Sovereign Cloud Stack
— An OSB ALLIANCE project —

https://scs.community

Supported by:

Federal Ministry
for Economic Affairs
and Climate Action

on the basis of a decision
by the German Bundestag

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htw **Informatiktag 2024**

19. Juni 2024

Dr. Manuela Urban

Sovereign Cloud Stack: Entirely Open Source for Cloud Technology & Standards

There was a dream... (Marcus Aurelius)

Quelle: Bundesministerium für Wirtschaft und Technologie 2010

...but reality shows:

- \>80 % of companies in Europe feel technologically dependent.[1]

- Amazon, Microsoft, Alphabet (Google) dominate the market.[2]

- Vendor lock-in.[3]

- Infrastructures, platforms and applications are incompatible.

- US Foreign Intelligence Surveillance Act (FISA) ⚡ EU GDPR

- Dynamic, distributed platforms are highly complex to operate.
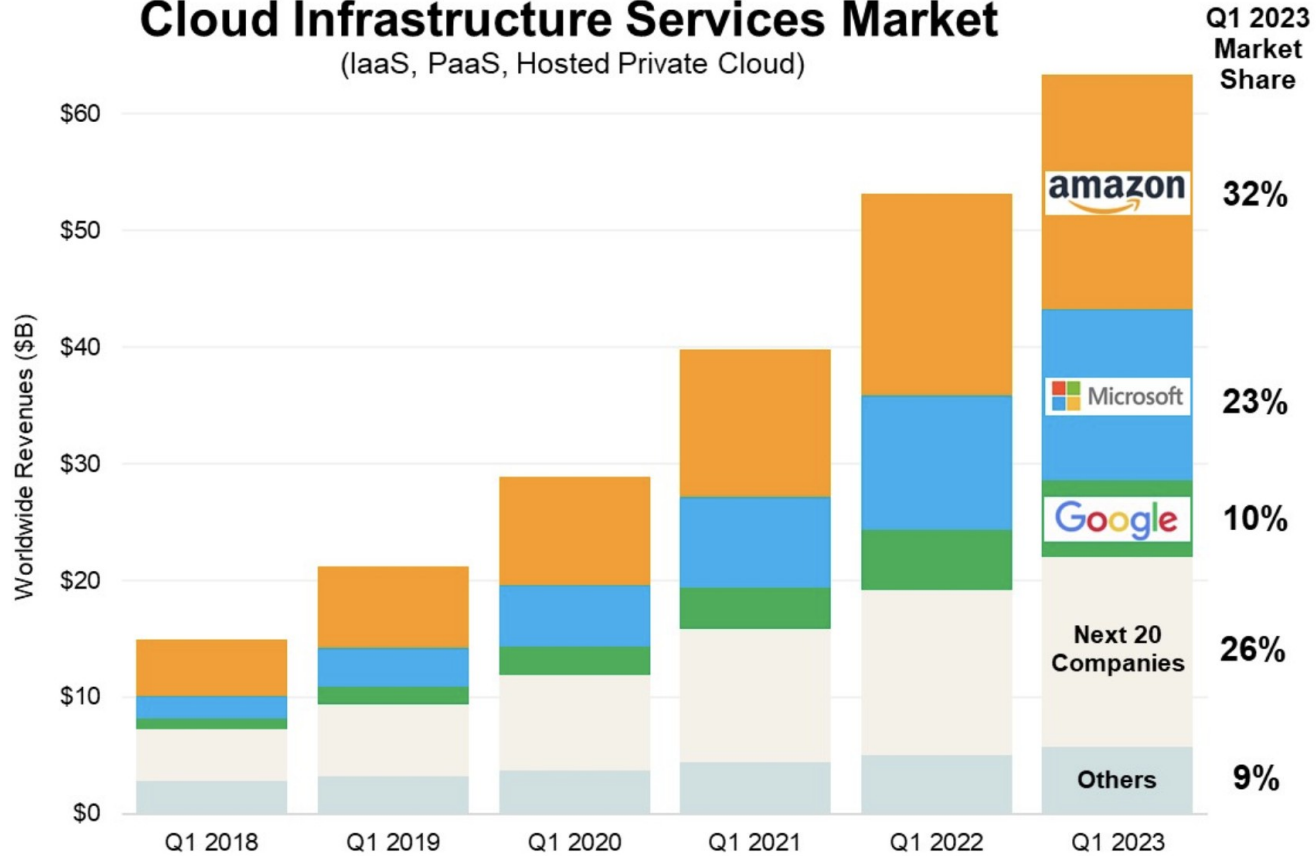
- Shortage of skilled labour.

