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OPEN STRATEGIC AUTONOMY

Ensuring Europe's Access to
Key Enabling Technologies,
Reducing Dependencies and
Growing Capabilities

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DIGITALLY SOVEREIGN AND OPEN

The Dance of
Dependencies and
Capabilities

An interconnected and open technology sector in Europe would provide the continent with cutting-edge, competitive solutions; well-paid jobs; and a turnover that contributes to Europe's tax base and public welfare. As digitalisation and decarbonisation continue worldwide, an open technology sector would provide a strong geopolitical position, that allows Europe to set global technological standards, promote European values, as well as, maintain and grow Europe's economy.

This paper presents a view on how a strategic policy approach to Open Technologies can support the reduction of dependencies and increasing capabilities found wanting in Europe.

“Once you realise [what COVID has changed], you also look at the tools you are using and you realise that you don't have that much control over what those tools actually do. Then the topic of digital sovereignty has become a personal and a business issue. The definition of digital sovereignty is now at the heart of policymakers.”

Rafael Laguna de la Vera, SPRIND

Digital sovereignty is a much discussed concept in the context of policy discussions and is arguably one of the main concerns facing Europe's governments. How it is defined often depends on the vantage point, yet from the perspective of a pragmatic approach to address the challenges, risks to achieving the following four main policy goals are relevant:

- Economic competitiveness
- Digital transformation of society
- Respect for European laws and values
- Continued access to critical technologies

These policy goals are interlinked, but arguably all stem from a view that Europe, while having a strong industrial base, has struggled to convert this into the digital domain. For the past few years, political and corporate stakeholder discussions have been taking place across Europe that address how to create strategies for achieving more control over digital infrastructure.

What are the root causes that present a challenge to Europe achieving digital sovereignty? A sovereign decision is dependent on the decision maker's ability to make it freely and then implement it. Thus, if sovereignty is reduced, this is because dependencies restrict the ability to make decisions. Such dependencies are ultimately due to missing own capabilities. Yet, sovereignty does not mean autarky. Interdependencies will always exist in an interconnected economy, but the reduction of one-sided dependencies is the crucial approach

