

# XII. Toward Public Digital Infrastructure: From Hype to Public Value

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Following decades of a hands-off, neoliberal approach that relied on market forces to drive technological progress and digital industries to self-regulate, there is now growing recognition in EU policy circles that governments must play a more active role in shaping digital markets. Amid a wave of digital regulation—including the Digital Services Act (DSA), the Digital Markets Act (DMA), and, most recently, the AI Act—the EU has taken steps to mitigate risks and harms in the digital economy and to improve the contestability and fairness of digital markets. But regulation alone cannot transform a digital economy characterized by corporate capture and technological dependency on a handful of mostly US-based companies. Any real transformation must be complemented by substantial investment in digital infrastructures.

The idea of digital public infrastructure (DPI) captures much of the current sentiment about what needs to be done to address some of the pathologies of digital markets. While the concept of DPI carries a lot of promise, its ambiguous and evolving nature also introduces challenges, chief among them the risk of forgetting that digitalization and “digital innovation” are not ends in themselves. As the discussion about new industrial policy in the EU unfolds and the idea of digital public infrastructure attracts the attention of European policymakers and civil society, these risks must be recognized and addressed. This requires shifting the focus from “digital” to “public” and moving away from the technosolutionist mindset that has shaped the EU’s approach to digital innovation. Technosolutionism, which overlooks the complexities of human behavior and wide-ranging systemic issues, is characterized by the belief that technology alone can solve societal problems.

Over the past couple of years, various actors from the UN<sup>209</sup> to Mastercard<sup>210</sup> have championed digital public infrastructure. The concept of DPI has become influential due to the efforts of the Indian government and its work on digital identity, e-commerce, and payment systems.<sup>211</sup> India has conceptualized DPI as open and interoperable technologies that facilitate essential functions for the delivery of public services. A closer look at the idea of DPI reveals that its proponents speak of an array of technological components and areas of desired intervention. While the Indian Stack is a major source of inspiration for advocates of DPI, there are alternative ways of framing the demand for digital infrastructure that serves the public. In our work, we identified several other approaches to digital public infrastructure.<sup>212</sup> Notably, Ethan Zuckerman defined it as “infrastructures that let us engage in public and civic life in digital spaces.”<sup>213</sup> For him, key components of digital public infrastructure include social media networks, discovery tools, and revenue systems. Another important contribution to the debate on digital infrastructures championed by the Sovereign Tech Fund funded by the German government<sup>214</sup> is one that highlights the need to safeguard the resilience of the open-source layers within the internet stack to withstand disruptions such as security threats, technical failures, or attempts to limit openness. A strong emphasis on the openness of online resources also guides the work of the Digital Public Goods Alliance.<sup>215</sup> A looming question in the discussion on DPI is whether it should only encompass the immaterial (i.e., purely digital) components of the internet stack, such as protocols or software; or also reach deeper, physical layers.

While a certain ambiguity around digital public infrastructure helps bring together under the same banner a bigger coalition of stakeholders, it also creates challenges. For example, whether we refer to the internet stack's material or immaterial layers affects the investment scale needed. Related to that, approaches that only look at the application layer run the risk of ignoring structural dependencies and concentration of power at the deeper levels of the stack. More fundamentally, however, the ambiguity might conceal the fact that the priorities of those implementing DPI do not align. In the past, this risk manifested itself, for example, in the case of India's Aadhaar, the world's largest biometric

<sup>209</sup> “Digital Public Infrastructure,” United Nations Development Programme (UNDP), accessed September 25, 2024, <https://www.undp.org/digital/digital-public-infrastructure>.

<sup>210</sup> “Good Connections: How DPI Drives Global Inclusion and Innovation,” *Financial Times* (Mastercard Partner Content), accessed September 25, 2024, <https://www.ft.com/partnercontent/mastercard/good-connections-how-dpi-drives-global-inclusion-and-innovation.html>.

<sup>211</sup> “About Us,” Global DPI Repository (GDPIR), accessed September 25, 2024, <https://www.dpi.global/home/aboutus>.

<sup>212</sup> Jan Krewer and Zuzanna Warso, “Digital Commons as Providers of Public Digital Infrastructure,” *Open Future*, June 30, 2024, <https://openfuture.pubpub.org/pub/digital-commons-public-digital-infra/release/2>.

<sup>213</sup> Ethan Zuckerman, “What Is Digital Public Infrastructure?” Center for Journalism and Liberty, November 2020,

<https://static1.squarespace.com/static/5efcb64b1cf16e4c487b2f61/t/5fb41b6aac578321b0c50717/1605639019414/zuckerman-digital-infrastructure-cjl-nov2020.pdf>.

<sup>214</sup> “Strengthening Digital Infrastructure and Open Source Ecosystems in the Public Interest,” Sovereign Tech Fund, accessed September 25, 2024, <https://www.sovereigntechfund.de>.

<sup>215</sup> “Unlocking the Potential of Open-Source Technologies for a More Equitable World,” Digital Public Goods, accessed September 25, 2024, <https://digitalpublicgoods.net>.

ID system, which faced criticism regarding security, privacy, exclusion of vulnerable citizens from public services, and the exploitation of data.<sup>216</sup> This challenge becomes particularly acute when efforts around DPI focus too much on technical issues and less on the social embeddedness of technologies, turning digital innovation into an end in itself.

