

FOSDEM'26



Thanks



Kurt Garloff
CEO S7n Cloud Services
SCS PB, OIF BoD
s7n@garloff.de



Karsten Samaschke
CEO VanillaCore
Assembly Lead GovStack
karsten@vanillacore.net



SPRIN-D
OSBA



GovStack



Supported by:



on the basis of a decision
by the German Bundestag



giz

The world we live in ...

"A world of imperial ambitions
and imperial wars.
A world in which dependencies
are ruthlessly weaponised."

— Ursula von der Leyen, State of the
European Union, September 2025

SocialMedia RareEarths
AI Cloud
Energy Communication
SupplyChains
Navigation Military



OSPOs for Good 2024 (NYC)

“Openness, of course, but there is democratization, the future of democracy. It is human centric digital development. It is values about trust and co-creation, reducing the barriers between governments and citizens. Those values are as important as the aspect of creation and innovation.”

Amandeep Singh Gill

UN Secretary-General's Envoy on Technology



About GovStack

Adaptive Shared Citizen-centric e-Government Services

Mediation Middleware
Open API gateway, secure data exchange

Common Applications Blocks
e-Learning, e-Marketplace business intelligence/analytics, workflow, etc.

Foundational Blocks*
Identity/authentication, security, consent, payment, registration, messaging, etc.

