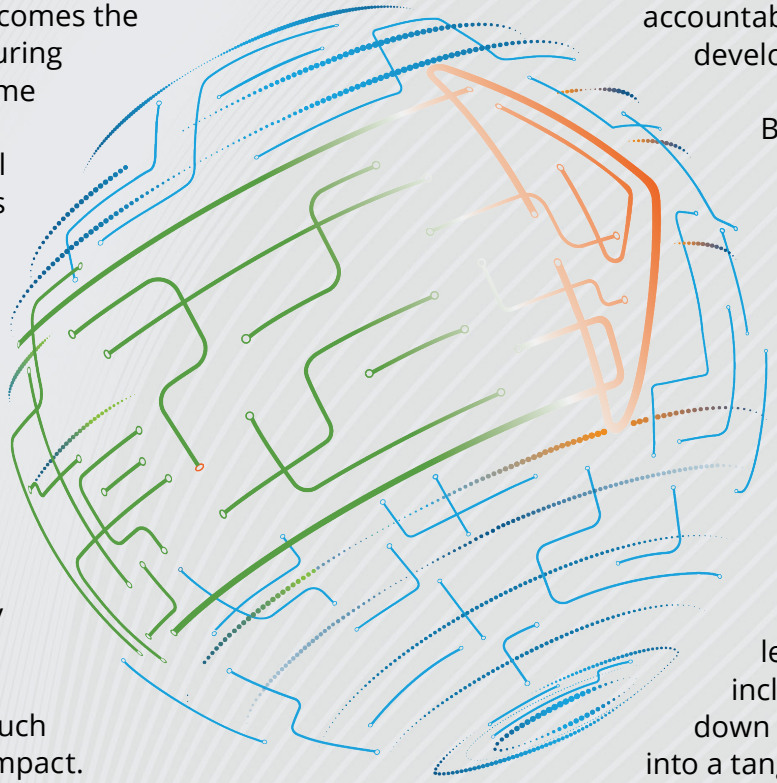
04 | Government digital transformation: The blueprint for Viksit Bharat

Harnessing the power of technology, India's vision for 2047 is to create a governance ecosystem that is faster, smarter and more inclusive than ever.

The goal of *Viksit Bharat* is to reorient governance using a digital-first mindset, where technology becomes the axis of India's developmental roadmap. During *Ārohaṇa: Growth with Impact,* the focal theme was holistic digitisation as the best way towards the swift development of national governance. This transformation promises to make governance more inclusive, efficient and innovative, connecting citizens to key services and unlocking India's full global potential.

India's ambitious *Digital Bharat* mission lays the foundation for a technology-driven future, empowering citizens and transforming governance. Speaking on this vision, the Secretary of the Ministry of Electronics and Information Technology (MeitY) emphasized key initiatives such as the IndiaAI Mission and the National Supercomputing Mission, while sessions such as Tech4Good also made an exceptional impact.



These initiatives bolster the country's digital infrastructure, collectively driving innovation, fostering smarter cities and improving public services through digital transformation. Discussions at *Ārohaṇa: Growth with Impact* further underscored the importance of measuring the success of digitisation initiatives, ensuring transparency, efficiency and accountability as India progresses towards its holistic developmental targets.

Beyond governance, India's digital evolution is driven by a broader DPI strategy encompassing Open Networks, cybersecurity, cloud computing and GenAI. These elements foster innovation and enable scalable, inclusive and secure solutions. Platforms such as the UPYOG offer a glimpse into how digital tools can streamline urban governance. However, the impact extends further. DPI-based frameworks are transforming industries, enabling interoperability and empowering businesses and individuals.

As India positions itself as a global technology leader, the focus remains on designing accessible, inclusive and sustainable digital ecosystems that break down barriers and turn the vision of *Viksit Bharat 2047* into a tangible reality.

