Security, compliance, data protection – SAP helps with the right solutions

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About the Speaker

Kristian Lehment

- Product manager, SAP SE
- 30 years in information technology, worked as consultant, software developer and product manager
- Proud father
- Skydiver

Agenda

- Today's Security Problem
- Security at SAP – From Strategy to Action
- Securing Your SAP Software Environment – Recommendations
- Security and The Intelligent Enterprise
- Wrap-up

76% of the world's transaction revenue

83% of the world's business-to-business transaction revenue

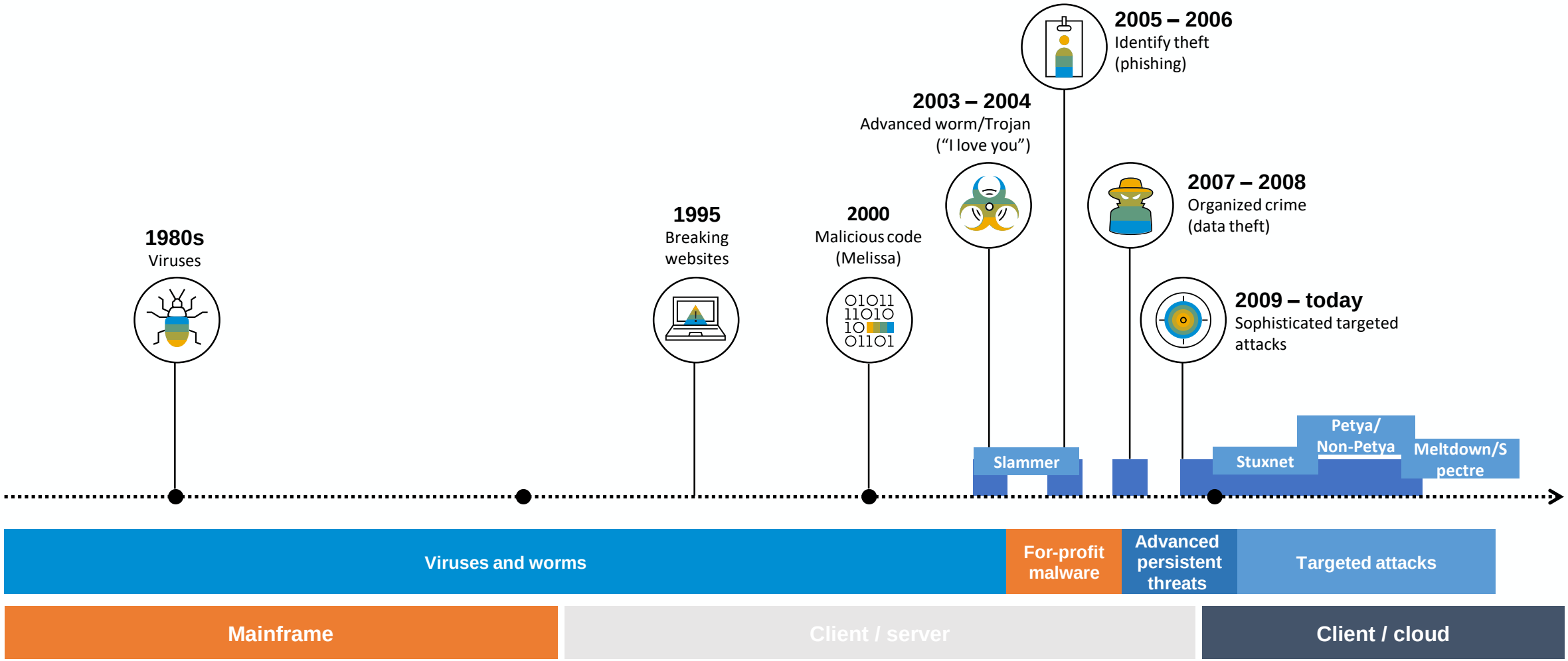
$22 trillion of consumer purchases around the world

… are touched by SAP software systems.

If our economy is to thrive, our commitment to cybersecurity must match our commitment to innovation

