ALASCA

Verband für betriebsfähige, offene Cloud-Infrastrukturen e.V.

Continuity on the Path to Digital Sovereignty – European Initiatives in Focus

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Table of contents

1. Introduction

Europe is facing one of the biggest digital challenges of its time: achieving digital sovereignty in the face of geopolitical tensions and the dominance of non-European tech giants. At a time when digital resources are increasingly seen as economic and geopolitical factors of power, it is crucial for Europe to maintain control over its digital infrastructures and data. This control not only affects companies and public institutions but also has a profound impact on society as a whole. Digital sovereignty is the foundation for innovation, security and economic independence at both national and European level.

Against the backdrop of the increasing dominance of non-European cloud providers, particularly from the US and China, the dependence on external players poses a growing threat to Europe's political, economic and social independence. These providers control critical infrastructures and process data without always adhering to European data protection standards. This makes it all the more urgent for Europe to regain control of its digital infrastructure, which requires not only the establishment of a secure and trustworthy digital infrastructure, but also the protection of fundamental European values such as data protection, data sovereignty and open standards. Only with a sovereign digital infrastructure can Europe exist as an independent player in the digital era.

In this context, several European initiatives such as Gaia-X, Manufacturing-X, Catena-X, IPCEI-CIS, the 8ra initiative, the Sovereign Cloud Stack (SCS) and the Open Source Business Alliance (OSBA) play a key role. They are not only attempts to actively shape the digital transformation, but also an expression of the political will to establish European digital sovereignty. These initiatives aim to develop a digital infrastructure that meets Europe's specific requirements and forms the basis for a competitive, secure European cloud infrastructure. However, despite these ambitious goals, these initiatives face major challenges. The recent withdrawal of Nextcloud from Gaia-X impressively demonstrates how difficult it is to establish a stable and coherent European cloud infrastructure that is supported by all relevant stakeholders. Questions about the practicality and sustainability of such initiatives raise important concerns about whether and how these initiatives can successfully stay on track in the long run.

This white paper examines the various European initiatives on digital sovereignty: their origins, objectives and the current status of their implementation. It examines how these initiatives are interlinked and the common challenges they must overcome on the way to a sovereign and secure digital future for Europe.

In addition, this analysis is supplemented by the discussion points, statements and demands of the experts at the press conference, which took place in Berlin on March 25, 2025. Experts from business and politics who are actively involved in the various initiatives or have followed their developments in recent years provide valuable perspectives and insights into the ongoing processes. Their assessments and suggestions help to clarify the complexity of implementing a sovereign digital infrastructure in Europe and provide important imputes for the future development of these initiatives.

The expert panel was made up of the following experts:

- Ernst Stöckl-Pukall (BMWK)
- Felix Kronlage-Dammers (OSBA / SCS)
- Miriam Seyffarth (OSBA)
- Till Hertwig (N+P Informationssysteme)
- Gregor Schumacher (cloud ahead)
- Oliver Nyderle (Deutsche Telekom)
- Gernot Hofstetter (Yorizon)
- Marius Feldmann (Chair of ALASCA and COO Cloud&Heat Technologies GmbH)

2. Overview of European initiatives

In order to assess the continuity and potential of the European initiatives, it is essential to understand what they each achieve and what goals they pursue. Projects such as Gaia-X, Manufacturing X, Catena X, IPCEI-CIS/8ra, Sovereign Cloud Stack (SCS) and the Open Source Business Alliance (OSBA) were launched to strengthen Europe's digital sovereignty, promote open standards and create a secure, interoperable infrastructure. Only by understanding their origins, objectives and current developments will it become clear how these initiatives can work together to create a secure and competitive digital future.

2.1 Gaia-X and Manufacturing-X

Gaia-X was launched in 2020 following the initiative of the Federal Ministry for Economic Affairs and Climate Protection (BMWK) and in collaboration with partners from France to strengthen Europe's digital sovereignty and create a trustworthy, secure and interoperable cloud infrastructure. The aim of Gaia-X is to offer a European, open cloud infrastructure that operates according to the highest security and data protection standards and enables the exchange of data between different cloud providers. Gaia-X pursues the promotion of open standards and cooperation between cloud services and data providers in order to reduce dependence on non-European cloud providers and establish a European solution for data sovereignty and security. (Source: Website: https://gaia-x.eu)

In the implementation phase of Gaia-X, various players from the areas of business, science and politics are working together, including large companies such as Deutsche Telekom, Atos and SAP as well as numerous smaller cloud service providers. (Source: Gaia-X annual report 2023: https://gaia-x-hub.de/community-events/rueckblick-2023/)

Gaia-X is an umbrella term for several sub-initiatives. One of these initiatives is Manufacturing-X, which was launched in 2020 under the Industry 4.0 platform, another initiative of the BMWK and the Federal Ministry of Education and Research (BMBF). The aim of Manufacturing-X is to drive forward the digital transformation of European industry and take on a leading role in Industry 4.0. The aim is to create a secure and interoperable data space in order to strengthen the competitiveness and sustainability of industry.

