# Sovereign Cloud Stack: Open Source Cloud & Container Stack

## Sovereign Cloud Stack

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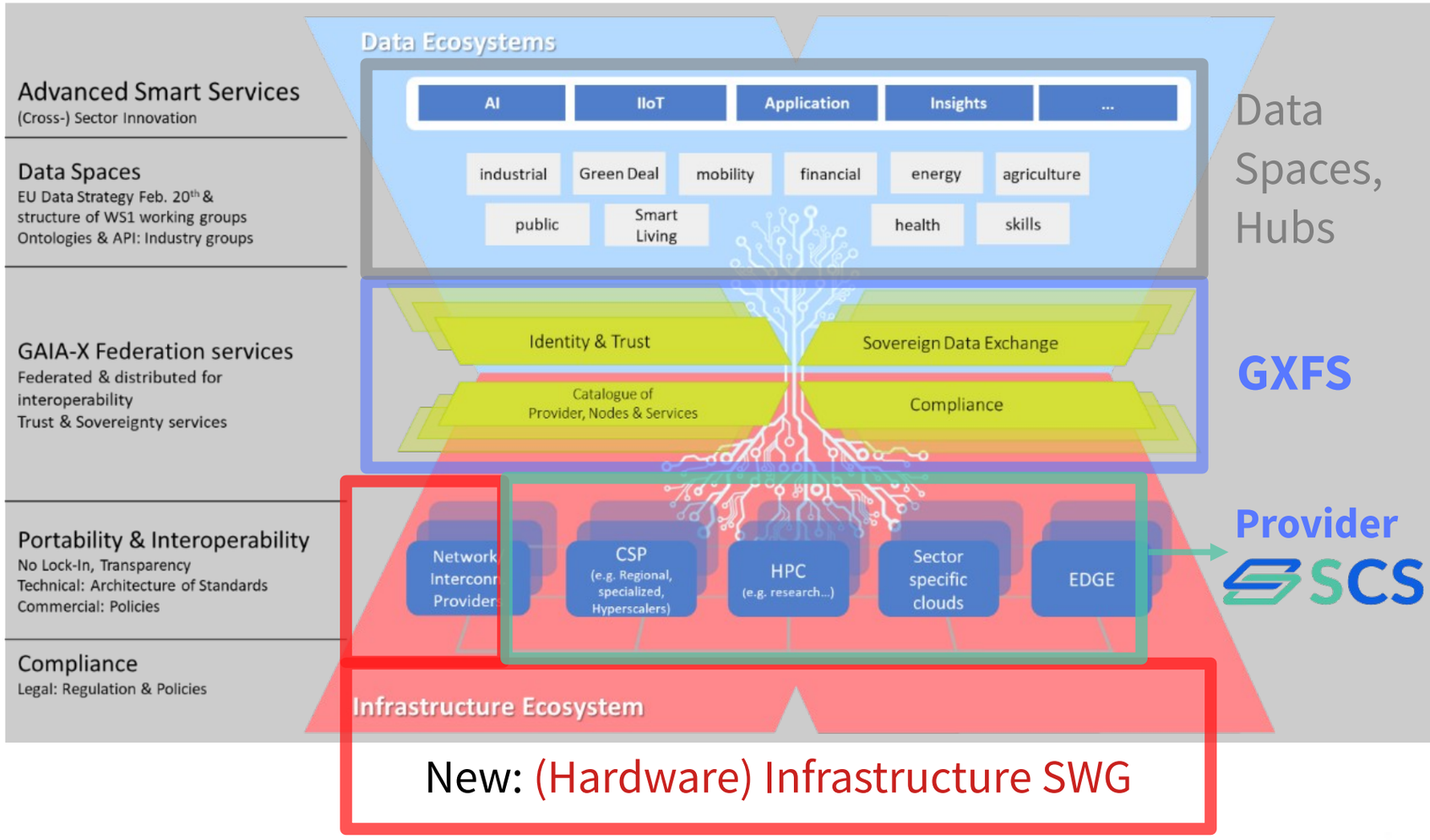
# GAIA-X Map




New: (Hardware) Infrastructure SWG

GAIA-X's mission is to strengthen digital sovereignty for business, science, government and society by empowering the development of innovation ecosystems. Digital sovereignty means that these individuals, organizations and communities stay in complete control over stored and processed data and are enabled to decide independently who is permitted to have access to it.

