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Europe's Quest for Digital Sovereignty: GAIA-X as a Case Study

by Simona Autolitano and Agnieszka Pawlowska

ABSTRACT

There is currently much discussion about "digital sovereignty" in Europe. While the term encompasses very diverse connotations, it refers to a broad concept involving data, technological, regulatory and political elements. Cloud computing represents one example of the concrete materialisation of the European Union's quest for "digital sovereignty" – especially through the development of its GAIA-X project. It is too early to assess whether or not GAIA-X will definitively help the Union to achieve this much-desired goal; however, some challenges have already emerged along the way. Looking to the future, if the EU wants to achieve "digital sovereignty", a different strategy to the one currently under discussion will be needed.

keywords

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Introduction

Digital technology is changing people's lives. This development has become even more visible with the onset of the COVID-19 pandemic. We have seen an increase in teleworking and the use of e-commerce platforms worldwide, as well as an acceleration of online education. However, the pandemic has also raised many questions around our dependence on the technology companies involved in these services, which are mainly based outside the European Union.

The aspiration of creating alternatives to foreign companies dominating the EU market for digital services is nothing new, and can be traced back to 2010 in countries such as France or Germany. However, since then a great deal has changed.

Today the ambition of achieving "digital sovereignty" features as a priority on the European Commission's digital agenda. In her "Agenda for Europe", Commission President Ursula von der Leyen clearly states that "it is not too late to achieve technological sovereignty in some critical technology areas", citing artificial intelligence, quantum computing and blockchains as examples of such areas.[1] Gradually, Europe's "digital sovereignty" is taking shape.

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[1] Ursula von der Leyen, *A Union that Strives for More. My agenda for Europe. Political Guidelines for the Next European Commission 2019-2024*, 16 July 2019, p. 13, https://op.europa.eu/s/oSKL; Mark Scott, "What's Driving Europe's New Aggressive Stance on Tech", in *Politico*, 27 October 2019, https://www.politico.eu/article/europe-digital-technological-sovereignty-facebook-google-amazon-ursula-von-der-leyen.

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Cloud computing is an especially interesting case, if only because the EU has already engaged in a major project, called GAIA-X, to achieve greater capacity in this field. Indeed GAIA-X can be described as a first step towards the concretisation of what the Union defines as "digital sovereignty". Previous national experience, such as with "Andromède" in France or the "Bundescloud" (federal cloud) in Germany, shed light on potential shortcomings and challenges faced by the GAIA-X project. While it remains very difficult to compete directly with the hyperscalers,[2] the EU needs an alternative route that focuses on its own strength – i.e. its European "added value".

1. Towards a definition of European "digital sovereignty"

The digital transformation, digitalisation and digitisation turbo[3] in the year of the COVID-19 crisis require us to think about digital technologies and how we deal with them.[4]

What happens to our data when we use video-conferencing systems or operate our robot vacuum cleaner via an app? And how can we safeguard work processes if we are suddenly denied access to our digital platform for political reasons? Due to dependence on a relatively small number of market leaders, such questions about potential future deficits for our digital economy and modern society increasingly characterise the political debate in the EU.

In recent years, the concept of "digital sovereignty" has become prominent at both the national and international level, feeding into political agendas, cybersecurity strategies and industrial-policy decisions. Nevertheless, what "digital sovereignty" actually means for the EU is far from clear.

Digital sovereignty means control over one's own digital data, as well as self-determination in the use and design of digital systems and processes.[5] From this initial conceptual explanation, it becomes clear that "digital sovereignty" is a multidimensional concept. The ambition of "digital self-determination"

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[2] Hyperscalers are generally defined as the three major cloud providers: Amazon, Microsoft and Google. See Peter Bendor-Samuel, "Hyperscale Cloud Providers Shaping the Platform Marketplace", in *Forbes*, 2 March 2020, https://www.forbes.com/sites/peterbendorsamuel/2020/03/02/hyperscale-cloud-providers-shaping-the-platform-marketplace.

[3] Digitisation, digitalisation and digital transformation are here seen as distinct phenomena. Digitisation is the process of converting information from a physical format into a digital one. Digitalisation is the process of leveraging digitisation to improve business processes. Digital transformation includes several digitalisation projects and, more importantly, cultural changes. Jason Bloomberg, "Digitization, Digitalization, and Digital Transformation: Confuse Them at Your Peril", in *Forbes*, 29 April 2018, https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril.

[4] European Commission, *A European Strategy for Data* (COM/2020/66), 19 February 2020, p. 2, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0066.

[5] Bitkom, *Digitale Souveränität: Anforderungen an Technologie und Kompetenzfelder mit Schlüsselfunktion. Stellungname*, 2019, p. 9, https://www.bitkom.org/node/13521.

and "sovereignty" does indeed apply to the state and the economy, but it is also relevant to society and individuals. This heterogeneous landscape of actors makes a conclusive and generally valid single definition of "digital sovereignty" very difficult, as it raises different questions and demands depending on the user group in question.[6]

For example, on the one hand, "digital sovereignty" for citizens and civil society means mainly data security and control over their own data; on the other hand, for businesses it also implies freedom of choice between providers of digital systems or technological components. Therefore, the terms "technological sovereignty" and "data sovereignty" are sometimes used interchangeably in place of "digital sovereignty".

Yet these terms cannot be used synonymously; each represents an aspect of the overarching, broader concept of "digital sovereignty". Thus, while "data sovereignty" looks at data security and ownership – and "technological sovereignty" can be understood as the endeavour to engage with key technologies, innovation and digital infrastructures – the concept of "digital sovereignty" also entails regulatory and political elements.[7]

Jean-Claude Juncker, former President of the European Commission, proclaimed in 2018 that "the hour of European sovereignty" had come.[8] Juncker was responding to a changed geopolitical situation: the relationship with the United States under former President Donald Trump was deteriorating, while at the same time EU–China cooperation was being complicated by Beijing's ambition of becoming a technological leader.[9]

Following the revelations by US whistle-blower Edward Snowden, the EU became aware of the increased power of the group of so-called Five Eyes countries (Australia, Canada, New Zealand and the United Kingdom, led by the US) and its own dependence on certain providers of digital services. The view that the protection and control of one's own data is an essential asset worthy of safeguarding began to prevail. This resulted in the General Data Protection Regulation (GDPR), which can be seen as a first building block in the achievement of European "sovereignty" in the area of "data sovereignty". Transatlantic turbulences under Trump and

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[6] Ibid.