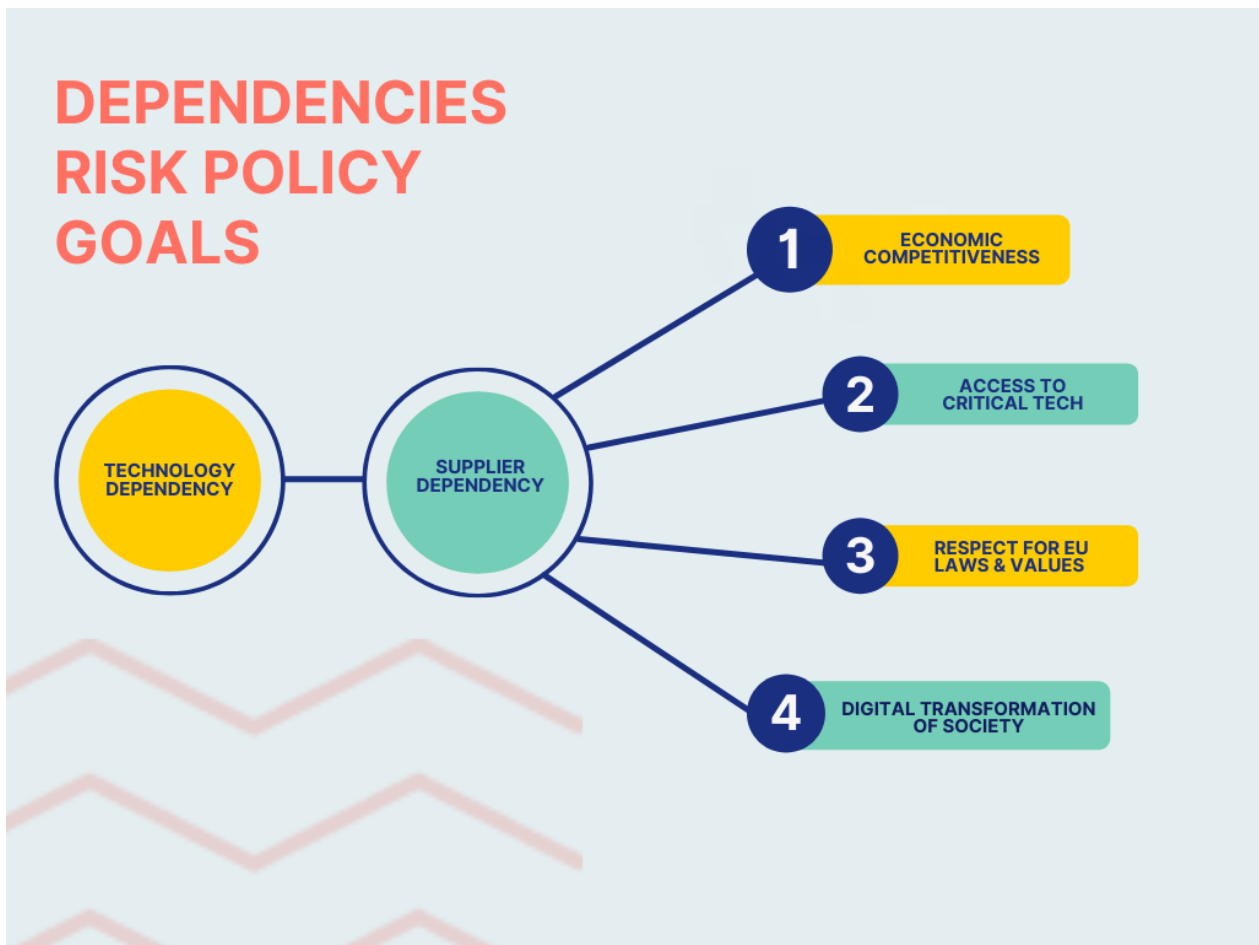
to increase sovereignty. At the core of this paper lie dependencies Europe has in the digital domain. We suggest two dependency dimensions that should be addressed primarily:

- Technology dependency and
- Supplier dependency

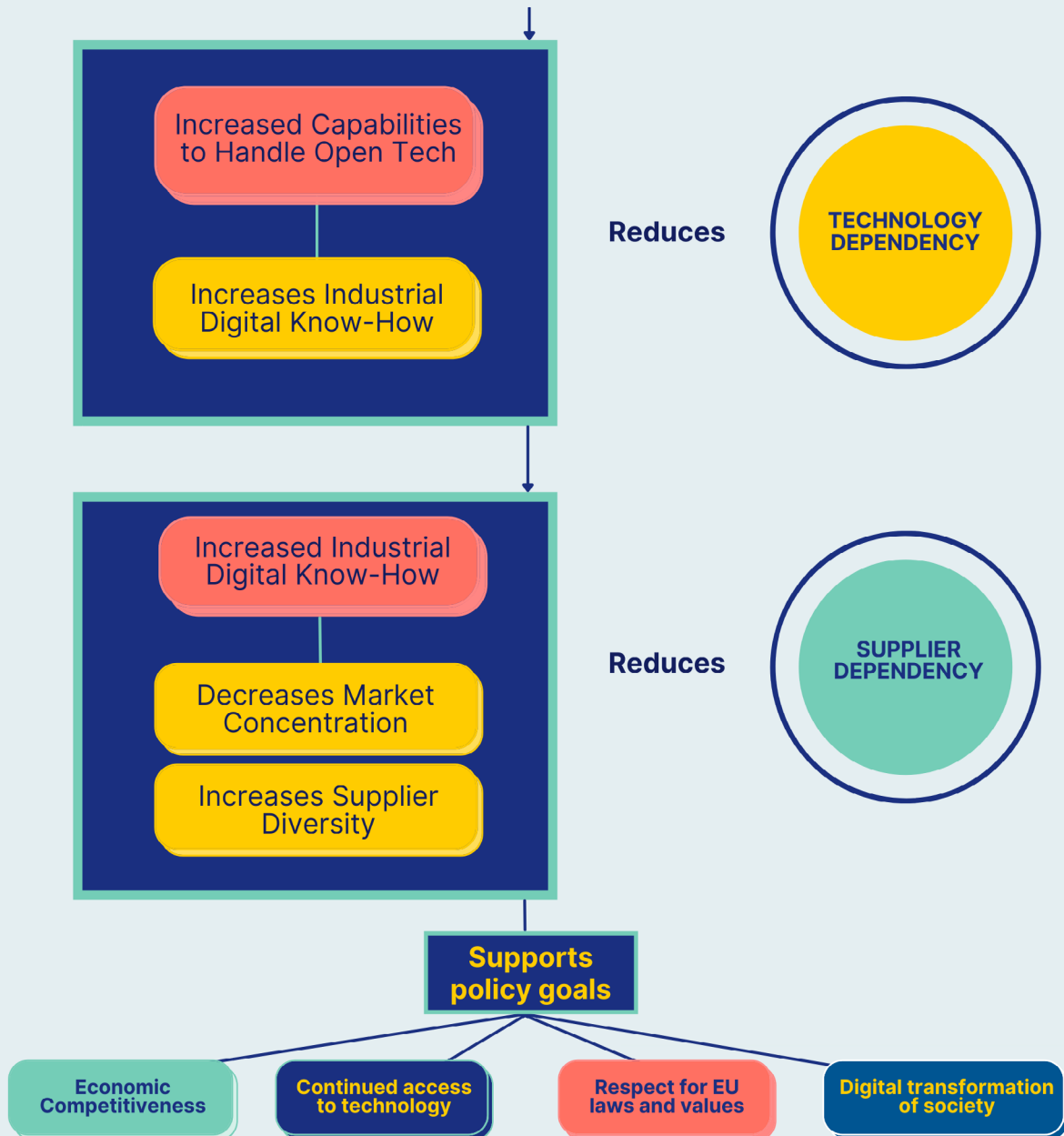
Europe has structural, one-sided dependencies on technologies and suppliers that reduce its ability to provide competitive, cutting-edge, full-stack services. While interdependencies help drive equilibrium in a system, issues develop from an overdependence. Technology dependency needs to be addressed first. It is a necessary condition for the reduction of technological dependencies and will set the basis to reduce supplier dependencies.

“A very important point here is that digital sovereignty does not mean protectionism or autarky or something like this. I don’t think there is a conflict between trade with other countries and other regions and Digital Sovereignty. But we need a level playing field for trade and to negotiate the rules under which we trade.”

Peter Ganten, Univention & OSBA



Strategic Engagement in Open Tech



Digital Sovereignty

“The entire society is dependent on ICT: work, private life etc. No company or country can afford to be deprived of access to technologies. Open Technologies will not exclude others. The point is not depriving others of their sovereignty, but assuring yours.”

Vittorio Bertola, Open-Xchange

All policy actions carry risks. There is agreement in the policy sphere that action is necessary and significant steps have already been made in the field of Open Technologies. Some approaches put forward risk undercutting the very basis for Europe’s economic success and its status as one of the largest global economies: An open market, relying on a well-defined rules-based system. Without trust in a reliable economic framework costs for suppliers and consumers increase, reducing Europe’s ability to deliver on policy goals. We suggest an approach that leverages Europe’s strengths and uses them to turn weakness into opportunity, without risking Europe’s success story: A single market, open for all, but one that can set its own rules and doesn’t become overly dependent on any entity, be it a third country or a vendor.

What can an approach that reduces dependencies look like?

