

Reimagining Public Service Delivery

Accelerating the Global South's Digital
Moment

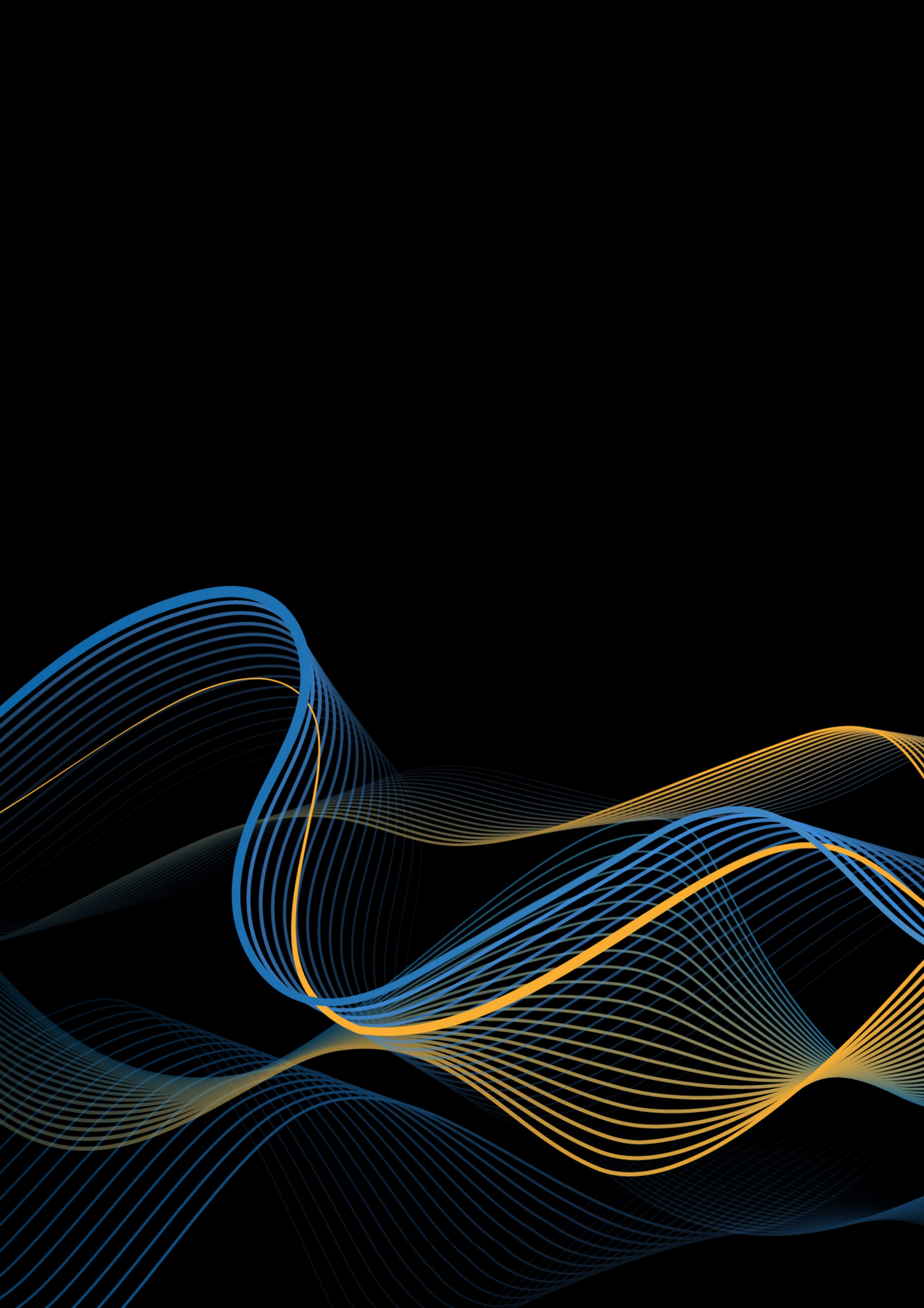
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About this Compendium Report

Reimagining Public Service Delivery examines how Digital Public Infrastructure can evolve from foundational digital rails into trusted, AI-enabled systems that improve public service delivery and support inclusive economic growth across the Global South. Bringing together perspectives from government, industry, academia and multilateral institutions, the compendium draws on India's experience while recognising that every country must develop a digital pathway suited to its shared priorities, institutions and development context.

August 2026

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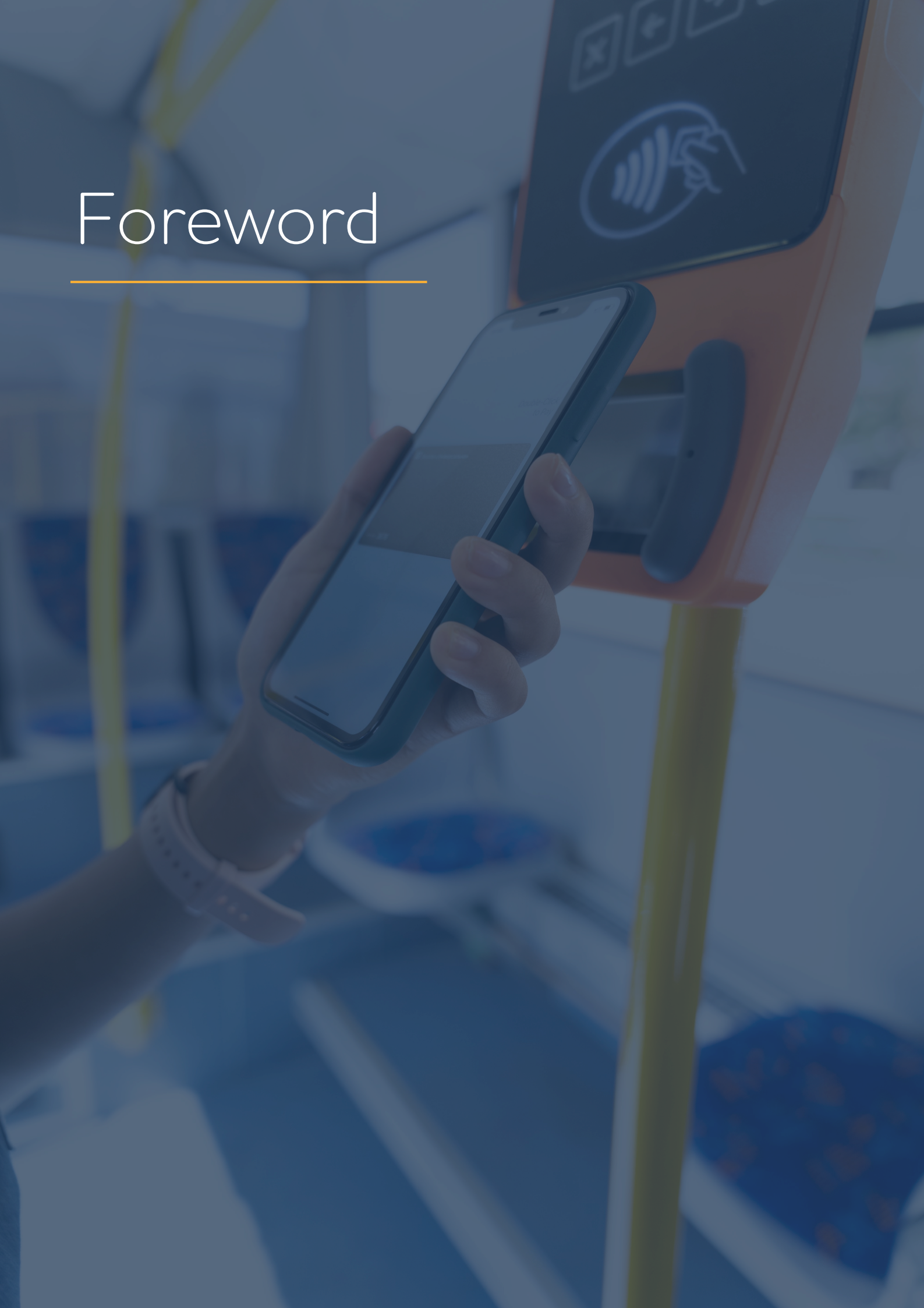
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Foreword





Jyotiraditya M. Scindia

Minister of Communications, and Development of
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Every era of human progress has been built on a foundation of infrastructure, the roads that connected markets, the wires that connected homes, the networks that connected countries. Today, a new foundation is emerging as the defining enabler of development: Digital Public Infrastructure (DPI).

Unlike traditional infrastructure, whose value is measured in kilometers laid or megawatts generated, the true worth of DPI lies in the opportunities it creates. It enables a farmer to access markets, an entrepreneur to build a business, a student to pursue learning without barriers, and a citizen to access public services with dignity, transparency, and trust. At its best, Digital Public Infrastructure is about expanding human potential.

For developing economies, this moment presents a rare opportunity. Many countries of the Global South are building digital ecosystems while simultaneously meeting the aspirations of young populations, expanding public services, and accelerating economic growth. This convergence allows countries to leapfrog traditional models of development and build systems that are inclusive by design, resilient by architecture, and responsive to local needs.

India's own digital journey stands as testimony to this transformative power. Under the visionary leadership

of Prime Minister Narendra Modi, India has built Digital Public Infrastructure for over 1.4 billion people remarkably low cost through an open, interoperable network anchored in Aadhaar, UPI, and DigiLocker that has become a catalyst for innovation, entrepreneurship, financial inclusion, and effective governance. Our experience has reinforced a simple but enduring lesson: technology delivers its greatest value when it empowers people, strengthens institutions, and enables markets to flourish.

As India assumes the BRICS Chairship in 2026 under the theme of Building for Resilience, Innovation, Cooperation and Sustainability, we do so guided by a humanity-first, people-centric approach and the conviction that the future of digital transformation must be built through collaboration, not convergence on a single model. Every country must chart its own digital pathway, reflecting its unique priorities, capacities, and aspirations. Yet our challenges are often shared, and so too can be our learning. It is through partnerships founded on mutual respect, knowledge exchange, and trust that the Global South can collectively shape a digital future that is open, secure, and inclusive.

It is in this context that this compendium assumes particular significance. Bringing together policymakers, industry leaders, technology innovators, and development practitioners, this publication moves the conversation beyond technology alone, exploring how Digital Public Infrastructure is reshaping economies, transforming governance, and creating new pathways for sustainable development. At its heart, it reflects a shared commitment to ensuring that digital transformation serves as a force for public good.

The task before us is to build digital systems that strengthen trust, preserve sovereignty, foster innovation, and reach every citizen. No single institution or country holds all the answers. They will emerge through dialogue, collaboration, and a collective willingness to learn from one another's experiences.

I hope this compendium contributes meaningfully to that endeavor as a platform for ideas, a source of practical insight, and an invitation to deepen cooperation across the Global South. As Governments, industry, academia, and multilateral institutions come together to shape the next generation of digital ecosystems, we have the opportunity to keep technology firmly anchored in the service of humanity.

The infrastructure that will define the twenty-first century will do more than connect us digitally; it will empower every individual to take part fully in the opportunities of a connected world. Together, let us build digital ecosystems that are trusted by design, inclusive in reach, and transformative in impact, ensuring that the benefits of the digital age are shared by all.



From Digital Foundations to Intelligent Nations





Girish Ramachandran

President – Growth Markets and Public Services
(India and RoW),
Tata Consultancy Services

The role of technology must be measured not by its sophistication, but by its contribution to society at large. Across the Global South, digital transformation is no longer just about improving government services. It is now central to how nations drive growth, widen inclusion, and build resilience. As governments across Asia, Africa, Latin America and the Middle East look to deliver services more effectively, expand financial and social inclusion, and create new opportunities for citizens and businesses, Digital Public Infrastructure (DPI) has emerged as a powerful catalyst to ensure equitable growth, wider access, and public empowerment.

The Evolution of Digital Rails—From Infrastructure to Daily Existence:

Every country's digital journey is different, but one thing remains increasingly clear: meaningful transformation starts with strong digital foundations. When governments invest in open, trusted and interoperable DPI, they create the foundation for better public services, greater innovation and wider economic participation.

India's digital journey demonstrates what can happen when foundational infrastructure is designed to work together. What began with a focus on financial inclusion has grown into a digital ecosystem that supports everyday life—from instant digital payments and healthcare to welfare delivery, commerce and access to financial services. More importantly, it has shown how public digital infrastructure can encourage innovation, allowing governments, businesses and start-ups to build solutions that can create value.

As more countries across the Global South accelerate their digital ambitions, the conversation is shifting from digitising individual services to building the foundational infrastructure that can support long-term growth. Trusted DPI provides that foundation by creating an environment where governments deliver at scale, enterprises innovate with confidence and citizens benefit from a more connected and inclusive economy.

DPI is not just a technology initiative; it is an investment in long-term national development. Yet infrastructure alone is not enough. As digital ecosystems mature, the next opportunity lies in making them more intelligent, adaptive and responsive to the needs of citizens.

When Digital Infrastructure meets Intelligence:

DPI has laid the foundation for inclusive digital economies; the next phase of this journey will be defined by how countries harness Artificial Intelligence (AI) to build on these very foundations.

Together, DPI and AI can help governments move beyond efficient service delivery to anticipating needs, improving outcomes and enabling more proactive governance.



Making government more accessible:

AI-powered voice and language capabilities can make digital public services easier to use, enabling citizens to interact with their governments in their preferred language and reducing barriers created by literacy or digital skills.



Unlocking broader financial participation:

When combined with trusted digital identity and payment infrastructure, AI can help extend formal financial services to underserved individuals and small businesses, creating new pathways to credit, entrepreneurship and economic participation.



Enabling smarter governance:

By drawing insights from trusted digital public infrastructure, AI can help governments anticipate needs, target welfare more effectively, strengthen healthcare delivery, optimise public spending and ensure support reaches the right people at the right time.

Trust, Security and Digital Sovereignty:

As DPI becomes more deeply embedded in the way nations deliver services and drive economic growth, trust will be its greatest currency. The success of these systems will depend not only on how widely they are adopted, but on how secure, transparent and resilient they remain. Security cannot be an afterthought; it must be built-by-design into the foundation of every digital system, protecting critical infrastructure and strengthening public confidence.

The choice made today around data and AI will shape the resilience and competitiveness of nations for decades to come. As countries across the Global South build their digital foundations, safeguarding data, ensuring transparency and developing AI that reflects local contexts and priorities will be critical. Digital sovereignty is about giving nations the confidence to innovate, the resilience to adapt, and the freedom to shape a digital future aligned with their own priorities.

The Road Ahead:

The opportunity before the Global South is unlike any it has seen before. As nations respond to challenges of climate, health and AI, technology will increasingly become a defining force in the way it is applied to solve real problems and create new opportunities for people.

DPI provides that foundation. When built on open standards, underpinned by trust and strengthened by responsible AI, it gives countries the confidence to innovate, grow and build resilient digital economies on their own terms. It is our hope that the ideas and experiences shared in this compendium will encourage greater collaboration, inspire new thinking and contribute to a future where technology remains firmly in the service of society.

The true measure of digital transformation will not be the technologies we deploy, but the opportunities we create, the inclusion we enable, and the lives we improve.



Digital Rails for the Global South





S. Krishnan

Secretary, Ministry of Electronics and Information
Technology, Government of India

India assumes the BRICS Presidency in 2026 at a consequential moment for the developing world. Across emerging economies, the central question is no longer whether digital technology will shape growth and public services. It is whether countries can build the foundations for that future on their own terms – at scale, with trust, and in a manner that leaves no citizen behind.

India's digital decade began with a simple recognition. For a citizen, access to the State should not depend on where she lives, how many forms she can submit, or how many intermediaries stand between her and a public service. A small merchant should be able to receive a digital payment as easily as a large business. A family should be able to receive a benefit directly and reliably. A student, worker, farmer or patient should not have to start afresh every time they engage with a different service.

This required more than individual digital applications. It required shared foundations.

Over the past decade, India has built what we now call Digital Public Infrastructure: open, interoperable digital rails for identity, payments and data. The logic is straightforward. Instead of every department, enterprise or innovator having to create these basic capabilities independently, the country can build common foundations on which many services can grow.

Government creates and safeguards the core infrastructure. Innovators build services around it. Citizens gain access.

The scale of this transformation is visible in the numbers. Aadhaar has provided a digital identity to more than 144 crore residents and now supports more than 2,700 crore authentication transactions each year. The Unified Payments Interface has changed the way India pays. In the financial year just concluded, UPI processed over 24,000 crore transactions worth more than Rs 314 lakh crore. India today accounts for close to half of all real-time digital payments in the world.

Yet scale, by itself, is not the story. The more important question is what these systems have changed in the lives of ordinary people.

Direct benefit transfers built on these foundations have helped reduce duplication and improve beneficiary verification, saving the public coffers more than Rs 4.3 lakh crore. Millions of households now receive support directly in their bank accounts. Small enterprises that once operated entirely in cash can build a formal transaction history. This can, in turn, make it easier for them to access credit and participate more fully in the economy. Inclusion is not an afterthought in this model. It is embedded in the architecture itself.

The rails are only the beginning. The real value lies in the services and opportunities that can be created and delivered on the rails. India is using these foundations to make welfare, pensions, scholarships and health records more accessible to citizens. At the same time, open standards have created space for banks, hospitals, start-ups and technology firms to build services on common digital foundations. An entire generation of Indian innovators has grown alongside this ecosystem.

This is where the strength of the model lies. It combines public purpose with innovation at scale. The government sets the direction, establishes standards and safeguards the core systems. Public institutions sustain the foundational rails. Enterprises and start-ups build applications, solve real problems and compete to offer better services. Over time, institutions learn from implementation, improve systems and take successful ideas from pilot to population scale.

Such an ecosystem can work only when it rests on trust. India's approach has therefore been shaped by three connected principles: openness, sovereignty and security. Open standards and public application programming interfaces lower barriers for those who wish to build. Sovereignty ensures that each country remains in control of its data and digital future. Trust requires that systems used by hundreds of millions of people are secure and respectful of citizen privacy. India's Digital Personal Data Protection framework and its investments in cybersecurity reflect this commitment.

These foundations are now enabling the next phase of India's digital journey: the use of frontier technologies to improve public outcomes. Artificial Intelligence, when placed thoughtfully over strong digital infrastructure, can make services more responsive and more personalised. A farmer can receive timely guidance in her own language. A patient in a remote area can access better health support. A pupil can learn at a pace suited to her needs.

