



Sovereign Cloud Stack: Open Source Cloud & Container Stack

Sovereign Cloud Stack

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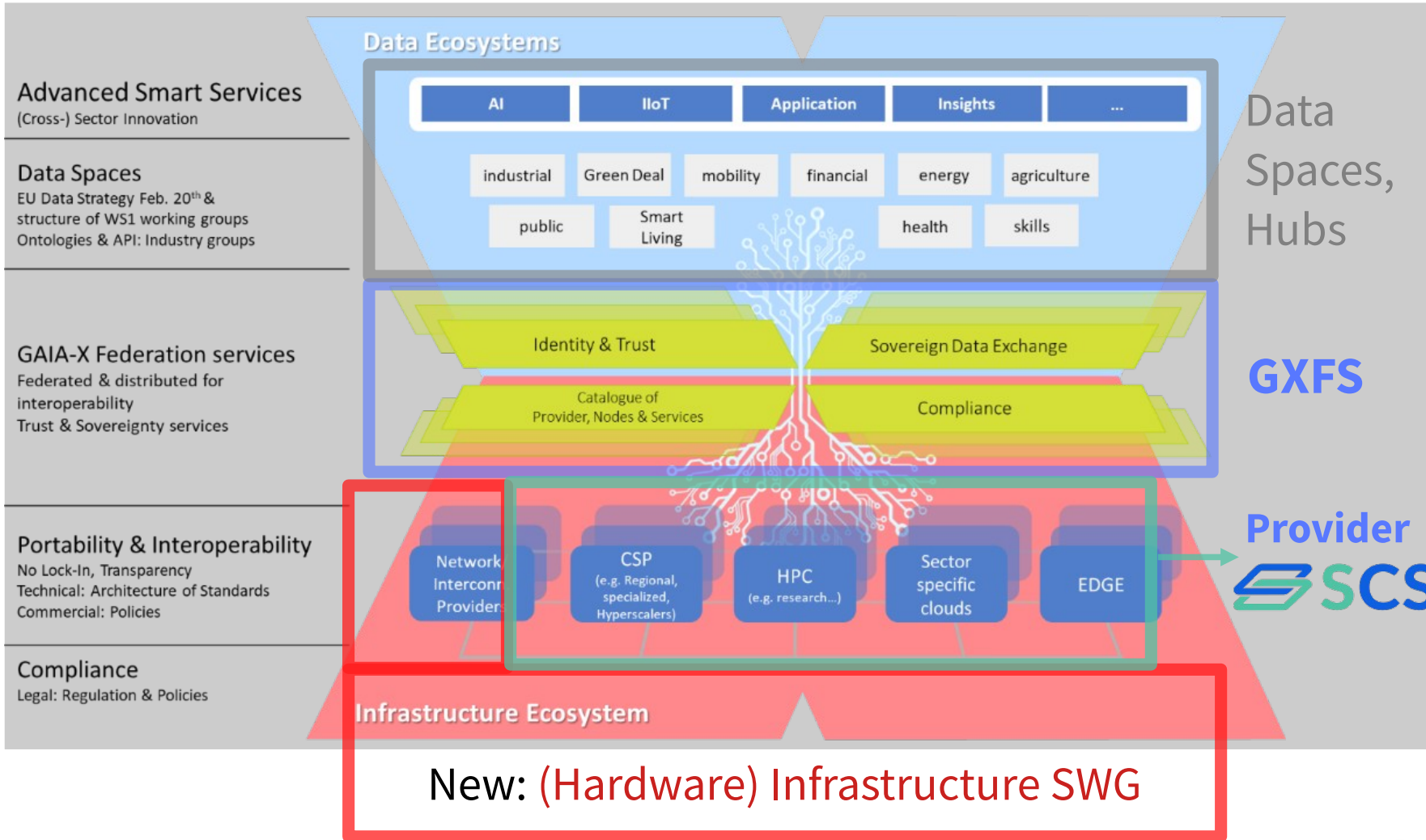
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KI Innovationswettbewerb

