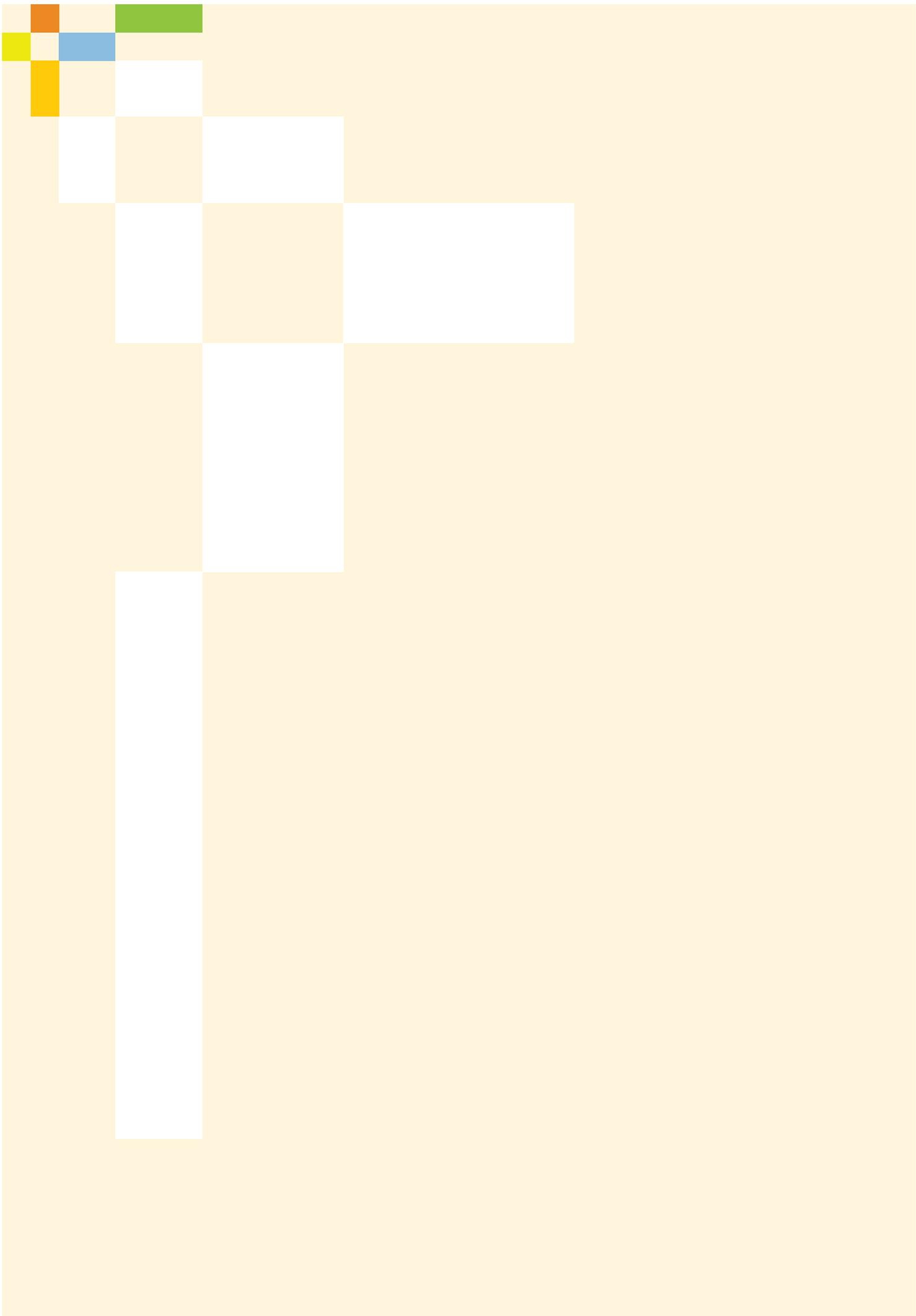


acatech IMPULSE

European Public Sphere

Towards Digital Sovereignty for Europe

Henning Kagermann, Ulrich Wilhelm (Eds.)



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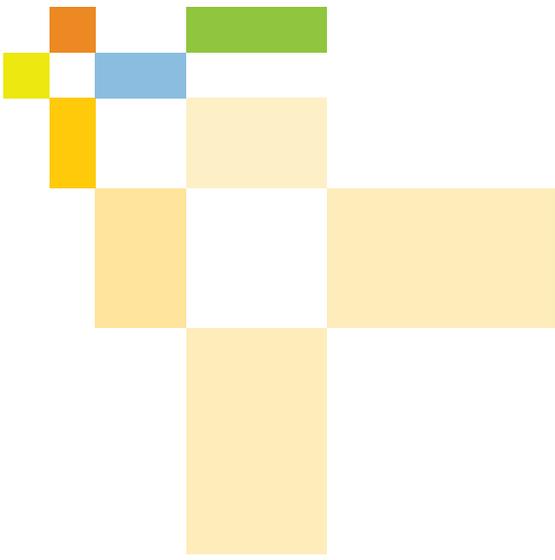
The acatech IMPULSE series

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Executive Summary

Europe can strengthen its digital sovereignty by creating a sovereign European digital ecosystem that is democratically accountable to its citizens. A digital ecosystem that observes European values such as transparency, openness and privacy protection, even in its technical design, can create a digital public sphere that offers fair terms of access and use, strengthens the public debate and safeguards the plurality that forms a key part of Europe's identity. This sphere would be open to everyone, both within Europe and beyond – the key to Europe's digital sovereignty lies not in isolationism but in the creation of ambitious alternatives.

The current coronavirus crisis has shone a light not only on how digital technology is increasingly penetrating every area of our lives, but also on just how dependent Europe has become on non-European platform operators. Europe is losing its influence over the digital public sphere at a time when it has taken on a central role in the continent's economic and social life. As well as diminishing Europe's economic competitiveness and thus the prosperity of European society, this poses a particularly serious threat to people's individual freedom and privacy and to Europe's democratic values. The time has come for both the member state and European Union levels to demonstrate the common political will to actively shape a digital public sphere that provides a basis for democratic debate, public opinion-forming and respect for European values, and to develop and establish an open European digital ecosystem that offers a genuine alternative. If incorporated into the special funding measures to overcome the coronavirus crisis, this European Public Sphere (EPS) can also provide a huge opportunity for European companies and startups, thereby helping to boost value creation in Europe.

This paper describes how a European Public Sphere can be established as an alternative European ecosystem, and sets out

the concrete measures that will be necessary in order to do so. These include:

- Design of a technology infrastructure for delivering the digital public sphere as a public service.
- Formulation of a technology strategy characterised by modularity, interoperability, openness and transparency that enables continuous development and a diverse range of business models.
- Establishment of a governance entity such as a European Digital Agency or agency network, together with an alliance of European actors including content, service and infrastructure component providers, civil society initiatives and research institutions.
- Government funding coupled with European regulation to kick-start the establishment of an open, European digital ecosystem for the development and operation of the key technological components and products for a digital public sphere.
- Requirement for all the digital ecosystem's actors to adopt a "values by design" approach.

These measures will enable the establishment of a trusted digital public sphere for the citizens of Europe that puts European values first and that facilitates cross-border services and a dialogue between people who live in different countries and speak different languages.

Together with key partner France, and in conjunction with the European Commission and European Parliament, the Trio Presidency of Germany, Portugal and Slovenia can initiate the European Public Sphere as an ambitious, pan-European development project. Provided that they receive the necessary backing and financial support from government, stakeholders from the private sector, culture, civil society and academia are ready to create an alternative European digital ecosystem.



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1 Status quo and challenges

1.1 The key challenge of technological sovereignty for Europe

From search engines and social networks to shopping platforms and cloud services, almost all of the digital platforms used by citizens, the public authorities, institutions and businesses in Europe are provided by non-European private-sector companies. This means that although the digital sphere plays a critical role, as highlighted during the current crisis, Europe has no influence over its governance.

This raises several questions about Europe's economic and geopolitical dependency. Coupled with their financial strength, the dominant platform providers' control of critical functions (especially the operating system, browser, search engine and app store) allows them to hold sway over the competition. Many established platforms now act as de facto regulators, stipulating the rules governing interactions between their users. In the main, this happens without democratic governance and with no reference to European values, thereby also calling into question the effectiveness of current (data protection) legislation.

The American and Chinese companies also provide critical data and analytics infrastructure. This means that most European data is stored either outside of Europe or, if it is stored in Europe, on servers belonging to non-European companies. Europe must gain sovereignty over the data and data infrastructure in order to ensure the availability of this data for future value creation within Europe and its effective protection by European data protection regulations. This will help private individuals, businesses and civil society to make independent decisions about how their data

is used and whether they allow it to be used in the first place. In this context, the term "sovereignty" refers not so much to geographical sovereignty as to regulatory protection and influence. As things currently stand, there is a disconnect between regulatory and data sovereignty.