[7] Kenneth Propp, "Waiving the Flag of Digital Sovereignty", in *New Atlanticist*, 11 December 2019, https://www.atlanticcouncil.org/?p=205142.

[8] Jean-Claude Juncker, *State of the Union 2018. The Hour of European Sovereignty*, 12 September 2018, https://ec.europa.eu/info/priorities/state-union-speeches/state-union-2018_en.

[9] Emblematic is the speech of Emmanuel Macron at the UN General Assembly, were he states "we are currently experiencing a crisis of the effectiveness and principles of our contemporary world order which will not be able to get back on track or return to how it functioned before". See *United Nations General Assembly: Speech by President Emmanuel Macron*, 25 September 2018, https://www.diplomatie.gouv.fr/en/french-foreign-policy/united-nations/news-and-events/united-nations-general-assembly/unga-s-73rd-session/article/united-nations-general-assembly-speech-by-president-emmanuel-macron-25-09-18.

the debate about Huawei's participation in the 5G rollout in European countries contributed to highlighting the geostrategic and geopolitical implications of Europe's dependence on other markets and technological leaders.

If the idea of "European sovereignty" was already prevalent in the Juncker Commission in 2018, for the new European Commission it has become a top priority.[10] It is therefore no surprise to learn that, under the German EU Presidency in the second half of 2020, "digital sovereignty" became a leitmotif of European digital policy. Germany pushed forward the development of a high-performance, sovereign and resilient European digital infrastructure. The programme for Germany's Presidency states that the EU should strive for "state-of-the-art skills in the field of key digital technologies" while achieving "a common understanding among the EU Member States regarding the definition of and path towards greater digital sovereignty".[11] This passage contains not just the idea of a new beginning but also a call to work together on a definition and a common understanding of "digital sovereignty", thus implicitly recognising the fact that a shared definition of this notion is yet to come. As part of the overarching goal of achieving "digital sovereignty", the German Presidency embraced a new political objective: the creation of a European "sovereign cloud", which is being developed within the framework of GAIA-X, "a project initiated by Europe for Europe".[12]

2. The rise of a "sovereign cloud" in Europe

2.1 France

According to some scholars, the concept of "sovereign cloud" in the French political discourse started to develop in the context of the 2008 economic crisis.[13] Since then the term has taken on different connotations and meanings, and has materialised in various political initiatives.[14] For simplicity, we can distinguish three main development phases.

The first phase can be traced back to the end of 2009 and sees the first ever "sovereign cloud" project in France, also known as Andromède. The weaknesses of French industry, particularly in digital technology, were of great concern for the country's government. François Fillon, the then-Prime Minister, declared in January 2010 that the dominant position of the US was a "major challenge for the competitiveness of our economies, for […] sustainable development and even, I

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[10] Ursula von der Leyen, *A Union that Strives for More*, cit.

[11] Federal Foreign Office, *Together for Europe's Recovery. Programme for Germany's Presidency of the Council of the European Union*, July 2020, p. 8, https://www.eu2020.de/eu2020-en/programme.

[12] Statement on the official website of the project: https://www.data-infrastructure.eu/GAIAX.

[13] Clotilde Bômont and Amaël Cattaruzza, "Le cloud computing: de l'object technique à l'enjeu géopolitique. Le cas de la France", in *Hérodote*, No. 177-178 (2020), p. 149-163.

[14] Ibid.

dare say, for the sovereignty of our country".[15] It was, therefore, in order to compete with American companies that the French Government launched in 2010 France's first project for a sovereign cloud.

Andromède was designed to lead to the construction of a large data centre supported by a 150 million euro state-funded budget.[16] Based on a public–private partnership, the project – essentially perceived as an economic opportunity for France, with the objective of supporting the emergence of French industrial players in the cloud business – was completed in May 2011 by Thalès, Dassault Systèmes and Orange.

However, due to strong divergences between operators – and contrary to the government's initial plan – two competing projects were eventually financed and 75 million euro allocated to each: "Cloudwatt" was supported by Orange and Thalès; "Numergy" was led by SFR (Société française du radiotéléphone) and IT group Bull.[17]

Many scholars agree that Andromède did not represent a major success. The project was based on a partial understanding of cloud technology and, as a consequence, actual market needs were not taken into account. With their very limited offerings, Cloudwatt and Numergy were not able to compete with cloud providers such as Amazon or Microsoft.[18]

In the second phase, the notion of "sovereign cloud" took on a new dimension. With the Snowden revelations in summer 2013, the need to reduce French dependence on US cloud providers became even more compelling. This second phase saw a new government programme, "Nouvelle France industrielle", presented in 2013, with "cloud computing" as one of its 34 priorities.[19]

The new project, contrary to the one announced in 2009, was led by senior figures from specialised companies already operating in the sector of cloud computing: Octave Klaba, founder and Chief Technology Officer of OVHcloud, and Thierry Breton, then CEO (Chief Executive Officer) of Atos.[20] The main difference with the previous phase lay in the fact that instead of creating new national

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[15] François Fillon, *Déclaration sur le déploiement de la fibre optique dans les zones moyennement denses…*, Vélizy, 18 January 2010, https://www.vie-publique.fr/discours/177909-declaration-de-m-francois-fillon-premier-ministre-sur-le-deploiement.

[16] The project was funded via "*le grand emprunt*", a French Government borrowing initiative to support infrastructure improvement and the creation of innovation-oriented employment.

[17] Sandrine Cassini, "Cloud souverain, un gâchis à la française", in *Les Echos*, 24 February 2015, https://www.lesechos.fr/amp/1105856.

[18] Clotilde Bômont and Amaël Cattaruzza, "Le cloud computing…", cit.

[19] French Ministry for the Economy and Finance, *The New Face of Industry in France*, 2013, https://www.economie.gouv.fr/files/nouvelle_france_industrielle_english.pdf.

[20] Christophe Auffray, "Plan industriel Cloud: une mission pour Atos et OVH", in *ZDNet*, 26 September 2013, https://www.zdnet.fr/actualites/plan-industriel-cloud-une-mission-pour-atos-et-ovh-39794356.htm.

players the government decided to cooperate with existing ones. As a result, the administration now started to understand the complexity of the technology and, more importantly, to consider the market – although the political perspective continued to predominate.[21] In May 2016, Emmanuel Macron, the then-French Minister for the Economy, presented an updated version of the "Nouvelle France industrielle". As in 2013, the projects carried out within this framework remained under the direction of Thierry Breton and Octave Klaba but they were joined by Gérard Roucairol, President of Teratec.

