Reaching Digital Self-Determination

Recommendations for an autonomous, sustainable, ethical, and EU-conform Technology Stack

Executive Summary

This paper explains and recommends the choice of open-source technology and software for the development and future expansion of digital infrastructures for the cultural and creative sector.

It advocates for a flexible and autonomous tech stack and organizational structure to secure future-proof and successful development of digital projects and platforms within the broader political framework of European digital sovereignty and digital commons approach.

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Version	0.4 – October 1st, 2024

Digital Commons

Accessible and secure digital infrastructures are key to **sustainable and common good-oriented digitalization**, enabling the freest possible choice of suitable technologies. **Digital sovereignty** – that is, the self-determined use of digital and diverse technologies and systems by individuals, companies, and governments – cannot be achieved without open source.[1] The distinction between digital commons and other digital resources is that the community of people building them can intervene in the governing of their interaction processes and their shared resources.

Public money should support public code, enable pooling efforts for interoperable cross-sectoral solutions, and avoid vendor lock-ins. The use of commercial enterprise software solutions without open source must be well justified, especially by publicly financed clients, since the use of public funds leads to the development of closed technologies that are not available to the general public. Those technologies can only be further developed in complete dependence on commercial providers and are therefore not aligned with public interests.[2]

We work with (real) open-source technologies[3] because they correspond to the **European understanding of sustainable and common good-oriented digitalization**. We are deeply embedded within an active **global open-source community of more than 16.000 developers** worldwide that focuses on sustainably strengthening open-source technologies' security, stability, and technological diversity. We **also ensure** that all our clients can use and modify their technological stack as they see fit through the use of open licenses.

[1] See the recently launched Sovereign Tech Fund that focuses on open-source infrastructures, financed by the new innovation agency of the German State SPRIND (Sprung Innovation Deutschland): https://www.sovereigntechfund.de/mission

[2] See the open-source Initiative for German public adminstration: https://zendis.de/ and the "Open Source Software Strategy 2020 – 2023" of the European Commission: https://commission.europa.eu/document/download/97e59978-42c0-4b4a-9406-8f1a86837530_en?filename=en_ec_open_source_strategy_2020-2023.pdf

[3] Several open-source projects – while claiming to be open-source – are in fact used to greenwash closed software systems, either as a free basic version with a reduced feature set (as Magnolias open-source CMS) or as a way to attract developers to a certain platforms (such as Meta, Alphabet, Amazon or Microsoft). See Claudio Guarnieri:"Agency for all, Privacy for none". In: *Practicing Sovereignty – Digital Involvement in Times of Crisis*, Transcript: 2021.

The European Way

While US-American and Chinese platforms dominate the global technology landscape, the European Commission emphasizes the **importance of political regulation and sustainable development** for technology (see its first-mover role in regulations such as GDPR, DSA, DMA, AI Act, etc.).[4]

The term ***Deep Tech***[5], often used in the context of European technology, describes **technological innovation at the service of society**, contributing to a **sustainable and green digital transition**.[6] The six key principles that guide the European Commission *Digital Decade Targets*, reflect this approach: ▪ People at the center ▪ Freedom of choice ▪ Safety and security ▪ Solidarity and inclusion ▪ Participation ▪ Sustainability.[7] Based on these principles, the European Commission has developed a dedicated **open-source software strategy**[8] to support the European digital single market, foster competition and create a level playing field, especially for publicly funded organizations.

We support the European perspectives on technological innovation and the **benefits of digital commons**. We share the belief that sustainable digitalization in the public interest relies on **open digital infrastructures**, **open data**, and **open source**. These principles are deeply embedded in all our technological platforms.

[4] See: Fieke Jansen, "The State. A Key Actor in Shaping Data Infrastructure Space", in: *Practicing Sovereignty – Digital Involvement in Times of Crisis*, Transcript: 2021.
[5] Most prominently used by former commissioner Mariya Gabriel and deeply embedded in European Innovation frameworks since 2022, see for example: https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/commissioner-gabriel-us-europe-place-be-new-generation-innovators-2023-03-27_en
[6] As again emphasized by Olaf Scholz and Emmanuel Macron in their recent Op-ed in the Financial Times – "We must strengthen European Sovereignty": https://www.ft.com/content/853f0ba0-c6f8-4dd4-a599-6fc5a142e879, Juliy 2024.
[7] See the Initiative of the European Commission: "Europe's Digital Decade, a human-centric, sustainable vision for digital society" – https://digital-strategy.ec.europa.eu/en/policies/europes-digital-decade
[8] See the "Open Source Software Strategy 2020 – 2023" of the European Commission: https://commission.europa.eu/document/download/97e59978-42c0-4b4a-9406-8f1a86837530_en?filename=en_ec_open_source_strategy_2020-2023.pdf

Scaling Infrastructures

Digital infrastructures should **scale** with and **adapt** to the changing requirements and ecosystems in which they are embedded. They should enhance the user's **efficiency, agility, and autonomy** while fulfilling all compliance requirements. They should **integrate** with different tech stacks that are either already in use or are developed in parallel. Cultural events – such as festivals or conferences – have high spikes in the usage of digital infrastructures. This requires **flexible scaling** of resources to ensure their efficient allocation at the right time – to reduce costs and energy consumption. Last but not least, the technology users should be able to modify it based on their needs.