Source: (w/o frames)
https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Publications/gaia-x-the-european-project-kicks-of-the-next-phase.pdf?__blob=publicationFile&v=7

# Status Quo & Sovereign Cloud Stack vision

GAIA-X

## Hyperscalers dominate the cloud market

- Dependencies (economic, strategic, legal challenges) → digitization barrier
- Centralized control over platforms and data access
- Control and Value creation outside Europe

## Open Source Building blocks available for alternatives

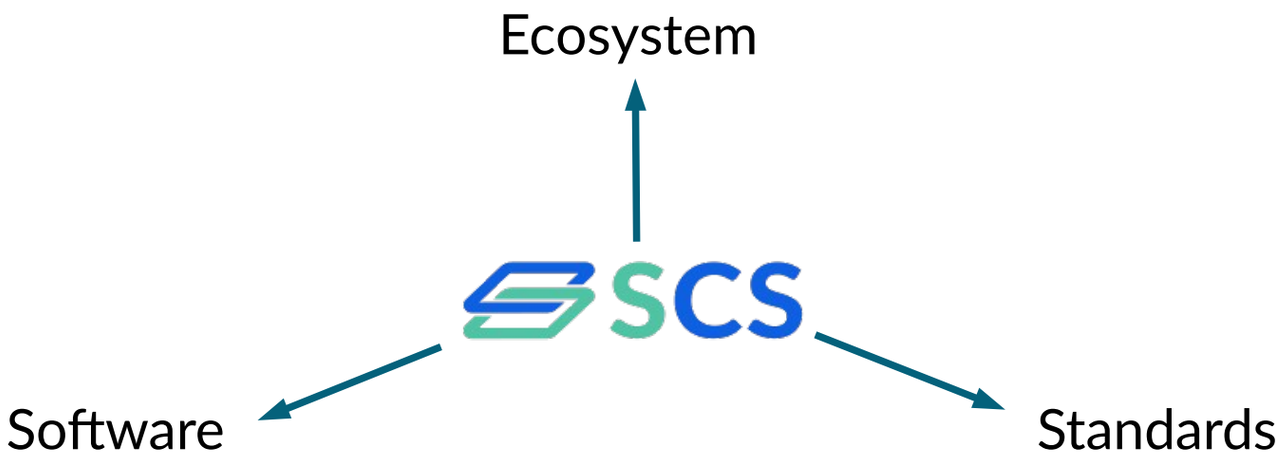
- Many disconnected efforts in many companies and a few CSPs to build & run their own stacks
- Operating such a dynamic distributed platform well is hard
- Every team solves curation, integration, testing, automation, certification, operations on their own
- Many somewhat incompatible disconnected offerings, no alternative

## Sovereign Cloud Stack creates a network of many of these teams.

- Define and implement the stack together (incl. Operations!) as open source (in an open community process)
- Certifiable standardized interfaces
- Make it easy for users to federate clouds

# SCS Deliverables

- CSPs: Share Ops Best Practices
- Transparency on Quality, RCAs
- “Open Ops”
- One set of interfaces for ISVs, Operators, Consultants, ...
- Stretch goal: Cross-reselling




- Complete Stack: IaaS, KaaS, (PaaS)
- As Open Source (4 Opens)
- Modular
- Including Ops: Lifecycle Mgmt, Infra, CI, Moni
- Including Feder-atable IAM

- Strict standards: IaaS, k8s, k8s cluster mgmt Behavior (e.g. AZ definition), roles
- Ops standards (e.g. updating!)
- SLAs
- GAIA-X Self-Desc