The third phase started in 2018 and continues to this day. The concept of "sovereign cloud" has since taken on new connotations: the need for a "sovereign and secure cloud" and its clear "strategic importance". This new conceptualisation is partly the result of the changing context internationally – of which the Trump US's CLOUD Act, which is ostensibly aimed at regulating cross-border access to data in cases of investigations but which may be in conflict with the GDPR – is just one example.[22] This third phase is characterised by increased cooperation between the activities of the French National Cybersecurity Agency (ANSSI) and the German Federal Office for Information Security (BSI),[23] which culminated in the conceptualisation of GAIA-X.[24]

2.2 Germany

Similarly to France, security concerns and increased dependence on foreign cloud providers led former German Federal Minister of the Interior Hans-Peter Friedrich to announce in 2011 the creation of the "Bundescloud",[25] a "sovereign cloud" functioning as the central operating platform for the federal government's IT. However, unlike in other European countries, the political discourse on "digital sovereignty" has taken shape in Germany only since 2015.[26] Since then, two major dimensions of the German debate around "digital sovereignty" have gradually emerged.[27]

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[21] French Ministry for the Economy and Finance, *The New Face of Industry in France*, cit.

[22] The "Clarifying Lawful Use of Overseas Data Act", known as the US CLOUD Act, was adopted in 2018. The European Data Protection Supervisor viewed the CLOUD Act as a law in possible conflict with the GDPR. For more information, see: *EDPB-EDPS Joint Response to the LIBE Committee on the Impact of the US Cloud Act on the European Legal Framework for Personal Data Protection (Annex)*, 10 July 2019, https://edpb.europa.eu/node/270.

[23] French National Cybersecurity Agency, *The European Digital Sovereignty: A Common Objective for France and Germany*, 7 April 2016, https://www.ssi.gouv.fr/en/actualite/the-european-digital-sovereignty-a-common-objective-for-france-and-germany.

[24] Laurens Cerulus, "Europe's Litmus Test over Cloud Computing Push", in *Politico*, 28 July 2020, https://www.politico.eu/article/shades-of-sovereignty-dent-european-cloud-dreams.

[25] Jürgen Berke, "Innenminister Friedrich will Bundes-Cloud aufbauen", in *WirtschaftsWoche*, 17 December 2011, https://www.wiwo.de/5965544.html.

[26] Julia Pohle, *Digital Sovereignty. A New Key Concept of Digital Policy in Germany and Europe*, Berlin, Konrad-Adenauer-Stiftung, https://www.kas.de/en/web/guest/single-title/-/content/digitale-souveraenitaet.

[27] In its Cyber Security Strategy for Germany 2016, the German Government also refers to a third

The first of these is the state dimension: acknowledging the need for the security of digital infrastructures and the associated independence from US (and, more recently, Chinese) providers, the federal government prioritises measures to regain the sovereignty of its civil service by promoting national IT security technologies. Following the agreement in 2015 of the top-level decision body (IT Council) within the Federal Ministry of the Interior (BMI) the "Bundescloud", the first strategy for IT consolidation at federal level, was released.[28] Two years later, the federal government's "sovereign cloud", which guarantees the highest security standards, became operational.[29]

The second is the economic dimension: economic and industrial-policy demands are also a top priority for the federal government. The German debate about "digital sovereignty" in the context of economic policy, reached an important milestone in 2015. At the national Digital Summit[30] on 18–19 November 2015, the German Federal Ministry for Economic Affairs and Energy (BMWi) published a position paper entitled "Leitplanken digitaler Souveränität".[31] This document identified the key prerequisites for ensuring and maintaining the "sovereign actions" of Germany and the EU in the global data economy. A group of experts from both government and the private sector, designated "Focus Group 1" by the position paper,[32] developed a definition of "digital sovereignty" in the context of economic policy and identified seven technology areas in which to invest – including cloud computing and cloud services.[33]

A multitude of economic and industrial policy recommendations emerge within this dimension, with the objective of countering dependence on foreign digital companies and the consequent lack of innovation in Germany.

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dimension of "digital sovereignty" in conjunction with measures to enhance data protection and the "digital autonomy" of individual users. However, the "individual dimension" is outside the scope of this study. For more information, see: Julia Pohle, *Digital Sovereignty*, cit., p. 16-18.

[28] Federal Ministry of the Interior, *Kabinett beschließt IT-Konsolidierung der Bundesverwaltung*, 20 May 2015, https://www.bmi.bund.de/SharedDocs/pressemitteilungen/DE/2015/05/it-konsolidierung.html.

[29] Federal Government Commissioner for Information Technology (CIO) website: *Bundescloud*, https://www.cio.bund.de/Web/DE/IT-Dienste-Bund/Infrastruktur/Bundescloud/bundescloud_node.html.

[30] The Federal Ministry for Economic Affairs and Energy organises the Digital Summit, which focuses every year on a different key topic. For more information, see the official website: https://www.de.digital/DIGITAL/Navigation/EN/Home/home.html.

[31] Federal Ministry for Economic Affairs and Energy (BMWi), *Leitplanken digitaler Souveränität*, National IT-Summit, Berlin, 17 November 2015, p. 4, https://www.de.digital/DIGITAL/Redaktion/DE/Downloads/it-gipfel-2015-leitplanken-digitaler-souveraenitaet.pdf.

[32] In view of the Digital Summit, the BMWi coordinates the work of various "focus groups" consisting of representatives of the public and private sectors. The objective of these groups is to meet regularly and prepare a study on key priorities previously identified. The results of their work are then presented during the Summit. The "Focus Group 1" mentioned here deals with the issue of digital sovereignty and the innovative digitalisation of the economy.

[33] BMWi, *Leitplanken digitaler Souveränität*, cit.

Germany's economy is characterised by small and medium-sized enterprises (SMEs).[34] With the precise goal of strengthening trust among this target group in cloud technology, the BMWi started the "Trusted Cloud" technology programme in 2015 – from which a new association then emerged: the "Competence Network Trusted Cloud" (CNTC). Members of this neutral and cross-industry network include major institutions such as Germany's digital association (Bitkom) and the Association of the Internet Industry (eco), as well as research institutions such as the Fraunhofer-Gesellschaft.[35]

Based on the idea that the more trust there is in cloud services the clearer will be the regulations and security measures to protect data from misuse and unauthorised access, the cornerstone of these initiatives was to create a quality seal for trusted cloud services – resulting in a catalogue of criteria for minimum requirements with regard to transparency, quality and legal conformity. The overarching goal of such initiatives, supported by the BMWi, was not to support the creation of new German players in the cloud ecosystem but rather to provide guidance and orientation to both providers and users of cloud services, as well as to build high quality standards.

