Implementing digital sovereignty with open source software – vision and practice

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What‘s digital sovereignty?

Wikipedia*:

„Digital sovereignty generally refers to a person's ability to use digital media with sovereignty.“

* translated by me, original:

„Digitale Souveränität bezeichnet im Allgemeinen die Möglichkeit eines Menschen, digitale Medien souverän nutzen zu können.“,

https://de.wikipedia.org/wiki/Digitale_Souveränität

What‘s digital sovereignty for organizations?

2. Zum Begriff der Digitalen Souveränität

Digital Gipfel
Nürnberg 2018

2.1 Definition

Souveränität bezeichnet die Möglichkeit zur unabhängigen Selbstbestimmung von Staaten, Organisationen oder Individuen. Digitale Souveränität ist heute ein wichtiger Teilaspekt allgemeiner Souveränität, der die Fähigkeit zur unabhängigen Selbstbestimmung in Bezug auf die Nutzung und Gestaltung digitaler Systeme selbst, der darin erzeugten und gespeicherten Daten sowie der damit abgebildeten Prozesse umfasst.

https://www.de.digital/DIGITAL/Redaktion/DE/Digital-Gipfel/Download/2018/p2-digitale-souveraenitaet-und-kuenstliche-intelligenz.pdf?__blob=publicationFile&v=5

Translation (by me):

Sovereignty refers to the possibility of independent self-determination of states, organizations or individuals. Today, digital sovereignty is an important aspect of general sovereignty, which includes the ability for independent self-determination with regard to the use and design of digital systems themselves, the data generated and stored in them, and the processes mapped with them.

Categories of digital sovereignty

- **Data** – is all information available and computable?
- **Interfaces** – is the access to information and processes computable?
- **Source Code** – is the software implementation transparent, reusable and transferable?
- **Hardware** – is the implementation transparent, reusable and transferable?
- **Control** – are all components of the solution fully controllable?
- **Competences** – does the organization have the competence to control the solution?
- **Jurisdiction** – do all suppliers and involved persons need to follow the same laws?

Vision – what an IT stack should be like

- **transparent and accessible:**
  Open Source
  Open Standards
- **modular:**
  no vendor lock-in, free choice of modules
  federation
- **standardized:**
  standard interfaces for standard services
  standard software for standard problems
- **individualized:**
  dedicated implementations for special needs

Vision – what an IT stack should be like

» **transparent and accessible:**

Open Source

Open Standards

» **modular:**

no vendor lock-in, free choice of modules

federation

» **standardized:**

standard interfaces for standard service

standard software for standard problem

cial

- Only Open Source guarantees
  - full control
  - full transparency
- Open Standards allow
  - modularity
  - integrability

Vision – what an IT stack should be like

» **transparent and accessible:**

Open Source

Open Standards

» **modular:**

no vendor lock-in, free choice of modules

federation

- » modular design ensures
  - » freedom of choice
  - » limited Vendor / Solution lock-in
- » modules need to implement standard APIs !
- » federation eases integration with other organizations / subsidiaries

» **individualized:**

dedicated implementations for special needs

Vision – what an IT stack should be like

» **transparent and accessible:**

Open Source

Open Standards

» **standardized:**

standard interfaces for standard services

standard software for standard problems

» following standards is needed to stay modular and to integrate with other environments