Hosting

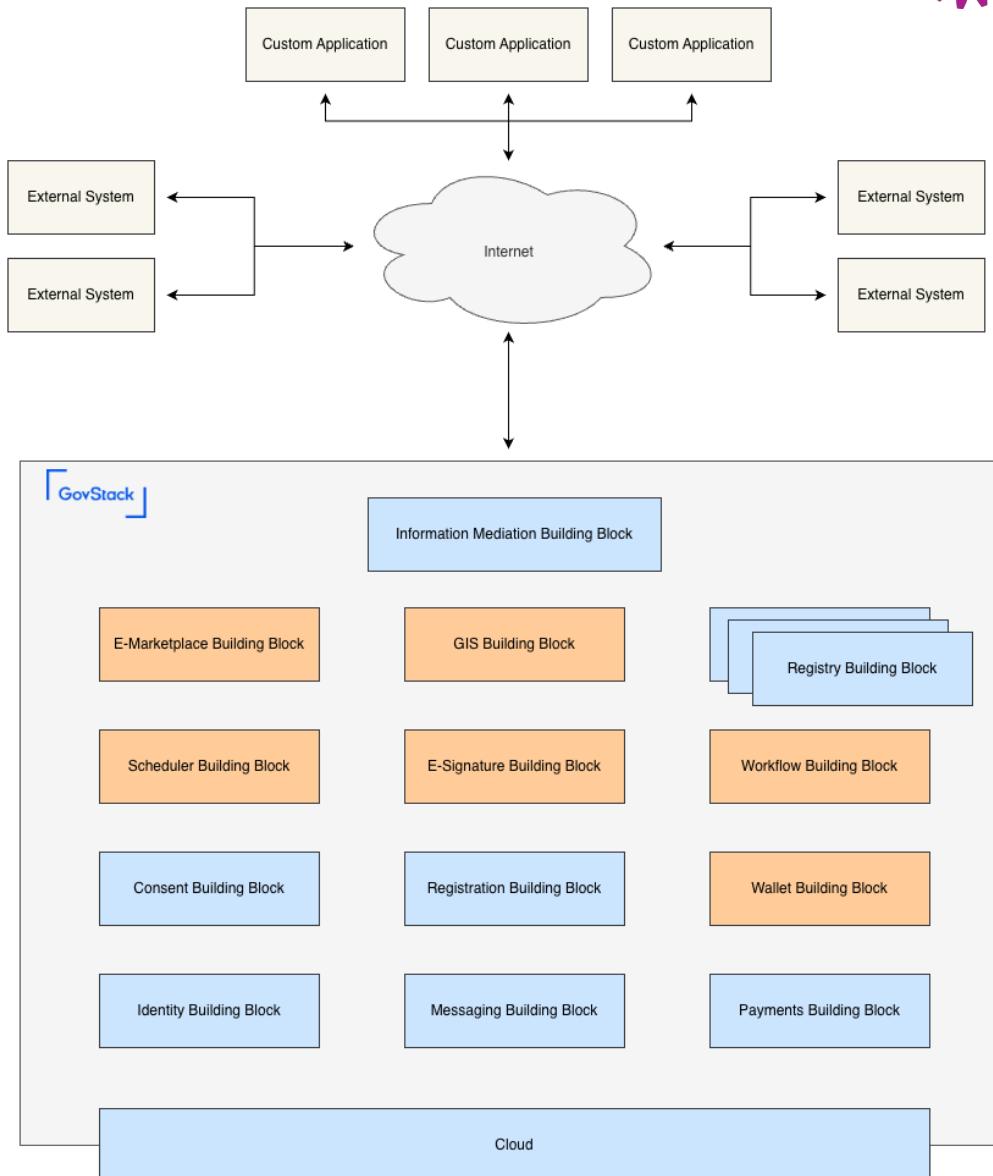


compare



GovStack Building Blocks

- Specifications to be implemented
- Independent Components - Chosen individually per Country
- Vendor Neutrality: Implemented using OSS and Commercial Software as per Country's decision
- Assembled and Operated within the Country or in United Nations Data-Centres, or any feasible Public- or Private Cloud Environment, including Hyperscalers
- Sovereign Cloud Stack (SCS) is the Reference Cloud Implementation for GovStack



Openly-developed OSS on all Levels



GovStack

- Specifications developed in Public
- Assembly developed in Public
- Documentation is Public
- Source-Code is Public
- Automation is Public



Sovereign Cloud Stack

- Specifications developed in Public
- Software developed in Public
- Documentation is Public
- Source-Code is Public
- Automation is Public

Digital Sovereignty a.k.a. Resilience

cloud
ahead



0 True cloud

→ API – driven, scalable virt/container infra

1 Data Sovereignty

Control over data, data sharing and data security. Your data stays where you decide it should stay.

→ Security by design: Virtualization, Encryption, Daily updates (possible), Automated pentesting (GAIA-X labels, ENISA, BSI)

2 Provider Switching Capability

Strong standards ensure changing providers does not have high technical burdens. Makes federation possible.

→ Strong technical standards ensure technically easy switch (or federation): **SCS-compatible**

3 Technological Sovereignty

The ability to shape technology, to innovate and create value. Broadly possible only with openly developed open source.

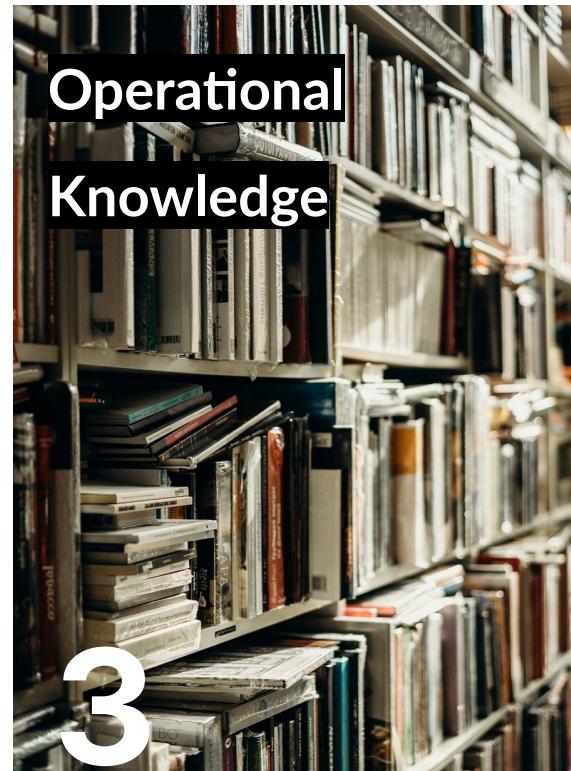
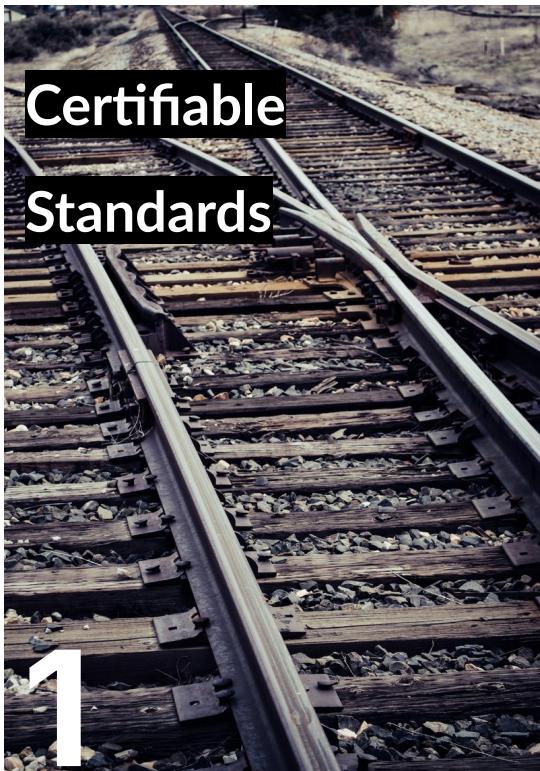
→ Openly developed Open Source code (production quality ref. implementation available): **SCS-open**