There were also other, privately driven, initiatives such as the attempt at building a "German Cloud" by Microsoft in cooperation with Deutsche Telekom in 2015.[36] With the new "German Cloud" data stored on German territory, and with Telekom taking on a trustee function, this project was supposed to guarantee that no data was leaked to third parties – including the US Government. The project was, however, not particularly successful on the market as, once again, market needs were not really considered. Among other things, the new "German Cloud" could not offer modern Microsoft applications such as Microsoft Office 365. A new attempt followed in 2019, with less-rigid parameters.[37]

Nonetheless, this "special model" of a "German Cloud" remains a cloud offering of one of the largest hyperscalers on the cloud market: Microsoft. Ultimately, "digital sovereignty" in the sense described above cannot be truly achieved through it.

The "International Data Space" (IDS) project, on the other hand, represents a promising, decentralised approach. On 26 January 2016, the IDS was founded – initially as "Industrial Data Space" – by the Fraunhofer-Gesellschaft with the

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[34] SMEs account for 99 per cent of German companies and generate more than half of the economy's total turnover. For more information, see BMWi website: *The German Mittelstand as a Model for Success*, https://www.bmwi.de/Redaktion/EN/Dossier/sme-policy.html.

[35] See the official website: https://www.trusted-cloud.de/index.php/en/about-trusted-cloud.

[36] Telekom, *Deutsche Telekom to Act as Data Trustee for Microsoft Cloud in Germany*, 11 November 2015, https://www.telekom.com/en/media/media-information/archive/deutsche-telekom-to-act-as-data-trustee-for-microsoft-cloud-in-germany-362074.

[37] Dieter Petereit, "Neuauflage der 'Deutschen Cloud': Microsoft stellt neue Rechenzentrumsregionen vor", in *t3n*, 31 August 2019, https://t3n.de/news/?p=1192412.

German Electrical and Electronic Manufacturers' Association (ZVEI) together with 16 German businesses.[38] The IDS's goal is to create a secure data space "that enables companies from various industries and of all sizes to sovereignly manage their data assets".[39] In its decentralised approach and efforts to achieve digital sovereignty, as well as its European orientation, the IDS was a structural and conceptual forerunner of the GAIA-X ecosystem.[40]

2.3 The European Union

By 2010 the European Network and Information Security Agency (ENISA) had already put cloud computing on its research agenda.[41] A couple of years later, in September 2012, the European Commission adopted the first "European Cloud Computing Strategy", which called upon member states to embrace the potential of the cloud.[42]

In its first cloud strategy, the Commission stated that the creation of a "European Super-Cloud" – defined as "a dedicated hardware infrastructure to provide generic cloud computing services to public sector users" – had not been foreseen.[43] However, it highlighted the idea that the public sector, which in several member states (including the UK, which at the time was still part of the EU) had started national initiatives – Andromède in France, Trusted Cloud in Germany and G-Cloud in the UK – should work together and avoid the fragmentation of the market in Europe.[44] The objective of the first "European Cloud Computing Strategy" was therefore to call upon member states to better coordinate their efforts to unleash the power of cloud computing.

A timid start towards the conceptualisation of a "European Cloud" emerged in the 2016 with the "European Cloud Initiative".[45] In this communication, the Commission put forward a series of initiatives aimed at the creation of a "European

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[38] Boris Otto et al., *Industrial Data Space. Digital Sovereignty over Data*, München, Fraunhofer-Gesellschaft, 2016, p. 34, https://www.fraunhofer.de/content/dam/zv/en/fields-of-research/industrial-data-space/whitepaper-industrial-data-space-eng.pdf.

[39] Fraunhofer-Gesellschaft website: *International Data Spaces*, https://www.fraunhofer.de/en/research/lighthouse-projects-fraunhofer-initiatives/international-data-spaces.html.

[40] German Parliament, Statement by Fabian Biegel on "Datensouveränität im Zusammenhang mit dem Projekt GAIA-X, Datenräume und Datenstrategie", Berlin, 28 October 2020, https://www.bundestag.de/resource/blob/801240/f8ec9d2274b1791f1720fbf0866e0982/Stellungnahme-Biegel-data.pdf.

[41] European Network and Information Security Agency (ENISA) website: *Priorities for Research on Current and Emerging Network Trend*, https://www.enisa.europa.eu/publications/copy_of_procent.

[42] European Commission, *Unleashing the Potential of Cloud Computing in Europe* (COM/2012/0529), 27 September 2012, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52012DC0529.

[43] Ibid., p. 6.

[44] Ibid., p. 13.

[45] European Commission, *European Cloud Initiative - Building a Competitive Data and Knowledge Economy in Europe* (COM/2016/178), 19 April 2016, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52016DC0178.

Open Science Cloud" and a "European Data Infrastructure". At first glance, neither of the documents covering these proposals contained a reference to the need to build a sovereign European cloud infrastructure. Nevertheless, looking at both initiatives in more depth, the idea of a "European Cloud" emerged quite clearly.

Considering the needs of the scientific community, the EU planned to create a "trusted, virtual, federated environment" where researchers could use, store, manage, analyse and re-use data across borders and scientific disciplines by developing a "European Open Science Cloud".[46] Moreover, a "European Data Infrastructure" would underpin the "European Open Science Cloud" with High-Performance Computing, high-speed connectivity and leading-edge data and software services. Starting with a specific use case – the scientific community in Europe – the Commission aimed at widening both initiatives to other sectors, from small businesses to its civil service. Over time this would allow the EU to strengthen the cloud industry, as well as accelerating cloud adoption.[47]

The big push for the notion of a "sovereign cloud" at the European level coincided with the adoption of the US CLOUD Act in 2018. By enabling US law-enforcement authorities to access data stored by a service provider subject to US jurisdiction, regardless of where that information is stored, the CLOUD Act raised concerns about potential conflicts with the EU General Data Protection Regulation (GDPR), the cornerstone of data privacy for Europe and European citizens – accelerating, in turn, an acknowledgment of the need for sovereignty.

Nevertheless, while France and Germany were already cooperating on various fronts – in October 2019 they announced a project to connect cloud providers around Europe, known as GAIA-X – it was only the von der Leyen Commission that made clear statements and proposed concrete actions in this field.

Even before being confirmed as President of the European Commission, Ursula von der Leyen declared that the achievement of "technological sovereignty in some critical technology areas" was one of her main priorities.[48] With the appointment of Thierry Breton as European Commissioner for the Internal Market in charge of the digital, space and defence industries, the call for Europe's technological sovereignty became even stronger.