Various national and European actors have now recognised the fundamental need for action to address these issues, and several promising civil society initiatives have already been launched¹. At municipal and local level, startup and innovation centres are springing up from a variety of backgrounds with the goal of bringing together different actors and stakeholders and leveraging synergies by connecting up different initiatives.² These civil society initiatives often involve collaboration with universities and research institutions. For instance, one recent initiative calls for a publicly moderated search index that can be accessed by search engines in order to increase the diversity of search results.³ Hitherto, however, a lack of government support in the shape of coordination, funding and standardisation has meant that these projects have been unable to achieve the scale and firepower needed to provide a genuine alternative to the current infrastructure. Nevertheless, the existing project landscape provides a good basis for further discussion.

In addition to the proposals from civil society, the research community and the private sector, the need for action has also been recognised by policymakers, with possible instruments being debated at various levels. At national level in Germany, the Data Ethics Commission has drawn up recommendations for the ethical use of data in connection with algorithms and artificial intelligence.⁴ At the end of June 2020, the Federal Chancellery will present a data strategy based on the findings of an expert committee and a broad-based online consultation.⁵ The importance of digital policy is also highlighted in the mission of the Executive Vice-President of the European Commission, Margrethe Vestager. A strategy has been published for the use of both data and artificial intelligence. Under the motto "The Future

- 1 | The following are just a few of these projects, cited for illustrative purposes. Civil society organisations such as the Free Software Foundation have been campaigning for many years for more open standards and interfaces in technology development <https://fsfe.org/index.de.html>. The Beyond Platforms Initiative is an alliance of media actors that is working to develop innovative solutions to the problems discussed in this paper <https://beyond-platforms.org/>. The Public Open Space initiative brings together actors from academia, public service and non-commercial media and civil society organisations in Austria, Germany and Switzerland. It proposes an alternative media infrastructure geared towards ensuring a well-informed public <https://public-open-space.eu/>. The European Broadcasting Union is developing infrastructure components aimed e.g. at making recommendation algorithms more transparent and diverse <https://peach.ebu.io/>. These examples illustrate different approaches to the overarching theme of the digital public sphere, as well as the range of different recommendations, from policy demands to concrete implementations.
- 2 | See e.g. Munich Urban Colab and <https://www.unternehmertum.de/ueber/munich-urban-colab> Barcelona City Council, especially with regard to e-government and smart cities, <https://www.barcelona.cat/digitalstandards/en/init/0.1/index.html>.
- 3 | See <https://opensearchfoundation.org/en/open-search-foundation-home/>
- 4 | See <https://www.bmi.bund.de/DE/themen/itund-digitalpolitik/datenethikkommission/datenethikkommission-node.html>
- 5 | See <https://www.bundesregierung.de/breg-de/themen/digitalisierung/daten-verantwortungsvoll-nutzen-1725992>.



of Europe”, this digital strategy ⁶ focuses on Europe’s citizens as one of its three key pillars, aiming to strengthen Europe’s open, democratic society in the digital realm. The European Commission is also working on a concrete technological user ID component as proposed in this paper.⁷

Finally, a further compatible framework is offered by the GAIA-X project, which aims to facilitate a digital ecosystem by developing an open, secure and trusted data infrastructure for Europe. GAIA-X wants to establish an open ecosystem comprising providers of different sizes, all of whom use a common reference architecture, are technically interoperable and can benefit from working together via an appropriate collaboration mechanism. A network like this would be suitable for various areas of application, from industrial automation to healthcare and e-government.

1.2 The specific actions required in the digital public sphere

Europe’s current technological dependency poses a threat to the competitiveness of European industry and thus to the prosperity of European society as a whole. Moreover, as digital technology continues to penetrate every area of our lives, the fact that its design can no longer be adequately influenced by Europe poses a further threat to individual freedoms, particularly privacy protection, as well as an indirect threat to our democratic values.

Over the last three decades, the importance of digital platforms has also risen continuously for the private individuals, consumers, entrepreneurs and political actors who make up the opinion-forming public. This trend has been accentuated even further during the coronavirus pandemic, with most private and professional communication, social dialogue and democratic debate switching over to the digital domain due to the threat of infection from face-to-face contact.

The Internet has become the fulcrum of our private and social lives. However, the media, private individuals and other content providers have no genuine alternative to the major digital platforms. Europe has largely surrendered its influence over the digital public sphere to private-sector companies that are not subject to democratic governance and for whom respect for basic values such as data protection and privacy is not a priority.

Content relevance and visibility are controlled by software and algorithms primarily designed to target individual users with personalised ads and increase their activity. This state of affairs is extremely dangerous in the context of political content and public debates – on the current platforms, users have no way of distinguishing between high-quality, factual content and fake news, propaganda and hate speech.

1.3 The European Public Sphere: a European alternative

A better offer (e.g. a website, app or product) is not enough to effectively counter the problems outlined above. After all, there have been several promising start-ups that were quickly swallowed up by the ecosystems of the major platforms.⁸ Instead, the goal should be to develop a digital ecosystem with the ambition of establishing an open infrastructure that enables further offers and platforms. It may seem reasonable for policy to focus on the level of individual products and services – for example in the form of a European “super media library” –, since this level is often the most tangible and visible. However, this type of individual product would have no realistic chance of success if simply delivered through the existing platform infrastructure without forming part of a broader initiative. A genuine product-based alternative can only come about if the products are conceived as the foundation and as an integral part of a digital ecosystem right from the outset.

It is therefore necessary to systematically build up a European infrastructure that is consistent with European values and guarantees principles such as transparency, fairness and the protection of private data against misuse. In doing so, it will be important to strike a balance between economic interests and social goals. In order to provide an effective alternative to the quasi-monopoly of the major providers, this technology infrastructure should therefore be conceived as a public service.

Up until now, not enough attention has been paid to the technological component level, especially higher-value services. A successful approach will need to give equal weight to the technology level and the design of the market rules. It is the interaction between alternative technological components and a diverse offer that will enable the emergence of the European Public

6 | See https://ec.europa.eu/commission/commissioners/sites/comm-cwt2019/files/commissioner_mission_letters/mission-letter-margrethe-vestager_2019_en.pdf

7 | See https://ec.europa.eu/info/sites/info/files/communication-shaping-europes-digital-future-feb2020_de_0.pdf

8 | See e.g. <https://www.gruenderszene.de/allgemein/facebook-ubnahme-fayteq>

Sphere (EPS) – an open digital sphere in Europe that provides the foundation for democratic debate, cultural diversity and the observance of European values.⁹

In view of the proposed EPS structure, it makes sense to seek synergies with the European GAIA-X project, particularly at Levels 1 and 2.

