

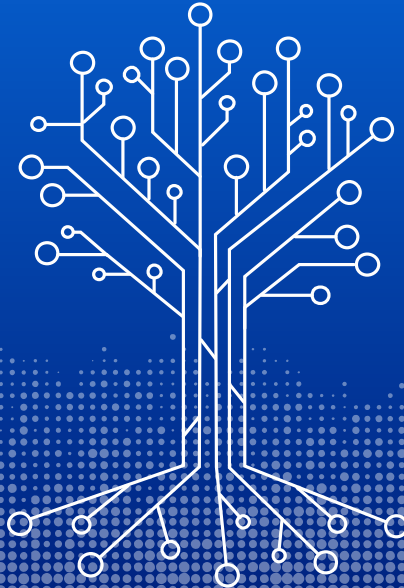


GAIA-X
data-infrastructure.eu

GAIA-X Deep Dive – 17.02.21

Deploy with GAIA-X

Jean Chorin – Cloud & Heat Technologies GmbH



Agenda

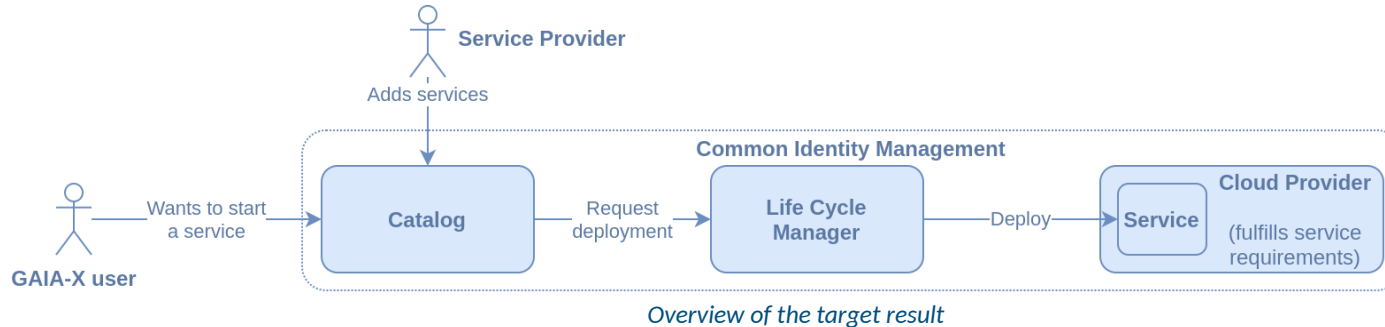
- Motivations and Goals
- Components of the prototype
- Design
- General overview
- Demo
- Prototype's future in the GAIA-X world

Motivations

- Several results created within the GAIA-X project → **We should evaluate and improve them**
 - Need to implement prototypes leveraging these results
 - Prototypes have to make use of selected GAIA-X Federated Services
- **Deploy with GAIA-X**, a simple prototype leveraging:
 - Identity Management
 - Self-Descriptions
 - Life Cycle Manager (*deploys and manages selected services*)

Use case

- User without in-depth cloud knowledge should be able to:
 - **select the right service for their purpose**
 - **deploy applications**
- Have a central Identity Management for all steps of the deployment
- Prototype started by the “Ein Ort für öffentlichen Code” initiative → want to promote FOSS in public sector
- Use **existing general solutions** for now, as the GAIA-X Federated Services are being developed

