Smart Cities and urban transformation

Europe's path to digital independence

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1. The age of polycrisis and a new industrial paradigm

We are currently undergoing rapid and profound changes. In Europe, the war in Ukraine continues to unfold, while in the Middle East, the ongoing conflict in Palestine threatens to spread across the region. At the same time, we are confronted with a climate emergency, a migration crisis, and the escalating US–China trade war. In these times of polycrisis, as economists and intellectuals have described, it is imperative that we seek ways to move beyond the status quo.

The technological trends we face today carry significant geopolitical implications reminiscent of the Great Power competition during the Cold War. Control over technological and scientific development – particularly in frontier technologies with disruptive societal and economic impacts – has become crucial. The ongoing race between the United States and China for technological supremacy, heavily reliant on critical raw materials, profoundly affects our ability to transition to a more sustainable and just global economic model. The vulnerabilities in supply chains and the technological decoupling of these superpowers impact all economic sectors, with substantial geopolitical and economic consequences. This situation raises the pressing question: Are we facing a new kind of Cold War, defined by technological decoupling, where the United States and China develop separate technological ecosystems?

As we navigate this era of rapid technological advancement, it is crucial to reassess the shifting geopolitical landscape and question whether we are witnessing the end of globalisation as we once knew it. The decline of hyper-globalisation challenges the neoliberal market paradigm, which advocated free trade and market efficiency as pathways to wealth creation. Instead of delivering widespread prosperity through trickle-down economics, this model has deepened inequalities, heightened wealth polarisation, accel-

1 The following text is a transcript of a keynote delivered by the author at the Weizenbaum Conference 2024.

erated climate change, and concentrated market power in the hands of a few in the Global North – often at the expense of people in the Global South and the planet.

Some experts suggest that we are entering a new phase of 'de-globalisation' or near-shoring, where nations increasingly prioritise domestic production and reduce their reliance on global supply chains. This shift is characterised by the rise of economic statecraft, where governments implement interventionist policies – such as tariffs, price controls, and restrictions on critical technologies – to protect their national interests. A notable example in the high-tech sector is the US government's decision to prohibit the Dutch company ASML from exporting its advanced lithography technology to China. This move, intended to curb China's technological advancement in key areas, underscores a growing economic protectionism trend. It marks a departure from the laissez-faire approach that dominated previous decades and prompts a reevaluation of the relationship among economic policy, state intervention, and global trade. These developments suggest that we are entering a new geopolitical landscape where traditional notions of globalisation are being reshaped by the imperatives of national security, technological sovereignty, and economic resilience.

2. The quest for Europe's technological independence

Europe views the current technological landscape as a critical political challenge that necessitates a strategic and alternative approach. In response to the Covid-19 pandemic, Europe has prioritised shared agendas and ambitious goals, including the creation of a new generation of European common debt to commit significant investments to the European Green Deal. The continuation and success of these initiatives will hinge on the effectiveness of the upcoming European Commission.

Europe faces the urgent task of reclaiming its sovereignty in the technology sector. Beyond its dependence on rare earths and raw materials – many of which are sourced from the Global South and are essential for digital and green transitions, such as cobalt and silicon, predominantly mined in Africa – Europe is also critically dependent on hardware, semiconductors, computing power, data infrastructure, AI, and digital platforms, all of which are predominantly controlled by US-based companies.

Europe's extensive reliance on external technological infrastructure has placed it in a precarious position, with its digital sovereignty increasingly

dictated by foreign forces. The dominance of US-based tech giants over critical components of Europe's digital ecosystem – ranging from chips and computing power to AI and digital platforms – has led to what can be described as a new form of digital colonialism. In this scenario, Europe has, in many ways, ceded control over its digital future, with its industries and institutions deeply embedded in and dependent on technologies governed by external entities.

To address this vulnerability, European policies are increasingly focused on enhancing supply chain resilience and ensuring economic security. This approach includes advocating for decolonial and resilient supply chains that prioritise fairer and more sustainable industrial practices, as well as developing robust domestic capabilities in hardware, computing, AI, and digital platforms. By reducing these dependencies, Europe aims to reclaim its digital sovereignty and safeguard its technological future from external control.