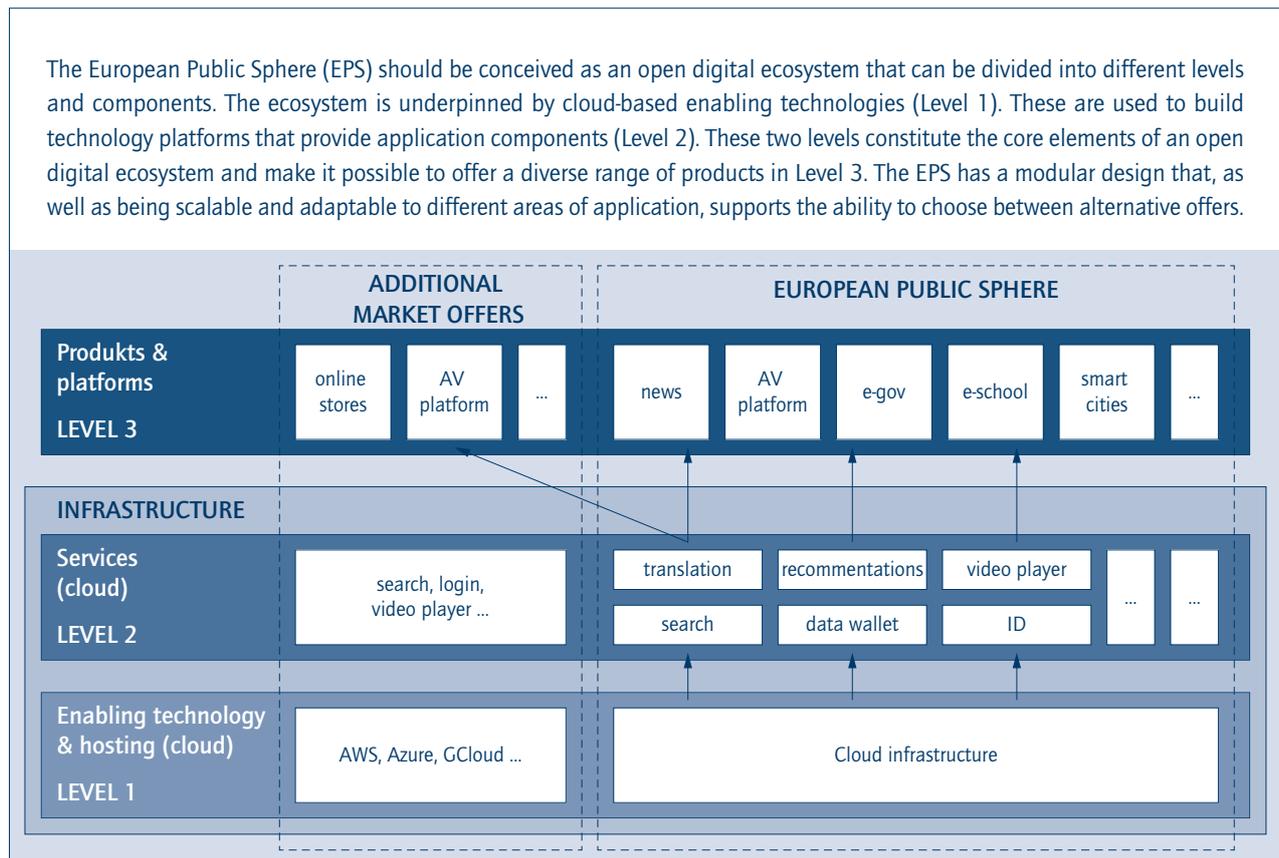


Figure 1: Modular design of the EPS (Source: authors' own illustration)

9 | In this paper, the term “European Public Sphere” refers to the realm of our (digital) social life in which individual and public opinion is formed. The term is also sometimes used by other initiatives that are unconnected with this paper.



2 The State as the active driver of a European Public Sphere

Given the financial and distribution power of the established platforms, it will be a huge challenge to deliver the necessary functional quality and distribution system. Consequently, State intervention is not only justified but imperative. An alternative European digital ecosystem will have no chance of succeeding without State-initiated coordination supported by regulation, standardisation and government funding.

2.1 Current role of the State

Until now, the State has played a predominantly reactive role in shaping the digital public sphere. Unlike broadcasting, healthcare, education and the transport and communication networks, the digital public sphere has not hitherto been regarded as a public service. This may also be connected to the fact that the momentum and dominance of the US platform providers and their digital ecosystems in the digital public sphere is so great that regulators are scarcely able to keep up with the pace of change.

State intervention is also justified on the market side of the digital public sphere. The public sphere is the key arena in which people exercise their basic rights and is fundamental to how we live together as a society. In the past, established "analogue" public spaces such as the transport space, roads and squares, the consumer space, the space for democratic opinion-forming and the key communication and media spaces were all specifically shaped through State intervention in order to minimise their vulnerability to disruption. As well as using regulation, the State also created numerous public service entities to help ensure the positive development of the relevant spaces.¹⁰ The EU member states' public service broadcasting corporations are one prominent example of

this approach. Yet things are very different in the digital public sphere, where at present it is mainly private platforms and their ecosystems and monetisation strategies that hold sway.

Attempts to use traditional competition law instruments to limit the existing platforms' market dominance have so far proved difficult to implement.¹¹ The European Commission is addressing the associated challenges through its recently launched consultation on a new competition tool.¹² Even highly successful but complex regulatory initiatives such as the GDPR can indirectly strengthen the position of the dominant platform providers, since they have the necessary resources and financial clout to effectively manage the additional complexity. Moreover, even successful attempts to regulate the market do not guarantee the establishment of an open digital sphere.

The US and Chinese platform operators also benefit from the fact that the EU's digital single market is incomplete and there is still fragmentation across Europe. The strength of the existing platform providers' domestic markets – where network effects have allowed them to accumulate huge financial power – has made it easier for them than for European companies to achieve a dominant position in Europe. Moreover, the supremacy of the current platform providers in the digital sphere is not down to market forces alone – they have also benefitted from massive State intervention and funding, particularly to support their technologies.

It is thus apparent that the digital public sphere needs a more concrete and systematically implemented "mission".¹³ At present, the European Commission's Digital Single Market (DSM) strategy remains extremely abstract and reflects the orthodox view that policymaking should adopt a technology-neutral approach wherever possible. While the State supports basic research through a range of programmes, it is harder to find examples of government funding for either specific or more general innovations or for the commercialisation and distribution of concrete products in the digital sphere. Until now, there has been little commitment to an ambitious joint European digital initiative.

10 | The Data Ethics Commission is also calling for the State to exert this kind of positive influence, specifically with regard to media intermediaries. It believes that "positive legal provisions for social networks which, for example, increase the transparency and range of discussions held there and bolster the rights of users" would be particularly constructive (Final Report, p. 208, https://datenethikkommission.de/wp-content/uploads/191128_DEK_Gutachten_bf_b.pdf)

11 | For an overview of traditional competition law instruments, see Jacques Crémer, Yves-Alexandre de Montjoye, Heike Schweitzer, *Competition policy for the digital era*, DG COMP, 2019

12 | See <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12416-New-competition-tool/public-consultation>

13 | Mariana Mazzucato, *The Entrepreneurial State*, 2018.

2.2 The essential ingredients of State intervention

In view of the current balance of power in the digital sphere, it is not enough simply to regulate the market. Instead, it is necessary to re-create a functioning market from scratch. This will require the State to redefine its role.

Government regulation will continue to be necessary, especially through competition law.¹⁴ However, the regulatory framework's scope should be extended to include industrial policy aspects such as facilitating access to European services and content. In addition to regulation, Europe also needs to actively develop the digital sphere. An open digital sphere will require a basic infrastructure – a kind of open, digital equivalent to the road network – providing alternative technologies that enable the development of products and services consistent with European values. Europe can only acquire digital sovereignty if it is able to shape its development and correct any mistakes. This would be almost impossible without an alternative European digital ecosystem.

At present, there is no substantial European funding programme for new projects or a coordinating body for bringing together existing initiatives in the field of public-interest technologies. These are necessary in order to finance the launch and initial growth phase of a basic digital infrastructure and to promote cooperation between media and technology actors and projects in research institutions, businesses and civil society that are committed to strengthening digital sovereignty in line with clearly defined standards. While it may not be appropriate for the State to directly operate a digital infrastructure itself, the successful development of an alternative digital ecosystem incorporating all the relevant stakeholders will require the State to establish an overall organisational framework and to provide adequate financial support.

It will be critical to ensure that a European Public Sphere provides products and services that are attractive to its users and add genuine value for them. In its capacity as both regulator and user, the State would seem the obvious candidate to ensure an attractive core for the EPS by providing digital access to public services such as e-government and healthcare through EPS components. Market forces would then drive the emergence of further products based on the EPS's digital infrastructure.

14 | In Competition Law 4.0, the Commission presents a series of specific regulatory proposals for online platforms with a dominant market position (Final Report, p. 6 ff., https://www.bmwi.de/Redaktion/DE/Publikationen/Wirtschaft/bericht-der-kommission-wettbewerbsrecht-4-0.pdf?__blob=publicationFile&v=12).



3 European values require European alternative technologies

Few blueprints currently exist for a European approach to delivering technology development, an innovation ecosystem and governance consistent with European values. In recent decades, however, methodologies and process models have been developed that can help to create a responsible research and innovation agenda.

3.1 Concrete implementation of abstract values – “values by design”

Technology is never “neutral”. It is always influenced by the environment in which its specifications are defined and in which its technical implementation is carried out. Accordingly, the engineering process always translates values into technologies. However, most widely used software and technology engineering process models devote very little attention to the translation of concrete values or to value-based technology assessment. As a result, values are established inadvertently or implicitly rather than explicitly.

The way that recommendation algorithms work is a good example. These algorithms aim to keep users on the platform in question for as long as possible in order to increase advertising revenue. At a technical level, greater priority is attached to click probability, for example, than to whether the content differs from previously consumed content. One consequence is the generation of the one-sided recommendations that have attracted such widespread criticism, as well as the emergence of filter bubbles. This example illustrates how the different – explicit and implicit – objectives that informed the development of existing platforms are often diametrically opposed to European notions of diversity and self-determination.