» standard software reduces the effort to provide “commodity” services

dedicated implementations for special needs

Vision – what an IT stack should be like

» individualization ensures the uniqueness of your organization

» … but creates the “burden” to maintain it

» **modular:**

no vendor lock-in, free choice of modules

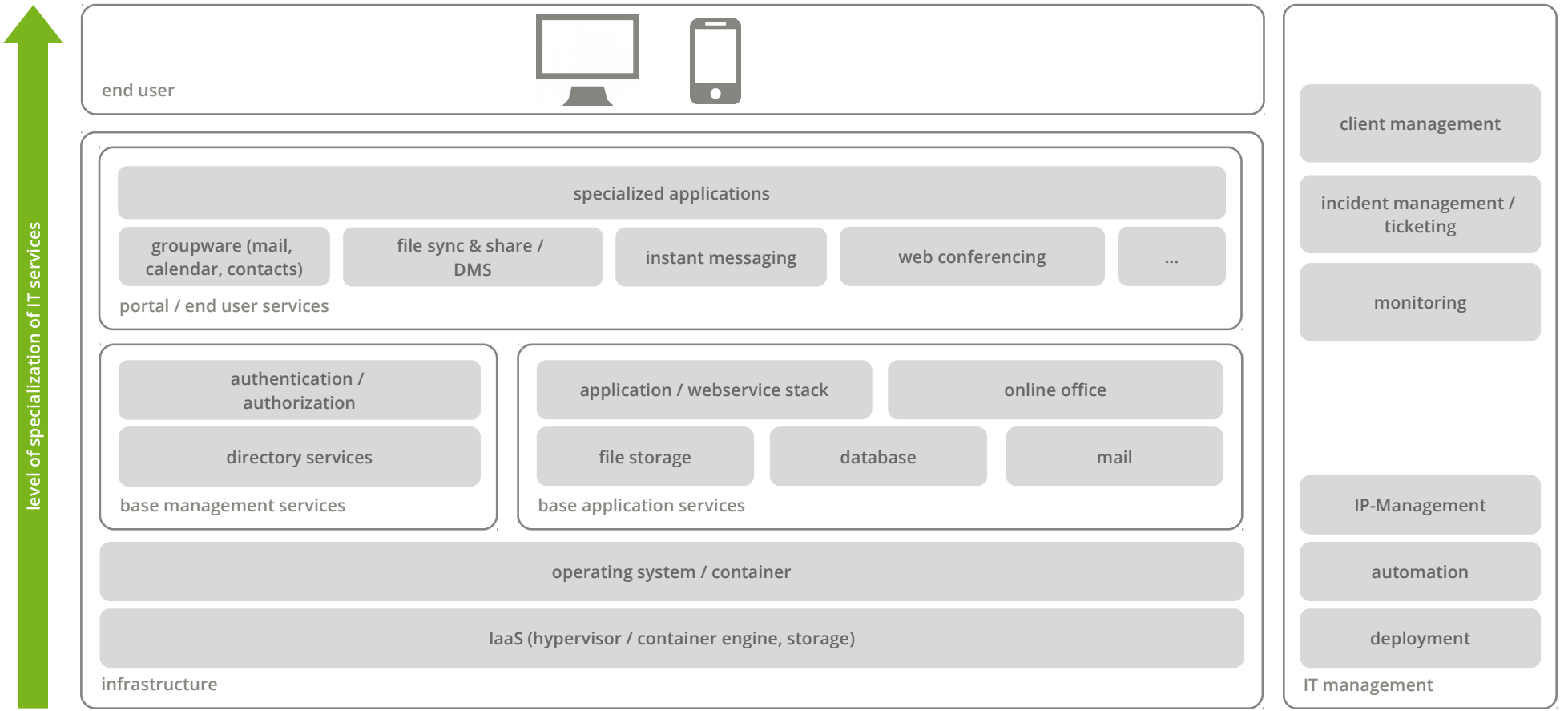
