

Sovereign Cloud Stack

Open Source Cloud & Container Stack for Gaia-X

How does it work?

Dr. Manuela Urban, Dirk Loßack, Eduard Itrich, Kurt Garloff (OSB Alliance e.V.)
Christian Berendt (OSISM/23tech)

project@scs.sovereignit.de

2021-08-17



OSB Open Source
Business
ALLIANCE
Bundesverband für digitale Souveränität e.V.

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



gaia-x

Status Quo & Sovereign Cloud Stack vision

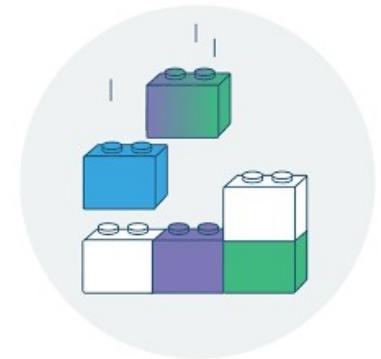
Hyperscalers dominate the cloud market

- 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 mostly disconnected efforts in many companies, research institutes and some CSPs to build & run their own stacks
- Operating such a dynamic distributed platform well is very hard
- Every team solves curation, integration, testing, automation, certification, operations on their own (duplicated efforts)
- Many somewhat incompatible disconnected offerings, don't sum up to a viable alternative

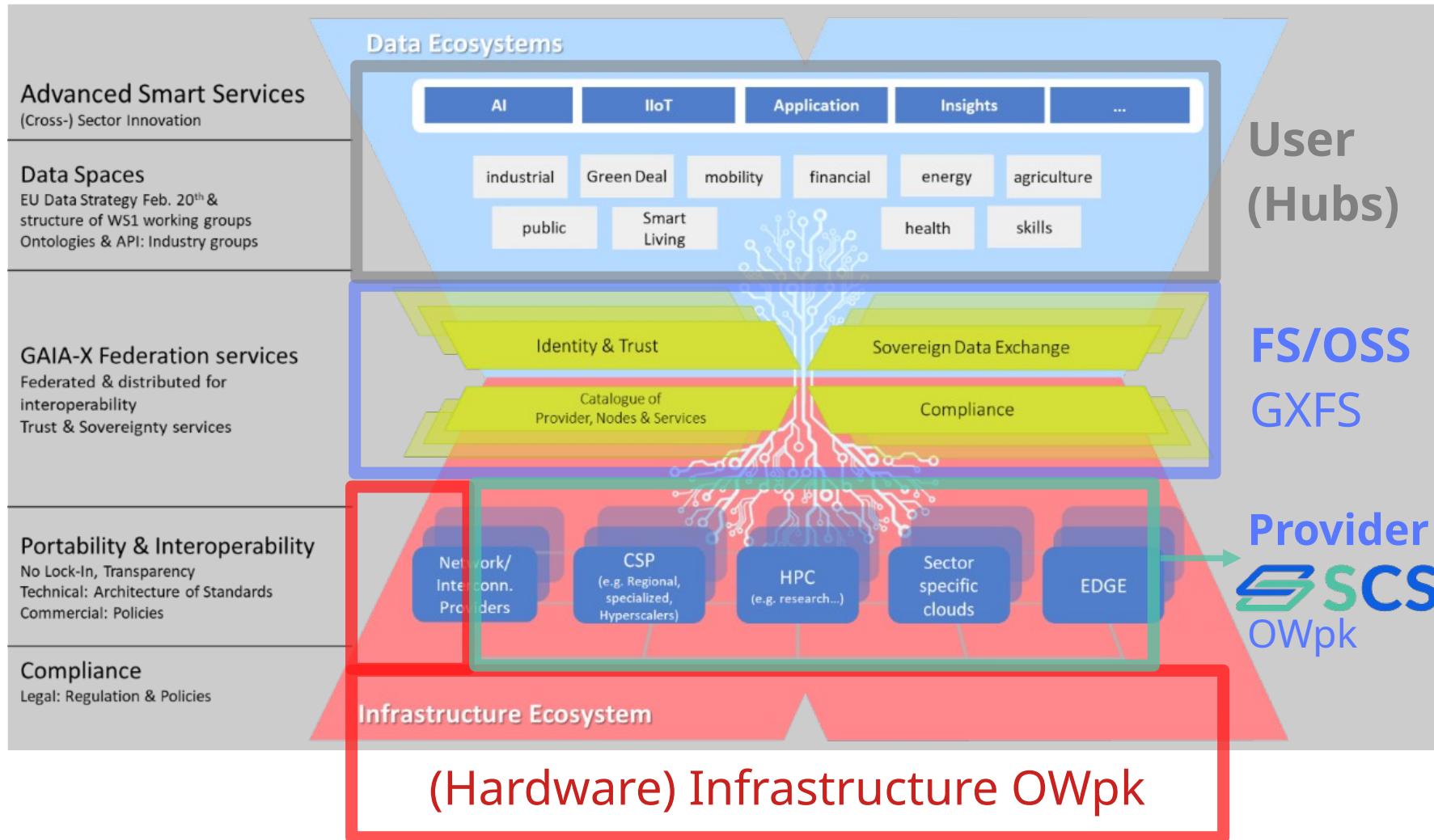


Sovereign Cloud Stack creates a network of many of these teams

- Define and implement the stack together as open source (in an open community process) and also tackle operational topics together ("Open Operations")
- Certifiable standardized interfaces
- Make it easy for users to federate clouds



Gaia-X Conceptual Map



Source: (w/o frames)

<https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Publications/gaia-x-the-european-project-kicks-off-the-next-phase.pdf?fbclid=IwAR0yJLjPQWzv7>

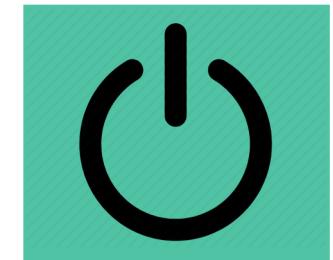


gaia-x

SCS Goals & Vision

Standardization

- Of the offered interfaces (compatibility for users)
- Operator – Focus: Configuration, Operations Tooling, Continuous Ops Processes
- Create scale advantages for all



Certification

- Verifiable Compatibility/Interoperability, Quality, Security



Transparency

- Completely Open Source Software, Open Community, Open Design and Development
- Open Ops: Configuration, Operational Processes and Operations Knowledge (new!)
- GAIA-X Self-Descriptions



Sustainability

- Long-term existence of SCS
- Contribute back to existing upstream projects
- Efficient usage of resources

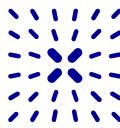


Federation

- Network of federated, compatible providers is better than monolithic structure
- Allows for specialization and differentiation



=> Relevance as one federated platform



gaia-x

SCS value to Gaia-X ecosystem

SCS provides one viable option to provide trustable, secure and fully sovereign infrastructure (IaaS/CaaS/KaaS/PaaS)



- Full technology control (fully open source, design, open development, open community)
- Can be implemented in-house or by CSP (and be federated – if wanted)
- SCS works within Gaia-X to help define standards and ensure compliance, deliver SD templates

Helping to validate Gaia-X

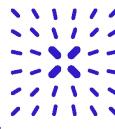
- Working closely with GXFS to validate concepts and implementation

Standardization Value (for providers that chose to comply with SCS)

- SCS defined IaaS/CaaS/KaaS/PaaS standards can be more precise/specific (less inclusive) than Gaia-X rules – technical decisions that make a difference to DevSecOps teams
- Providers can chose to only use a subset of SCS implementation (or even none of it) and still fulfill all relevant SCS compliance tests
- Ecosystem value – services developed and tested against one SCS implementation working on all.