To realise this potential, India is building computing capacity, datasets and reliable, secure AI tools through the IndiaAI Mission. Our approach is deliberate. Frontier technologies must not remain limited to a few firms or a few cities. They must reach productive sectors of the economy and improve the daily lives of citizens. At the same time, risks that grow with scale, from cyber threats to misuse of data, must be managed with equal seriousness.

The strength of groupings like BRICS lies in our shared context. We are large, diverse societies, often with immense developmental needs and equally immense technological potential. We are building for citizens who expect the same quality, reliability and dignity in public services as anyone else in the world.

India's experience is not a template to be copied without adaptation. Each country will make its own choices, based on its institutions, priorities and social context. But India can share a practical path: build common digital foundations; create room for local innovators to solve local problems; strengthen the institutional capacity needed to carry systems from design to delivery; and ensure that citizens remain at the centre of the digital transformation.

India has already signed agreements with 24 countries to share this experience. Open-source versions of Indian systems are serving people from the Philippines to Ethiopia. UPI is now live in nine countries beyond India's borders. These are early examples of what cooperation among developing countries can achieve when technology is treated not as a closed product, but as a shared capability.

India's offer to the Global South is therefore a partnership in building capacity, not merely a transfer of technology. It is an offer to share lessons – both achievements and challenges – on creating open digital ecosystems that are locally governed, trusted by citizens and capable of improving public services at scale. Through shared standards and interoperable technologies, our digital economies can connect, innovate and grow together.

The digital decade has shown what is possible when a country invests in its people and builds public infrastructure that enables others to create. The task before us is to extend that possibility, so that every nation can shape its own digital future, and so that the infrastructure designed for 1.4 billion people can help serve many billions more.



From File to Flow: DPI and the Restructuring of Bureaucratic Process and Accountability





Rajiv Gauba

Former Cabinet Secretary, Government of India,
and Member, NITI Aayog

For far too long, bureaucracies the world over have been synonymous with files and red tape. This was not unique to India; it was the legacy of bureaucratic systems everywhere, designed in an age when paper, hierarchy, and physical verification were the only instruments available to the State.

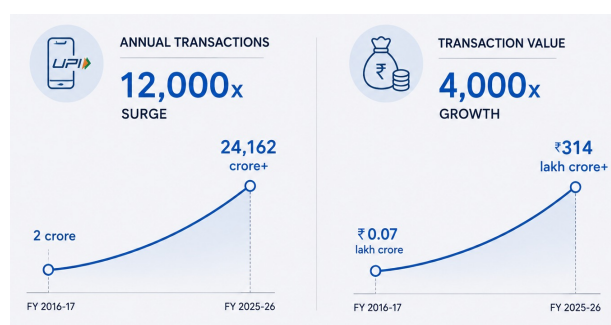
What made the system more hierarchical, and ridden with excessive paperwork for our people was the colonial artifact which was designed not to serve, not to deliver services to citizens with speed but to rule over a public that was not trusted, that was treated with suspicion; and the systems and procedures were designed to prevent mistakes through elaborate administrative hurdles. Any claim by a citizen, be it a subsidy, a certificate, or license, was required to travel through a chain of desks, each adding a signature, a noting, contributing to delay, without adding any value.

Over the last decade, India has built a Digital Public Infrastructure that has fundamentally transformed governance, from the file to the flow. It is not simply a story of digitisation, rather a deeper restructuring of how the state establishes trust, verifies identity, moves resources, and holds itself accountable to the citizen.

The scale of what has changed in India is momentous and profound. Aadhaar has created, for the first time,

a foundational digital identity layer which can authenticate a person without requiring her to be physically present to prove her identity to each department, every time, separately. As of March 2026, more than 144 crore Aadhaar numbers had been generated and in 2024-25 alone, over 2,707 crore authentication transactions were carried out.

The Unified Payments Interface built a real-time payment rail on top of that identity layer, allowing money to move instantly without intermediaries. Annual transactions surged nearly 12,000-fold, from 2 crore in FY 2016-17 to over 24,162 crores in FY 2025-26, while transaction value grew over 4,000-fold, from ₹0.07 lakh crore to roughly ₹314 lakh crore.



DigiLocker and the broader consent-based data-sharing framework replaced the certified, attested photocopy with the verifiable digital credential. DigiLocker now serves more than 71 crore users, with over 950 crore documents issued through the platform, underscoring its growing role in the daily life of citizens.

Each of these systems, individually, solved a set of challenges. Together, they accomplished something far more significant: they converted the default mode of state-citizen interaction from episodic, file-based transaction to an instantaneous, paperless, faceless interaction.

For the bureaucracy, DPI reduces repeated verification. For the citizen, it reduces repeated submission. A document that can be issued, stored, shared and verified digitally shifts the burden away from the citizen having to prove the same fact again and again to different arms of the same State.

Direct Benefit Transfers have demonstrated the power of this shift, eliminating intermediaries, leakages and corruption, making welfare delivery instantaneous, and empowering citizens like never before.

The shift is not only visible to citizens; it has also changed how government works internally. The e-Office has eliminated physical files, officers can receive, dispose of and send files anytime, even while travelling or at home. Its analytics let administrators track file movements, pinpoint delays and provide overall analysis of timeliness of disposal; for individual officers and for ministries.

Accountability has, as a result, improved. It is no longer dependent on post-facto inspections or audit; it is built into the workflow itself. Dashboards, timestamps and alerts make delays harder to hide and coordination easier to manage. This is the essence of File to Flow transition.

None of this, however, should be mistaken for a completed journey. The more important work lies in process reform and institutional redesign. Technology has moved faster than the administrative culture built to use it. Many departments still run digital systems with file-based mindsets, treating the online portal as one more stage in an unchanged approval chain rather than as an opportunity to redesign the process itself. Interoperability across databases remains incomplete, and the absence of common standards continues to produce silos that mirror, in digital form, the departmental compartments of the paper era.



Capacity at the state and local level, where DPI ultimately meets the citizen, is uneven, and last-mile access, particularly in connectivity-poor regions, remains a genuine constraint on the promise of universality. Data governance and privacy protection must mature at the same pace as the infrastructure to build public trust in the digital systems.

We will be able to realize the full potential DPI only when it is accompanied by parallel reform in three areas. First, process reforms must precede or accompany digitization.

Second, DPI should be conceived and governed as a public good, built on open standards and interoperable rails, so that private innovation can be layered on top without the state ceding control of the foundational layer, as India has demonstrated through its approach to UPI and the broader India Stack. Third, institutional capacity by training officials to think in terms of outcomes and real-time data rather than procedure and precedent. This deserves the same investment as the technology itself. Recognizing this imperative, Government of India, with the inspiration of Prime Minister Shri Narendra Modi, has introduced Mission Karmayogi. This a comprehensive capacity-building initiative, designed to shift the civil service from a restrictive "rule-based" orientation to a dynamic "role-based" competency framework.

The transition from file to flow is, at its core, a transition in how the state understands its relationship with the citizen. From one of custodianship over paper to one of continuous, accountable service delivery. India's experience, offers a model that this transition is achievable at scale, in a large and diverse democracy, without abandoning the discipline that public institutions require. For the Global South, the invitation is to adopt this digital infrastructure for the larger public good.



From Digital Public Infrastructure to Digital Public Intelligence: Human-Centric AI for Inclusive Governance





Amit Kapur

Chief AI and Services Transformation Officer,
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Why the next chapter of digital governance is about empowering every citizen, not just digitizing public services

Digital Public Infrastructure has already changed the way governments deliver services. Digital identity, payments, data exchange and consent-based platforms have expanded access, reduced leakages, improved transparency and brought millions of people into the formal economy. Across the Global South, DPI has shown that population-scale transformation is possible when public infrastructure is designed as a shared, interoperable and inclusive foundation.

But the next chapter of digital governance cannot only be about digitizing access. It must be about expanding agency.

For citizens, the real promise of technology is not simply that a benefit can be transferred faster, a certificate can be downloaded online, or a service request can be tracked digitally. The deeper promise is that public institutions can understand people better, anticipate their needs earlier, respond in their language, reduce the burden of navigating complex systems and deliver services with dignity, fairness and trust.





The Questions Around DPI Are Evolving

As AI advances, the questions around DPI are changing. The first generation of DPI asked: *Can every citizen be identified, connected and served digitally?* The next generation must ask: *Can every citizen be understood, supported and empowered meaningfully?*

This shift changes the ambition of public service delivery. It is no longer enough to know whether a benefit was transferred, a grievance was recorded or a service was made available online. Governments must ask whether the right person received the right support at the right time; whether citizens could access services in their own language; whether systems recognised vulnerability early; and whether digital channels made public services simpler, not more complex.

This is the shift from **digital public infrastructure** to **digital public intelligence**.

The Three Pillars of Human-Centric AI-Enabled DPI

To realise this promise, governments need to approach AI-enabled DPI through three interconnected pillars:



**Inclusive
Infrastructure**



**Intelligent
Services**



**Trusted
Governance**



Inclusive Infrastructure

is the foundational layer — digital identity, payments, consent-based data exchange and interoperable platforms that enable secure interactions between governments, citizens and businesses, regardless of geography, income, language or literacy level.



Intelligent Services

represent the AI layer that transforms digital access into meaningful outcomes. By analysing data responsibly and supporting decision-making, AI can enable proactive service delivery, multilingual engagement, personalised citizen experiences and population-scale responsiveness across healthcare, education, social protection, financial inclusion and citizen services.



Trusted Governance

ensures AI remains fair, accountable and aligned with citizens' rights. This requires privacy by design, cybersecurity, transparency, explainability, bias mitigation and human oversight at every stage.

Together, these pillars define Digital Public Intelligence — the convergence of trusted infrastructure, intelligent services and accountable governance to deliver more inclusive and citizen-centric public outcomes.

AI as the Inclusion Catalyst

DPIs — digital systems that enable secure interactions between governments, citizens and businesses — have become the lifeline of modern public services. AI extends the benefits of digitalization: while digital technologies improve connectivity and access, the AI layer adds personalisation, contextual intelligence and scale.

In many parts of the Global South, governments face common challenges: large and diverse populations, uneven digital access, linguistic complexity, fragmented systems and constrained administrative capacity. AI-enabled DPI can shift public services from reactive administration to proactive governance — using trusted data ecosystems to identify eligibility, detect service gaps and trigger timely support.

Seen through a citizen lens, this means a very different public-service experience. A farmer should not have to search across multiple portals to understand crop insurance, subsidy eligibility or weather advisory support. A student should not have to navigate disconnected education, scholarship and skilling systems. A family eligible for social protection should not be required to repeatedly prove vulnerability to different departments.

With AI-enabled DPI, public services can become more intuitive, life-event-based and conversational — guiding citizens through moments that matter, from birth, education and employment to health, livelihood support and retirement.



India offers a compelling illustration. Aadhaar has established trusted digital identity at population scale, enabling streamlined access to banking, welfare and public services. Direct benefit transfer systems have enabled programmes such as PM-KISAN and MGNREGA to reach citizens more efficiently and transparently — improving financial inclusion, preventing leakages and enabling precision targeting. As AI is layered onto such ecosystems, governments can move beyond efficient transactions toward proactive identification of needs, risks and service gaps.

The Intelligence Behind Better Public Services

The applications are significant. In healthcare, AI can support early diagnosis, disease surveillance and remote consultations, extending scarce specialist capacity to underserved regions. In education, it can enable personalised learning pathways and adaptive assessments. In financial inclusion, it can improve fraud detection and credit access for citizens with limited formal histories. In social protection, AI can improve beneficiary identification, reduce duplication and prioritise urgent cases.

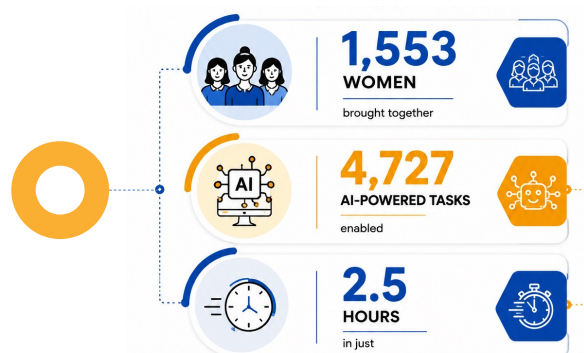
Initiatives such as India's Bhashini demonstrate how AI-powered language technologies can bridge linguistic barriers and make digital government more accessible across diverse populations — a critical dimension for the Global South.

The true measure of this intelligence is not the sophistication of the model, but the simplicity of the citizen experience. Human-centric AI must simplify complexity for citizens, not transfer it to them. A citizen should be able to ask a question in a familiar language, receive guidance that reflects their context and understand what action to take next. Over time, government can feel less like a maze of departments and more like a responsive, trusted partner.

Making Learning and Upskilling More Joyful

AI can also make learning and upskilling more accessible, practical and joyful. For many citizens, especially first-time digital users, the barrier is not aspiration but confidence. Traditional training models can feel formal, intimidating or disconnected from daily life. AI can change this by making learning conversational, visual, multilingual and immediately relevant.

The Tata AI Sakhi Immersion Program at the India AI Impact Summit demonstrated this shift. Rural women artisans and entrepreneurs experienced AI not as an abstract technology, but as a practical companion for their work and livelihoods. Participants used AI to explore product designs, create marketing material, understand government schemes, translate documents and prepare applications on their own phones and in their own languages. The programme brought together 1,553 women and enabled 4,727 AI-powered tasks in 2.5 hours, showing how AI can become a tool for confidence, creativity and self-reliance.



This is an important lesson for citizen-centric AI adoption. When AI is designed around real needs, familiar languages and everyday aspirations, upskilling becomes less about instruction and more about discovery. It helps citizens move from being passive users of digital platforms to confident creators, entrepreneurs and problem-solvers.

A Framework for Trust, Privacy and Accountability

The promise of AI-enabled DPI will only be realised if intelligence does not come at the cost of inclusion, privacy or trust. AI systems trained on incomplete or biased datasets can unintentionally exclude the very communities they are meant to serve. Local languages, informal livelihoods, gendered access patterns and rural realities are often under-represented in digital datasets. Left unaddressed, AI can reinforce historical inequities rather than reduce them.

Responsible AI must begin with representative data, rigorous bias testing and inclusive design. Citizens must have access to grievance-redressal mechanisms when AI-assisted decisions affect their rights and entitlements. AI can augment public decision-making, but accountability must always remain with the institutions entrusted to serve citizens. AI should recommend and streamline, but human officials must remain accountable for final decisions that impact human lives.

Public trust is not created after deployment — it is engineered through privacy-first architectures, transparent model governance, independent oversight and auditable decision-making.

Modernise Today to Build the Public Institutions of Tomorrow

Many public institutions still rely on fragmented legacy systems designed for a different era — unable to share data, adapt to changing needs or deliver services at population scale. The cost of inaction is high: today's legacy systems can quickly become tomorrow's barriers to inclusion and growth.

Governments must invest in AI-ready architectures, interoperable platforms, high-quality data foundations and secure digital ecosystems. The journey from digital infrastructure to digital intelligence requires capabilities spanning legacy modernization, data readiness, AI integration, cybersecurity and citizen-experience design.

Technology partners with deep experience in large-scale transformation have an important role to play in helping governments build resilient, citizen-centric platforms designed for long-term impact. For organizations such as TCS, the opportunity is to bring together technology, domain understanding, responsible AI, security and transformation capabilities to help public institutions convert ambition into population-scale outcomes — ensuring that AI is deployed not for its own sake, but to deliver measurable improvements in access, transparency, trust and citizen empowerment.



From Access to Agency

The ultimate value of AI in governance is not measured by the millions of transactions automated or the petabytes of data processed. Success must be measured by the people reached, the waiting times reduced, the grievances resolved and the access gaps permanently narrowed.

True digital transformation is achieved only when scale is matched by context, access is matched by agency and intelligence is anchored by unyielding accountability.

The next decade of digital transformation must be about more than digital access — it must be about digital empowerment. As AI and DPI converge, governments have an opportunity to move from service delivery to citizen enablement, from transactions to outcomes, and from access to agency. The countries that succeed will be those that combine innovation with trust, technology with accountability, and scale with inclusion. In doing so, they can build a lasting legacy of governance that is not only digital and intelligent, but profoundly human.

Key Takeaways:



For **CITIZENS**:

AI-enabled DPI can make public services simpler, more personal and more empowering — helping people access the right support, in the right language, at the right moment.



For **GOVERNMENTS**:

The opportunity is to build on a service experience continuum towards trusted and outcome-led governance, while ensuring privacy, fairness and accountability.



For **TECHNOLOGY PARTNERS**:

The role is to help governments modernize legacy systems, build AI-ready data foundations, integrate responsible AI and design citizen-centric platforms that can deliver impact at population scale.



A photograph of an elderly man with white hair, wearing a dark brown long-sleeved shirt and pants, sitting on a wooden stool in a workshop. He is barefoot and focused on weaving a basket. The background is filled with numerous finished, conical woven baskets hanging from the ceiling. The entire image has a dark blue overlay.

DPI for DPI-constrained countries: Pathways to Excellence in Public Service Delivery and Socio-Economic Growth



Prof. Kamakoti Veezhinathan

Director, IIT Madras

1. Background

The new global order and alignment call for precision, preserving identities and avoiding the implication that diverse societies should also share a single development trajectory as followed elsewhere in the globe.

The renewed approach should focus on capabilities, institutions, and policy choices which can be shared through dialogue, dissemination, bilateral agreements, trade contracts, etc and thus be issue-specific rather than on a broad label.

In this context, the document shares India's experience in the successful implementation and operation of the DPI to "DPI-constrained countries".

2. Significance of the DPI

India inverted the norm set during the formative and early days of Digital technologies; India treated identity, payments, and data exchange as public infrastructure churned out of Digital technologies that are open, interoperable, population-scale rails on which both the state and the market could build and anchor their daily operations and service offerings, and its digital modernisation was not defined by proprietary platforms built by an oligarchic few.

The evidence cannot be disputed: Aadhaar has enrolled over 1.3 billion residents, making it the largest digital identity programme in history. The Unified Payments Interface (UPI), residing on that identity layer and the JAM trinity (Jan Dhan-Aadhaar-Mobile) of bank accounts, Aadhaar, and mobile connectivity, processed more than 228 billion transactions in 2025 and crossed 23 billion transactions in a single month by mid-2026 — nearly half of global real-time payment volume.





Financial inclusion through schemes such as Direct Benefit Transfer over these rails has, according to government estimates, saved tens of billions of dollars in leakage by eliminating ghost beneficiaries and intermediaries.