4 Operational Skills

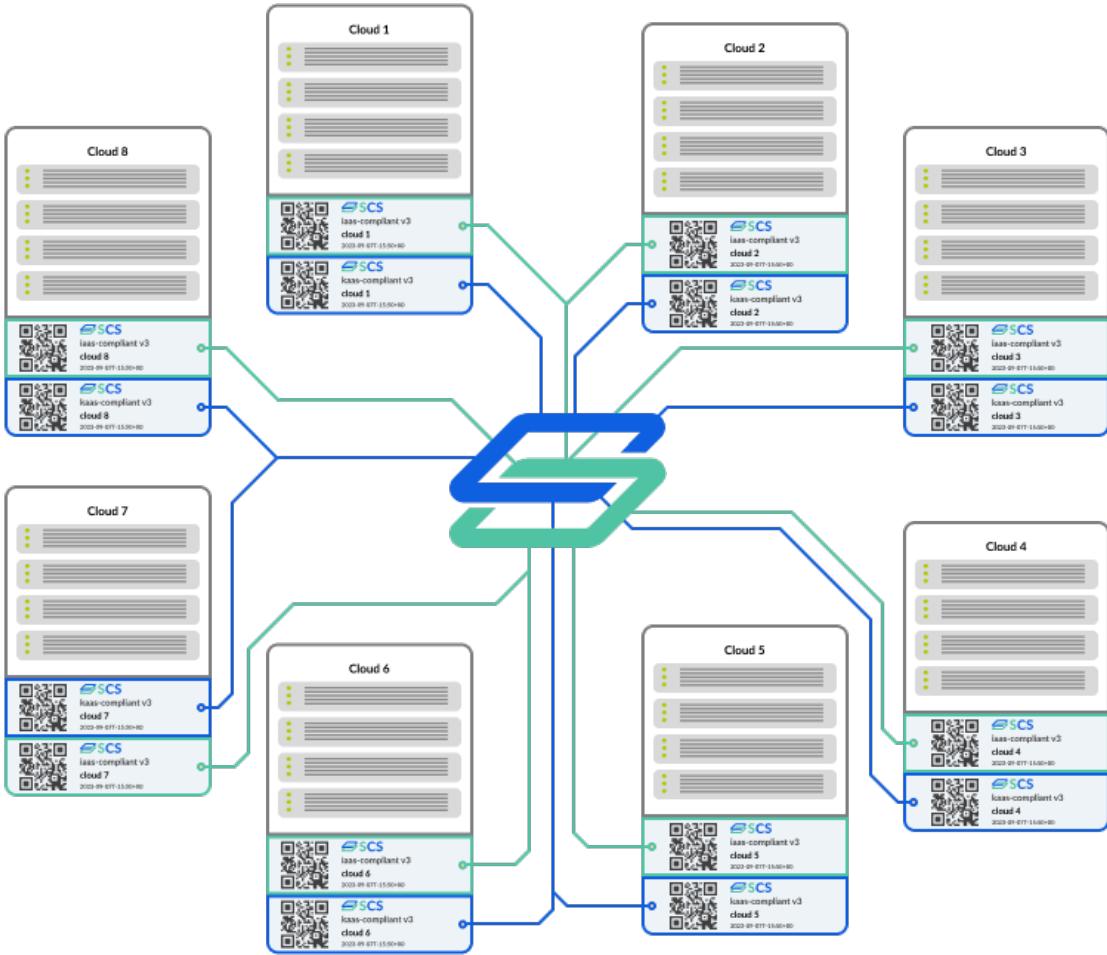
Availability and transparency of operational tools and best practices make operation possible for SMEs.