Implementation Value (for providers that chose to use most of SCS implementation)

- Providers can chose to use most or all of SCS
- Saving a lot of work for architecture, curation, planning, implementation, testing by collaborating
- Benefitting a lot from shared operational practices, tools and encouraged Ops collaboration
- Commoditizing the lower layers of infrastructure



SCS project status

gaia-x

Organization

- Project team started in early 2020 with SPRIN-D funding
- Part of GAIA-X (WS2/SWG 1.4 → GAIA-X (Open) Work Package SCS under TC Provider WG)
- BMWi funding (14.9M€ granted on 2021-06-30 to OSB Alliance e.V., hosting the team to coordinate partners)
- Homepage (<https://scs.community/>), source code on github/SovereignCloudStack
- Lined up ~25 engineers (growing) from partners regularly contributing code/artifacts, weekly sprints

Standardization & Ecosystem

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

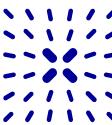
Implementation

- 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, ...)
- Future: PaaS => ecosystem, develop standardized base in 2022 („SCS-3“)
- Future: Edge specific work (realtime, accelerators, simplifications) => 2022 („SCS-2“)
- Release Plan: R0: 7/2021 (delayed by funding delay), R1: 9/2021, R2: 3/2022, R3: 9/2022, ...

Transparency & Certification

- GAIA-X self descriptions created 11/2020 (rudimentary) – working with SD group on improving
- TBD: Convert chosen standards (all open source!) into automated standards compliance tests





SCS Roadmap

gaia-x

Releases

- Release 0: (2021-07-14)
 - Fully automated Infra, IaaS, Ops automation (CI/CD, Monitoring, Patching), local IAM
 - Technical Preview for Container Stack (k8s cluster API, incl. CNI/CSI, helm)
- Release 1: (9/21)
 - Container Stack in production quality, container registry
 - Federation (OIDC, SAML)
- Half-yearly releases (3/22, 9/22, 3/23, 9/23, 3/24, 9/24):
 - Multi-region setups, Security scanning, Security Certifications, CI coverage (for daily updates!), Compliance test coverage (automated certification), SSI/DID federation, X-Cloud Orchestration, Service Mesh, ...



Adoption

- Public Clouds: Betacloud Solutions (2020), PlusCloud Open (12/2020),
- Industry Partners: (Automotive, Commerce, ...)
- Public Sector: DVS – looking for pilot / PoC partners

Ecosystem

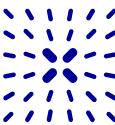
- Building skilled support, implementation, training partners
- Platform services on top of well-defined SCS standards

SCS-2: Edge (project proposal WIP)

- Even smaller simplified stacks (limited multitenancy), but w/ special acceleration / realtime requirements

SCS-3: PaaS&Dev (project proposal WIP)

- Integrate set of Platform services and Dev Tooling into standard SCS base



gaia-x

Security by Design

Using strong isolation for container clusters

- Different tenants receive their own Kubernetes clusters; by default, no cluster sharing happens
- Underlying VMs, network, storage are separated by strong virtualization barriers

Private registry for users

- Make it easy for DevOps teams to enforce their own security vetting processes and control their supply chain
- Vulnerability scanning included in registry solution

Daily patching supported

- The architecture is built for daily patching (or redeployment) without noticeable customer impact
- This creates a practice of keeping the systems up to date especially with respect to security patches

Secure Operational practices

- Document updating, patching, security response, ... processes to help with secure operations

Air gap mode supported

- Deploying and updating without internet connection possible
- Leveraging an internal registry and patch distribution mechanism (includes vulnerability scanning)

Certification

- Budget for security certifications (BSI) with partners
- Pen testing planned (and budget allocated)

Supply chain security

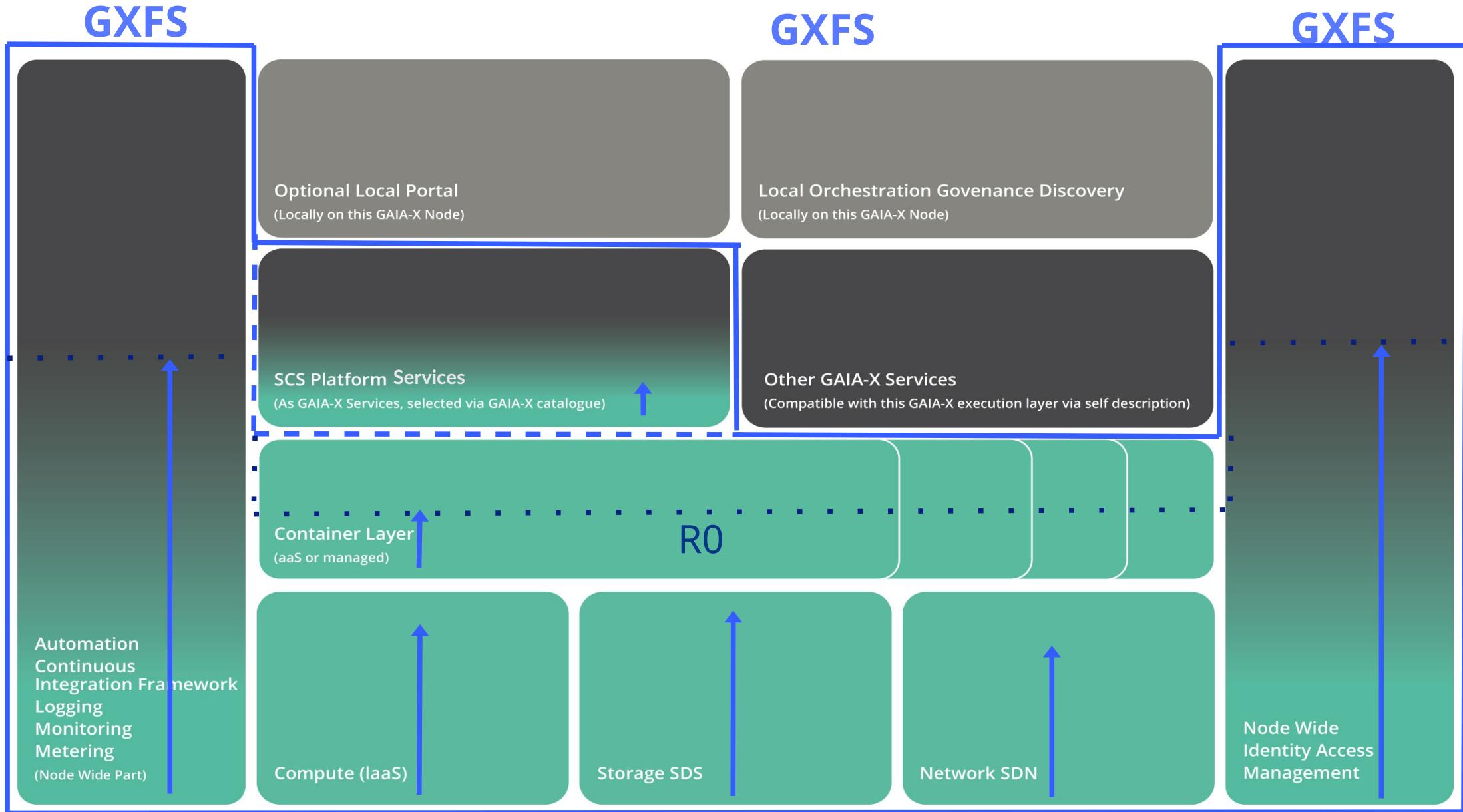
- Work with researchers on further improving supply chain security (reproducible builds, scanning, ...)