The challenges ahead are significant. The intensifying chips war, the surging demand for computational power, and the growing concentration of AI market control underscore the urgent need for Europe to secure technological sovereignty in this rapidly evolving global landscape. Addressing these challenges is critical for Europe to maintain its strategic autonomy and ensure its digital infrastructure aligns with its long-term interests.

a) The chips war

One of the most pressing examples of technological vulnerability is the ongoing 'chips war', as highlighted in Chris Miller's book, which underscores the critical importance of microprocessors in global technology and industry. The Covid-19 pandemic starkly exposed the fragility of global supply chains, particularly in Germany's automobile sector, where a severe shortage of semiconductors led to widespread production delays and substantial economic losses. This crisis revealed the world's heavy reliance on a few key microprocessor manufacturers.

The digital revolution, far from an abstract concept, is deeply rooted in substantial physical infrastructure – submarine cables, satellites, and data centres – all powered by microprocessors. The chip supply chain, highly concentrated with significant production in Taiwan, particularly by the Taiwan Semiconductor Manufacturing Company (TSMC), and with crucial machinery provided by ASML in the Netherlands, presents significant

geopolitical risks. This dependency highlights the urgent need for more secure, resilient, and diversified supply chains to mitigate the growing risks posed by geopolitical tensions and potential disruptions.

For Europe, the implications of these vulnerabilities are profound. The continent's heavy reliance on external suppliers for critical technologies places its industries, especially automotive and high-tech manufacturing, at considerable risk. As geopolitical tensions continue to escalate, particularly between the United States and China, Europe's position in the global semiconductor supply chain becomes increasingly precarious. This situation underscores the urgent need for Europe to develop its own semiconductor manufacturing capabilities and diversify its supply sources. To address these challenges, Europe must invest heavily in achieving technological sovereignty. Initiatives like the European Union's European Chips Act are essential steps in the right direction, aiming to reduce dependency on foreign suppliers and enhance resilience against supply chain disruptions.

While strengthening Europe's domestic semiconductor industry and forging strategic partnerships is essential for reducing risks associated with a concentrated global chip supply chain, this approach faces significant obstacles. The immense costs and lengthy timelines needed to build a competitive semiconductor sector, coupled with Europe's current technological lag and dependence on global supply chains, complicate the pursuit of true technological sovereignty. Furthermore, geopolitical pressures – especially from the US–China rivalry – and the inherently global nature of the semiconductor industry mean Europe may still be reliant on external expertise and partnerships for the foreseeable future. Therefore, to truly secure its tech sovereignty, Europe must implement robust regulatory frameworks and industrial policies that not only foster long-term technological independence but also ensure sustainability and resilience against geopolitical disruptions.

b) Computational power

Computing power, particularly in the realm of supercomputing, is rapidly emerging as a critical battleground in the ongoing geopolitical and technological competition. Europe is making substantial investments in both public and private computing infrastructures to secure its position in the global digital economy. These investments are essential not only for advancing

scientific research but also for tackling complex societal challenges, such as climate change, and for ensuring Europe's digital sovereignty.

At the forefront of this technological race is quantum computing – a field that, although still in its early stages, has the potential to revolutionise scientific paradigms and reshape global power dynamics. Recognising the transformative potential of quantum technologies, both the public and private sectors are making heavy investments in research and development.

For Europe, the stakes are high. As quantum computing and supercomputing become integral components of the modern technological landscape, Europe's ability to compete on the global stage will increasingly depend on its capacity to lead in these areas. Initiatives like the EuroHPC Joint Undertaking and the Quantum Technologies Flagship are vital efforts to bolster Europe's capabilities, ensuring the continent remains competitive. Failure to do so could leave Europe vulnerable to technological dependencies.

Advancing computational power indeed brings significant sustainability challenges, particularly due to the resource-intensive nature of data centres. These centres, essential for storing and processing the massive amounts of data required for supercomputing and quantum computing, consume vast quantities of water, electricity, and land. According to a report published in *Nature*,[2] data centres annually consume more than 200 terawatt-hours of electricity worldwide, rivalling the energy consumption of some mid-sized countries. Moreover, Goldman Sachs' recent report highlights that AI is poised to drive a 160% increase in data centre power demand as the processing power required for training and deploying advanced AI models continues to escalate. This surge in energy demand, coupled with the significant water and land resources required for cooling and housing these facilities, amplifies the environmental challenges posed by the current extractive data centre model. As the demand for data processing grows, addressing these sustainability issues becomes increasingly critical to balance technological advancement with environmental stewardship.

