

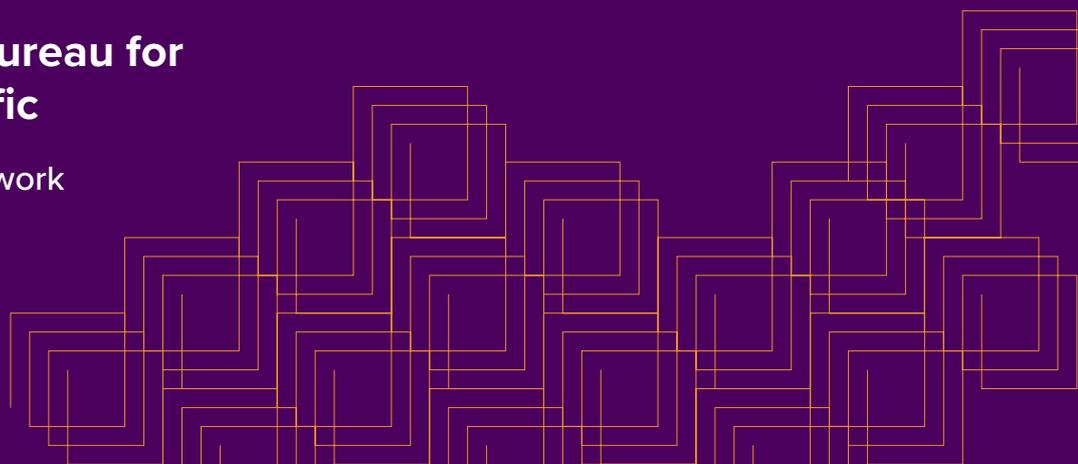


CAN DIGITAL PUBLIC GOODS DELIVER MORE EQUITABLE FUTURES?

REIMAGINING DEVELOPMENT IN ASIA AND THE PACIFIC FORESIGHT BRIEF | AUGUST 2022

**UNDP Regional Bureau for
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Strategic Foresight Network



This publication is authored by **Urvashi Aneja, Ph.D.**, Digital Futures Lab.

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**United Nations Development Programme
Regional Bureau for Asia and the Pacific**

One United Nations Plaza
New York, NY, 10017, U.S.A.
Tel: +1 212 906-5000
Fax: +1 212 906-5898



INTRODUCTION

In recent years, numerous governments, development agencies and civil society organizations have argued for the need to develop ‘digital public goods.’ The United Nations Secretary-General’s report on digital cooperation, entitled *The Age of Digital Interdependence*,¹ for example, states that digital public goods are essential for unlocking the potential of digital technologies and achieving the Sustainable Development Goals (SDGs), particularly in developing countries.

Endorsed by the United Nations Secretary-General and incubated by the Government of Norway and UNICEF, a new multi-stakeholder initiative, entitled the Digital Public Goods Alliance, has been set up to facilitate the discovery, development, use of and investment in digital public goods.² Indian Prime Minister Narendra Modi recently announced that CoWIN, India’s technological platform for vaccinations, will be available as a digital public good for other countries to use.³ A number of global philanthropies have also begun investing in research and innovation around digital public goods.

But what is a digital public good? In economics, a public good is typically one that is both non-excludable and non-rivalrous. The term public good also has a looser definition, one that serves the common good. Digital public good is still an emergent concept, whose current use seems to borrow and combine both these definitions – as free and open software that is intended to serve the common good. The United Nations Secretary-General, for example, defines digital public goods as “open-source software, open data, open artificial intelligence (AI) models, open standards and open content that adhere to privacy and other applicable international and domestic laws, standards and best practices and do no harm.”⁴

Another recent essay defines digital public goods as “open source digital infrastructure that aims to serve as building blocks for modern digital society.”⁵ Regularly cited examples of digital public goods include Mojaloop, an “open source software for creating payment platforms that will help unbanked people access digital services”⁶ and MOSIP, “an open source, open standards-based foundational identity platform.”⁷ A common attribute of these examples of digital public goods – they are ‘open’ and they are ‘platforms’.

