configured and available for use only via the extension subaccounts:

- Destinations settings
- Theming and Branding
- Security settings

Recommendation: Use the extension subaccounts as central containers of the configurations required for an extension solution.

Important: Keep the identity propagation setting enabled.
Extension subaccount – a central container for configurations

SAP SaaS

ODATA

Subaccount

- Users
- Resources
- Data
- Apps
- Subscription for a custom solution

Extension Subaccount

- Users
- Resources
- Data
- Apps
- Configuration

Partner Subaccount

- Users
- Resources
- Data
- Apps
- Configuration

Subscription for an SAP partner solution

SAP Cloud Platform
Lifecycle Management
SAP Cloud Platform
Continuous innovation for your applications using simplified Dev/Ops activities

Simplified Development

- **SAP Web IDE** - Web-based integrated development solution for end-to-end full-stack SAP application development
- **Rapid application development tooling:**
  - Wizards
  - Templates
  - Graphical editors
  - Code assist
  - Validations and more
- **Build & deploy from the SAP Web IDE directly to SAP Cloud Platform Neo and Cloud Foundry Environments**
SAP Cloud Platform
Continuous innovation for your applications using simplified Dev/Ops activities

Simplified Operations
- Unified and consistent deployment process for your projects, including alignment with the on-premise development processes when necessary
- Flexible properties configuration with no need for re-deployment
- Simple and easy start and stop for your applications
- Comprehensive and configurable monitoring and alerting for an easily health check of your solutions
- Quick and easy problem troubleshooting via the detailed and configurable application log
- Transparency for the resource usage of your SAP Cloud Platform accounts
Lifecycle Management
Transporting Development Components

Subaccount - QA
- Resources
- Users
- Configuration

Subaccount - DEV
- Resources
- Apps
- Users
- Configuration

Subaccount - PROD
- Resources
- Apps
- Users
- Configuration

Java Apps
- HTML5 Apps
- Portal site
- Destinations
- Roles
- Homepage tile

SAP SaaS
ODATA

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Lifecycle Management
Multi-target Applications in Cloud Foundry environment

1. Develop & Build
   - Subaccount - DEV
     - Resources
     - Data
     - Users
     - Configuration
     - Apps

2. Archive

3. Deploy & Test
   - Subaccount - QA
     - Resources
     - Data
     - Users
     - Configuration
     - Apps

4. Deploy & Run
   - Subaccount - PROD
     - Resources
     - Data
     - Users
     - Configuration
     - Apps

SAP SaaS

ODATA
Multi-Target Applications
Enable you to overcome lifecycle management challenges

When you develop a complex business application:
- Composed of multiple software pieces ("modules")
- Written in different languages or paradigms
- Using different tools, IDEs and technologies

MTAs help you to:
- Have a common lifecycle across all modules and configuration
- Maintain versions for the different modules
- Manage dependencies

1 Develop & Build

Developers

module

2 Archive

SAP Web IDE

module

3 Deploy

MTAR

SAP Cloud Platform Administrator

Various target runtimes
Provider – Deployment with entitlements
Grant permissions for subscription to consumers via entitlement

Provider: Create entitlements for the solution to the licensed customers

Solution appears as “available” for subscription to consumers
Provider – Consumer scenario
Provision to consumers via subscription

Consumer: Subscribes for the solution

[Optional] Solution components can get automatically deployed in the consumer subaccount as part of the subscription process (if necessary).
Open innovation

SaaS

Marketplace / Ecosystem

Business Services / Enterprise APIs

Platform services

Differentiating business services

Open standards

Openness:
Provider/DC of choice

Thriving enterprise ecosystem

Best integrated services + comprehensive set of platform capabilities

only multi-cloud enterprise platform in the market

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Where To Find More Information

Learn more about SAP Cloud Platform
Get started by learning about SAP Cloud Platform at https://cloudplatform.sap.com

Benefit from free developer account
Free unlimited SAP Cloud Platform developer account at https://www.sap.com/developer/topics/cloud-platform.html

Participate in the SAP Community
Follow the blogs and join the discussions at https://www.sap.com/community/topic/cloud-platform.html

Explore the free sample code for developers
Jump start your SAP Cloud Platform experience with sample code from http://sap.github.io

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Questions & Answers
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