It is not out of place to mention that it took advanced economies half a century of institutional accretion — near-universal financial inclusion — for India to compress that massive effort into roughly a decade.

Crucially, this was achieved through frugal engineering: minimalist, unbundled protocols rather than monolithic systems, at per-capita costs a fraction of those in comparable deployments elsewhere.

3. Sharing is Caring: Extending friendship globally through the DPI

India now stands at one of the crucial defining moments, by sharing its experience in envisioning, architecting, provisioning, and deploying the DPI to serve its 1.47 billion citizens.

India has preserved and protected its sovereignty through the DPI, using open standards and open-source components, and by adopting states' own infrastructure, data governance, and vendor relationships. This is in decisive contrast to dependence on foreign platform monopolies or opaque, surveillance-linked systems.

DPI is a maker of the market rather than a taker from the market: Consider for a moment how open APIs allowed domestic fintechs, agritech firms, and civic innovators to build atop shared rails, keeping value creation onshore.

This friendship that India is renowned for offering is already travelling through the DPI. MOSIP, the open-source identity platform incubated at IIT-Bangalore, anchors the Philippines' PhilSys, which has issued digital IDs to some 76 million citizens, with pilots underway in more than a dozen countries across Africa and Asia.

UPI is live in eight countries, and India has signed DPI cooperation memoranda with over twenty more. The 2023 G20 consensus under India's presidency has given DPI a shared global definition; the 50-in-5 campaign, the UN Global Digital Compact, and the World Bank's Global DPI Program have since converted that consensus into financing and delivery machinery.

4. **Architecture and artefacts: Peeking into some long-lasting avenues of friendship through DPI**

Consider, for a moment, that it all started with minimal foundational layers, open protocols, public ownership of standards, and private innovation at the edges. Brazil's Pix, built independently on similar principles, proves the grammar that India resorted to generalises. The primary strategy by which the countries would benefit is to resist turnkey projects and instead localise their DPI to their federal structures, connectivity realities, and legal traditions and compliance frameworks.

The methodology that India adopted was to deliberately address the persistent issues of precedence posed by digital technologies: it concerned the sequence DPI should adopt. It narrowed down to sequencing identity, payments, and data exchange and in that order.

5. **Institutions of digitisation: - The preferential method**

India built the NPCI; the payments corporation, the statutory identity authority, regulatory sandboxes, and grievance mechanisms were put in place and anchored.

Countries that are potential adopters of DPI could consider equivalent institutions early, with clear mandates, independent oversight, and sustainable funding models that do not depend on donor cycles.

6. **Opportunities galore: The road to jointly traverse is socio-economic**

A. Build regional interoperability.

Cross-border UPI linkages with Singapore, the UAE, Sri Lanka, and Nepal point to the next broad road, i.e., remittance corridors with regional blocs such as ASEAN, the African Union's interoperability initiatives, and CARICOM

B. Safeguards as a Design Requirement

Countries that desire DPI adoption could adopt the UNDP-championed universal DPI safeguards, from data protection laws that precede deployment to offline and assisted fallbacks for authentication failures, purpose limitation, independent audit, and inclusive design for the disabled, the elderly, and the unconnected.

C. The Dividend of growing together

DPI formalisation and adoption broaden tax bases that could unlock credit for micro-enterprises previously invisible to lenders; open networks for commerce and skilling extend the model beyond payments to livelihoods. IMF and World Bank assessments increasingly treat DPI as a horizontal enabler of growth rather than a sectoral IT project.

Conclusion

The deeper significance of DPI adoption is just not geopolitical. India now possesses a development template authored within the regions where digital tech was not primarily designed and built. The open, sovereign, frugal, and demonstrably scalable system, with disciplined execution, indicates that excellence in public service delivery will follow not from importing technology, but from owning it.

From Infrastructure to Intelligence: Reimagining Financial Inclusion Through DPI





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For much of modern history, economic progress has been built on physical infrastructure: roads, ports, power networks and connectivity. The next chapter of economic growth will not be defined by technology alone, but by the strength of the digital foundations that nations build today. For countries across the Global South, Digital Public Infrastructure (DPI) has emerged as a strategic enabler of inclusive growth, providing trusted digital identity, seamless payments and consent-based data exchange that allows citizens, governments and businesses to participate fully in the digital economy.

Across the Global South, countries are exploring different pathways to build digital foundations for inclusive growth, improve public-service delivery, and expand economic participation. India's experience demonstrates how DPI can accelerate access to essential services, strengthen financial inclusion, and create new opportunities for innovation across sectors. As more nations invest in DPI, the focus must shift from building individual systems to creating trusted digital ecosystems that can support long-term economic growth, resilience, and responsible AI adoption.

India's experience demonstrates how DPI can lead to inclusive growth. Foundational and sectoral DPIs have ensured access to public services, accelerated financial inclusion and created new opportunities for innovation across sectors. As more nations invest in DPI, the focus must shift from building individual systems to creating trusted digital ecosystems that can support long-term economic growth and responsible AI adoption.

DPI offers a practical pathway to overcome many barriers by enabling an interoperable, secure, and trusted digital network that expands access to essential services. When implemented well, DPI can help public institutions reach citizens more efficiently, while also enabling enterprises and innovators to build services on top of shared digital foundations. The true value of these digital foundations is realised when they power intelligence through policymaking, predictive service delivery, real-time governance, and citizen lifestyle improvement. At TCS, we see this evolution as the journey from 'Infrastructure to Intelligence', where trusted digital foundations are the base for intelligent, AI-enabled economies. Over the past few decades, TCS has been a key technology enabler in several initiatives, including the Passport Seva program,

India Post's digital transformation, the System for Pension Administration (Raksha)-SPARSH, the Electoral Roll Management Network (ERONET), to building core financial market infrastructure for institutions like the National Stock Exchange (NSE) as well as the Bombay Stock Exchange (BSE).

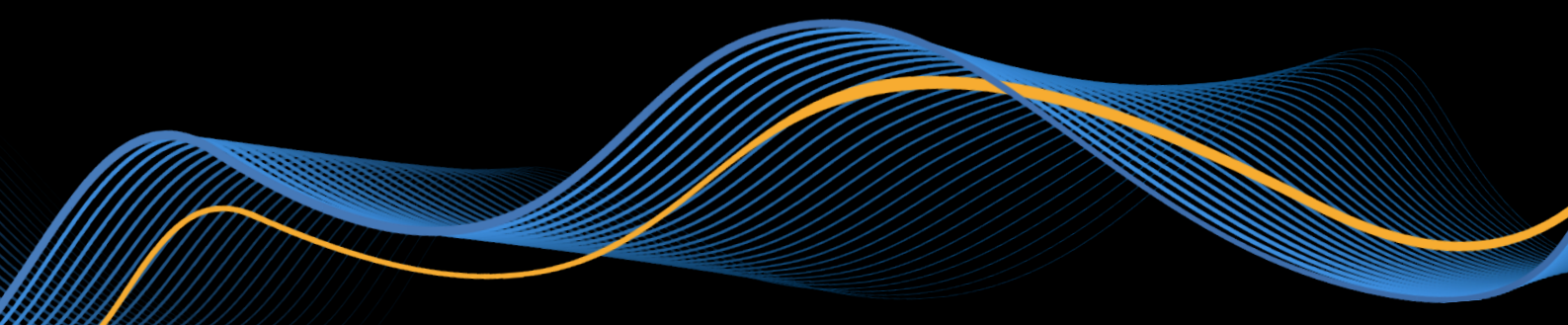
The Passport Seva Program, for instance, reimagined one of India's most visible citizen services through a national digital platform and a unified system serving Indian missions overseas. The platform manages 1.5 crore passport applications annually and processes around 65,000 applications daily. Similarly, India Post's digital transformation helped extend access across rural and remote areas, supporting efficient mail delivery, financial services, and e-commerce through mobile point of sale (mPOS) devices, omnichannel access, and large-scale transaction processing. Ayushman Bharat PM-JAY programme provides government-funded health insurance to over 500 million eligible beneficiaries, expanding access to quality healthcare across the country.

DPI has a direct role in making public benefits more transparent, efficient, and auditable. Integrating digital identity, banking and payment systems enables governments to transfer benefits directly to eligible beneficiaries, reducing delays, leakages and administrative overheads.

More importantly, financial inclusion must go beyond opening bank accounts and enabling digital transactions. Its real promise lies in meaningful livelihood improvement. Direct access to financial services can support independence, entrepreneurship, welfare access, and security for underserved communities. Digital platforms can also support the agriculture community through subsidies, insurance, advisory services, and market participation. Over time, digital participation can help more citizens enter the formal economy.

The success of DPI should ultimately be measured by the value it creates for the wider economy, enabling new business models, expanding access to services, strengthening livelihoods, and accelerating socioeconomic mobility.

DPI may provide rails, but financial inclusion at scale requires strong participation from banks, fintechs, enterprises, public agencies, startups, and technology partners. TCS' Digital Financial Inclusion work with State Bank of India (SBI) is one such example. The platform has expanded essential banking access across India with the opening of over 250 million accounts, served more than 200 million account holders through kiosk banking channels, enabled over 80,000 daily active agents, and provided access to more than 70 banking services.



For the Global South, the future of DPI must now move from adoption and access to measurable usage and impact for better livelihood acceleration. The next stage will be shaped by a host of priorities, mainly sovereignty, security, intelligence, and ecosystem-led innovation. Countries will need digital foundations that protect national priorities, safeguard citizen data, while remaining resilient against risks. These systems will also need to be flexible enough to support rapid innovation and make way for new models of public-private collaboration. This is where DPI can play a larger role.

While DPI can serve as a national capability for inclusive growth, AI can help governments anticipate service demand, identify delivery gaps, improve policy decisions, and personalise citizen services. Secure data exchange will enable better coordination across departments and institutions. Cloud-enabled and scalable architectures can help countries expand digital services faster, while ensuring resilience and continuity.

For countries in the Global South, the future of DPI will depend on their ability to balance scale with trust, innovation with governance, and speed with affordability. DPI must be designed and built with the understanding that technology alone is not enough; successful DPI requires policy support, ecosystem participation, regulation, capacity building, and sustained citizen trust.

India's experience shows that DPI can become a foundation for inclusive public-service delivery and economic opportunity. While financial inclusion is one of the most visible outcomes, its impact extends much further—helping citizens move from access to participation, and from participation to prosperity.

For countries across the Global South, the next chapter of development will not be defined by digitisation alone, but by their ability to transform trusted digital foundations into intelligent, inclusive, and resilient ecosystems that create opportunity at scale.



Banking the Last Mile: YONO 2.0 and SBI's DPI Journey as a Blueprint for Emerging Economies





Deepak Kumar

Deputy Managing Director at State Bank of India

In emerging economies, financial inclusion is the ultimate catalyst for human development. Historically, high operational costs, rigid documentation, and fragmented technology left billions outside the formal economy. India shattered this barrier through its Digital Public Infrastructure (DPI), known as the "India Stack." The core opportunity India's DPI stack provided to the banks through infrastructure such as Aadhaar, DigiLocker, Account Aggregator, GSTN, e-NACH and others, is a consent-driven data layer that is helping banks in radically improving the customer experience.

At the forefront of this digital leap is the SBI's next-generation platform – **YONO**. Rebuilt from the ground up as a unified digital banking super-app under the Bank leadership, YONO serves as an advanced blueprint for emerging nations seeking to bridge the financial divide through resilient public rails. This engineering shift underpins a true **omnichannel capability** i.e., a common platform powering **4 channels – App, Web, Branch Portal and upcoming Feet-on-Street (FoS)**. Also, as part of its last mile connect and financial inclusion initiatives, the bank has leveraged **AI-first intelligence layer** with advanced AI capabilities to design solutions that transcend traditional banking boundaries.

Architectural Overhaul and Frictionless Onboarding

YONO is built on a ultra-scalable **modular and microservices architecture**. Running on decoupled, **cloud-ready platforms**, it rolls out quick updates and handles high concurrent transaction volumes seamlessly.

Supported by India's national biometric identity stack Aadhaar, YONO enables digital account opening via a paperless, real-time **Video KYC** journey. It also features a simplified **centralized KYC and re-KYC processes** which customer can perform digitally. To drive retail investing adoption, YONO offers users to invest in mutual funds, purchase insurance and also a seamless **3-in-1 digital onboarding journey** to open savings, demat, and trading accounts simultaneously in one single workflow. Apart from offering banking products and services, YONO users can also perform e-commerce transactions, book flight tickets, hotels etc.

YONO also serves as the customer's **everyday banking companion** through seamless UPI payments.

Bill payments and merchant transactions. By bringing these **high-frequency payment journeys** together with savings, investments and lending services on a single platform, YONO enables SBI to deepen engagement beyond transactions and build a broader, long-term financial relationship with the customer

In addition, YONO operates in **12 distinct languages**, spanning **11 vernacular languages apart from English**. This inclusive multi-lingual reach expands outside the core app through **SBI WhatsApp Banking**. Available in **8 regional languages**, the WhatsApp channel hosts over **4 Crore registered users** till date. As part of future roadmap, YONO is integrating an intuitive voice-to-command capability through which user will be able to navigate as well as do select transactions in the app basis verbal commands.

Under its dedicated credit section, YONO executes entirely frictionless, **end-to-end digital loan journeys** such as digital loans against mutual funds, Pre-approved Personal Loans etc., along with **digital document execution** facility. **Our Digitization** initiatives are working **hand-in-hand with Operational Process Re-engineering** to reduce the processing TAT down to under 10 minutes for instantaneous in-app sanctions.

Apart from the above, several "Digital First" innovations were introduced such as **Financial Fitness score**, compiling a **"Green Score"** based on paperless transactions.

We have also enhanced state-of-the-art security via layered **Adaptive Authentication** models alongside **biometric authentication** methods. The platform continuously monitors device geolocations, hardware tokens, and transaction velocity. Frictionless biometric recognition allows fast access, but the system intelligently scales up validation in case of risky application access situations.

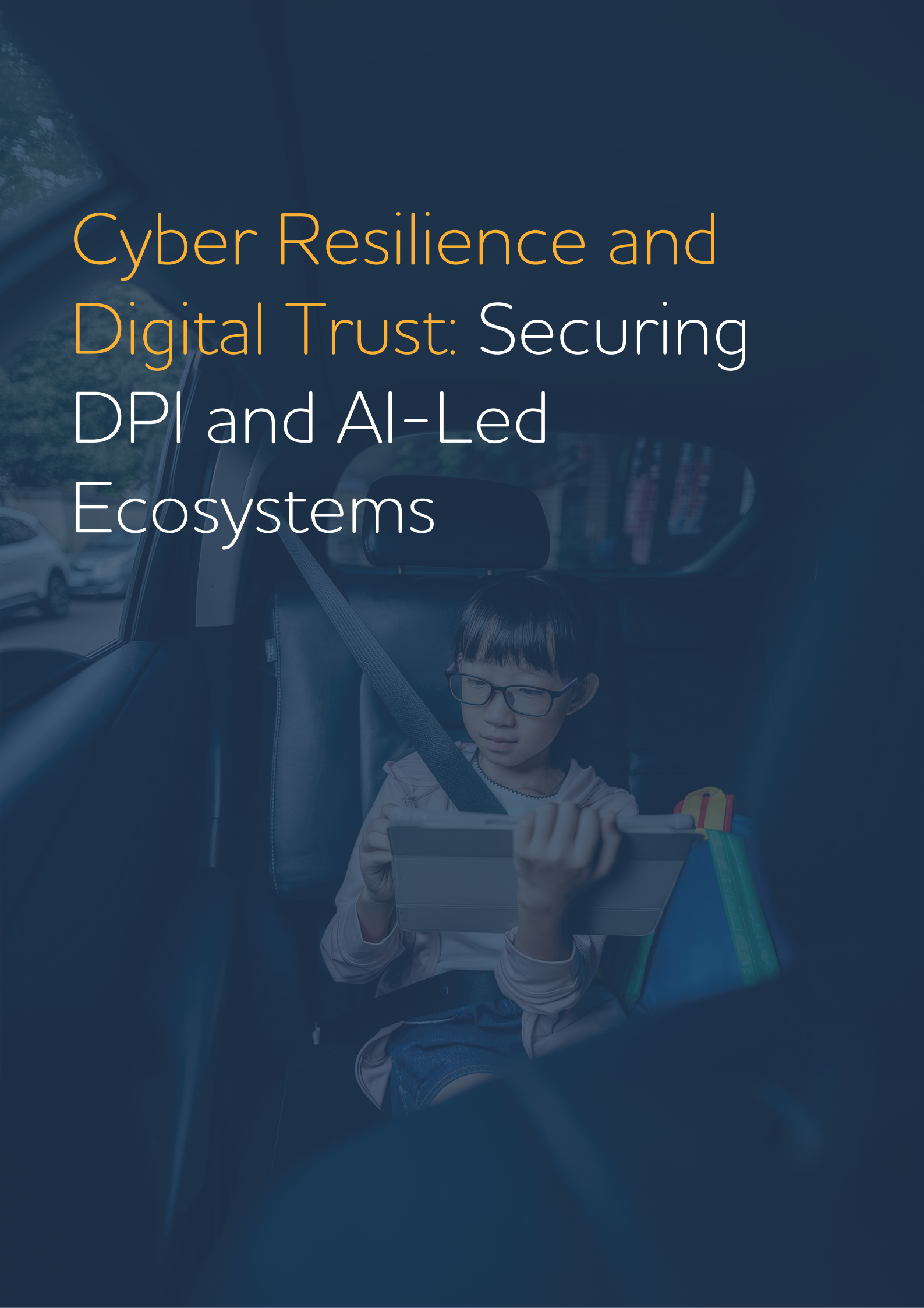
The bank has launched YONO Ji, a 24/7 Agentic AI-powered digital assistant suite. It seamlessly integrates with banking applications to enhance customer engagement and support, and also accelerates staff workflows by facilitating document intelligence, financial analysis, query resolution, and instant knowledge retrieval to solve complex banking tasks.

On the YONO Business web and mobile platforms, it provides immediate guidance on product features, platform navigation, and banking queries, strengthening support to corporate and MSME customers. By equipping agents with instant, focused answers tailored to customer needs, the tool revolutionizes the contact centre experience. Similarly, staff members can now query thousands of internal documents, including Circulars, Standard Operating Procedures (SOPs), HR policies, and annexures, to understand context and receive accurate, cited answers. For project finance in emerging sectors, it consolidates data to deliver techno-economic viability assessments for precise, data-driven decisions. By blending conversational intelligence with robust backend data processing, this tool redefines traditional banking operations.