2021-03-12

GAIA-X Map



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/GAIA-X/Redaktion/EN/Publications/gaia-x-the-european-project-kicks-of-the-next-phase.pdf?__blob=publicationFile&v=7



GAIA-X

Status Quo & Sovereign Cloud Stack vision

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



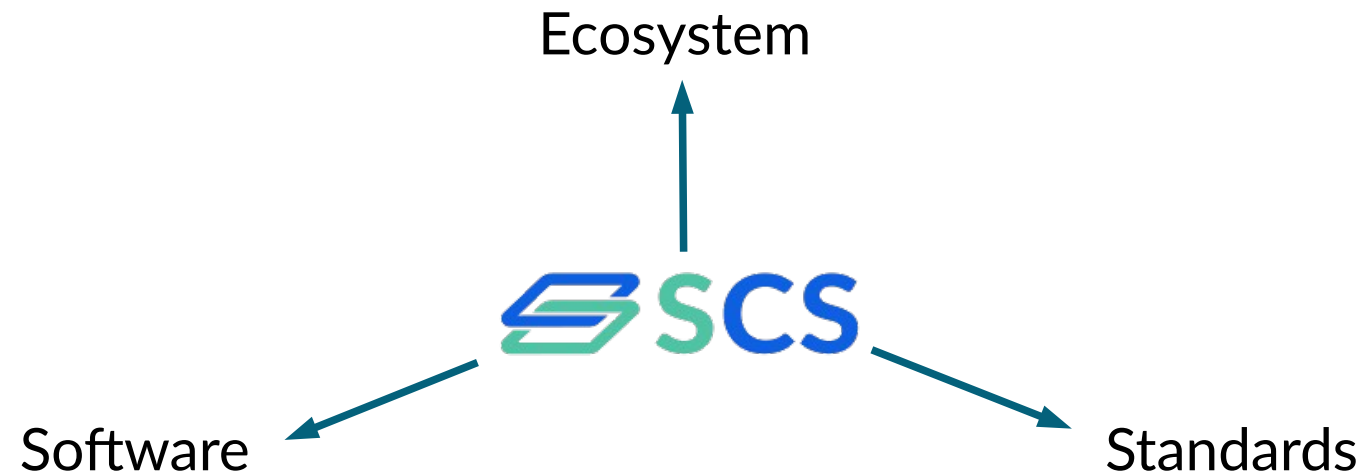
SCS Deliverables



GAIA-X

- 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 Federatable 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

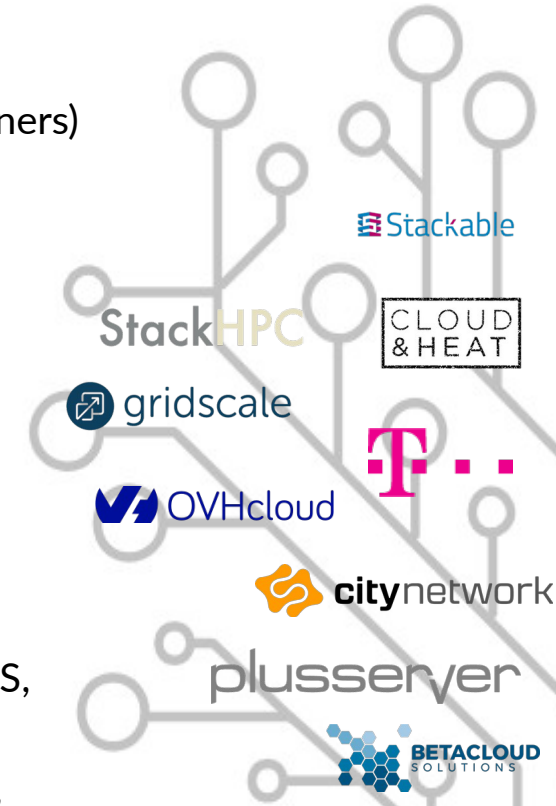
- Working with existing providers: Betacloud Solutions, PlusServer, CityNetwork, T-Systems, OVH, Cloud&Heat, gridscale, StackHPC, IONOS, ...
- Working with industry (private clouds @ e.g. automotive, HPC)
- Working with public sector IT providers (Germany)