It is therefore necessary to compile a set of fundamental abstract values based on current EU legal principles that can then be systematically articulated in more concrete terms with a view

to their implementation in an open digital sphere. This process should involve the public and be moderated by democratically accountable representatives. It is in this spirit that the recently published final report of the Federal Government’s Data Ethics Commission states that the Charter of Fundamental Rights of the European Union should be viewed as “an indispensable and socially accepted benchmark for action”.¹⁵ It argues that human dignity, self-determination, privacy, security, democracy, justice, solidarity and sustainability should be at the core of a European policy for an open digital sphere.

There is nothing specifically European about any of these values – in the main, they are universal standards to which Europe has made a particular commitment. For example, GAIA-X also undertakes to base its activities on European values.¹⁶ In view of the different and shifting weight that individual nations and social groups attach to different values, it is necessary to maintain an ongoing public debate about their design and implementation. For instance, we must keep revisiting the definition of privacy that underpins various data protection concepts.

When putting its values into practice, Europe focuses on achieving harmonisation while striking a balance between common standards and the specific circumstances of individual member states, between economic interests and the public interest, and between supporting diversity and maintaining unity. The implementation of privacy and self-determination is a case in point. In the field of data protection, privacy by design is a core principle enshrined in Art. 25 GDPR. A similar “values by design” approach should be adopted to ensure that the European Union’s basic values underpin its digital platforms.

3.2 Values as a point of difference: the guiding principles of the European Public Sphere

Over the years, the European project has been informed by countless different values and principles. In terms of the design and implementation of an EPS, the key values are diversity and openness, transparency and accountability, striking a balance between free competition and the public interest, and ensuring that individual rights are compatible with collective goals.

15 | See https://www.bmi.bund.de/SharedDocs/downloads/DE/publikationen/themen/itdigitalpolitik/gutachten-datenethikkommission.pdf;jsessionid=770B765CFB3E65BC451369EED5823C5F2_cid295?__blob=publicationFile&v=6

16 | See https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/gaia-x-das-europaeische-projekt-startet-in-die-naechste-phase.pdf?__blob=publicationFile&v=16, p. 5.

Diversity and openness are values that relate to both technology and content. Open development of components such as search technologies or recommendation systems facilitates a dialogue between development teams, users and the public, enabling the development of a diverse offer with a range of different priorities. Participatory processes can also be used as the basis for drawing up and establishing common standards in areas such as data protection, transparency and informational self-determination. As far as content is concerned, diversity and openness means not only using content from public service or private media, but also being open to new journalistic initiatives and projects such as user-generated content, or content from cultural institutions and universities. For this to be possible, it is necessary to ensure both extensibility and co-determination and participation rights at the governance level.

Transparency and accountability are key to enabling a meaningful democratic debate about the development of the relevant technologies and components. Effective regulation requires technology and content providers to operate transparently so that it is possible to verify implementation of the relevant regulations. The server location is no guarantee in itself, since misuse of data can also occur in a European data centre. By the same token, the quality of certain providers' content is not guaranteed purely by its source. As far as the technology is concerned, this means disclosing the source code and adopting an open-source approach wherever possible.¹⁷ In order to ensure that the rules defined by providers are democratically accountable and that there are penalties for non-compliance, governance structures must go beyond voluntary commitments and make this implementation compulsory.

An appropriate balance must be struck between **competition and the public interest**, in order to ensure that innovation and

observance of common rules and standards are strengthened in equal measure. The rules and standards adopted to protect the public interest provide the framework for the competitive development of specific, user-oriented business models. Without access to concrete user experience, it is not possible for a government-commissioned entity to develop mature technologies and business models capable of competing successfully with existing products and services. In order to prevent conflict between competition and the public interest, it will be necessary to establish innovation-oriented funding programmes and a common authority that is independent of competing projects and partners. This body would have a public service mission to support, enable and monitor the relevant projects, components and stakeholders.

Individual rights and collective goals would at first sight appear to be at odds with each other. While promising greater personalisation, mass user data analysis also poses a threat to the data privacy rights of the individual. In order to reconcile these two values, it will be necessary to develop interfaces and data trusts that can access anonymised data for specific, transparently defined purposes, while at the same time always ensuring that the user retains the rights to the data, in accordance with the principle of data sovereignty.¹⁸

The key challenge is to establish a systematic framework for translating principles into technology and for verifying the technology's compliance with these principles. GAIA-X will provide services and data using a portable, interoperable and federated approach based on European regulations and standards.¹⁹ While not exhaustive, the following table illustrates how European values could also be translated into technology modules for a European Public Sphere.

- 17 | The positive feedback on the IT architecture of Germany's coronavirus warning app (decentralised data synchronisation, open source, broad user information) is a testament to the effectiveness of this approach (<https://www.bundesregierung.de/breg-de/themen/coronavirus/corona-warn-app>).
- 18 | The once-only principle makes it easier for people to use e-government services. It reduces the administrative burden on citizens and businesses by only requiring them to register once to comply with the formal legal requirements and by simplifying the exchange of data through the relevant access rights. Germany transposed the European Commission's guidelines into national law in the 2017 Online Access Act
- 19 | See https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/gaia-x-das-europaeische-projekt-startet-in-die-naechste-phase.pdf?__blob=publicationFile&v=16, p. 5.



Values	Objectives	Technological components
Diversity and openness	<ul style="list-style-type: none"> Plurality of opinions and public Avoidance of polarisation Accessibility of opinions 	<ul style="list-style-type: none"> Search algorithm: promote diversity, protect data, ensure transparency Recommendation algorithms: Combination of personalised and editor's recommendations Automatic translation
Transparency and accountability	<ul style="list-style-type: none"> Traceability of source and author or source quality Protection of anonymity where necessary, traceability of criminal behaviour 	<ul style="list-style-type: none"> Distributed ledger technology (blockchain) for source traceability Identity provider and single sign-on with authentication Interfaces for transparent fake news detection projects Publication of the developed components' source code Explanation components
Competition and public interest	<ul style="list-style-type: none"> Enabling sustainable business models Reconciling openness and business models 	<ul style="list-style-type: none"> Definition of open interfaces Collaboration on components that are not key to competition
Individual rights and collective goals	<ul style="list-style-type: none"> Data protection and data rights Data portability Use of data for centralised analytics 	<ul style="list-style-type: none"> Data wallet: control over master and transaction data, right to erasure, full anonymisation Cloud storage with open interfaces

Figure 2: Illustration of how values and goals can be translated into concrete technological components (Source: authors' own illustration)

3.3 Integrating values into methodologies and development processes

Public engagement and participation are key to the socially inclusive formulation and establishment of value-based principles in an open, democratic process. At the technology development level, the relevant values can be put into practice by implementing a responsible research and innovation agenda along the lines of the Rome Declaration on Responsible Research

and Innovation in Europe.²⁰ This encompasses different levels, from the participatory definition of an open, adaptive overall architecture with a public service mission and the selection and development of open standards and interfaces to individual technology development projects. At an organisational level, it will also be necessary to implement appropriate forms of participation and co-determination and to enable external transparency, accountability and democratic supervision vis-à-vis citizens, policymakers and civil society.

20 | See <https://ec.europa.eu/digital-single-market/en/news/rome-declaration-responsible-research-and-innovation-europe>

4 The European Public Sphere ecosystem: business models, technology, products

In order to accomplish its vision, the EPS must pursue a long-term strategy. If it is to provide a basis for public debate and opinion-forming, it cannot afford to confine itself to one particular niche market. The strategies of the non-European platform providers such as Facebook, Apple, Amazon, Google, Tencent and Alibaba are not exclusively focused on a single technology or business model. Instead, they have certain core competencies that form the scalable nucleus of their strategy. These are then repeatedly combined with other resources (in what is known as the flywheel effect) in order to create new business models in different markets. Amazon, for instance, uses its cloud technology and recommendation algorithms not only for its e-commerce market platform but also for its media platforms such as Prime Video, Prime Music, Audible and Twitch. Scalable, modular technologies are used to build a family of business models across different Internet and media markets.

4.1 A strategy for the European Public Sphere

If the EPS is to gain traction, its strategy must take inspiration from the core concepts of the non-European platforms while at the same time clearly distinguishing itself from them. The EPS strategy should be characterised by the following elements:

- The EPS focuses on the predominantly decentralised development of innovative products and platforms as opposed to monolithic closed platforms. The extensibility of the EPS is based on a technology strategy characterised by modularity, interoperability and openness. Unlike many other contemporary technologies, the EPS develops specific and enabling technologies designed to allow rapid reusability and optimise combinability with other technologies – including proprietary technologies – through open standards. The EPS shares its modular approach with the European GAIA-X project. A standardised set of interconnected nodes offers new opportunities to providers in the GAIA-X infrastructure ecosystem

to scale and connect their products and services in order to bring new alternatives to the digital market.²¹

- The EPS thus enables the creation of products that provide a genuine alternative and add new value for citizens in every area of the digital realm (digital media, e-schooling, e-government, etc.). The spectrum can encompass everything from (news) portals and media ecosystems (e.g. European video platforms) to highly specific apps.
- The EPS does not have a single, all-embracing business model. Instead, it allows for a wide variety of different business models based on EPS technology and products. Different business models can complement each other, eventually leading to the emergence of entire business model families that add new value for users but are not necessarily under the centralised control of a single actor.

