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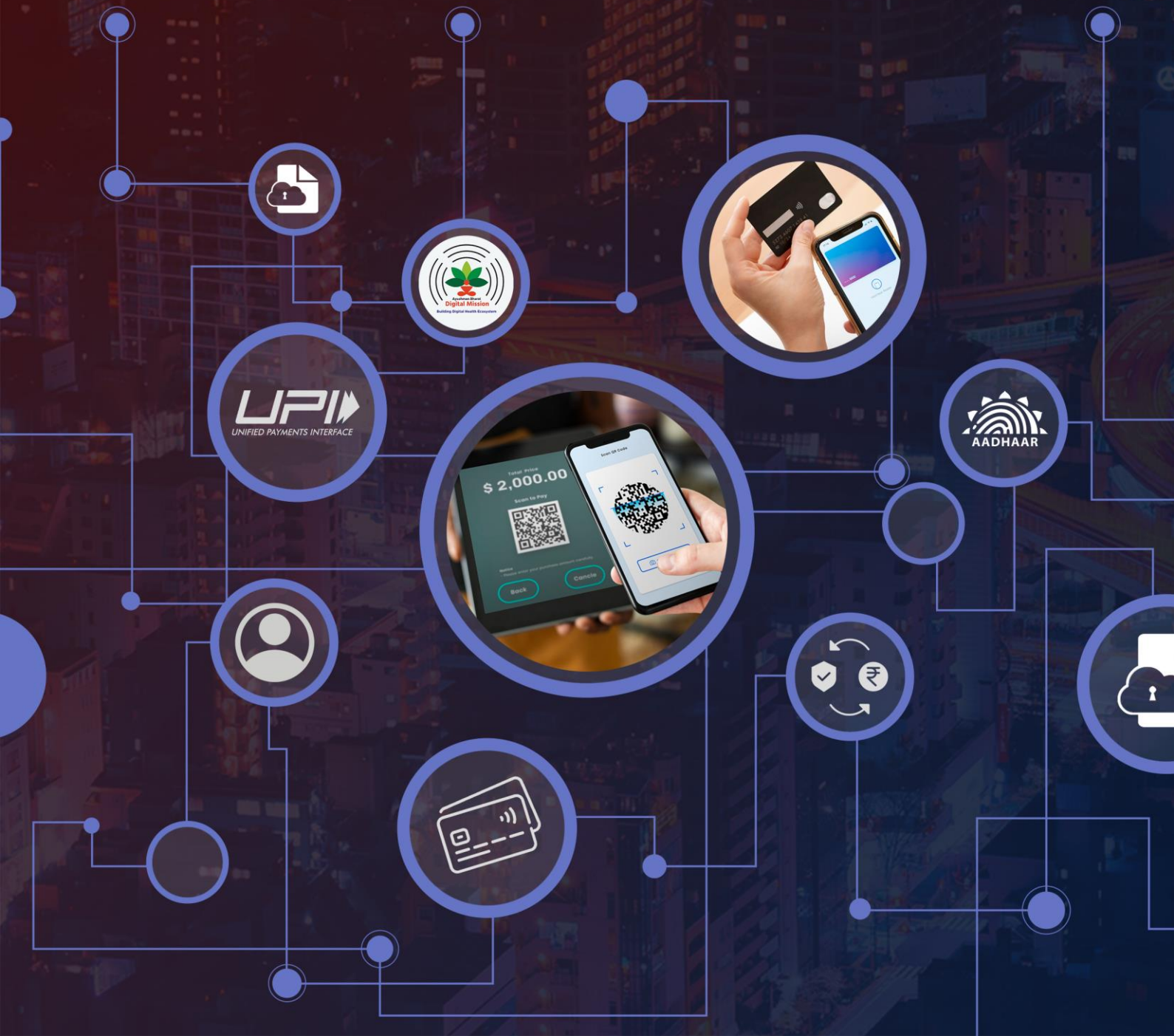
Beyond Boundaries: India's Digital Public Infrastructure (DPI) Model for Global Progress



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FOREWORD

A Global DPI Framework: India's Citizen-First Approach to Digital Transformation

Mr Amitabh Kant

G20 Sherpa, Government of India

In the past thirty years, the world has witnessed a digital transformation led by tech giants in the West and China, driven by breakthroughs in AI and machine learning. Unlike these data-centric commercial models, India has pioneered a distinct path through its Digital Public Infrastructure (DPI) framework—an open-source, globally interoperable system that serves 1.4 billion people and centers on citizens' rights.

India's DPI has achieved remarkable scale, facilitating financial inclusion and expanding real-time payment capabilities, making up nearly half of the world's real-time transactions. This infrastructure has fostered a thriving startup ecosystem, enhancing credit access, market participation, and insurance availability, particularly in underserved areas. More than just technology, DPI represents a model of inclusive growth, bridging socioeconomic divides and delivering mobile-friendly services.

The COVID-19 pandemic showcased the resilience of India's DPI, enabling a seamless, cashless vaccination campaign for 2.2 billion people and direct cash transfers to 800 million citizens with minimal leakage. Today, over 700 government programs use DPI for transparent benefit distribution directly to bank accounts.

Globally, DPI's case is compelling: with 4 billion people lacking digital identities and 2.5 billion unbanked, the Global South is poised for rapid growth. India's model, which lowers customer acquisition costs and accelerates progress, has demonstrated that change can be achieved within years rather than generations, lifting millions from poverty.

India's G20 presidency spotlighted DPI as a tool for inclusive governance and service access in finance, healthcare, and education, resonating with member nations. The Data Empowerment and Protection Architecture (DEPA) ensures citizens' data ownership, contrasting sharply with Big Tech's models and reinforcing trust and transparency.

India's DPI vision extends beyond borders. Platforms like MOSIP have provided digital identities for 110 million individuals in over 20 countries. Integrating AI, including real-time local language translation, will further expand service accessibility. DPI has catalysed advancements in human development areas such as financial inclusion and healthcare, exemplified by services like Digi Yatra, which streamlines airport security.

With only 12% of Sustainable Development Goals (SDGs) on track, DPI offers a scalable pathway to achieve them through inclusive solutions. India aims to build a global Citizens' Stack, helping nations craft their own DPI models tailored to local needs. India remains committed to collaborating with the Global South, sharing resources and expertise for collective success.

My compliments to Primus Partners Pvt. Ltd. for supporting this initiative and contributing to global dialogue on DPI. This compendium aims to inspire a unified approach to building an inclusive, equitable, and sustainable digital future.

MISSION

Sustainable Futures: India's Mission to Leave No One Behind Through Digital Public Infrastructure (DPI)

Mr Devroop Dhar

Co-Founder & Managing Director, Primus Partners

The world stands at a crucial point where its creative technological inventions and developments over the last two centuries are at odds with Mother Nature. The pandemic and climate change around us are grim reminders to look back at the journey and the urgent need for sustainable engagement of our aspirations with nature.

Coupled with this are uncomfortable global realities, such as conflicts, hyperglobalisation, inequalities, and other challenges that are becoming complex amidst a rising population projected to touch 11.2 billion by 2100.

Like the rest of the world, India stands exposed to them, too. However, it has made paradigm shifts in viewing the future as one filled with unlimited potential. In the last decade, India has positioned itself as the Global R&D in addressing global challenges, wherein its solutions come as offerings to both itself and the rest of the world. Case in Point is Vaccine Maitri, where India shared its COVAXIN COVID Vaccine with all willing partners and, in the process, saved lives beyond its borders.

But India did not stop there when it realised that the world, especially the Global South, faced socio-economic challenges strikingly like its own. Knowing well that the all-encompassing Sustainable Development Goals 2030 served as the panacea to these challenges, India spared no effort in the massive development and deployment of Digital Public Infrastructure, which it has applied to over 700 government programs for delivering public service—which, in turn, is accelerating progress in achieving SDGs under all 17 goals.

While DPI's success has improved the lives of ordinary citizens, who can now avail of services at their convenience, the state in India has saved close to $41 billion in leakages during public service delivery. This endeavour of the state has provided confidence to the private sector, which has been proactive in utilising DPI for private service delivery thanks to its encouragement through its provision of India Stack with open APIs and digital public goods for anyone to develop upon.

This positive collaboration between the state and the private sector has resulted in joint efforts to promote financial and social inclusion and position the country for the Internet Age.

Amidst its ongoing efforts to alleviate socio-economic challenges through DPI deployment, India, during its 2023 G20 Presidency, made a monumental decision to fulfil the promise of SDG 2030—'Leave No One Behind'. Through its relentless efforts, it drew international consensus on the definition of DPI and the G20 Framework for Systems of DPI. With this, DPI is now among the foremost solutions to global challenges that SDG 2030 is positioned to address.

Many solutions falter when concrete philosophies do not back them. While India was developing DPI solutions, it didn't just do so because it fulfilled SDGs but because India, as a civilisational nation, finds itself deeply connected to the elements of nature. The Indian scripture Atharvaveda, dating back to circa 1200 BCE, speaks of 'Prithvi Sukta' or Hymn to the Earth, which presents eco-friendly ideas to understand the treasures of planet Earth and means to utilise them sustainably.

MISSION

Sustainable Futures: India's Mission to Leave No One Behind Through Digital Public Infrastructure (DPI)

This continues to reverberate through India's actions. It doesn't just see SDGs as a path to continue development through alternative paths such as DPI. Instead, it is concerned about sustainable consumption and production patterns, which it promotes through its 'Mission Lifestyles for Environment (LiFE), or what has been internationally embraced as Lifestyles for Sustainable Development.

India's Digital Public Infrastructure (DPI) initiative represents a strategic approach to development, avoiding the pitfalls of unsustainable overconsumption often observed in developed economies. Through mainstreaming LiFE, India underscores the importance of responsible consumption and sustainable growth.

Despite being a significant contributor to the global economy and the only major economy poised for consistent 7% growth this decade, India has yet to leverage its position for unilateral benefit. Instead, its vision—exemplified by "Viksit Bharat @2047"—prioritises inclusive and sustainable development, staying true to its foundational principle of 'Vasudhaiva Kutumbakam' (the world is one family). By sharing solutions like DPI and Mission LiFE, India reaffirms its commitment to collective global progress.

In alignment with India's vision, Primus Partners Pvt. Ltd. is dedicated to contributing to the evolving global DPI policy landscape. Guided by the principle of providing 'Solutions for Tomorrow,' we engaged with stakeholders across sectors—including private enterprises, policymakers, and philanthropists—to discuss unified strategies for leveraging DPI to improve lives globally.

Primus Partners' recommendations are rooted in practical insights gained from deploying DPI in underserved regions of the Global South. These recommendations aim to enhance global policymaking efforts and facilitate the delivery of high-quality public services worldwide. We hope that this collaborative effort will support both national and international stakeholders in building robust foundations for global DPI solutions.

MISSION

Sustainable Futures: India's Mission to Leave No One Behind Through Digital Public Infrastructure (DPI)

INTRODUCTION

Digital Public Infrastructure: The Journey So Far

Mr Nilaya Varma

Co-Founder & CEO, Primus Partners

India's Digital Public Infrastructure (DPI) has become a global example of how citizen-focused digital systems can drive meaningful socio-economic progress. Through impactful platforms like Aadhaar, the Unified Payments Interface (UPI), and DigiLocker, India has built a digital ecosystem that delivers secure, scalable, and transparent services to over a billion people. This infrastructure meets essential public needs across areas like financial inclusion, healthcare, education, and government services while empowering citizens economically. At the heart of this transformation is the India Stack, which unites digital identity, payments, and data management, creating a model that other nations can look to as a benchmark for DPI.

India's DPI ecosystem continues to expand and evolve. As of 2024, projects such as Bharat Net, which has brought internet access to more than 213,000 Gram Panchayats, are closing the digital divide in rural areas. The Open Network for Digital Commerce (ONDC) facilitates millions of transactions, helping small businesses reach broader markets. India's data infrastructure, now ranked 14th globally, is projected to grow by 30% each year, supporting an ambitious national digital strategy.

The impact of India's DPI success has spread beyond its borders, inspiring partnerships and collaborations with other countries. Memorandums of Understanding (MoUs) have been signed with nations including Armenia, Sierra Leone, and Suriname, sharing India's DPI solutions to encourage digital innovation worldwide. The India-France collaboration on UPI deployment showcases the potential for DPI as a tool for cross-border development. The launch of the Social Impact Fund by India's Prime Minister, Mr Narendra Modi, pledging $25 million to support DPI adoption in the Global South, emphasises India's commitment to helping other nations leverage digital systems for economic growth and social advancement.

To ensure that DPI maintains its positive impact, it is crucial to understand what makes a "good" DPI model. A well-designed DPI protects data privacy, upholds citizens' rights, prevents monopolistic practices, and aligns with ethical regulatory standards. These principles are essential for keeping DPI secure and beneficial to the public, shielding it from privacy breaches, data misuse, and unchecked market power. While progress has been made, challenges like data privacy, digital sovereignty, and regulatory alignment remain pressing. India's Data Privacy and Protection Act 2023 (DPDPA) is a significant step in addressing these concerns.

India's DPI achievements have significantly contributed to Sustainable Development Goals (SDGs), helping speed progress by fostering financial inclusion and reducing inequality. DPI also creates opportunities for broader market participation by lowering transaction costs and encouraging competition. During the COVID-19 pandemic, DPI was instrumental in enabling quick digital responses, such as cash transfers to over 450 million beneficiaries and vaccination of 2.2 billion doses, underscoring DPI's importance in crisis management. Through DPI, India offers a model that allows developing countries to bypass traditional development stages, supporting digitally inclusive and sustainable growth.