1 ZEW – Leibniz-Zentrum für Europäische Wirtschaftsforschung:„Schwerpunktstudie Digitale Souveränität 2021" Hrsg.: Bundesministerium für Wirtschaft und Energie (Oktober 2021)

2 https://www.srgresearch.com/articles/huge-cloud-market-is-still-growing-at-34-per-year-amazon-microsoft-and-google-now-account-for-65-of-all-cloud-revenues

3 https://www.cio.bund.de/SharedDocs/downloads/Webs/CIO/DE/digitale-loesungen/marktanalyse-reduzierung-abhaengigkeit-software-anbieter.pdf?__blob=publicationFile&v=1

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An OSB ALLIANCE project

https://scs.community

Gefördert durch:
Bundesministerium für Wirtschaft und Klimaschutz
aufgrund eines Beschlusses des Deutschen Bundestages

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Digital Value Creation & Market Power

Die Top100 größten börsennotierten Unternehmen der Welt
Nach Marktkapitalisierung

		Name	Land ⚙	Umsatz (EUR)	Gewinn (EUR)	↓ Market Cap (EUR)
# 1		Microsoft Corp. Registered Shares DL-,00000625	🇺🇸	192,4 Mrd.	65,7 Mrd.	3,0 Bio.
# 2		Apple	🇺🇸	355,6 Mrd.	90,0 Mrd.	2,7 Bio.
# 3		Alphabet Inc. Reg. Shs Cl. A DL-,001	🇺🇸	282,5 Mrd.	67,9 Mrd.	1,9 Bio.
# 4		Amazon.com	🇺🇸	533,2 Mrd.	28,2 Mrd.	1,8 Bio.
# 5		Meta Platforms Inc. Reg.Shares Cl.A DL-,000006	🇺🇸	125,1 Mrd.	36,3 Mrd.	1,0 Bio.

Source: Finanzen 100, June 2024

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Why do we think that Open Source makes a difference?

Competence (esp. Operations)

Ability to shape technology

Choice / Switching / Interoperability

Legal Compliance (GDPR …)

https://rdcu.be/cWdBJ
(in German)

https://the-report.cloud/wp-content/uploads/2022/03/CloudReport_2022_01-1.pdf
(in English)

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imagine a Cloud Platform...

... where users can easily switch between different cloud service providers without being locked in.

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Sovereign Cloud Stack: An open community that develops and standardises cloud technology and shares operational knowledge across all sectors.

Sovereign Cloud Stack
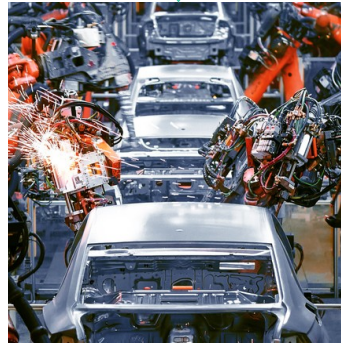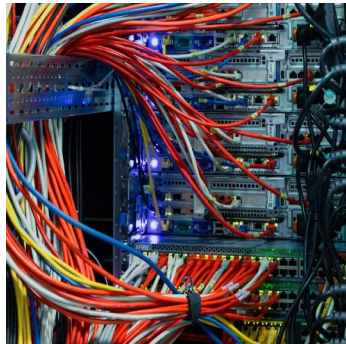
Sovereign Cloud Stack Deliverables

1 Certifiable Standards

2 Modular Open Source Reference Implementation

3 Operational Knowledge

Sovereign Cloud Stack
An OSB ALLIANCE project

Open, certifiable Standards

- ✔ Portability

- ✔ Interoperability

- ✔ Scalability

- ✔ Collaboration between CSPs, technology providers, service companies, software vendors made easy.