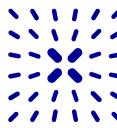




gaia-x

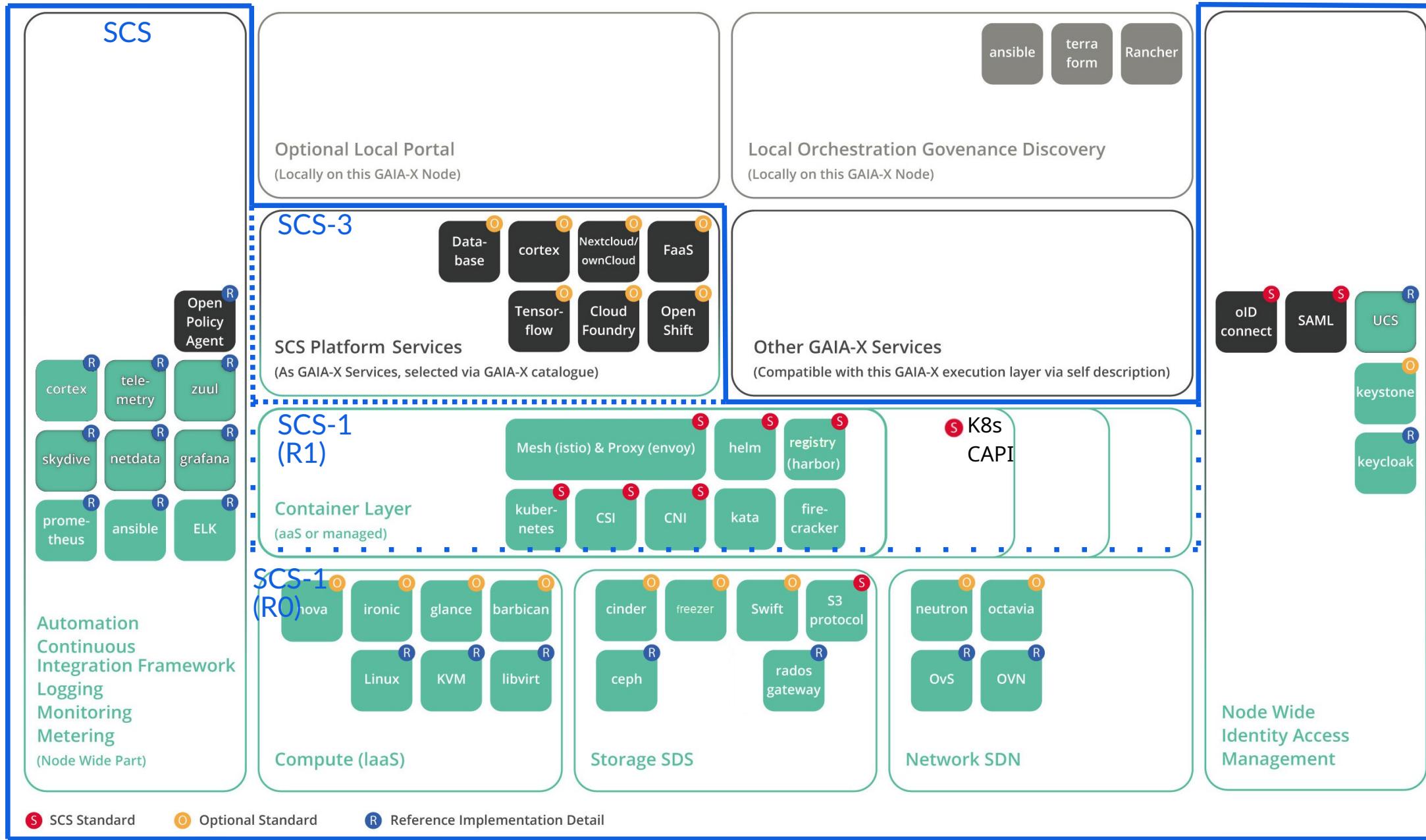
Building the SCS architecture bottom up

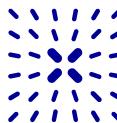




SCS Architecture (current status)