INTRODUCTION

Digital Public Infrastructure: The Journey So Far

DPI's global relevance continues growing, with countries adopting interoperable systems tailored to their needs. Examples include Brazil's Pix, Singapore's Singpass, Ghana's Financial Inclusion Triangle, and Indonesia's QRIS. India's leadership of the G20 Task Force on DPI has further highlighted DPI's significance, emphasising three main pillars: technology design focused on interoperability, government features to protect consumers, and market participation to ensure open access and fair competition.

However, developing DPI with safeguards that address potential risks is crucial. International discussions at forums such as the G20, which defined DPI during India's G20 Presidency in 2023, and other organisations have identified fundamental DPI principles to help prevent unintended consequences, such as threats to human rights, exclusion, or unequal access to justice. The United Nations' 2024 Global Digital Compact (GDC), part of the Pact for the Future, emphasises DPI's role in achieving SDGs, calling for transparent, secure, and interoperable systems. This vision aligns with India's proposal for the One Future Alliance, which advocates for a global DPI framework that respects digital and data sovereignty while encouraging international cooperation and investment.

DPI deployment models have adapted over time in response to diverse economic needs. As discussed in Carnegie India's Report On 'The Future Of Digital Public Infrastructure: A Thesis For Rapis Global Adoption' The Traditional Custom Build (TCB) model, used in India's Aadhaar program, is ideal for large economies with substantial technical resources, allowing for highly customised solutions. Alternatively, the "DPI as a Packaged Solution" (DaaS) model provides ready-to-use DPI solutions that reduce deployment time and costs, making it a practical choice for smaller economies of the Global South with limited expertise. This approach allows low- and middle-income countries to adopt DPI affordably while retaining control over their data.

Looking to the future, India's DPI strategy aims to incorporate Artificial Intelligence (AI), transforming DPI into "Digital Public Intelligence" to make AI accessible and beneficial to society. Initiatives like AI for Bharat and Bhashini, which focus on language-specific AI applications, show how AI can simplify complex tasks and increase accessibility. For DPI to be a practical choice amongst the private sector as their preferred way of conducting business, there is a need for economic sustainability within DPI, with precise revenue models and equitable participation to encourage continued innovation and fair competition.

India's journey with DPI offers a path forward for other nations. It combines scalable technology with public protections to create resilient, inclusive digital systems.

With these critical developments in place, Primus Partners' Report on 'Beyond Boundaries: India's DPI Model for Global Progress' presents thoughtful recommendations based on real-world industry experience. This report seeks to balance stakeholder needs while helping to accelerate global progress toward the Sustainable Development Goals for 2030, using India's DPI model as a framework for shared success and resilience worldwide.

Further, this report presents key recommendations based on India's experience with DPI, emphasising phased implementation, balanced regulation, and collaborative approaches. These guidelines empower countries, particularly those in the Global South, to use DPI for sustainable, inclusive growth and digital sovereignty. By building on India's achievements and fostering global partnerships, the international community can unlock DPI's potential to profoundly transform digital governance and bridge socio-economic divides.

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The recommendations outline a comprehensive framework focusing on positioning India as the global leader in accelerating the achievement of SDGs through the advancement of Digital Public Infrastructure (DPI).

The recommendations take inspiration from the 'Report of India's G20 Task Force on Digital Public Infrastructure' launched in July 2024. The report sought to define the future course of the DPI approach and actions for implementation around the globe, particularly in the Global South. One of the key points that the report raised was the criticality of market participants' involvement in the development and deployment of DPI solutions.

Further, the recommendations take forward the core message from the Declaration on DPI, AI and Data for Governance—Joint Communiqué by the G20 Troika (India, Brazil, and South Africa), adopted on 20 November 2024 and endorsed by the Troika along with Italy, Norway, Portugal, Singapore, Spain, Mexico, the United Nations (UN), World Bank, International Monetary Fund (IMF), World Trade Organisation (WTO), and World Health Organisation (WHO).

The Declaration seeks fair and equitable principles for data governance, Trust as the cornerstone for technological systems, appropriate safeguards to respect citizens' rights, and training AI on diverse and properly representative data sets to be cognizant of the diversity of language and culture.

The following vital recommendations highlight strategic approaches for the effective deployment and global sharing of DPI models to take forward the blueprint laid in the Report as mentioned earlier and Declaration as well as developments on DPI at other international fora such as G20 and QUAD and at international organisations such as Office of the UN Secretary-General's Envoy on Technology (OSET):

1. **Interoperability, Open standards, and Citizen-first principles:** DPI should prioritise open standards and a citizen-first approach to build trust, enhance accessibility, and meet local needs, particularly in underserved regions.

2. **Integrating Comprehensive Frameworks for DPI:** Establish data privacy and cybersecurity as foundational elements, balancing innovation with strict ethical standards to foster public trust.

3. **Strategic Partnerships for Advancing DPI:** Governments should collaborate with private and philanthropic organizations to build resilient DPI models, encouraging interoperability and economic resilience.

4. **Implementing a Phased, Layered Approach to DPI with Targeted Regulatory Support:** A gradual DPI rollout with targeted regulation will help countries build digital maturity cost-effectively, ensuring accessibility and scalability.

5. **Ensuring Accessibility, Inclusivity, Localisation, and Data Sovereignty in Digital Public Infrastructure:** Make DPI inclusive by focusing on accessibility, language, and local adaptability, while ensuring data sovereignty to build public trust.

6. **Driving DPI through Policy and Government Programs:** Government policies should promote DPI use, showcase its crisis response potential, and encourage knowledge exchange across regions.

7. **Enhancing Data Accessibility for Successful DPI Implementation:** Enhance public access to well-governed data, particularly for climate resilience, public health, and automated public services.

8. **Capacity Building, Skill Development, and Digital Literacy for Successful Digital Public Infrastructure Implementation:** Invest in skill development and digital literacy to prepare communities, workforce, and policymakers for effective DPI use.

9. **Ensuring Cost-Effectiveness in DPI Development:** To make DPI sustainable and widely accessible, focus on scalable, low-cost solutions, especially for rural and underserved areas.

10. **Strengthening R&D, Data Exchange, and Educational Initiatives to Drive DPI Success:** Support DPI innovation through R&D partnerships, standards for emerging markets, and a Global Digital Academy for knowledge sharing.

11. **Leveraging DPI to Accelerate Sustainable Development Goals (SDGs) Achievement by 2030:** Leverage DPI as a tool to advance SDGs, including health, education, and economic equality, to foster a more inclusive and sustainable future.

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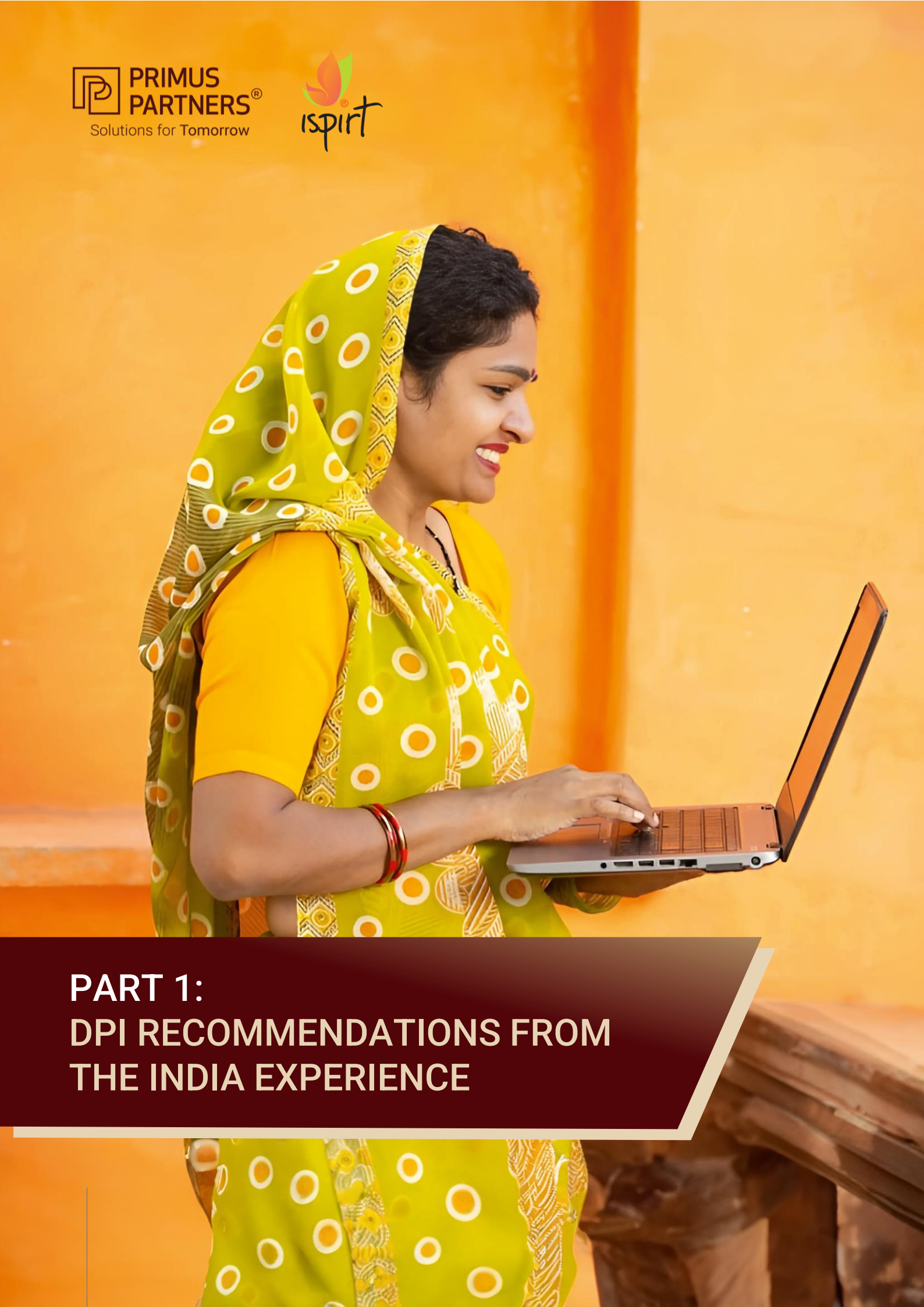

PART 1:
DPI RECOMMENDATIONS FROM THE INDIA EXPERIENCE

01 Recommendation: Interoperability, Open standards, and Citizen-first principles

DPI must uphold interoperability, open standards, and citizen-first principles. Its uniqueness will lie in its ability to create equitable, independent digital ecosystems that are universally acceptable, especially across the Global South. It must also balance tech companies' commercialised, data-centric approach.

Interoperability and Open Standards: Upholding Interoperability and Open Standards in DPI systems will facilitate their integration into government services, private sectors, and fintech institutions and pave the way for a more efficient and interconnected digital landscape.

A suitable example is India's Ayushman Bharat Digital Mission and its ABHA Digital ID card, which is highly interoperable and allows for the digital access and sharing of health records across different healthcare providers. Similarly, philanthropic organisations such as BMGF and NGOs such as India's e-Governance Foundation are working with the Liberian government to digitise the transfer of and the supply of bed nets to the last mile to tackle Malaria.

Citizen-First, Inclusive Approach: DPI platforms must be unequivocally citizen-centric, designed to foster trust and transparency among citizens. India's success in the widespread adoption of digitally enabled systems, from healthcare to fintech, is a testament to the fact that stakeholders view DPI as a public good that must enhance the quality of citizens' lives. This approach also ensures that private players have citizens who trust digital systems for commercial activities.

Adaptation for Local Contexts: Stakeholders must recognise the digital divide between the Global North and Global South and within the Global South. While India is prepared to adopt mature digital technologies, high-speed data connectivity, and advanced digital banking facilities, other regions like Africa have informal economies and high unbanked populations. Therefore, DPI systems should accommodate local economic networks and service delivery challenges, including rural outreach and informal financial systems.

Collaborative Development: With each stakeholder possessing unique digital strengths, there must be a focus on open, community-led development standards that can avoid regulatory capture and promote healthy competition. Commercial initiatives like Google's DPI in a Box demonstrate the importance of adaptable, user-centric design that balances high interoperability with the highest privacy protections.

User-Centric Design for Practicality: Develop practical DPI tools that are user-focused and accessible in local languages. By providing ease of access, we can empower communities with interpretable data for decision-making. Tools like the United States Federal Flood Standard Support Tool exemplify how user-friendly data delivery can guide local responses effectively.

02 Recommendation: Integrating Comprehensive Frameworks for Digital Public Infrastructure

Privacy and Security as Cornerstones: DPI frameworks must prioritise data privacy and cybersecurity protocols to maintain public trust. India's Data Empowerment and Protection Architecture (DEPA) framework is a powerful example, which heavily concentrates on securing data ownership, transparency, and trust. Through this, India has showcased how ethical and citizen-centric digital economies can operate side by side. Further, this aligns with the Supreme Court of India's 2017 judgement on privacy as a fundamental right.

Inclusivity-Driven Policy Frameworks: Effective DPI must adopt a whole-of-government and whole-of-society approach, considering the DPI model focuses on inclusivity and scalability. Also, the fewer the regulations, the more potential for government and private stakeholders to get creative and provide tailored solutions that serve diverse, underserved populations and marginalised communities.

Continuous Innovation and Adaptability: Due to DPI's limitless potential in tackling socio-economic challenges and turning countries into digital economies, DPI strategies require constant updates and integration of global developments. Therefore, policymakers must prioritise agility in their regulatory actions to foster an innovation-friendly environment and serve citizens' socio-economic needs through DPI innovations.