Today’s Security Problem

History of technology and threats



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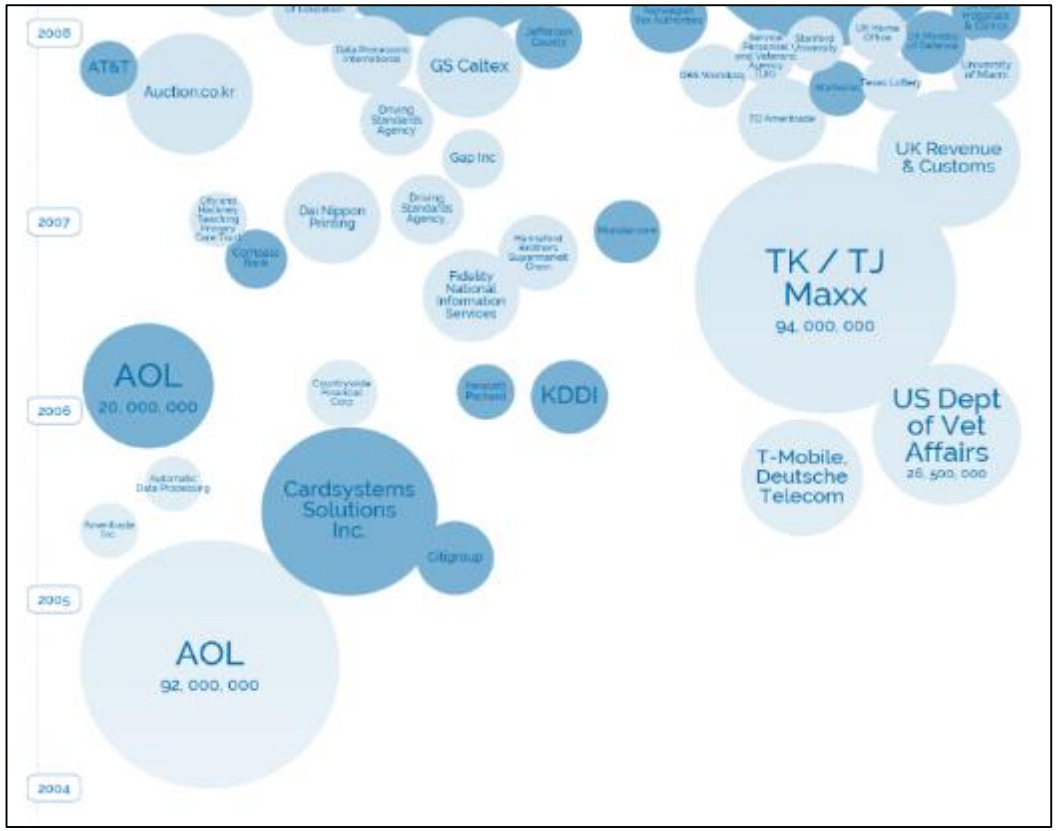
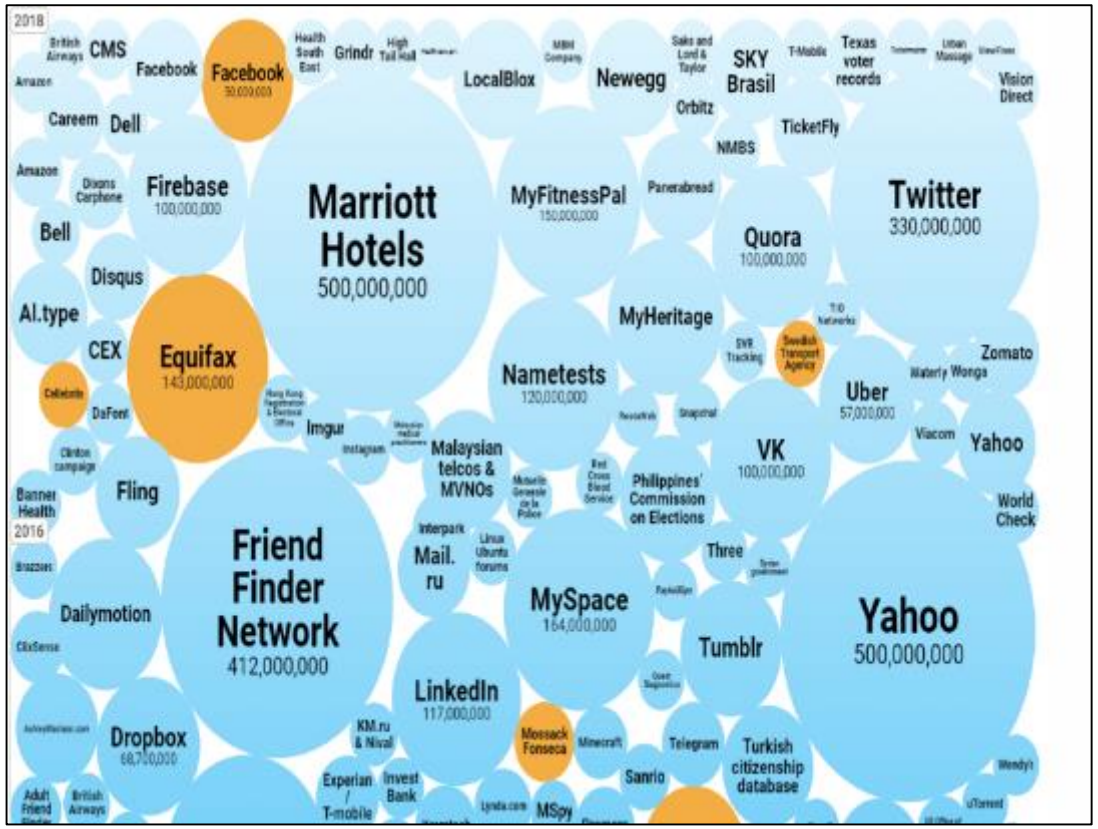
You know the challenges

2004



today



Source: http://www.informationisbeautiful.net/visualizations/worlds-biggest-data-breaches-hacks/

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Security risks today

Value of data

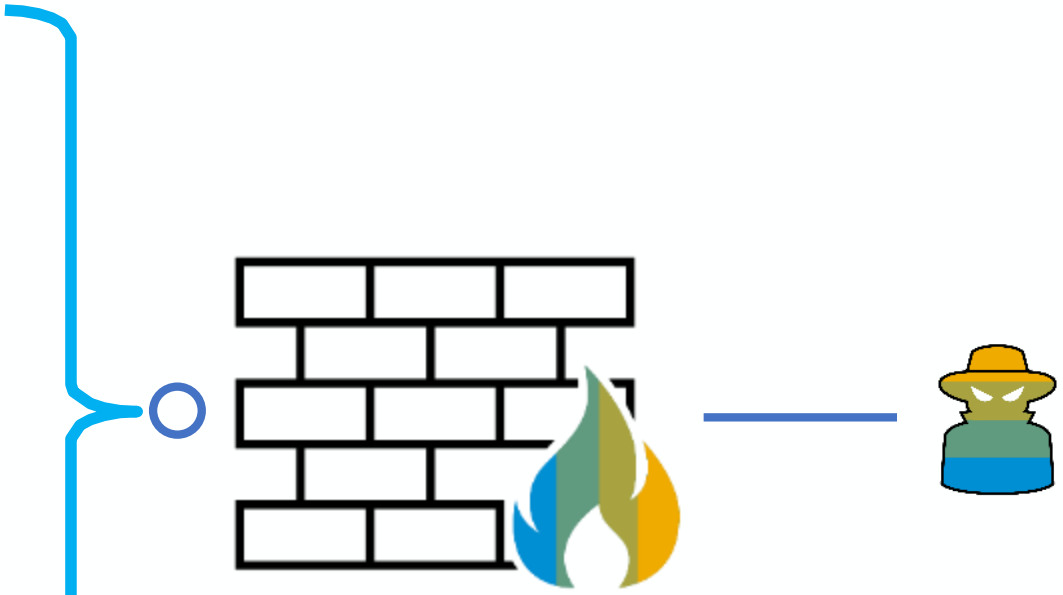
Data has value, both in terms of the value companies are able to extract and the value a potential hacker could exploit.

Volume of data

Companies are collecting and storing more data than ever before.

Vulnerability of endpoints

No longer does data remain locked inside a mainframe, as it has proliferated outside of the four walls of a company's business.



The sheer number and sophistication of attacks are at an all-time high

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Security at SAP – From Strategy to Action

SAP’s Security Vision

We see a world where our customers and employees are able to use our software and services from anywhere, from any device, at any time, with confidence and trust.