Manufacturing-X focuses on the entire manufacturing industry and is designed to optimize supply chains and develop new business models. As part of this initiative, major companies such as Bosch, Siemens and SAP as well as many other players will work together to create an interoperable platform based on open standards that enables data exchange in the industry. Criticism of Manufacturing-X relates to security risks in the networking of production facilities, the dependence on sectors such as transportation and energy and the need for international coordination.

Another important area within Gaia-X is Catena-X, an initiative that specifically addresses the automotive sector. Catena-X aims to create an interoperable data platform that enables the exchange of information along the entire value chain of the automotive industry. This platform is supposed to not only increase efficiency but also safeguard the digital sovereignty of players within the industry. It can already be used and serves as a reference for other projects.

Despite the promising goals of Gaia-X, there are critical voices regarding the practical implementation and slow development of the initiative. In 2025, important member companies such as Nextcloud withdrew, whose CEO considered the project a failure. In particular, the slow pace of progress and the growing influence of US hyperscalers are seen as problems that are slowing down the project. (Source: Golem] There are also concerns about excessive bureaucracy and conflicting interests within the project. The growing influence of these US companies is also criticized, as they are accused of blocking vendor-neutral and portable cloud models. (Source FAZ)

In the future, Gaia-X plans to strengthen its infrastructure through concrete use cases and further expand the interoperability between European cloud and data platforms. New partnerships and continuous dialog with the open source community will help to address weaknesses and establish the project as the long-term backbone of the European digital economy (source: Gaia-X Roadmap 2024).

2.2 IPCEI-CIS

The Important Project of the Common European Interest on Cloud Infrastructure and Services (IPCEI-CIS) is an initiative launched by the members of the European Commission Germany and France with the aim of promoting cloud and edge computing technologies in Europe. The project aims to create an interoperable and openly accessible European ecosystem for data processing – the so-called multi-provider cloud edge continuum. This innovative approach is intended to provide European companies with a robust digital infrastructure that meets the highest standards of security, data protection and interoperability. The IPCEI-CIS was born out of the desire to strengthen Europe's digital sovereignty and significantly reduce dependence on non-European cloud providers. It promotes the development of cloud infrastructures that comply with European standards and enable companies to build an independent, trustworthy digital infrastructure. The initiative thus contributes significantly to the creation of a secure digital space for companies throughout the EU (source: CloudComputing Insider).

The initiative is supported by several EU member states, including Germany, France, Italy, the Netherlands, Poland, Spain and Hungary. More than 100 companies and research institutions from a total of 12 EU member states are involved. The leading companies include well-known names such as T-Systems, Atos, OVHcloud, Deutsche Telekom, Siemens and SAP. These partnerships are key to driving the development of a secure, sustainable and competitive cloud infrastructure (source: CloudComputing Insider).

In December 2023, the European Commission announced the official launch of the IPCEI-CIS project. Since then, the participating companies and research institutions have been in the research, development and implementation phase, which is set to last until 2031. This long duration is necessary to achieve the project's ambitious goals and create a future-proof European cloud infrastructure (source: FH Dortmund).

Despite the broad support and promising approaches, there are concerns about the slow implementation and the challenges posed by the coordination of the various players. Some experts question whether the solutions developed can be completely independent of foreign technologies, as European cloud infrastructures are partly dependent on non-European hardware. This could compromise long-term independence and digital sovereignty (source: CloudComputing Insider).

