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Impetus to strengthen digital sovereignty in Germany and Europe

**Considerations and measures to strengthen digital sovereignty and technological
capability for action in Germany and Europe**

1 Why?

Digital sovereignty is key to ensuring that Germany and Europe remain competitive and capable of action in the 21st century. It will be decisive in determining where value will be created in the future and who will be able to play an active role in shaping technological developments.

In this context, digital sovereignty also represents the ability of the state, economy and society to develop and make use of key digital technologies and critical infrastructure themselves. The aim is to ensure technological capability for action and to create our own strategic options. Recent developments, in which Germany and Europe often found themselves taking a back seat, have highlighted the urgency here.

Germany and Europe have outstanding conditions for actively shaping these developments: a strong industrial base, excellent research institutions, highly qualified skilled workers, financial strength, and a large internal market. Alongside the cultural diversity that makes Europe strong and special, we also possess a wide range of different strengths and specialisations as well as a broad spectrum of technological expertise that can be combined into a unique technological ecosystem.

This presents a great opportunity: according to estimates by the market research firm Gartner, the global IT market is worth US\$5.6 trillion. If we succeed in gaining market share with competitive, native European products, this will open up enormous potential for growth. If Europe combines its industrial strengths, excellence in research, and single market in a targeted way, this could give rise to globally leading technology providers and infrastructures. In this respect, a harmonised digital single market and a reduction in regulatory fragmentation across borders are essential.

Furthermore, advancing our shared goal of digital sovereignty also represents a significant opportunity for bringing Europe closer together. The example of Airbus shows what is possible: when Europe had fallen behind in the aviation sector, a Franco-German consortium managed to found a new company in 1970 and build it up into a group with global success. Since no later than the 1990s, Airbus has been a successful and established player in global competition.

Today, Europe is facing similar challenges in the technology sector and has an immense amount of catching up to do: as of 2025, Europe imported 80% of its IT infrastructure and technologies from non-European providers.¹ As a result of market concentration, these providers can, to a large extent, set prices and make it more difficult for new native EU businesses to enter the market and expand. It is thus in the public interest to enable greater diversification of IT offerings, including through national and European providers that can offer attractive products in terms of both quality and price. To this extent, advancing digital sovereignty in Europe requires coordination, interconnectivity and political support. It would bolster existing economic efforts so that the European private sector could fully unleash and scale up its ability to bring new technologies to fruition, much like in the aviation sector during the early 1970s. The diversity of key digital technologies – from quantum computing through cloud services to robotics – gives companies from almost all Member States the opportunity to contribute their own specific strengths. Combined, these capabilities may create a whole that is far greater than the sum of its parts – in a way, this would be the “Airbus moment” of the technological age in Europe.

Specific solutions in the field of technology can also show how the framework conditions in future-oriented fields need to be adapted and further developed in Europe. In this context, a powerful step would be deeper capital market integration – especially with regard to venture capital. However, the decisive factor will be to take specific actions very swiftly at the current juncture.

This paper is therefore not intended to further analyse or assess the current situation or ongoing developments. Instead, it aims to provide concrete impetus for coordination, interconnection, and support throughout society as a whole to serve as a real counterweight to the current market conditions.

2 What?

With our paper, we want to encourage constructive and productive dialogue towards developing operational measures that have strategic relevance and can be implemented quickly in order to strengthen digital sovereignty in Germany and Europe from a technological perspective – and to create a platform on which relevant stakeholders can coordinate their activities.

This paper outlines a strategy for enhancing digital sovereignty along three key dimensions: 1. Innovation and technology, 2. Economy and financing, 3. Communication.

In addition to these three, a more comprehensive analysis would also cover further dimensions such as data and information, energy supply, and defence. We have not discussed these dimensions in greater depth here, as this paper focuses on the most relevant measures with regard to digital sovereignty. Of course, no one set of measures or considerations on this topic can be considered truly complete or conclusive; however, it could provide impetus for implementing specific measures that have an impact.