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

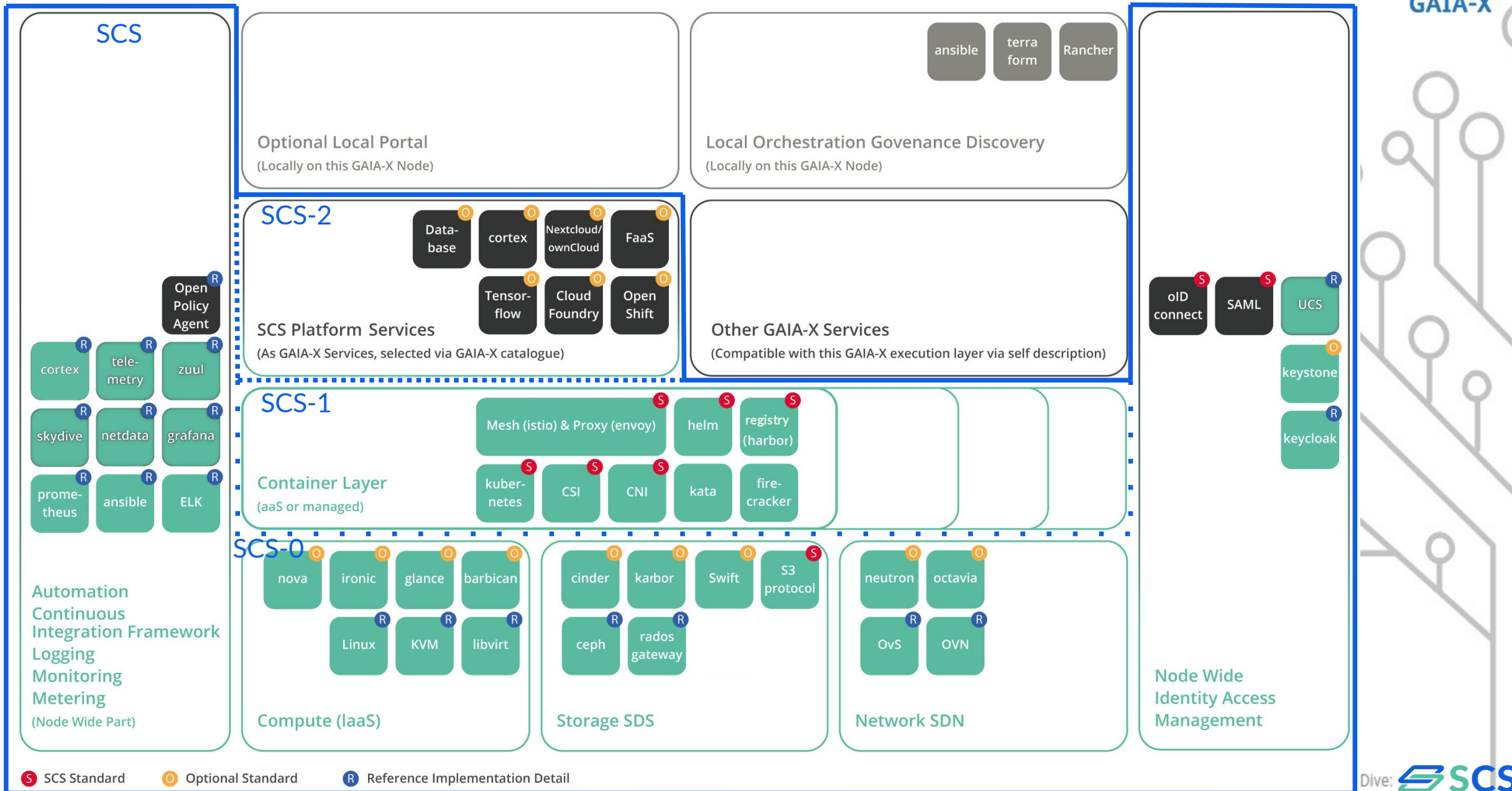
- GAIA-X self descriptions exist (rudimentary)
- TBD: Convert chosen standards (all open source!) into automated standards compliance tests