4a. Laying the foundation for Mission 2047

Nitin J Gadkari
Minister of Road Transport and Highways, Government of India

Technological advancement, economic growth and strategic leadership are the core pillars that will strengthen the foundation of India's *Viksit Bharat Vision 2047.* In his keynote address, the Honourable Minister, Nitin J Gadkari, emphasized the goal of making India one of the world's leading economies. Sustainability, entrepreneurship and innovation in the urban and rural sectors are essential for inclusive growth and success. Additionally, uplifting India to a global leadership role depends on the country's ability to use technology and financial resources to drive innovation.

Economic growth through technological innovation

Technology is a key driver of India's sustained development. Industry leaders and entrepreneurs are vital contributors to this development if they focus on economically viable projects that emphasize the innovative use of technology to advance various sectors. The Honourable Minister also provided examples from the agriculture sector, such as the use of embryo transplant technology, aquatic agriculture and natural farming methods. These innovative technologies are receiving the necessary support to boost productivity and socio-economic growth.

> *We are making smart cities, but why not make smart villages? There is a potential for economic viability and growth in rural areas.*
>
> **Nitin J Gadkari**
> Minister of Road Transport and Highways, Government of India

Entrepreneurship and leadership in policy implementation

Entrepreneurship and leadership hold the key to this nation's progress. Although technology and financial resources are essential, the Honourable Minister emphasized that strong leadership with a clear vision makes all the difference. He urged policymakers to lead initiatives that foster growth in urban and rural areas. He also iterated the value of fast-track decision-making, transparency and a corruption-free system, which would be necessary to achieve the Viksit Bharat target.

Rural development as a pillar of growth

Speaking further on rural development as one of the essential pillars of India's future, the Honourable Minister, Nitin J Gadkari highlighted the importance of developing the agriculture sector to new heights. Farming is a primary income source for a large part of India's population. Modernising this sector through initiatives such as "smart villages," improved water management infrastructure and a wide range of new AgriTech innovations is crucial. As established before, the goal is to foster economic equalisation between urban and rural spaces to boost the larger economy and job market.

Sustainability and environmental responsibility

The Honourable Minister, Nitin J Gadkari emphasized the importance of sustainability by urging India to adopt “green energy solutions.” He highlighted the benefits of biofuels, hydrogen generation and other renewable energy sources in reducing the nation's dependence on fossil fuels. Projects such as bio-hydrogen cars and biomass fuel demonstrate the success of green technology in decreasing pollution and paving the way for a sustainable future in India.

Hydrogen is the potential holy grail for India’s renewable resource development. That is precisely why the country is investing in several experiments with biohydrogen, the findings of which can establish India as the leading expert in this burgeoning scientific area.

Integrated development across sectors

Finally, the Honourable Minister strongly advocated for **integrated development** across sectors that linked **infrastructure, industry and agriculture** through modern-tech solutions. He stated that these would be the building blocks for the country's smart cities and smart villages, fostering employment, addressing socioeconomic disparities and accelerating India’s path towards global leadership.