However, this strategy will require overarching coordination. Firstly, it will be necessary to coordinate the establishment of technological and organisational standards and the associated participation and supervision aspects. And secondly, it will be necessary to coordinate innovation in the digital public sphere, i.e. the development of an innovation agenda linked to financial incentives or funding for actors who develop products for the digital public sphere.

4.2 The technology of the European Public Sphere

The EPS should be conceived as an open digital ecosystem for the exchange of data and services, divided into different levels and components (See Figure 1 above, which describes Levels 1 to 3).

The *cloud-based enabling technologies* in Level 1 include data centres and line connections and provide the computing functionality such as memory, CPU, etc. for the services in Level 2. In other words, they constitute a physical level that includes what is now commonly referred to as smart operating software. In technical terms, it is possible to further subdivide this bottom level. In the GAIA-X project, for example, it encompasses various decentralised infrastructure services, especially cloud and edge instances, which constitute individual nodes in a federated ecosystem and are combined to form a homogenous, user-friendly system. The use of these nodes delivers efficiency gains by increasing performance range, while redundant nodes strengthen the ecosystem's security. If one node becomes non-operational, another node steps in to

21 | See https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/gaia-x-das-europaeische-projekt-startet-in-die-naechste-phase.pdf?__blob=publicationFile&v=16, p. 4.



replace it. In addition, this approach delivers enhanced performance through distributed processing of CPU-intensive applications in dedicated cloud instances (see GAIA-X publication 12 f.).

By way of example, media companies usually hire the enabling technologies from major US providers – in practice this almost always means Google (Google Cloud Platform), Amazon (AWS) and Microsoft (Microsoft Azure). European players from e.g. the technology and telecommunications industry currently play a negligible role at this level. Although in most cases there are no technical issues with the US providers' solutions, it is difficult to implement European values due to the dependency on companies that in practice can often be hard to pin down under European jurisdiction and that in some cases subscribe to very different values, particularly with regard to data protection. Accordingly, it makes sense to seek synergies with the European GAIA-X project at this level. It should be possible to ensure that the end products reflect the desired values by creating an ecosystem of multiple providers at the enabling technology level, with defined standards and a common reference architecture to ensure that they all meet the same requirements.

Level 2 comprises services, i.e. standardised technology components from different providers delivering functionality that can be used by a wide variety of products. If appropriate, these are also provided as cloud services via APIs. Alternatively, they can be delivered as self-hosted versions, while self-hosting providers can also offer them as cloud services via APIs. The provision of these decentralised infrastructures and transparent services is also one of the key aims of GAIA-X.²² The *application components* at this level are one step closer to the products of the digital public sphere. This level brings together different functions such as recommendation systems, automatic translation and video analysis. Many of them use big data and machine learning based data correlation and analytics techniques – in other words the classic components of artificial intelligence.

Since end products place extremely high demands on these components, significant financial and human resources will be required to develop components that are competitive. In order to spread the high cost of developing individual components and achieve a diverse offer, it will therefore also be necessary for different partners to cooperate at the services level. The major cloud providers have already invested to varying degrees in industry-specific application components (e.g. Microsoft's Azure Media Services), harnessing lock-in effects to further strengthen their dominance of Level 1.

However, there are also several concrete examples of open-source projects to develop on-demand audiovisual services. These include video players (such as the open-source project hls.js), search solutions (Elastic Search and Apache SOLR), voice SDKs for voice control integration, open-source codec development (e.g. based on AV1), metadata feed standardisation (e.g. based on the schema.org approach), language databases for minor European languages, and the work on front end standards from PWA to CE-HTML in the context of W3C.

The two bottom levels in this layer model make it possible to provide end users with a wide range of products and services in Level 3. These are the product of free competition and can add value for the end users of the digital public sphere. They also reflect European values and principles, since their technology is based on an EPS infrastructure informed by European values.

4.3 The products and business models of the European Public Sphere

If it is to gain traction among users, the EPS will need to add concrete value for private end consumers. The EPS technologies can provide the basis for a range of different products. While some of these will be market-driven, there is also potential for the EPS to host public services such as e-schooling and e-government services.

Digital media is one area of application where the EPS can create concrete alternatives for citizens in the open digital sphere. That is not to say that the EPS should replace the existing services landscape, with its diverse array of digital media services (video, audio, text), social media platforms (Facebook, Instagram, etc.) and support functions (e.g. search engines). Instead, the EPS should provide a viable alternative to the existing platforms, with a view to capturing a growing share of the digital services landscape. The long-term goal is for as many people as possible to use the alternative services provided by the EPS. Ultimately, it will be up to the targeted individuals to decide which services they choose and trust, but they cannot do so unless they have alternative services to choose from.

The point of difference offered by the EPS in the digital media sector is that its services provide users with new opportunities for individual and public opinion-forming, while still delivering

22 | See https://www.bmw.de/Redaktion/DE/Publikationen/Digitale-Welt/gaia-x-das-europaeische-projekt-startet-in-die-naechste-phase.pdf?__blob=publicationFile&v=16, p. 3f.

content and functionality on a par with existing services. A diverse range of intuitively accessible content from across the countries of Europe allows citizens to gain a broader perspective on a range of different issues. Transparent rules of conduct and supervision mechanisms prevent fake news and filter bubbles, enabling an open, democratic debate. Moreover, users can be confident that their personal data is being protected at all times.

Below, we outline a European video ecosystem as a concrete example of the shape that the EPS could take in the digital media sector. The ecosystem encompasses a family of different video business models. In essence, the European video ecosystem comprises a range of products that use EPS technologies to provide European video content to citizens in an innovative manner (see Figure 3). These products are extremely user-friendly, but

are clearly distinguished from the current offer of international corporations by the fact that they reflect the desired European values.

The underlying principle of all the products in the European video ecosystem is to offer citizens the broad spectrum of European content in an easily accessible digital space. As one example of the products in the video ecosystem, the vision of a Euro TV portal shows how this principle can be implemented. The TV portal would comprise an Internet-based TV offer providing European TV channel content in a common digital space for European viewers on all end devices. The “news snapshot portal” is an additional product module that could tailor European news to different European target viewers. A third product idea involves a “remix & user-generated content portal” that would allow