Conclusion

To provide banking services till the last mile, a complete shift from standard transaction processing to dynamic, population-scale ecosystem design is required. Through YONO, SBI demonstrated that a legacy, state-owned bank can deploy top-tier tech to securely manage hundreds of millions of users at low operational costs. As developing countries build out their own sovereign digital architectures, the open, interoperable, and user-centric approach of YONO serves as an adaptable global benchmark.

Cyber Resilience and Digital Trust: Securing DPI and AI-Led Ecosystems





Dr. Kanwar Preet Singh Sandhu

Global Head of Cyber Strategic Initiatives and
Securing AI for TCS Cybersecurity Business Unit at
Tata Consultancy Services

From transactions per second to trust per transaction

Every nation building digital public infrastructure (DPI) is shaping how citizens prove identity, access services, receive benefits, move value and participate in the digital economy. As identity platforms, payment systems and data exchanges increasingly become the interface between citizens and the state, one principle matters above all else: trust.

A commercial outage may inconvenience customers. A disruption to population-scale public infrastructure can interrupt benefits, healthcare services, public assistance and critical citizen services. In this context

cyber resilience is not simply a technology concern. It is a foundation for societal continuity, digital sovereignty and public confidence.

The success of DPI will ultimately be measured not only by adoption, coverage or transaction volumes, but by whether every interaction is secure, reliable, explainable and recoverable. The emerging risk framework for DPI must therefore be assessed not only through adoption, coverage or transactions per second, but through trust per transaction.

Systemic risk now extends across the digital ecosystem

Recent incidents across digital ecosystems, including attacks affecting financial services, healthcare systems and other critical infrastructure, demonstrate that cyber risk increasingly originates beyond the core platform itself. These events highlight a common challenge faced by every nation: trusted providers, interconnected systems and operational dependencies can become pathways through which systemic risk propagates.

Adversaries already operate as adaptive systems. National cyber defence must become equally dynamic and be able to sense weak signals across identity, data, AI, cloud, telecom and operational environments; adapt controls as conditions change; and heal essential services through pre-tested response and recovery pathways.



The lesson is universal. National resilience cannot stop at the boundary of the primary platform. It must extend across privileged identities, connected providers, data exchanges, operational dependencies and the recovery pathways upon which essential public services rely.

Cyber resilience can no longer be defined primarily as the ability to restore systems after an attack. It must include the ability to detect compromise early, adapt while services remain operational and recover without allowing a technology incident to become a crisis of public confidence.



AI is redefining operational failure

Artificial intelligence is no longer confined to user-facing interactions. It is increasingly becoming part of the decision-making fabric of digital public infrastructure. AI systems may translate citizen requests, detect fraud, assess eligibility, prioritise cases and coordinate activity across agencies. Agentic systems may go further, invoking tools, accessing data and initiating actions with progressively less human intervention.

AI can make public services more accessible, responsive and personalised. However, it also introduces a category of risk that traditional security architectures were never designed to address.

A system can remain available, uncompromised and technically compliant but still produce an unacceptable outcome. It can possess valid credentials yet act beyond its mandate. It can process each data element correctly while reaching a harmful conclusion. An autonomous agent can execute an authorised action through an approved interface while violating the purpose for which that authority was granted.

The danger is not only that a system may be attacked. It is that it may become **wrong with authority**.

Establish controls across AI lifecycle: governance to assurance

As agentic AI evolves rapidly, the risk-management response cannot be a collection of disconnected controls. DPI requires an integrated control spine extending from national policy and secure engineering through runtime protection, security testing and continuous assurance.

The control model must protect the entire ecosystem, including citizens, agencies, platforms, data exchanges, cloud environments, suppliers and AI agents, rather than treating the central platform as the only asset worth defending.

It begins with governance which defines clear boundaries for the use of data, algorithms and autonomous systems. It must define both the authority granted to a system and the boundaries that must not be crossed, irrespective of technical capability. These principles must then be translated into secure-by-design engineering so that digital identity, privacy, resilience, interoperability and sovereignty are factored from the outset.



Protection must be complemented by rigorous validation. Adoption of AI in the public sector must be tested not only for accuracy, but also for manipulation, privacy leakage, bias, unsafe autonomy, data poisoning and failure under adversarial conditions. Continuous assurance must span visibility of assets and dependencies, monitoring of models and agents, evidence that controls are functioning, and recovery arrangements that are regularly exercised.

Redesign identity around minimum necessary disclosure

Digital identity remains the foundation of DPI. Its next evolution must reduce the repeated collection and exposure of personal information.

A citizen establishing entitlement should not always have to disclose an entire identity record. In many circumstances, the service needs only a verified attribute: that the person is above a prescribed age, resides within a jurisdiction or satisfies a particular eligibility condition.

Selective disclosure, verifiable credentials, pseudonymous authentication and privacy-preserving

proofs can confirm eligibility without revealing information unrelated to the transaction. Privacy-enhancing technologies, including differential privacy, secure computation, tokenisation and robust de-identification can similarly enable public value to be derived from data without creating unrestricted concentrations of citizen information.

Privacy and utility should not be treated as competing objectives. Properly engineered, privacy is what enables data-driven public services to scale without creating disproportionate surveillance and concentration risk.

Build post-quantum resilience before migration becomes urgent

The digital systems being built today will protect identities, financial records, health information and national assets for decades to come. Their cryptographic foundations must therefore be designed for a future threat landscape, not today's assumptions.

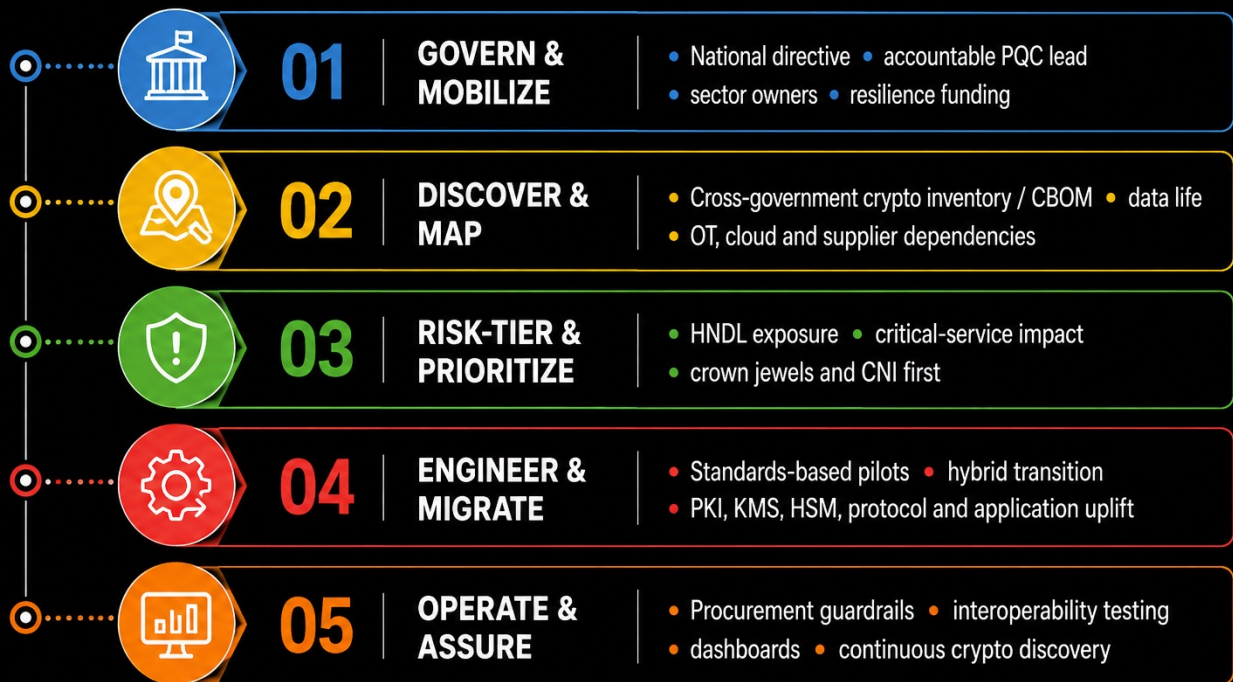
Post-quantum readiness is not a single technology migration but it is a governed national pathway from mandate and inventory to prioritised engineering, transition pilots and continuous assurance.

Post-quantum resilience should begin with disciplined discovery and risk-based prioritization, not indiscriminate technology replacement. Governments should establish a cross-sector cryptographic inventory, identify where algorithms and keys protect long-lived or nationally significant information, and map dependencies across public cloud, telecommunications, operational technology and the supplier ecosystem.

Critical services can then be prioritised for standards-based pilots, hybrid transition mechanisms and crypto-agile engineering. The immediate priority is not to replace every algorithm. It is to ensure that governments know where cryptography is embedded, which information requires early protection and whether algorithms and keys can be changed without rebuilding the underlying public service.

WHOLE-OF-NATION ACTION PATHWAY

One governance resilience mandate,
five coordinated workstreams.



Resilience must pass the implementability test

For the Global South, the credibility of any security framework will ultimately rest on its implementability. Cyber resilience cannot be achieved through isolated technology investments alone. It must address the full ecosystem spanning AI, cloud, identity, applications, operational technology and supply chains.

An effective framework will be unified and operate across public policy, service design, identity, privacy, cloud, cybersecurity, AI governance, engineering and operations because failure rarely respects organisational boundaries.

A resilient DPI model must be based on open standards, reusable control patterns, shared national capabilities, clear accountability and operating models aligned to institutional maturity.

Trust is the real measure of scale

The next generation of DPI should not be assessed only by citizens enrolled, applications launched or transactions processed.

It should be assessed by whether citizens can understand who acted, under what authority, using which information and for what purpose; whether an incorrect decision can be challenged and corrected; whether essential services continue during compromise; and whether the state can demonstrate that its digital and AI systems remain within the boundaries society has established. These are not secondary measures of digital government, but they are the very foundations of trust.

Ultimately, the question for nations is not whether digital and AI-led ecosystems will expand. They surely will and the real challenge is ensuring that this scale will be matched by resilience, accountability and trust.



Cyber resilience protects the continuity and integrity of the system. Digital trust gives that system the legitimacy to operate on a national scale.

Beyond borders:

NPCI's cross-border UPI
linkages as a model for
South-South payment
cooperation



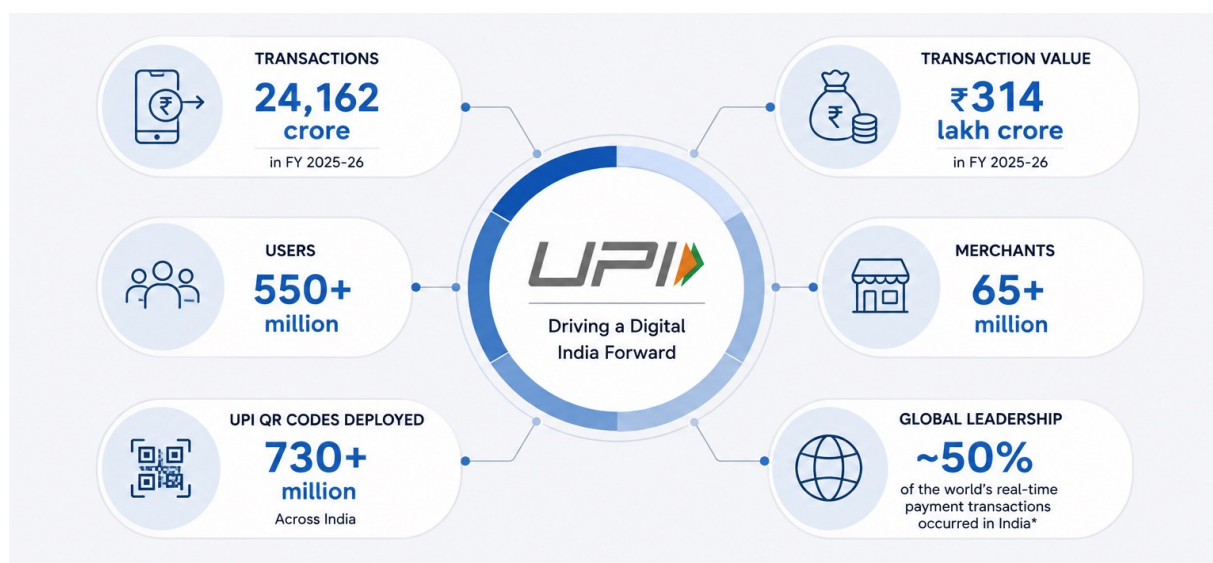


Dilip Asbe

Managing Director and CEO of National Payments Corporation of India (NPCI)

India's Digital Public Infrastructure (DPI) journey demonstrates how interoperable digital systems can operate at population scale while encouraging innovation and competition. A cornerstone of this transformation has been UPI, developed by the National Payments Corporation of India (NPCI). Built on open and interoperable standards, UPI has simplified real-time digital payments by enabling seamless transactions across banks and payment applications while supporting broad ecosystem participation. Its evolution illustrates how interoperable public digital infrastructure can advance inclusion, resilience and innovation at scale.

The impact of UPI is reflected in both its scale and reach. In FY 2025-26, it processed **24,162 crore transactions valued at ₹314 lakh crore**. With **over 550 million users** and **65 million merchants**, UPI has made digital payments more accessible while opening new avenues for commerce, entrepreneurship and financial inclusion. More than **730 million UPI QR codes** have been deployed across India, enabling businesses of all sizes to accept digital payments with minimal infrastructure investment. This level of scale is globally significant; according to the ACI Worldwide Report 2024, **almost 50% of the world's real-time payment transactions** occurred in India.



What began in 2016 as an effort to accelerate financial inclusion and reduce reliance on cash has since emerged as a scalable model for digital payments globally. As Digital Public Infrastructure matures within national borders, the next opportunity lies in extending its benefits beyond Bharat. Over the last decade, India's experience has also demonstrated how trusted public digital systems can create value beyond national boundaries.

For countries across the Global South, strengthening economic connectivity increasingly depends on strengthening digital connectivity. Payments sit at the centre of this transition, connecting trade, tourism, remittances and everyday commerce while creating new pathways for regional economic cooperation.

Despite rapid advances in domestic payment systems, cross-border payments continue to face familiar constraints. Multiple intermediaries, fragmented infrastructures, differing technical standards and complex settlement arrangements often make international payments slower, costlier and less transparent than their domestic counterparts. Addressing these frictions has become a global priority, reflected in the G20 Roadmap for Enhancing Cross-border Payments. For developing economies in particular, better cross-border payment infrastructure is not only about improving transaction efficiency, but also about expanding access to markets, reducing barriers to economic participation, and strengthening regional connectivity and economic resilience.

Building on India's domestic DPI experience, NPCI established **NPCI International Payments Limited (NIPL)** to support the internationalisation of indigenous payment technologies through partnerships with institutions and countries across the world. NPCI International is working with global to strengthen payment connectivity through collaborative models that respond to local priorities. Today, these partnerships are reflected in the enablement of UPI acceptance across France, Singapore, Cambodia,

the United Arab Emirates (UAE), Qatar, Mauritius, and closer home in Nepal, Bhutan and Sri Lanka.

NPCI International is also collaborating with central banks and governments, including the Bank of Namibia, the Central Bank of Peru and the Ministry of Digital Transformation in Trinidad and Tobago, to help develop sovereign, UPI-like real-time payment systems. These engagements span multiple dimensions, including UPI acceptance at merchant touchpoints, cross-border remittances, interoperability between payment systems, development of instant payment infrastructure and domestic card schemes. Several of these engagements have already progressed from design to live implementation, reflecting the depth of institutional trust and regulatory collaboration established with ecosystem partners and payment system operators over time.

The significance of these partnerships extends well beyond facilitating cross-border transactions. They represent a practical model of South-South cooperation, where technology is accompanied by institutional partnership, knowledge sharing and long-term capacity building. This approach recognises that sustainable digital infrastructure must reflect local regulatory frameworks, market structures and developmental priorities.

Underlying these partnerships is a shared commitment to building trust among regulators, financial institutions, businesses and consumers, recognising that trust remains the foundation of every successful payment ecosystem.

For countries across the Global South, this experience offers a practical framework for modernising payment ecosystems, and three considerations stand out. First, payment cooperation is most effective when built on interoperability rather than uniformity. Countries need not adopt identical payment systems; instead, they can develop domestic infrastructures suited to their own requirements while enabling interoperability with international partners.



Second, technology transfer alone is insufficient; sustainable digital transformation requires capacity building, regulatory collaboration, cybersecurity, operational resilience and continuous ecosystem development. Third, DPI delivers its greatest value when it remains open, inclusive and designed to encourage participation by banks, fintechs and other ecosystem stakeholders.

As countries continue to strengthen their domestic digital foundations, opportunities for South-South cooperation will continue to expand. Cross-border payment connectivity can simplify tourism, strengthen remittance corridors, support businesses engaged in international trade and enable new forms of digital commerce. More importantly, it demonstrates how countries can collaborate through shared principles rather than identical systems, preserving digital sovereignty while creating trusted pathways for economic interaction.

Cross-border UPI linkages demonstrate that trusted interoperability is not merely a technological possibility but a practical framework for advancing South-South payment cooperation. By combining technology with collaborative implementation, local ownership and shared learning, these linkages reaffirm the broader promise of Digital Public Infrastructure as a catalyst for inclusive public service delivery and sustainable socio-economic growth beyond borders.

From Deployment to Capability: Digital Public Infrastructure as Institutional Capital in Africa





Talla KEBE

United Nations – Office Of The Special Adviser On
Africa to the UN Secretary-General

More than US\$2 trillion flowed through mobile money wallets in 2025, and US\$1.4 trillion of that — roughly two-thirds of the global total — was transacted in sub-Saharan Africa. Registered accounts reached 2.3 billion worldwide, growing by 268 million in a single year, with most of the new accounts opened on this continent. By any measure of deployment, Africa leads the world.