# SCS project status

## Organization

- Project team started in early 2020 with SPRIN-D funding
- Part of GAIA-X (WS2/SWG 1.4 → GAIA-X Community Project under iTC Provider WG)
- BMWi funding requested (real start planned for Mar 2021, team @ OSB Alliance e.V. coordinating partners)
- Homepage (https://scs.community/), source code on github/SovereignCloudStack
- Lined up ~15 engineers from partners regularly contributing code/artifacts, weekly sprints

## Standardization & Ecosystem

- Working with existing providers: Betacloud Solutions, PlusServer, CityNetwork, T-Systems, OVH, Cloud&Heat, gridscale, StackHPC, IONOS, ...
- Working with industry (private clouds @ e.g. automotive, HPC)
- Working with public sector IT providers (Germany)

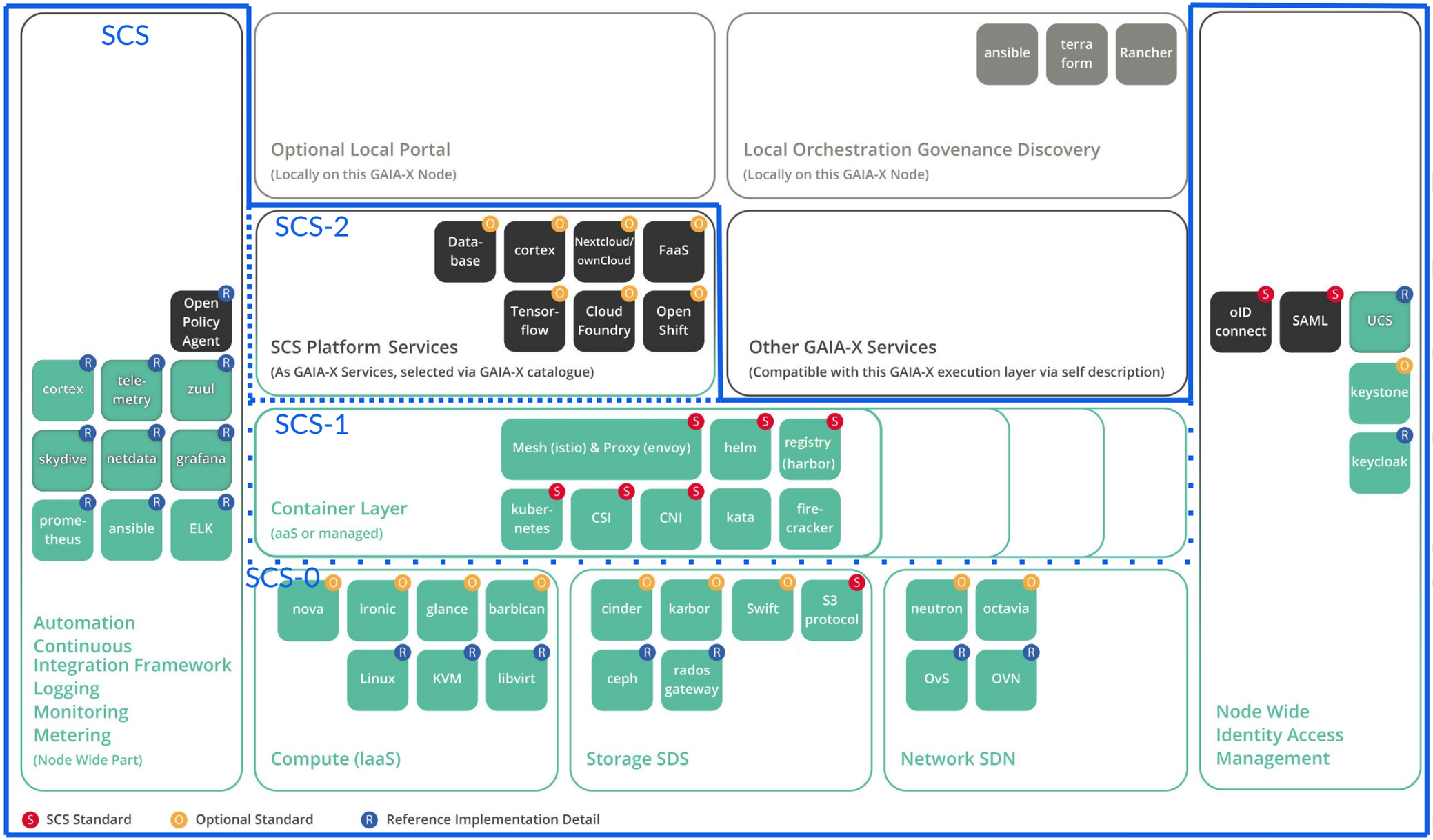
## Implementation

- Automated deployment of federatable IAM, Ops Tooling (LCM, Monitoring, CI, Security, telemetry), SDS, SDN, IaaS (OpenStack) – daily deployments (CI/CD) on virtual environments (city, plus, ...)
- KaaS is WIP (k8s cluster API + Gardener), CNI+CSI, Container tooling (helm, mesh, registry, monitoring, tracing)
- PaaS => ecosystem, develop standardized base in 2022
- Release Plan: R0: 4/2021, R1: 9/2021, R2: 3/2022, ...

## Transparency & Certification

- GAIA-X self descriptions exist (rudimentary)
- TBD: Convert chosen standards (all open source!) into automated standards compliance tests

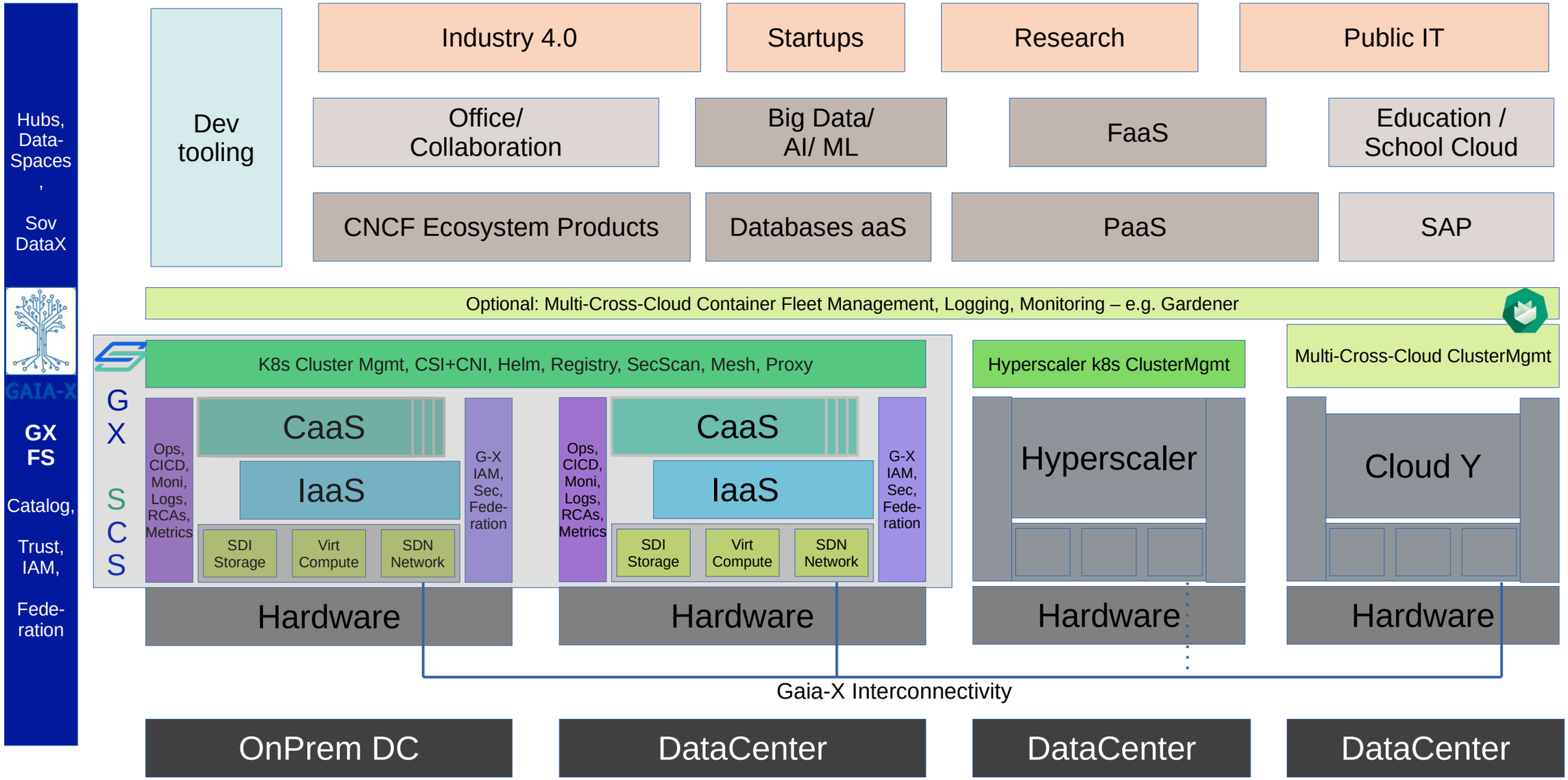
# SCS Architecture (current status)