Such articulations of digital public goods seem to be shaped by two prior beliefs. First, digital technologies are necessary for achieving development gains, particularly in low- and middle-income countries; and, secondly, the control of essential digital infrastructures by a handful of technology companies is undesirable because their business practices are often antithetical to the public welfare. Achieving development gains thus requires the creation of ‘open’ digital infrastructures that enable participation by a wide range of public and private actors to collaboratively build development solutions.

This foresight brief examines this emergent concept of digital public goods. Building on the United Nations Secretary-General’s report on digital cooperation, *Roadmap for Digital Cooperation*,⁸ this brief recognizes the critical importance of building a digital infrastructure that can accelerate development gains and the SDGs. But it cautions that this vision of digital public goods promotes and risks locking-in a particular vision of our digital development futures, one that is deeply contested and raises complex issues around governance and accountability. Openness in itself is not enough to realize positive development outcomes; on the contrary, without appropriate governance frameworks and capacities, ‘open’ systems may reproduce social inequities and create new unintended harms.

Open systems could lead to decentralized development solutions that are better attuned to local needs and enable local ownership, but only when accompanied by significant and sustained investments in building civic capacity. Emerging proposals for empowering communities, such as data trusts, are also no panacea, for their success will similarly rest on developing both adequate governance systems and civic capacity. Realizing the social or common good in our digital development futures is ultimately a question of ethics, not an issue of technical software standards. We need to develop alternative ethical frameworks grounded in values of relationality and interconnectedness to steer innovation trajectories toward the public good.

Creating open digital infrastructures may address the problems that arise with the concentration of power with a select few technology companies, but openness does not in itself resolve older and persistent challenges around competing values, accountability, governance and institutional and civic capacity. On the contrary, it risks relegating these issues to secondary status with priority assigned to questions of technical standards and competencies, thus reproducing a form of market-led techno-solutionism.

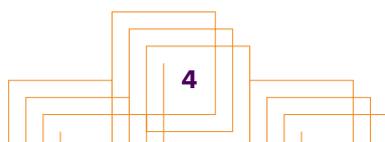
Platforms for Development

Defining digital public goods in terms of open-source platforms that can promote sustainable development encourages a particular vision of our digital development futures. In this conceptualization, platforms backed by open data and open application programming interfaces (APIs) allow multiple actors to build new solutions for development and for the public good. Such platforms for development can enable innovative new development solutions, but also risk transforming other societal or common goods, such as education, health care and judicial services, into ‘services’ that are overwhelmingly provided by the market.

Open government data programmes, for example, work to create new markets for the delivery of public services. In many developing countries, weak state and institutional capacity may necessitate the need for greater collaboration with the private sector in delivering development solutions. But it is critical that we recognize how this emerging vision of digital public goods may transform state-society relationships and the new and complex questions this raises for accountability and governance.

Within this vision, the role of the state is no longer to provide essential development goods, but to enable a competitive market for development as a service. Citizens become ‘users’ of a commodity, or a commodity themselves, as their data is mined to create new product offerings. Citizen rights and entitlements risk being reduced to a series of terms of service with private vendors. Platforms for development could also have exclusionary outcomes. Market-based solutions are shaped by market pressures, and thus may not always serve the needs of people with the least purchasing power.⁹ This vision also risks reducing complex development challenges to issues of access, affordability and market penetration, thereby blocking out the complex socio-economic and cultural contexts that determine how people actually engage with and are shaped by these ‘services.’

Embracing market-based solutions requires us to pay close attention to business models, accountability and governance frameworks – these are more important than technical standards. Openness is envisioned as a set of technical standards rather than principles of governance. But it is this second view of openness that is critical, in particular because of the type of digital developmental vision that is being promoted through this definition of digital public goods.