Europe must, therefore, rethink its approach to data centres, focusing on more sustainable models for public computing infrastructure. Doing so could involve developing energy-efficient data centres, exploring innovative cooling methods, and ensuring that data centre locations are selected with environmental impact as a key consideration. By integrating sustainability into its strategy for enhancing computational power, Europe can build a

2 https://www.nature.com/articles/d41586-024-00478-x

digital infrastructure that not only supports technological innovation but also aligns with its broader environmental objectives.

c) Market power in artificial intelligence

The rapid rise of AI has sparked critical questions about the true scope of its advancements and the risks posed by the concentration of power in the hands of a few tech giants. Companies like Google, Amazon, Microsoft, and NVIDIA control vast reservoirs of data, computational power, and cutting-edge chips essential for training advanced AI models. This concentration has raised alarms about monopolistic practices and the potential for these companies to drive AI development in ways that may not align with the broader public interest.

Take NVIDIA, for instance – a leader in AI hardware. The company recently saw a sharp decline in its stock value after initial excitement over AI's growth potential was tempered by fears of overvaluation. This episode underscores the fragility of market confidence in AI's long-term economic impact. Some experts have even warned of a looming AI bubble, where the current hype could lead to overinvestment and eventual disillusionment, reminiscent of the dot-com bubble of the early 2000s.

Moreover, the AI boom has intensified concerns about power concentration within the tech industry. NVIDIA, which controls significant aspects of the AI stack – from chips to software – exemplifies this trend. The company's market capitalisation now surpasses that of several European countries combined, underscoring its vast influence. NVIDIA's vertical integration across the AI ecosystem allows it to dominate the market, raising serious concerns about the potential risks of an unregulated AI oligopoly for economic stability, national security, and social equity.

To address these growing challenges, a robust anti-monopoly approach to AI governance is becoming increasingly urgent. Policymakers in both Europe and the United States, including Lina Khan, head of the US Federal Trade Commission, are recognising the need to assess and mitigate the risks posed by concentrated market power in the AI sector. Khan has called for audits to identify choke points within the AI ecosystem, currently controlled by a few dominant players. This concentration of power threatens not only small and medium-sized enterprises (SMEs) but also citizens and industry leaders alike. For example, Sam Altman, CEO of OpenAI, recently

claimed he aims to raise six trillion dollars to invest in chips – though this figure might be more marketing hype than economic reality.

Nonetheless, the underlying message is clear: the AI market is becoming increasingly monopolistic and concentrated. To ensure a competitive, dynamic environment that harnesses these technologies for the public good, significant industrial effort and robust regulatory frameworks are essential.

3. Surveillance capitalism and the threat to a democratic digital public sphere

Beyond its concentration of market power, the digital ecosystem poses serious threats to democratic accountability, a danger vividly outlined by Shoshana Zuboff (2019) in her concept of surveillance capitalism.[3] Zuboff describes this new phase of economic history as one driven by relentless data tracking, where every action we take on computers and mobile devices is meticulously monitored and monetised by Big Tech. This vast trove of personal data is then used to train sophisticated AI systems, which, in turn, fuel predictive models, machine learning algorithms, and deep learning technologies that increasingly shape our experiences, choices, and decisions.

In the era of surveillance capitalism, individuals are no longer just customers or products – they are the raw material. This shift brings to light significant concerns about data extraction and the growing concentration of AI capabilities within a few dominant tech companies. With near-unlimited access to personal data, these companies have unprecedented power to predict, influence, and control human behaviour. This concentration of power poses serious risks to privacy, personal autonomy, and the very foundations of democratic governance.

Recent studies reveal the disturbing extent of this issue, showing how major tech companies, in collaboration with advertisers, exploit personal data to build detailed behavioural profiles. These profiles are then used to manipulate consumer choices, political opinions, and even voting behaviour – often without users' informed consent. Such control erodes the principles of autonomy, self-determination, and accountability that are essential to a functioning democracy.