To further promote IPCEI-CIS, the 8ra initiative was established as an overarching structure at a political level. 8ra is intended to ensure that the results of IPCEI-CIS are continued beyond the program horizon and further developed in the long term in order to create sustainable added value. The initiative lays the foundation for a decentralized, interoperable and secure cloud edge ecosystem that enables the seamless provision of IT services across provider and country borders. Its aim is to create a European cloud edge infrastructure that meets the highest standards of security, data protection and interoperability while strengthening Europe's digital sovereignty. (Source: www.8ra.com, https://www.computerwoche.de/article/3821798/gaia-x-ist-tot-lang-lebe-8ra.html)

2.3 Sovereign Cloud Stack (SCS) and OSBA

The **Sovereign Cloud Stack (SCS)** is an innovative project of the **Open Source Business Alliance (OSBA**) that aims to develop open standards for cloud and container infrastructures. With the overarching goal of creating a European cloud infrastructure that is not only secure and sovereign, but also based entirely on open standards, SCS aims to establish a genuine European alternative to the dominant US cloud providers. The focus is on an interoperable, open and privacy-friendly infrastructure that strengthens Europe's digital sovereignty. The project has already made initial progress and there are several reference implementations of cloud services that are being tested in practice. These implementations are actively supported by various European cloud providers and companies that contribute to the continuous development of SCS.

Following the successful completion of the funded SCS project on December 31, 2024, the initiative will be continued. A group of numerous companies has come together within the OSBA and founded the **SCS Standards Forum.** This forum will continue the standardization and certification work and focus on the **SCS-compatible, SCS-open** and

SCS-sovereign certification levels to ensure that the standards developed continue to meet the high European requirements for security, data protection and interoperability. (Sources: https://scs.community/de/, https://www.osba.de/, https://www.open-infrastructure.org/)

3. The connection of initiatives

The European initiatives briefly presented in the previous section pursue the common goal of European digital sovereignty in different ways. They are committed to building a European, secure and interoperable digital infrastructure that strengthens independence from non-European providers and at the same time promotes the competitiveness of European industry. Although these initiatives operate in different areas – from cloud infrastructure to industrial data spaces and digital production processes – there is a promising opportunity for collaboration that could ensure the success of digital sovereignty in the long term.

3.1 Joint goals and cooperation

The increased networking and coordination of the Gaia-X, IPCEI-CIS, OSBA, SCS and Manufacturing X initiatives offers great potential for a future-proof European digital infrastructure. Gaia-X and IPCEI-CIS are creating a European cloud infrastructure that acts as a secure and interoperable platform. This is central to the success of projects such as Manufacturing X. Manufacturing X uses the secure, interoperable data spaces of Gaia-X and IPCEI-CIS to enable the networking of production systems and the exchange of production data. Close dialog and ongoing collaboration between these initiatives could be key to driving the development of a robust, future-proof infrastructure for Industry 4.0 in Europe.

The Sovereign Cloud Stack (SCS) and the Open Source Business Alliance (OSBA) play a central role in promoting open standards and software solutions that can be adopted by all participating initiatives. Through standardization and the use of open source technologies, they support the seamless integration and interoperability of digital infrastructures – and thus significantly increase the efficiency, flexibility and innovative strength of projects.

3.2 Challenges on our way to continuity

Despite the promising opportunities for cooperation, there are considerable challenges on the path to digital sovereignty. One of the biggest hurdles is the coordination between initiatives that are active in different areas. The challenge lies above all in the efficient coordination of projects with different time frames, priorities and objectives. In particular, coordination between industry and cloud infrastructure applications as well as ensuring interoperability and open standards are of central importance.

The question also arises as to what extent these initiatives can reconcile their respective specific requirements and approaches. While IPCEI-CIS and Gaia-X primarily create the basis for a European cloud infrastructure, Manufacturing X focuses on the optimization of production processes. These differences in objectives require close cooperation and continuous adaptation in order to create synergies. Seamless integration and the expansion of open interfaces are crucial to ensure that the infrastructures complement rather than compete with each other.

Another critical point concerns the allocation of resources and ensuring sustainable funding for these initiatives. Although the EU has already provided significant funding, it is important to involve private companies and investors more to ensure the long-term scalability and success of these projects. More collaboration between the initiatives and the financial community could help to create a balanced ecosystem that integrates and supports both public and private parties. (Source: https://www.reuters.com/markets/europe/private-cash-spurred-by-public-funds-should-drive-eu-investment-ministers-say-2024-11-04)

3.3 Synergies and Chances for Europe

The ongoing collaboration between these initiatives holds enormous potential. A common European cloud infrastructure, driven by Gaia-X and IPCEI-CIS, could form the basis for further projects such as Manufacturing X. By pooling their expertise and resources, these initiatives could create a digital ecosystem that not only strengthens Industry 4.0 in Europe but also promotes innovation and new business models. The interplay of cloud infrastructures, secure data spaces and open source technologies would help to strengthen the industry, create new value chains and promote digital transformation in Europe in the long term.