As Srinivas Kodali, a researcher with the Free Software Movement of India, asks, “What does openness signal? Does it signal that we are open for business or does it signal transparency?”¹⁰

The report of the United Nations Secretary-General, *Roadmap for Digital Cooperation*,¹¹ for example, cites the Digital Public Goods Alliance as a «go to platform» for digital public goods, but there is no discussion of business models, accountability mechanisms or institutional frameworks needed to govern them. Digital identity platforms, for example, may improve the delivery of public services, but without adequate institutional safeguards, they can lead to unwarranted profiling of citizens, exclusion from public services, privacy violations and security breaches, often to the benefit of commercial interests and at the expense of citizens’ rights.

In this sense, emerging narratives around digital public goods reproduce the idea of techno-solutionism, privileging a set of technical standards and technological solutions as necessary for addressing the SDGs, but without consideration of the social institutions and regulatory frameworks that need to also be in place. Many of the digital harms of today, such as privacy violations or monopolistic market practices, are not due to a failure in technical standards or in technological affordances, but because of the incentives driving technology companies and the lack of adequate safeguards and accountability mechanisms.

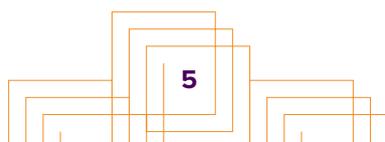
We must therefore pay close attention to the vision of our digital development futures that is being espoused through the emergent paradigm of digital public goods – how benefits and harms are distributed and how the new challenges for accountability and governance and the alternative developmental visions may be foreclosed as a result. As Evgeny Morozov argues, as techno-solutionism becomes the default response to many political problems, “it disarms, disables and discards any political alternatives.”¹²

THE POLITICS OF ‘OPEN’

Open Data

It has become increasingly common to talk about data as a public good, a common, or a shared community resource, which must be leveraged for public benefit and development gains, not just narrow commercial interests. This is often meant in two ways – either that in principle data should be defined as a public good, or that more data should be available to development agencies and governments to promote the public good.¹³ However, both these framings are problematic.

The first suggestion that data is in principle a public good rests on an erroneous conflation between ‘knowledge’ or ‘information’ and data. Information or knowledge is considered a public good because it is non-rivalrous (there is no extra cost incurred when others use it) and non-excludable (it is impossible to keep others from using it.) But as Nadezhda Purtova (2015) argues, data is in fact both rivalrous and excludable. Data-intensive businesses compete to harvest personal data and seek to exclude other competitors from accessing that data. The current data economy effectively excludes people from decisions about how their data is collected and used. The ‘over-extraction’ of data also has a direct impact on people’s privacy and agency.¹⁴



The idea that data is, in principle, a public good also rests on the assumption that data is a naturally occurring phenomena – that it necessarily exists in the world and should therefore be available for the public good. But data is always manufactured – what constitutes data is a direct product of what we deemed relevant or important, which in turn is shaped by a broader set of values and interests. Data, as Anja Kovak and Nayantara Rangathan (2019), argue, “is not an inevitable factor of development in technology” but the “result of a market where there is both demand for more data and a promise of development through more data.”¹⁵

Open data acquire more value when they are linked compared to when they are not linked. Digital identity systems provide one such way of linking open data sets. Linking up open databases through digital identity systems can lead to privacy harms and enable unwarranted profiling and surveillance. In India, for example, critics of the national biometric identity system – Aadhar – have argued that having a unique identifier allows government agencies to integrate data about individuals from multiple sources. This allows them to create a full 360-degree profile of individuals without their knowledge, which in turn enables unwarranted profiling.

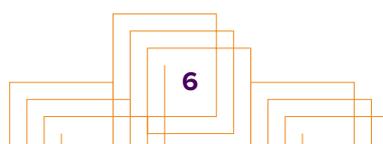
This can have deleterious consequences leading to egregious privacy violations, to self-censorship, to an accentuation of power asymmetries between the state and citizens and to the creation of opportunities for misuse.¹⁶ Recent research also shows that databases can never be perfectly anonymous, and an increase in the utility of data analytics is met with a decrease in privacy.¹⁷ Research from Belgium’s Université catholique de Louvain and Imperial College London, for example, has shown that a dataset with just 15 demographic attributes is enough to identify almost an entire population.¹⁸