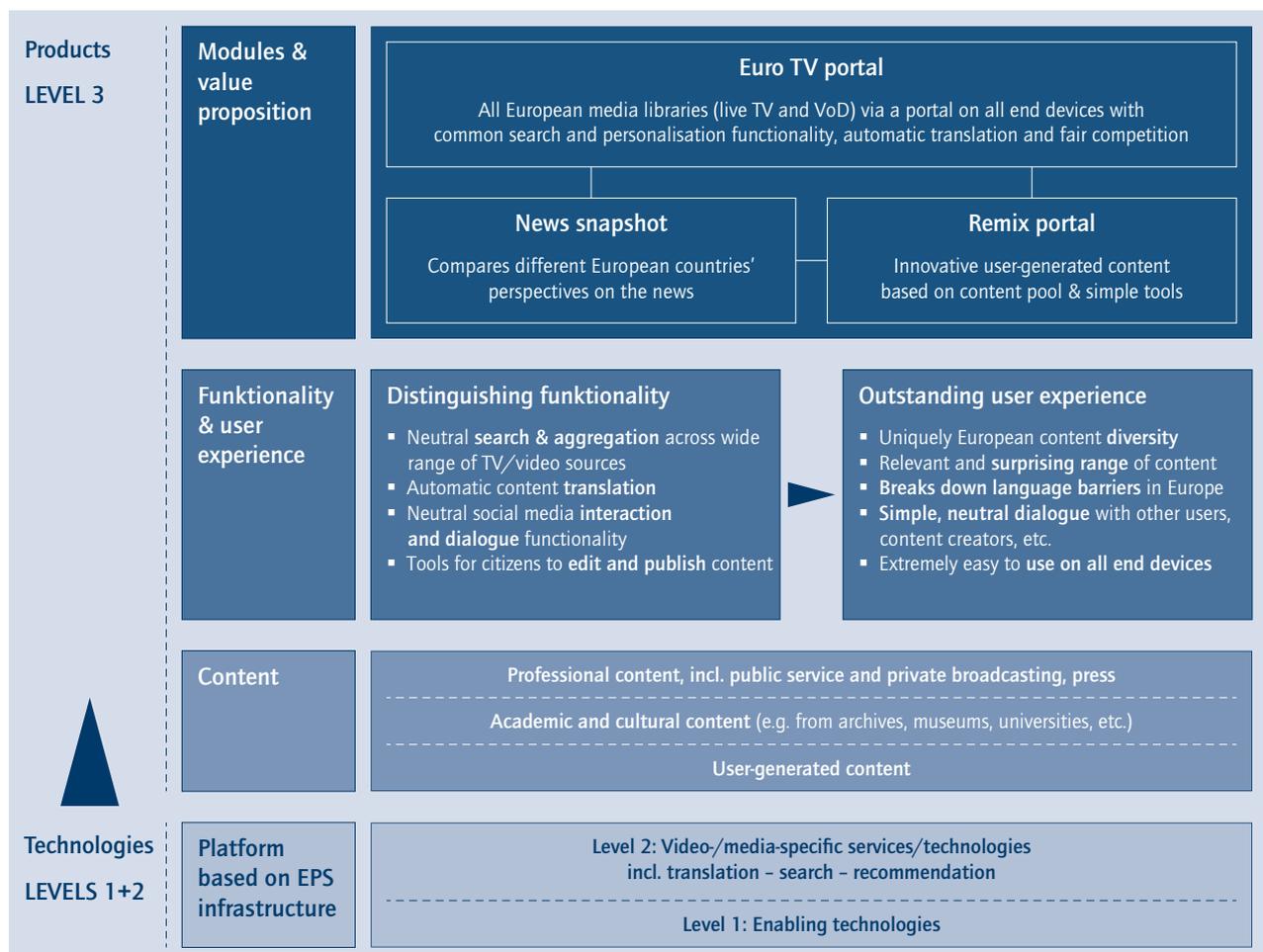


Figure 3: A European video ecosystem as a potential video sector business model (Source: authors' own illustration)



European citizens to create and disseminate their own content based on freely available European content.

While a vast range of European video content already exists today, some of it is not easily accessible to individual viewers. Although European TV channels offer high-quality formats on a wide variety of topics in their media libraries, unfortunately these are currently content silos that are not connected to each other at European level. The same usually applies to the free content of film archives and other cultural institutions such as museums and theatres. European user-generated video content is of course also of interest to viewers, as demonstrated by the success of many content creators. However, these content creators also have to contend with the problematic aspects of the existing platforms (e.g. unfair search algorithms and payment systems).

In addition to clarification of the legal and regulatory issues, enabling easier access to this diverse video content will require the appropriate technology. It will be necessary to create a common technology platform as the basis for all the products in the European video ecosystem. If all products are based on a standard, open-interface technology, it will be possible to develop them more quickly and to combine them easily with other product modules in order to create further innovative offers for citizens. Digital components in Level 2 can provide the necessary technology for the platform of a European video ecosystem and realise basic functionality for all the video ecosystem's products. This will create a user experience on any end device that has the following points of difference compared to existing products:

- A *neutral search function* covering a wide range of TV and video sources makes it easy to find the European video content, despite its diversity. Coupled with a *neutral aggregation*

function, it provides viewers with content recommendations that they might find surprising but that nonetheless interest and excite them.

- *Automatic content translation* allows European citizens to consume content that was not produced in their mother tongue, opening up a whole new world of European content.
- *Social media interaction and dialogue functionality* makes content more attractive by allowing people to discuss it without exposing themselves to abuse. Viewers should also be able to directly contact the media professionals, journalists and artists responsible for the content.
- *Content editing and publishing tools* allow citizens to remix or produce content themselves. This increases the diversity of European content and allows the target audience to participate in creating the offer.

The specific example of a European video ecosystem outlined above and the digital media sector in general are just one possible area of application for the EPS. The enabling technology level provides the foundation for an open digital sphere, while the different technology modules in Level 2 can be used to realise a variety of applications in different sectors in Level 3. These include e-government and e-schooling solutions, two areas in which the serious lack of trusted digital offers and alternatives has become all too apparent during the coronavirus crisis.

Although the EPS has a wide range of potential applications, a successful launch will initially require it to focus on the design and implementation of a restricted number of key applications. If the EPS is to stand any chance of becoming a genuine alternative in Europe's future digital public sphere, it will need to begin by concentrating its resources on a handful of core projects that will serve as a launchpad for its subsequent step-by-step development and expansion.

5 Governance of the European Public Sphere

The establishment of the EPS as an alternative European digital ecosystem will require an overall governance system that includes all the relevant stakeholders, defines the scope of the EPS's digital public service mission and also supports its dynamic and competitive development.

5.1 The special features of public-interest platforms and ecosystems

Often described by buzzwords like network effects and N-sided markets, the characteristic structures of platforms and ecosystems mean that models for the governance of digital offers have a number of special features compared to conventional governance models for companies or public institutions. There is more to platforms than standard products – a platform's value increases in line with the number of users (direct network effects) and with the usage of complementary products and services (indirect network effects). This means that as well as providing an attractive core product, platform operators must ensure that decentralised, complementary products and services are compatible with the core product and are equally attractive.

This results in a larger circle of stakeholders with different and potentially conflicting interests. Consequently, platform governance models must enable coordination within the network of stakeholders as well as providing guidance for any potential new members. As a result, they have to strike the right balance between central coordination and decentralised participation.

Most platform governance models today are entirely financially driven. While the providers of content or complementary products and technologies also include public institutions, public-interest initiatives or other non-commercial actors, the ground rules are determined by the commercial interests of the platform provider, at least in the case of the major platforms. In recent years, alternative approaches collectively referred to as "platform cooperatives" have been developed in sectors such as retail, energy and smart city technology.

The digital public sphere must offer a more balanced approach than the purely financially driven platform governance models.

After an initial phase focusing on public-interest requirements, it should be possible to provide both non-commercial goods and services and commercial consumer products on the basis of common technology components and modules. Incentives such as access to funding, content or new customers can be created for private-sector media providers, publishers or technology companies, for example using shared search and curation technology. At the same time, however, it is necessary to ensure that the offer of non-commercial or public-interest actors such as public service media, cultural institutions, universities and civil society initiatives does not simultaneously promote individual commercial interests, as is currently the case when platforms like YouTube, Facebook and TikTok are used for public service broadcasting content.

5.2 Requirements for a governance model

In order to reflect the special features of the EPS concept, the EPS governance model will need to meet the requirements summarised below:

1. The EPS will require an operating entity responsible for generating direct and indirect network effects and supporting the establishment of a digital ecosystem. Initially, this operating entity will need to set binding requirements with regard to technical and organisational standards and their implementation, as well as independently balancing different market and State interests. It must also be able to coordinate a large and diverse network of individual actors capable of delivering commercial and non-commercial complementary components.
2. Joint projects and offers will initially be asked to meet public-interest requirements. This will provide the basis for the subsequent development of both non-commercial goods and services and commercial consumer products. Rather than being a burden, the requirement to act in the public interest and respect the relevant values can actually benefit all the stakeholders – the observance of these values and standards should encourage innovation and vice versa.
3. The model must allow for the involvement of content providers (public service and private broadcasters, publishers, educational and cultural institutions, user-generated content, etc.), private-sector technology providers (telcos, start-ups,



industry associations, etc.), research institutions (universities, standardisation actors, etc.) and civil society (interest groups, investigative journalism networks, advocacy organisations, digital and Internet policy actors, community representatives). It is therefore necessary to ensure internal and external accountability and effective stakeholder participation and co-determination formats.

4. In order to ensure transparency, the operating entity must be subject to robust democratic supervision.

5.3 Proposal for a Digital Agency and European Public Sphere Alliance

There are various different approaches that the State could take to establishing an EPS compatible with public-interest objectives and guided by a public service mission. One option would be to implement the entire EPS directly through government agencies. However, as well as being less agile, this approach would not be well suited to facilitating the necessary involvement of different civil society and private-sector actors. Another possibility would be a public-private partnership (PPP) model. However, the complex consortium agreements involved in setting up a PPP would place too many constraints on what is supposed to be an innovative space where start-ups and creative projects can flourish. This approach would also lack the necessary flexibility, open participation opportunities and transparency.

In order to satisfy the specific requirements outlined above, we propose a two-pillar EPS governance model. This model can achieve the required balance between freely established business models and government initiatives, between creative and civil society initiatives, and thus between State control and influence over the EPS and the independence from the State that is necessary for market processes and public opinion-forming.