SCS Architecture (current status)



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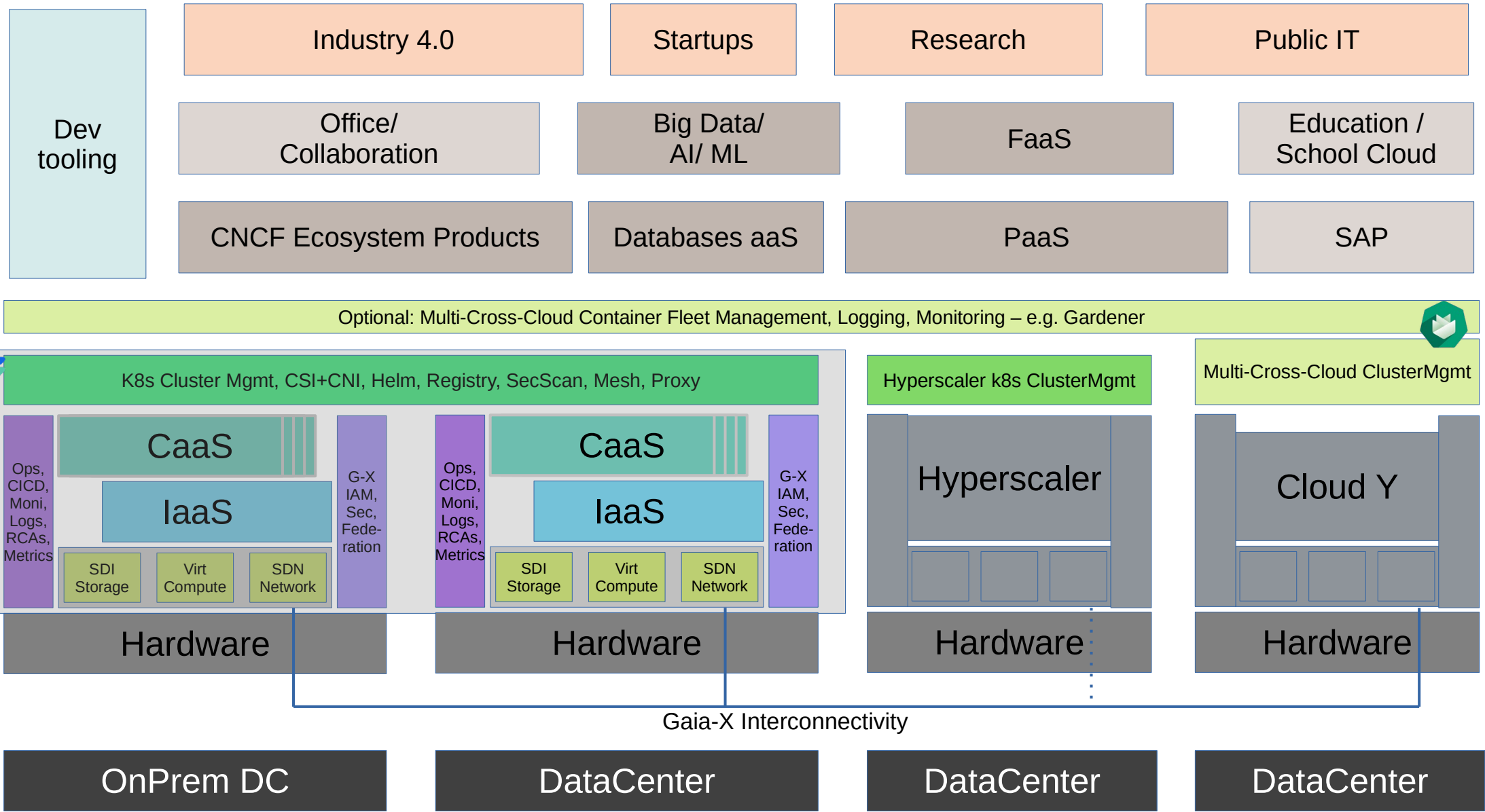
S SCS Standard
 O Optional Standard
 R Reference Implementation Detail