It’s not realistic to attempt to develop European competing proprietary solutions. In Europe, and the world for that matter, there is a lack of manpower, capacity and access to IP. Without them it’s unrealistic for Europe to attempt to develop competing proprietary solutions and expect to reduce supplier dependencies - as technological access is a necessary condition.

Here, Open Technologies should play an ever more critical role. Like the EU, Open Technologies are based on a time-tested legal framework that ensures collaboration and open access. Open Technologies are developed internationally and collaboratively. Europe’s public sector, a significant buyer of IT, has increasingly turned to open source to drive better citizen-centric eGovernment.

Access to them cannot, by virtue of a well established definition, be restricted. Yet, while Open Source Software alone is already [contributing](#) between €65bn and €95bn to Europe’s GDP, the potential of Open Technologies is still not taken full advantage of. Many of the key Open Tech projects are being steered without European involvement. Open Technologies are already present in many IT projects, what needs to change is that they become part of an organisation’s culture, a deliberate, leadership-driven approach transforming the way innovation is done. Europe needs to further bolster its engagement and open source contributions and thus be

part of the shaping of existing and new Open Tech projects toward its needs. This will allow Europe to profit off the collaborative work, multiplying its own investments.

By engaging more with Open Technologies, European suppliers can gain access to, know-how in, and influence over Key Enabling Technologies (KETs). European suppliers can then build their own solutions on top to differentiate their services and use these gains to offer cutting-edge, scalable services, contributing to an open, competitive and healthy European information and communications technologies (ICT) market.

Open Technologies will not be a panacea to achieve Europe's digital sovereignty, but with these steps Europe can strategically reduce both technology and supplier dependencies, while maintaining an open, innovative, and competitive digital economy.

“The term ‘strategic autonomy’ [...] refers to the EU’s ability to chart its own course in line with its interests and values. This does not mean going it alone, but rather accepting and managing our interdependence in the best possible way. The addition of ‘openness’ shows that the EU will be open to trade and will promote stable rules in order to be strong economically and have geopolitical influence.”

European Commission

2

THE WORLD RUNS ON OPEN TECH

Why Europe is Well-Placed
to Leverage Open Tech
Strategically

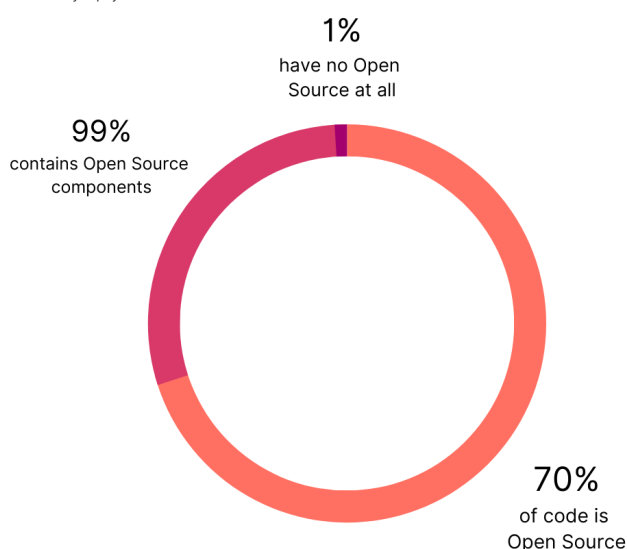
Open Technologies are imperative for Europe's digital future. Regardless of one's view of a digital policy strategy centred on Open Technologies, the reality is that they already underpin the digital transformation globally. There are virtually no complex software projects that don't rely on Open Technologies, be that Open Source Software components, that often make up the base technology of software packages, Open Standards, among them file formats, specifications and APIs and other open collaboration methods: open access, open data, open government etc.