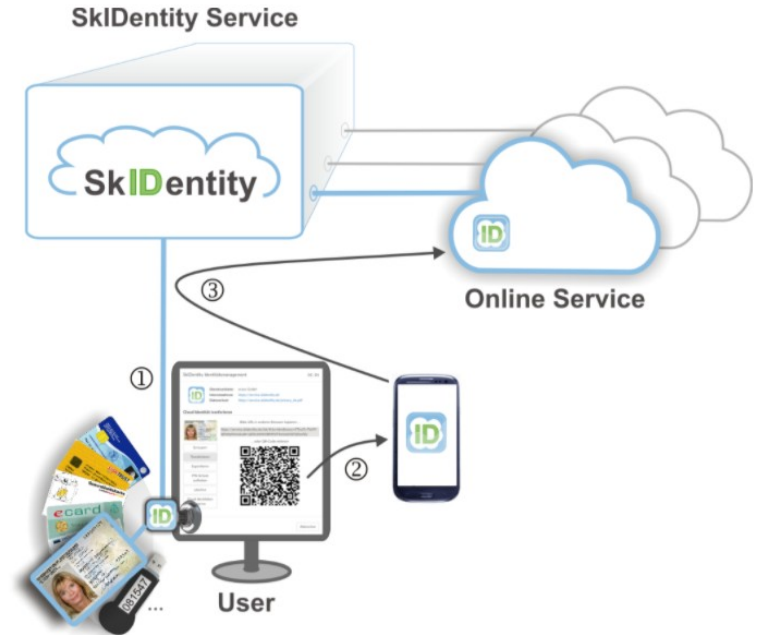


Prototype goals regarding GAIA-X

- Apply GAIA-X **principles**:
 - Aims to improve digital sovereignty: choose where the data is processed
 - GAIA-X Infrastructure Ecosystem aspects:
 - Automatic deployment of selected services
 - Central Identity Management for all services (deployed or not)
 - Open standards and FOSS are essential for this purpose
- Leverage **simple replacements of GAIA-X services** currently being designed:
 - Custom self-descriptions
 - Identity Management: **SkIdentity**
 - Life cycle management of services selected by a user: **Krake**

Identity Management

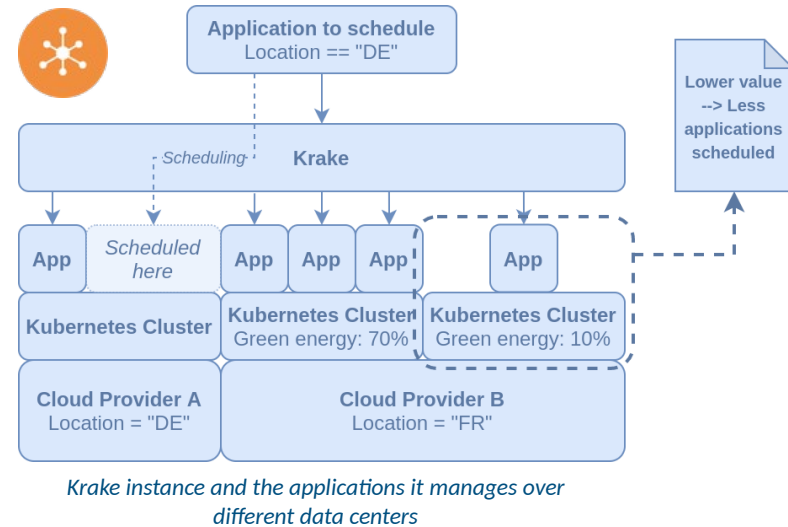
- Selected solution: **SkIDentity** (from ecsec GmbH)
- Created within the "Trusted Cloud" programme
- Leverage **electronic identity cards (eID)** for internet and mobile applications
- Allow the user to control the information given to an entity and provide **consent**
- Feature **self-sovereign identity** management and derived **credentials**
- Received multiple international **awards** and **certifications**



- 1) The user authenticates with its ID card 2) The identity can be transferred to a cellphone
3) It can then be used for online authentication