3 How? – Measures

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
Innovation and technology Digital sovereignty is based on innovation and technology. In order to achieve digital sovereignty, it is important to make strategic use of public demand, secure financing, and consistently translate research output into marketable products.					
Strategically relevant digital future technologies Europe must significantly accelerate the development of selected future digital technologies. The competition for technological leadership in the digital environment and, consequently, for market share will be decided by developments in five strategically relevant digital future technologies in particular: 1) Chip technology, 2) Cloud and data centres (including their energy supply), 3) Artificial intelligence (AI), 4) Quantum computing, and 5) Robotics.					
Focus on relevant, digital future technologies: 1) Chips, 2) Cloud/DCs, 3) Robotics, 4) AI, and 5) Quantum computing	All	1. Aim to achieve political commitment at the highest level to ensure that these technologies are at the focus and that their further development in Europe is supported and accelerated by setting out appropriate frameworks and, if necessary, implementing promotional measures.	5	Short term 1 Long term 4	Short term
Chip technology The current debate clearly shows that there are complex supply chain dependencies in the field of chip technologies and that no government will prospectively be able to build up a fully independent supply chain within the medium or long term. The measures are therefore aimed at making existing dependencies and supply chains transparent as well as identifying areas in which the rest of the world is also dependent on Europe. These can then be used as a negotiating element in further negotiations and thus, at the same time, create a good starting point for technological leadership with regard to future chip technologies (e.g. photonic chips and cryogenic chips).					
Negotiate chip guarantees for chip supply chain guarantees with the United States, China and Taiwan	Chips	1. Commission maps of supply chains/determine interdependencies and supply chains 2. Prepare content of negotiations (papers) 3. Raise to European Commission 4. Raise during next tariff talks with the United States and in trade agreements with China and other countries	2	3	Short term
Finance the step towards mass production for photonic chip manufacturers in Germany	Chips	1. Identify enterprises suitable for support 2. Assess opportunities and risks	3	Short term 2 Long term 4	Medium term

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
		3. Mobilise €2-4 billion of private or public capital 4. Accompanying measure: Ensure government or state guarantees or coordination for financing (see KfW financing of pilot projects for offshore wind parks 2011) 5. Commit to investment 6. Accompanying measure: Tender contract with a fixed delivery quantity that can be used for specific areas of national security			
Finance research for future chips: Cryo chips, graphene chips, inference chips	Chips	1. Finance €50-100 million for basic and application-oriented research and bring this research to implementation	5	Short term 1 Long term 3	Medium term
Chip production: Establish an EU programme analogue to AI gigafactories	Chips	1. Raise to European Commissioner and advocate for a programme analogue to AI gigafactories 2. Implement the programme	2	5	Medium term
Cloud and data centres The measures for the technology field “Cloud and data centres” aim to consolidate both public and private demand on native European providers and their offerings as well as to further develop infrastructure in partnership with customers. Furthermore, the measures focus on financing enterprises in this area.					
Rapidly strengthen the energy infrastructure at data centre sites (e.g. by accelerating grid connections). In addition, build data centres in coastal regions, leveraging large offshore wind farms that can provide low-cost electricity through reduced grid charges.	Cloud	1. Incorporate into the Federal Government’s multi-cloud strategy 2. Ensure private and public financing	4	5	Medium to long term
Establish European Commission framework agreement under which all public institutions can access services from the	Cloud	1. Estimate overall needs for all public institutions (including cities and municipalities) in Europe 2. Raise to European Commissioner and advocate for European Commission	3	5	Short, medium and long term

Measure	Technology	Approach	Feasibility 1-5 (difficult- easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
top 3-5 native EU cloud providers		framework agreement with 2-3 native EU cloud providers - Use the developed criteria and requirements catalogue from the Federal Ministry for Digital Transformation and Government Modernisation (BMDS)/Federal Office for Information Security (BSI) as part of the tender procedure for the sovereign cloud - Identify clouds for specific areas in the public sector and conclude corresponding framework agreements - Consolidate Eurosystem demand on native EU cloud			
Equip top 2-3 native EU cloud providers with standard landing zones	Cloud	Set up co-financing support programme, identify alternative financing options, e.g. through PPP projects	3	4	Medium term
Establish European Commission framework agreement under which all public institutions can access services from the top 2-3 US cloud providers	Cloud	- Estimate overall needs for all public institutions (including cities and municipalities) in Europe - Select requirements from BSI C3A criteria catalogue that are relevant for use of US hyperscalers (e.g. security) - Raise to European Commissioner and advocate for European Commission framework agreement with 2-3 US cloud providers - Identify cloud services for specific areas in the public sector and conclude corresponding framework agreements - Consolidate Eurosystem demand on US clouds	3	4	Medium term
Create legal basis for legally sound native EU procurement of cloud services	Cloud	- Develop an amendment proposal for the EU Procurement Directive - Adopt the tender acceleration procedure of the Competition Act (<i>Gesetz gegen</i>	3	5	Short, medium and long term