IT Ecosystem with GAIA-X



GAIA-X

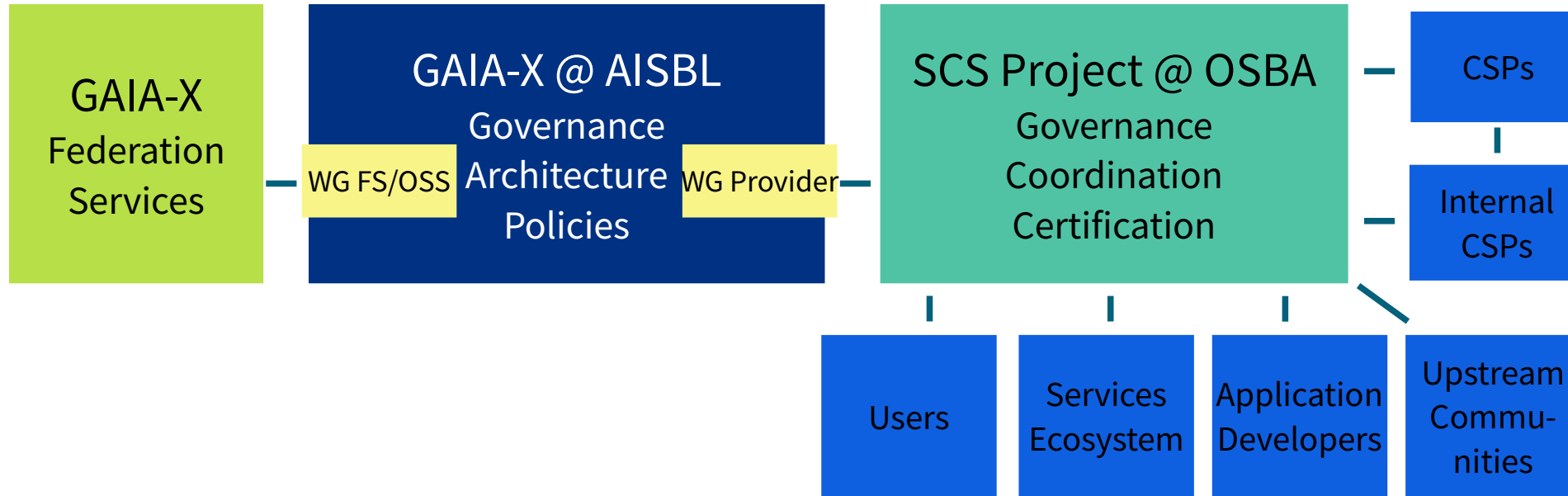
Hubs, Data-Spaces
Sov DataX
GAIA-X
GX FS
Catalog, Trust, IAM, Federation