It was, finally, with the communication on a "European Strategy for Data" in 2020 that Europe officially declared its willingness to "reduce its technological dependencies" in cloud infrastructure and services.[49] One of the four pillars of

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[46] European Commission website: *European Open Science Cloud (EOSC)*, https://ec.europa.eu/info/research-and-innovation/strategy/goals-research-and-innovation-policy/open-science/european-open-science-cloud-eosc_en.

[47] European Commission, *European Cloud Initiative*, cit., p. 8.

[48] Mark Scott, "What's Driving Europe's New Aggressive Stance on Tech", cit.

[49] European Commission, *A European Strategy for Data*, cit., p. 9.

this strategy looks at investment in "strengthening Europe's capabilities and infrastructures for hosting, processing and using data".[50] In its communication, the Commission agreed to invest in a "High Impact Project on European data spaces and federated cloud infrastructures" in the period 2021–7 in order to address the needs of industries and the public sector.[51]

To avoid fragmentation and the duplication of initiatives, the Commission promised to ensure synergies with what Germany and France had begun in October 2019: GAIA-X. In this context, on 15 October 2020 a Memorandum of Understanding was signed by all 27 member states.[52]

In this "Joint Declaration" EU countries agreed to work together to foster a European cloud-federation initiative, a project aimed at shaping secure, efficient and interoperable cloud services for the Union. This would be facilitated by the nascent European Alliance for Industrial Data and Cloud,[53] wherein interested member states, cloud-computing providers and industrial cloud users would work together towards the materialisation of the "next generation cloud" for Europe.[54]

3. GAIA-X: A practical approach towards European "digital sovereignty"

3.1 The GAIA-X Initiative

GAIA-X, originally led by Germany and France, aims to create a "federated data infrastructure" for Europe.[55] The name refers to "Gaia", who in Greek mythology is the ancestral mother of all life;[56] the project aims to become the "mother cloud" for the EU. Its timeline can be divided into three main phases.

The first of these, 2015–18, can be defined as the "awareness phase". We have seen various European countries and the EU as a whole starting to realise their dependence on foreign technology companies, and thus pushing for sovereignty in order to respond to growing geopolitical tensions arising worldwide.

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[50] Ibid., p. 15.

[51] Ibid., p. 16.

[52] European Commission, *Towards a Next Generation Cloud for Europe*, 15 October 2020, https://digital-strategy.ec.europa.eu/en/news/towards-next-generation-cloud-europe.

[53] According to the European Commission's plan, the launch of the European Alliance for Industrial Data and Cloud was foreseen for the end of 2020. As of 29 December 2020, no further information on the Alliance was available.

[54] Declaration "Building the Next Generation Cloud for Businesses and the Public Sector in the EU", 15 October 2020, https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=70089.

[55] For more information on GAIA-X, including the technical concept, see the project website: https://www.data-infrastructure.eu/GAIAX.

[56] As explained by the Federal Government on its official website: *Frequently Asked Questions about GAIA-X*, https://www.bundesregierung.de/breg-en/news/gaia-x-1795070.

The year 2019 saw the second phase kick off with the official launch of the "GAIA-X" project as a Franco–German initiative. Officially presented on 4 June 2019 at a joint press conference by Peter Altmaier, German Federal Minister for Economic Affairs and Energy, and his French counterpart, Bruno Le Maire – and involving 22 companies: 11 French and 11 German firms[57] – GAIA-X aims to create the basis for an open-data infrastructure that represents "European values" on topics such as data sovereignty, data protection and portability.

During the third phase, from 2020 onwards, this bilateral cooperation became "European", with the Commission agreeing to invest up to 2 billion euro in a "European Alliance for Industrial Data and Cloud"[58] as part of a larger investment plan.[59]

As originally planned, the "GAIA-X Foundation", described as "a project initiated by Europe for Europe", was then established, in June 2020, under Belgian law with its headquarters in Brussels. As of today, more than 300 organisations from various countries are involved in the project.

The goal of GAIA-X is to facilitate a secure pan-European data-collection, data-processing and data-sharing mechanism by creating a networked data infrastructure that is designed to meet security and privacy requirements by design while promoting digital innovation. The GAIA-X "ecosystem", made up of various digital operators – cloud solution providers, high-performance computing, sector-specific clouds and edge-computing systems – will create a federated cloud infrastructure in line with "European values". This federated infrastructure is meant to enable scalability and interoperability, and to ensure the freedom of choice for providers. In addition, a transparent catalogue of criteria tackling cybersecurity and privacy aims to implement European standards, thus creating trust mechanisms for potential users.

As "Europe's digital infrastructure currently lies in the hands of a small number of major non-European corporations", GAIA-X has the overarching "objective […] to safeguard and expand the industrial competitiveness […] of the European community by reducing dependence and fostering competition".[60] Here the key

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[57] Founding members of GAIA-X include Amadeus, Atos, Beckhoff, Bosch, BMW, DE-CIX, Deutsche Telekom, Docaposte, EDF, Fraunhofer-Gesellschaft, German Edge Cloud, Institut Mines Telecom, International Data Spaces Association, Orange, 3DS Outscale, OVHcloud, PlusServer, Safran, SAP, Scaleway and Siemens. The companies agreed to collectively invest 1.5 million euro a year to set up the "GAIA-X Foundation", an organisation aiming to coordinate the work of member companies. See Liam Tung, "Meet GAIA-X: This is Europe's Bid to Get Cloud Independence from US and China Giants", in *ZDNet*, 8 June 2020, https://zd.net/3iq6qpk.

[58] Declaration "Building the Next Generation Cloud…", cit.

[59] European Commission, *A European Strategy for Data*, cit.

[60] Gerd Hoppe et al., *GAIA-X: A Pitch Towards Europe. Status Report on User Ecosystems and Requirements*, Berlin, BMWi, May 2020, p. 5, https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Publications/gaia-x-a-pitch-towards-europe.html.

terms of the project are "interoperability", "portability", "transparency", "security" and "privacy by design". All in all, by focusing on the creation of guidelines, policies and a technical target architecture, GAIA-X aims to create a trusted infrastructure ecosystem that offers the highest standards in regard to security and privacy.

3.2 GAIA-X: A true EU "sovereign cloud"?

Having discussed European "digital sovereignty" and the concept of a "sovereign cloud", one question on the GAIA-X initiative emerges quite naturally: is GAIA-X truly a EU "sovereign cloud"? Does the project help the Union to move closer to "digital sovereignty"?

