



Task Force 2

Our Common Digital Future: Affordable, Accessible  
and Inclusive Digital Public Infrastructure



INDIA 2023



भारत 2023 INDIA

# TOWARDS INTEROPERABILITY OF DIGITAL SERVICES AND STANDARD SETTING

May 2023

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# Abstract




**R**apid advancements in digital technologies have given rise to a number of novel concerns and created digital divides. The digital shifts underway are reshaping economies, transforming business dynamics, widening upskilling, and learning needs, and have resulted in increased risks to data security and privacy. The lack of interoperability among the key components of the global economy hinders the adoption and implementation of digital services.


This policy brief outlines the current challenges and issues related to the lack of interoperability and standardisation in digital technologies, and how the G20—comprising the world’s major economies and accounting for a significant proportion of the global GDP, trade, and population—can play a critical role in addressing such issues. Further, it puts forth certain recommendations for G20 leaders to promote and encourage multilateral cooperation among member countries to ensure a safer medium for transferring information and data, fostering innovation, enhancing accessibility, and reducing trade barriers.



# **The Challenge**



# **1**



In a highly interconnected economy, the ability for diverse networks, devices, and services to work together seamlessly is critical. The recent COVID-19 pandemic provided an unprecedented boost to the digital economy and thus heightened the need to transform and update existing policies. To ensure contestability and fairness in digital markets, interoperability remains a powerful instrument for regulating digital bottlenecks.<sup>1</sup>

The world is currently witnessing the inception of a digital Industrial Revolution, where new technologies are progressively reshaping industries. Traditional industrial assets are being transformed into intelligent interconnected devices, while cutting-edge production techniques, such as additive manufacturing, are revolutionising the way products are designed and built.<sup>2</sup> This transformation is expected to accelerate further with the advancements in robotics and artificial intelligence (AI). It is, therefore, essential to prioritise the standardisation of interoperability in the design and development of digital systems and technologies.


The discussion around interoperability is challenging due to the absence

of a clear definition. Generally, interoperability is understood as the technical mechanism of a system, product, or service to communicate and operate with other systems.<sup>3</sup> Interoperability plays a crucial role in digital technologies by facilitating communication across different architectural layers and organisational boundaries.<sup>4</sup> The absence of interoperability among vital components of the global economy such as government agencies, financial institutions, and healthcare may pose a significant obstacle to growth. Effective interoperability between networks, devices, applications, data repositories, and services can drive the emergence of a truly digital society, spur innovation, and enhance competitiveness.<sup>5</sup>

The lack of interoperability resulting from the rapid growth and ever-changing nature of digital services presents several challenges.

### **Barrier to innovation**

Lack of interoperability can lead to fragmentation, where different systems and technologies become isolated from each other. This can make it difficult to share information, integrate systems, and collaborate with others, which can



stifle innovation. A lack of horizontal interoperability could constitute a barrier to entry into a market and dissuade users from switching.<sup>6</sup> Proprietary systems can create vendor lock-ins wherein users are tied to a particular vendor or platform and cannot easily switch to another system. This can limit innovation by creating barriers to entry for new players and thus reducing competition.

### **Lack of standardisation**

Standardisation and interoperability are critical issues in the digital age. Technologies such as the Internet of Things (IoT), AI, and blockchain are often fragmented and lack standardisation, making it difficult for different systems to work together.<sup>7</sup> Interoperability may require some degree of standardisation of common functionalities or standardised interfaces between interoperable products and services. Without standardisation, interoperability can create security risks, as different systems and technologies may not be able to communicate with each other securely. Moreover, when digital services are not interoperable, it can limit competition and innovation in the market. It can increase the complexity

of systems and technologies, which can make it more difficult to manage and secure them. Therefore, there is a need for global standards that ensure digital services are compatible with each other.

### **Security risks**

Interoperability and cybersecurity are closely linked. Interoperability can create security risks if not implemented properly, as different systems and technologies may not be able to communicate with each other securely. Privacy and security risks may arise when platforms open up new data flows to third parties.<sup>8</sup> It is essential to prioritise security in the design and development of interoperable systems and technologies to mitigate these risks. This includes implementing security controls, standardising protocols, and ensuring that systems and technologies are properly configured and monitored. Otherwise, there can be vulnerabilities and breaches that undermine innovation by eroding trust in digital systems. Privacy and security risks may pose a limit on the degree of openness that should be mandated through interoperability.<sup>6</sup>



### Limited access to data

Our societies and economies increasingly depend on the digital ecosystem, which plays a vital role in driving economic growth and providing enhanced social benefits. As the global economy becomes more digitised, data flows have become crucial not only within countries but also across borders.<sup>9</sup> These benefits of data flow for economies and societies require trust in the activities of different players operating in the digital space. Interoperability between data protection and privacy laws ensures certainty and security and reduces restrictions over cross-border data flow.<sup>10</sup> Without interoperability, it is difficult to access and share data across different systems and platforms.