As the world’s leading provider of business critical applications,

SAP will continue to **drive security into the heart of the application** and to **excel in secure cloud operations** for ultimate protection of content and transactions,

to efficiently help customers define, plan, and execute measures for their **secure digital transformation.**

SAP applications – highly attractive targets

Company facts

- **3rd-largest software company globally**
- **SAP customers comprising 91% of Forbes Global 2000 companies**
- **76% of the world's transaction revenue touching** an SAP software system
- **More than 378,000** customers in over 180 countries
- **Over 150,000,000 subscribers** in our cloud user-base
- **More than 1,300 service partners** worldwide
- **90,000-plus SAP employees** in over 130 office locations
- **21 R&D** locations worldwide

Cloud infrastructure services from SAP

- **40 data centers in 21 locations and 12 countries operated by SAP**
- **172,000 virtual machines, 13,500 hypervisors**
- **17.6 petabytes memory (physically available)**
- **Cloud storage** capacity of **160+ petabytes**
- Daily **backup volume** of **3+ petabytes**

From an attackers standpoint, SAP is the most important application to compromise confidentiality, integrity or availability of leading businesses

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SAP Global Security – speeds and feeds

Cyber Defense and Response Center (statistics per month)

Level 1
Outer shell

- **15,000,000+** malicious e-mails blocked
- **21,000,000+** threats blocked at the border of our network

Level 2
Middle layer

- **160,000+** malware detected and cleaned up by antivirus software
- **375,000,000+** Internet connections blocked (~3% of total)

Level 3
Security monitoring cent

- **3.5+ terabyte** log volume collected **per day**
- **30,000,000,000+** events collected in central system, of which:
  - **4,500+ security events** correlated
  - **240+ security incident** cases generated and defended

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Cornerstones of security at SAP

Transparency

Security by default

Zero vulnerability

Defendable application

Zero knowledge

Security incorporated into applications, delivering ultimate protection for content and transactions

End-to-end, secure cloud operations and defense of customer data and business operations

Security by default

Intelligent infrastructure protection

Perceptive data shield

Security-shielded ecosystem

Security-aware staff, end-to-end physical security of SAP's assets, and a comprehensive business continuity framework: **secure SAP**

Security culture

Secure environments

Business continuity

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Multidimensional compliance framework@SAP and best practices*

* The management systems are used across all SAP Cloud Secure services. Execution of independent certification and audit depend on service and organizational unit respectively. Details available at http://go.sap.com/corporate/de/company/innovation-quality/excellence.html

Regional standards	FedRAMP	HIPAA	China's Cybersecurity Law	IRAP			
Industry-specific standards	GxP Pharmaceuticals sector	C5 Public, banking, and finance sector	TISAX Automotive sector				
Data privacy standards	BS 10012	Personal information management	ISO 27018:2014	Data privacy for cloud provider	GDPR		
Global standards	ISO 9001:2015 Quality** management	ISO 20000 Service** delivery	ISO/IEC 27001:2013 Security** management	ISO 22301:2012 Business** continuity	AICPA SOC Financial controls	AICPA SOC 2 Operations compliance	PCI DSS Payment card industry data security standard

** Component of the **integrated information security management system (IISMS) of SAP**

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Securing Your SAP Software Environment

Recommendations

Security recommendations

10 focus areas for customers (details, visit www.sap.com/security)

As SAP continues to secure its internal operations, we have captured our best-practice approach to share with our customers

Network security

- Define a network concept with clearly structured different zones
- Separate high-security areas
- Determine concepts for dedicated servers and administrative roles

OS and database security

- Implement dedicated security requirements for all operating systems
- Implement restrictive database access mechanisms

Front-end security

- Deploy security configuration for both clients and mobile endpoints
- Distribute and activate administrator rules
- Activate access control lists (ACLs)

Custom code security

- Establish custom code lifecycle management processes
- Use security source code scan tools to identify vulnerabilities in your custom coding

Secure maintenance of SAP software code

- Regularly update all SAP software
- Review common vulnerabilities and exposures (CVE) disclosures monthly to assess risks to your SAP software landscape

Secure configuration

- Password security
- Authentication
- Encryption of data and communication

Communication security

- Use encrypted communication - Secure sockets layer (SSL), transport layer security (TLS), or secure network communications (SNC)
- Secure all remote function call (RFC) connections

Security audit log

- Monitor all systems
- Activate the security audit log (SAL)
- Activate filters for critical users

Users and authorizations

- Security awareness
- User authorizations clearly defined and managed

Emergency concept

- Define emergency, backup, and disaster recovery concepts to ensure business continuity
- Consider preparation of complete fallback systems for business-critical processes and applications

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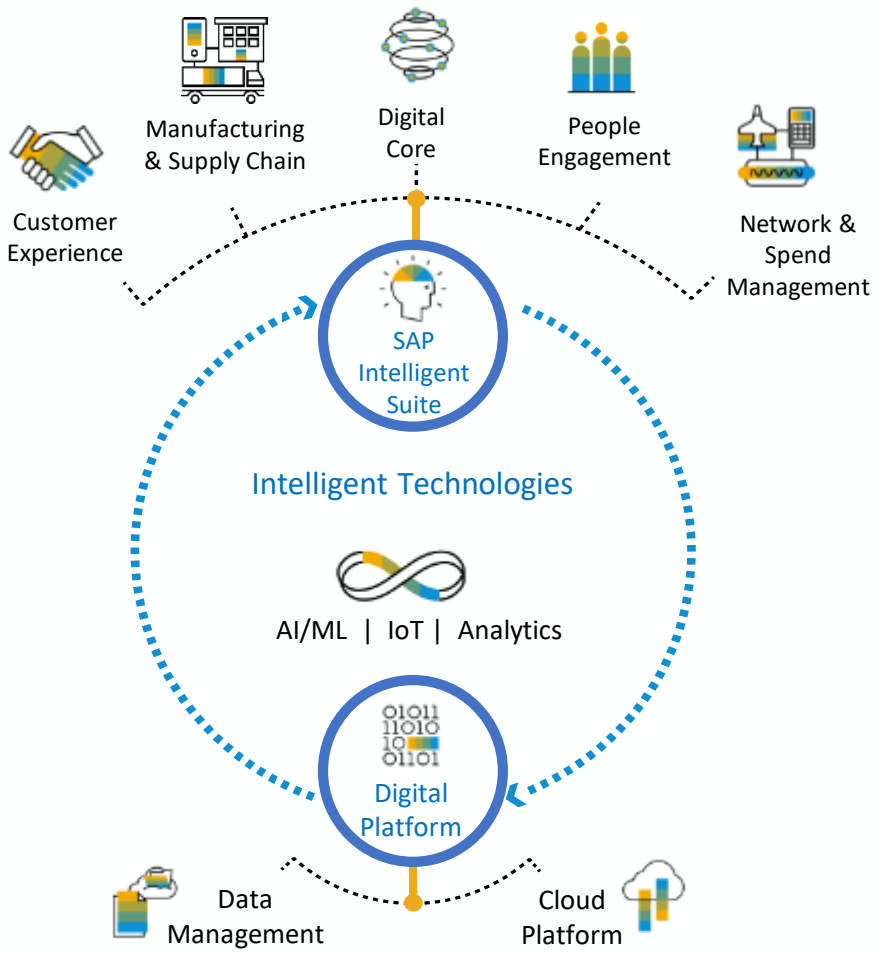
The Intelligent Enterprise