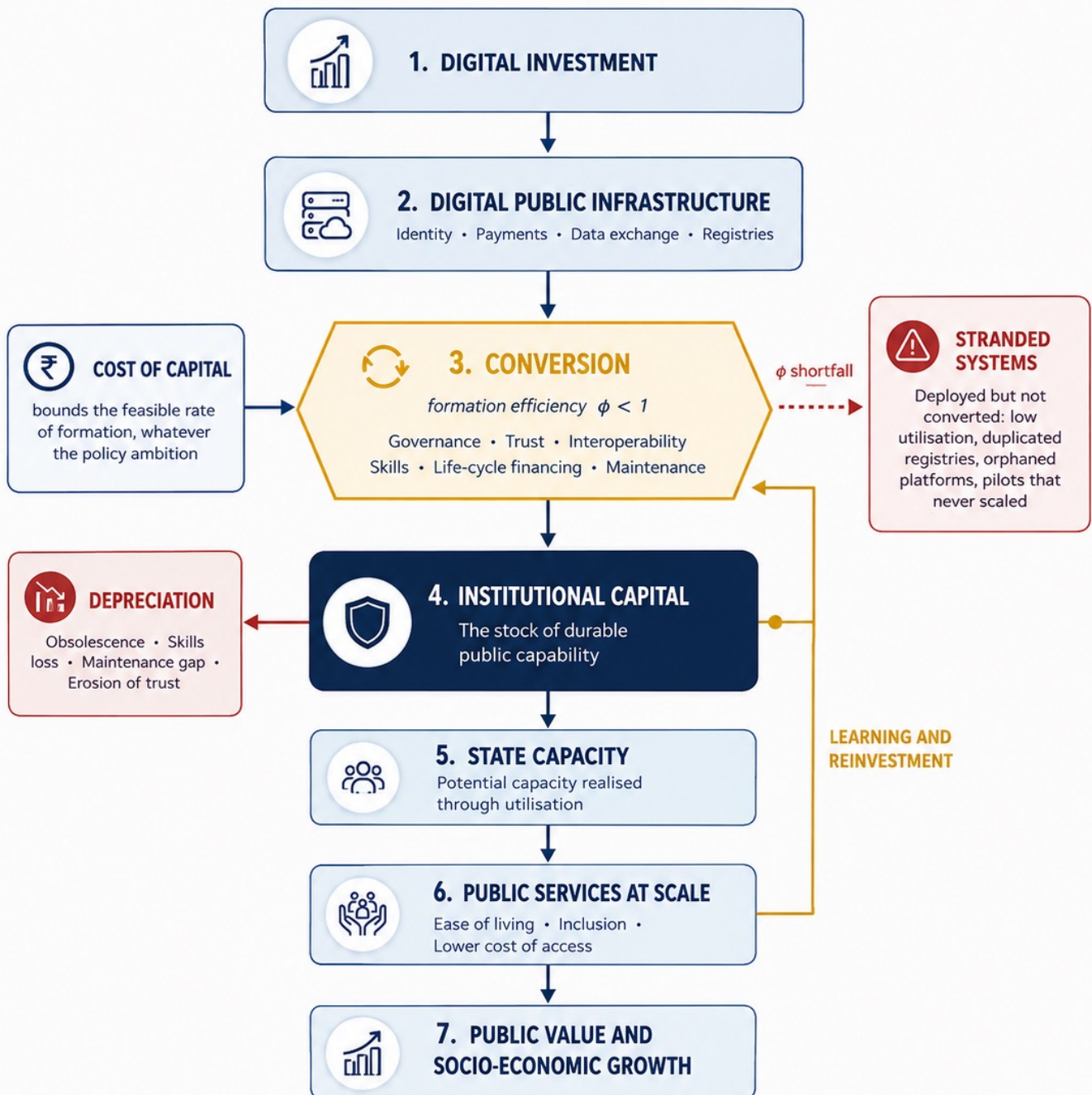
And yet the global thirty-day activity rate stands at 25.7 per cent. Roughly three in four registered accounts go unused in any given month. Africa built the rails, opened the accounts, and still holds a very large stock of infrastructure that does not generate transactions.

That gap — between what has been installed and what is actually used — is the central problem of digital public infrastructure. It is not a technology problem.



FIGURE 1. FROM DIGITAL INVESTMENT TO INSTITUTIONAL CAPITAL

Investment becomes capability only where conversion succeeds



Digital investment produces lasting public value only where deployed infrastructure is converted into institutional capital. Conversion is not automatic: governance, trust, interoperability, skills, life-cycle financing and maintenance determine how much investment becomes capability, and the resulting stock depreciates unless it is maintained.

Deployment is not a capability

DPI is usually defined as the foundational digital systems, identity, payments and trusted data exchange, on which public and private services are built. The definition describes the infrastructure. It does not explain why comparable systems, comparably financed, produce such different results.

Institutional Capital Theory supplies the missing term. Institutional capital is the stock of durable public capabilities created through investment, accumulated over time, and used repeatedly to produce services, coordination and economic value. It behaves like capital in the respects that matter for policy: it requires investment, it yields returns over years, its productivity rises as systems interconnect — and it depreciates.

The critical implication is that investment and capital formation are not the same thing. Spending converts into capability at a rate well below one. Figure 1 calls that rate the formation efficiency, written as ϕ . It is the share of each unit of digital investment that ends up as durable capability; whatever falls short shows up as stranded systems, deployed but never converted. A digital identity system becomes institutional capital when it is legally recognised, widely accessible and trusted across institutions. A payment platform becomes capital when households, firms and agencies can use it securely and affordably. A data-exchange layer becomes capital when public bodies have agreed standards, responsibilities, safeguards and legitimate uses. Absent those conditions, the system has been deployed but not converted: real expenditure, no accumulated capability.

Depreciation is the second thing the conventional framing misses. Institutional capital erodes through obsolescence, staff turnover, deferred maintenance and, fastest of all, the loss of public trust. Because that erosion is silent and unbudgeted, governments routinely finance construction and neglect the maintenance that determines whether the asset continues to produce.

What separates mature ecosystems

Countries that have accumulated institutional capital in DPI share a recognisable pattern: clear institutional ownership, interoperability designed in from the start, legal certainty, financing sustained across the life cycle, credible data governance and cybersecurity, and mechanisms for learning from use.

Where accumulation fails, the pattern is equally recognisable: isolated platforms, duplicated registries, incompatible standards, and dependence on project financing that ends before the capability is formed. Governments acquire sophisticated technology without developing the authority and skills to govern, operate and improve it. When external support closes, systems stagnate or quietly deteriorate.

The distinction changes how progress should be measured. Central banks signing on to a regional payment system is an announcement; commercial banks going live in those countries is a capability. Enrolment in a national identity register is a count; institutions accepting that identity as sufficient proof is a capability. Installed coverage, effective coverage and utilised coverage are three different numbers, and only the third produces public value.

Africa's compounding opportunity

Africa's advantage lies in sequence. Many countries are modernising civil registration, identification, payments, tax administration, customs, health records, land administration and social protection at the same time. Designed as a single architecture rather than as separate procurements, these systems reinforce one another: a trusted identity layer lowers the cost of every service built on top of it, interoperable payments reduce transaction costs for households and small firms, and trusted data exchange removes the need for repeated documentation.

This is where returns to institutional capital can increase rather than diminish. Each additional interoperable service raises the value of the whole. The Pan-African Payment and Settlement System, which the Bank of Central African States joined in July 2026, carries the same logic across borders: the value of the network is a function of how many participants are live on it, not how many have signed.

For citizens, the promise is not digitisation. It is ease of living — less travel to administrative offices, fewer documents submitted twice, faster payments, lower costs of dealing with the state, and greater control over personal data. For small firms and underserved communities, it is an entry into formal markets on affordable terms.

The financing constraint

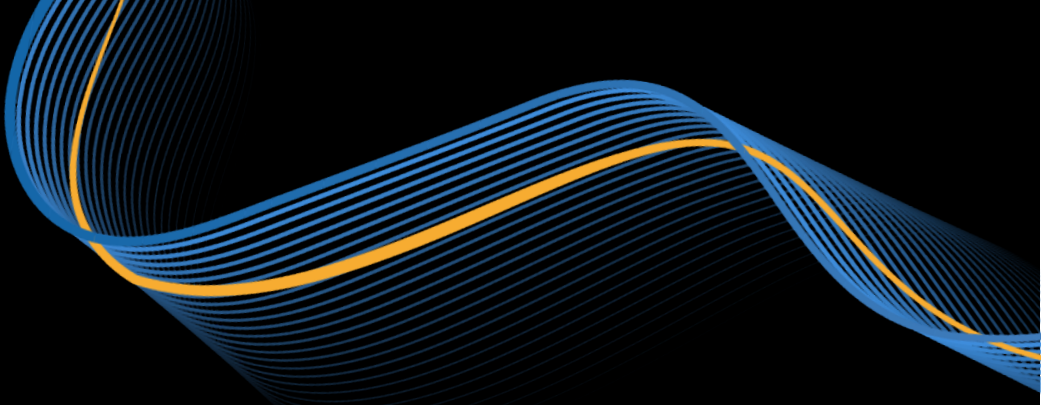
One condition is systematically underweighted in DPI policy discussion. The feasible rate of institutional capital formation is bounded by the cost of capital faced by the state, regardless of policy ambition or administrative capability.

Institutional capital has long-dated, diffuse returns, which make it acutely sensitive to the discount rate. Where sovereign borrowing costs are high, the composition of the stock shifts towards short-payback,



visible applications and away from the foundational registry and interoperability layers that make everything above them cheaper. Maintenance is cut first. Financing conditions translate directly into a maintenance gap and a depreciating stock, weakening fiscal performance and raising borrowing costs again.

This is not an argument for lower ambition. It is an argument for treating concessional terms, guarantees and blended structures as design variables of DPI strategy rather than as separate financial questions.



Choosing a pathway

The most advanced technical option is rarely the right one. Three questions discriminate better than any maturity index.

01

Can we govern it?

Do we have the legal authority, standards-setting capacity, and institutional mandate to run it in the public interest without dependence on a single vendor?

02

Can we finance it across the full life cycle?

Not procurement — operations, security, upgrades, user support and staff, budgeted over a decade.

03

Can we maintain it when external support ends?

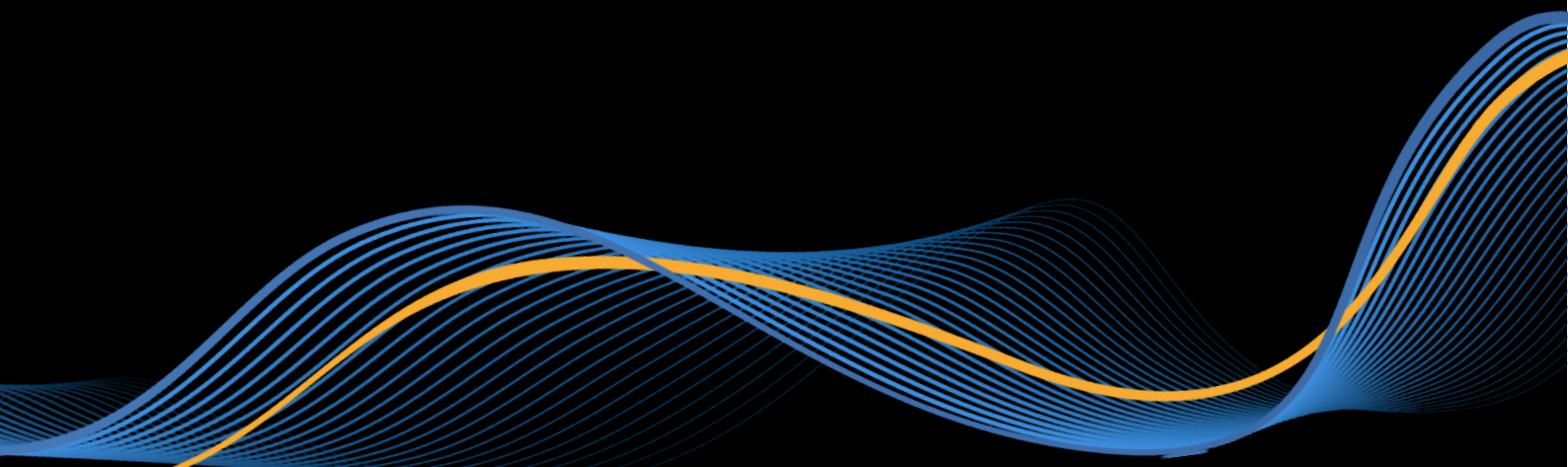
If the answer depends on a partner's project cycle, the capability has not been formed.

The partnership implication

For international organisations, development partners and technology providers, the objective should not be delivering systems. It should be to help countries accumulate capabilities they own, govern and can afford to keep. Pilots should be judged not by their outputs but by what they leave behind: standards, skills, governance arrangements, coordination mechanisms, and fiscal sustainability. Regional cooperation — shared open standards, reusable components, pooled regulatory learning — lowers the cost of formation for everyone.

The policy question should therefore shift from “what platform should we deploy?” to “what enduring public capability are we building, and what will keep it producing value?”

Africa has the opportunity not merely to adopt digital public infrastructure, but to demonstrate how digital investment becomes institutional capital, and how institutional capital becomes growth.





How can African
countries benefit from
digital public
infrastructure
to spur more inclusive
development?



Federico BONAGLIA

Deputy Director,
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Andrea CINQUE

Economist,
OECD Development Centre



Africa stands at a pivotal moment. The continent combines some of the world's greatest development opportunities with some of its most pressing development challenges. Every year, around 29 million young Africans reach working age, making job creation and economic transformation an urgent priority. At the same time, digital public infrastructure (DPI) has emerged as a promising tool to support inclusion, improve public services and accelerate regional integration.

The experience of countries such as India and Brazil demonstrates the transformative potential of digital public infrastructure. India's Unified Payments Interface (UPI) and Brazil's Digital Public Payment system PIX have dramatically expanded access to digital payments, reduced transaction costs and accelerated financial inclusion, while creating platforms on which governments and businesses can build new services. These experiences have strengthened the case for DPI as a powerful tool for advancing social and economic inclusion. For Africa, however, the critical question is not whether DPI matters, but whether countries are investing in the conditions needed for DPI to deliver similar returns. DPI is a "soft" digital layer that depends

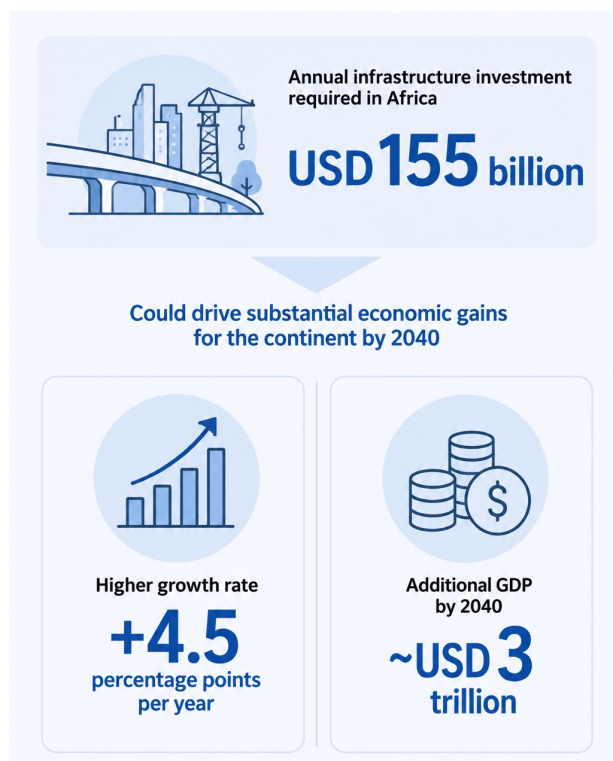
on hard foundations: fibre-optic networks, reliable energy systems, affordable devices and connectivity, skilled workers and effective institutions. Without these complementary investments, DPI may improve digital services but fall short of its broader potential to support productivity growth, economic integration and inclusive development.

Africa's enormous potential

Africa's economic potential is difficult to overstate. The continent's greatest asset is its people. Africa has the world's youngest population, with a median age of 19 years, compared with 30 in Latin America and the Caribbean, 31 in developing Asia and 42 in Europe. Over the next two decades, the number of Africans with higher education is projected to double to around 240 million. According to OECD-African Union analysis, if all African children acquired the same level of basic skills as their peers in OECD countries, Africa's GDP could become 22 times larger by the end of the century.

The continent also possesses exceptional natural assets. Africa holds 60% of the world's best solar resources, major reserves of critical minerals needed for the global energy transition and vast carbon-sequestering forests. North Africa alone could become one of the world's leading exporters of green hydrogen, with projected exports worth USD 110 billion annually by 2050.

Investment opportunities are equally significant. According to *Africa's Development Dynamics 2025*, investing the estimated USD 155 billion required annually in infrastructure could raise Africa's growth rate by 4.5 percentage points per year and add almost USD 3 trillion to the continent's GDP by 2040.

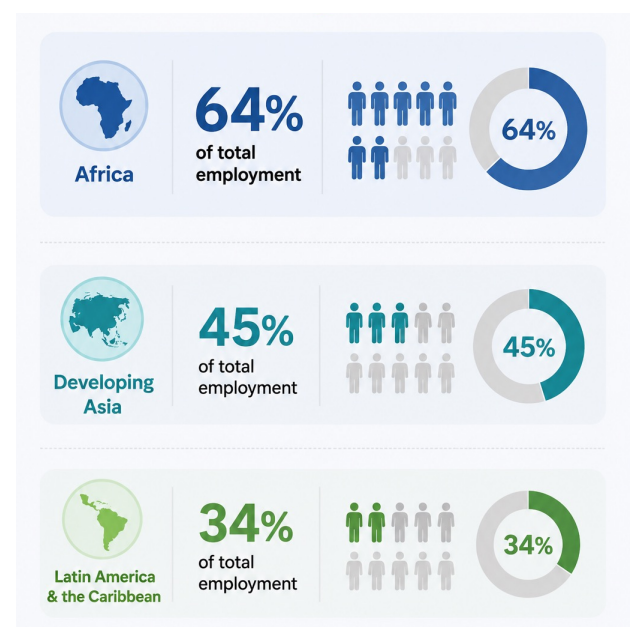


Africa has already demonstrated its capacity for digital innovation. The continent now processes around 65% of global mobile money transactions and hosts more than 850 million mobile money accounts. More than 500 fintech firms and over 640 technology hubs are helping to build a dynamic digital economy.

The challenge: creating productive jobs and accelerating transformation

Despite its enormous potential, Africa continues to face structural challenges that constrain the realisation of its full development potential.