Many developing countries also do not have the regulatory capacity to effectively protect people from such harms. Many are yet to pass data protection legislation and still have a considerable distance to go before they are able to establish competent regulatory authorities. Data legislation frameworks in most countries are also based on the Fair Information Practices principles of the 1970s, which articulate procedural rights such as transparency and purpose limitation. However, as Richard and Hartoz argues, these principles are inadequate to address the massive power and informational asymmetries that characterize our current data economy.¹⁹

Open data is often championed as enabling three things – government transparency, improving citizen engagement and promoting enterprise. But there is very little systematic evidence on the actual outcomes of open data. In one of the few empirical studies on this question, Bright et. al (2019) found that the use of profit-making data sets far exceeds those which could be used to enhance government transparency or service delivery.²⁰

Open data also poses serious security risks. Recent cyber-attacks show how even advanced economies are struggling to build secure data infrastructures. Estonia is often cited as the emblematic example of a digital republic, but what is sometimes neglected in these accounts is that Estonia’s data architecture prioritizes data security over open data. Data is not open by default – people have clear ownership rights over their data and are able to see which organizations have access to their data and for what purpose.²¹

There is therefore no necessary connection between open data and the public good. Open data can bring many benefits, from government transparency to innovative new development solutions. But we should resist claims that open data is, in principle, a public good. Data can be used to promote the public good, but this depends more on the broader systems that govern its use rather than whether the data is open or not.



Open AI

The United Nations Secretary-General's report, *Road Map for Digital Cooperation*, also argues for “open AI models” as part of its definition of digital public goods. This is assumedly intended to address the concentration of power in the hands of a select few technology companies. However, the current dominance of machine-learning and deep-learning systems require huge quantities of data and computing power, and this presents structural barriers to ‘democratizing AI’ systems. Relaxing patent regimes may also only work to democratize AI adoption, but not its development or production.

Moreover, even if open AI models help to democratize AI, this does not change the fact that algorithmic systems are not neutral. What data points are considered relevant, how they are weighted and correlated are value-laden processes. A growing body of scholarship also shows how algorithmic systems embed and perpetuate societal and historical biases and injustices. For example, studies of the use of algorithmic decision-making systems in the judicial system in the US have found that they unfairly discriminate against people of colour. Another study on Google's search algorithm found that it showed lower paying jobs to women.²²

Open models do not address this fundamental problem, and may even exacerbate the spread of these discriminatory impacts. GPT-3, a text generation model, released by Open AI, is an instructive example. GPT-3 was trained off of 175 billion parameters from across the internet (including Google Books, Wikipedia and coding tutorials); its code necessarily contains bias. A tweet generator based on GPT-3, when prompted to write tweets from the words ‘Jews’, ‘black’, ‘women’ and ‘holocaust’ came up with inappropriate suggestions.²³ Open models also increase the chances of misuse. Taking the GPT-3 example again, the developers of the model have themselves raised concerns about how the model could be a bad actor creating an endless amount of fake news, spreading misinformation amid COVID-19 and carrying out phishing scams.

Renowned AI scholar Nick Bostrom, taking a long-term view, asks a pertinent question: ‘«Supposing openness would speed-up technical process and roll-out, would that be socially beneficial ?”²⁴ In the short run, open AI models may speed up innovation, but in the medium-long term, it could mean that governments have less time to develop the adequate institutional and social capacities to navigate the challenges of AI. This may become even more worrying if open AI speeds up the race for developing Artificial General Intelligence. AI production and deployment also has significant environmental costs – speeding up AI development may thus also end up privileging the needs of current generations over future generations.

Creating open AI models may democratize AI use and allow for a wider range of actors, particularly in the Global South, to use AI tools to solve localized development challenges. But just because code is open does not make it a public good. Whether it is rivalrous and excludable, or promotes the public good, is entirely dependent on how it is developed, used and governed, not on whether it is open.

Open standards

Open standards could help create a more decentralized ecosystem by enabling interoperability and allowing new players to plug into existing products and systems. But it is vital that the setting of these standards is also done in a transparent manner and anchored in democratically accountable institutions.