"Data sovereignty" is of primary importance to the project: one of the guiding principles of GAIA-X is the promotion of data sovereignty at the European level.[61] The aspect of "technological sovereignty" is present too. The EU wants to free itself from dependence on the US and Chinese IT giants; GAIA-X seeks to create the "next generation of a European data infrastructure for Europe, its states, its companies and its citizens".[62] Fostering innovation in key technologies – enabling full data control, traceability, auditability, reversibility and data interoperability – is also one of the top priorities for GAIA-X.[63]

Furthermore, "European values" are the cornerstone of the project. It will be fully committed to requirements such as the GDPR, the Regulation on the free flow of non-personal data, and the Cybersecurity Act. GAIA-X participants will need to comply with all these EU rules and to make this compliance transparent to (potential) customers. The GAIA-X ecosystem will also be based on regulatory sector-specific and technical standards in order to ensure a high level of interoperability and the security of cloud providers.

Overall – from a theoretical perspective and considering data-privacy concerns as well as technological, political, normative and policy aspects – we can indeed describe GAIA-X as a project by which Europe can achieve "digital sovereignty".

However, it is certainly too early to assess whether the GAIA-X project will be successful or not. While there have been some important steps forward, a few shortcomings can be also identified.

Considering previous attempts at building national cloud infrastructures in France or Germany, GAIA-X has learned an important lesson. Instead of trying to construct

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[61] Peter Altmaier et al., *Project GAIA-X. A Federated Data Infrastructure as the Cradle of a Vibrant European Ecosystem*, Berlin, BMWi, October 2019, https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Publications/project-gaia-x.html.

[62] Ibid., p. 45.

[63] Franco-German Position on GAIA-X, 18 February 2020, p. 1, https://www.bmwi.de/Redaktion/DE/Downloads/F/franco-german-position-on-gaia-x.pdf.

a "European Super-Cloud", it is targeting existing ones. Furthermore, with the adherence to core "European values" as the bottom line in becoming part of the initiative, GAIA-X tries to increase trust in cloud services by ensuring transparency, security and privacy by design. Its stakeholder-engagement approach should also be seen as a successful model for future cooperation between the public and private sectors. For instance, with "Workstream 1" on "User ecosystems and requirements", the user perspective is taken into account from the very beginning and stakeholders are involved in the development process at an early stage. Lastly, the open-source approach and transparency during the development process promises a high level of acceptance among users. In this case, the success of the German "Corona Warn App" could serve as an example. Commissioned by the Federal Government to react to the COVID-19 pandemic and to facilitate the tracing of infection chains, the "Corona Warn App", based on a decentralised software architecture, is a prime example of collaboration between German companies (Deutsche Telekom and SAP [*System Analyse Programmentwicklung* – System Analysis and Programme Development]), German research institutes and the country's civil service. The open-source approach, and thus the inclusion of the public and the developer community during the entire development process of the app, contributed positively to its success and high level of acceptance by the population.[64]

On the other hand, GAIA-X remains an "open system" – thus allowing all providers meeting its requirements to be part of the initiative. Indeed, it should be noted that GAIA-X is not about protectionism. In practice, this means that cloud companies like Amazon, Microsoft and Google can apply to join GAIA-X, thus becoming part of the European federated data infrastructure. While some rules have been adopted to limit the amount of influence of non-EU companies within the GAIA-X Foundation – for instance, they are not able to participate as members of the board and thus have no voting rights – the extent to which such restrictions will be enforced remains unclear. The risk is that GAIA-X may turn into a "Trojan horse" for the hyperscalers. Given that the overarching goal of GAIA-X is that of "reducing dependence and fostering competition" in the EU,[65] the risk of allowing non-EU firms to participate might be that much of the value of the European data economy will still flow outside of Europe.

GAIA-X should learn from the previous experiences of Andromède or the "German Cloud" and avoid what may be defined as a "cargo cult" – a religious movement of the Melanesian Islands, characterised by the expected return of spirits in ships or aircraft carrying goods for its followers.[66] To avoid the fate of the inhabitants of Jayapura Island, who after the Second World War continued to build airports that no one needed or ever used, the EU should consider the actual requirements of the

[64] André Claaßen, "6 Erfolgsfaktoren der Corona-Warn-App, die wir für die digitale Verwaltung nutzen können", in *publicplan blog*, 1 July 2020, https://publicplan.de/node/540.

[65] Gerd Hoppe et al., GAIA-X: A Pitch Towards Europe, cit., p. 5.

[66] Enno Park, "Gaia X: Ein informationstechnischer Cargo-Kult", in *t3n*, 7 November 2019, https://t3n.de/news/?p=1217410.

market – otherwise, these technologies will be of no use.

Additionally, while the "rules of the game" for participation in GAIA-X are clear, the way in which the project will ensure their implementation remains an open question. For instance, according to the US CLOUD Act, while there may be no negotiated treaties for data exchange in criminal cases, US cloud providers will always be obliged to respond to any US court request asking for data – even if it is stored in Europe.

Lastly, the Commission should ensure synergies with the GAIA-X Foundation. Fragmentation or the development of new independent and parallel projects is the last thing such a complex project needs.

Going back to our question of whether GAIA-X can be described as a first step towards the realisation of what the EU defines as "digital sovereignty", we can conclude that while, from a theoretical perspective, the project represents a first important step in the right direction, in practice the Union remains dependent on the technologies of those hyperscalers that it wanted to fend off in the first place. All the issues mentioned above will need to be addressed in order for the EU to achieve data; technological; and, ultimately, digital sovereignty.

Looking to the future, if the EU really wants to achieve "digital sovereignty", a different strategy is needed. Instead of aiming to compete with the hyperscalers, the Union should focus on what its actual added value is.

By regulating its internal market step by step, the EU formulates effective standards that force companies to comply or are copied directly by other governments. Whether it is chemicals, hazardous waste, hormone-treated meat, antitrust law, privacy or cybersecurity – the EU is always involved in some way in setting high-quality standards and criteria worldwide. Europe's view of data protection, as laid down in the GDPR, has become in a short time the global standard that no company or country can afford to ignore. The United States' biggest companies continually spend billions in order to implement EU requirements, and the situation is not much different for the largest Asian, African or South American businesses. The same can, and should, happen in the field of new technologies. Europe has the power to build a "trust framework" for cloud services willing to operate in Europe, by setting the highest privacy and security standards. Such a framework will also help smaller providers in the cloud business, whose compliance with European standards and values could incentivise users to move to the cloud – but not necessarily to the "usual suspects".