How SCS works



SPRIN-D



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



GAIA-X

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

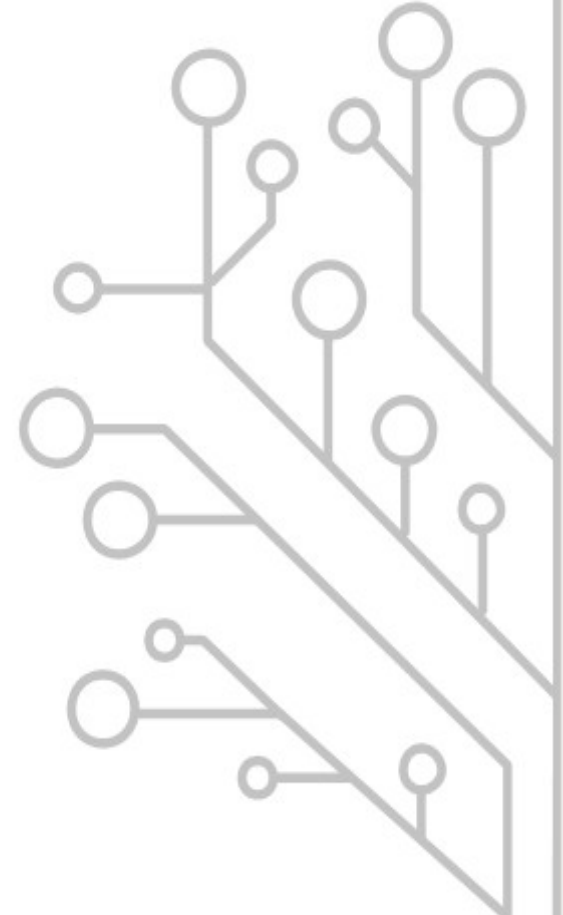
AI frameworks & AI accelerators (GPU/TPU/FPGA/...)

- 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?