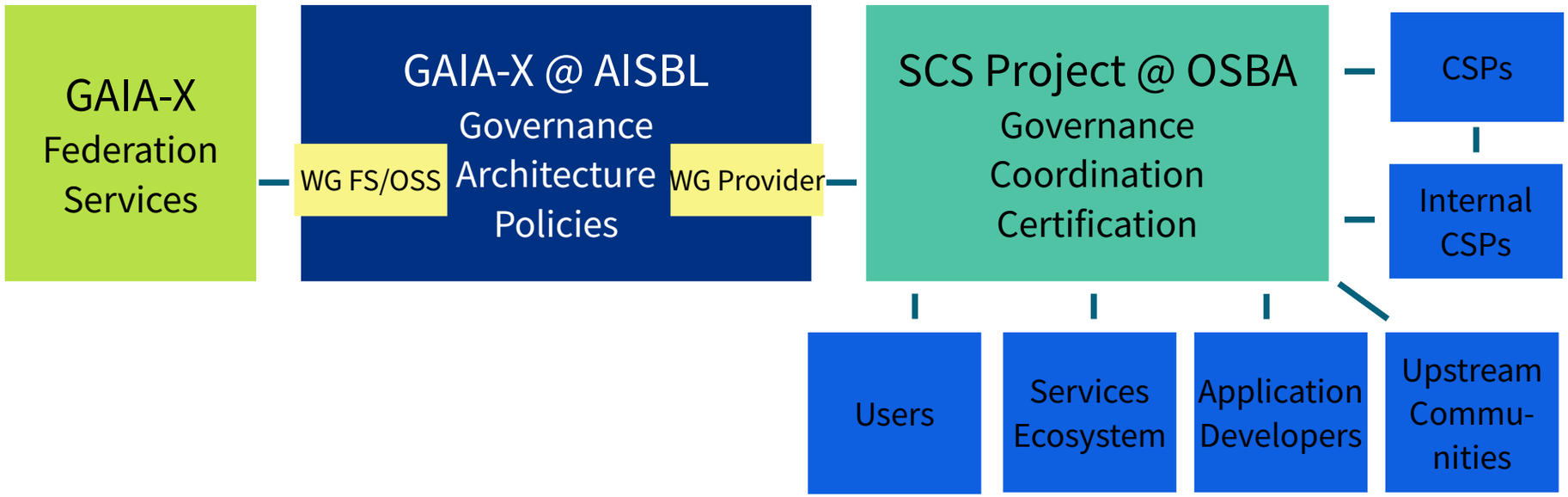

GAIA-X

Dive: SCS

# IT Ecosystem with GAIA-X



# How SCS works




## Open Software Development

- All Open Source (OSI, mostly ASL2, DCO), distributed copyright, code on github, Open Design, Open Development by Open & Diverse Community
- Contributors from all groups → Join us!