Our technology is API-first[9] and **designed to integrate** and blend seamlessly **within any given complex technological ecosystem.** It **grows dynamically** with new requirements and responsibilities, integrating diverse technologies or evolving into an ecosystem on its own. With our **cloud architecture**, we provide autoscaling computing resources while fulfilling all compliance requirements. We enable our clients to adapt and modify digital platforms through **low- and no-code solutions**[10], letting them take control of their technology by gradually building up in-house competencies.

[9] API stands for Application Programming Interface. API-first describes interoperable technologies that are designed to connect with other technologies or services via API standards (for example REST API as used by BerlinalX).
[10] Admins can visually design automation processes through an "Event-Condition-Action" module, or change the taxonomy and ontology of the platform on their own.

Organizational conditions

Digital innovation and technological projects concern the whole organization. Successful digital projects require **continuity, flexibility,** and **cross-sectional alignment**. First and foremost, they need **competence-based decision processes**: Delivering concrete solutions to specific needs requires a deep and thorough understanding of what is happening and what is necessary.

In the best case, the internal requirements are managed and moderated by a cross-functional group on the ground that has **autonomy** regarding technology decisions and can operate freely within a dedicated budget. This can lead to **integrated and diverse technological ecosystems** that dynamically respond to each section's individual needs and are **interoperable** with each other.[11] In the worst case, technology solutions are enforced top-down without a real understanding of the needs and requirements on the ground. Those projects are bound to fail halfway, burning budget and resources while destroying trust and continuity.[12]

To ensure trust and accountability, we advocate for participatory approaches, competence-based decision processes, and cross-functional dialogues. We understand and have deep experience with the cultural sector's specific financial and political constraints and how they affect organizational structures and mechanics.

[11] See the often cited best case study for Spotifys organizational structure, based on the principle of autonomy and "Freedom to operate": https://hbr.org/2017/02/how-spotify-balances-employee-autonomy-and-accountability

[12] See the famous comparison between two fundamentally different approaches to software development: Raymond, Eric S.: *The Cathedral & the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*. O'Reilly Media: 2001.

Ethical AI

We are witnessing a **global AI race** and do not advise integrating AI just for its sake. There might be other more useful technological innovations, such as scalable cloud infrastructure, open data exchange standards, or data lakehouse modeling, that are relevant to actual use cases[13] and tasks and don't have **high ethical trade-offs** such as:

Energy Consumption	The AI race is putting stress on local power grids and leads to mass water evaporation, causing Microsoft and Google to miss their carbon emission reduction goals.[14]
Intellectual Property Abuse	The data sets used to train the large language models contain intellectual property that is not cleared and poses a threat to creative industries at large.[15]
Bias Reproduction	The training data sets can contain biases, which are then reproduced and enforced through AI.[16]
Information Pollution	AI feeds on itself and produces increasingly polluted output, contaminating the internet with low-quality generated content (so-called slop).[17]
Ghost Work Exploitation	The actual human labor behind the models is hidden and outsourced to the global south and takes a big toll on the worker's mental health.[18]

If there is a real use case and benefit through AI we integrate it. Examples for now include generative text for rather mundane tasks such as shorting long copy, writing image captures, producing easy language versions, and automated translations. Based on the data structure and quality, there are more interesting use cases such as assisted content curation, automated planning, matchmaking, database chat, or advanced data analytics for business intelligence.

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[13] There are some arguments that AI might actually generate more work than it saves: Joe McKendrick: "Generative AI may be creating more work than it saves", ZDnet May 2024, https://www.zdnet.com/article/generative-ai-may-be-creating-more-work-than-it-saves/ and even the big banks are now issuing warnings regarding a potential bubble: Glodman Sach – Global Macro Research: "Gen AI: Too much Spend, too little Benefit?", June 2024, https://www.goldmansachs.com/intelligence/pages/gs-research/gen-ai-too-much-spend-too-little-benefit/report.pdf

[14] "AI's Energy Demands Are Out of Control. Welcome to the Internet's Hyper-Consumption Era", in: Wired, July 11th 2024: https://www.wired.com/story/ai-energy-demands-water-impact-internet-hyper-consumption-era/

[15] See for example the ongoing lawsuit from Getty Images against Stability AI: https://www.bakerlaw.com/getty-images-v-stability-ai/

[16] https://www.ibm.com/blog/shedding-light-on-ai-bias-with-real-world-examples/

[17] Melissa Heikkilä: "How AI-generated text is poisoning the internet", MIT Technology Review, 2022: https://www.technologyreview.com/2022/12/20/1065667/how-ai-generated-text-is-poisoning-the-internet/

[18] See the interview with Milagros Miceli about the hidden data workers in the global south: https://netzpolitik.org/2024/data-workers-inquiry-the-hidden-workers-behind-ai-tell-their-stories/

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