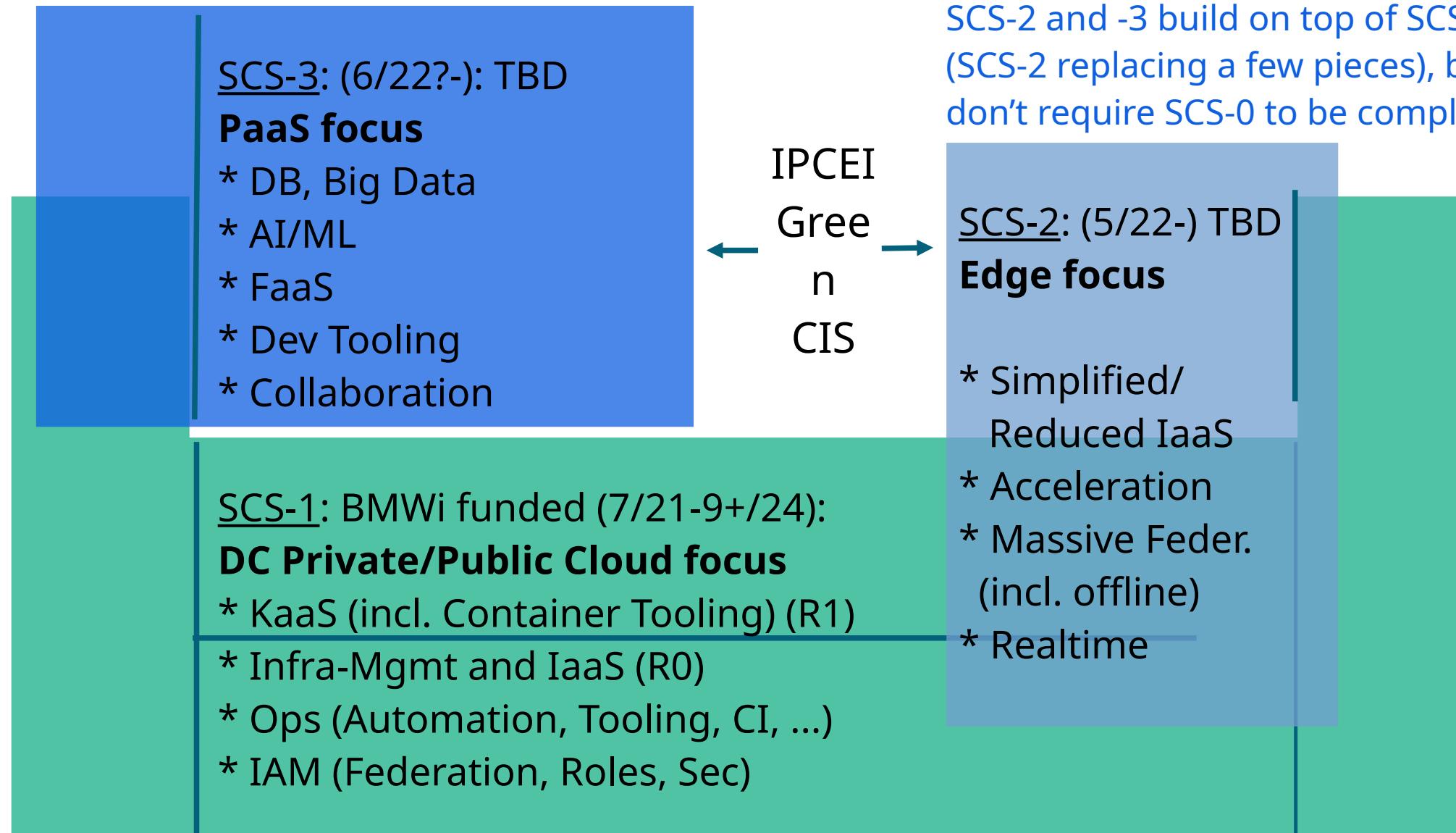
gaia-x





gaia-x

Beyond SCS ("SCS-1") ...



SCS-2 and -3 build on top of SCS-1 (SCS-2 replacing a few pieces), but don't require SCS-0 to be complete.

Inside SCS

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



How does SCS succeed?

Operator perspective

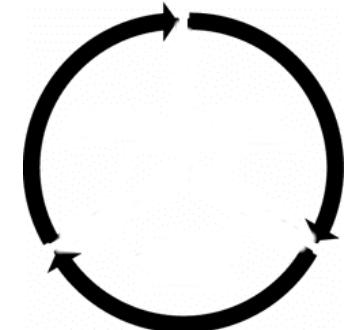
- Full-featured, open, federated, modular IaaS/KaaS platform
- High degree of automation for Operations - Tooling for installation, monitoring, lifecycle management, logging, CI, asset management, capacity management, ...
- Operational practices shared and published
- Differentiation with professional services, platform services, managed services
- Suitable as public cloud, private cloud, near edge cloud

Customer perspective

- Choice and transparency on platform AND its operation
- Highly standardized IaaS platform (OpenStack plus SCS standards)
- Well-defined CNCF aaS platform (k8s, CNI, CSI, registry, sec, mesh/proxy, helm, ...)
 - Self-Service (KaaS with k8s cluster API) or Managed (CaaS)
- Standardization, network connectivity and identity federation allowing to easily use several SCS clouds as one
- Federation Services (from Gaia-X) provide standardized way for higher-level InterOp & Transparency