Moreover, as researchers at the Electronic Frontier Foundation have long argued, “interoperability should be the floor, not the ceiling.”²⁵ ‘Cooperative interoperability’ can end up reinforcing the power of companies building the original products, as they have to give permission for how and where data on their platforms can be used. For example, a study on Facebook’s Open API policy found that it primarily worked to encourage the proliferation of social applications that redirected traffic to Facebook’s servers.

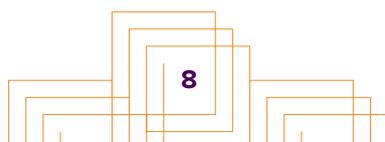
The open API policy established conditions for online sharing that undermined privacy, data security, transparency and user autonomy.²⁶ In contrast, ‘adversarial interoperability’ allows products and services to plug into existing ones, without the permission of the companies that made them. This form of interoperability could be an important instrument to create a more competitive and participatory digital ecosystem. It could create enabling conditions for more localized and community-owned development solutions.

Unless civic institutions have the knowledge and resources to leverage open standards to build such solutions, however, there is a high risk of capture by a select few. Large, well-resourced enterprises, for example, are likely to get the most out of open data as they will be able to apply the full range of big data capabilities. There is thus nothing intrinsic about these principles of openness which guard against monopolies of unfair value capture unless a wider range of actors have the capacity for meaningful participation. Wikipedia is an instructive example – often regarded as a provider of knowledge as a public good, it employs 450+ people worldwide and required significant capital investments in ICT infrastructure and for developing the digital capacities of its communities members, particularly to ensure a diverse community.

WHEN CENTERING COMMUNITY IS NOT ENOUGH

A core actor in such open systems is the ‘community.’ Enabling and empowering community is critical to be able to reframe development from within this vision itself, to make more meaningful and transformative use of this open and modular vision of development. Within the current ‘data for development’ paradigm, therefore, an essential starting point is to enable people to have control over their data. Data stewardship models are increasingly proposed as one such mechanism that can enable people to have greater voice and control over how their data is used, while still leveraging data for broader societal benefit.

Numerous data stewardship experiments are already underway. Digi.me is a personal data store that aggregates individual data from multiple sources and allows subjects to share it with the companies they choose.²⁷ This model aims to empower individuals and help them extract value from the data they produce. Data cooperatives, such as the MiData platform, which shares medical data



for research, allow members to collectively govern the use of their data.²⁸ Driver's Seat, a driver-owned cooperative, collects and sells mobility data from drivers to city governments and research institutes.²⁹ Such cooperative models seek to develop participative governance mechanisms that give communities the ability to negotiate their data rights while generating positive societal value.

Even more radical solutions can be imagined. For example, Baradaran et. al (2020) have recently made a case for leveraging new advances in edge-computing and cloudlet storage systems to develop personalized AI systems. They argue for a world of open and standardized APIs built on existing social networks and commercial databases through which people can build their own personal AI. This personal AI can serve the role of a personalized data fiduciary that helps people manage how their data is collected, used and shared.³⁰

Such solutions that seek to shift power to communities are certainly important. But just as openness is no panacea, neither is data stewardship. We will need to make sure that these new social institutions do not replicate the same problems they are seeking to solve. Sean McDonald (2019), for example, notes the emergence of a consulting and software market for data trusts. Rather than protecting data rights, much of the public dialogue on data trusts, he argues, is being shaped by “large well-financed interests trying to maximize data sharing.”³¹

McDonald also highlights that there are far more use cases of pooling data for open-ended purposes; purpose-driven uses, in contrast, such as for advocacy movements, are struggling to be able to use data to advance their cause. The extent to which data stewardship models can protect peoples' community rights is also dependent on the broader institutional contexts into which they are introduced. In many developing countries, people lack the capacities to negotiate their data rights, and there may be low levels of trust in existing public institutions. Many current conversations about data stewardship models are being led by civil society organizations in the industrialized economies, where democratic institutions are more mature and civil society is better resourced. Simply creating data trusts without addressing broader socio-economic inequities and governance structures can easily lead to the private capture of these new social institutions. Creating more decentralized models will require investing in civic capacity to be able to access, use and build such solutions. It will require investing in knowledge institutions that are able to understand and anticipate emerging needs and harms, and that have the capacities to interrogate dominant power structures.