Legal and Ethical Governance: The legal framework must be well articulated to protect citizen data and ensure ethical use. Legislation like India's Aadhaar Act 2016 showcases how legal measures can restrict data access while upholding individual rights to privacy. Such laws can inspire countries looking to establish similar protections within their DPI.

Building Digital Trust and Resilience: Digital trust must extend beyond data protection and uphold fair and effective technology deployment considering emerging technologies like Artificial Intelligence (AI). This focus on risk management and social impact helps mitigate vulnerabilities from widespread digital adoption. The advancement of AI calls for deploying risk management strategies, which create protected pathways that guide the side-by-side safe expansion of DPI and AI.

03 Recommendation: Strategic Partnerships for Advancing Digital Public Infrastructure

DPIs' success will lie in strategic and trusted partnerships among government, private companies, and philanthropic organisations, especially with the potential DPI systems possess to achieve economic resilience, social inclusion, and sustainable development goals.

Foster Interoperability with Local Stakeholders: Governments should prioritise interoperability when designing DPI systems, enabling seamless integration across banks, fintech, and public services to provide unified, accessible citizen services. Governments must remain open to public and private stakeholders in developing and scaling DPI systems.

India's DPI success demonstrates the potential of collaboration between public infrastructure and private innovation. In India, banks, fintech companies, and government agencies have worked together to create a DPI that serves nearly a billion people, setting a model for engaging close cooperation between technology firms and financial institutions in other countries. Other nations can replicate this interoperable, inclusive model by adopting open-source principles to achieve cohesive service delivery and shared value across sectors.

Build Partnerships for Technical and Financial Support: Governments must engage private sector entities and international organisations to provide DPI technical expertise and financial support. International bodies, like the UNDP, and private companies like TCS can facilitate these partnerships to support the scaling of DPI through capacity-building, funding, and operational assistance.

Tata Consultancy Services' commitment to collaborating with governments across the Global South showcases how technical support and knowledge-sharing can build capacity for DPI. Through partnerships, countries can foster socio-economic resilience and improve digital infrastructure. Additionally, philanthropic organisations, like the Gates Foundation, can further DPI implementation by engaging local organisations in Africa and Asia to build inclusive, sustainable DPI ecosystems.

Establish a Global Ecosystem of Collaboration: A sustainable DPI ecosystem must extend beyond traditional stakeholders to civil society, philanthropic organisations, and local communities to support long-term growth, social investment, and continuous improvement in DPI models. This approach encourages customisation and ensures DPI solutions meet each nation's unique needs, allowing countries to take ownership of their digital futures. For instance, To lessen long-term reliance on subsidies, the Wadhwani Foundation, for instance, promotes collaborations to improve healthcare and education through DPI. By allocating funds for training initiatives, pilot projects, and expanded nationwide rollouts, these partnerships can create a robust ecosystem in which local talent and technical know-how boost digital transformation.

04 Recommendation: Implementing a Phased, Layered Approach to Digital Public Infrastructure (DPI) with Targeted Regulatory Support

Countries looking to adopt DPI must initiate this process through a phased, layered approach combined with targeted regulation. This strategy allows nations to grow their digital maturity gradually, focusing on foundational elements and minimising costs while maintaining flexibility. The following recommendations outline steps for phased DPI implementation with regulatory guidance to ensure accessibility, scalability, and impact.

Focus on Foundational Elements: Begin with essential components like digital IDs and payment systems, as they can provide immediate results by enhancing financial inclusion, improving access to public services, and facilitating economic transactions. India's DPI journey offers a practical example, demonstrating how a strong foundation in digital IDs and payments has led to the opening of over 500 million bank accounts in the past 8 years, creating a base for subsequent digital layers and expansion of commercial services ranging from online trading to digital insurance in the fintech space.

Showcase Real-World Impacts: Sharing concrete examples of DPI's benefits, especially in the Global South, such as improved access to financial services or efficient delivery of government benefits, can inspire other countries to adopt similar transformations. Illustrating DPI's practical, everyday impacts can help make digital infrastructure accessible and relevant for various stakeholders.

For example, during its G20 Presidency, India showcased how digital banking has reduced customer acquisition from $100 to as low as 15 cents, the successful delivery of over 2.2 billion COVID-19 vaccination doses through the CoWIN platform, and the targeted disbursement of financial support during COVID-19 to over 450 million people straight to their bank accounts without any leakages in between.

Implement a Targeted Regulatory Approach to Maintain Flexibility and Accessibility: A targeted, minimalistic regulatory approach is essential for the effective rollout of DPI. Countries should prefer a lean regulatory framework with specific use cases instead of rigid regulations that could increase implementation costs and reduce system flexibility.

05 Recommendation: Ensuring Accessibility, Inclusivity, Localisation, and Data Sovereignty in Digital Public Infrastructure

Prioritising accessibility, inclusivity, localisation, and data sovereignty is essential in making DPI more equitable, relevant, and resilient across diverse communities and regions. The following recommendations outline a holistic approach to achieving these goals.

Foster Accessibility and Inclusivity in DPI Design: DPI must provide equitable access across socio-economic backgrounds and geographic locations. India's DEPA (Data Empowerment and Protection Architecture) empowers individuals by centring data ownership with citizens. As DEPA focuses on safeguarding privacy, it can inspire similar frameworks in other regions, such as Africa, where citizen-centric data ownership can support digital identity initiatives and contribute towards financial inclusion.

To expand DPI's reach, integrating solutions like IVR-based services that work on basic mobile phones can bridge the digital divide, especially in areas with limited internet and smartphone access. Such accessible technologies, which can operate through offline mode, are particularly critical for underserved communities in the Global South.

Embrace Localisation to Overcome Connectivity Challenges: Localisation of DPI elements is crucial for overcoming barriers in regions with limited digital infrastructure. Customising solutions to align with local languages, internet availability, and digital capabilities is essential for sustainable implementation. Digital health platforms, for example, should be tailored to the health needs of local communities and remain effective across varied population densities and geographic conditions.

Adapting DPI to meet local needs, from language customisation to data security, is essential. India's LoKOS platform for women's self-help groups (SHGs) illustrates how localised DPI can empower marginalised groups. LokOS is crucial in realising India's National Rural Livelihood Mission's (NRLM) vision of empowering SHGs through digitisation. LoKOS records member profiles and activities at every Community-Based Organization (CBO) nationwide and is a significant step towards centralising the entire SHG system with the elimination of traditional ways of bookkeeping on paper. Through LokOS, the government can maximise returns on the savings of SHG members and quickly provide financial assistance for sustainable livelihood development at the grassroots level. This transformational transition moves SHGs from 'sample-based decision-making' to 'data-driven decision-making'.

Prioritise Data Sovereignty for Building Public Trust: Data sovereignty is crucial in developing trust and ensuring citizens retain control over their personal information. By placing data ownership and control in the hands of individuals, as India's DEPA does, DPI can strengthen trust and encourage user engagement. DPI frameworks must establish policies that secure personal data, align with regional regulations and promote transparency to build and gain long-term public confidence.

06 Recommendation: Driving Digital Public Infrastructure (DPI) through Policy and Government Programs

India has demonstrated that concrete government support and carefully designed policies are essential for facilitating the widespread adoption and impact of Digital Public Infrastructure (DPI). Prioritising a strategic and policy-driven strategy is crucial to ensure that DPI can serve as a strong initiative for social inclusion, economic development, and crisis response. Here are some important recommendations to promote the adoption of DPI worldwide.

Implement Policy-Driven Mandates to Encourage DPI Utilization: Policies that mandate and reward its use are essential to promote DPI adoption in both the public and private sectors. For example, India's Direct Benefit Transfer (DBT) program requires beneficiaries to receive payments directly via digital means, eliminating intermediaries and guaranteeing effective, open, and corruption-free service delivery. DBT demonstrates how well legislative mandates operate to increase DPI reach and impact by directly linking these services with digital frameworks. Similar standards across other government sectors- like agriculture, education and public health can result in additional gains in efficiency and transparency.

Showcase DPI as an Effective Mechanism for Crisis Management: India's effective usage of DPI during the COVID-19 pandemic reflects how adaptable and resilient it is in crises. DPI facilitated vaccination delivery, coordinated healthcare resources nationwide, and assisted the government in providing cash transfers in a timely and efficient manner.

These instances highlight how DPI infrastructure can be crucial in handling extreme crises. The advantages of DPI can be optimised during emergencies by implementing policies that include it in emergency response frameworks.

Foster Cross-Regional Knowledge Exchange and Collaboration: The dissemination of India's DPI expertise to other nations can be facilitated via international participation through knowledge exchange initiatives. The significance of these exchanges is highlighted by delegates visiting India to examine the DPI model from nations like Tanzania. Further, Kenya is contributing to DPI in its way by adopting the National Farm Registry, which is a registry containing 6 million farmers who have farmer IDs that help them get access to fertilisers, good quality seeds at the right time, and also the correct information on agriculture, contributing to food security efforts for smallholder farmers. India and the Global South may take the lead in encouraging more of these exchanges, offering technical assistance and creating frameworks that enable other countries to modify DPI to fit their particular needs.

By advancing DPI through planned and policy-led initiatives, India can firmly establish itself as a global leader in digital public infrastructure. DPI will continue to strengthen communities, boost economies, and promote resilience across regions, provided a targeted strategy is implemented based on policy mandates, social impact amplification, disaster preparedness, and international collaboration.

07 Recommendation: Enhancing Data Accessibility for Successful Digital Public Infrastructure Implementation

It is imperative for stakeholders, especially governments, to give top priority to accessible, well-governed data systems to fully utilise DPI's potential. Access to data strengthens communities, promotes effective public services, and builds resilience in sectors like climate adaptation and health. The following recommendations highlight crucial steps toward achieving strong data accessibility within DPI frameworks.

Prioritise Accessible Climate Data for Resilience and Preparedness: Data accessibility in climate resilience must be crucial to DPI as climate risks rise worldwide. Proactive adaptation and willingness can be strengthened by developing resources that give communities access to information about climate risk. Communities can lessen the effects of potential disasters by using easily accessible flood risk data, such as that provided by the Federal Flood Standard Support Tool of the U.S. Department of Housing and Urban Development (HUD). A comparable model could be created within DPI to give communities access to real-time local climate data, boosting their ability to withstand natural disasters and make well-informed decisions.

Implement Integrated and Automated Data Collection for Service Efficiency: Automated and integrated data systems are necessary for DPI to provide accurate and effective public services at scale. DPI can improve service accuracy and decrease manual workloads by implementing IoT devices for health monitoring.

For example, ASHA (Accredited Social Health Activist) staff can track community health metrics with the help of IoT tools, which lowers administrative costs and enhances service quality. The efficacy of DPI can be increased by extending automated data collection to other public services, like social welfare and education, allowing on-the-ground staff to concentrate on community support and engagement.

Ensure Scalability and Address Ground-Level Needs through Technology: DPI's efficacy and scalability depend on incorporating technology that caters to local needs. Automated systems can help expand service reach and decrease administrative labour. Governments can guarantee data-driven service delivery that directly addresses issues at the community level by integrating these systems into DPI. Services are guaranteed to be scalable and effective when technology is used to deliver simplified, easily accessible data across DPI initiatives.

Data accessibility needs to be a top priority for DPI to be a catalyst for progress and resilience. Governments and stakeholders should support tools and policies that provide communities access to vital data for healthcare, climate resilience, or other purposes. By improving data accessibility within DPI frameworks, India can become a global leader in digital innovation and build a future where data-driven solutions empower people and strengthen public infrastructure.

08 Recommendation: Capacity Building, Skill Development, and Digital Literacy for Successful Digital Public Infrastructure Implementation

Investing in the capacity building of stakeholders, policymakers, and the general workforce is crucial to ensuring the successful implementation of DPI. DPI's function can produce revolutionary results in various industries by providing individuals at all levels with relevant skills, digital literacy, and knowledge. The following recommendations focus on developing the skills and expertise required to maintain DPI adoption and growth.

Build a Skilled Workforce for DPI Management and Innovation: A workforce with digital transformation skills must be established for DPIs to succeed. The demand for DPI-skilled professionals in Africa emphasises the value of regional capacity building and educational partnerships. For instance, the Indian Institute of Technology (IIT) in Zanzibar was established by India to create local pools of professionals who are ready for DPI. Tech leaders who can adapt DPI solutions to their communities' specific needs will be developed by expanding similar institutions and exchange programs in other areas.

Strengthen Digital Literacy and Engagement at All Levels: Effective adoption of DPI requires Digital literacy and active participation from citizens, community workers, and healthcare providers. For example, digital health-focused training programs can guarantee that workers and providers are comfortable using digital tools and can help citizens adopt them.

Programs for change management that build digital confidence and address common issues are also essential. These programs promote inclusivity and trust in digital services by enabling communities to use DPI effectively.

Leverage AI-Powered Skill Development for Economic Growth and Job Readiness: Platforms with AI capabilities can be beneficial in bridging the gap between industry demands and educational content, promoting skill development on a large scale. From Grade 9 onward, students can receive pro bono training in 15 essential competencies through the Wadhwani Foundation's employability platform based on generative artificial intelligence. More people should embrace similar AI-powered training initiatives that emphasise lifelong learning and are customised to DPI competencies. By improving workforce preparedness, this strategy promotes economic expansion and guarantees a steady flow of talent with DPI skills.

India can set the standard for establishing DPI as a pillar of socio-economic resilience and empowerment by investing in skill development, digital literacy, and capacity building. In addition to establishing a self-sustaining ecosystem for DPI, these initiatives will encourage other countries to adopt India's inclusive, cooperative digital infrastructure development model.