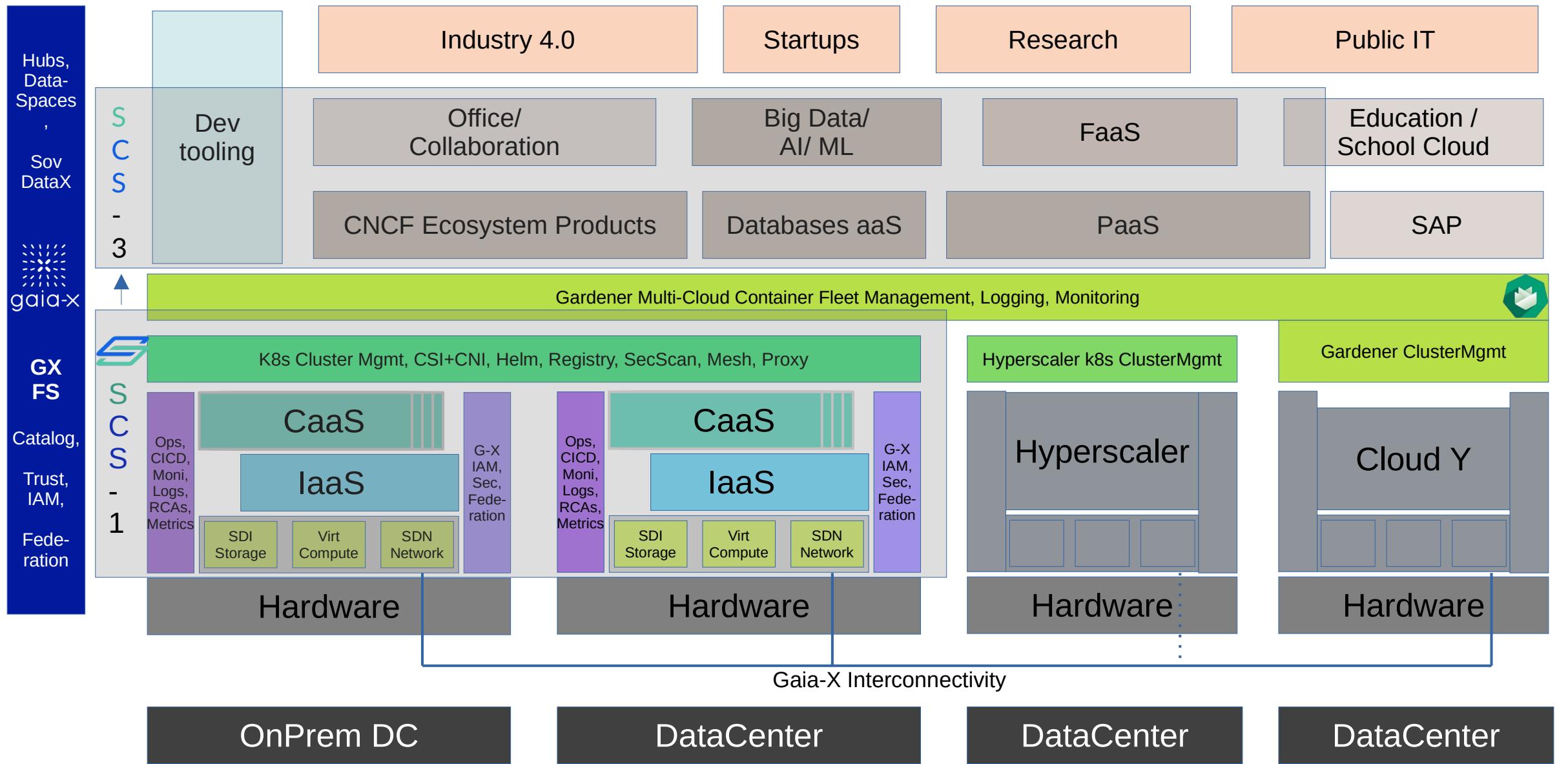
Ecosystem perspective

- Viable ecosystem for training, prof. services, support
- Viable platform for tools, standard building blocks, solutions
- Availability of experts



IT Ecosystem with GAIA-X

adapted from Acatech whitepaper



Flow of automated deployment

(currently covering: Infra, IaaS, Ops, KaaS is WIP)



Physical deployment

Production („Live“)

Server buying,
racking,
cabling

Kayobe/
Ironic
Netbox

Physical SCS can of course host virtual SCS
Nested virtualization support recommended

- Ansible: Setup Mgr, Nodes:
- Infra: Database, MemCache, rabbitMQ
- Infra: ceph+radosgw, OvS/OVN
- OpsTooling: ARA, ELK, netdata, prometheus, patchman
- IaaS: OpenStack Core (nova, keystone, ...) - kolla
- KaaS (WIP): k8s cluster API, CNI, CSI, registry, helm
- Validation (WIP): Smoke tests, conftest, RefStack, OPA

Virtual (testbed) deployment

Dev, Testing / CI („Ref/Test“)
Demo, Explore, Debug, ...



Bootstrap:
terraform
(on IaaS)

- Ansible: Setup Mgr, Nodes:
- Infra: Database, MemCache, rabbitMQ
- Infra: ceph+radosgw, OvS/OVN
- OpsTooling: ARA, ELK, netdata, prometheus, patchman
- IaaS: OpenStack Core (nova, keystone, ...) - kolla
- KaaS (WIP): k8s cluster API, CNI, CSI, registry, helm
- Validation (WIP): Smoke tests, conftest, RefStack, OPA

~90min

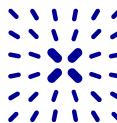
<https://github.com/OSISM>

<https://docs.osism.de/>

<https://docs.osism.de/testbed/>

<https://github.com/OSISM/testbed>

<https://github.com/SovereignCloudStack/Docs>



How does it look? (Customer perspective)

gaia-x

The screenshot shows the OpenStack Horizon dashboard with the 'DNS Zones' page selected. The left sidebar includes links for Projekt, API Zugriff, Compute, Container Infra, Netzwerk, DNS, and Zonen. The main content area displays a table with columns for Name, Typ, and Status, showing 0 Einträge werden angezeigt. A message at the bottom says 'Keine Einträge zum Anzeigen.'

horizon

```
apiVersion: v1
kind: ServiceAccount
metadata:
  name: csi-cinder-controller-sa
  namespace: kube-system

---
# external attacher
kind: ClusterRole
apiVersion: rbac.authorization.k8s.io/v1
metadata:
  name: csi-attacher-role
rules:
- apiGroups: []
  resources: [persistentvolumes]
  verbs: [get, list, watch, update, patch]
- apiGroups: []
  resources: [nodes]
  verbs: [get, list, watch]
- apiGroups: [storage.k8s.io]
  resources: [volumeattachments]
  verbs: [get, list, watch, update, patch]
- apiGroups: [storage.k8s.io]
  resources: [csinodes]
  verbs: [get, list, watch]

---
kind: ClusterRoleBinding
apiVersion: rbac.authorization.k8s.io/v1
metadata:
  name: csi-attacher-binding
subjects:
- kind: ServiceAccount
  name: csi-cinder-controller-sa
  namespace: kube-system
roleRef:
  kind: ClusterRole
  name: csi-attacher-role
  apiGroup: rbac.authorization.k8s.io
```

API

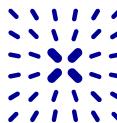
The terminal session shows a context switch to 'kind-kind' and lists pods across namespaces. It then switches to the 'cert-manager' namespace and retrieves the logs for the 'cert-manager-cainjector' pod.

NAMESPACE	NAME	PF	READY	RESTARTS	STATUS	IP	NODE
cert-manager	cert-manager-56b8dc89-44ldg	●	0/0	0	Pending	n/a	n/a
cert-manager	cert-manager-cainjector-755fb6b5fb-9xqgg	●	0/0	0	Pending	n/a	n/a
cert-manager	cert-manager-webhook-76b9bb6f69-lgj2p	●	0/0	0	Pending	n/a	n/a
kube-system	coredns-6955765f44-7nc89	●	0/0	0	Pending	n/a	n/a
kube-system	coredns-6955765f44-q9s7s	●	0/0	0	Pending	n/a	n/a
kube-system	csi-cinder-controllerplugin-0	●	0/0	0	Pending	n/a	n/a
kube-system	etcd-kind-control-plane	●	1/1	0	Running	172.17.0.2	kind-control-plane
kube-system	kindnet-g4qp2	●	0/1	32	CrashLoopBackOff	172.17.0.2	kind-control-plane
kube-system	kube-apiserver-kind-control-plane	●	1/1	0	Running	172.17.0.2	kind-control-plane
kube-system	kube-controller-manager-kind-control-plane	●	1/1	0	Running	172.17.0.2	kind-control-plane
kube-system	kube-proxy-dkx4z	●	0/1	50	CrashLoopBackOff	172.17.0.2	kind-control-plane
kube-system	kube-scheduler-kind-control-plane	●	1/1	0	Running	172.17.0.2	kind-control-plane
local-path-storage	local-path-provisioner-7745554f7f-4r812	●	0/0	0	Pending	n/a	n/a