- ✔ SaaS providers can develop and offer platform-independent services.

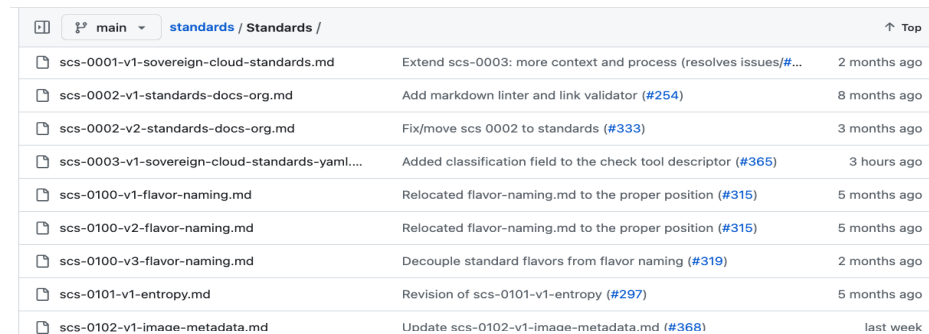|	main ▾	standards / Standards /		↑ Top
	scs-0001-v1-sovereign-cloud-standards.md	Extend scs-0003: more context and process (resolves issues/#...	2 months ago
	scs-0002-v1-standards-docs-org.md	Add markdown linter and link validator (#254)	8 months ago
	scs-0002-v2-standards-docs-org.md	Fix/move scs 0002 to standards (#333)	3 months ago
	scs-0003-v1-sovereign-cloud-standards-yaml...	Added classification field to the check tool descriptor (#365)	3 hours ago
	scs-0100-v1-flavor-naming.md	Relocated flavor-naming.md to the proper position (#315)	5 months ago
	scs-0100-v2-flavor-naming.md	Relocated flavor-naming.md to the proper position (#315)	5 months ago
	scs-0100-v3-flavor-naming.md	Decouple standard flavors from flavor naming (#319)	2 months ago
	scs-0101-v1-entropy.md	Revision of scs-0101-v1-entropy (#297)	5 months ago
	scs-0102-v1-image-metadata.md	Update scs-0102-v1-image-metadata.md (#368)	last week
	scs-0103-v1-s		
	scs-0104-v1-s		
	scs-0110-v1-s		
	scs-0111-v1-v		
	scs-0210-v1-k		
	scs-0211-v1-k		

SCS compatible clouds

This is a list of clouds that we test on a nightly basis against our `scs-compatible` certification level.

Name	Description	Operator	IaaS Compliance Check	HealthMon
gx-scs	Dev environment provided for SCS & GAIA-X context	plusserver GmbH	compliant passing	HM
pluscloud open - prod1	Public cloud for customers	plusserver GmbH	compliant passing	HM
pluscloud open - prod2	Public cloud for customers	plusserver GmbH	compliant passing	HM
Wavestack	Public cloud for customers	noris network AG/Wavecon GmbH	compliant passing	HM
REGIO.cloud	Public cloud for customers	OSISM GmbH	compliant passing	Dashboard