### Higher costs

A lack of interoperability can lead to higher costs, as organisations may

need to invest in custom integrations or develop their own solutions to connect different systems. This can impose additional switching costs upon customers, thus diverting resources away from core business activities. Conversely, the cost of achieving interoperability either ex-ante (before any decisions regarding interoperability) or ex-post is also higher since firms have to elaborate standards.

### Lack of technical expertise

The role of regulators and standardisation organisations is crucial in defining the specifics of the platform interface to adhere to public standards.<sup>11</sup> However, the regulators generally lack technical and market expertise to adapt application programming interfaces (APIs) and technical access conditions. Standard-setting organisations are too slow moving for defining software standards in comparison to the fast-paced environment of digital markets.<sup>12</sup>




# **The G20's Role**

# **2**








**I**nteroperability serves as a crucial enabler in the digitalisation of the public sector, facilitating the realisation of digital public service goals. Incompatibility of information technology (IT) infrastructure as well as the use of different data models and standards limit interoperability between and within organisations.<sup>13</sup> The G20 is a consortium of the most significant and influential economies worldwide. With its members representing approximately 65 percent of the world's population, 85 percent of the global GDP, and 75 percent of global trade, the G20 has an immense impact on the world economy.<sup>14</sup>

In the digital age, where cross-border digital trade is growing rapidly with divergent standards, there is a dire need to look upon existing policies to approach interoperability within a broader context, beyond organisational and national boundaries.<sup>15</sup> Interoperability among digital services can enhance innovation and increase competition by reducing vendor lock-in and ensuring consumer protection and security. The G20 has an opportunity to create a favourable environment for businesses across the globe by establishing global standards and a robust policy framework.

## Policy at the global level

The policy should cater to the requirements of developing countries based on robust digital strategies but flexible enough to address sector-specific challenges. There is a need to align national-level policies with global policies to enhance accessibility and innovation. Policies should also address the challenges from institutional barriers and allow companies to adopt an integrated process approach to overcome the same. The G20 can play a critical role in creating a favourable environment for businesses by establishing global standards for digital services interoperability. Today, cross-border data flows play a crucial role in international trade and digital service models; however, these flows are often hindered by limitations on cross-border personal data transfers and legislations requiring data to be stored locally.<sup>16</sup>

This consortium can promote the harmonisation of digital standards, create frameworks for cross-border data flows, and support the development of new technologies such as Data Empowerment and Protection Architecture (DEPA) and the EU General Data Protection Regulation.



Further, by coordinating efforts and collaborating with other stakeholders such as the private sector, academia, and civil society, the G20 can facilitate the development of global standards and policies that promote digital interoperability.


### **Policy to enhance capacity building**

One of the major objectives is to boost investment in the development of digital infrastructure and enhance digital literacy to meet existing and future demands and help bridge digital divides. There is a dire need to address the differential gap between existing and required skills by promoting digital skills initiatives such as DigiSaksham in India. The G20 should also support small and medium enterprises to adapt and uptake digital technologies, and encourage member countries to develop national digital strategies to overcome traditional barriers. The policy should also have a provision for funding mechanisms for developing nations so that they can leverage the G20 platform to access new technologies and innovation. The G20 can help to break down barriers for developing nations to leverage existing infrastructure and

access resources and services from developed nations to enable individuals to adopt digitalisation in new forms of employment, including new businesses, particularly micro, small and medium enterprises.

### **Policy to support trade**

The policy must encourage the development of standards and standards-based interoperability for digital services and technologies to support cross-border trade and international acceptance. The G20 can also encourage governments of the member countries to enforce a common standard-setting procedure for the harmonisation of cross-border regulations that support trade agreements between different economies. Moreover, by establishing global standards for digital services, interoperability can create viable opportunities for businesses. When digital services are interoperable, it becomes easier for businesses to integrate their services with others, expand their customer base, and increase revenue. The G20 should facilitate cross-border trade through digital means by recognising digital authentication and digital payments,



and ensuring payment of appropriate taxes for international e-commerce through base erosion and profit shifting.<sup>17</sup> This consortium can create a level playing field in the digital economy by establishing standardised rules and regulations that reduce trade barriers and create a more predictable and transparent environment for businesses, encourage investment, and promote economic growth. Additionally, there is a need to utilise digital technologies in global supply chains and value chains to diversify and make them more resilient. Initiatives such as the Supply Chain Resilience Initiative by India, Japan, and Australia can provide a clear roadmap to building resilient supply chains.

### **Policy to mandate interoperability**


Regulators must take a more active role in mediating the standard-setting procedure and find new ways of collaborative oversight.<sup>18</sup> Interoperability may not emerge endogenously, and making it mandatory may be the only way to implement it. When specifying the details of the APIs and data formats, regulators should adhere to the standards set by standardisation bodies. In case a standard does not exist, a standardisation body should address the gap and propose a solution, which may then be adopted.<sup>19</sup> Another approach is to set up a trusted third party or an oversight board, which can review and ensure that the organisation meets security and compliance standards.