Security and The Intelligent Enterprise

The Intelligent Enterprise

- **Better decisions**
  with instant, real-time insight and prediction
- **Increased performance**
  through end-to-end reinvented processes
- **Higher productivity**
  with Digital Age UX and intelligent assistance
- **Lower TCO**
  with simplified architecture and cloud deployment



1. Intelligent Suite
2. Intelligent Technologies
3. Digital Platform

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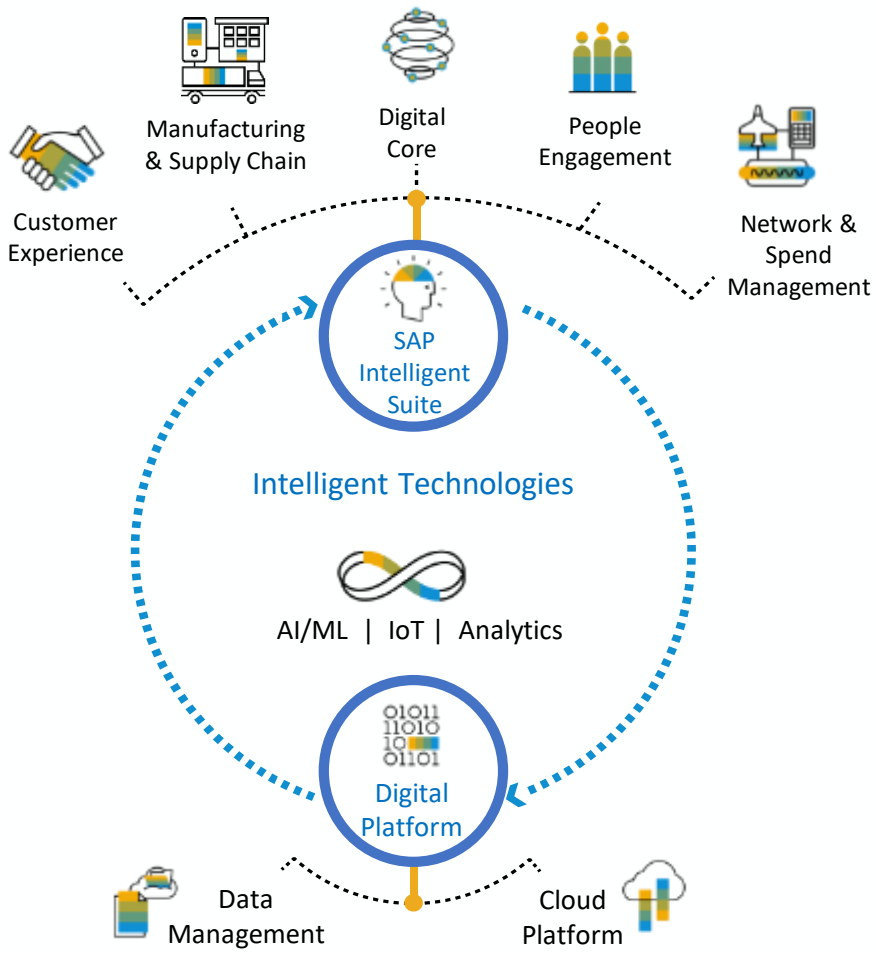
Benefits for GRC and Security with the Intelligent Enterprise

End-to-end innovation of GRC and Security processes across core business activities

- **Intelligent monitoring and reporting** with instant, real-time insight and prediction on better, live data
- **Increased performance with in-memory** technology allowing for previously impractical monitoring scenarios now becoming the norm
- **Higher productivity** with extensive opportunities for automation leading to resources focusing on higher value activities
- **More comprehensive information security** and monitoring across hybrid environments
- **Flexible deployment covering today and tomorrow's** architecture and landscapes



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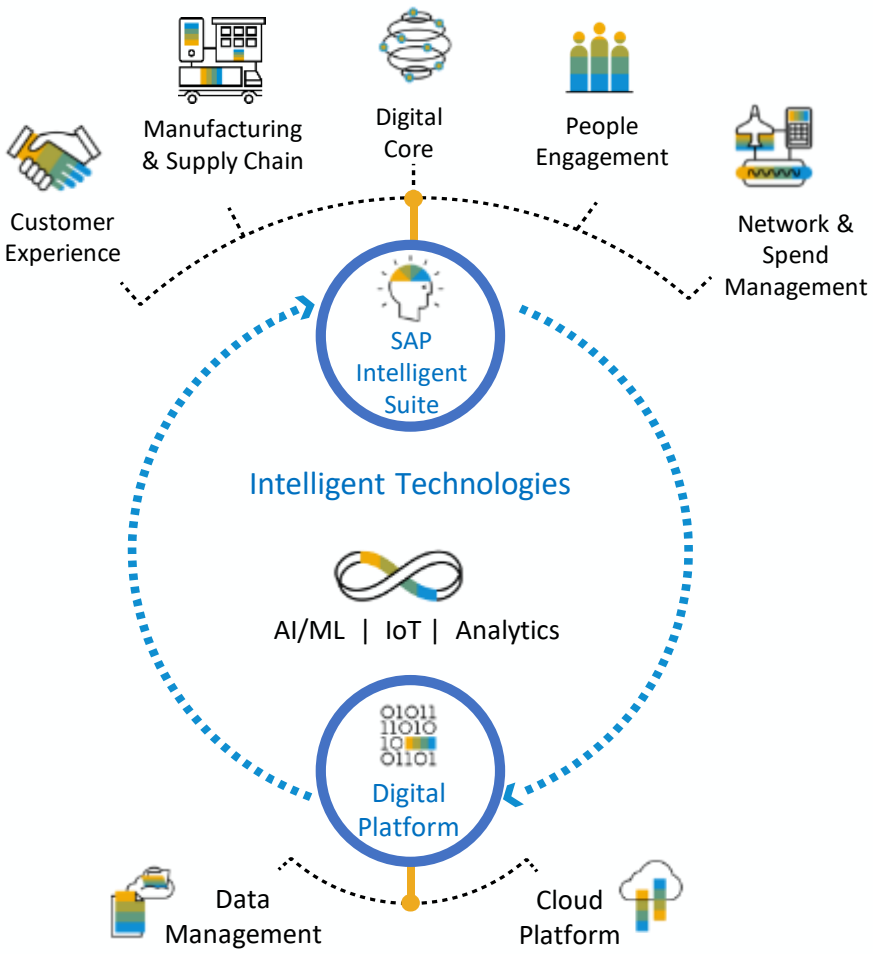
Why SAP solutions for GRC and Security