→ Open Operations: Transparency on Ops tools & processes, knowledge sharing: **SCS-sovereign**

Sovereign Cloud Stack – Deliverables



SCS = an open federated Hyperscaler



Held
together
by common
standards

SCS Standards

File Edit View History Bookmarks Tools Help

Programm Univention Portal Dashboard - Nextcloud GovStack | GovStack Sp... GovStack – Accelerating Overview | One platform

docs.scs.community/standards/standards/overview

Sovereign Cloud Stack Standards For Operators For Contributors For Users Community FAQ GitHub Search

	Standard	Track	Description	Draft	Effective	Deprecated*
Introduction	scs-0001	Global	Sovereign Cloud Standards	-	v1	-
Certification	scs-0002	Global	Standards, Docs and Organisation	v2	v1	-
Standards	scs-0003	Global	Sovereign Cloud Standards YAML	v1	-	-
Global	scs-0004	Global	Regulations for achieving SCS-compatible certification	-	v1	-
IaaS			Supplement: Implementation hints for achieving SCS-compatible certification	w1	-	-
KaaS	scs-0005	Global	Governance of the SCS community	-	v1	-
IAM	scs-0006	Global	SCS GitHub Organization - Management of Inactive Users and Repositories	v1	-	-
Ops	scs-0007	Global	Certification of integrators	-	v1	-
			Supplement: Implementation hints for achieving Certified SCS Integrator	w1	-	-
	scs-0100	IaaS	SCS Flavor Naming Standard	-	v3	v1, v2
			Supplement: Implementation and Testing Notes	w1	-	-
	scs-0101	IaaS	SCS Entropy	-	v1	-

- RFC community processss
- Drafts, reviews, stabilization (github)
- Manadatory and recommended
- Optional implementation hints
- Sorted into tracks
- Test case collection and test suite
- Scopes = Set of mandatory standards

Compliance monitor

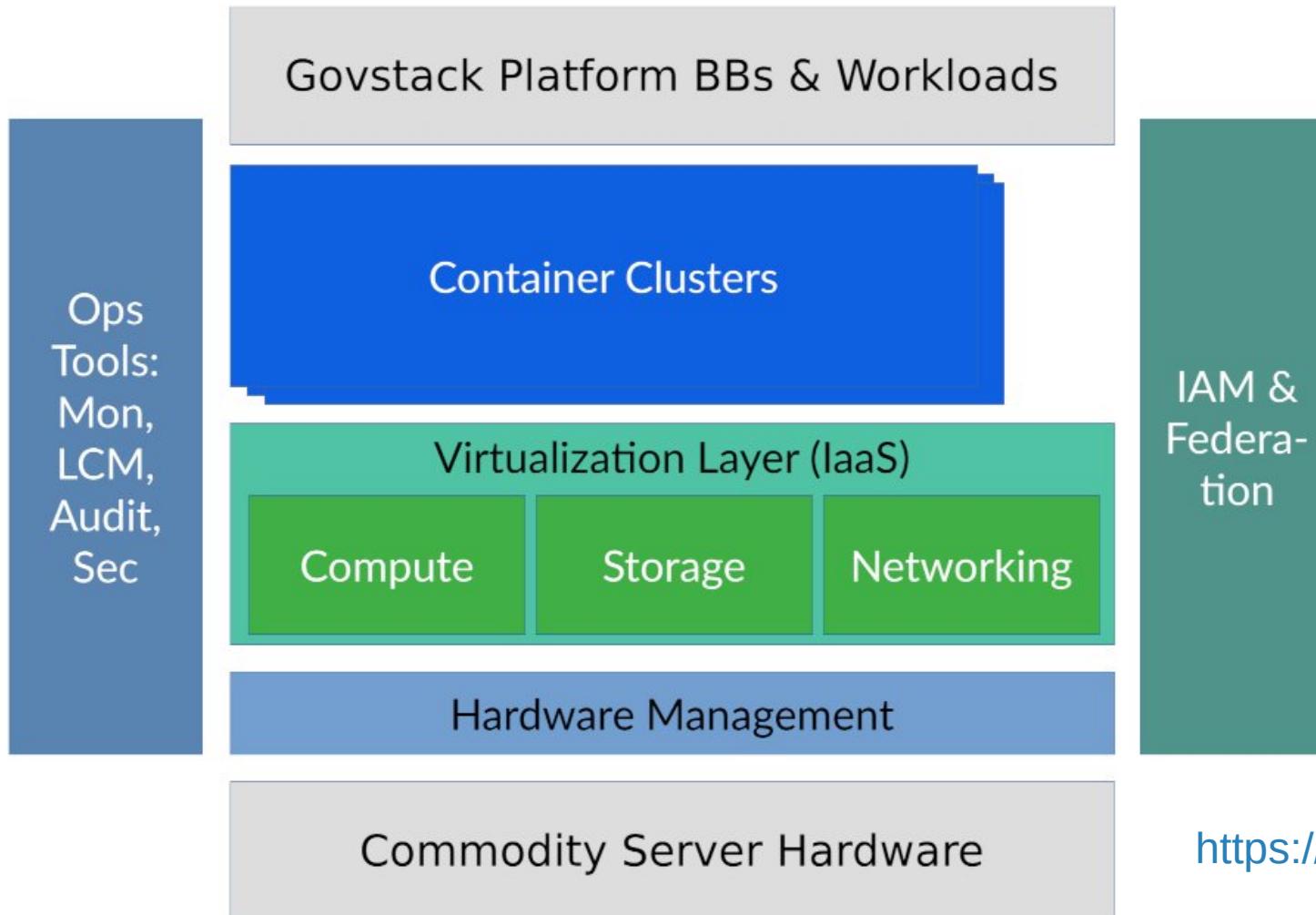
Current (daily)
state of
standards
conformance
(here:
IaaS SCS-
compatible)