» **individualized:**

dedicated implementations for special needs

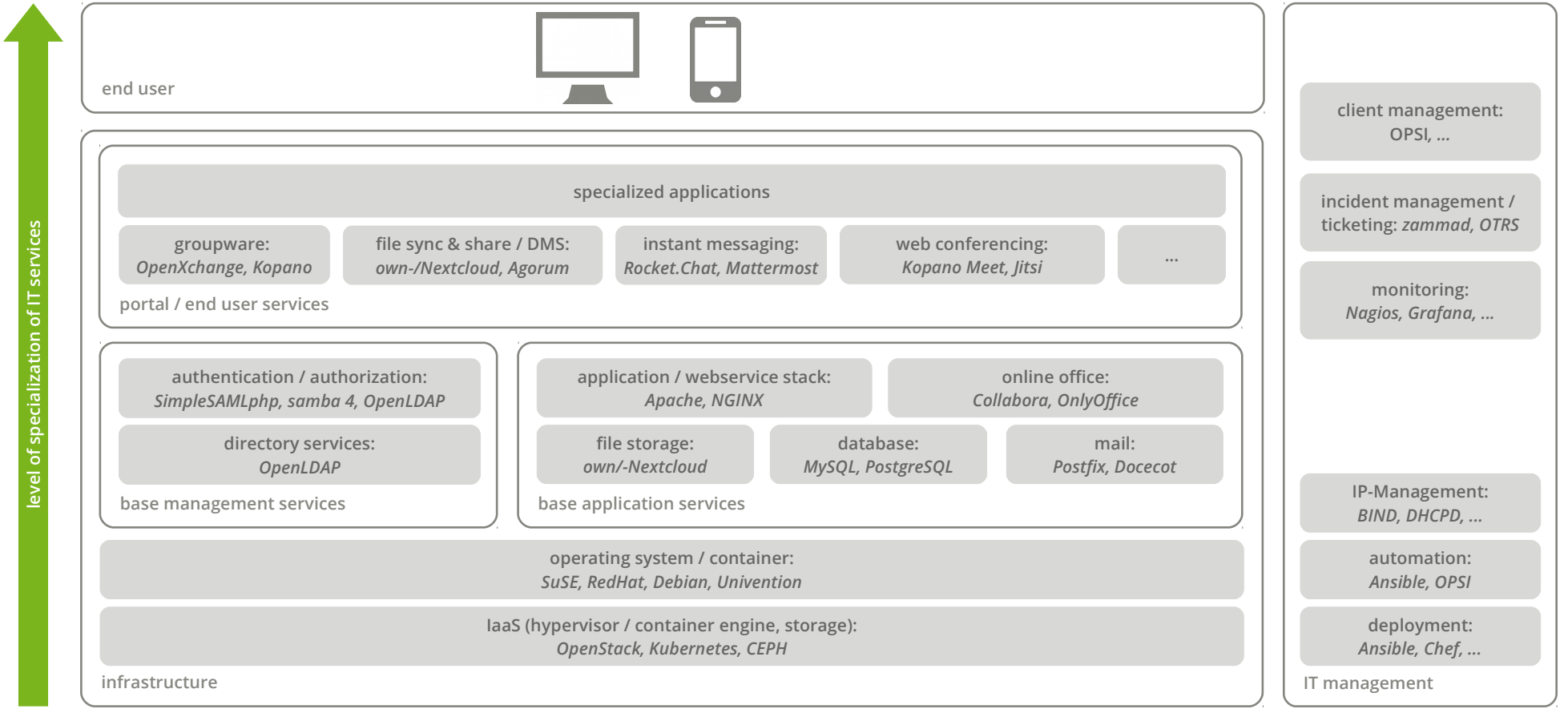
standard software for standard problems

architecture for a modular IT infrastructure

modular architecture – overview



modular architecture – example open source components



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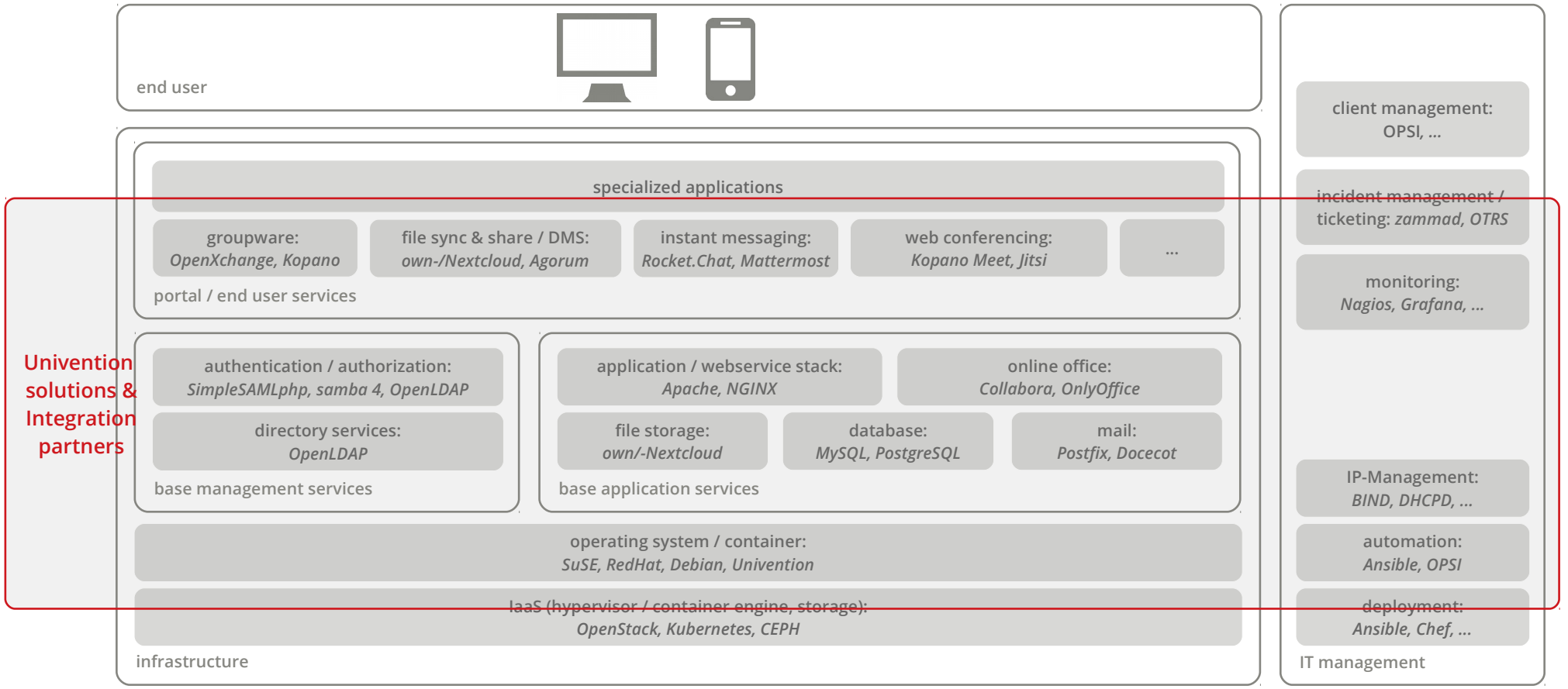