# **Recommendations to the G20**

# **3**





**A**s digitalisation continues to play an increasingly significant role in various sectors and industries, it has become imperative to address the existing digital divide, especially in developing nations. The interoperability of digital services is essential to ensure seamless communication and data exchange between different economies. The G20, which represents nearly 65 percent of the world's population, must agree on common principles, initiate reforms, promote innovation and inclusive growth, and bridge the existing gaps in digital infrastructure.

### **Setting up of digital public infrastructure**


The establishment of digital public infrastructure (DPI), which is a network of interconnected digital platforms, systems, and technologies, can catalyze the growth of the digital economy. DPI can help developing nations create a more enabling environment for digital businesses, bridge digital divides, and enhance cybersecurity and data privacy. A good example of this is the Digital India programme, which aims to enhance digital inclusion by providing broadband access to all

village clusters through efficient fibre networks and expanding the country's telecommunications infrastructure.<sup>20</sup>

Inter-organisational information sharing and interoperability allow rapid decision-making and collaboration between multiple partners.<sup>21</sup> The G20 should encourage its member countries to establish a standardised framework for digital public infrastructure and integrate interoperability as a central element when designing new digital public services.<sup>22</sup> It can also work with industry stakeholders to develop guidelines based on international best practices promoting seamless communication and data exchange between digital services.

### **Interoperability through standardisation**


Standards play a critical role in promoting interoperability of digital services. Standardisation can guide the development of emerging technologies such as 5G wireless communications, digitisation of manufacturing (Industry 4.0) and construction processes, data-driven services, cloud services, cybersecurity, e-health, e-transport, and mobile payments.<sup>23</sup> The G20 must



advocate for setting common standards and mutual recognition of cross-border innovations and support the standards development organisations and consortiums that facilitate digital trade and interoperability of information and data exchange. The G20 can promote a framework for open APIs to ensure software interoperability for digital applications and encourage multistakeholder participation in the digital economy. The use of standards, such as a specific API, is an important mechanism for implementing interoperability between services such as a Modular and Open-Source Identity Platform (an open-source platform designed to enable governments, organisations, and individuals to issue and manage secure and privacy-preserving digital identities) and the European Union's APIs4DGov digital government APIs. They provide a common framework for the development of compatible products and services and facilitate the integration of different systems and platforms. Standards can set a common communication language and procedure for communication between digital services. The development and adoption of international standards can also help to reduce fragmentation in the digital services market.

### **Foster cross-border partnerships**

New technologies and business models can help break down barriers to interoperability and create new opportunities for collaboration and integration. The G20 can play a crucial role in the collaboration of the private and public sectors for inclusive growth, technological innovation, and promotion of upskilling and knowledge sharing. The G20 must emphasise building applications that can positively impact livelihoods, accelerate various sectors, strengthen the supply chain, and build a cyber-safe world.<sup>24</sup> The G20 should also establish a roadmap to build resilient global supply chains through the integration of standards compliance while addressing specific challenges of developing nations. This can be achieved by promoting cooperation between governments, standards organisations, and industry consortia. The G20 must take a collaborative approach with member countries to recognise the need for innovation and data protection. The G20 can also include other international forums, such as the Organisation for Economic Co-operation and Development and the United Nations, to develop interoperability standards and



promote the adoption of interoperable digital services across borders. Further, it is essential for G20 nations to work together and reach a consensus on e-commerce development, ensuring that it does not have a negative impact on trade competitiveness in developing countries.<sup>25</sup>

### **Address regulatory challenges**

Most economies have weak mechanisms to monitor and evaluate the impact of the implementation of technical regulations. The implementation of interoperability standards may require some degree of regulatory oversight through competition law enforcement, competition authority market investigations, sector-specific regulation, and other broad-based regulation. The G20 can work to address regulatory challenges that impede the interoperability of digital services. This

can be done by promoting harmonisation of the regulatory frameworks that encourage competition and innovation while protecting the privacy and security of users. The G20 must also encourage the use of open-source standards and protocols for interoperability among member countries. Initiatives such as the Open Network for Digital Commerce based on open-source standards such as the BECKN Protocol can enable interoperability and seamless exchange of data between different digital platforms and service providers. Empowering individuals to offer their products as part of the global value chains will require a strengthening of Intellectual Property Rights (IPR).<sup>26</sup> The G20 can push for a collaborative approach to promote IPR protection among member countries to reduce costs and increase accessibility to global value chains.

Attribution: Deep Kapuria, Rajesh Maheshwari, and Ankit Kataria, “Towards Interoperability of Digital Services and Standard Setting,” *T20 Policy Brief*, May 2023.

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