Building these capacities takes time and investment, which is often thought not to exist in our current digital ecosystems because of the dizzying speed of technological innovation. But there is nothing natural or determined about this speed – it is enabled by an absence of regulatory structures, the prioritization of efficiency and individualism, and a broader Silicon Valley ideology of “permission-less” innovation.³² Instead, technological innovation needs to be steered by a different set of values, particularly where we are expecting digital technologies to help secure equitable development futures.



WHAT WE NEED: TO RESCUE ETHICS FROM ETHICS-WASHING

In response to a growing tech-lash, technology companies have increasingly begun to employ the language of ethics and responsibility. But this can be seen as a mere exercise by technology companies to regain their social licence to operate, and as a strategy of ‘ethics-washing’ to avoid stronger government regulation. The non-binding nature of ethical frameworks means that companies can deflect criticism by appearing to do something, even while continuing business as usual.

Such ethics-washing can result in the hollowing out of conversations about ethics: of ethical deliberations losing much of their moral and social force. But questions of ethics must be central to deliberations on our digital development futures. Many of the challenges we confront with regard to the use of digital technologies and their societal impacts cannot be resolved with more or better evidence, but are ultimately a question of competing values.

As we chart our digital development futures, it is vital that we unpack the ethical frameworks driving dominant innovation trajectories and explore alternative value paradigms. The conversation around digital public goods must start with this question of ethics and values. Technical standards and software principles are only a means to realize the public good – they should not be a way to lock-in or prevent value-based contestations around what constitutes the public good.

Dominant innovation trajectories rest on a particular set of ontological and epistemological assumptions. Man is viewed as an atomistic being, detached from broader social and political contexts; as a free and rational agent working towards maximizing his or her individual desires through exercising the faculty of reason. As Birhane argues, data science “reincarnates rationalism in many forms, including in the manner in which messiness, ambiguity and uncertainty are not tolerated...and the manner in which the dominant view is taken as the ‘God’s eye view.’”³³ Dominant technological innovation trajectories are deeply embedded in values of enlightenment individualism, in which individuals, through their own faculties of rationality and reason, are able to arrive at an already determined vision of the ‘good life.’ This view perceives individuals as rational equals, divorced from their social context and pursuing the maximization of their interests.

Relational ethics offers an alternative framework, as it involves a change in focus from the individual self to one embedded in a social context. It emphasizes values of interdependence and connectedness. Such relational ethics are a core tenet in many cultural traditions across the world, emphasizing a communal duty of care toward people and the environment. The Ubuntu tradition, for example, is encapsulated in the phrase, ‘I am because we are, and since we are, therefore I am.’ Ethical traditions in Asian countries, sometimes referred to as Kampong ethics, highlight the ‘communal self’, emphasizing values of empathy and compassion. Relational paradigms, based on social and environmental sustainability, have also long informed technology development in indigenous cultures. Many indigenous epistemologies refuse to centre or elevate the human above the natural environment. Indigenous value systems also prioritize a temporal dimension, asking about the impact of today’s actions on future generations.

In practical terms, relational ethics force us to centre the experiences of those most impacted by such systems, who tend to be the already vulnerable and marginalized members of society.

Emerging platforms for development must thus play close attention to their possible exclusionary effects, and ensure the availability of alternative and equally effective pathways for people to access digital development gains. Beyond individual gains, we must consider the broader societal impacts, including for future generations.