Univention GmbH

- Software producer of the enterprise distribution Univention Corporate Server (UCS) to operate and manage IT
- Founded in 2002 in Bremen, Germany with further offices in Berlin, Germany and Seattle, WA (USA)
- More than 12,000 organizations use Univention software
- More than 350 cooperation partners:
  System integrators (VAR), Cloud Service Providers (CSP) and Technology Partners (ISV)

Univention Corporate Server (UCS)

- enterprise server operating system
- Identity and Access Management solution
  - intuitive, web-based management
  - powerful APIs
- RFC and Microsoft compatible authentication and Directory Services (Kerberos, SAML, ...)
- scalable and compatible
- 100% Open Source
- to operate on-premises, in the cloud or hybrid

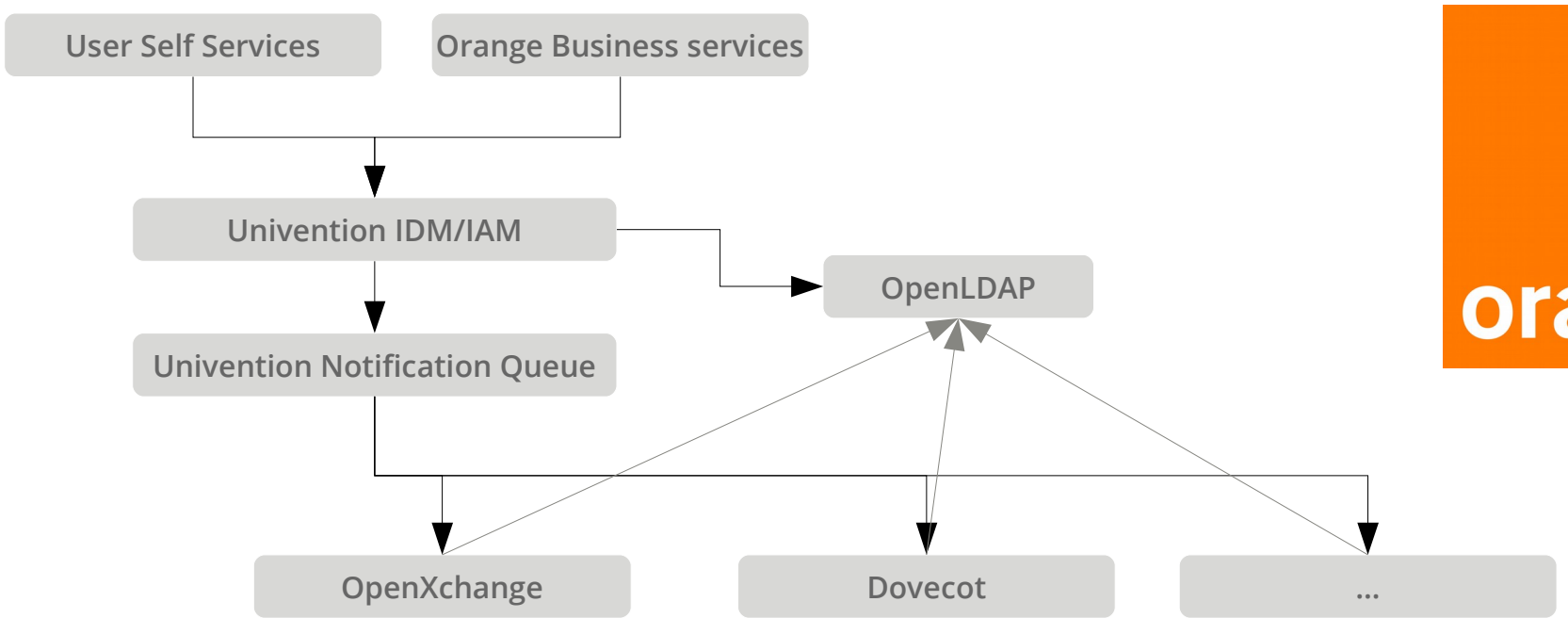
Univention App Center – standardized software stack