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
		<i>Wettbewerbsbeschränkungen</i> – GWB) Section 218(2) in the Bundesrat to ensure entry into force on 1 July 2026 (for Germany) 3. Conduct legislative initiative and implement legislation			
Tighten regulation (e.g. for KRITIS) so that the use of sovereign providers can be made mandatory in some cases	Cloud	1. Develop an amendment proposal for KRITIS legislation 2. Implement legislation	4	3	Medium term
Artificial intelligence (AI) The measures in the area of AI focus on furthering and financing native European LLMs, consolidating public and private demand on them, and fostering disruptive new technologies involving AI.					
Build and grow a second frontier LLM for EU/Germany	AI	“AI Airbus” model: Establish a firm like Airbus for AI 1. Identify (on the basis of set criteria) top 2-4 European countries with experience in LLMs (e.g. FR, DE, IT, FI) 2. Each “founding country” brings to the table an experienced company with resources and LLM expertise 3. “Founding countries” contribute seed capital needed 4. Firms brought in form “AI Airbus” 5. EU awards (paid) contract to “AI Airbus” to develop a European LLM 6. “AI Airbus” is given special status where public procurement procedures are concerned “Privileged firms in special zones” model: Establish supranational firms with privileges in special zones. The capital comes from native European investors, who invest in the firms and have a stake in the profits, but cannot trade their shares.	3 5 4 3 2 2	5	Medium term Medium term
			4		

Measure	Technology	Approach	Feasibility 1-5 (difficult- easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
		1. Task expert panel with exploring situation and drawing up detailed brief 2. Foster political will 3. Appoint initiative group to take care of implementing project 4. Create dedicated EU legal form with special privileges attached 5. Designate, demarcate and establish special zones 6. Set up task force for operational coordination 7. Conduct the first round of financing with investors 8. Establish company, appointing supervisory boards and executive boards 9. Award contract and provide an LLM that can be used for matters of defence	4 2 1 2 3 3 3 3		
Develop, finance and establish specialised LLMs in Europe for the use of industrial application data	AI	Federal Government commissions development of sector-specific models (e.g. Federal Ministry for Economic Affairs and Energy (BMWE) gives mandate to Federal Agency for Disruptive Innovation (SPRIND)). Industry associations contribute firms, data and pilot/test customers 1. Draw up concept proposal for BMW 2. Assign task to SPRIND 3. Assemble a coordinating body made up of industry representatives 4. Pinpoint participating firms via the coordinating body 5. Provide training data in return for free-of-charge use of the models later on 6. Carry out industry testing 7. Evaluate and examine outcomes 8. Mount BMW collecting society	4 5 4 5 5 4 4 5 4	4	Short term
Foster disruptive AI technologies	AI	Invest in research fostering disruptive approaches that have the potential to	5	1 or 5 (depending	Short term

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
		take AI development straight to the next stage 1. Approach SPRIND with proposal 2. Leverage existing formats: • Research programmes • Research projects • Research professorships at institutions of higher education • Mandates for applied research • Competitions and challenges		on success of the approaches)	
▪ Implement AI gigafactories	AI	Already being implemented at EU level. No need for additional measure of our own.			
▪ Promote the application of AI at the interface between universities, start-ups and firms	AI	Initiate and implement projects in Germany and Europe modelled on the example of the drone competence centre at Kassel Airport (Calden) 1. Communicate example 2. Scale	4	3	Short term
▪ Create a broad-use AI platform, including open source offering	AI	Establish and grow “AI Amazon”: Building a platform that offers LLM use and provides the usual gamut of services (e.g. chats and chatbots, APIs, RAG services, agents, etc.). This would be done using various AI models – major commercial LLMs as well as open source models that are hosted by the platform itself. 1. Provide funding in the shape of KfW venture capital funds 2. Launch a call for applications and select 3 German firms each capable of building and running such a platform	4 3 5	4	Short term
Quantum computing The measures in the field of quantum computing revolve around furthering and financing native European quantum computing applications, consolidating public and private demand on them, and fostering disruptive new quantum computing approaches.					
▪ Establish European Commission framework agreement under which all public institutions can	Quantum	1. Gauge overall needs for all public institutions in specific economic sectors such as finance, pharmaceuticals, and defence	3	4	Medium term