Conclusion

In 2018 Commission President Juncker proclaimed that "the hour of European sovereignty" had arrived.[67] European interests in the development of technology and the digital market were thereby put under the spotlight. It became clear that the current geopolitical situation makes a European single market, capable of action and innovation, indispensable.

Since then, a great deal has changed and the EU seems to have moved from words to deeds. Europe's path to "digital sovereignty" has taken shape in Commission President von der Leyen's "Agenda for Europe"[68] and new funding programmes such as "Digital Europe",[69] as well as the programme of the German EU Presidency.[70]

Cloud computing is identified as a key technology for achieving "digital sovereignty". Various attempts to establish a "sovereign cloud" were made in order to end the dependence of the European economy on large US and Chinese hyperscalers. Germany and France launched national initiatives such as Andromède, Trusted Cloud and the International Data Space (IDS), which have paved the way for GAIA-X – "a project initiated by Europe for Europe".

While GAIA-X represents an important first step in the right direction, some challenges have emerged along the way. The EU should address two dilemmas, in particular, in order to truly contribute to data; technological; and, ultimately, digital sovereignty.

The first is the "Trojan horse" dilemma. Being an open system, GAIA-X could prove to be a Trojan horse for extra-EU hyperscalers. While the overarching goal of the project is to reduce the dependence of the European community on foreign cloud providers, the risk of allowing non-EU firms to participate might be that much of the value of the European data economy will still flow outside of Europe.

The second dilemma is that of the "cargo cult". We have seen with previous national projects, such as Andromède in France and the "German Cloud" in Germany, that creating innovative technologies without taking into account the real needs of the market inevitably leads to failure. While GAIA-X promises to become an

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[67] Jean-Claude Juncker, *State of the Union 2018. The Hour of European Sovereignty*, cit.

[68] Mark Scott, "What's Driving Europe's New Aggressive Stance on Tech", cit.

[69] The EU's "Digital Europe" programme, which was confirmed on 18 December 2020, gives concrete shape to this undertaking and provides 7.6 billion euro for the development and expansion of technologies. For more information, see: BMWi, *Minister Altmaier: "Digital Europe Programme Provides €7.6 Billion for Digital Technologies"*, 18 December 2020, https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2020/12/20201218-minister-altmaier-digital-europe-programme-provides-7-6-billion-euros-for-digital-technologies.html; European Commission, *The Digital Europe Programme*, 23 March 2021, https://digital-strategy.ec.europa.eu/en/activities/digital-programme.

[70] Federal Foreign Office, *Together for Europe's Recovery*, cit., p. 10.

alternative to the big American and Chinese providers and to end the dependency of European companies on hyperscalers like Amazon or Microsoft, its peculiarly distinct structure might imperil the attainment of that objective. GAIA-X is not a monolithic, proprietary platform but rather a transparent cloud ecosystem. It can fulfil its promise only if it does not compete directly with these US or Chinese providers in technological innovation, as it does not have comparable financial resources. There are indeed important questions that all stakeholders need to keep in mind when it comes to resources: What will happen to the GAIA-X project if new governmental priorities arise? Will the project be able to "find its feet" and become a financially sustainable model?

Consequently, in order to succeed in its quest for "digital sovereignty", the EU's strategy should focus on what Europe's actual added value is. Being a regulatory superpower, the EU has the ability to build a "trust framework" for cloud services willing to operate in Europe by setting the highest privacy and security standards, with which they have to comply even if based outside Europe. This will in turn also benefit the users in their choice of provider. The Union needs to understand this in order to offer a real value-added proposition.

The stakeholders involved in the project are hopeful that GAIA-X will become a successful model, similarly to the GDPR, whose reach is felt far beyond the EU's borders as a "practical example of [the] successful implementation and realization of data sovereignty".[71] While GAIA-X might not really help the EU in the creation of credible European alternatives in the world of cloud computing, the project might still strengthen the Union's control over global technology companies by binding them to implement GAIA-X's principles. Only the future will show us whether this hope is justified.

Updated 25 March 2021

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[71] German Parliament, Statement by Andreas Weiss on "Datensouveränität im Zusammenhang mit dem Projekt GAIA-X, Datenräume und Datenstrategie", Berlin, 28 October 2020, p. 12, https://www.bundestag.de/resource/blob/801238/d9259c6adb2f0889fd0e25f0dec5f3c4/Stellungnahme-Weiss-data.pdf.

References

Peter Altmaier et al., *Project GAIA-X. A Federated Data Infrastructure as the Cradle of a Vibrant European Ecosystem*, Berlin, BMWi, October 2019, https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Publications/project-gaia-x.html

Christophe Auffray, "Plan industriel Cloud: une mission pour Atos et OVH", in *ZDNet*, 26 September 2013, https://www.zdnet.fr/actualites/plan-industriel-cloud-une-mission-pour-atos-et-ovh-39794356.htm

Peter Bendor-Samuel, "Hyperscale Cloud Providers Shaping the Platform Marketplace", in *Forbes*, 2 March 2020, https://www.forbes.com/sites/peterbendorsamuel/2020/03/02/hyperscale-cloud-providers-shaping-the-platform-marketplace

Jürgen Berke, "Innenminister Friedrich will Bundes-Cloud aufbauen", in *WirtschaftsWoche*, 17 December 2011, https://www.wiwo.de/5965544.html

Bitkom, *Digitale Souveränität: Anforderungen an Technologie und Kompetenzfelder mit Schlüsselfunktion. Stellungname*, 2019, https://www.bitkom.org/node/13521

Jason Bloomberg, "Digitization, Digitalization, and Digital Transformation: Confuse Them at Your Peril", in *Forbes*, 29 April 2018, https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril

Clotilde Bômont and Amaël Cattaruzza, "Le cloud computing: de l'object technique à l'enjeu géopolitique. Le cas de la France", in *Hérodote*, No. 177-178 (2020), p. 149-163

Sandrine Cassini, "Cloud souverain, un gâchis à la française", in *Les Echos*, 24 February 2015, https://www.lesechos.fr/amp/1105856

Laurens Cerulus, "Europe's Litmus Test over Cloud Computing Push", in *Politico*, 28 July 2020, https://www.politico.eu/article/shades-of-sovereignty-dent-european-cloud-dreams

André Claaßen, "6 Erfolgsfaktoren der Corona-Warn-App, die wir für die digitale Verwaltung nutzen können", in *publicplan blog*, 1 July 2020, https://publicplan.de/node/540