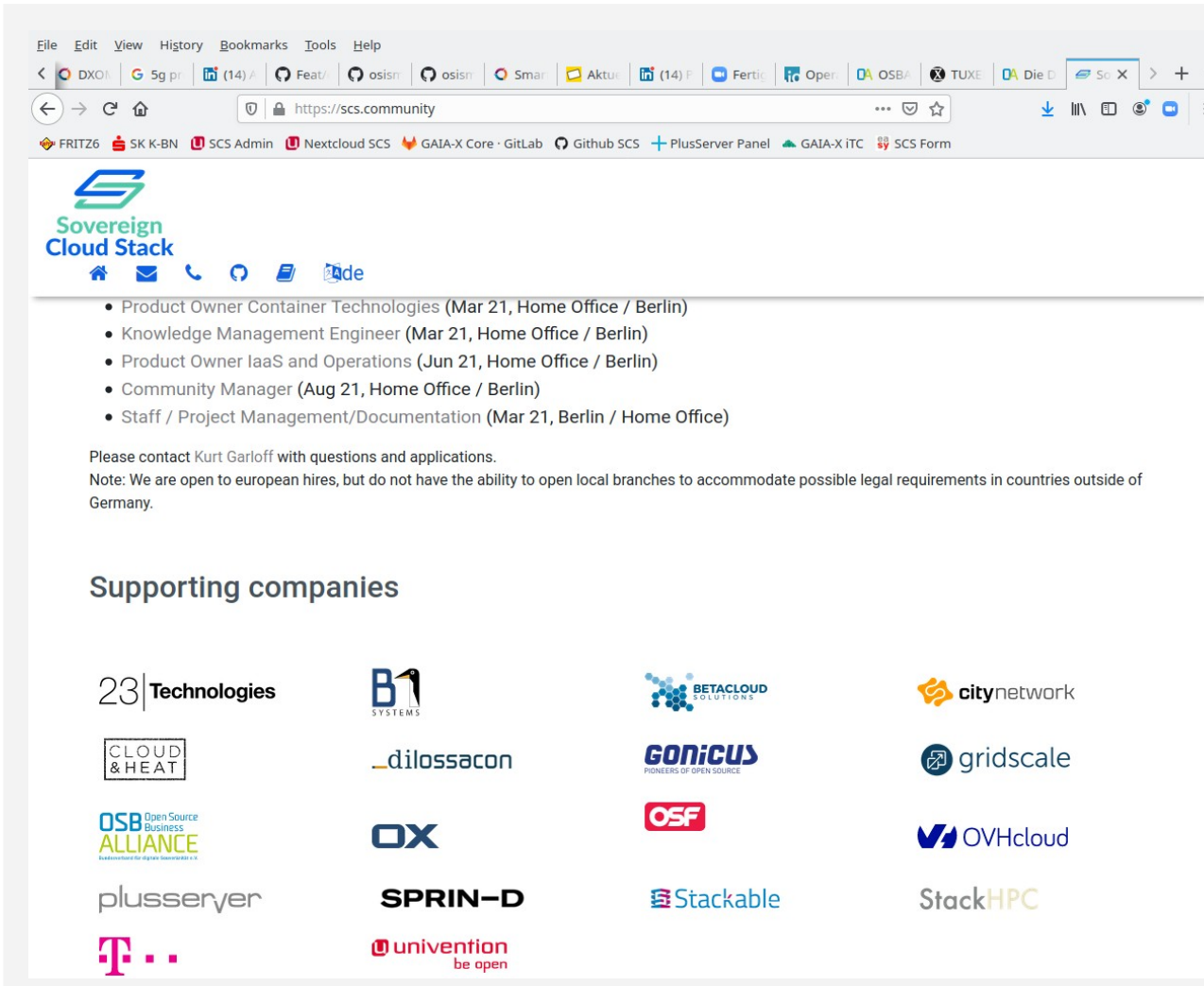
Webpage

<https://scs.community/>

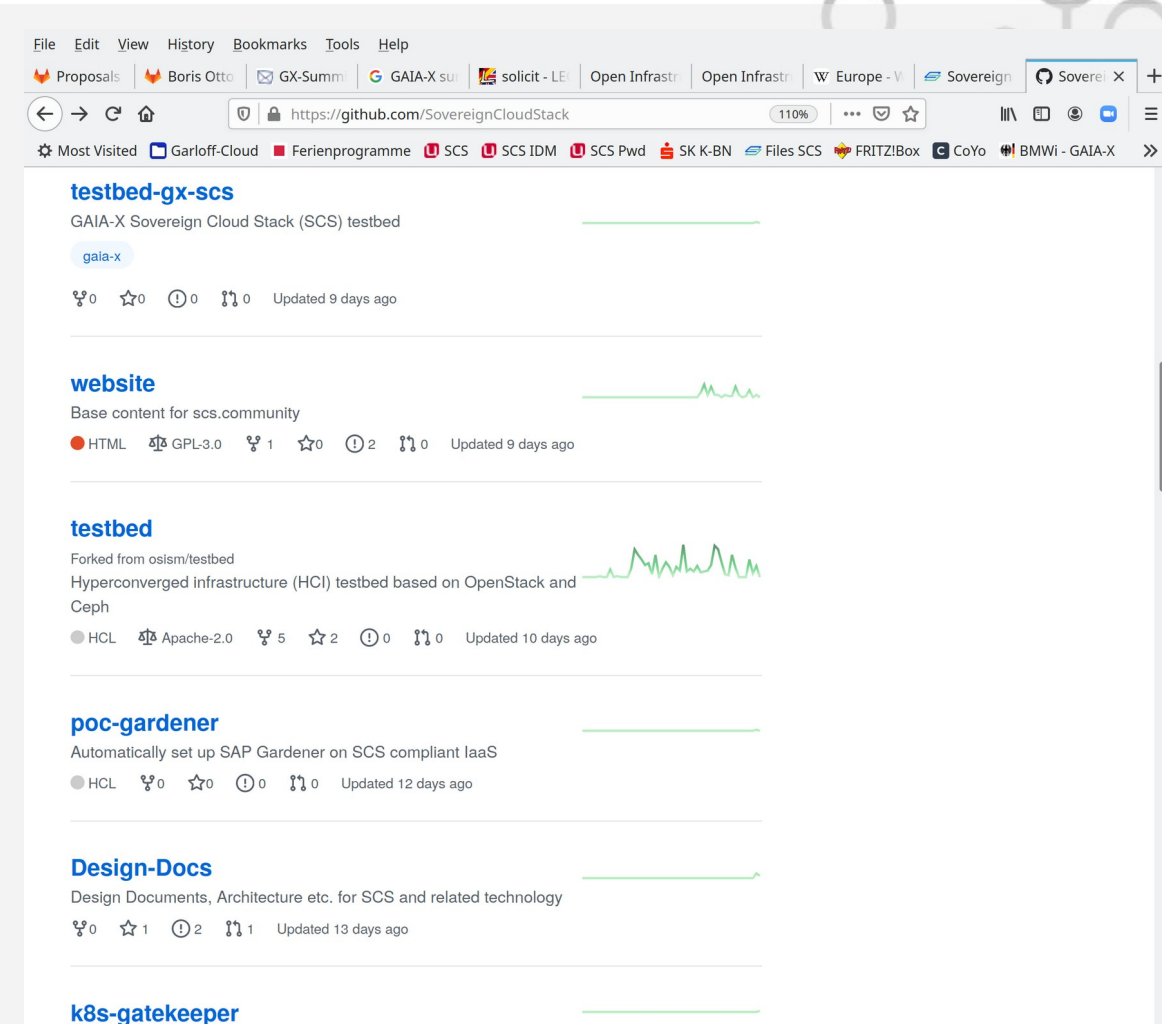
&

github

[github/SovereignCloudStack](https://github.com/SovereignCloudStack)



The screenshot shows the homepage of the Sovereign Cloud Stack website. At the top left is the logo for Sovereign Cloud Stack. Below it are navigation icons for home, mail, phone, refresh, document, and code. A list of roles and locations is provided, including Product Owner Container Technologies (Mar 21, Home Office / Berlin), Knowledge Management Engineer (Mar 21, Home Office / Berlin), Product Owner IaaS and Operations (Jun 21, Home Office / Berlin), Community Manager (Aug 21, Home Office / Berlin), and Staff / Project Management/Documentation (Mar 21, Berlin / Home Office). A contact note for Kurt Garloff is also present. The bottom section, titled "Supporting companies", displays logos for 23 Technologies, B1 SYSTEMS, BETA CLOUD SOLUTIONS, citynetwork, CLOUD & HEAT, dilossacon, GONICUS, gridscale, OSB Open Source Business ALLIANCE, OX, OSF, OVHcloud, plusserver, SPRIN-D, Stackable, and StackHPC, along with the T-Mobile logo and univention be open.



The screenshot shows the GitHub repository page for SovereignCloudStack. The repository is titled "testbed-gx-scs" and is described as "GAIA-X Sovereign Cloud Stack (SCS) testbed". It has 0 forks, 0 stars, 0 issues, and 0 pull requests, and was updated 9 days ago. Below this are three other repositories: "website" (Base content for scs.community, 1 fork, 0 stars, 2 issues, 0 pull requests, updated 9 days ago), "testbed" (Forked from osism/testbed, Hyperconverged infrastructure (HCI) testbed based on OpenStack and Ceph, 5 forks, 2 stars, 0 issues, 0 pull requests, updated 10 days ago), and "poc-gardener" (Automatically set up SAP Gardener on SCS compliant IaaS, 0 forks, 0 stars, 0 issues, 0 pull requests, updated 12 days ago). At the bottom, "Design-Docs" (Design Documents, Architecture etc. for SCS and related technology, 0 forks, 1 star, 2 issues, 1 pull request, updated 13 days ago) and "k8s-gatekeeper" are listed.