Sovereign Cloud Grid: Build a virtual hyperscaler!
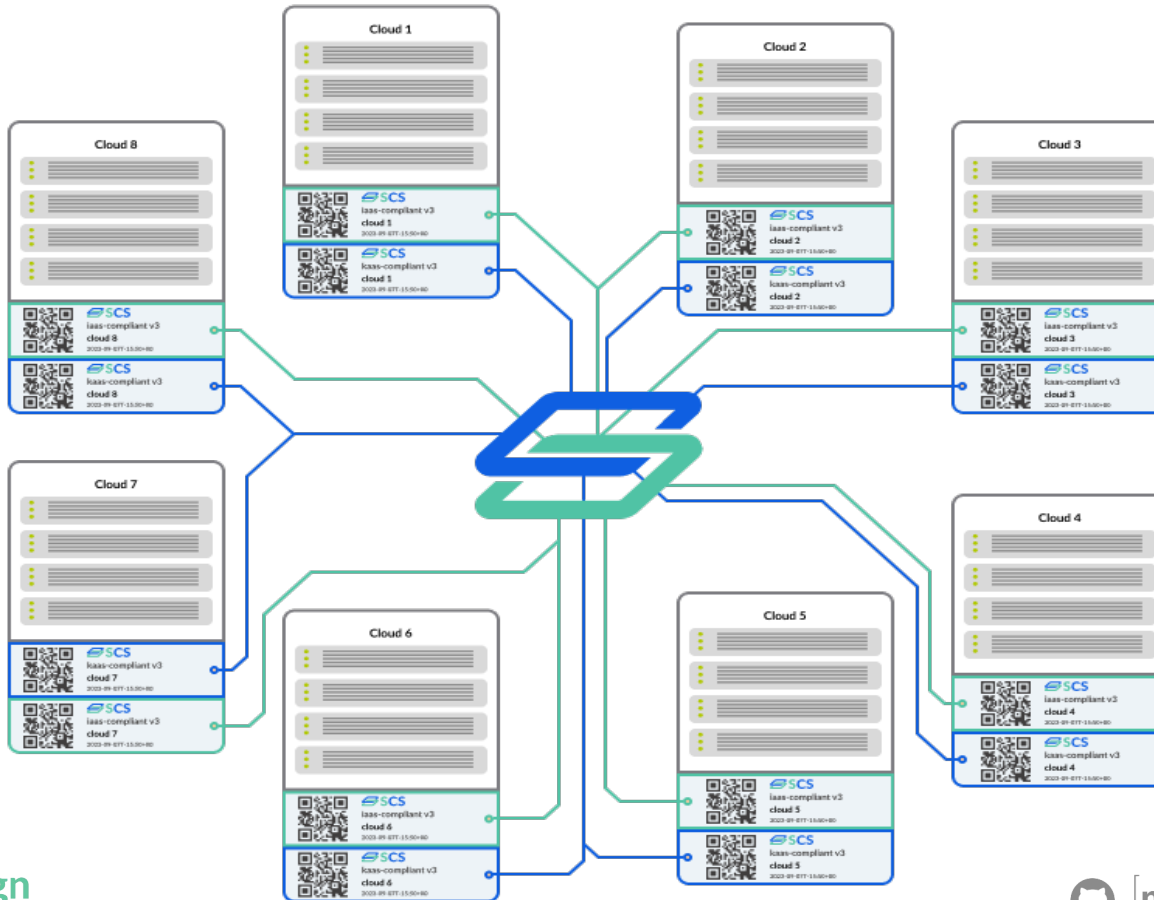
SCS integrates, standardizes and complements proven building blocks

SCS

	Zalando Operator		TBD	OSISM	Ubuntu
			k8s	OpenStack	Debian
			istio		
			Cilium		
			helm	ironic / neutron / ansible / prometheus	Linux
...	postgres		harbor / ...	keystone / ... / ELK / ... / Ceph / ...	
			Cloud Native Computing Foundation	OpenStack Foundation / Linux Foundation	

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Open Knowledge

Cloud Offerings based on SCS

BayernCloud Schule

Die Plattform für eine moderne digitale Bildung

→ Informationen für Schulleitungen zur Freischaltung

...runs on SCS infrastructure.

powered by plusserver

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Public Money – Public Code

Explore / **Groups**

Search by

Below you will find all the groups that are public.