- The first pillar is a governance entity that could take the shape of the public service Digital Agency proposed in this paper. This coordinating and operating entity would have a clearly defined remit and goals. It would have to be granted adequate budgetary resources to fulfil its mission, which it would accomplish e.g. through innovation competitions, funding and implementation of certain elements of the EPS.
- The second pillar is a European Public Sphere Alliance (EPS Alliance). Although initiated by the State, this would be an independent alliance that would bring together and be funded by all the relevant private-sector and civil society actors. It could start out as a consortium before gradually moving over to a model based on cooperative and meritocratic²³ principles. The Digital Agency would support the initial establishment of the EPS Alliance.
- The Digital Agency's Board would comprise representatives of government agencies and the EPS Alliance and would be responsible for appointing the Digital Agency's CEO. This would ensure that the Digital Agency had links to both the State and to a stakeholder alliance organised along cooperative principles.

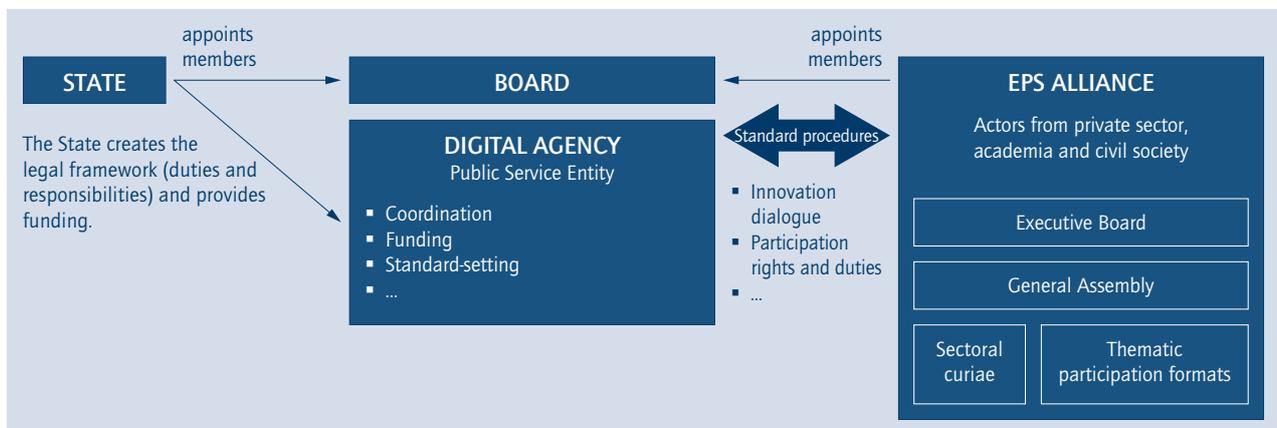


Figure 4: Governance model showing the relationship between the European Public Sphere Alliance and Digital Agency and the State and relevant stakeholders (Source: authors' own illustration)

23 | In a meritocracy, actors are assigned responsibility for future duties that they are qualified to perform based on their defined "achievements" in the past.

- The Digital Agency and EPS Alliance would cooperate on the basis of defined standard procedures. In addition to a permanent innovation dialogue, there would be concrete rules governing their respective authorisation and participation rights and duties in different areas such as standard-setting. Members of civil society not belonging to any particular organisation could be included via regular, organised participation processes modelled on Ireland's citizens' assemblies, for example.

The Digital Agency has the public-interest mission of coordinating the development of a digital ecosystem and receives adequate public funding for this purpose. As a rule, however, it uses this funding to enable the development and provision of technologies, components and projects by existing and potential EPS Alliance members rather than performing these roles itself.

In principle, any European or non-European actor that is committed to the goals of the EPS can become a member of the EPS Alliance. However, members must be committed to the EPS's existing values and the public-interest focus of its joint activities, as well as to active participation in the expansion of the ecosystem. To this end, members are entitled to use the technologies and components that are already available, and may also access funding through the Digital Agency and engage in the participation and co-determination formats through the EPS Alliance.

The EPS's structure facilitates the commitment of everyone involved to common standards and values. The membership model adopts a voluntary approach: members commit to cooperation on joint components, technologies and projects that address public-interest requirements in exchange for access to resources and a say in how the EPS is run. They can also use the components and technologies for their own commercial or non-commercial offers and business models, provided that their use does not contravene the EPS's principles. In individual cases, legal restrictions may be imposed on their use by earmarking public funding for specific purposes. Under this approach, members are free to develop their own business models, public products or components either

independently or in consortiums, and in doing so to focus on profit, reach and market considerations.

Within the EPS Alliance, "curia democracy"²⁴ principles can be used to enable the organised representation of stakeholder groups (e.g. technology providers, public service and private media, cultural and educational institutions or civil society initiatives). This makes it possible to regulate the balance of power between a few big actors and a large number of small ones. The use of cooperative principles serves to decouple financial input (e.g. in the form of developments contributed to the community or private capital) from co-determination rights with regard to content. Some of the Digital Agency's individual activities will probably require the establishment of local, regional or national chapters to facilitate coordination with the entities and media policy actors responsible e.g. for content, as well as the creation of technical committees and "ecosystem support committees".

The structure should be conceived as a European structure right from the outset and will require the support of the member states, European Parliament and European Commission. However, in order to get things moving as quickly as possible, symmetrical structures could initially be created in individual member states and coordinated at European level. The individual member states' agencies and cooperatives could subsequently be subsumed into a European agency and cooperative. The Trio Presidency – beginning with Germany – could lead the way together with France, with other member states following in their footsteps. This would allow rapid implementation in the member states championing the project. During this initial implementation at member state level, European coordination geared towards establishing joint standards and objectives could be accomplished through a dialogue between representatives of the national Digital Agencies. Regardless of whether symmetrical structures are initially created in the member states or a centralised European solution is adopted from the outset, it will be necessary to take the specific characteristics of the individual member states' structures and legal frameworks into account and include the necessarily broad spectrum of stakeholders from the different member states.

24 | In a curia democracy, actors with similar backgrounds meet and agree on positions that they then feed into discussions with actors from different backgrounds. For instance, libraries and cultural institutions might form one curia and telecoms companies another, so that they can represent their collective interests within the wider process.



6 Outlook

A European Public Sphere (EPS) should be established as a digital ecosystem offering a real alternative to the monopoly of the major non-European platform providers. The EPS should reflect European values and form the basis of a range of platforms and products that provide a genuine alternative. The EPS should be regarded as a digital public service, and will require State coordination supported by regulation, standardisation and government funding.

Together with France, and with the support of the European Parliament and European Commission, the Trio Presidency of Germany, Portugal and Slovenia can drive this pan-European project forward by establishing or gradually developing a European Digital Agency and an EPS Alliance based on cooperative principles. The core tasks of this two-pillar governance structure would include the translation of European values into concrete technological developments, the formulation of the relevant standards and methodologies, certification of commercial providers in the digital public sphere and the allocation of European funding. Regulation will also continue to play a vital role. The existing regulatory framework's scope should be extended to include industrial policy aspects such as facilitating access to European services and content. Once it is up and running, the EPS Alliance can use cooperative principles to bring on board the key partners willing to participate in a European Public Sphere.

If the European Public Sphere is launched immediately as a pan-European project, the vision outlined below could, with enough ambition, become everyday reality by as soon as 2025.

Thanks to its diverse and attractive offer, the EPS has become an established part of the day-to-day digital experience of millions of Europeans. Personal data sovereignty has become an important value for Europe's citizens, who trust EPS products because they transparently guarantee data security through European standardisation and certification, as well as offering effective complaint and participation procedures.

In 2025, the EPS coexists productively with other digital platforms and has become the most popular digital space for some of the key functions of the opinion-forming public – the transparency

and certification provided by the EPS have created a new trust in democratic processes in the digital realm.

Within the EPS, a new European public is emerging that is helping to strengthen European society. Europe's citizens enjoy rapid and straightforward access to an extremely diverse range of European media content. The EPS facilitates more direct interaction between the public and the media professionals, journalists and artists responsible for the content. It also strengthens pluralism by providing new ways of enabling debate among European citizens and supporting opinion-forming among people from different countries and with different mother tongues. The diverse range of European content provided in the EPS allows European citizens to gain new perspectives on a variety of topics. Transparent rules of conduct prevent fake news and filter bubbles, enabling an open, democratic debate.

The EPS allows key public service functions to be delivered digitally. For example, e-schooling has become an important digital area of application in schools and universities. The relevant EPS modules are freely available to schools, teachers and students. As well as being user-friendly, they offer a high level of data security.

The EPS also provides the public administration with an important tool for developing its digital offer. Transactions with the public authorities are increasingly carried out digitally. These new e-government solutions are of particular value to people with limited mobility and single parents.

Trust in the EPS has largely been built up through the operating entity established in 2020. This independent, democratically controlled body facilitates the application and enforcement of value-based standards without hindering the consumer-oriented development of innovative products and services in accordance with free-market principles.