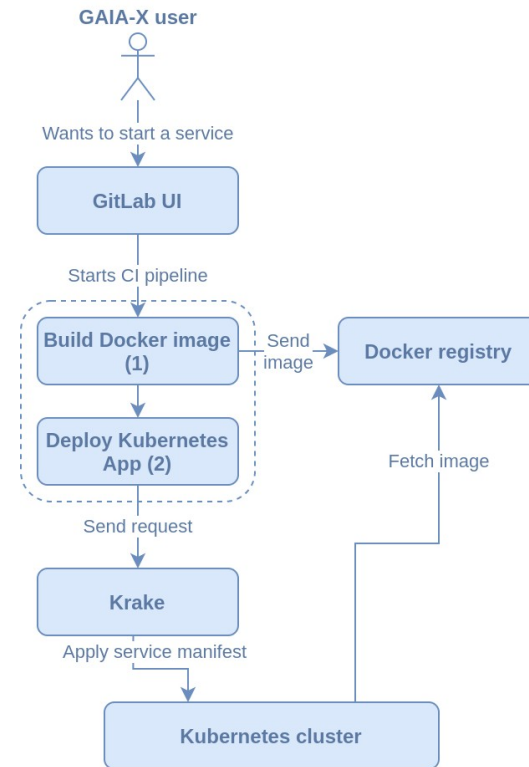
Life Cycle Manager

- Selected solution: **Krake** orchestrator
- **Open source**, contributed by **Cloud&Heat**
- Manage life cycle of applications **across different data centers and providers**
- Currently supports **Kubernetes** applications and OpenStack **Magnum** clusters
- Can **schedule and migrate** deployments to fit **user-defined requirements**, following:
 - **Labels** like location, ISO 27001 certification, ...
 - **Metrics** like latency, energy usage, electricity cost, ...