A relational ethics lens can also be applied to designing new social institutions for data. A relational view draws attention to the vast asymmetries in power that characterize our modern data economy, and how that renders the principle of consent inadequate in protecting people from harm. Rather than procedural rules that can be circumvented by the most powerful, a relational lens could help articulate “duties of loyalty, confidentiality and care on tech companies” in which people are protected despite their capacities, or regardless of the individual decisions they make when navigating digital spaces.³⁴

Scholars studying indigenous traditions have made similar arguments. They have argued that traditional open data principles – findable, accessible, interoperable and reusable (FAIR) – primarily focus on the characteristics of data that will facilitate increased data sharing among entities, while ignoring power differentials and historical contexts. Instead of focusing on the qualities of data, we should focus on people and purpose-oriented principles, emphasizing principles such as Collective Benefit, Authority to Control, Responsibility and Ethics (CARE).³⁵

Beyond those impacted by particular technological systems, a relational view forces us to consider the entire process of technology production. This includes the materials involved in the building of current technology systems and their environmental impacts. The cloud, for example, is already one of the largest emitters of CO₂. A recent study quoted in the Harvard Business Review shows that the last 0.08 percent incremental increase in the accuracy of an AI model took nearly 400 percent more energy than the first stage.³⁶ This is not an inevitable outcome of technology development processes, but the result of specific types of business models and technological decisions.

Relational ethics should also turn our attention to the ‘invisible labour’ that is enabling the production of AI systems. The main training data sets for machine learning originated in corporations, universities and military agencies, but the laborious work of data labelling and annotation is done by populations in the Global South via crowd work platforms. ImageNet, for example, which has become the de facto benchmark for image recognition algorithms, was built by outsourcing the work of labelling millions of images via Amazon Mechanical Turk to workers around the world.³⁷

Global supply chains of technology production are marked by exploitative working conditions that represent a starkly unequal distribution of technology gains. These exploitative work conditions undergird much of our current digital ‘progress’.

Seeing the world through this prism of interconnectedness and relationality can help better guide our innovation trajectories and reorient the dizzying pace of technological innovation. Ethics must lead the way in defining our digital development futures, not technical software standards.

CONCLUSION

Economists and other scholars have long argued that few things are pure public goods. For example, in the context of growing atmospheric pollution and how its harms are unevenly distributed across the globe, even access to clean air can be exclusionary and rivalrous. The question we thus need to ask is, what are the values, interests, institutional arrangements that are enabled or legitimized through defining digital public goods as open platforms.

Lawrence Lessing (2020) argued that code – the language in which computational logic is expressed – could act as an enforcer for the law, and might even become the law. By defining digital public goods in terms of open source platforms that are necessary for development, we are also inadvertently locking-in a particular vision of our digital development futures. Instead of focusing on the technical features of this vision, we should examine the interests and values it privileges, how gains and harms are likely to be distributed, how it transforms state-society relations and the new governance arrangements that are needed.

In the looser sense, whether an open platform can enable the public good is dependent on governance structures, incentives and business models. Open systems can help shift power away from large corporations and enable more decentralized solutions, but this will require investments in civic capacity and appropriate social institutions. Ultimately, these investments must be ethically moored, for what constitutes a public good is ultimately a question of values and ethics, not technical standards.

Many governments in the Global South are seeking to build open platforms as digital public goods, often supported by international organizations and global development agencies. Estonia and India are often cited as examples. Many African countries are even looking to learn lessons from India's digital transformations, particularly its platforms for digital identity and financial services. As global development agencies support these efforts, it is critical that adequate attention is paid to the institutional capacities and governance frameworks for governing such platforms.

These new technology architectures are believed to be easier to develop in developing countries because of the absence of legacy systems, and can allow developing countries to leapfrog progress on persistent socio-economic challenges. The corollary to the absence of such legacy systems, however, is weak institutional capacities in countries of varied stages of democratic maturity. The new institutional systems that are being built are not drawing on the wisdom and experience of earlier systems. Instead, they are starting on shaky or weak grounds, which makes it even more important not to create harmful technological and policy lock-ins.

As global development agencies increasingly support the development of digital infrastructures now and into the future, it is vital that our interventions in digital futures are in equal traction to our focus on equality. They are not siloed issues but closely interlinked and have to be programmed accordingly. It is vital that we pay equal, if not more, attention to questions of ethics, power and institutional and social capacity, as these are far more essential than software standards in aligning digital innovation trajectories with the public good.

ENDNOTES

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