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
access services from the top 3-5 native EU quantum computing providers		(including cities and municipalities) in Europe 2. Raise to European Commission and advocate for European Commission framework agreement with 3-5 native EU quantum computing providers 3. Consolidate Eurosystem demand on native EU quantum computing providers (potentially for digital euro too)			
Finance research into quantum algorithmics	Quantum	Invest in research to further develop quantum algorithmics to allow for broader applications 1. Approach SPRIND with proposal of using existing formats: • Research programmes • Research projects • Research professorships at institutions of higher education • Mandates for applied research • Competitions and challenges	3	3	Short term
Bring quantum computing into industry-specific application	Quantum	1. Conduct feasibility study concerning quantum computing in the financial sector 2. Tap financing initiative to facilitate implementation of study results in pilot schemes and mobilise €50 million for the pilots	4	3	Short term
Robotics Robotics will play a key role in how competitive Germany and Europe prove as business locations in the coming decades. We also anticipate that robotics is set to experience a “ChatGPT moment” sometime over the next 12 months.					
Conduct technology assessment at the human-machine interface	Robotics	Draw up criteria at the human-machine interface for the responsible use of AI in robotics, e.g. compliance with security criteria, ethical aspects of responsible handling and deployment in different target groups, and value-based development of technical applications 1. Draw up the first white paper on this topic	5	2	Short term

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
		2. Coordinate discussion events			
Devise concepts for fostering development of humanoid robots with AI layers/AI stacks	Robotics	Standardise and pilot connection between hardware and software in humanoid robots - Develop a concept outline - Provide start-up financing for pilots through funding programmes	5	3	Short term
Form clusters of medium-sized enterprises (demand) and robotics suppliers and researchers (supply)	Robotics	Launch a “Robotics Initiative” to couple medium-sized enterprises seeking applications with solution providers - Conduct exploratory talks in a round table format to validate proposition - Secure backing from policymakers and business - Design and implement formats for dialogue	5	3	Short term

Economy and financing

Digitalisation is a key driver of economic performance and productivity growth in Germany and Europe. It is crucial to ensuring prosperity, security and independence going forward as well. Strengthening digital innovation and key strategic technologies will rely on enhancing technology transfer and bolstering financing.

Identify measures to further develop the venture capital (VC) market with a focus on scale-up and, above all, exit opportunities	All	Improve VC financing in Germany and Europe. Support and further develop measures already under way to bolster scale-up financing, such as Germany’s WIN initiative, the Scaleup Europe Fund, etc. - Also strengthen measures to improve exit opportunities in Germany and Europe Identify opportunities for 1) IPOs, 2) financial exits and 3) corporate exits - Bring relevant market participants together with e.g. VC experts in order to draw up a 3-5-year plan of action.	2	5	Medium term
Implement the measures contained in the Draghi Report (09/2024) for start-ups	All	Already being implemented at EU level. No need for additional measure of our own.			

Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
Implement the measures contained in the Letta Report (04/2024) concerning next steps for the Single Market	All	Already being implemented at EU level. No need for additional measure of our own.			
Allow spin-offs and use of intellectual property from universities	All	Plan: Make legislative adjustments to facilitate spin-offs and use of findings and output from publicly funded research projects 1. Draw up a paper containing legislative proposals and discuss with the research community 2. Conduct legislative initiative 3. Implement legislation	3	4	Medium term
Significantly simplify and streamline the AI Act	AI	Federal Government is already pushing to simplify the AI Act. No need for additional measure.			
Radically streamline EU projects, cutting red tape	All	Amend legislation to reduce bureaucracy with regard to applications, project processes (requirements relating to documentation and evidencing) and final reports 1. Raise to European Parliament and advocate for a legislative initiative to cut bureaucracy in EU projects 2. Draw up a paper containing legislative proposals and discuss with the research community 3. Conduct legislative initiative 4. Implement legislation	2	3	Short term
Create a legal basis for legally sound native EU procurement	All	1. Develop an amendment proposal for an EU Procurement Directive 2. Conduct legislative initiative 3. Implement legislation	3	5	Medium term
Permit sale restrictions of up to 10 years for firms that have received EU funding	All	1. Raise to the European Commission and advocate for a legislative initiative to this effect 2. Draw up a paper containing legislative proposals and discuss with	2	3	Medium term

Measure	Technology	Approach	Feasibility 1-5 (difficult- easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
		investors in the EU to explore potential side effects 3. Conduct legislative initiative 4. Implement legislation			
Permit sale restrictions of up to 10 years for firms that have received funding from Germany	All	1. Advocate for legislative initiative to this effect (e.g. by raising to the Federal Ministry for Economic Affairs and Energy, the Federal Ministry of Finance, etc.) 2. Draw up a paper containing legislative proposals and discuss with investors in the EU to explore potential side effects 3. Conduct legislative initiative 4. Implement legislation	3	2	Medium term
Cluster available resources from various funding programmes to consolidate provision of funding to relevant recipients	All	1. Set up a funding committee in Germany to formulate a proposal including impact assessment aspect	3	4	Medium term
Link infrastructure projects such as the EUDI Wallet (European Digital Identity Wallet) and the digital euro with one another	All	Already being implemented at EU level. No need for additional measure of our own.			

Communication

Fully living out digital sovereignty across the board hinges on social participation and the willingness to develop a collective stance. This means that we need a narrative that the European public can identify with.

Develop and propagate a positive European vision of the future for the AI age (narrative beyond the defensive)	All	1. Develop a shared European vision for people, work and society in the AI age; anchor that blueprint in government policy statements, school curricula and communication through public-service broadcasting channels; provide annual public updates in the vein of situation reports	3	4	Short term
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Measure	Technology	Approach	Feasibility 1-5 (difficult-easy)	Impact on digital sov. 1-5 (low-high)	Time horizon
Establish a social partners' pact on AI-driven transformation of the world of work	All	1. Engage in structured dialogues involving trade unions, employers' associations and the Federal Government to discuss a shared vision of the future of work; draw up ground rules for co-investment in reskilling, transparent AI use, protection of career entry pathways; objective: collective framework agreement	4	4	Short term
Mount a nationwide campaign to promote AI proficiency among the general public	All	1. Establish accessible, low-bar formats geared towards AI proficiency (explanatory content, opportunities for participation); familiarising people with how to identify synthetic content; safeguarding against deepfake fraud; e.g. through vehicle of public service broadcasting, adult education colleges, the Federal Agency for Civic Education (<i>Bundeszentrale für Politische Bildung</i>) and other educational institutions.	3	3	Medium term

4 Genesis and the road ahead

Progress towards developing a strategy has taken a step-by-step approach and this is set to continue:

1. First working meeting in January 2026: Initial brainstorming session with a small set of participants aimed at laying down a basis for discussions with relevant stakeholders and champions.
2. Publication of the paper as a stimulus for debate and swift implementation of measures to drive forward digital sovereignty in Germany and Europe.
3. Workshops in sub-groups: Organise a series of workshops to go deeper into specific topics and dimensions with the objective of establishing a shared understanding and developing concrete measures.
4. Event before end of 2026 to serve as a kick-off for a platform to promote digital sovereignty in Europe with prominent backing. The event will be geared towards finding sponsors for individual measures who will drive those measures forward.
5. Coordination and implementation: Setting up a German/European platform with the working title “Europäische Digitaldialog-Initiative”/“European Digital Dialogue Initiative” (EDDI) to facilitate stakeholder collaboration in implementing the strategy. Organisation of an exclusive annual “Europäischer Digitaldialog”/“European Digital Dialogue” flagship conference.

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