09 Recommendation: Ensuring Cost-Effectiveness in Digital Public Infrastructure Development

Cost-effectiveness should be a top priority for DPI to be widely available and effective. DPI can reach underprivileged communities and promote digital equity by concentrating on scalable, reasonably priced solutions and utilising India's effective strategies. The following suggestions provide strategic methods for implementing DPI at a reasonable cost.

Prioritise Infrastructure Investments for Rural and Underserved Areas: Digital infrastructure, especially in rural and remote areas, is essential to bridge digital divides and ensure equitable DPI access. Enhancing internet and mobile connectivity in these areas should be the top priority for investments. India's experience in increasing connectivity to rural populations provides insightful information, and other Global South nations can adopt its model. By promoting South-South collaboration and knowledge exchange, Latin American and African countries can further embrace affordable connectivity options, reducing digital divides between urban and rural areas and laying a solid basis for DPI.

Use a DPI Readiness Framework to Tailor Cost-Effective Solutions: By using a DPI readiness framework like the one developed by TCS, nations can assess their policy environments, connectivity, and digital infrastructure. Countries with high levels of digital access can swiftly adopt cutting-edge solutions like real-time payment platforms and digital ID systems. On the other hand, areas with inadequate infrastructure need to focus on essential, affordable solutions that can yield results right away, like low-bandwidth systems and offline-accessible services. Adapting DPI investments to the readiness level of each nation guarantees cost-effectiveness and maximises impact.

Enable Affordable, Offline-Ready Digital Health Solutions: Reaching people in places with fluctuating connectivity requires digital health services that can function offline or with low bandwidth. The Global South can learn from India's experience developing offline-capable digital health solutions for rural areas, guaranteeing that everyone can access basic services like healthcare. DPI is a valuable tool in underserved areas because its affordable designs don't require constant connectivity, promoting inclusivity without incurring high expenses.

Leverage India's Scalable, Low-Cost Digital Solutions for Global Adoption: Scalable solutions from India, like the Unified Payments Interface (UPI), show that the nation can create affordable, high-impact digital infrastructure. Promoting UPI as a scalable payment option for nations with low and moderate incomes can provide reasonably priced means of creating effective, safe digital payment systems. Additionally, nations can choose cost-effective strategies by learning from India's experience resolving the "build vs. buy" challenge in DPI development. By providing pre-built, reasonably priced DPI solutions, India can assist countries in accelerating their digital transformation initiatives while lowering development costs.

DPI development is crucial for digital infrastructure to be accessible, inclusive, and sustainable across various locations. By concentrating on targeted infrastructure investments, scalable and affordable solutions, and the international sharing of India's DPI models, India can set an example for delivering DPI that benefits the public while lowering financial barriers. This strategy guarantees that everyone can benefit from DPI's transformative impact while improving India's digital innovation leadership.

10 Recommendation: Strengthening R&D, Data Exchange, and Educational Initiatives to Drive Digital Public Infrastructure (DPI) Success

There is a need to create institutions dedicated to DPI education with an investment focus on R&D and establishing platforms for Data exchange. Such an approach will position India as a central hub for DPI innovation, knowledge-sharing and standard-setting, enabling scalable and inclusive DPI solutions worldwide. The following recommendations emphasise a structured approach to realising this vision.

Establish DPI-Centric Research and Development Alliances: Forming R&D partnerships, particularly with countries in the Global South, will allow India to share its expertise while fostering region-specific innovation. At international forums such as the India-Africa Summit, DPI should be highlighted as a critical area for collaboration. By emphasising information sharing, India can help other countries create DPI solutions specific to their problems. For instance, India's experience with climate resilience and affordable housing, like HUD's work in the U.S., can serve as a foundation for creating resilient, scalable digital solutions globally.

Promote Global Standards Development with a Focus on the Global South: India's technology hubs, such as Bangalore, offer a unique advantage in setting DPI standards and prioritising cost-effectiveness and accessibility for emerging markets. We need to develop inclusive, research-driven DPI standards that would enable countries in the Global South to adopt DPI solutions without relying on frameworks dominated by technologically rich nations. In addition to strengthening India's influence, establishing Indian-developed DPI standards guarantees that these standards accurately represent the needs and capacities of emerging economies.

Launch a Global Digital Academy for Knowledge Exchange and Training: Creating a Global Digital Academy would be pivotal for DPI education and capacity-building. This Academy can create a global network of specialists prepared to apply digital solutions in diverse contexts by providing technical training on DPI and its best practices. The Academy would also facilitate cross-sectoral knowledge exchange, ensuring that experts from academia, not-for-profits, businesses, and government sectors collaborate on emerging digital challenges and innovations.

R&D investments, data exchange frameworks, and the establishment of specialised DPI educational institutions will cement India's leadership in DPI. These efforts will facilitate global access to research-driven, affordable DPI solutions tailored for diverse regional contexts. By leading on these fronts, India can help shape a more inclusive digital future, ensuring DPI serves as a foundation for sustainable growth and resilience worldwide.

11 Recommendation: Leveraging Digital Public Infrastructure (DPI) to Accelerate Sustainable Development Goals (SDGs) Achievement by 2030

DPI offers a revolutionary solution to accelerate global progress towards the Sustainable Development Goals (SDGs), of which only 12% are currently on track. Digital frameworks akin to those of India can scale up health, education, and economic empowerment efforts while addressing social equality and sustainable growth challenges. By promoting DPI as a strategic tool for achieving SDGs, India can inspire other countries, especially in emerging economies, to adopt DPI to overcome long-standing barriers and fast-track development goals.

Position DPI as a Catalyst for Social Equity and Economic Empowerment: DPI has demonstrated a remarkable capacity to bridge socio-economic gaps by facilitating economic empowerment and enhancing access to essential services. India's DPI system, for instance, simplifies welfare distribution, making government service delivery more efficient, accessible and transparent, specifically for underserved communities. DPI effectively accelerates SDG targets like No Poverty (SDG 1) and Reduced Inequalities (SDG 10) by providing a scalable model for poverty reduction and social inclusion. Other countries can adapt India's DPI frameworks to build robust, inclusive systems that empower local communities.

Promote DPI's Role in Strengthening Health and Education Outcomes: To achieve Good Health and Well-Being (SDG 3) and Quality Education (SDG 4), DPI provides essential improvements in both health and education. For instance, digital health platforms in India help to reduce health disparities by enabling rapid healthcare interventions and remote monitoring in rural areas. In a similar vein, DPI-powered digital education tools improve learning quality and accessibility while promoting equal educational results. Countries worldwide can close significant gaps in SDG attainment by implementing these DPI-driven approaches to enhance health and education service delivery.

By removing impediments to social and economic advancement, DPI has shown the ability to dramatically speed up the fulfilment of the SDGs. India's DPI leadership can serve as a model for other countries looking to create inclusive, effective digital systems that thoroughly and extensively fulfil development goals. By 2030, India and its international partners may collaborate to build a more sustainable and equitable future by embracing DPI as a strategic asset for SDG attainment.

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PART 2:
APPROACHING DPI FROM AN INDUSTRY PERSPECTIVE

Digital Public Infrastructure (DPI): Leveraging India's experience to build a Global Digital Future

Major Ranjeet Goswami (Retd.)
Global Head of Corporate Affairs at
Tata Consultancy Services (TCS)

"I am pleased to present Tata Consultancy Services' (TCS) view on the potential of Digital Public Infrastructure (DPI) to achieve Sustainable Development Goals (SDGs) and serve as a model for other nations. TCS, having supported India's DPI journey, offers insights as both a practitioner and stakeholder in the global DPI landscape. The success of India's DPI, particularly in digital identity, payments, data exchange, direct benefit transfer (DBT), Financial inclusion, and Digital Health Mission, highlights the transformative power of digital ecosystems in improving service delivery, economic resilience, inclusive growth, and financial inclusion."

Understanding the Three Layers of DPI

DPI's success can be credited to its multi-layered Digital Public Goods (DPGs) architecture:

- **Foundational Layer:** This layer serves as the primary source of truth, maintained in accordance with national sovereignty requirements in a secure manner, while providing digital public goods services to citizens under privacy and consent regulations. Key stakeholders involved in this layer include governments, regulators, and government-regulated private organizations that provide vision, policy, and governance.
- **Distribution Layer:** This layer includes digital public goods that ensure safe, secure, and effective public services. Regulated public and private partners and technology service providers will implement solutions and manage distribution changes.
- **Consumption Layer:** This layer focuses on delivering last-mile services through fintechs, user agencies, and public-private partnerships, respecting data privacy and consent.

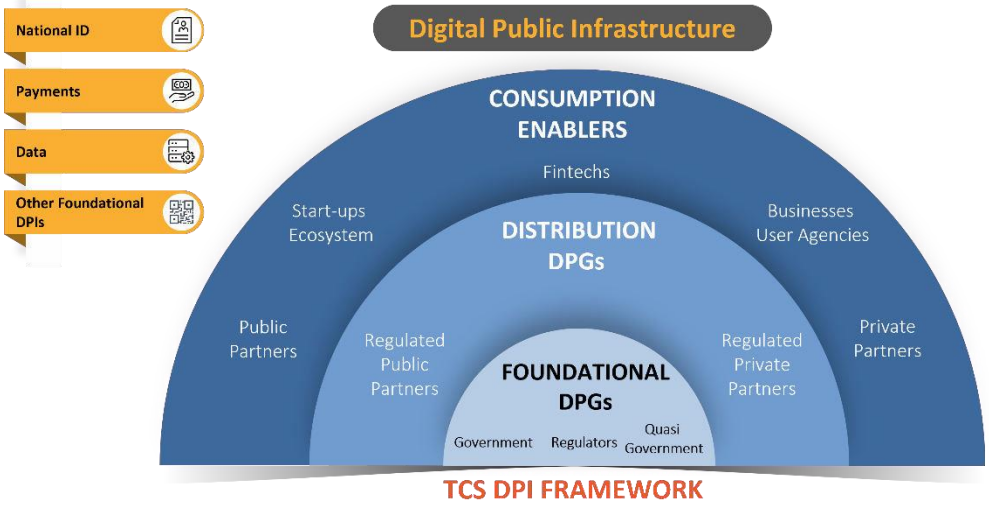


Figure 1: TCS DPI Framework

The interconnected DPGs form an integrated digital public infrastructure, allowing countries to adapt these layers locally as a citizen stack. This approach yields significant societal benefits through open, interoperable tech building blocks and transparent governance frameworks. The DPI ecosystem, supported by public, private, and civil society organizations, drives innovation and ensures accountability. Citizens own and control their data, which can only be shared with explicit consent for specified purposes, ensuring privacy and security.

TCS offers a framework for knowledge sharing and adopting DPI in new contexts. TCS, a leader in DPI in India and globally, plays a crucial role in developing these infrastructures. With G20 collaboration, other countries can adopt this model, enhancing inclusivity, data security, and delivering essential services to underserved areas.

Key Challenges and Lessons Learned

From TCS's experience working with diverse stakeholders, including government, regulators, government-regulated bodies, policymakers, financial institutions, Fintechs, and civil society groups, DPI implementation presents technical, cultural, and regulatory challenges that we have learned to navigate:

- **Connectivity and Digital Access:** Limited internet and smartphone penetration in underserved regions require innovative solutions to ensure inclusivity.
- **Improving Adoption and Usage:** This involves institutionalizing large program change management processes and practices and leveraging technology.
- **Data Privacy and Security:** Safeguarding citizen data and building public trust necessitate robust privacy frameworks and cybersecurity measures.
- **Driving Impact:** The focus is on benefiting a larger section of society and measuring benefits towards achieving sustainable development goals. This involves addressing the varied and unique needs and constraints of marginalized and vulnerable communities, effectively governed by enabling rules to promote development, inclusion, innovation, trust, competition, and respect for citizens' rights.

Despite these challenges, DPI has seen resounding success due to careful design and phased rollouts that account for the varied technological landscapes across India.