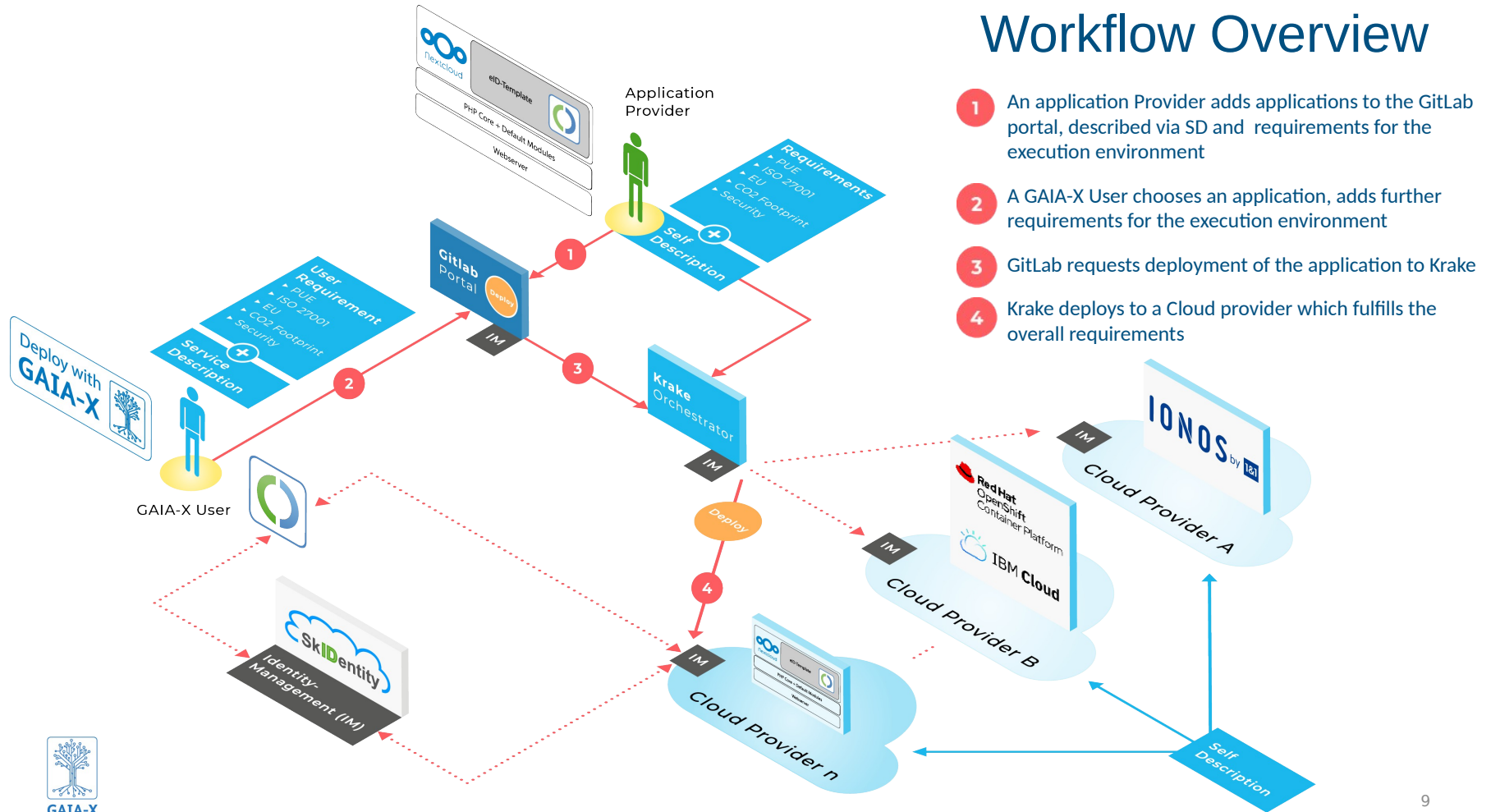
Prototype's design

- Implemented partially by **D3TN**
- Define the Services and requirements as **Self-Descriptions** (SD) files
- Integrate Krake via **GitLab CI** (Continuous Integration) to deploy software:
 - Deployment files and constraints (metrics, labels): part of the GitLab project → **subject to version control**
 - Leverage **GitLab CI job templates** (core element) for:
 - (1) **Building a Dockerfile**, push the image to a Docker image registry
 - (2) **Deploying the Kubernetes apps** via Krake (using built Docker image)
- In the following demo: deploy a **NextCloud instance**
- All elements of prototype leverage the **SkIdentity** service for Identity Management