- Most **comprehensive GRC and Security suite** from the market leader
- Most **integrated set of capabilities** to deploy along your current and future landscapes
- Highest coverage for **language and country-specific regulatory requirements**
- **Global service coverage** from SAP, global partners, and expert ecosystem
- Broadest **industry coverage** and best practices



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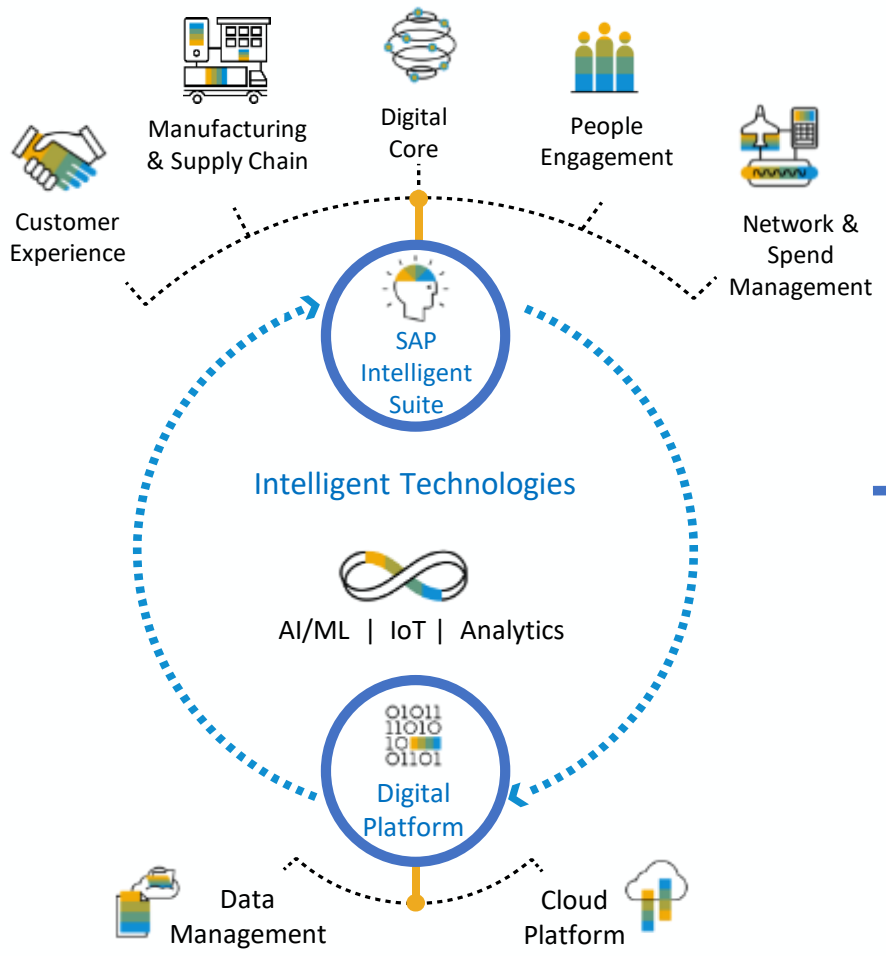
Transform your governance, risk and compliance practices

Embed GRC and security in SAP S/4HANA



Enterprise risk and compliance

- Provide one view of risk
- Enable automated monitoring and screening
- Embed controls across business processes

Identity and access governance

- Manage users and identities across landscapes
- Improve user experience with single sign-on

Cybersecurity and data protection

- Manage digital rights to protect applications and data
- Enhance application-level threat monitoring and analysis

International trade management

- Screen related parties and manage trade compliance
- Leverage free trade agreements and optimize duty rates

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SAP GRC and security solutions

Key themes

Enterprise risk and compliance

- Manage risks, controls, and regulatory requirements in business operations
- Screen third parties and detect anomalies and fraud
- Provide independent assurance of risk and compliance standards

Identity and access governance

- Manage identities, authorized information access, data use, and sharing conditions
- Mitigate access risk violations and monitor financial impact

Cybersecurity and data protection

- Protect data, control access, and detect threats
- Help ensure compliance with information security standards
- Identify vulnerabilities in code and remote function call (RFC) connections

International trade management

- Manage import and export compliance as well as free trade agreements in global supply chains
- Optimize trade utilizing special customs procedures such as bonded warehouses, processing trade in China, and free trade zones in NA
- Manage Intrastat and export compliance in S/4HANA

SAP GRC and security solutions

Solution mapping to key themes

Enterprise risk and compliance

- ✓ SAP Process Control
- ✓ SAP Risk Management
- ✓ SAP Audit Management
- ✓ SAP Business Integrity Screening
- ✓ SAP Regulation Management by Greenlight

Identity and access governance

- ✓ SAP Access Control
- ✓ SAP Cloud Identity Access Governance
- ✓ SAP Identity Management
- ✓ SAP Cloud Platform Identity Provisioning Service
- ✓ SAP Single Sign-On
- ✓ SAP Cloud Platform Identity Authentication Service
- ✓ SAP Dynamic Authorization Management by NextLabs
- ✓ SAP Access Violation Management by Greenlight