Furthermore, the unchecked manipulation and monetisation of personal data threaten to deepen existing inequalities. Those with access to vast

3 Zuboff, S., 2019. The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power, edn. *PublicAffairs, New York*.

amounts of data can further consolidate their power and influence, raising critical concerns about who controls these technologies, how they are used, and their long-term impact on society. If left unregulated, the dominance of a few powerful entities in the digital space could lead to a future where democratic processes are undermined and individual freedoms are increasingly curtailed. To counter these threats, there is an urgent need for robust regulatory frameworks that protect fundamental rights, safeguard privacy, and hold tech companies accountable for their access to and use of data. Without such measures, the promises of the digital age could be overshadowed by a dystopian reality where our lives are governed by algorithms serving the interests of a few rather than the common good.

Reclaiming a digital public sphere is crucial to countering Big Tech's dominance. This effort includes forging new alliances with national broadcasters and public media. In some European countries, concerns are growing about state-controlled public communication turning into propaganda while digital information channels remain in the hands of media tycoons. Consider Elon Musk, who owns X (formerly Twitter) and holds vast amounts of social media data. During the German elections, Musk openly supported the far-right AfD party and now advocates for Donald Trump's re-election in the United States, underscoring the urgent need to reclaim a truly accountable digital public sphere.

It is essential to ensure that digital public spaces align with our values and protect social rights and democracy. We must confront the critical question of power in the digital age: who holds it, for what purposes, with what legitimacy, and how we can move beyond technological solutionism. As historian Evgeny Morozov (2023) argues,[4] this also involves challenging the ideologies of Silicon Valley, such as technological solutionism and the pursuit of artificial general intelligence (AGI), which often lack scientific grounding and instead reinforce the neoliberal paradigm. In a year filled with elections, the dangers of manipulation and misinformation are more pressing than ever. Fake news and targeted misinformation are exacerbated by the fact that a few media oligopolies control today's communication and information channels. To safeguard democracy, we need to rethink our approach to digital governance, prioritise the public interest, and ensure that technology serves as a tool for empowerment rather than control.

4 Morozov, E., 2023. The True Threat of Artificial Intelligence. *International New York Times*.

4. Building and governing technology in the public interest

A central component of Europe's strategy should be the deliberate shaping of its digital future. The pandemic underscored the urgency of directing the digital transition, as essential services – education, healthcare, urban management, and traffic control – have become deeply intertwined with digital technologies. These technologies have evolved into critical infrastructures, making it imperative to ensure democratic and accountable control over them. Europe has responded by crafting a regulatory framework that places rights and principles at the forefront of its proposed digital transformation. The Declaration of Digital Rights, signed by all European governments, enshrines fundamental rights such as information self-determination, autonomy, education, and equality.

Europe's new regulatory framework is designed to serve as a constitution for the digital age. Despite some scepticism regarding its potential bureaucratic hurdles, this framework is essential for fostering a different kind of innovation – one that is inclusive and rights-based. Effective enforcement is crucial to this effort. Clear regulatory goals must prioritise shifting the balance of power away from tech oligopolies and towards a more dynamic, inclusive innovation ecosystem.

Key legislative measures, including the Digital Services Act (DSA) and the Digital Markets Act (DMA), target anti-monopoly practices Big Tech companies employ. Additionally, the Artificial Intelligence Act (AIA) and the Data Governance Act (DGA) address critical aspects of AI development and data management. It is vital to ensure that these regulations are implemented in a way that does not stifle small players, academia, research institutions, or public administrations. Instead, the goal is to create public options for digital infrastructures, protect fundamental rights, and enable the development, access, and use of technologies in the public interest.

In the realm of anti-monopoly measures, Europe may need to take even more assertive steps. A major concern is the increasing vertical integration across what is known as the 'AI stack', which functions similarly to a supply chain for AI. The stack comprises four key layers: physical hardware (chips), cloud infrastructure, AI models, and applications. Vertical integration occurs when companies expand their control across multiple layers of this stack, consolidating power at each level. This trend is particularly troubling because the dominant Big Tech firms are already deeply embedded throughout the entire stack. As these companies strengthen their hold on one layer, they can leverage that position to gain an unfair advantage

in other layers, potentially stifling competition and innovation. This concentration of power raises questions about whether the Digital Markets Act alone is sufficient. More drastic interventions, such as breaking up dominant companies, may be necessary to prevent monopolistic control.