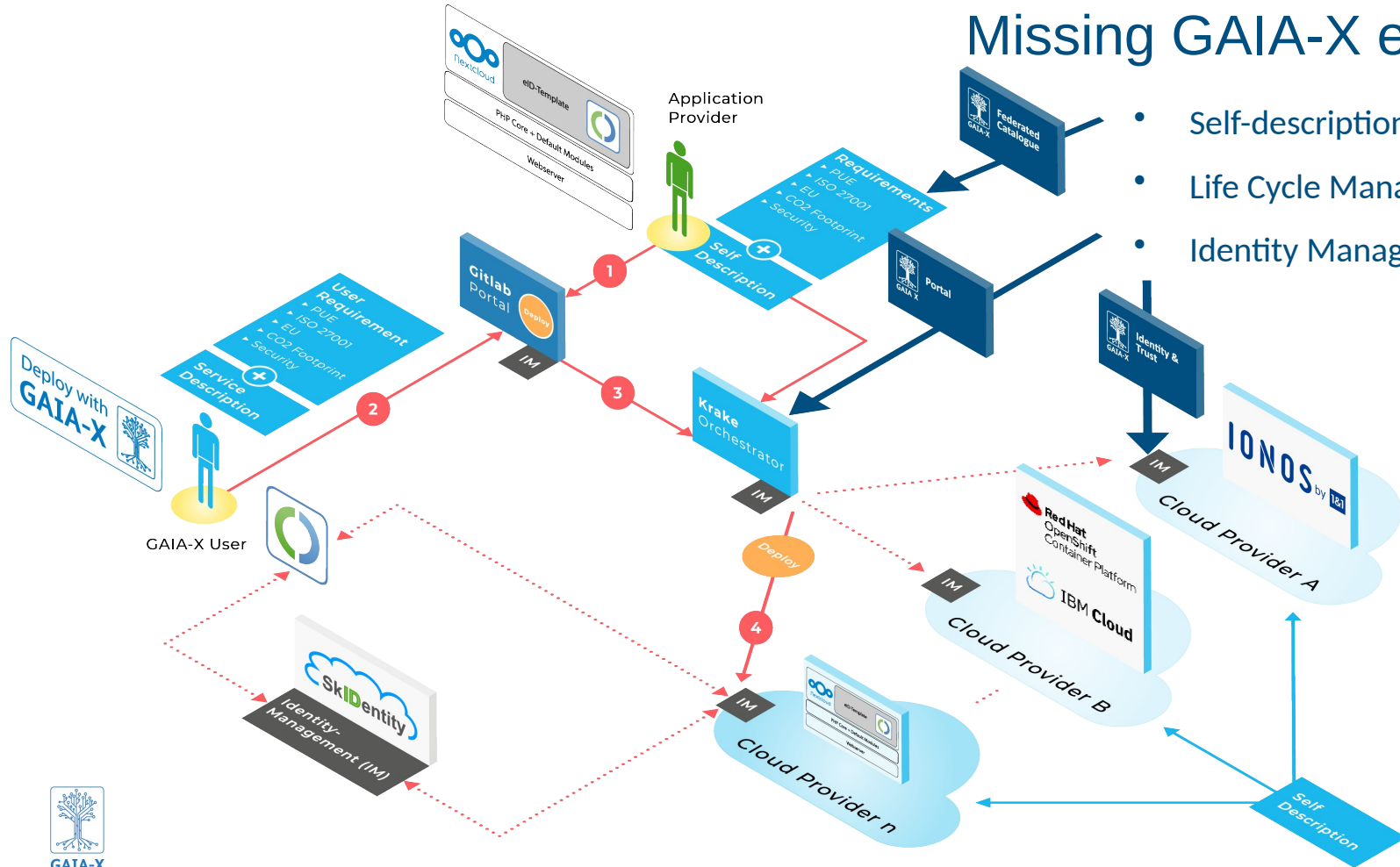
Workflow of the design in GitLab

Workflow Overview



Missing GAIA-X elements

- Self-description templates
- Life Cycle Manager
- Identity Management



Demo

The prototype's future in the GAIA-X world

- Currently using non-GAIA-X services and tools, because the GAIA-X implementation is **not available** yet
- Following services are specific to this prototype, but will be replaced in a later version **as soon as the corresponding GAIA-X services are available**:
 - Custom self-description files → **Approved self-description files in Federated Catalog**
 - SkIDentity → **Identity and Trust**
 - Krake → **Portal and Life Cycle Manager**

Partners and Contacts

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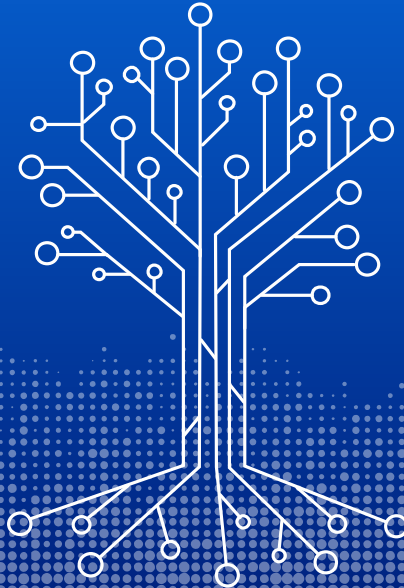


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Backup slides

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"Ein Ort für öffentlichen Code" *(literally: "A place for public code")*

- “public” reflects the **public sector or entities** as “consumer”
- Joint initiative of industry, NGOs, local authorities
- Motivation: **digital sovereignty of public entities**
- Prevent **dependence to small number of large software providers**, which means in consequence:
 - Legal and security certainty (personal data, GDPR...)
 - More flexibility (e.g. avoid vendor lock-in, software gets EOL'd)
 - More innovation (e.g. opportunities to customize existing product)

→ "Ein Ort für öffentlichen Code" wants to reuse and adapt existing FOSS