"Open Technologies follow a principle that we invented when we invented science. That's the way science works. You just publish the way you did the experiment and what the outcome was so that everyone can repeat it. That's what open source software does for software. It's a highly efficient approach to innovation. Full control over the destiny of your systems"

Rafael Laguna, SPRIND

SOFTWARE TODAY

Source: Synopsys



Open Source Software has profited from being clearly defined by the Open Source Initiative's (OSI) [Open Source Definition](#) (OSD). In general, Open Technologies can be inspected, used, modified, and sold by anyone. Unlike when relying on other, more closed forms of intellectual property, for Open Innovation the value lies in zero-transaction cost collaboration and legal certainty for reuse. Today, no organisation has the ability to develop all layers of a complex software stack on its own. Collaboration is a necessity and Open Technologies are the most efficient way to do it. That is why the world runs on it.

These freedoms are essential to the advantages Open Technologies offer. Countries in global technology competition are concerned that they could lose access to Key Enabling Technologies, important for their economies,

and thus reduce their ability to make sovereign decisions. One possible answer to this is to try to develop domestic technologies or obtain, through economic or legal agreements, secure and stable access to them. Yet, when relying on Open Technologies, the freedoms attached to them mean that access to these technologies virtually cannot be impaired.

"By definition open technologies are not controlled by anyone. Due to that you have an assurance that -- you're not just a user. Nobody will be able to take the technologies away from you."

Vittorio Bertola, Open-Xchange

Open Technologies are Public Goods: They are non-rivalrous and non-excludable. Their use or supply does not dwindle when using them (the use actually increases often) and they are available to anyone. In that way Open Technologies are not unlike a popular example of a Public Good: physical public infrastructure. Typically, roads and bridges are available to anyone in a country, everybody can profit from them, not everyone may contribute, but they are essential to the running of an economy. Public goods are provided both by the public and the private sector and in the case of Open Technologies have mostly been developed and published by the latter. Though Open Technologies are usually developed to provide a solution that the developer needs, their publication makes their value public. Open Source is the Digital Public Infrastructure our society runs on, with the difference that in the digital Open Technologies world everyone can contribute to creating this infrastructure.

“The days of building proprietary IT infrastructure, software, automation, are far gone. The complexity of IT necessitates a large workforce which we think no single organisation can bring to the table alone.”

Basem Vaseghi, Daimler TSS

“If you want to build solutions that can be used by billions of users, you don’t want to negotiate licence terms for the next billion of users. That’s one of the reasons why AWS, Google etc. they’re all built on top of OSS, because they need to scale.”

Peter Ganter, Univentio & OSBA

European companies cannot afford to try to reinvent the wheel, they need to rely on the infrastructure available to them.

Reinventing the wheel would be a waste of the already scarce resources. As European industrial players realise they gradually need to become software companies, they also realise the enormity of the task in front of them, especially for a company that does not have expertise in software development.

There is no European digital transformation without Open Technologies, such as Open Source Software, Open Standards, Open APIs, at every level of the technological stack - there is simply no one there to develop these components anew. Companies that are used to an IP-heavy model may not find this transition easy. Silicon Valley companies have effectively strategically employed Open Technologies’ innovation and scaling power. The collaboration and zero-cost access characteristics of Open Technologies have proven to be a combination that has enabled businesses to grow to immense size. Europe needs to wake up, catch up and use Open Technologies strategically.

Complexity of the MODERN SOFTWARE STACK

Capabilities needed to develop a typical industrial application:
Predictive maintenance



Cloud Application



Cyber Security



AI Tech & Models



User Interface



Cloud Infrastructure



High Level of Complexity

Base Technologies and Capabilities Needed

In many ways Europe's cultural and organisational model (the EU's "united in diversity") is a very good match for the cooperative modus operandi of Open Technologies.

Europe prides itself on its "win-win" approach to trade and policy, seeing itself as the flagbearer for multilateralism in the world. The United States and China have monolithic markets, companies that often have a winner-takes-all approach, and a unifying language. The European Union has 24 official languages, 27 markets and many local rules and customs. It might be easier for a European company to offer products in the United States in some ways than in every Member State of the European Union. To be active in every Member State, especially smaller companies need to form alliances. This is also the case for the successful development of Open Technologies. There is, therefore, a direct link between the European cooperation model and the Open Technologies cooperation model.