As argued by different anti-monopoly scholars,[5] one approach to regulating AI is through structural separation, which would prevent businesses from operating at multiple layers of the AI stack. For example, this could mean prohibiting cloud providers from also running the applications and services that depend on their cloud infrastructure. Another related regulatory concept is nondiscrimination, which would require businesses to offer equal service and pricing to all users, preventing preferential treatment. Looking beyond these measures, the EU could consider creating a public option for cloud computing. This service would involve strengthening the network of publicly funded and managed supercomputers that serves government agencies, researchers, and others focused on solving public challenges rather than using AI to enhance the profitability of tech platforms. Such a public cloud could be trusted to prioritise societal interests and user needs over commercial gain.

a) Digital industrial policy for EU strategic autonomy

Europe's response to the current technological challenges is multi-faceted, involving robust regulation, strategic investment in green and digital industrial strategies, and a steadfast commitment to democratic control and the protection of fundamental rights.

To achieve genuine strategic autonomy, Europe must implement a comprehensive and coordinated digital industrial policy that reflects the urgency of the moment. The ongoing investments in critical areas such as 5G, cloud computing, semiconductors, quantum technologies, and batteries are steps in the right direction. However, these efforts must be part of a broader strategy that integrates both the green and digital transitions. Europe needs to harness these substantial investments to build domestic capacity, ensuring that key technologies are developed and maintained throughout the continent.

A critical aspect of this strategy is making EU infrastructures widely accessible to society. Europe's network of supercomputing centres represents

5 Sitaraman, G. and Narechania, T.N., 2023. An Antimonopoly Approach to Governing Artificial Intelligence. *Available at SSRN*.

a powerful resource that should be opened to a diverse range of stakeholders – researchers, startups, civil society organisations, NGOs, journalists, and artists. By facilitating multidisciplinary collaboration, Europe can unlock the full potential of data and technological advancements. Adopting a governance model based on public office–society cooperation could set a new standard for digital innovation, uniquely positioning Europe as a leader in inclusive and sustainable technological development.

The proposal for a €10 billion Sovereign Tech Fund for Europe is a crucial step toward this goal. In discussions with EU officials and through building strategic alliances, it has become clear that while the final figure may vary, the need for substantial resources is undeniable. The forthcoming Draghi report underscores this urgency, advocating for a €500 billion investment in European public goods. Digital public infrastructures, alongside other critical infrastructures, must be recognised as fundamental European public goods that require robust financial commitment.

Policymakers need to acknowledge that digital public infrastructure goes beyond mere physical assets – it encompasses open technology transfer, open-source standards, sovereign AI, data commons, and privacy-preserving technologies. Such infrastructure must be open, interoperable, and sovereign, managed as digital commons,[6] not controlled by the state or privatised for profit. This vision is essential for safeguarding Europe's digital future and ensuring that technological advancements serve the public interest rather than a narrow set of private interests.

In summary, Europe's strategic autonomy hinges on a well-coordinated digital industrial policy, significant investments, and the creation of open, accessible, and sovereign digital public infrastructures. These actions are not just necessary for fostering innovation and protecting privacy – they are fundamental to placing the public interest at the core of Europe's technological future.

b) A vision for an AI digital commons ecosystem

A crucial element of this vision centres on the ownership and collective control of our data. While the European Union has introduced important regulations, such as the Data Governance Act and the Data Act, it is not

6 https://www.nldigitalgovernment.nl/news/european-collaboration-for-digital-commons/

enough to simply have these rules in place. We must actively leverage them to ensure that Europe develops a distinct approach to data-driven innovation – one that promotes information self-determination, data sharing in the public interest, data portability, and data quality.

For example, private data with significant public value, such as information on pollution, mobility, climate, and housing, should not be monopolised by a few private entities. Instead, this data should be made accessible to society to help address collective challenges. One promising policy measure being advocated at the European level is the creation of a European Data Intermediary[7] in the public interest. This publicly governed data body would ensure that valuable data is not hoarded by large corporations but is available under transparent and fair rules. Currently, researchers face significant barriers to accessing essential data, even when their work is publicly funded. This situation is unacceptable, as scientific research should be a collective asset that benefits society, not just a few firms.