Declaration "Building the Next Generation Cloud for Businesses and the Public Sector in the EU", 15 October 2020, https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=70089

European Commission, *The Digital Europe Programme*, 23 March 2021, https://digital-strategy.ec.europa.eu/en/activities/digital-programme

European Commission, *European Cloud Initiative - Building a Competitive Data and Knowledge Economy in Europe* (COM/2016/178), 19 April 2016, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52016DC0178

European Commission, *A European Strategy for Data* (COM/2020/66), 19 February 2020, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0066

European Commission, *Towards a Next Generation Cloud for Europe*, 15 October 2020, https://digital-strategy.ec.europa.eu/en/news/towards-next-generation-cloud-europe

European Commission, *Unleashing the Potential of Cloud Computing in Europe* (COM/2012/0529), 27 September 2012, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52012DC0529

European Data Protection Supervisor, *EDPB-EDPS Joint Response to the LIBE Committee on the Impact of the US Cloud Act on the European Legal Framework for Personal Data Protection (Annex)*, 10 July 2019, https://edpb.europa.eu/node/270

Federal Foreign Office, *Together for Europe's Recovery. Programme for Germany's Presidency of the Council of the European Union*, July 2020, https://www.eu2020.de/eu2020-en/programme

Federal Ministry for Economic Affairs and Energy (BMWi), *Leitplanken digitaler Souveränität*, National IT-Summit, Berlin, 17 November 2015, https://www.de.digital/DIGITAL/Redaktion/DE/Downloads/it-gipfel-2015-leitplanken-digitaler-souveraenitaet.pdf

Federal Ministry for Economic Affairs and Energy (BMWi), *Minister Altmaier: "Digital Europe Programme Provides €7.6 Billion for Digital Technologies"*, 18 December 2020, https://www.bmwi.de/Redaktion/EN/Pressemitteilung en/2020/12/20201218-minister-altmaier-digital-europe-programme-provides-7-6-billion-euros-for-digital-technologies.html

Federal Ministry of the Interior, *Kabinett beschließt IT-Konsolidierung der Bundesverwaltung*, 20 May 2015, https://www.bmi.bund.de/SharedDocs/pressemitteilungen/DE/2015/05/it-konsolidierung.html

François Fillon, *Déclaration sur le déploiement de la fibre optique dans les zones moyennement denses...*, Vélizy, 18 January 2010, https://www.vie-publique.fr/discours/177909-declaration-de-m-francois-fillon-premier-ministre-sur-le-deploiement

Franco-German Position on GAIA-X, 18 February 2020, https://www.bmwi.de/Redaktion/DE/Downloads/F/franco-german-position-on-gaia-x.pdf

French Ministry for the Economy and Finance, *The New Face of Industry in France*, 2013, https://www.economie.gouv.fr/files/nouvelle_france_industrielle_english.pdf

French National Cybersecurity Agency, *The European Digital Sovereignty: A Common Objective for France and Germany*, 7 April 2016, https://www.ssi.gouv.fr/en/actualite/the-european-digital-sovereignty-a-common-objective-for-france-and-germany

French Presidency, *United Nations General Assembly: Speech by President Emmanuel Macron*, 25 September 2018, https://www.diplomatie.gouv.fr/en/french-foreign-policy/united-nations/news-and-events/united-nations-general-assembly/unga-s-73rd-session/article/united-nations-general-assembly-speech-by-president-emmanuel-macron-25-09-18

German Parliament, Statement by Fabian Biegel on "Datensouveränität im Zusammenhang mit dem Projekt GAIA-X, Datenräume und Datenstrategie", Berlin, 28 October 2020, https://www.bundestag.de/resource/blob/801240/f8ec9d2274b1791f1720fbf0866e0982/Stellungnahme-Biegel-data.pdf

German Parliament, Statement by Andreas Weiss on "Datensouveränität im Zusammenhang mit dem Projekt GAIA-X, Datenräume und Datenstrategie", Berlin, 28 October 2020, https://www.bundestag.de/resource/blob/801238/d9259c6adb2f0889fd0e25f0dec5f3c4/Stellungnahme-Weiss-data.pdf

Gerd Hoppe et al., *GAIA-X: A Pitch Towards Europe. Status Report on User Ecosystems and Requirements*, Berlin, BMWi, May 2020, https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Publications/gaia-x-a-pitch-towards-europe.html

Jean-Claude Juncker, *State of the Union 2018. The Hour of European Sovereignty*, 12 September 2018, https://ec.europa.eu/info/priorities/state-union-speeches/state-union-2018_en

Boris Otto et al., *Industrial Data Space. Digital Sovereignty over Data*, München, Fraunhofer-Gesellschaft, 2016, https://www.fraunhofer.de/content/dam/zv/en/fields-of-research/industrial-data-space/whitepaper-industrial-data-space-eng.pdf

Enno Park, "Gaia X: Ein informationstechnischer Cargo-Kult", in *t3n*, 7 November 2019, https://t3n.de/news/?p=1217410

Dieter Petereit, "Neuauflage der 'Deutschen Cloud': Microsoft stellt neue Rechenzentrumsregionen vor", in *t3n*, 31 August 2019, https://t3n.de/news/?p=1192412

Julia Pohle, *Digital Sovereignty. A New Key Concept of Digital Policy in Germany and Europe*, Berlin, Konrad-Adenauer-Stiftung, https://www.kas.de/en/web/guest/single-title/-/content/digitale-souveraenitaet

Kenneth Propp, "Waiving the Flag of Digital Sovereignty", in *New Atlanticist*, 11 December 2019, https://www.atlanticcouncil.org/?p=205142

Mark Scott, "What's Driving Europe's New Aggressive Stance on Tech", in *Politico*, 27 October 2019, https://www.politico.eu/article/europe-digital-technological-sovereignty-facebook-google-amazon-ursula-von-der-leyen

Telekom, *Deutsche Telekom to Act as Data Trustee for Microsoft Cloud in Germany*, 11 November 2015, https://www.telekom.com/en/media/media-information/archive/deutsche-telekom-to-act-as-data-trustee-for-microsoft-cloud-in-germany-362074

Liam Tung, "Meet GAIA-X: This is Europe's Bid to Get Cloud Independence from US and China Giants", in *ZDNet*, 8 June 2020, https://zd.net/3iq6qpk

Ursula von der Leyen, *A Union that Strives for More. My agenda for Europe. Political Guidelines for the Next European Commission 2019-2024*, 16 July 2019, https://op.europa.eu/s/oSKL

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