## Open Operations – „Open Source for Ops“

- We collaborate on operations, building and sharing automation & knowledge

# How SCS, GAIA-X might help AI

## GAIA-X DataSpaces, Sovereign Data Exchange

- Access to lots of data required for training AI models
- Transparency creates trust needed to store/process data off-premise

## AI frameworks & AI accelerators (GPU/TPU/FPGA/...)

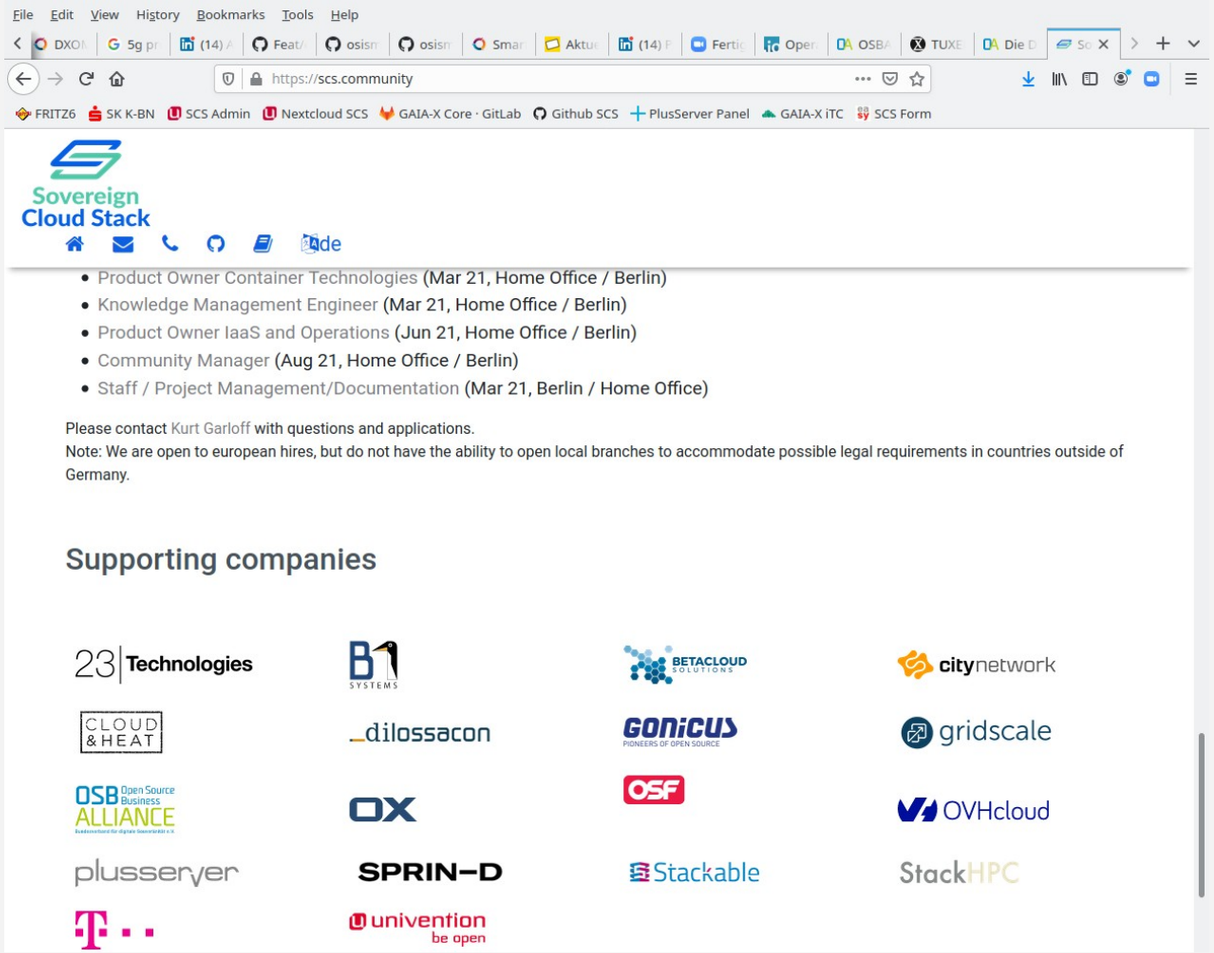