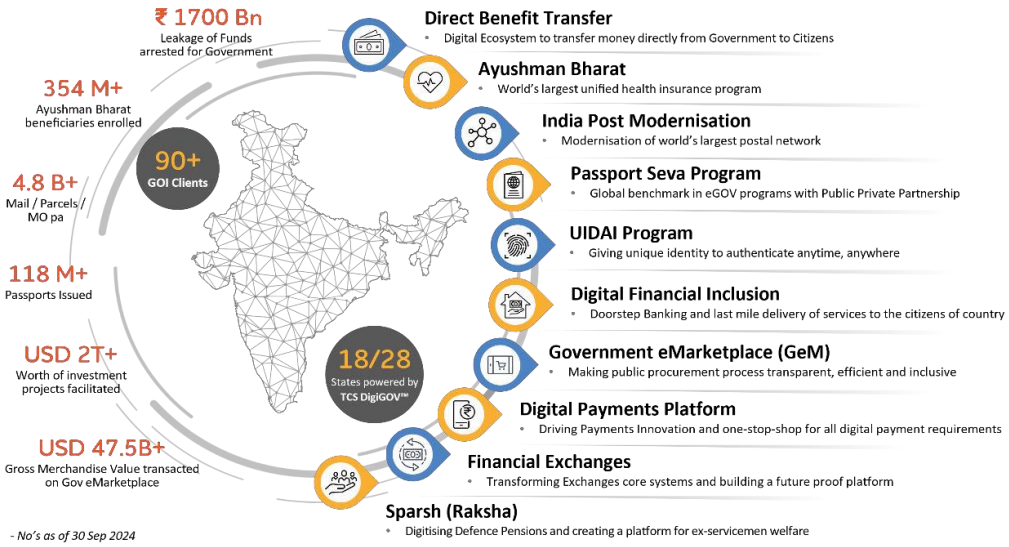


Figure 2: TCS Contribution in India's Digital Public Infrastructure Journey

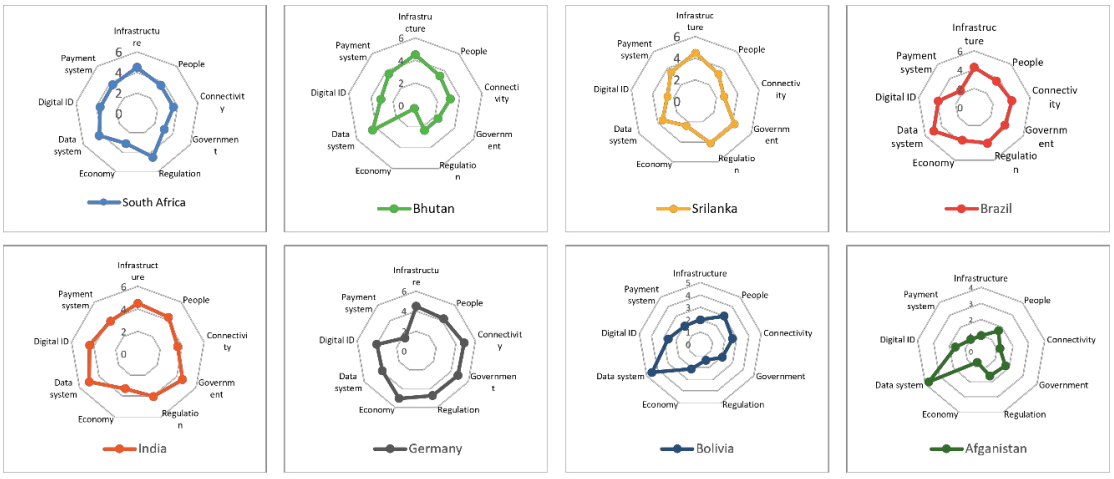
A Framework for DPI Maturity and Readiness

To help nations adopt DPI, TCS has created a readiness framework that evaluates nine core factors, such as digital ID, payment systems, infrastructure, connectivity, human capital, and policy environment. Applying this framework to various countries has provided valuable insights:

- **Countries with Advanced Connectivity:** These nations lead in digital transformation with strong infrastructure and are ready for digital adoption but may lack key components like digital ID or payments. They can quickly integrate high-impact DPI solutions like digital ID and real-time payments.

- **Countries with Limited Digital Penetration:** Regions with some DPI systems but needing better infrastructure and broader adoption, or those in the early stages with lower internet access or smartphone availability, should prioritize foundational DPI layers like ID and government services for immediate results.

We recommend evaluation of each participating country to assess its readiness and focus on solutions that can best deliver its priorities, considering the readiness and maturity of existing infrastructure.



** Note: All the parameters are represented on a scale of 0-5 for the respected country

Figure 3: Sample Comparison of selected countries on Multiple Parameters

Global Recommendations for DPI Adoption

TCS recognizes that there is no universal solution. The DPI requirements of a nation can vary and depend on the specific context. Each country's journey towards implementing DPI is unique. However, the experience gained from DPI frameworks deployed in India and other countries can be adapted to suit different national contexts and needs, considering technical, governance, and societal perspectives aimed at achieving SDGs.

- **Adopt a Phased, Layered Approach:** Implementing DPI in phases allows governments to scale as digital maturity grows. Countries can initially focus on establishing foundational elements such as digital IDs and payment systems to improve people's livelihoods.

- **Promote Strong Privacy and Security Frameworks:** DPI adoption should include robust data protection and cybersecurity protocols to ensure trust among citizens and secure interactions.

- **Foster Interoperability with Local Stakeholders:** Countries should design DPI systems with interoperability in mind, allowing banks, fintech companies, and government agencies to collaborate in delivering cohesive citizen services.

- **Develop a Policy-Driven Ecosystem:** Governments should use policy to drive DPI adoption. For example, India's Direct Benefit Transfer (DBT) initiative mandates direct digital payments to beneficiaries, ensuring efficient, transparent, and corruption-free service delivery. Policies that incentivize DPI use will enhance adoption and impact.

- **Localize Solutions for Digital Inclusion:** For countries in the Global South, digital inclusion is critical. Adopting DPI solutions that work offline or with basic mobile connectivity can help governments overcome connectivity barriers and provide essential services to rural and remote populations.

TCS is committed to working with governments, regulators, agencies, and organizations worldwide to implement Digital Public Infrastructure (DPI). Countries in the Global South can greatly benefit from DPI. TCS's experience in India and globally shows that transformative results are achievable despite initial limitations.

By focusing on inclusivity, fostering partnerships, and encouraging phased implementation, DPI can be crucial for socio-economic development and achieving SDGs. The future of DPI holds great promise. TCS aims to build secure, scalable, and inclusive digital ecosystems that empower citizens globally. We appreciate the chance to share our insights and look forward to further discussions on this important initiative.

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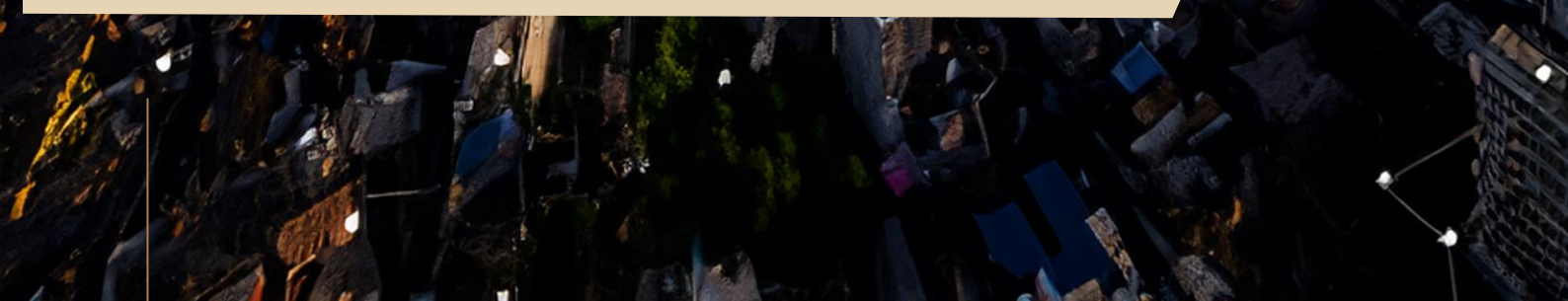
PART 2 B:
EXPERT PERSPECTIVES ON DIGITAL PUBLIC INFRASTRUCTURE



Leveraging DPI for inclusive in the Global South

H.E. Ambassador Prof. Anil Sooklal
High Commissioner of South Africa to India

DPI - a term gaining recognition thanks to India's recent G20 presidency - presents a vision for inclusive digital development. India has demonstrated, through its experience, the powerful role DPI can play in facilitating economic growth, fostering innovation, and uplifting underprivileged communities. This approach offers promising prospects for countries like South Africa and others across Africa.

While DPI as a concept is relatively new to the African ecosystem, including South Africa, we have observed its impact on digital identity, payment systems, and public service delivery in India. Indeed, DPI resonated profoundly in South Africa, sparking interest when our President H.E. Mr. Cyril Ramaphosa referenced it in his recent State of the Nation address, underscoring its potential to address some of our most pressing social challenges. Given the challenges we face, from widespread poverty to disparities in digital access, DPI offers a pathway to accelerate progress in the digital economy, even as we still grapple with foundational digital integration issues across the continent.

For context, Africa's internet penetration has risen significantly, from 19% in 2015 to 37% in 2023, yet vast disparities remain. Urban areas benefit disproportionately, while rural and underserved communities lag behind. Countries like Morocco, South Africa, and Nigeria have made notable strides, with internet penetration rates of 91%, 74%, and 72%, respectively, but other regions such as Central Africa face rates as low as 11%. The continent still has a high number of individuals lacking formal identification—470 million people, as of 2021. Integrating Africa's digital ecosystem will require addressing these digital divides in access, infrastructure, and resources.

Recommendations for Advancing DPI in Africa

1. **Strategic Partnerships for Technological Advancement**

   Africa's focus should be on building strategic alliances with countries that have made headway in DPI. India, as a democratic leader and a key partner, is positioned to share its technological know-how. A significant opportunity exists to strengthen collaboration, particularly as we look toward the upcoming India-Africa Summit, where DPI can be positioned as a central pillar of our partnership and be placed, as one of the items, on the agenda of the Summit. Rather than direct financial aid, Africa requires access to technologies, skill-building, and knowledge-sharing to enable our people to thrive in the digital age.

2. Supporting Skills and Capacity Building

Scaling DPI in Africa requires skilled professionals and a workforce well-versed in the application of social and economic aspects of technology.. We are encouraged by initiatives such as India's first overseas Indian Institute of Technology (IIT) in Zanzibar, and similar efforts could be instrumental in cultivating a skilled generation capable of managing and innovating within DPI frameworks. Through exchange programs, skill-development initiatives, and collaborations in education, Africa can enhance its technological capabilities.

3. Addressing Infrastructure and Accessibility Challenges

The disparity in digital access between urban and rural regions in Africa underscores the need for targeted infrastructure investments. South-South cooperation can play a pivotal role here, with countries like India offering models and support to help African nations achieve a more equitable digital landscape. Investing in mobile and broadband connectivity, especially in underserved regions, is essential to ensuring DPI reaches every corner of the continent.

4. Fostering Sustainable Digital Ecosystems through Localized Innovation

For DPI to be impactful, it must be adapted to local contexts. Africa's DPI strategy should promote solutions tailored to the continent's unique challenges, such as informal economies, high levels of unbanked populations, and rural demographics. India's success in digital payments, banking access, and rural service transformation offers a model, but it will be crucial for Africa to implement DPI in ways that resonate with local communities and address specific needs.

5. Ensuring Equitable Access and Inclusivity

DPI offers an opportunity to bridge inequalities, provided we uphold principles of equitable access and inclusivity. India's Data Empowerment and Protection Architecture (DEPA), which centers data ownership with citizens, offers an insightful framework for safeguarding privacy and promoting trust. Such principles will be fundamental for African countries to adopt as they expand digital identities, payment systems, and other DPI components.

Conclusion: DPI as a Catalyst for Africa's Development

The potential for DPI in Africa extends beyond digital transformation—it represents a chance to overcome decades-old barriers to economic and social development. India's experience underscores the role DPI can play in reducing poverty, improving public service delivery, and empowering citizens. With the collective will of our governments and strategic support from partners like India, Africa can move from being a passive consumer of technology to an active participant in shaping a global digital landscape.

The upcoming India-Africa Summit is a timely opportunity to formalise a shared vision for DPI that addresses Africa's needs and aligns with the United Nations Sustainable Development Goals. By prioritising DPI, we can help to position Africa as a dynamic frontier for development and innovation, ensuring that the Global South advances hand-in-hand in an increasingly digital world. India's continued support and moral commitment to uplifting the Global South are crucial as we strive for a more inclusive and equitable digital future.

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Towards an Inclusive Policy Framework for DPI

Mr Amit Agrawal (IAS)

CEO, UIDAI, Government of India

Mr Amit Agrawal highlighted the unique advantages and challenges of implementing Digital Public Infrastructure (DPI) in the Global South. He emphasised that while the Global South holds significant growth potential, as highlighted by Mr Kant, it also faces significant challenges in establishing efficient, inclusive and secure digital ecosystems to realise this potential. Drawing on India's experience, he outlined key design principles and policy approaches that could guide the development of DPI in the Global South.

Key consideration for DPI in the Global South

1. Policy-driven innovation and open frameworks:

The Indian DPI experience has been policy-driven and designed to foster innovation while balancing public interest with potential avenues for collaboration with the private sector to foster innovation and growth. This has created a dynamic system that empowers the government to lead policy development and support while private entities effectively manage implementation. For the Global South, there is the need to adopt policy frameworks that are open, allowing for designs that can adapt to the evolving needs of citizens, businesses and communities.

2. Opportunities for Aggregation and Inclusivity

a. **Aggregation for scale:** While enabling comprehensive market-based solutions, a common DPI layer allows governments and private sector players to innovate and provide scalable digital delivery systems.

b. **Inclusivity as the cornerstone:** Inclusivity should function as a fundamental need underpinning the creation of digital solutions rather than being a desirable objective. The Indian UPI story is the perfect model to demonstrate this. Had the solution lacked inclusivity, the result would have been a fragmented, piecemeal approach with severe implications on its scalability. However, its success underscores access and scale while homogeneously integrating diverse solutions for varied use cases.

c. **Security and responsiveness in policy design:** To build sustainable DPI, the Global South needs to ensure that systems are not only secure and provide digital protection but also serve societal needs responsibly. Choices made in this area are foundational and require attention to long-term impacts, especially given the varied regulatory environments across the Global South.

Recommendations for the Global South

Do's

- **Adopt an inclusive and aggregative policy framework:** Policymakers should prioritise inclusivity and scalability, adopting a whole-of-government and whole-of-society approach that minimises excessive regulation and allows customised innovations and solutions to emerge for addressing specific sectoral and use case needs.

- **Encourage open standards and community driven solutions:** By building on open, community-led standards, the Global South can foster collaborative growth and avoid regulation that may favour select interests. This promotes competition and innovation across diverse industry verticals, offers innovation access to global opportunities and thereby encourage it, and enables proven innovation that has successfully been tried out elsewhere to be adapted and adopted in other geographics.

- **Use India as a global experiential lab:** India's success in building scalable, inclusive solutions provides a model for other nations. Viewing India as a global experiential lab enables countries in the Global South to lean from India's experience, especially with respect to scalability and population-scale solutions that address various needs.