SCS compliance overview (incl. unverified results) — Mozilla Firefox

Name	Description	Operator	SCS-compatible IaaS	HealthMon
scs2	Dev/Test/Demo environment (2nd gen) provided for SCS & GAIA-X context	plusserver GmbH	v5.1, next*	HM
aov.cloud	Community cloud for customers	aov IT.Services GmbH	v5.1, next*	HM
CC@RRZE	Private Compute Cloud (CC) for FAU	Regionales Rechenzentrum Erlangen	v5.1, next*	(soon)
CNDS	Public cloud for customers (2 regions)	artcodix GmbH	-	HM
FOCUS	ALASCA community environment	Cloud&Heat Technologies GmbH	v5.1, next*	n/a
pluscloud open	Public cloud for customers (4 regions)	plusserver GmbH	-	HM1 HM2 HM3 HM4
REGIO.cloud	Public cloud for customers	OSISM GmbH	v5.1, next*	HM
ScaleUp Open Cloud	Public cloud for customers	ScaleUp Technologies GmbH & Co. KG	v5.1, next*	HM
syseleven	Public OpenStack Cloud (2 SCS regions)	SysEleven GmbH	-	(soon)
Wavestack	Public cloud for customers	noris network AG/Wavecon GmbH	v5.1, next*	HM
PoC WG-Cloud OSBA	Cloud PoC for FITKO	Cloud&Heat Technologies GmbH	v4††, v3††	HM

OpenStack
Health
Monitor
Dashboard:
Public realtime
monitoring of
performance and
error rates
(Recommended)

Cloud Building Block - SCS as Foundation for GovStack



<https://cloud.govstack.global/>

Rolling out Sovereign Cloud Stack

- Used by Governments and Private Companies in Europe
- African, Asian and American Countries are currently preparing for Sovereign Cloud Stack Rollouts
- Main Arguments: Digital Sovereignty, Open-Source, and Knowledge / Skills Building within the respective Countries
- Avoidance of Vendor Locks
- Avoidance of new Colonial Schemes
- Complemented by United Nation's Offerings



Skills / Capacity building

- Digital Sovereignty and Open-Source need to be learned
- Humans need to be skilled and enabled
- Capacities in Data-Centres and on-premises need to be defined and planned for



Open Knowledge: Docs & Training material

docs.scs.community

67%

Sovereign Cloud Stack Standards For Operators For Contributors For Users Community FAQ GitHub Search [ctrl] X

Welcome to the SCS Documentation

Find user guides, code samples, deployment examples, reference, community pages and more.

Introduction to SCS

Get to know SCS better and learn about the background.

[Get Started](#)

Releases

The latest release of the SCS reference implementation is R8. Check out the Release Notes.

[Learn More](#)

Frequently Asked Questions

You are curious what SCS is all about, what it can do and what it can't?

[Get Answers](#)

Existing Public Clouds

There are SCS compliant public clouds in production.

[Test Them](#)

Architectural Layers

Ops Layer

Tooling and infrastructure design for easy, efficient and transparent ways to operate an SCS Cloud.