A major advantage of closer cooperation also lies in scalability: the establishment of a joint infrastructure would relieve the burden on small and medium-sized enterprises (SMEs) that would otherwise not have the resources for their own isolated systems. This is in line with the vision of anchoring the digital transformation as broadly as possible in the European economy – an objective that is also clearly defined in initiatives such as Manufacturing X. This would not only lead to cost reductions, but would also accelerate the digital transformation in Europe. European industry is under increasing pressure, especially in the face of global challenges such as geopolitical uncertainties, disruptive technologies and supply chain crises. Dependence on non-European hyperscalers and the vulnerability of global supply chains highlight the need to build digital sovereignty. A common European infrastructure could be crucial here to reduce these dependencies and strengthen digital resilience in the long term.

4. Results of the Press Conference of March 25th 2025

In the face of geopolitical tensions and the dominance of non-European tech giants, Europe faces the challenge of shaping digital sovereignty not just as a political vision, but as a concrete reality. The press conference brought together leading voices from politics, business, open source and SMEs. The discussion made it clear that the path to a sovereign digital infrastructure leads through networking, standards and long-term thinking – not through short-term lighthouse projects or isolated technological solutions.

Continiuty instead of Disruption

One of the key results of the press conference was the appeal not to play initiatives off against each other, but to focus on synergies and further development. Structural continuity is needed instead of ever new individual projects.

Dr. Marius Feldmann (ALASCA): “Solutions that do not use synergies with existing initiatives run the risk of producing results that are neither sustainable nor long-lasting.” Gregor Schumacher (cloud ahead) also emphasized that new initiatives only make sense if they are specifically made connectable: “If we are not connectable to what others are already doing, we fragment the market – and lose valuable time.” Ernst Stöckl-Pukall (BMWK) emphasized the need for continuous further development of existing structures: "It's not about constantly launching new projects, but about further strengthening and connecting existing initiatives. The future of digital sovereignty lies in long-term cooperation, not in short-term individual projects." Gernot Hoffstetter (Yorizon) added: "Digital sovereignty requires continuity. Sustainable European cloud infrastructures can only be created through long-term cooperation between industry, research and politics."

Digital Sovereignty is not a Sprint – it’s a Marathon

On the subject of long-term planning and sustainable solutions, Stöckl-Pukall explained: "We need to clearly understand that digital sovereignty is a long-term project that takes time. The solutions we develop today must be flexible and scalable enough to still be relevant tomorrow. Policies and technology must go hand in hand to achieve true digital independence." Digital sovereignty requires time, reliability and structural planning. Ernst Stöckl-Pukall (BMWK) emphasized: “We need independent solutions that can grow – not just computing capacity alone.” The break between the political narrative and technical reality is particularly problematic - a lack of integration that slows down many processes. Political framework conditions and stable governance structures are necessary in order to channel investments in a targeted manner and avoid fragmentation. Oliver Nyderle (T-Systems) added: “We need continuity in political management, but also continuity in implementation – and to achieve this, we need to move beyond the logic of funding.” He thus addresses the need to understand project funding not as a one-off

impulse, but as a strategic process. Felix Kronlage-Dammers (SCS) also made it clear that digital sovereignty is not a short-term project, but a long-term structural task: "Continuity is the marathon, while AI is the sprint. Both need their space, but sustainable digital infrastructure doesn't happen overnight."

Open Source as the Basis for Sovereignty

There was a consensus that open source plays a key role – not just technically, but as a strategic model. It enables independence, transparency and cooperation across national and company borders. Miriam Seyffart (OSBA) emphasized: “Public money, public code must become standard.” This is not just about ideals – open source is also relevant in terms of security and costs: “If the new federal government does not start to focus massively on expanding open source alternatives, this could have a dramatic impact on the ability of public administration to act and function, the reliability and IT security of the systems used and the burden on public budgets in the coming years,” she warned with regard to the current situation in the state and administration. Gregor Schumacher also emphasized: “Open source is the only way we can ensure sustainable European value creation – everything else makes us dependent.” And he made it clear: “We can only achieve sovereignty if open source is taken seriously not just as a technology, but as a business model.” Gernot Hoffstetter (Yorizon) emphasized the collective dimension: “We want to be part of a movement that is bigger than ourselves – open source creates precisely this collective space.”