Don'ts:

- **Avoid conflicting interest in policy choices**: Policies should seek to simultaneously address diverse goals, without sacrificing or limiting inclusivity or efficiency. The focus should be on creating foundational standards that facilitate equitable growth, and on avoiding a biased or restrictive policy and regulatory framework that may stifle innovation.

- **Limit together regulatory approaches to specific use cases:** Rather than impose broad, highly prescriptive regulatory approaches that may increase costs and reduce flexibility, a minimalistic approach should be the default. Specific use cases or sector may complement this by employing regulation tailored to address unique requirements, keeping the foundational layer accessible and efficient.

India's Digital Health Infrastructure: Building a Blueprint for Global South

Mr Lav Agarwal (IAS)

Resident Commissioner, Government of Andhra Pradesh
(Former Additional Secretary, MoHFW)

With a commitment to digital heath transformation, I am pleased to share insights into India's remarkable journey in building robust Digital Public Infrastructure (DPI) for healthcare, a journey marked by immense scale, technical innovation, and dedication to equity. The evolution of India's digital health solutions reflects not only a deep commitment to serving our people but also the potential of digital infrastructure to impact the Global South, offering scalable, adaptable models for other countries.

India's Ministry of Health embarked on a path toward digital health transformation over 15 years ago. Today, this groundwork allows us to envision DPI not only as an instrument for efficiency and inclusivity within India but also as a tool to be shared across the Global South as a digital public good.

From Programmatic Success to Unified Digital Health Platforms

India's early digital health initiatives addressed various pressing health needs across maternal and child health, non-communicable diseases, and infectious diseases like tuberculosis. For example:

- Our Maternal Child Health application has enabled the monitoring of prenatal and postnatal care, delivery planning, and immunization for over 220 million women and children nationwide.
- The National Non-Communicable Disease (NCD) monitoring program tracks over 20 million individuals with high-risk conditions like cancer, hypertension, and diabetes.
- Our TB compliance application tracks 2.2 million cases, ensuring effective disease management and medication adherence.

While these programs achieved significant health outcomes, they also revealed critical barriers. Chief among them was the lack of interoperability—our various software solutions could not easily communicate, mirroring the siloed approach of physical health systems. This fragmentation limited our ability to harness the full potential of these digital tools.

COVID-19: A Turning Point for Digital Health Infrastructure

The COVID-19 pandemic accelerated our efforts to bridge these digital divides, pushing us to adopt integrated systems that support real-time response, adaptability, and scale. The CoWIN platform, for example, enabled equitable vaccine distribution, allowing India to administer over 2.2 billion doses while tracking supply, distribution, and prioritization across urban and rural populations alike.

Additionally, the eSanjeevani telemedicine platform addressed restricted access to medical services during lockdowns, delivering over 290 million consultations at no cost to citizens—a milestone in telemedicine that now serves as the largest public health telemedicine platform globally.

CoWIN's success showed that we could manage critical resources on a massive scale with digital tools, while also ensuring transparency, equity, and accessibility. These initiatives demonstrated that well-architected digital solutions could be deployed and scaled even in low-connectivity environments, underscoring the potential of DPI in achieving universal health coverage.

Toward an Interoperable and Inclusive Health Ecosystem

India has taken a monumental step in unifying its digital health landscape through the National Digital Health Blueprint (NDHB). This blueprint provides a coherent architecture that promotes interoperability, security, and inclusivity across the country's health system. Central to this framework are three registries:

- Patient Registry: Unique identifiers for individuals to track health services over time.
- Facility Registry: Details on locations where healthcare services are provided.
- Provider Registry: Information on healthcare professionals, from physicians to pharmacists, enabling better coordination across services.

By standardising data entry, these registries enable integration across various health platforms, paving the way for a national Electronic Health Record (EHR) system. This is a revolutionary step toward universal, lifetime health records for India's 1.4 billion people, enabling cradle-to-grave healthcare monitoring.

The DPI Vision for the Global South

India's DPI for healthcare is designed not only to serve our citizens but also to be a model for the Global South. As Prime Minister Modi highlighted during India's G20 presidency, our digital health solutions are freely available to any country in need. Our DPI initiatives aim to support other nations in creating accessible, affordable, and adaptable health infrastructure.

With the recent launch of the Global Initiative on Digital Health by the World Health Organization, India is positioned to share its DPI blueprints with other countries, enhancing global health equity and resilience.

Key Recommendations for Global DPI Implementation

User-Centric, Scalable Solutions: To succeed, DPI must be user-friendly, addressing real community health needs without introducing complexity. Solutions should be designed with scale in mind, ensuring they are effective across diverse geographies and population densities.

Interoperability and Standards: A robust DPI ecosystem requires interoperable systems supported by standardized data protocols. This allows data to flow seamlessly between platforms, facilitating comprehensive and coordinated care. Countries must adopt international standards or adapt India's registry models for universal data compatibility.

Focus on Privacy and Security: Privacy and security must be central to any DPI framework. In India, our DPI systems adhere to strict data privacy and security standards, fostering trust and ensuring that citizens remain the custodians of their personal health information.

Digital Literacy and Change Management: Stakeholder engagement is crucial for DPI adoption. We must work closely with healthcare providers, community health workers, and citizens to ensure digital literacy, address any concerns, and promote widespread adoption.

Adaptation to Connectivity Realities: In the Global South, digital health solutions must accommodate various connectivity constraints. Leveraging offline capabilities and designing applications that function on low-bandwidth networks will ensure DPI reaches rural and remote populations effectively.

A Vision for Universal Health Access

India's journey has proven that large-scale, equitable digital health solutions are achievable even within resource-constrained settings. By sharing our DPI models and frameworks, we aim to empower countries to build health systems that meet the unique needs of their populations. With determination and a unified approach, the Global South can leverage DPI to close health disparities, expand access, and create resilient, inclusive healthcare systems for all. India will remain committed to advancing this important dialogue and working with the global community to make universal health coverage a reality.

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Strengthening Global South Partnerships through India's DPI Vision

Mr Rohit Rathish (IFS)

Joint Secretary, Ministry of External Affairs, Government of India

India's Digital Public Infrastructure (DPI) journey has positioned us as a global leader in creating equitable, citizen-centric technology, with a focus on serving the unique needs of countries in the Global South. As highlighted during the G20 Summit, DPI has become central to India's development partnership agenda, extending beyond G20 countries to foster consensus on DPI principles and empower other regions. In the same lieu, India remains committed to extending the benefits of our DPI model to our neighbours and beyond, ensuring it is adaptable, practical, and responsive to specific local needs.

Our Ministry of External Affairs (MEA) has activated this agenda by engaging missions in over 140 countries to facilitate discussions on key DPI components—national identity systems, secure payments, data exchange, and digital public goods (DPGs). This collaborative, listening-first approach aims to provide DPI solutions that align with each partner country's distinct development goals rather than imposing a one-size-fits-all model.

By partnering with organizations like IIIT Bangalore, the Gates Foundation, and various development banks, we've developed needs assessments for 30 Global South countries, grounding our DPI approach in evidence-based practices. Within India, we've nurturedgoals and that our solutions are technically sound, resource-efficient, and respectful of each country's context.

In our commitment to DPI adoption, we emphaise capacity-building and resource mobilization, including budgetary allocations for pilot projects, training programs, and support for national rollouts in regions like Asia, Oceania, and Latin America. We recommend a partnership model where DPI solutions not only foster digital transformation but build the foundation for long-term, country-led digital independence.

India's DPI is guided by key principles—citizen ownership, transparency, inclusivity, and accountability. These principles shape protocols and standards that empower citizens and distinguish DPI as an equitable alternative to profit-driven models. As we move forward, India emphasizes continuous dialogue to customize DPI solutions effectively and strengthen trust.

Recommendations for Strengthening DPI Partnerships in the Global South:

- Engage in Customized Needs Assessments: Conduct targeted needs assessments in each country to understand unique digital requirements, challenges, and resource needs, in partnership with academic and philanthropic organizations.

Recommendations for Strengthening DPI Partnerships in the Global South:

- Engage in Customized Needs Assessments: Conduct targeted needs assessments in each country to understand unique digital requirements, challenges, and resource needs, in partnership with academic and philanthropic organizations.
- Promote Capacity Building through Dedicated Programs: Establish budget lines specifically for capacity-building initiatives, such as training programs, pilot projects, and funding for national rollouts.
- Maintain Inter-Ministerial and Cross-Sector Partnerships: Coordinate with internal ministries (e.g., health, finance, digital transformation) and external organisations (e.g., academia, development banks) to harmonise DPI strategies with broader development goals and support efficient resource allocation.
- Ensure Adaptability and Avoid One-Size-Fits-All Solutions: Recognize the distinct needs of each partner country by developing flexible, adaptable DPI models which avoid rigid, profit-driven frameworks, creating DPI models which serves as an empowering infrastructure for all citizens.
- Anchor DPI in Core Principles: By laying a strong emphasis within our core principles of inclusivity, citizen ownership, transparency, and accountability, designed DPI protocols and standards will reflect India's commitment to public welfare rather than vested commercial interests.
- Foster Continuous Dialogue for Tailored Solutions: Encourage ongoing discussions with Global South partners to refine DPI solutions, incorporating real-time feedback to enhance customization, efficacy, and local ownership.
- Cultivate a Collaborative Knowledge Culture: Organize regular exchanges, events, and forums to engage various stakeholders—academia, not-for-profits, businesses, and government—ensuring DPI remains aligned with evolving needs and advancing digital leadership across the Global South.
- By fostering these principles and partnerships, India stands ready to support the Global South in building inclusive, sustainable digital infrastructure that respects local challenges while catalyzing growth and empowerment for all citizens.

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Scaling Global Access: India's Vision for DPI

Mr Rai Mahimapat Ray (IAS)

Senior Digital Development Specialist, World Bank

1. **Global Challenges and the Role of DPI:**

   The foremost global challenge in digital public infrastructure is that over 3.3 billion people worldwide lack access to government-issued IDs, limiting their participation in digital economies and social systems. India's work on DPI should be posed as a replicable model for regions like Africa, Asia-Pacific and Latin America to assess how these digital identification and transaction systems could be scaled up. This is something that the World Bank has supported for DPI Knowledge Exchange for promoting India's DPI adoption, the World Bank is actively facilitating knowledge-sharing initiatives, with delegations from 33 countries having visited India to study the DPI framework. Notably, the international relevance has highlighted India's model at forums across the globe.

2. **Proposal for a Global Digital Academy:**

   A critical next step for scaling India's DPI globally is the creation of a Global Digital Academy, a concept proposed by India's Ministry of Electronics and Information Technology (MeitY) during the G20 discussions. This academy could serve as a means of sharing knowledge with governments and practitioners around the world, giving them best practices and frameworks for implementing DPI.

3. **UPI as a Cost-Effective Model:**

   A major strength of India's DPI stack is its cost efficiency, especially evident in the Unified Payments Interface (UPI). Implementing UPI is significantly more affordable compared to other international models. This makes the DPI framework of India very adaptable to other countries, especially tho se that have very limited financial means.

4. **Importance of Continuous DPI Evolution:**

   India's DPI model must continue evolving to maintain its vitality and cannot afford to rest on past laurels alone. Taking the example of DigiLocker
   against Nepal's app called Nagrik. The citizen-centric features of the latter are far more than DigiLocker. The need for updating digital infrastructure to meet changing needs of citizens cannot be emphasised enough. By learning from other countries' innovations, India can ensure that its DPI offerings remain effective, enterprising, aspirational, relevant and citizen-centric.

Key Recommendations

- **Establish the Global Digital Academy:**

  To support DPI implementation globally, India should prioritize the establishment of the Global Digital Academy. This institution would facilitate ongoing knowledge exchange and provide training on best practices, helping countries scale DPI sustainably.

- **Emphasize Cost-Effective Solutions:**

  Promote UPI as a cost-effective, replicable model for other countries, particularly in low- and middle-income regions, to build affordable, scalable digital infrastructure.

- **Commit to regular updates and innovation:**

  To maintain functionality and relevance at the citizen level, it will be necessary to absorb features and insights from other digital ecosystems coming up globally and, consequently, to update India's DPI stack regularly.

Harnessing DPI to drive social and economic transformation

Mr Sudhir Aggarwal

Director and Faculty – Digital Transformation,
Wadhwani Foundation

Based on Wadhwani Foundation's experiences, I offer the following recommendations for scaling and deepening the impact of DPI across India and globally, particularly by harnessing emerging technologies like artificial intelligence and IoT.

1. **Prioritize Workforce Development through Targeted Skill-Building Initiatives**

   Building a skilled workforce is essential for sustaining economic growth and employment. Wadhwani Foundation's Generative AI-based employability platform demonstrates how we can bridge the gap between education and industry requirements through customized learning.

   This platform, which provides pro bono training across 15 competencies and is accessible to students from Grade 9 onward, has shown that targeted, sector-specific learning significantly increases job readiness and placement rates. To replicate this success, we recommend that similar AI-powered skill-building programs be adopted across education levels, with a focus on providing continuous feedback and learning opportunities, thereby fostering a culture of lifelong employability.

2. **Use DPI to Strengthen Government Partnerships and Improve Accessibility in Healthcare**

   Public-private partnerships are key to implementing scalable DPI solutions. Our work with state and central governments illustrates how small but focused technological interventions can address healthcare access challenges. For example, IoT-based health monitoring for pregnant women in remote areas enables real-time data collection, simplifying processes for ASHA workers and improving patient outcomes. Scaling up such programs nationally and ensuring their adaptability in underserved communities can directly improve healthcare accessibility and data accuracy, ultimately bolstering public health infrastructure.