You can easily contribute to them by requesting to join these groups.

> **S** Smarte.Land.Regionen ⊕

S SopraSteria ⊕

Sovereign Cloud Stack ⊕ (Owner)
Eine Plattform — standardisiert, entwickelt und betrieben von Vielen.
Sovereign Cloud Stack (SCS) ist ein vom BMWK gefördertes Projekt der OSB Alliance e.V.
SCS stellt Standards, Software und Wissen für Cloudinfra bereit. https://scs.community/

S Stadt Detmold ⊕

> Stadt Soest ⊕

Stadt Wolfsburg ⊕
This is the official group of the city of Wolfsburg, Germany. Here you can find the open source projects that the city is working on or supporting.

T Testgruppe ⊕

T Thüringer Landesverwaltung ⊕
Open-Source-Initiative der Thüringer Landesverwaltung

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SCS provides an Infrastructure Layer for Gaia-X

Advanced Smart Services
(Cross-) Sector Innovations /
Market places / Applications

Data Spaces
Interoperable & portable (Cross-)
Sector data-sets and services

GAIA-X Federation services
Federated & distributed for
interoperability Trust & Sovereignty
services

**Portability, Interoperability &
Interconnectivity**
Technical: Architecture of Standards
Commercial: Policies

Compliance
Legal: Regulation & Policies

Data Ecosystem

AI | IoT | Analytics | Automation | Big Data | ...

industrial — energy — mobility — financial — green deal — agriculture — public
smart living — health — skills — ...

Identity & Trust | Sovereign Data Exchange
Federated Catalogue | Compliance

Network/Interconn. Providers | CSP (e.g. Regional, specialized, Hyperscalers) | HPC (e.g. research...) | Sector specific clouds | EDGE

Infrastructure Ecosystem

Gaia-X
FEDERATION SERVICES
GXFS

Sovereign
Cloud Stack

Sovereign
Cloud Stack
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SCS contributes to GovStack

GovStack harnesses the power of a global network and is led by:

Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

REPUBLIC OF ESTONIA MINISTRY OF FOREIGN AFFAIRS

ITU

digital impact alliance

GovStack

About ▾   Our Offerings ▾   Global Showcase   News & Events   Participate ▾

GovSpecs

We work with governments to identify real-life scenarios for digital...

Learn more

GovTest

We provide an open demonstration environment for...

Learn more

GovLearn

We collaborate to provide capacity building, trainings, and support designing...

Learn more

GovExchange

We offer a platform to research the market of digital services and find...

Learn more

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Herzlich willkommen zum
2. Sovereign Cloud Stack Summit
14. Mai 2024 in Berlin

https://www.youtube.com/@sovereigncloudstack

Programme and presentations (in German only):
https://scs.community/de/summit2024/
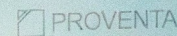
Sovereign Cloud Stack

— An **OSB** **ALLIANCE** project —

https://scs.community

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https://scs.community

One platform – standardised, built and operated by many.

SCS Certified Standards provide...

Modularity

KaaS

IaaS ..... IAM
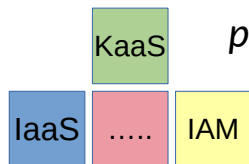
All pieces can be used independently or put together to build a complete stack.

Interoperability, Portability

Service Provider A

Customer
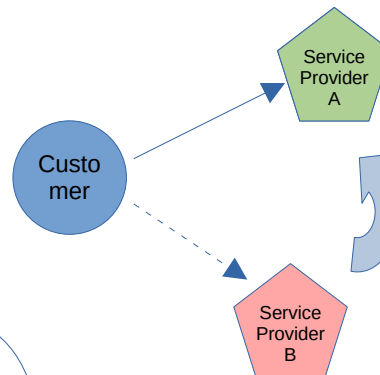
Service Provider B

Choose your service provider freely, transfer your data & applications easily and safely.