Standardization and Interoperability as Enablers

Binding standards and open interfaces are essential for federated, decentralized structures to work together reliably. The Sovereign Cloud Stack (SCS) is named as the central reference platform – supported by the commitment of the community, which ensures technical compatibility. Felix Kronlage-Dammers (SCS) put it in a nutshell: “Europe is big enough for collaboration over competition to be worthwhile.” Oliver Nyderle (T-Systems) added: “What we need is a minimum level of commitment – not everyone doing their own thing, but a European stack that provides orientation and security.” Till Hertwig (N+P) said: “We need to create standards that make sense from the user's perspective – in other words, that are tangible and usable.”

SMEs need tangible Use Cases

For many SMEs, digital sovereignty is still an abstract concept. What is missing, however, are concrete, practical use cases that offer clear added value. Till Hertwig (N+P) emphasized: “We need solutions that can be tested directly by users.” Only tangible, experiential applications create actual demand.

Dezentralized Structures as European Strength

Instead of emulating a European hyperscaler based on the US model, Europe is focusing on alternative concepts. One option is to build large cloud infrastructures on an open source basis by resilient European companies that meet the highest local data protection and security standards. Another important option is the creation of interoperability between many different providers. Felix Kronlage-Dammers (SCS) drew the comparison to a “weekly market instead of a department store”: a large number of providers, uniform standards - and therefore real choice. The distribution across numerous regional providers creates resilience and is proving to be an efficient strategy for expressing digital, European strength – cooperative, diverse and at eye level. Gernot Hoffstetter (Yorizon) added: “Broad participation from business and civil society is crucial to the sustainable growth of these platforms.”

Politics with Impact – Instead of Symbolism

The experts agreed that policymakers do not need to build a cloud themselves but rather create the space in which sovereign digital infrastructures can grow. What is needed are clear guidelines instead of symbolic lighthouses and binding tender criteria instead of individual initiatives. Ernst Stöckl-Pukall (BMWK) emphasized the political role in promoting digital sovereignty: "Politicians should not try to regulate everything themselves but create the right framework conditions so that the economy and technology sector can prosper. It's about creating a stable space in which innovations can thrive – without constantly setting new political symbols."

Miriam Seyffart (OSBA) added with a clear appeal: “We don't need a Buy German – we finally need a Buy European.” This sentence illustrates the need to focus on European solutions and cooperation instead of getting lost in national or isolated approaches.

At the same time, a dangerous trend was warned against: the drifting apart of political narratives and technological reality. Marius Feldmann (ALASCA) warned: “The most dangerous break is the vertical one – between storytelling and real technological implementation.” If strategy papers and funding logics do not pay into the concrete working level, there is a risk of frustration – and the opportunity for digital sovereignty is lost.

What is needed is a policy that not only tells stories, but makes them possible: through strategically bundled funding, long-term planning – and the courage to rely on functioning structures instead of constantly creating new symbols.

5. Conclusion and Outlook incl. Recommendations for Future Actions

Europe's digital sovereignty is not a vision – it is a necessity. Only through consistent cooperation, political backing and continuous development can European initiatives develop their full potential – and position Europe as an independent digital player worldwide.

Despite the progress made, building a sovereign European cloud infrastructure remains one of the biggest strategic challenges. Geopolitical tensions and dependence on non-European providers require decisive action. It is therefore all the more important that the existing initiatives are supported politically, networked in a targeted manner and provided with long-term investment security.

The successes achieved to date – particularly in standardization and cooperation across sectoral and national borders – provide a stable basis. It will be crucial to maintain continuity and make Europe a pioneer in digital sovereignty, not only in terms of technology but also in terms of ideas.

Recommendations for Future Actions for Politics, Economy and Society

The following recommendations are derived from the discussion:

1. **Expand existing initiatives instead of creating new ones**
   Strengthen and network structures such as SCS or ALASCA in a targeted manner – through active participation in the community and utilization of joint results instead of distributing resources to new individual projects.
2. **Anchor Open Source as Standard in the public Composition**
   Initiate procurement reforms at federal and EU level to systematically favor open technologies.
3. **Define uniform standards for interoperability**
   Create neutral, European bodies for standardization and secure them in the long term.
4. **Develop long-term political strategies**
   Digital sovereignty requires political planning beyond legislative cycles – including institutional anchoring.
5. **Strengthen and bind together SMEs**
   Binding together trustworthy SMEs and strengthening joint value creation.
6. **Interlock political narratives with technical reality**
   Strategies must have an impact at the operational level - through practical feasibility and the involvement of real stakeholders.
7. **Think and act Europe-wide**
   Develop a coordinated “Buy European” model, establish joint tenders and harmonize funding frameworks.

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