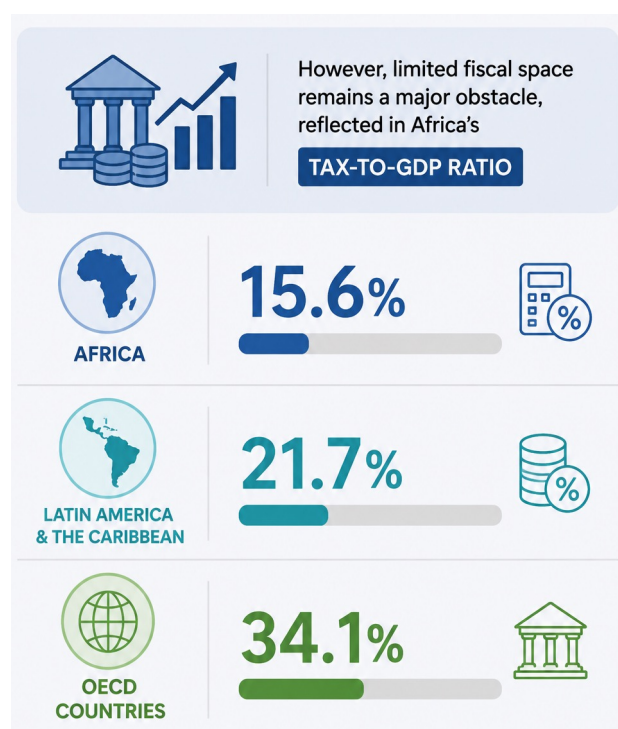
Perhaps the most significant challenge is employment. Africa's working-age population is growing faster than the creation of productive formal jobs. Most jobs have been created in low-productivity sectors, particularly agriculture and informal services, and informality remains a defining feature of African labour markets. Own-account workers and contributing family workers represented nearly 64% of total employment, compared with 45% in developing Asia and 34% in Latin America and the Caribbean.



Education outcomes have improved, but quality and labour-market relevance remain major concerns. The average number of years of schooling increased from 4.6 years in 2000 to 6.7 years in 2020; however, this falls to just 5.1 years when adjusted for learning outcomes.

Nearly half of African youth report that their skills are not aligned with labour-market needs, with 28% feeling underqualified and 17% feeling overqualified for available jobs. As a result, the continent faces a persistent productivity challenge. Africa's labour productivity has remained at roughly one-fifth of US productivity levels over the past two decades.

Addressing these challenges requires significant investment in human and physical capital. However, limited fiscal space remains a major obstacle, reflected in Africa's tax-to-GDP ratio of 15.6%, compared with 21.7% in Latin America and the Caribbean and 34.1% in OECD countries.



The promise of digital public infrastructure

Against this backdrop, digital public infrastructure offers important opportunities to support inclusion, productivity and integration.

DPI refers to foundational digital systems such as digital identities, digital payment platforms and data-exchange mechanisms that enable both public-service delivery and private-sector innovation. Properly implemented, these systems can lower transaction costs, simplify access to services and facilitate participation in economic activity.

They can also support regional integration. DPI can streamline customs procedures, facilitate cross-border payments, support digital trade and improve access to finance for SMEs. In doing so, it can help advance the objectives of the African Continental Free Trade Area (AfCFTA).

According to the UCL Institute for Innovation and Public Purpose's *Digital Public Infrastructure Map*, many African countries have made significant progress in developing digital identity, payment and data-sharing systems. Countries such as Kenya, Rwanda, Nigeria, South Africa and Cabo Verde are among the leading adopters.

Yet implementation remains uneven. The UNDP report *Digital Public Infrastructure in Africa: A Leapfrog Catalyst for Inclusive Growth and Prosperity* highlights persistent challenges including fragmented systems, limited broadband infrastructure, shortages of technical skills, financing constraints, weak governance arrangements and concerns around trust, privacy and digital sovereignty.

These findings highlight a crucial reality: DPI should not be viewed simply as a technology project. Its success depends on broader investments that strengthen the foundations of digital transformation.

3 Gaps

Africa must close

Gap 1

Closing the connectivity gap

DPI can only benefit citizens and firms that can access it. Despite rapid urbanisation, around 62% of Africa's population is projected to live in intermediary cities, small towns and rural areas by 2050. Yet only 35% of intermediary cities are connected to fibre-optic networks. Affordability remains another major barrier: only 17% of Africans can afford 1 gigabyte of data, compared with 37% in Latin America and the Caribbean and 47% in Asia.

Bridging these connectivity gaps is essential if digital services are to reach people and businesses beyond major metropolitan centres.

Infrastructure investment gap



Africa invests USD 83 billion annually in infrastructure. Estimated requirement: USD 155 billion per year through 2040.

Annual infrastructure investment

Current investment
USD
83
billion
per year



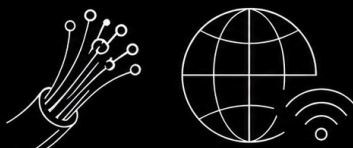
Estimated requirement
USD
155
billion
per year
through 2040



Annual investment needs in power infrastructure:
USD 43 billion
One of the largest priorities alongside transport and digital networks.



Strong progress in connectivity



Fibre-optic networks expanded from roughly

2010
466 000
kilometres → 2024
1.3
million
kilometres



Internet access

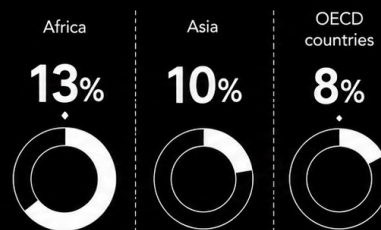
4x
QUADRUPLED

Highest cost of capital

Africa has the highest average cost of capital for infrastructure projects.



Average cost of capital for infrastructure projects



Gap 2

Closing the skills gap

The final enabling condition is skills. Africa's Development Dynamics 2024 shows that demand for digital skills is rising rapidly across the continent. Around 70% of future demand is expected to be for basic digital skills such as online communication, information search and digital transactions. However, the largest shortages concern intermediate and advanced skills. While nearly one-quarter of jobs require intermediate digital capabilities, only a small share of young Africans currently possess them.

DPI can facilitate inclusion, but only if citizens possess the skills needed to use digital identities, access online services and participate in digital markets. Investments in education, technical training and digital literacy are therefore not merely complementary to DPI—they are prerequisites for its success.



62%

of Africa's
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small towns and
rural areas by 2050



35%

of intermediary
cities in Africa
are connected to
fibre-optic
networks



% of population that can afford
1 gigabyte of data

17%



37%

Latin America
& the Caribbean



47%



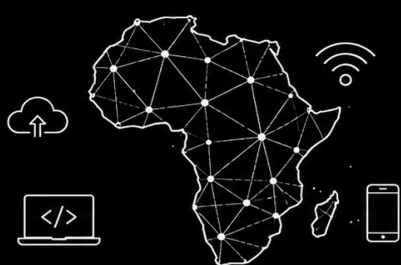
Closing the infrastructure investment gap

Digital systems depend on physical infrastructure. Africa currently invests around USD 83 billion annually in infrastructure, far below the estimated requirement of USD 155 billion per year through 2040. Africa's Development Dynamics 2025 estimates annual investment needs in power infrastructure at around USD 43 billion, making it one of the largest infrastructure priorities alongside transport and digital networks.

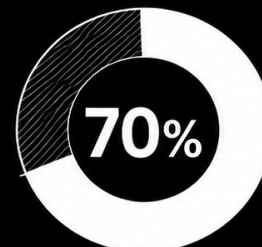
Progress has been substantial. Fibre-optic networks expanded from roughly 466 000 kilometres in 2010 to 1.3 million kilometres in 2024, while internet access quadrupled. Yet large gaps remain – with annual investment needs amounting to USD 36 billion. Beyond digital connectivity, energy access remains one of the most significant constraints, with nearly half of the continent's population still lacking access to electricity.

Financing these investments will not be easy. Africa faces the highest average cost of capital for infrastructure projects globally, at around 13%, compared with 10% in Asia and 8% in OECD countries. Mobilising greater private investment, improving project preparation and reducing information gaps will therefore be critical.

**Gap
3**



Demand for
digital skills is
rising rapidly
across the continent.



Around
70%
of future
demand
is expected to be
for **basic digital
skills**.



Basic
Digital
Skills



Advanced
Digital
Skills

DPI needs foundations, not just platforms

Digital public infrastructure can become a powerful catalyst for Africa's economic transformation. It can help integrate markets, improve service delivery, support entrepreneurship and expand economic inclusion. But DPI alone will not create productive jobs, raise productivity or accelerate structural transformation.

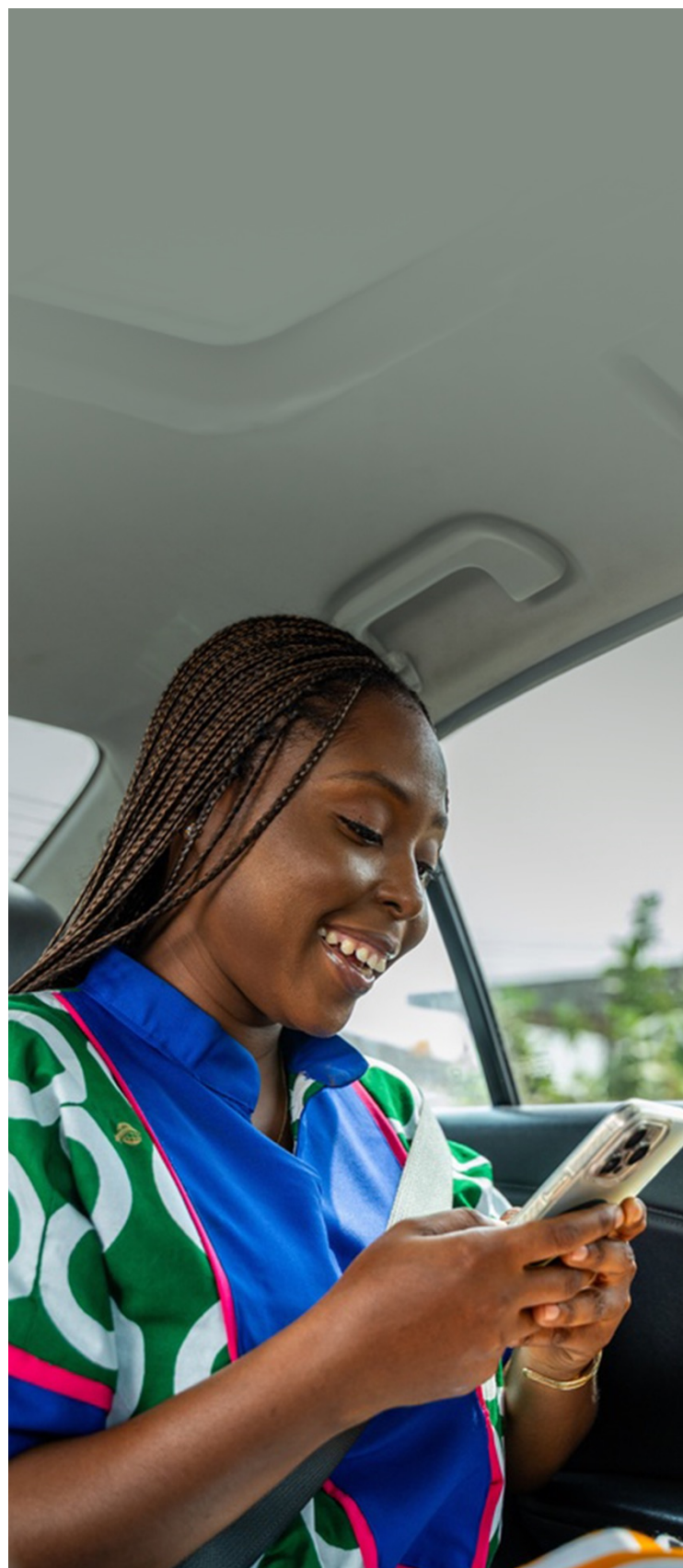
The real opportunity lies in combining DPI with investments in connectivity, energy, transport, skills and competitive enterprises. Africa's experience with mobile money demonstrates what is possible when digital innovation responds to real economic needs. The question is therefore not whether Africa needs digital public infrastructure. It is whether African countries can mobilise the complementary investments required to turn DPI into a driver of inclusion, economic integration and shared prosperity.

Sources

This article draws on evidence and analysis from the African Union Commission (AUC) and OECD's *Africa's Development Dynamics* reports, notably *Digital Transformation for Quality Jobs* (2021), *Skills, Jobs and Productivity in Africa's Digital Economy* (2024), and the 2025 edition on infrastructure investment, financing and productive transformation. It also draws on the United Nations Development Programme (UNDP) report *Digital Public Infrastructure in Africa: A Leapfrog Catalyst for Inclusive Growth and Prosperity*, as well as the University College London's Institute for Innovation and Public Purpose (UCL IIPP) *Digital Public Infrastructure Map* and related DPI Toolkit.

Disclaimer

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Women-centric DPI: More Than an Economic Multiplier





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India's Digital Public Infrastructure (DPI) has rightly earned global recognition as one of the country's most transformative public innovations. The JAM trinity (Jan Dhan accounts, Aadhaar and mobile connectivity) along with platforms such as UPI, DigiLocker, Government e-Marketplace (GeM), Skill India Digital Hub, API Setu, and the PM GatiShakti, have redefined the relationship between the citizen and the State. They have made welfare delivery faster, reduced leakages, lowered transaction costs and expanded financial inclusion at an unprecedented scale.

Yet, the true promise of India's DPI revolution may lie beyond mere digitisation of services or enabling financial transactions. One of the greatest dividends of the digital inclusion drive over the past decade has been quietly seen in rural India in the enhanced financial agency of women and the positive outcomes that have followed across social indicators like nutrition, health, education, financial resilience and household welfare. The yardstick then for a gender-intentional-next-gen design is to ask how can DPI raise women's labour force participation, earnings, and access to public services; and which safeguards (privacy, consent, grievance redress) are essential for inclusion?

This puts into perspective, the true transformative potential of a women-centred DPI, which more than an economic enabler, can become a social multiplier. Economists have long observed that who receives income within a household often matters as much as how much income the household earns. Nobel laureate Esther Duflo's work has shown that increasing women's control over household resources leads to greater investments in children's health and nutrition. Studies by the World Bank and UN Women similarly find that women are consistently more likely than men to allocate additional income towards food security, healthcare, education and other family needs, whereas men tend to spend a relatively larger share on personal consumption. While these are broad behavioural trends rather than universal rules, they are remarkably consistent across diverse socio-economic contexts.

India's welfare architecture increasingly reflects this understanding. Over the past decade, many flagship welfare programmes have consciously transferred benefits directly into bank accounts owned by women. The Pradhan Mantri Matru Vandana Yojana has provided income support to more than 4 crore women during pregnancy and early motherhood, recognizing that improved maternal nutrition has lasting consequences for child development. Under POSHAN

Abhiyaan, digital monitoring and targeted interventions at over 14 lakh Anganwadi Centres for nearly 9 crore beneficiaries seek to improve maternal and child nutrition. State-level schemes enabled by JAM trinity such as Odisha's Mission Shakti, Madhya Pradesh's Ladli Behna Yojana, West Bengal's Lakshmi Bhandar and Bihar's Mukhyamantri Mahila Rojgar Yojna similarly place financial resources directly in the hands of millions of women.



A bank account linked to a woman's digital identity is not simply a financial product, it is often a woman's first independently controlled economic asset. DPI has moved money directly to women at unprecedented scale. The ability to receive money directly, authenticate identity digitally and transact without intermediaries enhances her autonomy within the household and reduces her dependence on informal power structures. Digital ownership gradually translates into greater confidence in engaging with markets, government services and formal financial institutions. The outcomes by implication will extend well beyond financial access. Even when tracking beneficiaries, the test is whether women actually benefit from allocated money. We must track where money and contracts land, and grievance systems that

women can access without fear. If the benefit ends up in the account of her husband, brother, or any other proxy beneficiary, the system needs repair.

This is where DPI becomes more than technology – it is institutional for social transformation. DPI must build for agency – not simply access. Aadhaar has given an ID. UPI enables people to pay and Jan Dhan has created bank accounts. But who has agency to own the phone, who knows the UPI personal Identification number, who manages the bank account and controls earnings and expenses? In that data is asymmetrical. Women continue to face structural barriers across the digital ecosystem. NFHS-6 data shows that only 59% of rural women have ever used internet (compared to 77% rural men). They are less likely to own smartphones, have lower levels of digital literacy, often depend on shared devices and encounter social norms that restrict technology use. Rural women frequently rely on assisted access through banking correspondents or Common Service Centres, while concerns around privacy, cyber fraud and online harassment disproportionately affect their willingness to engage digitally. Therefore, policy formulation with respect to DPI cannot assume that equal digital access automatically translates into equal outcomes.

True empowerment requires a shift from funding isolated skilling projects to investing in integrated economic inclusion ecosystems, connecting skilling, finance, mentorship, and women led enterprises unlocking market opportunities with DPI. A women-centric DPI requires moving beyond counting female bank accounts towards measuring whether women can actually use digital platforms independently, confidently and safely. Ease of access for women should become a core success metric alongside transaction volumes or platform adoption. This would include indicators such as independent usage, application rates for government services, grievance resolution, accessibility for low-literacy users, language diversity, and digital safety outcomes.

When a woman receives a benefit directly into her account, the transaction may end on a digital platform.



Its real impact begins in the household, in a more nutritious meal, a child's school fee paid on time, a timely visit to a health centre, or a family's improved resilience against economic shocks.

Every rupee transferred through women has the potential to create value far beyond its monetary worth. Evaluations of cash transfer programmes in India and internationally show that women frequently prioritise expenditure on food, school-related expenses, medicines, household essentials and productive assets. Studies examining cash transfer programmes have found improvements in dietary diversity, reductions in food insecurity, increased school attendance and better utilisation of healthcare services when women control household transfers.