3. **Focus on Data-Driven Solutions to Address Core Social Needs**

   An integrated approach to data collection and application is crucial for effective DPI deployment. India's DPI journey highlights the importance of data-driven interventions, such as health tracking for pregnant women and

newborns, where IoT devices collect essential health metrics. This not only enhances service delivery but also reduces manual data-entry errors, relieving ASHA workers of administrative burdens. We recommend that governments and NGOs continue to prioritize automated data collection technologies and design DPI tools that address on-the-ground needs, ensuring scalability and efficacy for the communities served.

4. **Invest in Education and Healthcare to Build a Sustainable, Self-Sufficient Society**

   Strengthening education and healthcare systems through DPI will lead to substantial long-term benefits, reducing dependency on subsidies and creating a more resilient population. By focusing on DPI-driven improvements in these areas, we can empower future generations with the skills and resources needed to drive sustainable development.

We recommend that philanthropy, governments, and private-sector partners collaborate to create and scale digital solutions in education and healthcare that can yield high social returns over the next decade. In summary, the DPI approach in India serves as a model for digital transformation that bridges social gaps and enhances the quality of life for millions. By investing in scalable, targeted DPI solutions and fostering collaborative frameworks between the public and private sectors, we can significantly improve social services delivery and build the foundations for an empowered, sustainable society. We believe that these recommendations, if implemented, can play a pivotal role in advancing digital equity, both in India and globally. Thank you for allowing us to contribute to this important discussion.

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Unlocking Digital Potential through DPI Models

Mr Rajesh Ranjan

Head of Government Affairs and Public Policy,
Google India

I had the opportunity to share Google's perspective on DPI and its transformative impact on businesses across India. The panel was an excellent platform to discuss how DPI is shaping business ecosystems across large corporations to SMEs. DPI has enabled businesses across sectors to harness digital tools, creating a more level playing field. At Google, we take pride in collaborating with both central and state governments to drive this transformation, and we're committed to supporting India's DPI vision by fostering innovation and inclusivity, especially for startups and small businesses.

Content and Key Takeaways

1. **Impact of DPI on Businesses:**

   DPI's extensive reach has allowed big and small businesses equal access to critical digital resources that help in innovating and growing. As a responsible corporate player, Google believes in giving back, and we do this by developing tools and services tailored to the unique needs of Indian businesses. Through initiatives like the Bhashini platform and Digikavach on Google Pay, we strive to empower SMEs and startups by creating digital opportunities that promote growth and resilience.

2. **Collaborations Across Levels of Government:**

   Google's collaboration with both central and state governments is a key part of our strategy to ensure DPI benefits reach all levels of society. Working together, we develop solutions that address regional challenges and support local business ecosystems by promoting access to technology, last-mile connectivity, and digital inclusivity.

Notable examples

- **Bhashini Platform:** Language would be a vital tool for digital expansion, and through the Bhashini platform, we aim at last-mile connectivity through the provision of digital content in languages spoken by end-users. This initiative is vital to reaching users who may otherwise be excluded due to language barriers, and Google's technology is positioned to leverage this diversity for maximum impact.
- **Monitoring of weather and air quality:** Another example of DPI as an engine of international innovation could be the tool BreezoMeter, which was developed in India but is being exported globally. This success mirrors the broader DPI story and highlights how homegrown technology can drive global advancements.

- **Google Pay's Digikavach Campaign:** Observing the rise in fraud through digital mediums, we launched the Digikavach campaign through Google Pay. It has seen phenomenal success in building user trust and making the digital ecosystem safe, thus strengthening the security of DPI solutions.

Challenges in Scaling DPI and Solutions

- **Interoperability:** One of the crritical challenges while scaling up DPI is that our solutions need to be compatible with multiple frameworks. In our broader globalization program, we are actively addressing this through the development of flexible infrastructure that reflects both international and local requirements.
- **Data Privacy and Sovereignty:** Through DPI, data sharing becomes inherent which raises very pertinent questions of privacy and sovereignty. To address such concerns, we recently launched DPI in a Box, which is based on global experience and robust measures of privacy, interoperability, and data sovereignty
- **AI integration for scalling:** Generative AI will make the difference in scalability in DPI to overcome language and access barriers. With the integration of DPI across those language and accessibility barriers through AI-driven language tools, we can create more inclusive digital environments to allow the effective engagement of users across the country.

Key Recommendations

- **Strengthen Government-Industry Collaboration:** To truly realize the potential of DPI solutions, ongoing collaboration between the government and technology companies is essential. By working together, we can pool resources and expertise to ensure that digital innovations reach every corner of the business landscape.
- **Prioritize Interoperability and Privacy:** Our DPI in a Box solution is one way to address these priorities, and we're continuously working to refine it to meet the dynamic needs of stakeholders globally. I would recommend that this model of adaptability and user-centered design be considered across the DPI ecosystem.
- **Maximize AI's Potential for Accessibility:** Generative AI holds great promise for scaling DPI inclusively, particularly by overcoming language barriers and enhancing engagement. I encourage further exploration of AI applications to make DPI more effective and accessible for all.

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Towards a digital trust-based and inclusive future

Ms Shweta Khurana

Senior Director APJ - Government Partnerships & Initiatives, Global Government Affairs Group, Intel

The Indian DPI Model: A Blueprint for the Global South

Comparison with Global Models: Ms. Khurana analysed different international approaches to digital infrastructure. While the U.S. model is primarily enterprise-focused, the China model is characterised by stringent regulations, and the European model involves substantial regulatory oversight. In contrast, she asserted that the DPI framework of India is more balanced by injecting elements of access, interoperability, and innovation into such a framework.

India's DPI Model thrives on population at scale

- **Grassroots Innovation:** The Indian model also stands out in its strengths in developing grassroots innovation. For example, Bhashini showcases how digital technologies can further empower individuals as well as communities. Indeed, over a thousand AI models have been created to cater to varied needs. In that sense, grassroots innovation is, by far, the most significant innovation for enhancing digital inclusion and social empowerment.
- **Bridging Societal Gaps:** DPI has been instrumental in bridging societal divides. Promoting access to essential services like UPI played a crucial role in further enhancing the quality of life for marginalized communities. Shared infrastructure and open standards can become essential building blocks in making service delivery better and more equitable.
- **Public-Private Partnerships (PPP):** The role of PPPs in designing DPI was highlighted by Ms. Khurana. Involving both the government and the private sector helps to develop robust and scalable solutions for the diverse requirements of the Global South. It pools resources and expertise that leads to real innovation and better service delivery.

The Importance of Digital Trust.

As stressed in global discussions, even in G20, "digital trust" is much more than just cybersecurity and data protection. Rather, it is about assurance that technology serves the interest of all, as defined by the World Economic Forum. While trying to understand the Demand-Supply Dynamics, she pointed out that the concept of digital trust was a key plank of the DPI model. She presented an anecdote whereby some students were hesitant to use DigiYatra's service because they feared data usage. Thus, in each event, the need is for solutions that are user-friendly and trust-enhancing.

Three Pillars of Digital Trust: She classified her analysis into three simple pillars for the essentials of digital trust:

1. Risk: Recognizing the vulnerabilities in our digital footprints, particularly how they affect our social circles.
2. Resilience: Ensuring safe navigation of emerging technologies, such as AI, and advocating for secure pathways within the DPI and Digital Public Goods (DPG) frameworks
3. Responsibility: Acknowledging our roles as digital nagriks in enabling a trustworthy digital future, promoting safe and responsible usage of technology

In summary: Digital Trust is what the transition to an all-digital world will require, be it in healthcare, finance, or governance. The India model captures how large-scale inclusion can be sustainable and replicable by being an exemplary blueprint for the standards and protocols markets might look at when accelerating transformation through digital public infrastructure.

DPI as a catalyst to drive growth in SMEs and startups in India

Mr Sandeep Aggarwal
Founder & CEO, Droom

Returning to India from Silicon Valley over a decade ago, he recognized the challenges in the Indian e-commerce market—high payment failure rates, lack of delivery options, and no established infrastructure for fulfillment. Today, he acknowledges the remarkable progress India has made, now leading globally with a robust DPI framework that enables private businesses to thrive and innovate.

Key Contributions of DPI to Business Growth

1. **E-commerce Enablement and Financial Transactions:**

   Mr Aggarwal described e-commerce as a "family" where the platform is the king, payment is the queen, fulfilment is the prince, and language is the princess. As an entrepreneur, he built the platform, but DPI provided the essential payment infrastructure, transforming his vision into a successful enterprise. With DPI's payment backbone, businesses today can offer secure, efficient transactions that bolster customer trust and enhance business scalability. crucial role in further enhancing the quality of life for marginalized communities. Shared infrastructure and open standards can become essential building blocks in making service delivery better and more equitable.

2. **ONDC and the Promise of Fulfillment Solutions:**

   India's Open Network for Digital Commerce (ONDC) initiative has the potential to address last-mile delivery inefficiencies and streamline fulfilment processes. This development is crucial for businesses operating in a country with significant logistical challenges. ONDC could offer a scalable solution for millions of small and medium enterprises (SMEs) lacking the resources to manage fulfilment independently, thus levelling the playing field.

3. **Bhashini and Language Accessibility:**

   With India's massive internet user base—over 900 million users, of whom only about 200 million are proficient in English—Bhashini's language-agnostic capabilities are essential for democratizing internet access. DPI's language support opens avenues for reaching underserved audiences and fully realising the potential of digital commerce in a linguistically diverse market.

4. **Streamlined Compliance and Paperless Operations:**

   Reflecting on his experience at ShopClues, Mr Aggarwal noted the challenges of KYC (Know Your Customer) and other compliance requirements for onboarding half a million sellers. DPI now provides signatureless, paperless solutions, significantly reducing business costs and improving operational efficiency. This shift allows digital businesses to focus resources on growth and innovation rather than compliance overheads.

5. **Impact on the Startup Ecosystem:**

   India's DPI has facilitated the growth of its robust startup ecosystem, which now ranks third in the world with over 120 unicorns. Mr. Aggarwal credited the government's leadership in developing DPI as an instrumental factor in enabling entrepreneurial success across the country.

Recommendations

- **Expand ONDC to Reach Last-Mile Delivery for SMEs:** Prioritize ONDC expansion to support last-mile fulfilment, particularly for the 50 million SMEs in India. By lowering logistical barriers, ONDC can drive accessibility and growth for businesses that lack the resources for traditional fulfilment options.

- **Continue Development of Language-Agnostic Solutions:** Strengthen language-agnostic solutions like Bhashini to facilitate internet access for India's diverse population, ensuring that DPI truly democratizes digital opportunities across all linguistic backgrounds.

- **Foster Greater Paperless and Signatureless Adoption:** DPI's paperless infrastructure should be further optimized to benefit more businesses, especially those undergoing rapid digital transformation. This will streamline compliance and reduce operational costs, making digital transformation feasible for a wider range of companies.

A Global South Path for Inclusive Digital Transformation

Mr Arun Sharma

Senior Digital Development Specialist, World Bank

Mr Arun Sharma articulated the nuances of aligning DPI with global development goals, especially for the countries in the global south. As the DPI shifted its focus from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs), he emphasised the urgent need for efforts in such venues represented by DPIs.

DPI as a Pathway to Accelerate SDGs

1. **Digital Interventions in SDGs:**

   DPI intersects with 17 out of the 30 SDGs, underlining its potential in global development frameworks. He pointed out that although DPI can help achieve specific targets, a "one-size-fits-all" approach may not suit every country, especially smaller nations with populations under one million. Presently several countries, including the Global south lack necessary elements such as legal frameworks, data infrastructure, interoperability standards, amongst others which are intrinsic to DPI's development.

2. **Unique Challenges of Multilateral Solutions:**
   He acknowledged the challenge of creating multilateral solutions that suit the diverse capacities and requirements of countries globally. He noted that technologically advanced countries have built standards, particularly for identity systems, which often dominate, leading to high accreditation costs that can burden developing nations. He advocated for incorporating perspectives from the Global South into standard-setting processes, particularly by enabling cost-effective pathways that leverage local innovation.

India's Role in Developing and Evangelizing DPI Standards

1. **Build vs. Buy Model:**

   For many countries, including India, there is often a dilemma between building in-house DPI solutions or opting to buy pre-built systems. However, as smaller nations typically lack the resources to develop these systems independently, they often choose to buy, despite the high costs involved. He suggested that India's leadership in DPI could be instrumental in offering affordable, scalable solutions, allowing other countries to leapfrog in digital transformation.

1. **Setting Global Standards and Collaborative R&D:**

   Standards in telecom, privacy, and interoperability are foundational to DPI, but these are traditionally set by technologically rich countries. He advocated for more R&D and international collaboration to create truly global, inclusive standards. By working with institutions in Bangalore and other hubs, India is in a unique position to create and promote cost-effective standards that cater to the needs of the Global South.

Opportunities for Structured, Research-Driven DPI Solutions:

He emphasised that India has already made strides in developing DPI solutions, but he advocated for a more structured, research-based approach. By offering DPI as a holistic package—supported by Indian-developed standards and grounded in comprehensive research—India can play a pivotal role in shaping an inclusive digital ecosystem that bridges the North-South divide.

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Building Global Digital Capacity and Knowledge

Mr Moritz Carl Formageot

Associate Expert, Office of the UN Secretary- General's Envoy on Technology

Representing insights from the Office of the United Nations Secretary-General's Envoy on Technology, this perspective highlighted the significance of global digital cooperation to address the unique challenges of the digital age. The UN Tech Envoy's office underscored recent efforts in digital governance, specifically the Global Digital Cooperation framework, as a milestone towards structured international collaboration on Digital Public Infrastructure (DPI) and Digital Public Goods (DPG). Additionally, Mr. Formageot message emphasised the strategic value of DPI, drawing on India's model as a potential blueprint for global efforts.