Cybersecurity and data protection

- ✓ SAP Enterprise Threat Detection
- ✓ SAP Data Privacy Governance
- ✓ SAP Data Custodian
- ✓ SAP Enterprise Digital Rights Management by NextLabs
- ✓ UI masking for SAP
- ✓ UI logging for SAP
- ✓ SAP NetWeaver AS, add-on for code vulnerability analysis
- ✓ SAP Fortify by Micro Focus

International trade management

- ✓ SAP Global Trade Services
- ✓ SAP S/4HANA for international trade
- ✓ SAP Watch List Screening

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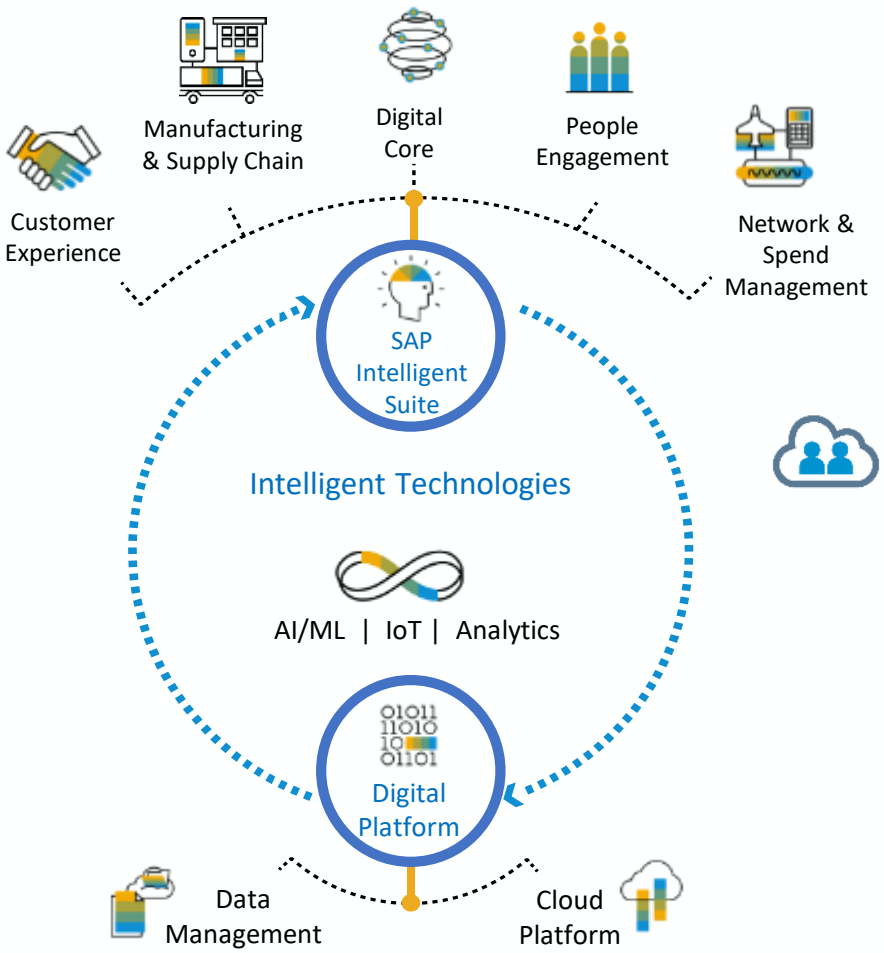
Identity and Access Governance

In the security products portfolio from SAP

Identity and access governance



Manage users and permissions

SAP Identity Management

SAP Cloud Platform Identity Provisioning

SAP Access Control

SAP Cloud Identity Access Governance

Secure access

SAP Single Sign-On

SAP Cloud Platform Identity Authentication

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Identity and Access Governance

Solution overview

Identity and access governance

SAP Cloud Platform Identity Provisioning

- Cloud-based service for identity lifecycle management
- Managing users, roles and groups in cloud- and hybrid landscapes
- Based on SCIM industry standard

SAP Cloud Identity Access Governance

- Centrally manage access risk and compliance for on-premise and cloud solutions
- Reduce complexity of role administration with streamlined design and governance
- Policy driven workflow processes for access management and certification

SAP Cloud Platform Identity Authentication

- Single sign-on to browser-based applications (cloud and on-premise)
- Various authentication options
- Different user store integration scenarios

SAP Identity Management

- Central management of identities throughout an on-premise system landscape
- Rule-driven workflow and approval process
- Optional integration with Identity Provisioning enables support for cloud applications

SAP Access Control

- Automatic detection of access violations for on-premise applications
- Extend to cloud through Cloud IAG
- Self-service access requests, workflows, automated review of user access

SAP Single Sign-on

- Single sign-on for SAP desktop clients and web applications
- Multi-factor authentication
- Secure data communication and digital signatures

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Identity and Access Governance

SAP's vision

Identity and access governance

Integrate

- Smooth, flexible **integration** with existing solutions in a multivendor landscape
- Support for **industry standards** and focus on **openness** toward 3rd party business applications
- Coverage of **hybrid** environments across on-premise- and cloud-based applications

Simplify

- Optimal ease of use
- Simplified onboarding of business applications through **automation**
- One-shop identity lifecycle management for all business applications

Protect

- Secure application access
- Usage of **state-of-the-art security** technologies

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Identity and Access Governance as an enabler for integration