By combining the observance of core values with an attractive offer, by 2025 the EPS has become an established presence in the European digital landscape. It is true that the development of the EPS required an initial outlay on behalf of the EU's member states, complemented by private investment. However, this is now paying dividends, since the EPS has provided the basis for numerous new self-sustaining business models and services that are boosting value creation in Europe. The market continues to drive further expansion of the EPS's functions and models.



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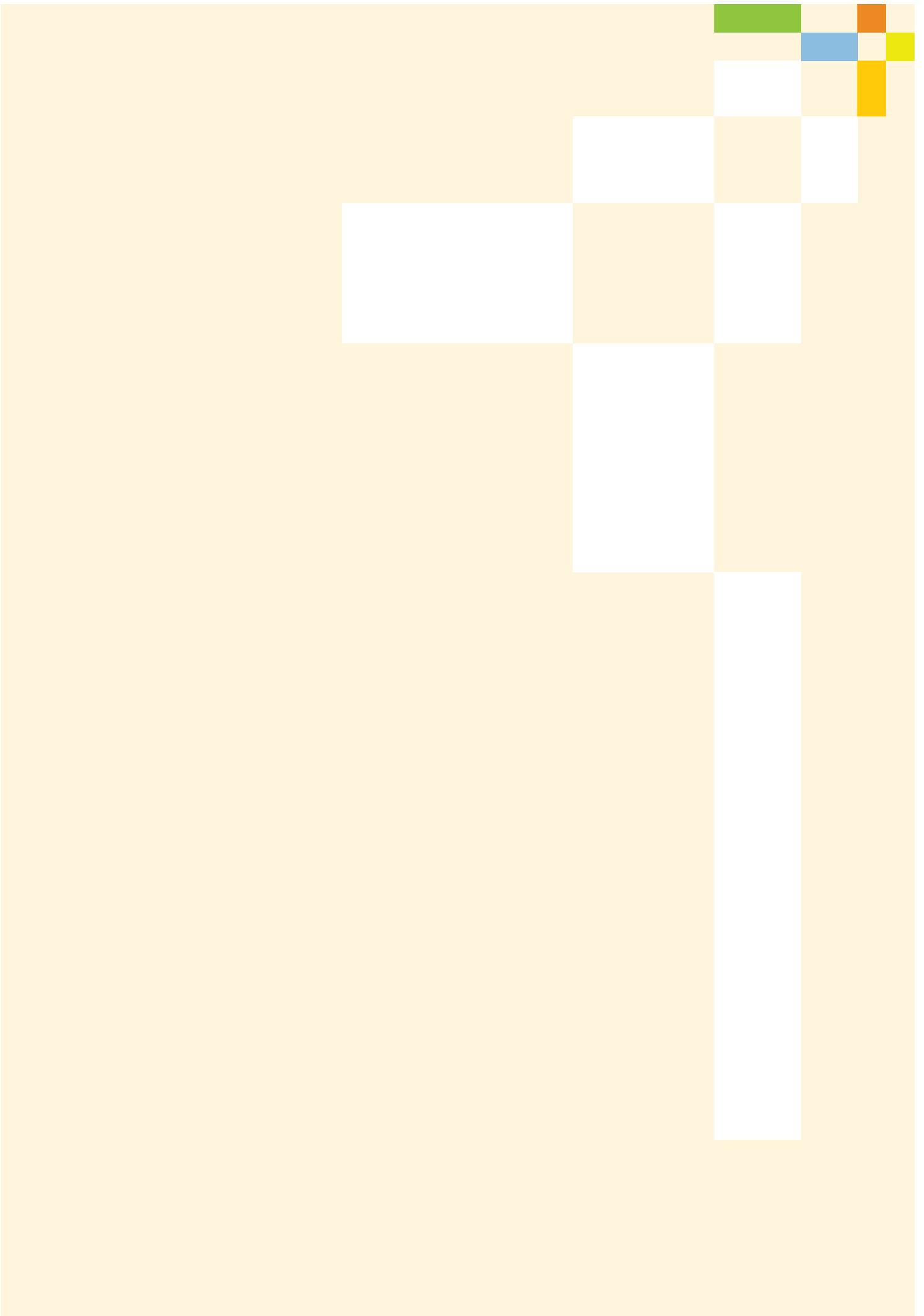
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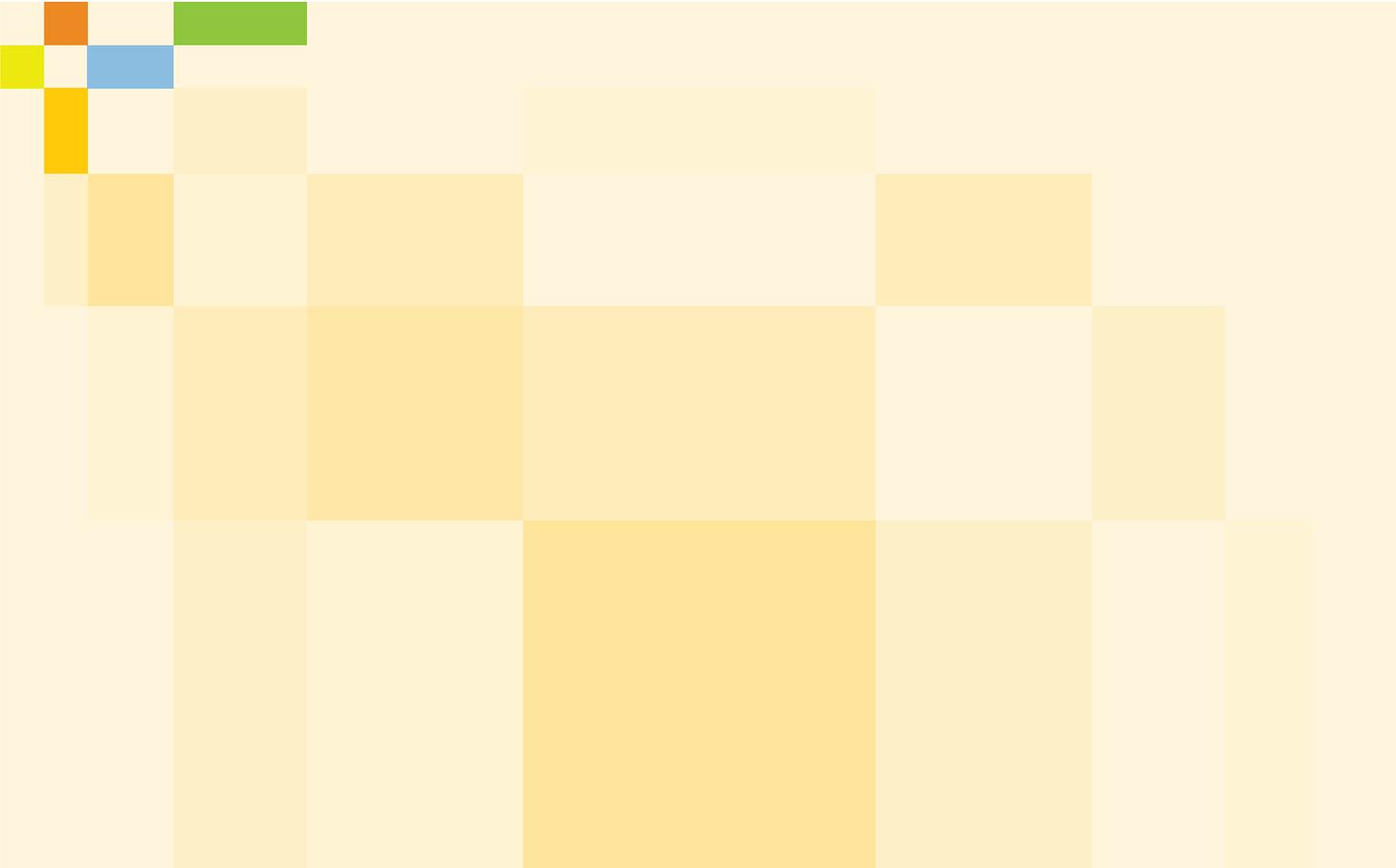
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Europe can strengthen its digital sovereignty by building a sovereign European digital ecosystem that is democratically accountable to its citizens. A digital ecosystem that observes European values such as transparency, openness and privacy protection, even in its technical design, can create a digital public sphere that offers fair terms of access and use, promotes public debate and safeguards the plurality that forms a key part of Europe's identity.

A project group led by Henning Kagermann and Ulrich Wilhelm has spent the last few months studying the challenges that arise from Europe's digital dependency and have particular implications for our democratic values. This paper describes how a European Public Sphere can be established as an alternative European ecosystem, and sets out the concrete measures that will be necessary in order to do so.