My work has focused on governing artificial intelligence and data as common goods that serve the public interest. As the chief technology officer (CTO) of Barcelona, I pioneered these approaches at the city level[8] and collaborated with Hamburg to develop a framework for data sharing in the public interest.[9] This model has the potential to scale and be implemented across European cities, extending beyond Hamburg. The initiative begins with urban data – data generated in public spaces – and ensures it is managed as a common good through public procurement clauses and tender requirements. Data funded by taxpayers should be managed within a data trust, benefiting society rather than being appropriated by private companies.

In today's world, data is akin to a new form of public utility that is essential for managing critical infrastructures. To fully harness its potential, we must treat data as a common good – accessible and beneficial to all – rather than allowing it to be confined to private interests.

Mobilising European cities, which are closer to citizens and equipped to manage critical digital infrastructures, provides – in my view – a unique opportunity to connect the climate agenda with data democracy and participatory governance. Citizen involvement is essential, not just to counter

7 https://publications.jrc.ec.europa.eu/repository/handle/JRC133988

8 https://www.ucl.ac.uk/bartlett/public-purpose/publications/2022/feb/new-data-deal-case-barcelona

9 https://thenew.institute/media/pages/documents/529e984d02-1698245881/the-new-hanse_blueprint_governing-urban-data-for-the-public-interest.pdf

threats to democracy but to empower individuals and harness collective intelligence for more informed decision-making. In Barcelona, where I served as CTO, 80% of policy agenda proposals originated from citizens, demonstrating the transformative power of participatory democracy. The best response to right-wing populism and democratic threats is not less democracy but more – a deeper, more inclusive participatory democracy that should be at the heart of the European project.

c) Building the Euro stack

The critical question is how to fund and develop the building blocks for a sovereign European public digital infrastructure. We must bring this term – public digital infrastructure – back into public discourse. We currently lack basic public digital infrastructures essential for building a fair, democratic, and accountable digital society.

Infrastructures like roads, electricity, and water systems have long fuelled societal progress. In the 21st century, digital infrastructures have become just as critical, underpinning the essential services upon which society depends. This new layer of infrastructure includes digital IDs, payment systems, and platforms for data management and exchange. These digital systems are now indispensable for everything from vaccine distribution to accessing social welfare, healthcare, and education. Governments, philanthropic foundations, and the private sector are investing heavily in digital public infrastructure (DPI). However, the direction of this investment is far from neutral – it is actively shaping the essential services of our society. To ensure these developments serve the public good, the EU must engage stakeholders across sectors to promote transparency, accountability, and citizen empowerment in the design and deployment of digital technologies.

Infrastructure shapes our world; thus, it is crucial that we shape our infrastructure. Failing to control and govern the digital infrastructure we rely on leaves us economically dependent and vulnerable to security risks. An ambitious and holistic approach is imperative and should involve utilising various tools and mechanisms to finance and scale existing national initiatives that align with European values and objectives. At the core of this effort should be a strong emphasis on free, open-source technology, data portability, and privacy-preserving standards. These principles of 'digital sovereignty' can be enshrined as legal obligations, embedded in procurement agreements, and made prerequisites for public financing or funding.

By mandating these standards, Europe can foster an environment that encourages innovation and collaboration while safeguarding privacy, security, digital rights, and data integrity.

Europe is working on several key initiatives, such as the digital ID project, which uses cryptography to enable people to control their data and privacy. This project would enable secure, pan-European digital transactions and application development, all while protecting privacy. Additionally, there are efforts to create public data spaces – repositories of data that can be used to build applications – along with a digital euro and digital payment system. Another focus is on open-source and fair AI ecosystems, collectively referred to as digital commons.

These initiatives form part of a broader vision for a robust digital public infrastructure in Europe. I proposed a €10 billion EU fund, called the EU Sovereign Tech Fund,[10] which aims to support this vision. Germany, for instance, already has a Sovereign Tech Fund that creates and maintains open-source software for communities. However, this effort needs to be expanded to different layers of the technology stack and connected across Europe with ambitious, dedicated resources to be truly effective.