Global Digital Cooperation Framework: Milestones and Ambitions

1. **Recent Achievements and International Endorsement:**

   During the recent UN General Assembly, significant steps were made towards a unified approach to digital governance with the adoption of the **Global Digital Cooperation framework**. This marks an ambitious agenda to harness digital technologies worldwide, recognising DPI and DPG as crucial tools for digital transformation. The framework calls for increasing partnerships and investments, particularly in **open-source models and solutions**, positioning DPI as a global priority. The UN aims to make this framework a collaborative hub, inviting stakeholders worldwide to endorse and align their initiatives with the framework's objectives.

2. **The Role of the Global Digital Compact (GDC):**

   As part of this effort, the **Global Digital Compact (GDC)** stands as a comprehensive and inclusive digital governance initiative. The Secretary-General has acknowledged the GDC's value in addressing risks associated with digital transformation, advocating for a framework that balances **safety, inclusivity, and accountability** in digital policy and infrastructure.

   India's DPI Model: A Case Study for Digital Transformation: Drawing on the success of India's DPI model, Mr Formageot noted two key factors critical to its effectiveness:

- **State Capacity:** India's DPI achievements are closely tied to the government's capacity to drive implementation across a diverse population. This capacity ensures that DPI initiatives are both scalable and sustainable, with strong public-sector involvement in digital transformation.

- **Accountability in Governance:** Accountability has been integral to India's DPI success, balancing accessibility with citizen rights and data protection. This element is crucial to creating a trust-driven digital environment where transparency fosters adoption and engagement.

The envoy highlighted that while DPI can be transformative in countries with both robust state capacity and high accountability, it can pose risks in environments where accountability is lacking. In such cases, citizen and human rights may be at greater risk, underscoring the need for governance structures that emphasise accountability.

Recommendations for Future International Cooperation

His message emphasised the importance of international cooperation that is aligned with strengthening both state capacity and accountability within DPI initiatives. This approach would ensure DPI's role as a public good that serves citizens equitably while fostering global trust in digital infrastructure.

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The Global Impact of India's DPI:
UNDP's Perspective on Scaling Success through Contextualized DPI Models

Ms Aafreen Siddiqui Sherwani
Regional Engagement Lead – Future of Governance, UNDP

In the last decade, India's achievements in Digital Public Infrastructure (DPI) have positioned it as a compelling case study in the global development sector. At the UNDP, we see India's DPI model frequently referenced across global discussions—not only as a successful technological framework but as a transformative narrative on scaling impact in diverse contexts. Policymakers from the Global South are particularly eager to learn how this "India model" of DPI can be adapted to address their unique developmental challenges.

However, the success of DPI is not simply in exporting technology. It is about understanding the specific pathways and stories that brought success to India's model and finding ways to share these effectively with countries beginning their own digital journeys. Context and customisation are key: the circumstances in Bhutan, Nepal, or Sri Lanka may differ considerably from India's starting point, but the adaptability of DPI is where its real promise lies

UNDP's Strategy for Scaling DPI: Building Capacity and Contextualized Narratives

As the development arm of the United Nations, our role at UNDP is to facilitate not only the transfer of technology but, crucially, the transfer of capacity-building frameworks and impactful narratives. DPI systems do not succeed by mere adoption; they succeed when local governments and stakeholders are equipped with the know-how to implement, adapt, and scale these systems in ways that meet their unique needs.

India's journey to establishing a resilient DPI involved building capacity across multiple sectors and regions. As such, our work at UNDP emphasises not just transferring the technologies but also fostering the capabilities that will sustain these technologies on the ground. For countries beginning their digital transformation journeys, we must tell the story behind India's DPI success: a story of gradual evolution, addressing local challenges, and fostering a robust governance framework for digital systems.

Recommendations for DPI Deployment in Emerging Contexts

1. **Promote Capacity-Building as a foundation for DPI Implementation:**

   Technology alone cannot drive development; it requires trained personnel, adaptive governance structures, and skilled local stakeholders. UNDP advocates a strong focus on capacity-building programs that empower local policymakers and technical teams to operate, customise, and evolve DPI systems. This capacity will be foundational for countries to design DPI strategies that are resilient and adaptive.

2. **Develop and share contextualised success stories:**

   For nations in the Global South, understanding the practical and social impact of DPI systems, beyond their technical specifications, is vital. UNDP has observed that policymakers resonate strongly with examples of how DPI can transform lives on the ground. By illustrating India's journey from policy development to public uptake and measurable impact, we can make DPI more accessible and inspiring for countries just beginning their journeys.

3. **Embrace a Context-specific and Human-centred Approach to Technology Transfer:**

   While India's DPI achievements are remarkable, a "one-size-fits-all" model cannot address the diverse needs and challenges of the Global South UNDP's approach to DPI emphasises local adaptation: from design and language to data infrastructure and security concerns. By enabling countries to customise DPI frameworks to their context, we can help them build systems that are relevant, resilient, and sustainable.

4. **Foster Partnerships for Technical and Financial Support:**

   Achieving robust DPI systems requires collaborative partnerships among governments, private-sector entities, and international organisations. Private sector involvement, for example, is essential to provide technological expertise, and multilateral partnerships can mobilise the financial resources needed for large-scale infrastructure investments. UNDP is committed to facilitating these partnerships, leveraging our network to connect countries with the technical and financial resources that support their DPI goals.

5. **Prioritize Policy Guidance and Governance Frameworks:**

   One of the most frequent requests from policymakers in the Global South is for guidance on translating DPI's potential into concrete, actionable policies. UNDP's role here is to support countries in developing governance frameworks that ensure data protection, privacy, and ethical use of digital tools. This helps countries not only to meet regulatory requirements but also to build trust and ensure inclusivity in digital initiatives.

DPI as a Driver for Equitable Global Development

DPI offers unparalleled potential for transforming public service delivery, empowering citizens, and building resilient societies. However, its successful deployment requires more than technology—it requires contextualisation, capacity-building, and strategic partnerships. As the UNDP, we are committed to supporting countries in the Global South by sharing India's DPI success story not as a rigid model to be replicated but as a flexible framework adaptable to each country's journey.

India's experience provides a powerful example of how DPI, when tailored to fit local conditions, can achieve lasting impact. By fostering knowledge exchange, capacity-building, and collaborative partnerships, we can unlock DPI's potential to drive sustainable development across the Global South, bringing us closer to achieving equitable global progress.

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The India Stack Revolution

Mr Sharad Sharma
Co-Founder, iSPIRT

1. **Whole of Nation Approach:** The DPI and India Stack Revolution involves a collaborative effort among the government, private sector, and civil society, serving as a model for other countries.

2. **Ongoing Revolution:** The transformation is still unfolding; significant progress has been made in the flow of people and money, but work on data flow—especially personal and training data—remains crucial. The pilot for the **Account Aggregator** model has shown potential, with over 100 million consents, paving the way for the **Digital Personal Data Protection (DPDP) Act.**

3. **Importance of Open Networks:** The **Open Networks Project** includes visible initiatives like the **Open Network for Digital Commerce (ONDC),** but the **Open Health Services Network** may have the most significant long-term implications for India's health system.

4. **Global Replicability:** India's approach can serve as a framework for other nations, emphasising the need for clear messaging about the **Citizen's Stack** concept, which can be adapted to different countries' needs.

5. **DPI Sutras:** The **DPI Sutras** are essential principles that guide the implementation of digital infrastructure, paralleling the practice of yoga by combining physical postures (DPI implementations) with underlying principles (DPI Sutras).

Key principles include **Citizen Centricity** and **Techno-Legal** frameworks that ensure the protection of personal data.

1. **Misunderstandings about Data Systems:** A significant misconception exists regarding the capabilities of India's digital systems, where many believe that government entities can easily access data. In reality, the design of systems like **Digi Yatra** protects user data by storing it locally on personal devices rather than in a central database.

2. **Legal Framework:** The legal structure surrounding data privacy in India, established by the Supreme Court's ruling, emphasises that data privacy is a fundamental right, and existing laws like the Aadhar Act restrict government access to personal information.

3. **Non-Weaponizing Technology:** Recent decisions, such as the **Linux Foundation's** removal of Russian contributors, highlight the need for developing technology platforms that are resistant to weaponization, reinforcing India's commitment to creating secure and inclusive digital environments.

4. **Future Opportunities:** The ongoing development of DPI in India presents numerous opportunities for global collaboration and learning, emphasizing the importance of understanding and communicating the foundational principles of these systems.

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PART 3: CONCLUSION

CONCLUSION

To New Beginnings

The recommendations and expert insights presented in this report are indeed sui generis—unparalleled in their scope and ambition—as they represent the first global effort to unite a diverse range of stakeholders in creatively leveraging Digital Public Infrastructure (DPI) to address pressing socio-economic challenges at a pivotal juncture in achieving the Sustainable Development Goals (SDGs).

Inspired by India's tireless commitment to advancing DPI through the India Stack initiative, this report reflects a collaborative, all-hands-on-deck approach to distil India's invaluable lessons into actionable recommendations. These can serve as blueprints for governments worldwide or as foundational inputs to international organisations deploying DPI to fulfil institutional mandates and address pressing socio-economic challenges.

Aligned with the Indian Prime Minister Shri Narendra Modi's vision that DPI should act as a bridge, not a barrier, we hope these recommendations will catalyse meaningful progress, enabling nations to harness DPI for transformative public service delivery and accelerate their journey toward achieving the SDGs by 2030.

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Roundtable Speakers

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KEYNOTE SPEAKER

AMITABH KANT
G20 Sherpa, Government of India

H.E. AMBASSADOR PROF. DR. ANIL SOOKLAL
High Commissioner of South Africa to India

AMIT AGRAWAL (IAS)
CEO, UIDAI, Government of India

LAV AGARWAL (IAS)
Resident Commissioner, Government of Andhra Pradesh (Former Addln. Secretary, MoHFW, Government of India)

ROHIT RATHISH (IFS)
Joint Secretary, (Development Partnership Administration-III), Ministry of External Affairs, Government of India

SHWETA KHURANA
Senior Director APJ - Government Partnerships & Initiatives, Global Government Affairs Group, Intel

SUDHIR AGGARWAL
Director and Faculty – Digital Transformation, Wadhwani Foundation

ARUN SHARMA
Senior Digital Development Specialist, The World Bank

RAI MAHIMAPAT RAY (IAS)
Senior Digital Development Specialist, The World Bank

RAJESH RANJAN
Head of Government Affairs and Public Policy, Google

MAJOR RANJEET GOSWAMI (RETD.)
Global Head of Corporate Affairs at Tata Consultancy Services (TCS)

ARNAV KAPUR
Deputy Director, Policy, Communication & Philanthropic Partnerships at Bill and Melinda Gates Foundation

VINAY VIJAY SINGH
CFO and Chief AI Officer, U.S. Department Of Housing and Urban Development

SANDEEP AGGARWAL
Founder & CEO, Droom

MORITZ CARL FROMAGEOT
Associate Expert, Office of the UN Secretary-General's Envoy on Technology

AAFREEN SIDDIQUI SHERWANI
Regional Engagement Lead - Future of Governance, UNDP

SHARAD SHARMA
Co-Founder, iSPIRT

DAVINDER SANDHU
Chairman & Co-Founder, Primus Partners

DEVROOP DHAR
Co-Founder & MD, Primus Partners

CHARU MALHOTRA
Co-Founder & MD, Primus Partners

ABOUT THE ORGANISERS

PRIMUS PARTNERS

Primus Partners is a leading management consulting firm focused on driving policy, strategy, and operational solutions across sectors. Their approach revolves around leveraging emerging technologies, fostering partnerships, and supporting governments and businesses in aligning with national development goals. Recently, Primus established a **Solutions Excellence Centre** in New Delhi to develop cutting-edge solutions utilizing **Digital Public Infrastructure (DPI),** aimed at improving governance and public service delivery. This initiative aligns with the Indian government's Digital India program and seeks to enable seamless citizen engagement while enhancing transparency and reducing administrative inefficiencies.

Primus has put emphasizes on creating platforms that support **citizen-led welfare delivery systems and local e-governance.** With a team of over 300 consultants, they aim to take their expertise beyond India, particularly to the **Global South,** offering DPI solutions to countries in **Africa and ASEAN**. Primus' mission is centered around fostering **sustainable growth**, enhancing public services, and digitizing operations at the grassroot level. This demonstrates the firm's deep commitment to **"Digital in DNA"** as part of India's broader **Digital Bharat** vision.

ABOUT THE ORGANISERS

iSPIRT

The Indian Software Product Industry Round Table (iSPIRT) is a non-profit think tank working at the forefront of India's digital transformation. iSPIRT's advocacy and policy initiatives have been instrumental in launching key DPI frameworks, including **India Stack**—the pioneering platform that powers innovations like **UPI (Unified Payments Interface)** and **DEPA (Data Empowerment and Protection Architecture).** Their efforts have driven **financial inclusion, e-governance, and privacy-focused data-sharing frameworks**, earning recognition on the global stage.

iSPIRT has also acted as a **knowledge partner** for various government-led initiatives - including collaborations under India's **G20 leadership -** to promote DPI as a model for sustainable development worldwide. Their work emphasizes interoperability, privacy, and fostering cross-border collaborations, demonstrating how **public digital goods can catalyse international cooperation.** iSPIRT's commitment to **open ecosystems and product-led growth** positions them as a key player in India's push towards becoming a leader for digital innovation.


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