- Marketplace for certified enterprise software and add-ons
- Enterprise Applications provided and support by Software Vendors
- full lifecycle management: installation, upgrades, removal
- Single point of administration for many apps through automatic directory integration

Example projects - Orange

- Consumer Mail platform for >30M mailboxes
- Modules include:
  - OpenXchange: Webmail / PIM
  - UCS: Directory Service, IDM/IAM, “business logic” / Notifications
  - Dovecot: IMAP, Mail Storage
- Standard Software for: Directory, Webmail, IMAP
- Individualized Software for Orange specific features and business logic

Example projects – Orange – IDM/IAM processing



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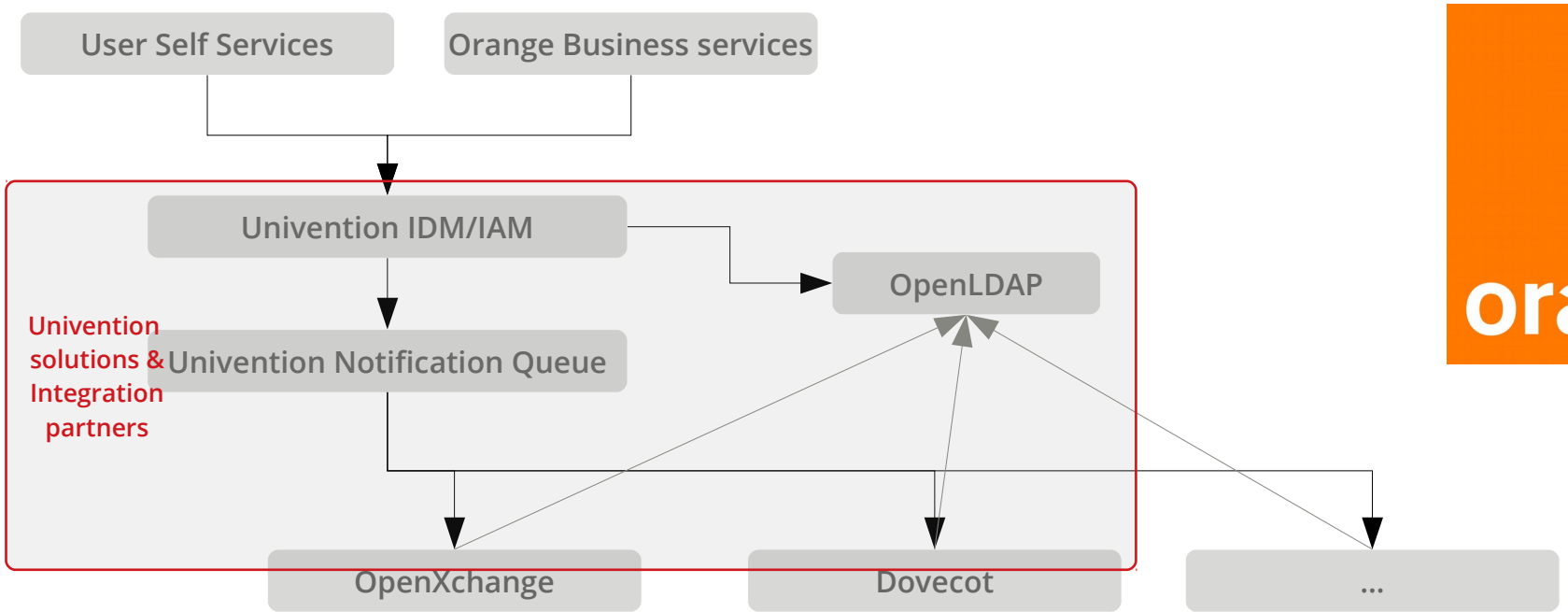
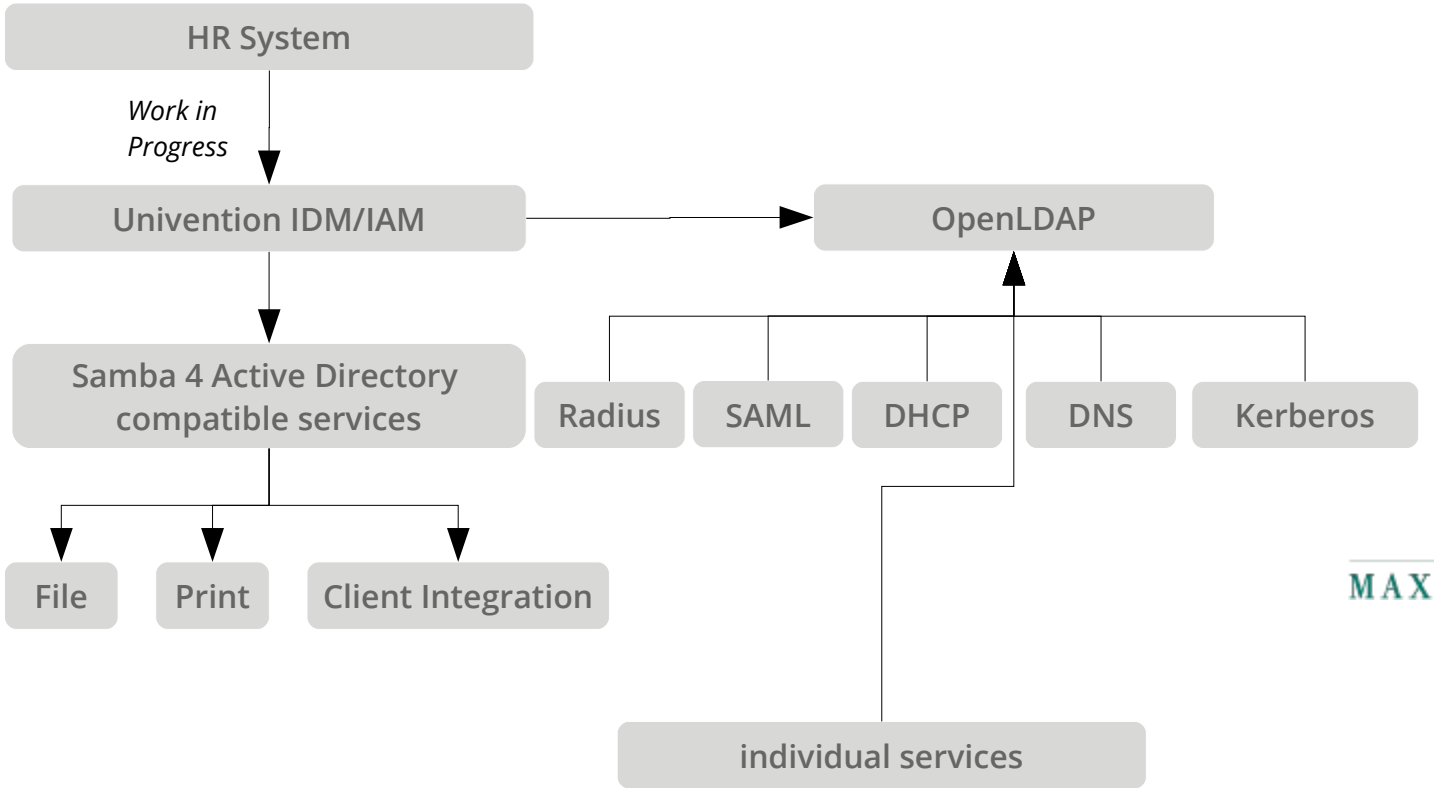