Federability, Scalability

Build a virtual hyperscaler.

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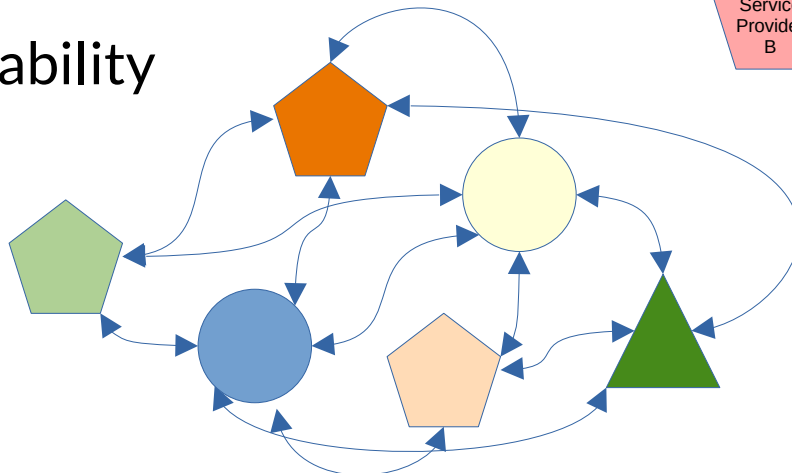
SCS Reference Architecture (current status)

SCS

Optional Local Portal
(Locally on this GAIA-X Node)

Local Orchestration Govenance Discovery
(Locally on this GAIA-X Node)

ansible | terra form | Rancher

SCS-3 (future)

Xpanse, Glasskube, ...

Data-base | cortex | Nextcloud/ownCloud | FaaS

Tensor-flow | Cloud Foundry | Open Shift

SCS Platform Services
(As GAIA-X Services, selected via GAIA-X catalogue)

Gaia-X FEDERATION SERVICES **GXFS**

Other GAIA-X Services
(Compatible with this GAIA-X execution layer via self description)

Open Policy Agent

cortex | tele-metry | zuul
skydive | netdata | grafana
prome-theus | ansible | ELK

SCS-1 (R5)

Container Layer
(aaS or managed)

Mesh (istio) & Proxy (envoy) | helm | registry (harbor) | k8s CAPI

kuber-netes | CSI | CNI | kata | fire-cracker

nova | ironic | glance | barbican
Linux | KVM | libvirt

Compute (IaaS)

cinder | freezer | Swift | S3 protocol
ceph | | rados gateway

Storage SDS

neutron | octavia
OvS | OVN

Network SDN

oID connect | SAML | UCS
keystone
keycloak

Node Wide Identity Access Management

Dark squares: future

**Automation
Continuous
Integration Framework
Logging
Monitoring
Metering**
(Node Wide Part)

Hardware & DC deployment automation & management

S SCS Standard   **O** Optional Standard   **R** Reference Implementation Detail

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SCS is involved in the German Federal Public Admin Cloud (Deutsche Verwaltungscloud DVC)

IT-Planungsrat

Deutsche Verwaltungscloud-Strategie
Übergreifende Etablierung und Nutzung von Standards für bestehende föderale Cloud-Lösungen der Öffentlichen Verwaltung
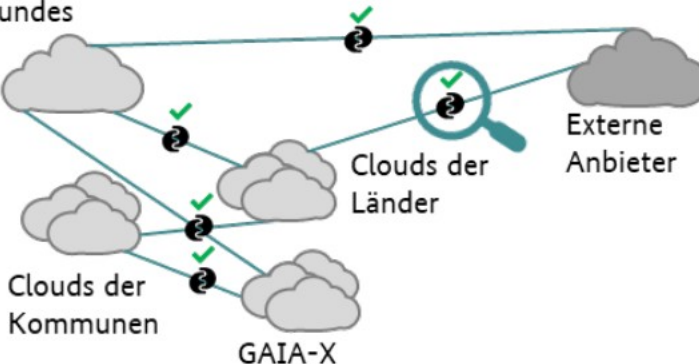
Clouds des Bundes