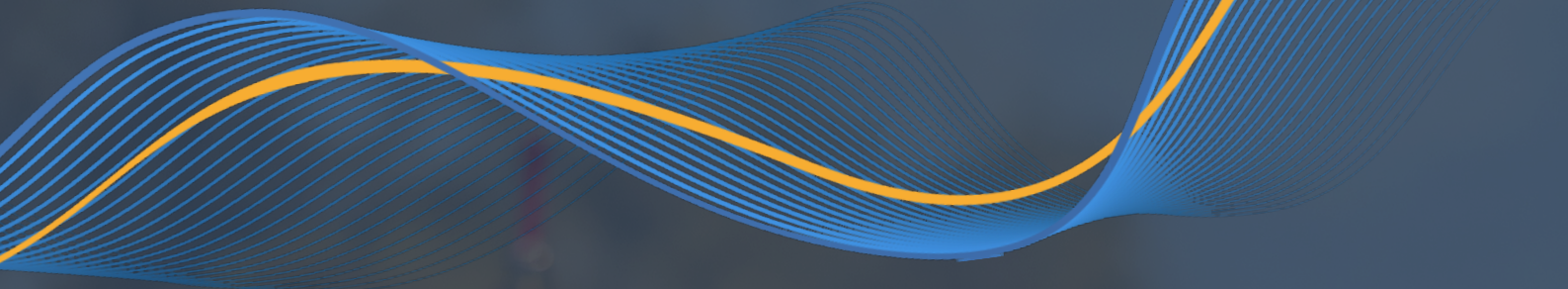
Equally important is ensuring that women participate not merely as beneficiaries but as architects of India's DPI. Women should have a stronger voice in policy formulation, platform governance, product design and implementation. User-testing of public platforms should deliberately include women from diverse socio-economic backgrounds, including rural users, informal workers, persons with disabilities and first-time digital users. Design choices, from interface simplicity and multilingual support to authentication mechanisms and consent architecture must reflect lived realities rather than technological assumptions. The frontline implementation ecosystem also requires a gender lens. Expanding the network of women

banking correspondents, digital sakhis, Self-Help Group (SHG) leaders and community digital facilitators can bridge the last-mile digital divide while simultaneously generating local employment.

Technology by itself is neither inclusive nor transformative. Its impact depends upon whose problems it solves and whose capabilities it expands. A digital ecosystem designed around the average user risks reproducing existing inequalities. Whereas one designed around the needs of women has the potential to uplift entire households. The next phase of India's DPI journey must therefore shift from infrastructure-led inclusion to inclusion-led infrastructure.

More than four in five working women in India operate in the informal economy, which means they power supply chains while remaining outside formal protections and value capture. Can the next wave of DPI be designed for closing gender gaps in work and enterprise? This could result in a scale of gain by lifting global gross domestic product by over twenty percent which no prudent nation can ignore.

That is why women-led DPI is not merely a financial multiplier – is a sound economic policy. If India truly seeks to realise the full promise of its DPI, women cannot remain just beneficiaries of the system, they must become its central design principle as movers of powerful social multipliers available to a developing nation.



The Future of Artificial Intelligence in India by 2050

From Digital Public Infrastructure and the IndiaAI Mission to the Viksit Bharat 2047 vision of a developed nation.





Shyam P Mardikar

President Autonomous
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Mobility, Jio Platforms



Aayush Bhatnagar

Chief Technology Development
Officer, Jio Platforms

Artificial Intelligence and India's National Priorities

Artificial Intelligence will become a foundational technology for India by 2050. It will influence economic growth, public services, national infrastructure, education, healthcare, agriculture, manufacturing, telecommunications, and scientific research. Its development must be understood in the context of India's national priorities, including Digital Public Infrastructure, Atmanirbhar Bharat, the IndiaAI Mission, and the Viksit Bharat 2047 vision of becoming a developed nation by the centenary of independence.

A National Intelligence Layer

India has already built large scale digital systems in identity, payments, governance, telecommunications, and public service delivery. By 2050, AI will act as an intelligence layer across these systems. It will support prediction, automation, decision support, personalization, fraud detection, and real time service delivery. This will strengthen the ability of public and private institutions to operate at population scale.



By 2050, AI will act as an intelligence layer across these systems



The IndiaAI Mission

The Government of India has established a strong policy foundation for AI through the IndiaAI Mission. The mission supports the development of the national AI ecosystem through compute infrastructure, data platforms, application development, innovation, startup enablement, skilling, and responsible AI. These initiatives recognize that AI requires advanced computing infrastructure, high quality datasets, skilled professionals, research capability, and long term investment.



Economic Growth

AI will become a major driver of India's economic growth. Improvements in productivity across agriculture, manufacturing, logistics, healthcare, education, financial services, energy, and public administration will contribute to sustained GDP expansion. AI will improve operational efficiency, optimize resource utilization, strengthen industrial competitiveness, and create entirely new technology sectors. The AI economy will become an important pillar supporting India's transition into a developed economy.



Atmanirbhar Bharat and Self-Reliance

Atmanirbhar Bharat will remain central to India's AI future. AI systems depend upon semiconductors, cloud infrastructure, data centres, communication networks, cybersecurity platforms, software frameworks, and domain specific applications. Self reliance in these strategic technologies will strengthen national capability, improve technological resilience, and support indigenous innovation. It will also enable India to develop AI systems that address its languages, industries, governance models, and societal requirements.



Sector Transformations

Healthcare will experience one of the largest transformations. AI systems will analyse medical records, diagnostic images, laboratory results, wearable sensor data, and genomic information to assist doctors in diagnosis, treatment planning, and preventive care. Remote healthcare services, AI assisted diagnostics, and intelligent hospital operations will improve accessibility and quality of care across both urban and rural India.





Agriculture will benefit from AI based weather prediction, soil analysis, pest detection, irrigation planning, crop monitoring, and market intelligence. Satellite imagery, drones, sensors, and intelligent data platforms will assist farmers in making informed decisions throughout the agricultural cycle. These capabilities will improve productivity, reduce wastage, strengthen food security, and increase farmer incomes.

Manufacturing will evolve into intelligent production ecosystems where AI supports predictive maintenance, quality inspection, production planning, inventory optimization, robotics, digital twins, and supply chain management. These capabilities will improve productivity, product quality, and operational reliability while strengthening India's manufacturing competitiveness. They will also support the objectives of Atmanirbhar Bharat by expanding domestic technology and industrial capability.

Telecommunications will remain one of the foundational enablers of AI. Future communication networks will integrate AI into network planning, spectrum management, energy optimization, cybersecurity, service assurance, and autonomous operations. AI agents will continuously monitor network behaviour, identify faults, recommend corrective actions, and execute approved operational workflows. These intelligent communication networks will support advanced digital services across healthcare, education, transportation, manufacturing, and smart cities.



Governance, Science, and Security

Public administration will become increasingly data driven through AI enabled governance. Government departments will use AI to improve citizen services, taxation, welfare delivery, disaster management, infrastructure planning, environmental monitoring, and public resource management. These systems must operate with transparency, accountability, security, privacy, and appropriate human oversight.

Scientific research will accelerate through AI assisted discovery. Researchers will use AI to analyse complex datasets, simulate engineering systems, discover advanced materials, design pharmaceuticals, and improve scientific modelling. Collaboration between universities, research laboratories, startups, and industry will strengthen India's position in advanced science and deep technology.

Cybersecurity will become increasingly important as AI adoption expands across critical infrastructure. AI will continuously monitor digital systems, detect cyber threats, analyse attack patterns, and support rapid response. Secure AI deployment will require robust governance, trusted computing infrastructure, advanced cryptography, and resilient communication networks.



Alignment with Viksit Bharat 2047

By 2050, AI will be closely aligned with India's Viksit Bharat 2047 journey. The vision of becoming a developed nation requires sustained economic growth, technological leadership, industrial modernization, high quality public services, and globally competitive innovation. AI will serve as a common enabling technology across these national priorities, strengthening both economic development and societal progress.

AI will serve as a **common enabling technology** across these national priorities, strengthening both economic development and societal progress.



Foundations for Long-Term Success

STRATEGIC FOUNDATIONS

By 2050, AI will be closely aligned with India's Viksit Bharat 2047 journey. The vision of becoming a developed nation requires sustained economic growth, technological leadership, industrial modernization, high quality public services, and globally competitive innovation. AI will serve as a common enabling technology across these national priorities, strengthening both economic development and societal progress.



AI-Enabled National Achievements for India by 2050

By 2050, India should aim to achieve five major national outcomes through the systematic adoption of Artificial Intelligence.



Universal AI-Enabled Healthcare

India should establish a nationwide AI assisted healthcare ecosystem that supports early diagnosis, preventive medicine, remote patient monitoring, personalized treatment planning, and specialist access across every district. AI should become an integral component of public health infrastructure, improving accessibility, affordability, and quality of care.



Personalized Education and National Skilling

India should create an AI enabled education and skilling platform that delivers personalized learning in Indian languages, supports teachers through intelligent teaching assistants, and enables continuous workforce reskilling throughout an individual's career. This capability will strengthen human capital and prepare future generations for an AI driven economy.



Intelligent and Sustainable Agriculture

India should transform agriculture through AI based precision farming, climate aware crop planning, soil and water optimization, pest prediction, autonomous farm equipment, and intelligent supply chains. These capabilities should improve agricultural productivity, strengthen food security, and increase farmers' incomes.



Global Leadership in AI-Driven Manufacturing

India should build globally competitive AI enabled manufacturing ecosystems supported by indigenous semiconductors, robotics, industrial automation, digital twins, and intelligent factories. These capabilities will strengthen Atmanirbhar Bharat, increase exports, improve industrial productivity, and establish India as a leading global technology manufacturing hub.



AI-Native National Infrastructure and Governance

India should operate AI native public infrastructure across governance, transportation, telecommunications, energy, disaster management, cybersecurity, and public services. These systems should provide secure, transparent, efficient, and citizen centric service delivery while supporting the long term objectives of Viksit Bharat 2047 and sustaining India's growth beyond its centenary as an independent nation.

The Children of the Stack: How India's Digital Public Infrastructure could shape the world's first generation of AI natives.

Sometime around 2028, in Warangal, a girl is born. Let us call her Kavya.

Her grandparents lived through Y2K and helped build the digital infrastructure that powers the nation today. They began in a world of paper forms, trunk calls and long queues, and migrated into the digital one, laying it down as they crossed. The mobile generations from 2G to 5G, the fibre-optic networks and the data centres became the backbone on which social media and digital public infrastructure would thrive. **The Digital Migrants.**

Her parents were born at the turn of the century, just as India began to go digital in earnest. By the time they were teenagers, tele-density had climbed from three per cent to eighty, smartphones were everywhere, and a social-media account had become a second identity. For them, the reflex in any moment of need was to reach for a screen; the world was something you went through glass to meet. **The Digital Natives.**

For Kavya, the world has gone beyond digital. It is intelligent: it perceives, reasons and responds. Screens are no longer the only surface, and language is no longer a barrier. She will meet this world by talking, in Telugu, to something that answers on a screen, through a speaker or in the air around her. She will not experience artificial intelligence as a technological revolution. She will live it as her childhood. **The AI Natives.**

Kavya will not learn to use intelligent machines. She will simply never know a world without them. For her, they will not be tools to be picked up, but the medium

through which the world arrives, the way electricity was for her parents: invisible, assumed and taken for granted.

This is what makes India's encounter with artificial intelligence unlike anyone else's. The technology is not landing on a blank page. It is arriving on rails already laid at the scale of a billion-plus people; the very rails her grandparents helped build: resilient telecommunications networks carrying every conversation, payment, request and answer; identity that can be established at scale, money that moves instantly, and a public digital foundation the rest of the world has only begun to study.

Three broad models of AI are emerging. One runs through the market, reaching people through a handful of powerful platforms: the market's way. One runs through the state, organised and directed from the centre: the state's way. India is attempting a third: intelligence as a public good, delivered on open rails, in one's own language, built by many hands rather than owned by a few.

This is the story of that third path, told through the child being raised on it.

The question is not whether Kavya will grow up with artificial intelligence. She will. The question is what kind of citizen it will help her become. Will these new rails make her freer, more capable and more connected? Or will they merely make her more efficiently governed?



What changes

Four things change for Kavya's generation.

Long before Kavya understands what artificial intelligence is, she discovers that it understands her.

At five, she speaks to it in Telugu without wondering whether it knows the language.

For two centuries, the price of the Indian future was often a second language. English was the toll gate to the good job, the form and the loan. Artificial intelligence can lift that toll. When a machine understands Maithili as easily as English, ambition is no longer taxed at the door of a borrowed tongue.

But a language machine is also a language politics. The great standard languages will be served beautifully. The smaller ones, the dialect of a grandmother's village, risk being rounded off towards whatever the data prefers. And every sentence Kavya speaks may also become a record. The mother tongue, once the most private thing a person owns, becomes data.

Before she even notices it, Kavya begins to use systems whose workings she never sees. Money moves. Identity is verified. Services arrive. Trust is assumed. She does not ask which institution sits underneath them any more than she asks which power station lit the room.

Today, much of the intelligence we encounter resides inside an app, behind someone's login: a voice assistant on a phone, a chatbot on a shopping site, a recommendation engine that works only within one company's walls. The rewards flow back to whoever owns that wall.

India chose to build differently. The rails Kavya's grandparents laid, payments, identity and commerce, were built as public infrastructure, open to many participants. UPI allows banks and applications to move money on a common network. Aadhaar enables identity to be established across services. ONDC seeks to let sellers and buyers meet across an open commerce network.

A village clinic builds on these rails. So does a startup. So does a large firm. All stand on the same ground and can, in principle, reach the same citizen.

But open ground is not necessarily fair ground. Whoever builds the smartest agent on these rails may still gather power to themselves. The same infrastructure that can include a citizen at scale can exclude one just as quickly.

As she starts travelling, Kavya discovers the plurality of India. The India that lives in cities and the India that is rural. Both are embracing the intelligence fabric the way they embraced digital.

There is a clear precedent for hope. Rural India never queued for the personal computer; it leapt directly to the smartphone and then to instant payments. Adoption at this scale has few parallels.

Voice and agentic delegation offer the possibility of another such leap: a health worker with an intelligent assistant; a farmer receiving advice and market prices in his own language; a corner shop trading over the same rails as much larger businesses.

However, access to intelligence will not be equal merely because intelligence exists. The quality of the device, the network, the model, the data and the assistance behind it will shape the quality of the opportunity. A weak connection to an intelligent world can still reproduce an old disadvantage in a new form.

For Kavya, government will also increasingly wear the face of a machine.

By the time she is old enough to apply for a scholarship, the state may be something she speaks to more often than something she visits. The scholarship, the ration, the pension and the health consultation may be claimed through conversation rather than paperwork.

Done well, this could make the state more legible to the poor than it has ever been.

Done carelessly, it could fail them in a new way.

When an entitlement runs through an automated system, a single mismatch does not merely inconvenience a person; it can deny them food, money or care. Automated exclusion is quieter than the human kind, and often more complete.

That is why a human being who can still be reached, an official who still owns the final decision, and a complaint that still goes somewhere are not administrative niceties. They are the line between dignity and a closed file.



Kavya at seventeen

Picture Kavya at seventeen, in 2045.

She has never filled a paper form or stood in a government queue. She learned physics from something that answered in Telugu at midnight, and mathematics from something that never tired of her mistakes.

She does not shop the way her mother did, scrolling and comparing. She says what she needs, and agents do the finding, comparing and bargaining, returning only for her approval.

She runs a small business from her phone that reaches the whole country over rails she never pauses to notice, in the same way her mother never thought about the current in the wall.

Her mother, at seventeen, walked to a bank, waited, and was turned away for want of a document. The distance between those two girls is the distance India means to travel. Her grandparents built the rails. Her parents learned to navigate them. Kavya simply assumes they have always existed.

What Kavya becomes at the far end of that distance will not be decided by the machine. It will be decided by who is watching over it, and where.

At home, that is her family and her teachers, asking whether she is learning to think or only learning to ask.

In government, it is the official who retains the final word when a machine recommends a decision about her life, and her right to be heard on the day it gets that decision wrong.

In the market, it is the company that built her tutor and shopping agent, and whether that company is required to serve her interests before its own.

Something quiet may still be lost along the way.

The shopkeeper who gave credit on trust. The bargain struck at the market. The small frictions that were never only about the transaction, but about belonging to a place.

Whether these disappear, or are carried forward in some new form, is also a matter of who is paying attention.

None of this is decided by technology alone. It is decided by us, and by how seriously family, government and market each answer for their part in it.

Those choices must be made before Kavya's generation comes of age.



A preview for the plural world

This is why Kavya's story is not only India's story.

India is attempting one of the hardest versions of the problem, in the open. A rich country with one dominant language may be able to design for one broad kind of citizen. India cannot. It must serve many languages, many levels of trust, uneven access and multiple social realities at once.

Countries across Asia, Africa and Latin America do not face India's problem merely by analogy. They confront versions of the same challenge: how to build intelligence for societies that are young, plural, unequal, multilingual and rapidly digitising.

India has begun to offer something outward: not a finished model, but scaffolding, the rails, the language tools and the hard-won lessons.



The third path: public, plural and built for the vernacular; offered so that others may build on it in their own way and in their own words. But a model is only a gift if its author is honest about its shadows. Offered with its warnings, it becomes a contribution. Offered without them, it becomes a sales pitch.

India should have the confidence to choose the first.

Kavya will grow up either way. The AI world is coming to her regardless.

The question is how it will influence and shape her. Whether the rails she was born onto make her freer, or only more efficiently governed. Whether they widen her world, or narrow it to a single comfortable lane.

That is a question artificial intelligence will not answer. It is ours. We do not know the answer yet. That not-knowing is the honest centre of the whole endeavour.

Her grandparents built towers, fibre, data centres and software, rarely imagining the child who would one day inherit them. Kavya will inherit something larger than infrastructure. She will inherit the assumptions built into it: the values it rewards, the freedoms it protects and the constraints it quietly accepts.

Millions of children beyond India will grow up alongside Kavya, inheriting similar rails in different languages, under different flags. They too will discover what kind of citizens those systems quietly encourage.

The world is watching India first, to see what we decide.



Beyond Connectivity: Building India's Digital Future



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There is a moment in the middle of most digital transactions that pass unnoticed. A payment settles. An OTP arrives. A merchant hears the familiar chime of a successful UPI payment. Somewhere between the beginning and end, a digital identity has been authenticated, a bank has spoken to another bank, and a telecom network has quietly carried thousands of signals across the country. Everything has worked so seamlessly that the only remarkable thing about the moment is how unremarkable it feels. We experience the outcome but rarely the machinery behind it, which is, in a strange way, the entire achievement of India's Digital Public Infrastructure (DPI). Like all great infrastructure, it remains invisible until it fails.

Over the past decade, India has built one of the world's largest DPI ecosystems. More than 144 crore Aadhaar numbers now exist, generating over 2,707 crore authentication transactions in a single year. Jan Dhan accounts have grown from 14.72 crore in 2015 to 57.71 crore as of March 2026. And underneath it all runs the connective tissue of mobile networks with 125.87 crore subscribers, 5G reaching 99.9 percent of India's districts, more than five lakh 5G base stations knitting the country together.