"Imagine you have three organisations who want to collaborate. What are the options of setting up a collaboration? They can create a joint venture, which means two years of having lawyers sitting around the table to work out the setup of the joint venture and that's very expensive. Or they decide to set up an Open Source collaboration, and they can inherit from Open Source best practises and legal framework: this way this can be operational in 3-6 months."

Gael Blondelle, Eclipse Foundation

European suppliers need to cooperate to compete in Europe and abroad. European suppliers tend to be smaller. Take the German Mittelstand, for instance. These companies are typically defined as very localised medium-sized companies. Instead of offering a broad range of products, they are leaders in their specific niche and cooperate with other companies, often of a similar size, to provide their value proposition. These companies are currently under pressure to develop software capabilities. They will need Open Technologies as a basis for their development, building differentiating products on top of existing components. They will also need to cooperate to build products together, that work together. Open Technologies provide the foundation for that from a technical, process and legal perspective. With Open Technologies the transaction cost on all of these levels can be radically reduced, as established norms and legal frameworks can be utilised.

Europe can get a head start if it makes a bigger bet on Open Technologies. It facilitates moving fast and efficiently on key digital technologies. Open Technologies provide a proven technological basis that reduces dependencies as well as a platform for cooperation that enables the rapid development of scalable products and services, in line with the diversity of European suppliers.

3

HOW EUROPE CAN LEVERAGE OPEN TECHNOLOGIES

Define Requirements,
Build Capabilities,
Stay Open,
Invest

SUPPORT THE SWITCH TO A NEW, LEADERSHIP-DRIVEN OPEN AND COLLABORATIVE CULTURE

For many organisations it is not intuitive that more openness provides more control. An organisation needs to go on a journey from realising the potential, to analysing the impact on the organisation and implementing a rethinking of some of the base assumptions of how value can be extracted. Open Innovation represents a huge change for the working methods of an organisation and such changes are difficult, even more so if the business model of an organisation was built on control over intellectual property. In short, therefore, culture is a critical antecedent for successful open innovation.

“You need to open yourself up to showing the results of the work to the world, which is not easy, especially if you are not used to it. You really have to build this into all processes, into everything. Make it open, discuss it open, release it open. Learn to have conflicts in the open. This has to go into the DNA of the company. People first think they need to own the product and extract from it. Then people realise Open Tech is about the experience of having developed or worked on something and being able to continue developing something into more.”

Timo Väliharju, COSS

The way to tackle the digitalisation backlog in European organisations and their products and services is cooperation and collaboration, as the solutions cannot be supplied in isolation. It is not, contrary to some political instincts, a case for raising drawbridges and asserting geopolitical boundaries in a bid to protect specific companies - an approach that ultimately reduces their competitiveness. Open Technologies provide an important basis to reduce the digitalisation backlog. One could compare this to the formation process of the EU: EU Member States realised limits to their capabilities and pooled their resources and sovereignty to achieve more together. A similar cultural shift is necessary in the business domain, for which the lessons learned from the EU formation process could provide valuable insights.

Many companies and governments still need to make this switch at a cultural level. The past has shown that for such a shift to be successful, the organisation's leadership needs to have understood the value of openness and needs to drive the process from the front - especially in those environments which have been traditionally more conventional / top-down structures.

SUPPORT THE DEVELOPMENT OF A FRAMEWORK FOR EUROPEAN OSPOS

The Open Source Programme Office (OSPO) has quickly become the key institution that enables an organisation's transformation into an Open Technology-savvy powerhouse. They are more expansive than an Open Source competence centre. OSPOs handle not only the legal compliance work, the integration of Open Source components and helpdesk services, they contribute to the larger organisation's strategic goals: privacy, security, trust and collaboration with other organisations.