The foundation of the Intelligent Enterprise

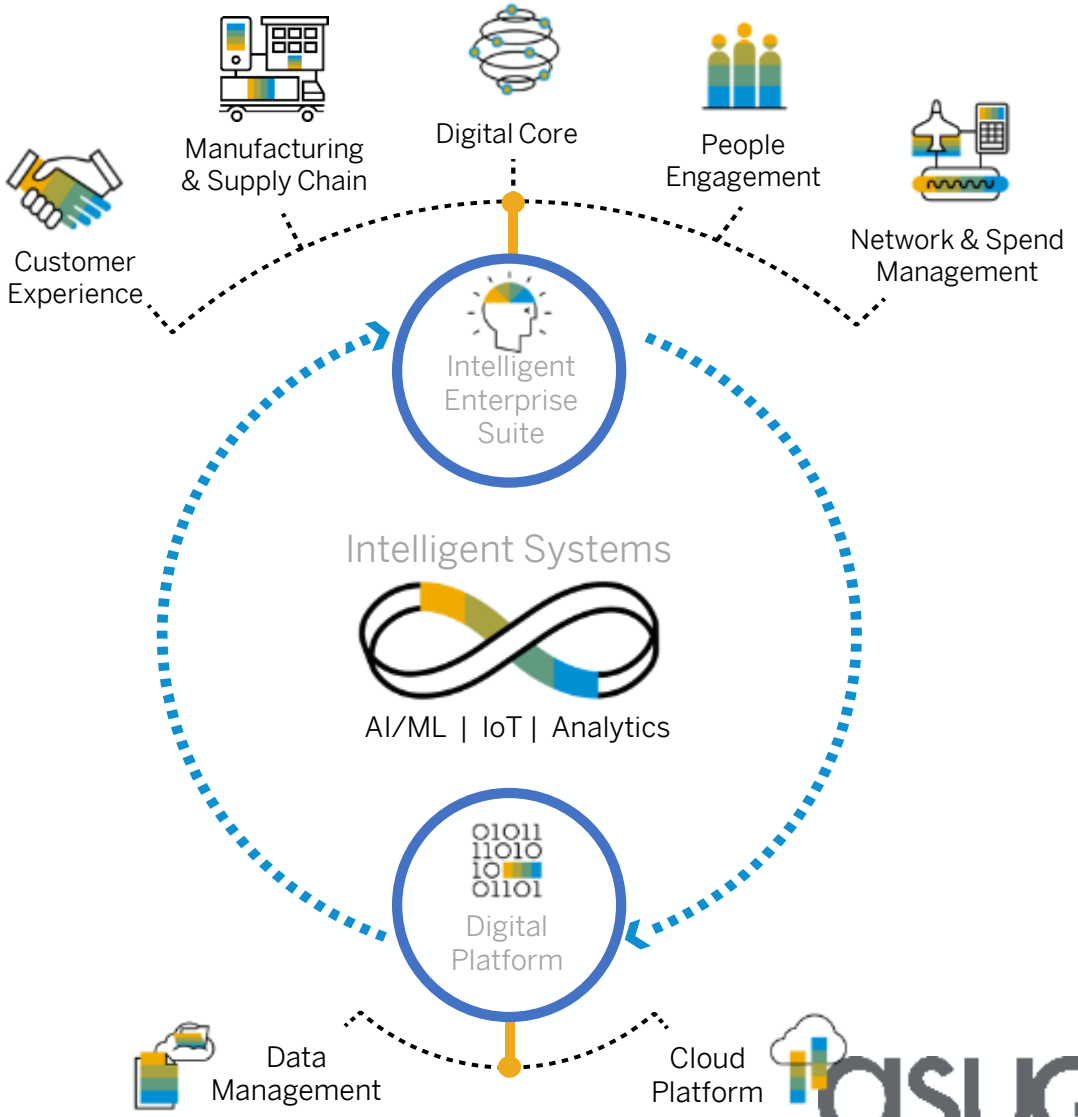
Integrate

Integrate the business processes of the Intelligent Enterprise

End-to-end single sign-on

Central management of identities, roles and access

Efficient on-boarding of applications and users



Identity and Access Governance

in a hybrid landscape

SAP Access Control and SAP Identity Management

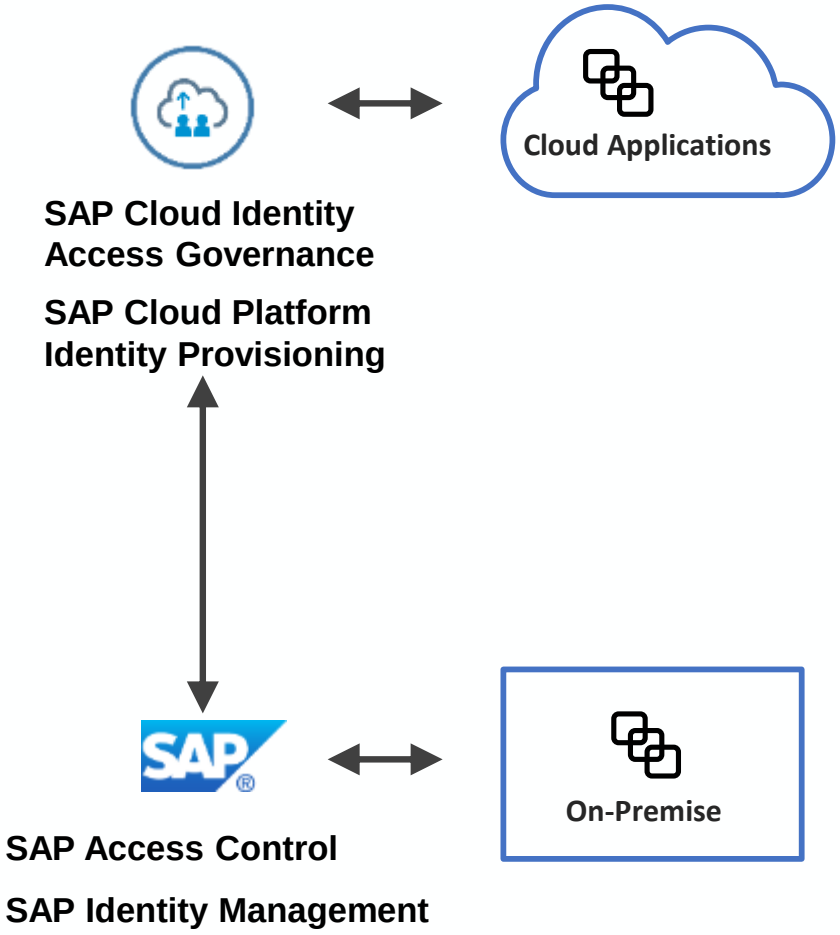
- SAP's strategic solutions for IAG for on-premise applications
- Optimized for SAP's on-premise applications
- Stable, widely adopted and fully supported

SAP Cloud Identity Access Governance and SAP Cloud Platform Identity Provisioning

- SAP's cloud services for IAG
- Focus on new business applications and cloud qualities
- Allow customers to efficiently on-board new applications and consume new services

Hybrid scenario recommendation

- Extend an existing identity access management and governance framework to the cloud using SAP's cloud IAG services



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Identity and Access Governance

Recommended setup for hybrid landscapes

End User

Workflow
Self-Service

ON-PREMISE

INTERNET

SAP Access Control

- Access Analysis
- Role Design
- Access Request

Assignments

SAP Identity Management

- Users/Groups
- Roles
- Connectors

SAP NetWeaver

SAP Business Suite

...