Clouds der Länder

Externe Anbieter

Clouds der Kommunen

GAIA-X

🔍 Bereiche zur Standardisierung föderaler Cloud-Lösungen

1 Entwicklung und Entwicklungsplattform
Plattformen, Prozesse und Architekturvorgaben zur Entwicklung von Anwendungen

2 Anwendungsbereitstellung und -management
Bereitstellung und Betreuung von Anwendungen über gesamten Lebenszyklus

3 Code Repository
Verwaltungsumgebung zur Versionierung von Anwendungs-Code

4 Infrastruktur-Service und technologischer Stack
Hard- und Software zur Erbringung von IT-Leistungen

5 Betriebsstandards und Betriebsmodell
Zusammenarbeit IT-Dienstleister/Service-Bereitstellung

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Cloud-Anwendungen

Hacker-Angriff auf Microsoft war gravierend

Stand: 08.09.2023 12:03 Uhr

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OPEN OPERATIONS MANIFESTO
Building a community of practice and transparency for operations

https://openoperations.org

We build a community of practice

Open Operations builds a community of practice to keep the barrier to entry low and create a thriving environment for comfortable exchange.

We share knowledge

The availability of knowledge and skilled engineers is the limiting factor for many organizations to adopt, leverage, and successfully operate complex technology.

We're transparent about our incidents

We firmly believe that failures make us experts. The way we handle mistakes is how we become better.

We're transparent about our operational processes

We share our internal processes for the sake of transparency. We firmly believe that transparency leads to better and more reliable processes.

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SCS Open Development in Practice

	Mon 18/09	Tue 19/09	Wed 20/09	Thu 21/09	Fri 22/09
all-day					
09				09:05 - 9:55 GMT+2 Team OPS Sprint Review/Planning and Refinement	
9:30					
10			10:05 - 10:55 GMT+2 Team IaaS Sprint Review/Planning and Refinement		10:05 - 10:55 GMT+2 IAM Hacking session
10:30				10:35 - 11:25 GMT+2 Team Container Sprint Review/Planning and Refinement	
11	11:05 - 11:55 GMT+2 SIG Documentation				
11:30			11:35 - 12:25 GMT+2 Team IAM Sprint Review/Planning and Refinement		
12					
12:30					
13					
13:30					
14	14:05 - 14:55 GMT+2 SCS Product Board			14:05 - 14:55 GMT+2 SIG Standardization/Certification	
14:30					
15	15:05 - 15:55 GMT+2 Blocker: SCS Team Overflow/Replacem / 15:05 - 15:55 GMT+2 Lean SCS Operator Coffee			15:05 - 15:45 GMT+2 Weekly SCS Community Meeting	
15:30					