<pod>

[0] \0:bash:make*/ 1:bash:terraform- 2:bash:~ 3:bash:terraform 4:bash:terraform 5:bash:terraform"linux@os152-kurt:~/k8" 13:59 17-Aug-21

K9s
(CAPI)



How does it look? (Operator perspective)

gaia-x

Name	URL	Username	Password
ARA	http://192.168.16.5:8120		
Ceph	http://192.168.16.9:7000		
Cockpit	https://192.168.16.5:8130		
Horizon	http://192.168.16.9		
Keycloak	http://192.168.16.5:8170		
Kibana	http://192.168.16.9:5601		
Netbox	http://192.168.16.5:8121		
Netdata	http://192.168.16.5:19999		
Patchman	http://192.168.16.5:8150		
Skydive	http://192.168.16.5:8085		
phpMyAdmin	http://192.168.16.5:8110		

System Overview

Overview of the key system metrics.

cpu

Total CPU utilization (all cores). 100% here means there is no CPU idle time at all. You can get per core usage at the CPUs section and per application usage at the Applications Monitoring section.

Keep an eye on iowait (0.40%). If it is constantly high, your disks are a bottleneck and they slow your system down.

An important metric worth monitoring, is softirq (0.05%). A constantly high percentage of softirq may indicate network driver issues.

Pressure Stall Information Identifies and quantifies the disruptions caused by resource contentions. The "some" line indicates the share of time in which at least some tasks are stalled on CPU. The ratios (in %) are tracked as recent trends over 10-, 60-, and 300-second windows.

CPU Pressure (system.cpu_pressure)

Zuul

OSB Open Source Business ALLIANCE
Gefördert durch
Bundesministerium für Digitales
und Wirtschaftsministerium
unterstützt von Bosch + Siemens
der Deutsche Betriebsrat

20 SCS



How does it look? (Operator perspective)

gaia-x

The screenshot shows the ARA web interface with a table of playbook runs. The columns include Status, Report Date, Duration, Hosts, Tasks, Results, Ansible, Controller, Name (or path), CLI, and Labels. The table lists several runs from August 17, 2021, involving various controllers like manager_osism, manager_kolla, and manager_osism_1_manager_default, with results ranging from 1 to 86 hosts.

Status	Report Date	Duration	Hosts	Tasks	Results	Ansible	Controller	Name (or path)	CLI	Labels
Success	17 Aug 2021 12:15:02 +0000	00:00:18.31	4	3	12	2.10.13	manager_osism-ansible_1_manager_default	/ansible/generic-facts.yml		[remote_user:dragon] [check:False] [tags:all]
Success	17 Aug 2021 11:28:41 +0000	00:01:38.74	4	27	86	2.10.12	manager_kolla-ansible_1_manager_default	/ansible/kolla-prometheus.yml		[remote_user:dragon] [check:False] [tags:all]
Success	17 Aug 2021 11:27:34 +0000	00:01:06.06	4	18	69	2.10.13	manager_osism-ansible_1_manager_default	/ansible/monitoring-netdata.yml		[remote_user:dragon] [check:False] [tags:all]
Success	17 Aug 2021 11:27:04 +0000	00:00:28.34	1	11	11	2.10.13	manager_osism-ansible_1_manager_default	/ansible/monitoring-openstack-health-monitor.yml		[remote_user:dragon] [check:False] [tags:all]
Success	17 Aug 2021 11:26:50 +0000	00:00:12.83	1	4	4	2.10.13	manager_osism-ansible_1_manager_default	...openstack/playbook-bootstrap-ceph-rgw.yml		[remote_user:dragon] [check:False] [tags:all]
Success	17 Aug 2021 11:26:36 +0000	00:00:11.76	2	5	5	2.10.13	manager_osism-ansible_1_manager_default	...openstack/playbook-bootstrap-basic.yml		[remote_user:dragon] [check:False] [tags:all]
Success	17 Aug 2021 11:24:03 +0000	00:02:31.58	4	34	82	2.10.12	manager_kolla-ansible_1_manager_default	/ansible/kolla-designate.yml		[remote_user:dragon] [check:False] [tags:all]

The screenshot shows the Kibana "Create index pattern" step 1 of 2. It includes fields for "Index pattern name" (index-name-*), "Include system and hidden indices" (unchecked), and a note that the pattern matches "Your index pattern can match your 1 source." Below the form is a search bar and a "Rows per page" dropdown set to 10.

Kibana

The screenshot shows the Keycloak welcome screen with links to Administration Console, Documentation, Keycloak Project, Mailing List, and Report an issue.

The screenshot shows the Netbox "Device Roles" table. The columns are Name, Devices, VMs, Color, VM Role, and Description. The table lists eight node types: Ceph control node, Ceph resource node, Compute node, Control node, Generic node, Manager node, Monitoring node, and Network node. All nodes have 0 devices and 0 VMs, and are assigned a green VM role. Buttons for "Edit Selected" and "Delete Selected" are at the bottom, along with a "per page" dropdown set to 50 and a note showing 1-8 of 8.

Name	Devices	VMs	Color	VM Role	Description
Ceph control node	0	0	Orange	✓	—
Ceph resource node	0	0	Orange	✓	—
Compute node	0	0	Blue	✓	—
Control node	0	0	Blue	✓	—
Generic node	0	0	Black	✓	—
Manager node	0	0	Green	✓	—
Monitoring node	0	0	Green	✓	—
Network node	0	0	Blue	✓	—

Netbox

Developing SCS

Gefördert durch:

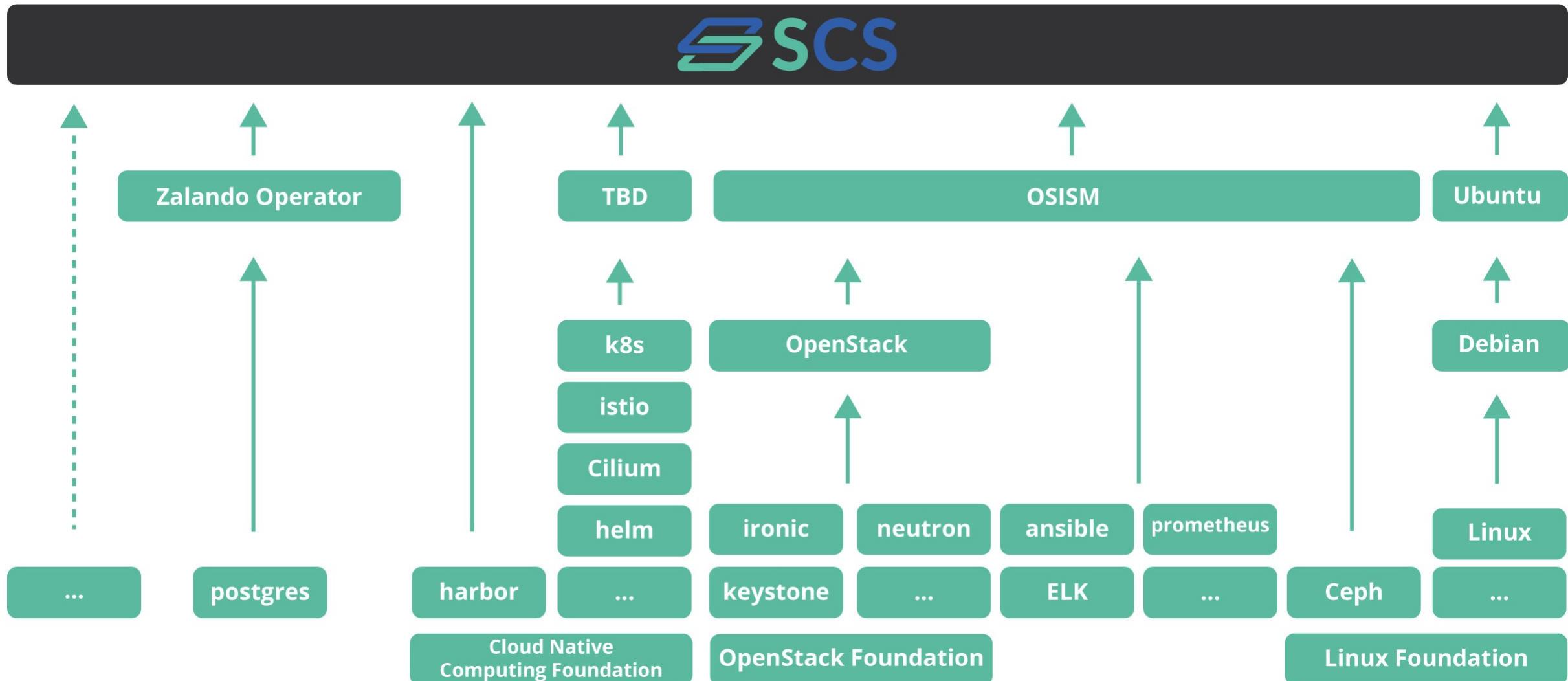


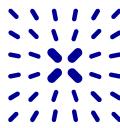
aufgrund eines Beschlusses
des Deutschen Bundestages



How is it built? (SCS developer perspective)

gaia-x





gaia-x

How is it developed?

Upstream communities

- OIF: OpenStack, kolla-ansible, kayobe, zuul, ...
- CNCF: kubernetes, helm, harbor, openstack-capi-provider
- LF: Linux, KVM, ceph, ...
- OSISM: Integration, Ops tooling (<https://github.com/OSISM/>)

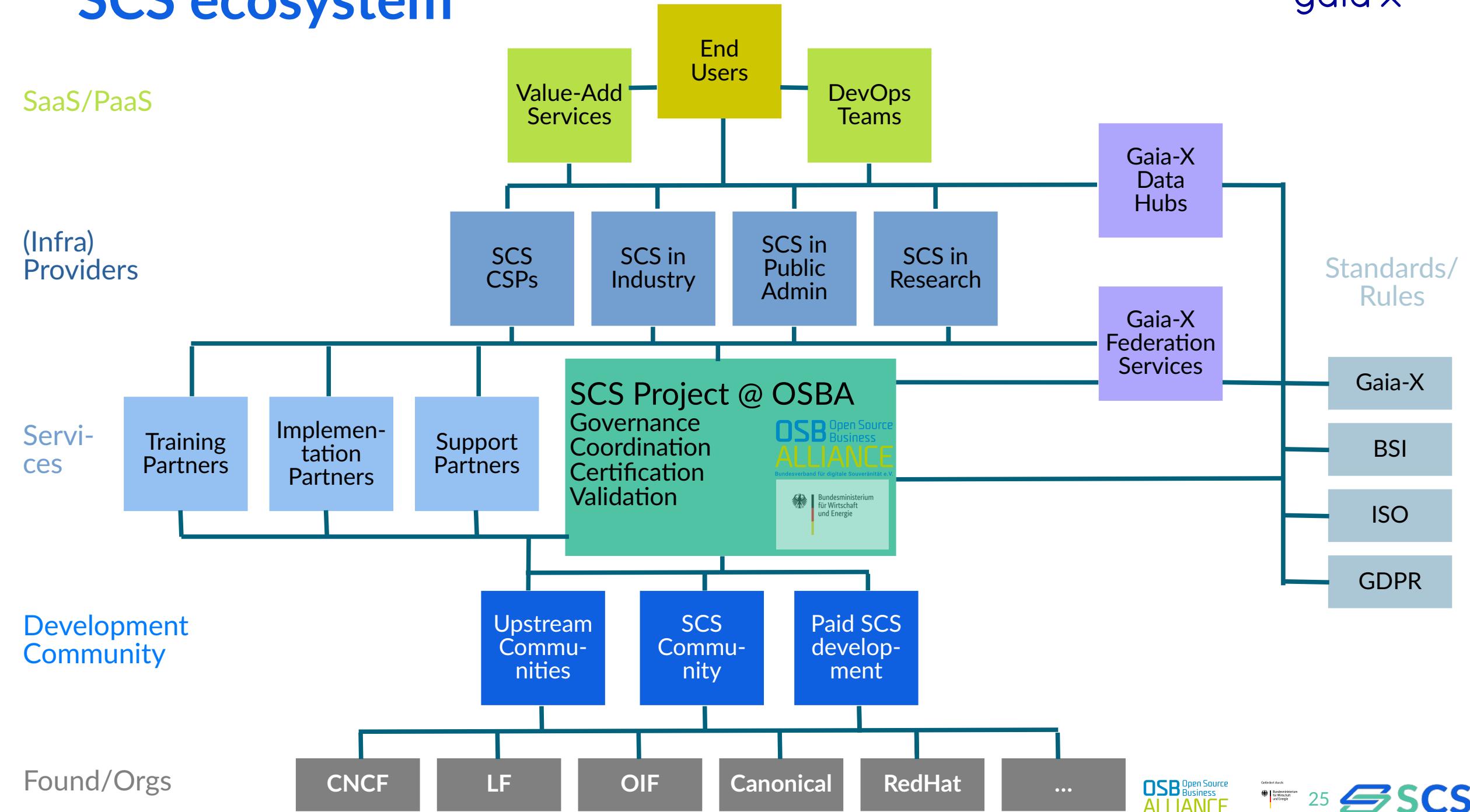
SCS community

- <https://github.com/SovereignCloudStack/Docs>
<https://scs.community/docs/contributor/>
- Contributions from providers, users, volunteers
- IP policy (Various FOSS licenses, Four Opens, DCO)
- Paid development via public tenders (BMWi funded): <https://scs.community/Tender/>
- Development performed in agile teams coordinated by POs (@OSBA)
- Align with upstream and contribute back

Collaboration

- Weekly sprints: Sprint reviews, backlog refinement, sprint planning via weekly VC (Jitsi)
- Weekly team call (Thu afternoon, SCS Jitsi)
- Taskboard (nextcloud deck, trello-like)
- Github: Reviews, PRs, Issues
- Mailing list

SCS ecosystem





gaia-x

How to get started? How to join?