The JAM trinity – Jan Dhan, Aadhaar, Mobile – has rewired the entire relationship between citizen and state, cutting out delay and leakage, and placing dignity and access directly into people's hands, in exchange for one thing: trust. Maintaining this trust requires resilience at every layer of DPI.

A useful way to understand DPI is through four interconnected layers. The first is **connectivity**: reliable and affordable networks that enable every digital interaction. The second is **physical infrastructure**: secure and scalable data centres where critical information is stored. The third is the **application layer**: platforms such as Aadhaar, UPI and Account Aggregators that enable identity, payments and consent-based data sharing. The fourth is governance: the policies, standards and institutions that ensure security, accountability and interoperability.

Together, these layers create the confidence that allows millions of Indians to transact digitally every day. They also carry some of the country's most sensitive information – from biometrics to financial records, making security by design a necessity rather than an option. Digital fraud illustrates why this matters.

Most scams do not exploit technology; they exploit trust. A customer receives a banking OTP while speaking to a fraudster. Within seconds, urgency and manipulation turn a legitimate security feature into the very tool that enables fraud. Telecom networks occupy a unique position in preventing such attacks. Unlike any single bank or platform, they can observe network-level signals such as SIM swaps, abnormal device behaviour and unusual network activity that may indicate fraud before money is lost. Used responsibly, these signals can complement existing fraud detection systems and strengthen trust across the wider digital ecosystem.

That understanding has shaped Airtel's approach to protecting consumers. Our AI-powered Spam Detection Solution, launched in September 2024, has helped cut the value of fraud across the Airtel network by nearly 70%. Our Fraud Detection Solution, which followed in May 2025, extended that same vigilance further into the network. In February 2026, we launched the Banking OTP Detection Solution, which delays delivery of a banking OTP until the customer explicitly confirms the transaction is safe. Each addresses a different stage of the fraud lifecycle, but all are built around the same principle: protecting trust before it is compromised.

The same intelligence can also help institutions. Fraud rarely remains confined to individual victims; it increasingly targets the banks, payment systems and platforms that underpin trust in the digital economy. Every bank opening an account or clearing a transaction is making a judgment about risk. Telecom networks can contribute signals that no single institution possesses in isolation. Shared securely, this intelligence can help financial institutions identify fraud earlier, improving the resilience of the entire ecosystem.

However, protecting trust requires consistency across the ecosystem. Telecom networks operate under rigorous accountability requirements including verified identities, lawful interception and spam controls. Meanwhile, messaging platforms carrying an equivalent

volume of interpersonal communication face no comparable standard, even though consumers expect the same level of safety. That expectation deserves to be met, and meeting it requires a shift in how we think about the problem. India does not need to regulate technologies; it needs to regulate outcomes.

If a platform enables interpersonal communication at scale, it should carry common baseline obligations around sender verification, fraud prevention, intelligence sharing and consumer protection, regardless of the technology beneath it. A Unified National Communications Framework would not diminish innovation. It would simply ensure that innovation grows on a foundation of accountability.

Trust also extends beyond transactions to the infrastructure on which they depend. As governments, businesses and AI systems increasingly rely on cloud platforms, digital sovereignty becomes an important dimension of resilience. For critical public services and strategic national data, trusted cloud infrastructure governed under Indian laws can strengthen both security and national capability.

That is why we built Airtel Cloud as an extension of the same responsibility that drives our work in fraud prevention and consumer protection. An India-owned, India-operated cloud applies the operational discipline of regulated telecom infrastructure to protecting the country's most valuable digital assets. Whether safeguarding a customer's OTP or hosting critical national workloads, the principle is the same: trust must be protected at every layer.

India did not arrive at the scale of its digital public infrastructure by accident, and it will not remain trustworthy by accident either. Preserving that achievement will require continued investment not only in technology but also in governance, security and collaboration. Trust cannot be confined to a single platform or institution. It must extend across networks, infrastructure, applications and policy. Somewhere between the citizen protecting a single password and the nation protecting its data lies one continuous idea – a single, unbroken commitment to the proposition that in a digital economy, trust is not a feature. It is the foundation everything else stands on.



India's digital transformation stands among the defining success stories of the 21st century. In just over a decade, the country has built a digital ecosystem that has fundamentally changed how citizens interact with governments, businesses and each other. More importantly, India has demonstrated that when digital infrastructure is designed as a public good, it can become a powerful catalyst for economic growth, financial inclusion, innovation and social empowerment. In the process, India has evolved from being a large user of digital technologies to becoming the architect of one of the world's most sophisticated population-scale digital ecosystems.

This remarkable journey did not begin with technology alone. It began with a simple but transformative idea—bringing together financial inclusion, trusted identity and universal connectivity.

The JAM Trinity—Jan Dhan, Aadhaar and Mobile connectivity—laid the foundation for India's digital revolution. Jan Dhan brought hundreds of millions of citizens into the formal banking system. Aadhaar established a trusted digital identity at an unprecedented scale.

Mobile connectivity became the bridge that brought digital identity and financial inclusion to every citizen, anytime and anywhere. Together, these three pillars enabled Direct Benefit Transfers at scale, reduced leakages, accelerated financial inclusion and brought millions into the formal digital economy.

Building on this platform, India created one of the world's most sophisticated Digital Public Infrastructure ecosystems. Platforms such as UPI, DigiLocker, CoWIN, FASTag, ONDC and the Account Aggregator framework have transformed payments, healthcare, mobility, commerce and public service delivery. UPI today processes billions of transactions every month and has made India the global leader in real-time digital payments.

What distinguishes India's approach is that, rather than creating standalone digital applications, it built interoperable digital rails on which governments, startups and enterprises can innovate. This open architecture has lowered the cost of innovation, encouraged competition and created a vibrant digital ecosystem. Today, India's DPI is recognised globally as a model for inclusive digital development, with countries

across Asia, Africa, Latin America and the Middle East adopting elements of India's approach. In many ways, India is now exporting not just digital products, but digital public architecture.

India's telecom sector has quietly enabled this transformation through sustained investments over the past three decades. India today offers among the world's most affordable mobile broadband services while supporting one of the highest levels of mobile data consumption globally. It is this combination of reach, affordability and network resilience that has enabled India's Digital Public Infrastructure to scale to over a billion people.

At Airtel, we have long recognised that building world-class connectivity is about far more than providing telecom services—it is about enabling India's economic and social progress. Over nearly three decades, Airtel has consistently invested ahead of demand to create one of India's most extensive and resilient communications networks. Today, our services connect nearly million customers across the country. Our investments have always been guided by a simple belief—that world-class digital infrastructure is essential for India's long-term economic competitiveness.

For millions of Indians, Airtel's networks provide the mobile connectivity that enables the 'M' in the JAM Trinity. Every day, our networks enable citizens to authenticate themselves using Aadhaar, receive welfare benefits directly into Jan Dhan accounts, make UPI payments, access digital healthcare, learn online and participate in India's rapidly expanding digital economy. Our nationwide 5G rollout, backed by one of India's largest fibre footprints and intelligent network architecture, is creating the digital capacity needed for AI, immersive applications, industrial automation and the Internet of Things. These investments are not simply about expanding network capacity; they are about ensuring that every Indian can participate fully in the country's digital economy.

Through Airtel Business, we provide secure connectivity, cloud, cybersecurity, IoT and managed services that help organisations accelerate their digital transformation. India's digital journey is entering a new phase.



Around the world, cloud infrastructure, data centres, cybersecurity platforms and AI computing are strategic national assets. Through Nxtra by Airtel and our broader cloud ecosystem, we are building trusted digital infrastructure that allows enterprises and government institutions to keep critical workloads within India, under Indian laws, with the security, resilience and governance standards they require.

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Our sovereign cloud approach is designed for organisations that need the benefits of modern cloud architecture without compromising on data residency, operational control or regulatory compliance. Sovereign cloud is not merely about data localisation; it is about ensuring trust, resilience, operational continuity and strategic autonomy for India's most critical digital systems. By combining trusted cloud infrastructure with Airtel's nationwide connectivity, cybersecurity capabilities and AI-ready platforms, we are creating an integrated digital foundation capable of supporting the next generation of Digital Public Infrastructure.

India has already shown the world how Digital Public Infrastructure can transform a nation. The next opportunity is even greater—to become the architect of the world's most trusted digital economy.

For nearly three decades, Airtel has had the privilege of contributing to every major phase of India's digital journey—from expanding connectivity to enabling Digital Public Infrastructure and now helping build the trusted cloud and digital infrastructure that will power the AI era.

At Airtel, we remain committed to building the connectivity and trusted digital infrastructure that will enable every citizen, enterprise and institution to participate confidently in India's digital future. As India moves from digital inclusion to digital leadership, we are proud to help build resilient, sovereign and AI-ready foundations that will power the nation's next phase of growth.



A young man with dark skin and short hair is focused on playing Jenga. He is wearing a white t-shirt with red text that includes "Me 99" and "98". He has a green wristband on his left wrist. He is leaning over a wooden picnic table, carefully pulling a block from a tall, precarious stack of light-colored wooden blocks. The background is blurred, showing other people and greenery, suggesting an outdoor event. The image has a blue and orange wavy graphic overlay at the top.

Recommendations

Recommendations for Advancing Digital Public Infrastructure in the Global South

01

Design DPI to be AI-ready from the outset

DPI should be built as an enduring public foundation rather than as a collection of systems developed separately for individual schemes or departments. Identity, payments, registries, digital credentials and consent-based data-exchange platforms should be modular, interoperable and capable of securely using machine-readable data generated through public-service delivery.

This would allow countries to add AI capabilities without repeatedly rebuilding their foundational systems. Over time, AI-enabled DPI can help governments identify service gaps, guide eligible citizens towards relevant schemes and deliver support based on life events and individual circumstances. The objective should be to move from simply making services available online to delivering the right support to the right person at the right time.

02

Build a trusted and interoperable public-data layer

The effectiveness of AI will depend on the quality, completeness and representativeness of the data on which it operates. Governments should therefore establish common data standards, interoperable registries and clear institutional responsibility for maintaining the accuracy and currency of public datasets. Data from different programmes should be capable of being securely exchanged without creating unrestricted access or centralising all information in one place.

Purpose limitation, data minimisation, access controls, audit trails and consent-based exchange, where appropriate, should be built into this layer. Particular attention should be given to gaps relating to women, rural communities, informal workers, local languages and other groups that may be under-represented in existing datasets. Otherwise, AI could reproduce existing exclusions rather than help overcome them.

03

Modernise public-service processes alongside AI adoption

AI adoption should be accompanied by a gradual review of underlying public-service processes so that technology can deliver its full value. Governments can begin with high-impact use cases where data integration, automated verification, multilingual assistance and AI-enabled decision support can reduce delays and improve the citizen experience.

A phased approach – beginning with pilots and expanding on the basis of evidence – would allow institutions to modernise without disrupting essential services or waiting for complete administrative reform. Governments and technology partners should work together to design solutions that integrate with existing systems, reflect local institutional capacity and can be improved progressively as needs evolve.

04

Embed human accountability throughout AI-enabled service delivery

AI can support beneficiary identification, fraud detection, case prioritisation and administrative decision-making, but accountability must remain with the public institution concerned. Where an AI-assisted decision can affect a person's rights, benefits or access to essential services, citizens should be informed of its use and be able to seek an explanation, correction and human review.

Governments should adopt risk-based requirements for testing accuracy, bias, cybersecurity and reliability before deployment and throughout the system's operation. High-impact applications should be introduced through controlled pilots before being expanded. Accessible grievance-redress and appeal mechanisms should be treated as part of the core architecture rather than added after deployment.

05

Finance the complete lifecycle of DPI

DPI financing should account for the full lifecycle of a system, not only its initial development and rollout. Governments require predictable resources for maintenance, software upgrades, cybersecurity, data-quality improvement, cloud and compute requirements, AI-model evaluation, workforce development and assisted service-delivery channels.

These requirements should be reflected in multi-year budgets and total-cost-of-ownership assessments from the beginning. Financing by governments, development institutions and technology partners should be linked to clearly defined readiness, operational and public-outcome milestones. This would help prevent foundational platforms from deteriorating once the initial project funding or external technical support ends.

06

Move from one-time cooperation to country-owned implementation partnerships

DPI cooperation should progress beyond MoUs, demonstration projects and short-term knowledge exchanges. Partnerships should cover the full implementation journey—from institutional and data-readiness assessments to localisation, deployment, operation and eventual transfer of responsibilities to national institutions.

Programmes should develop local government product owners, data stewards, cybersecurity professionals, AI specialists and operational teams. Domestic technology firms, start-ups, universities and civil-society organisations should be involved so that knowledge and implementation capacity remain within the country. Procurement arrangements should require open documentation, portability, structured knowledge transfer and measurable local-capacity development. India's role should be to share adaptable principles and implementation experience, while each partner country retains ownership of its pathway.

07

Close the gap between infrastructure availability and meaningful use

The presence of fibre, mobile coverage or a digital platform does not automatically translate into active use. Last-mile DPI strategies should address the activation of available connections, reliable electricity, affordable data and devices, digital skills and trusted local support. The experience of programmes such as BharatNet demonstrates why service readiness must be followed by sustained attention to actual utilisation.

Every essential service should remain available through a combination of mobile, web, assisted and, where feasible, offline channels. AI-enabled interfaces should work in local languages, on low-bandwidth networks and on affordable devices. Citizens who cannot independently use a digital interface should have access to accountable human assistance.

08

Treat inclusion and individual agency as design requirements

DPI should be assessed not merely by how many people are enrolled, but by whether they can independently and safely use the services provided. Systems should account for differences in language, literacy, disability, geography, income and access to personal devices.

Women's financial inclusion requires particular attention to control and agency. Individual ownership should be the standard offering for women's accounts, rather than being treated as an alternative to joint ownership. Dedicated grievance-redress mechanisms should address situations in which women are denied access to or control over their accounts. Similar safeguards should be built across DPI systems so that enrolment produces meaningful participation rather than nominal inclusion.

09

Measure public outcomes and trust, not scale alone

Transaction volumes, enrolments and accounts opened remain important indicators, but they do not by themselves demonstrate improved public service delivery. DPI performance frameworks should also measure reductions in waiting time, wrongful exclusion, service-delivery costs, unresolved grievances and geographic or demographic access gaps.

For AI-enabled systems, governments should track incorrect recommendations, false positives, human overrides, bias across population groups and the time taken to resolve appeals. Citizen satisfaction, active usage and trust should be monitored through independent evaluation and regular feedback. Public dashboards can support transparency, while the findings should be used to continuously improve both the underlying DPI and the AI systems layered upon it.

10

Build National AI Literacy and Citizen Empowerment Programmes

Governments should complement AI-enabled DPI with large-scale AI literacy and digital empowerment initiatives, particularly for women, youth, micro-entrepreneurs, farmers, informal workers and first-time digital users. AI tools should be delivered in local languages through conversational interfaces, community facilitators and assisted-service networks. Success should be measured not only by digital adoption but by citizens' ability to independently access opportunities, improve livelihoods, participate in entrepreneurship and make informed decisions using AI-enabled public services.

11

Adopt Privacy-Preserving Digital Identity and Trust-by-Design Architectures

Countries should evolve digital identity systems beyond basic authentication towards privacy-preserving models based on selective disclosure, verifiable credentials, data minimisation and privacy-enhancing technologies. Citizens should be able to prove eligibility for a service without revealing unnecessary personal information. AI-enabled DPI systems should incorporate continuous assurance, auditable decision trails, cybersecurity-by-design and future-ready cryptographic standards to maintain trust as digital ecosystems scale.

12

Measure DPI Success Through Livelihood and Economic Inclusion Outcomes

Governments should assess DPI not only through transaction volumes and service delivery metrics, but also through measurable improvements in livelihoods, entrepreneurship, credit access, SME growth, formalisation of economic activity and financial resilience. Public-private ecosystems involving banks, fintechs, start-ups and local enterprises should be encouraged to build innovative services on shared digital rails. The objective should be to move citizens from access, to participation, to sustained economic prosperity.



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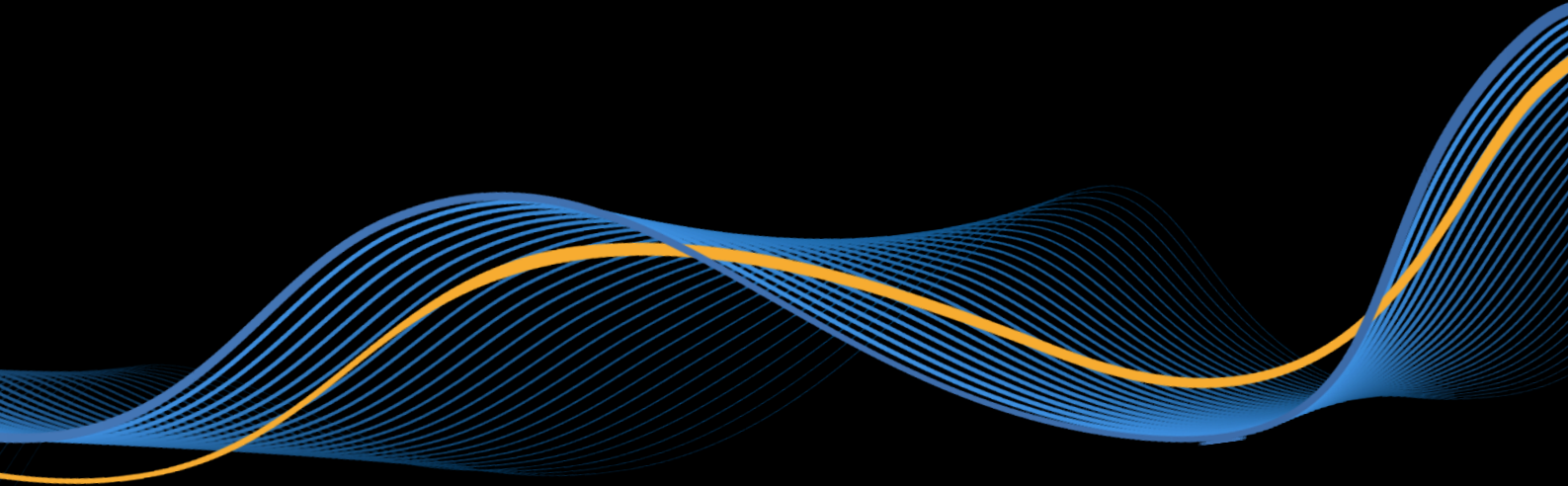
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