“This is exactly where the EU can shine: Working in the open on supporting a standard program for a legal framework that the industry can refer to. What are the IP policies when collaborating e.g. with an American company on certain technologies? How do I tax my collaboration when I'm working with someone else? What are the employment regulations if my employees are contributing in the evenings? Simple questions, but important”

Basem Vaseghi, Daimler TSS

Creating an OSPO should be seen as a new level of ambition and understanding of the power of Open Technologies. They are about more than only code: They help transform the culture of an organisation. This proliferates across the organisation's goals and activities and transforms processes that have been in an organisation for years. Additionally, the task of an OSPO also consists of building networks and communities around priority software.

European stakeholders should join efforts to standardise what an OSPO is. The European Commission can support European organisations by creating and funding a network of European OSPOs and contributing efforts to standardise the creation and running of an OSPO with information on e.g. the necessary legal steps, IP requirements, tax frameworks and labour laws.

AFFIRM THE OPEN SOURCE DEFINITION

The Open Source Initiative's Open Source Definition has ensured that there is legal clarity and certainty for the use of and contribution to Open Source Software. This legal certainty is enabling the low transaction costs inherent in using Open Technologies. Weakening this definition would lead to uncertainty about how to handle Open Source Software and question the framework that is underpinning economic activity in an amount of between €65bn and €95bn in Europe alone, as well as the basis for the world's digital economy.

European suppliers and European institutions should clarify whenever possible that Open Source Software is defined by the OSI's Open Source Definition. European institutions should also enshrine this in legal acts.

TAKE OSS LEADERSHIP: REUSE AND CO-DEVELOP WHERE POSSIBLE, REDEVELOP ONLY WHEN NEEDED

Open Technologies have to be used strategically and should be part of a concerted effort to build technological capabilities. Today, most of the base technology already exists or is being developed, in many cases in Open Technology communities. To duplicate code along a geographical defined ecosystems would be an unnecessary drain on scarce resources.

“You have different groups collaborating to develop a technology stack that they all want to use. As collaborators you have the opportunity to steer this technology based on your needs. You can steer these critical technologies towards your own requirements. If you want to steer and invest in open technologies you have to take an active role. This also means not limiting participants to certain geographic borders.”

Basem Vaseghi, Daimler TSS

European organisations should join, contribute to and take a leadership role in foundations and standards organisations and engage directly with organisations that have similar issues and that build Open Technology solutions. European organisations can actively initiate and contribute to shared efforts, prioritising resources of like-minded organisations to common issues and providing solutions in everyone’s interest. Existing solutions should be reused and not redeveloped.

PUBLIC FUNDING: PRIORITISE BUYING PRODUCTS OVER FUNDING RESEARCH

Europe has an SME-heavy industry, and it therefore needs to consider how to support SMEs in particular. This includes both SMEs that supply IT services as well as SMEs that need to digitise their processes and products. Funding research is important and the EU’s cascading grant structure of the NGI (Next Generation Internet) programme has achieved a much higher penetration into small companies due to its reduced complexity.

However, SMEs have been clear on what they need: They need to be able to sell their products and services in the EU single market

“EU companies compared to Big Tech are tiny. So we need to somehow use such interventions to create these markets for them to grow and become significant players, and that goes back to what we said: using buying power and also funding money to bring certain OS projects to a level where they’re competitive. Whenever there is a market failure - we see it now where the EU digital industries cannot develop or scale because they cannot compete with what’s on the outside - we need intervention.”

Rafael Laguna, SPRIND

as well as global markets. European organisations should prioritise public money to strategically buying products to build capabilities. The work of European institutions to make public procurement more accessible to SMEs needs to continue and better take into account the change from the acquisition of licences to products to the acquisition of services. In addition, tech SMEs employing Open Technologies should receive specific support for business development. The EIC (European Innovation Council) could play a specific role in supporting this. The current EU recovery grant program could also play an important role in accelerating this *shift to open*.