Test testbed ...

- Virtual deployment of SCS for testing, exploring, demos, CI,
 - You need access to a reasonably vanilla OpenStack
 - OR: You can help us port the terraform recipes to VMware, AWS, ...
- Ask questions, raise issues, submit PRs (with DCO)

Contribute upstream

Join the SCS community

- Become a regular contributor ...
- Onboarding call to understand interests, needs, skills, contribution areas ...
- Participate in team call (Thu 15:00 CEST) and sprint reviews (Mon afternoon)
- Onboarding to nextcloud and mailing lists
- Participate in tenders

Use SCS

- Create production setups for internal usage or as public clouds
 - Support available via partners (e.g. osism.tech)
 - Certification conformance tests in development
- Develop apps/services for SCS container/cloud platform (preferably with k8s operators)
- Become skilled to offer services around SCS (partner certification program in preparation)

QUESTIONS?

Test it!

Pilot project / Proof-of-concept

Join us!

Team meeting on Thu, 15:00 CE(S)T

GAIA-X: <https://gaia-x.eu/>

SCS Project: <https://scs.community/>

EMail: project@scs.sovereignit.de, garloff@osb-alliance.com

Appendix

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages

Webpage

<https://scs.community/>

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



File Edit View History Bookmarks Tools Help

Sovereign Cloud Stack < https://scs.community/ 90% ⚡

Most Visited Garloff-Cloud Files SCS CoYo BMWi - GAIA-X GAIA-X Core · GitLab PlusServer | Login github SCS OSBA Owncloud Other Bookmarks

Sovereign Cloud Stack

Home Email Phone Print Share

- Alliances / Chief of staff (Mar 21, Berlin / Home Office) ✓
- Product Owner Container Technologies (Jul 21, Home Office / Berlin)
- Knowledge Management Engineer (Jul 21, Home Office / Berlin)
- Product Owner IaaS and Operations (Aug 21, Home Office / Berlin)
- Community Manager (Jul 21, Home Office / Berlin) ✓
- Staff / Project Management/Dokumentation (Jul 21, Berlin / Home Office)

Please contact Kurt Garloff with questions and applications.

Note: We are open to european hires, but do not have the ability to open local branches to accommodate possible legal requirements in countries outside of Germany.

Supporting companies / organizations

23|Technologies CLOUD & HEAT gridscale OVHcloud StackHPC

B1 SYSTEMS dataport Open Infrastructure FOUNDATION plusserver T...

BETACLOUD SOLUTIONS dilossacon OSB Open Source Business ALLIANCE SPRIN-D UNIVENTION be open

citynetwork GONICUS PIONEERS OF OPEN SOURCE OX Stackable

File Edit View History Bookmarks Tools Help

Proposals Boris Otto GX-Summit GAIA-X sub solicit - LEO Open Infrastr Open Infrastr W Europe - V Sovereign Sovereign < https://github.com/SovereignCloudStack 110% ⚡

Most Visited Garloff-Cloud Ferienprogramme SCS SCS IDM SCS Pwd SK K-BN Files SCS FRITZ!Box CoYo BMWi - GAIA-X

testbed-gx-scs

GAIA-X Sovereign Cloud Stack (SCS) testbed

gala-x

0 ⚡ 0 ⚡ 0 ⚡ 0 ⚡ Updated 9 days ago

website

Base content for scs.community

HTML GPL-3.0 1 ⚡ 2 ⚡ 0 ⚡ Updated 9 days ago

testbed

Forked from osism/testbed

Hyperconverged infrastructure (HCI) testbed based on OpenStack and Ceph

HCL Apache-2.0 5 ⚡ 2 ⚡ 0 ⚡ Updated 10 days ago

poc-gardener

Automatically set up SAP Gardener on SCS compliant IaaS

HCL 0 ⚡ 0 ⚡ 0 ⚡ Updated 12 days ago

Design-Docs

Design Documents, Architecture etc. for SCS and related technology

0 ⚡ 1 ⚡ 2 ⚡ 1 ⚡ Updated 13 days ago

k8s-gatekeeper



IP management in SCS

Only accept OSI accepted open source licenses in implementation

Open Source health check

- 4 opens (open license, community, development, design)
- active&diverse communities
- maintenance, maturity

Use OSI licenses (ASL2, MIT, GPL, ...) of upstream projects

- contribute back as much as possible
- prefer copyleft for own independent code (weak copyleft for interface code)

Distributed copyright (like the Linux kernel)

- Intentionally prevents dual licensing, license changes

Use Digital Certificate of Origin (DCO, „signed-off-by“)

- documenting willful contributions under accepted license terms
- enforced by pre-merge checks



GAIA-X Technical Committee and SCS

gaia-x

WG Chairpersons

WG Support office

AISBL Working Groups within the Technical Committee (AISBL members only)

User
Stephan Stryhanin
Stefan Ettl

Provider
Anja Strunk
Judith Staginus

X-Association
Sebastian Steinbuß
Julian Nauen

Federation Services/OSS
Andreas Weiss
Christian Krug

Architecture
Klaus Ottradovetz
Christian Weiss

Portfolio
Michael Jochum
Judith Staginus



Propose, Comment, Contribute



Inform, Facilitate, Interact

Open Work Packages

Cross-Env Service Orch (CESO)

Project Soverein Cloud Stack (SCS)

Catalogue

Compliance

MVG

Project Federation Services

AoS

Identity & Trust

Data Sovereignty

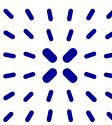
Interconnection

Infrastructure

Product & Services

Interconnection

Infrastructure



CSP ecosystem target (examples)

gaia-x

Legend: Standard

SCS

IAM API (M)

KaaS API (M)

S3 API (M)

OpenStack APIs (O)

PaaS w/ APIs (O)

VPN/Interconn

IdPs
Users
Apps
CSPs