Example projects – Max Planck Institutes

- Framework agreement between Univention and Max Planck Gesellschaft
- Focus on standardized Intranet services:
  - IDM / IAM (often connected with HR)
  - Authentication (LDAP, Kerberos, Active Directory compatible)
  - Infrastructure and client Management (DNS, DHCP, Active Directory group policies)
  - File, Print, Mail, ...
- Individual Integration with services hosted by Institutes

Example projects – Max Planck Institutes – structure



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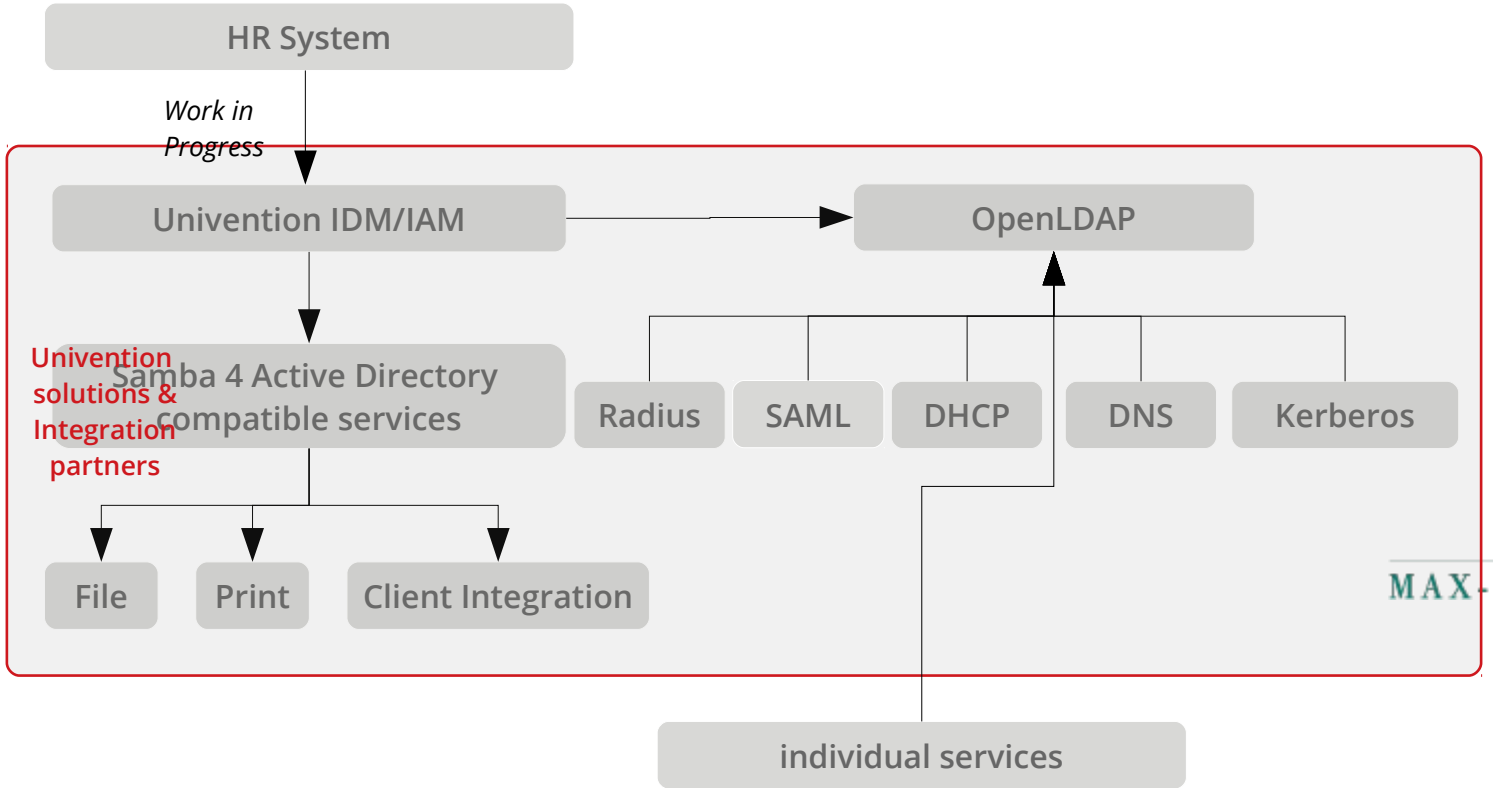

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- Largest Enterprise Open Source Event in Germany
- >400 participants, >30 solutions / companies represented
- 2020/01/23 + 24
- https://www.univention-summit.com

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