USE OPEN STANDARDS

Open Standards reduce dependencies on single suppliers, especially within complex value chains. Relying on an Open Standard, which is freely available without IP implementation costs (i.e. restriction-free), creates an ability to switch suppliers more easily, with lower costs. Should one supplier stop business in a specific area a new supplier can continue the work due to the open documentation.

“It is easier to modernize your IT system if it is based on open standards solutions as you can mix and match for the optimal customer solution.”

Charlotte Thornby, Oracle

European suppliers and institutions should prioritise products and services building on Open Standards wherever possible in their organisations. European institutions should continue the work to ensure standards-based procurement is the norm, a step in this direction would be the European Multi-Stakeholder Platform on ICT Standardisation continuing its work on identifying ICT standards relevant for public procurement.

SET REQUIREMENTS, NOT EXCLUSION

Europe is an open economy that profits from access to the most advanced technologies at market prices. The efficiency of such a market is difficult to beat and Europe would lose access to cutting-edge technologies if an approach would be adopted that would exclude non-European suppliers, as Europe does not have the capabilities to replicate these technologies without Open Technologies.

“With technology you always have intertwined supply chains, and I don’t think there’s a way to unwind them, especially with hardware. There will also be supply coming from countries outside Europe, so I don’t think this is a viable strategy to begin with. This is never a good decision for the economy and for peace. We should set principles for trusted systems that everybody needs to adhere to, and whoever adheres to these principles can supply government and companies in the EU.”

Rafael Laguna, SPRIND

“No country or organization in the world is big enough to keep up with the edge of technological development in every field. Pursuing technological autarky is a recipe for falling behind.”

Mike Linksvayer, Github

International cooperation is important. Open Technologies are global and excluding certain suppliers would have a chilling effect and negatively affect the ecosystem. This could threaten Europe’s access to important Open Technology base components.

Instead, a practical approach to address dependencies is to analyse what policy outcomes are aimed for and set uniform requirements for every supplier that correspond to these aims. Every supplier that wants to be active on the European market has to conform to these requirements. Positive examples can be found in the Digital Markets Act (DMA) and Data Act (DA), which attempt a regulatory approach to address lock-in. Their focus on addressing ex-ante gatekeeper dominance and strengthening regulatory requirements to ensure smooth switching and porting of data and digital assets is a welcome step forward. In combination with building own technological and supplier capabilities, this would more effectively address the broader issues at play.

BE IN IT FOR THE LONG RUN, STRATEGIC AUTONOMY CAN'T BE GAINED OVERNIGHT

Many of the recommendations we set out here will require time to show an impact. We suggest rethinking the way innovation is performed, understanding that with increased complexity and scaling to hundreds of millions while having only limited resources, collaboration is not only necessary, but in fact the most efficient approach. Reducing technological and supplier dependencies requires building and continually growing capabilities.

“It’s like clean energy: This really started to work when the industry understood that governments really mean it not for the next two years but also for the next thirty years.”

Peter Ganten, Univentio & OSBA

Past experiences have clearly shown that such a culture change takes time, leadership and stamina. Thus, European organisations and institutions need to follow a long-held EU mantra: Do not let a crisis go to waste. Consider long-term strategies and how to institutionalise them, in order to make them future-proof. The digital and green transformation goals coupled with significant EU recovery funds provide a unique opportunity to build and scale sovereign digital solutions which not only respond to the needs of European citizens but also drive European values and competitiveness. Yet, the digitalisation and decarbonisation challenges will outlive any current crisis and a European approach to these challenges thus needs the same state of mind.

FURTHER READING

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OPEN STRATEGIC AUTONOMY

ABOUT



MARCH
2022

OpenForum Europe (OFE) is a not-for-profit, independent European based think tank which focuses on openness within the IT sector. We draw our support not only from some of the most influential global industry players, but most importantly from across European SMEs and consumer organisations and the open community. OFE also hosts a global network of **OpenForum Academy Fellows**, each contributing significant innovative thought leadership on core topics.

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