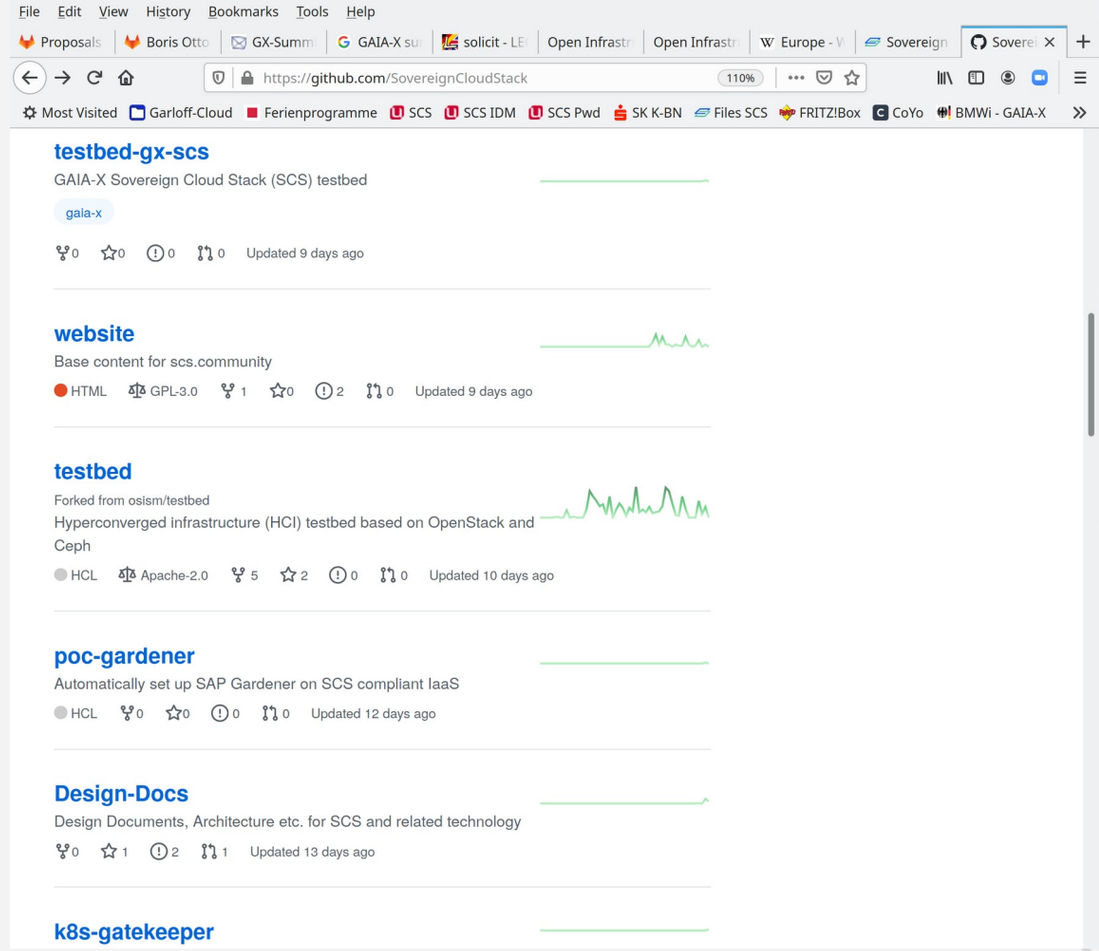
- Ecosystem on top of SCS-1
- Standardized services (Big Data, keras/tensorflow/PyTorch/...) planned for SCS-2 project (2022)

## Standardized sovereign platform available on-premise & public

- Develop once, run everywhere
- Simplified, Edge optimized setups for factory floors (SCS-2)

## Your input?

# Webpage & github

## https://scs.community/ github/SovereignCloudStack

GAIA-X