[Learn More](#)

Container Layer

SCS offers a robust solution for managing container workloads on a Kubernetes infrastructure.

[Learn More](#)

IAM Layer

Working on Keycloak federated identity provider within our Team IAM.

[Learn More](#)

IaaS Layer

SCS offers OpenStack infrastructure solutions based on KVM virtualization to deploy VM workloads and enabling the container layer optionally.

[Learn More](#)

Additional Resources

Get in touch

Come into our Matrix Chat in the SCS | Tech Room.

[Join Now](#)

Come to our Meet-Ups

Our working groups and special interest groups meet weekly or biweekly. When? Find out within our public community calendar.

[Learn More](#)

Standardization in progress

Get to know our current Decision Records and Standards.

[Start Now](#)

Deployment Examples

Get to know different ways to deploy SCS with cloud resources or on bare metal.

[Explore Cases](#)

Application Examples

Discover best practices to make the most of your cloud, from introductions to specific

Contents	
Search...	
➤ SCS training: Introduction	1
➤ Virtualization Layer: Operating SCS I...	3
➤ Virtualization overview	3
➤ Containerized OpenStack with k...	13
➤ Introduction to CEPH	23
➤ OSISM manager tooling	32
➤ IaaS Monitoring and Compliance	35
➤ Working with multiple Environm...	39
➤ Maintenance and Dealing with e...	41
➤ Updates and Upgrades	44
➤ Supporting users	46
➤ SCS Cluster Stacks Course	53
➤ Course Overview	53
➤ Introduction	53
➤ What Are Cluster Stacks?	53
➤ Cluster Stacks in the SCS Ecosyst...	54
➤ Architecture Overview	54
➤ Components and Responsibilities	55
➤ Quickstart Guide - Docker Infras...	56
➤ Quickstart Guide - OpenStack In...	57
➤ Configuration and Customization	60
➤ Building your own Cluster Stacks	61
➤ Upgrading Workload Clusters	63
➤ Debugging and Troubleshooting	64
➤ Summary and Further Learning	65
➤ Appendices and Resources	65
➤ SCS Monitoring	67
➤ Course Overview	67
➤ Introduction	67
➤ Motivation and Use Cases	67
➤ Monitoring Overview	68
➤ Example Deployments	70
➤ Dashboards and Customization	73
➤ Appendices and Resources	75
➤ SCS Container Registry (Harbor)	77
➤ Course Overview	77

Sovereign Cloud Stack Training Course¹

International Telecommunication Unit (ITU)
Place des Nations
1211 Geneva 20 Switzerland

v1.2.3
2025-08-31



¹License: CC-BY-SA-4.0
Material has been prepared by Kurt Garloff of 57n Cloud Services GmbH for the ITU following good collaboration in the gostack project.

The material was used for a training in Kenya paid for by GIZ and subsequently improved.
Thanks for contributions to dNation s.r.o., VanillaCore GmbH, OSISM GmbH.
A lot of material was prepared during the Sovereign Cloud Stack project at the OSBA by the SCS community, with funding from the German Federal Ministry for Economic Affairs and Climate Action.
Sovereign Cloud Stack, SCS and its logo are protected trademarks by the OSBA in most countries.

Thanks to ITU, GIZ,
VanillaCore, dNation, OSISM!

Digital Sovereignty is more than Open-Source

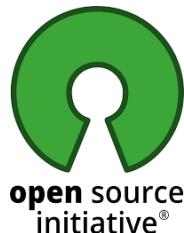
Control
(data)



Choice
(switching)



Shape
(innovate)



Understand
(operate)



Enabling Countries for Digital Sovereignty



Kazakhstan: Digital Sovereignty using Open-Source

President Kassym-Jomart Tokayev of the Republic of Kazakhstan



Kazakhstan wants to become a “fully digital nation within three years.”

“Today, over 92% of government services are available online.

Last year, the share of cashless payments in the country exceeded 85%.

In the first six months of this year alone, 26 million digital services were provided to Kazakhstani citizens, half of which were provided via smartphones.”

Kazakhstan uses OpenStack within its national data center infrastructure, including for several government platforms managed by National Information Technologies JSC.

Open-source technologies form an important part of our approach to building resilient and sovereign digital ecosystems.

Download Slides



<https://scs.sovereignit.de/nextcloud/s/4tnmPkxB6SgKoCs>