To avoid this pitfall and to differentiate from some of the narrower definitions of DPI<sup>217</sup> that concentrate on a selected number of services, we prefer to use the term “**public digital infrastructure**.”<sup>218</sup> This concept describes digital infrastructure designed to maximize public value by combining public attributes (unrestricted access enabled by openness and interoperability) with public functions (social and economic functions that empower and support people and institutions, including governmental bodies but also institutions like libraries and museums) and public ownership (government or civic participation in the production, funding, and control of the infrastructure). The intention of this complex unpacking of what “public” means, inspired by Mariana Mazzucato’s work,<sup>219</sup> is to shift the focus of the debate from the technical aspects of infrastructure (i.e., making things digital) to its social relevance (i.e., making things public). Maximizing public value is essential, especially in today’s context, where an ambitious industrial policy that EU policymakers are planning to pursue could further exacerbate the dangers of a technosolutionist approach to innovation. The concern is that the EU will funnel resources into solutions shrouded by hype and adopt an “arms race” mentality around certain digital technologies, AI in particular.<sup>220</sup> This would be the worst possible outcome of recognizing and acting on the need for a more active role of the state in shaping the digital economy.

Rather than fixating on speculative future needs, such as virtual worlds or “Internet 4.0,”<sup>221</sup> the EU must address its dependencies on digital infrastructures provided by the US-based hyperscalers who operate their own services on top of their infrastructures. The priority should be supporting a sustainable digital environment that puts people in control and allows them to flourish and enjoy their rights online.<sup>222</sup> Europe needs alternatives to Big Tech systems, including but not limited to cloud, online platforms, app stores, social media, collaborative and communication tools, advertising infrastructure, and so on. Such

<sup>216</sup> See Reetika Khera, ed., *Dissent on Aadhaar: Big Data Meets Big Brother* (Hyderabad: Orient Blackswan, 2019), <https://orientblackswan.com/details?id=9789352875429>.

<sup>217</sup> “Mapping Digital Public Infrastructure,” DPI Map, Institute for Innovation and Public Purpose, accessed September 25, 2024, <https://dpimap.org>.

<sup>218</sup> “Public Digital Infrastructure,” accessed September 25, 2024, <https://openfuture.eu/our-work/public-digital-infrastructure>.

<sup>219</sup> David Eaves, Mariana Mazzucato, and Beatriz Vasconcellos, “Digital Public Infrastructure and Public Value: What Is ‘Public’ about DPI?” Working paper, Institute for Innovation and Public Purpose, University College London, 2024–25, [https://www.ucl.ac.uk/bartlett/public-purpose/sites/bartlett\\_public Purpose/files/iipp\\_wp\\_2024-05.pdf](https://www.ucl.ac.uk/bartlett/public-purpose/sites/bartlett_public Purpose/files/iipp_wp_2024-05.pdf).

<sup>220</sup> AI Now Institute, “Tracking the US and China AI Arms Race,” April 11, 2023, <https://ainowinstitute.org/publication/tracking-the-us-and-china-ai-arms-race>.

<sup>221</sup> Paul Keller, “Europe’s Digital Infrastructure Needs: Consultation Response,” Open Future (blog), July 3, 2024, <https://openfuture.eu/blog/europes-digital-infrastructure-needs-consultation-response>.

<sup>222</sup> Zuzanna Warso, “Digital Rights Revisited: A Rights-Based Approach to Building Digital Public Spaces,” Open Future, October 17, 2023, <https://openfuture.eu/publication/digital-rights-revisited>.

alternatives should not simply replicate the “foreign” big-tech paradigm. Instead, they should be based on collective governance and nonextractive economic models.<sup>223</sup>

Creating these alternatives will only be possible by first understanding why past projects aimed at “digital sovereignty” have failed.<sup>224</sup> So far, Europe’s approach to supporting public digital infrastructure has been fragmented across different funding mechanisms, many of which, including the flagship Horizon Europe and Digital Europe programs, follow an innovation-driven and project-based model, often providing only short-term funding that is poorly suited to sustainable infrastructure maintenance.<sup>225</sup>

This approach to funding PDI needs an overhaul. If the EU is serious about “tech sovereignty,”<sup>226</sup> it must confront, through strategic investment, the fundamental mismatch between the interests of a small number of US and China-based corporations on one hand, and the health of European democracies on the other. Europe must move beyond its technosolutionist and fragmented approach and adopt a holistic strategy for public digital infrastructure. Without taking this step, it will never be an independent and sovereign player in the digital economy, but will simply remain a playground for Big Tech.

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<sup>223</sup> Alek Tarkowski and Paul Keller, “Generative Interoperability: Building Public and Civic Spaces Online,” Open Future, March 11, 2022, <https://openfuture.eu/publication/generative-interoperability>.

<sup>224</sup> Jan Krewer, “Draghi’s Plan: Rewriting or Repeating EU Tech History,” Open Future (blog), September 13, 2024, <https://openfuture.eu/blog/draghi-rewriting-or-repeating-eu-tech-history>.

<sup>225</sup> See Lee Vinsel and Andrew L. Russell, *The Innovation Delusion: How Our Obsession with the New Has Disrupted the Work That Matters Most* (New York: Penguin Random House, 2020); and Lee Vinsel, “The Innovation Delusion,” accessed September 25, 2024, <http://leevinsel.com/the-innovation-delusion>.

<sup>226</sup> See Ursula von der Leyen to Henna Virkkunen, “Mission Letter,” September 17, 2024, [https://commission.europa.eu/document/download/3b537594-9264-4249-a912-5b102b7b49a3\\_en?filename=Mission%20letter%20-%20VIRKUNEN.pdf](https://commission.europa.eu/document/download/3b537594-9264-4249-a912-5b102b7b49a3_en?filename=Mission%20letter%20-%20VIRKUNEN.pdf).