The goal is to leverage the EU tech stack to develop EU-wide interoperable digital public services that have a tangible impact on the ground, starting from cities in areas such as mobility, climate, and housing. Local digital twins, like those in Hamburg and other German cities, are crucial for improving these services. Imagine having an interoperable European application that you can use anywhere in Europe, running on top of a European Stack – this kind of seamless integration is essential.

By integrating these elements – sovereign digital infrastructure, interoperable public services, and empowered citizen participation – Europe can build a resilient, inclusive, and democratic digital future.

5. The way forward: A new Manhattan Project for science, technology, education, and culture

Shaping the future is not just about advancing technology – it is about forging new alliances, establishing new norms, and transforming our institutions. Without reimagining and reinventing these institutions, our goals

10 https://www.euractiv.com/section/digital/opinion/towards-sovereign-ai-europes-greatest-challenge/

will remain out of reach. This vision demands multidisciplinary innovation and a holistic approach.

As a board member of the New European Bauhaus,[11] I have witnessed firsthand the transformative power of collaboration among science, technology, and the arts in advancing the European Green Deal. This movement is rethinking public spaces, pioneering bio-based materials, and designing ecological cities, fundamentally reshaping our built environment. Considering that the built environment and food production account for 70% of greenhouse gas emissions, transforming our cities and construction methods is essential for meeting climate targets and building a regenerative economy.

While there are frequent calls for massive investments in artificial intelligence, often advocating for billions in AI development, I believe what we truly need is a Manhattan Project for culture and education. Instead of focusing solely on AI, we should prioritise upgrading skills, enhancing education, fostering talent, creating quality jobs, and promoting gender equality and diversity in the era of AI and automation. By investing in culture and education, we can develop the capacity to build and govern technology and digital infrastructures in a way that serves the public interest.

The future of digital development often seems to hinge on a choice between two models: Silicon Valley's Big Tech, with its surveillance capitalism and corporate concentration of power, and China's Big State model, where the Communist Party controls data and AI systems. Neither model aligns with democratic values rooted in constitutional rights. We must move beyond Big Tech and the Big State. Instead, we need to build a 'Big Democracy' that leverages technology in the public interest through a truly democratic framework.

To implement this vision, collective action is essential. Europe's approach to innovation must be grounded in values and human rights, promoting a model of democratic digitisation with genuine democratic control. Our goals should include ensuring strategic economic competitiveness, full democratic participation, environmental protection, data privacy, and the safeguarding of fundamental rights. Addressing the challenge of governing technology in the public interest requires robust regulation, thoughtful industrial policy, anti-monopoly measures, and extensive multidisciplinary research and innovation. Investing in a €10 billion EU Sovereign Tech

11 https://new-european-bauhaus.europa.eu/

Fund dedicated to building EU digital public infrastructures is a critical step toward establishing the democratic digital society that Europe urgently needs.

By adopting these strategies, we can move beyond the current model and foster an approach to innovation that prioritises the public good, promotes equitable economic growth, and ensures a resilient and sustainable global economy. By putting people first, we can ensure that the power and potential of technology benefit everyone and support the advancement of our democratic societies.

References

Zuboff, S., (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. New York: Public Affairs.

https://www.nature.com/articles/d41586-024-00478-x

Morozov, E., 2023. The True Threat of Artificial Intelligence. *International New York Times*.

Sitaraman, G. and Narechania, T.N., 2023. An Anti-monopoly Approach to Governing Artificial Intelligence. *Available at SSRN*.

https://www.nldigitalgovernment.nl/news/european-collaboration-for-digital-commons/

https://publications.jrc.ec.europa.eu/repository/handle/JRC133988

https://www.ucl.ac.uk/bartlett/public-purpose/publications/2022/feb/new-data-deal-case-barcelona

https://thenew.institute/media/pages/documents/529e984d02-1698245881/the-new-hanse_blueprint_governing-urban-data-for-the-public-interest.pdf

https://www.euractiv.com/section/digital/opinion/towards-sovereign-ai-europes-greatest-challenge/

https://new-european-bauhaus.europa.eu/