< > today edit

18 – 22 Sep 2023

day **week** month

https://scs.community

SCS Supporting Organisations

"Cloud-Shift": Enterprise IT Spending Worldwide
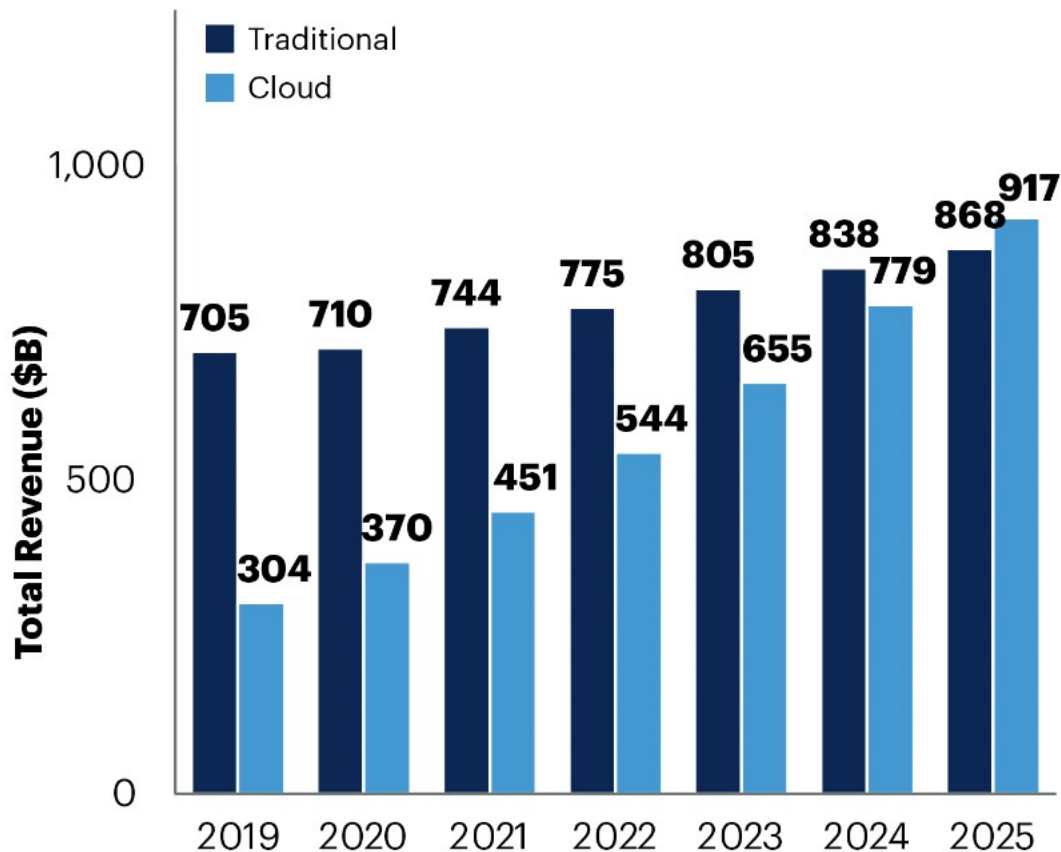
Source: Gartner 2022

The Four Opens

Our Philosophy on Open Source

https://openinfra.dev/four-opens/

The Four Opens are a set of principles guidelines that were created by the OpenStack community as a way to guarantee that the users get all the benefits associated with open source software, including the ability to engage with the community and influence future evolution of the software.

Under these guidelines, the OpenStack community grew from tens of contributors to thousands, creating one of the top three most active open source projects in the world behind the Linux Kernel and Chromium. The Four Opens were instrumental not only in this success but also in building a thriving, global community.

We at OpenInfra Foundation consider The Four Opens our guiding principles in everything we do.

- Open Source
- Open Design
- Open Development
- Open Community

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The Open Source Definition

Page created on July 7, 2006 | Last modified on February 16, 2024

Introduction

Open source doesn't just mean access to the source code. The distribution terms of open source software must comply with the following criteria:

1. Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

2. Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed

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Zur Bedeutung von Open Source

EU-Studie: Open Source stärkt die Wirtschaft und die technologische Unabhängigkeit

FEATURED | VERBANDS-NEWS | 13. DEZEMBER 2021

https://digital-strategy.ec.europa.eu/en/library/study-about-impact-open-source-software-and-hardware-technological-independence-competitiveness-and

INDUSTRIE 4.0

FORSCHUNGSBEIRAT

Expertise des Forschungsbeirats der Plattform Industrie 4.0

Open Source als Innovationstreiber für Industrie 4.0

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SCS: Why entirely Open?

- Highly innovative.

- Best possible quality.

- Efficiency and reduced complexity.

- Trust through transparency.

- Ensures digital sovereignty.

- *We believe that basic cloud technology and know-how should be common property.*

https://scs.community

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