3rd Party

SAP® Cloud Platform

SAP Cloud Identity Access Governance

- Access Analysis
- Role Design
- Access Request

SAP Cloud Platform Identity Provisioning

- Users/Groups
- Roles
- Connectors

SAP Ariba *

SAP Fieldglass *

SAP Hybris Cloud For Customer

SAP SuccessFactors

Google Cloud

SAP® S/4HANA Cloud

SAP Jam

Microsoft Azure

SAP® Cloud Platform

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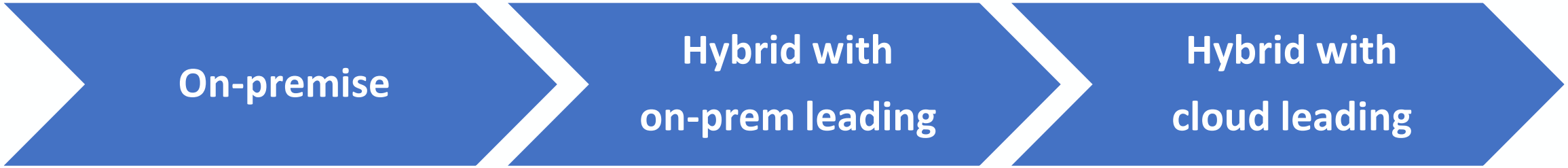
* For a detailed list of applications currently supported by Identity Provisioning, please refer to the online documentation

Identity and Access Governance

Evolution to the cloud



Available

- Focus on on-premise business applications
- IAG solution also running on-premise
- Strong IAG services and workflows
- Some limited capabilities to integrate cloud-based applications

Available, enhancements in development

- Supporting on-premise and cloud-based business applications
- On-premise IAG products as leading solution
- IAG cloud services used as extension to integrate cloud-based applications into the on-premise products for IAG
- Some selected new functionality available as part of the IAG cloud services

Future plans

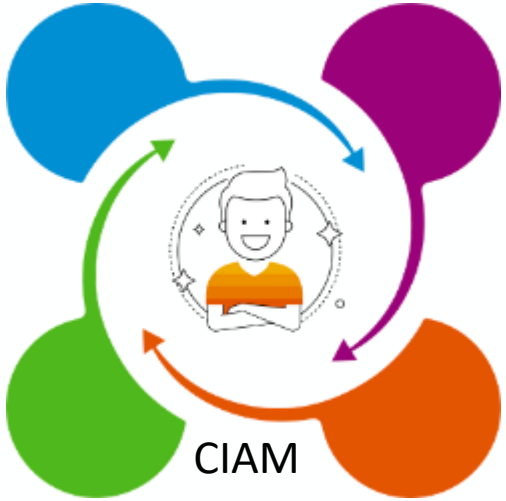
- Supporting on-premise and cloud-based business applications
- IAG cloud services are the leading solution
- IAG business-process- and end-user-related capabilities available and driven by the IAG cloud services
- On-premise IAG products act as an extension to integrate on-premise applications

Identity and Access Management vs. Customer Identity and Access Management

Product Strategy

SAP CP Identity Authentication
SAP CP Identity Provisioning
SAP Cloud Identity Access Governance

- Focus on employee and contractor identities
- Identity lifecycle management and access governance for business applications
- Single sign-on for employee scenarios



SAP Customer Identity

- Focus on consumer identities
- Compliant establishment of user profiles, e.g. for marketing purposes
- Secure authentication on end-user facing web applications

Product Strategy for IAM & CIAM
The lifecycle of identities differs significantly depending on their type

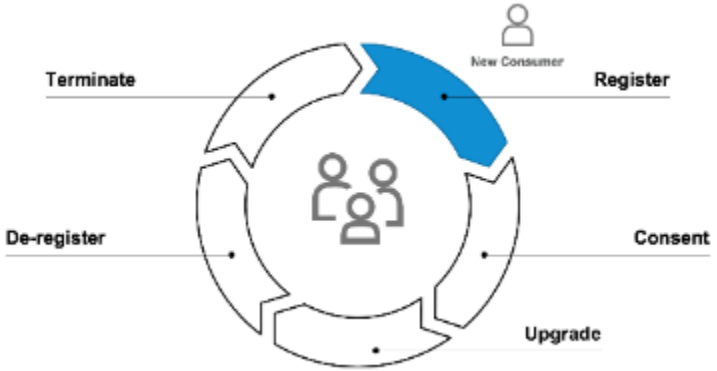
IAG cloud services

- Identity types: employees and contractors
- System of origin: HR
- Strong authentication mechanisms
- Integration with corporate IdP or directory
- Role Management and user provisioning to all business systems

For corporate users it is a strictly governed process including workflows for role- and authorization-approval and assignment

SAP Customer Identity

- Identity types: consumers, customers, prospects
- Self registration, invitation and on-behalf registration
- Authentication: username/password or social login
- Single sign-on across or separated by customer's brands
- Consent management for compliance



External users start with a simple self-registration.
The profile will then be extended based on the needs of additional scenarios and services a user consumes.

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Wrap-up

Make use of your maintenance contract

- Utilize the security chapter of your **SAP EarlyWatch Alert service** reports as a starting point. Make use of tools and services, like the **SAP Security Optimization service** or **configuration validation** (PDF)
- Leverage the **security baseline template package** (ZIP) – see also SAP note 2253549
- Make use of **system recommendations** to ease the consumption of our **security notes**
- As an **SAP Enterprise Support services** customer, look for security in **SAP Enterprise Support Academy** and make use of security content in the **SAP Enterprise Support value maps**
- As an **SAP MaxAttention** or **SAP ActiveEmbedded services** customer, reach out to your SAP contact and ask for support through a **security engagement service** (PDF)

Where to go from here:
useful information available on SAP Web sites

- **Security guides – https://help.sap.com**
  Provides security guide documentation

- **Security on sap.com – https://sap.com/security**
  Provides information on security at SAP and on security products from SAP

- **Security optimization services landing page – https://support.sap.com/sos**
  Provides information on tools and services in the context of your maintenance contract

- **SAP Cloud Trust Center site – https://sap.com/cloud-trust-center**
  Provides information on cloud security and security certifications at SAP

- **Security community – https://www.sap.com/community/topic/security.html**
  Gives access to the security community at SAP with information, blogs, and forums

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Presentation Materials

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Q&A

For questions after this session, contact me at Kristian.Lehment@sap.com

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