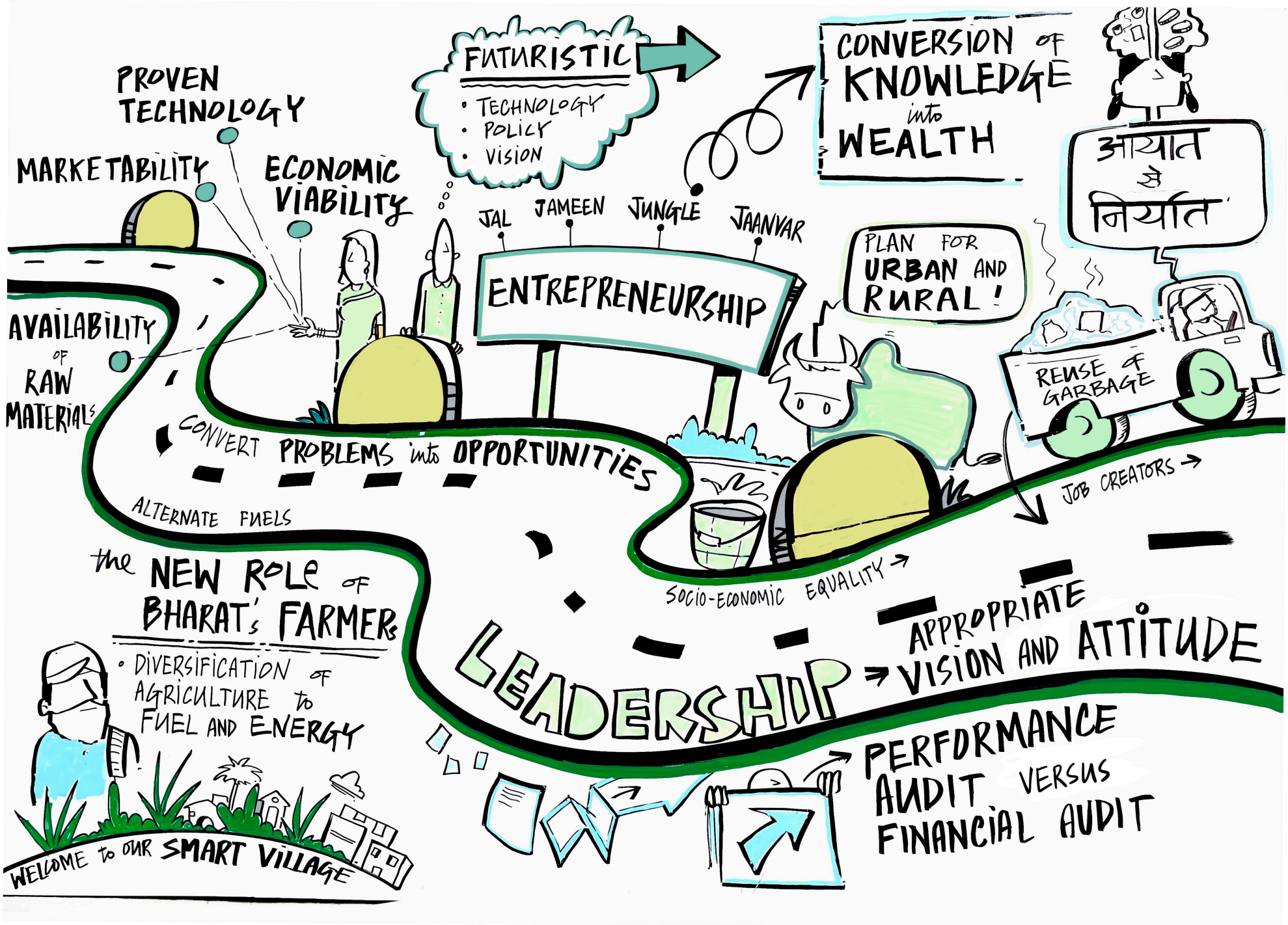
Technology is important. Financial resources are very important, but the most important thing is entrepreneurship and leadership with an appropriate vision. We can make a lot of things out of that.

Nitin J Gadkari

Minister of Road Transport and Highways, Government of India

Key takeaways

- **Technology as a growth driver:** Embrace technological innovations, particularly in agriculture and renewable energy, to drive India's economic growth and sustainability efforts.
- **Leadership and entrepreneurship:** Focus on transparent governance and fast-track decision-making, as strong leadership and entrepreneurial vision are essential to realise the *Viksit Bharat Vision 2047*.
- **Rural development:** Uplift rural sectors through "smart villages," water management and AgriTech solutions to ensure balanced, inclusive growth.
- **Sustainability:** Prioritise sustainable technologies, such as biofuels and hydrogen, to reduce dependence on fossil fuels and lower environmental degradation.
- **Integrated development:** Foster an integrated development model that links infrastructure, industry and agriculture with cutting-edge technology to create a robust and diverse economy.


PROVEN TECHNOLOGY
MARKETABILITY
ECONOMIC VIABILITY
FUTURISTIC
• TECHNOLOGY
• POLICY
• VISION
CONVERSION OF KNOWLEDGE into WEALTH
आयात से निर्यात
JAL
JAMEEN
JUNGLE
JAANVAR
ENTREPRENEURSHIP
PLAN FOR URBAN AND RURAL!
AVAILABILITY OF RAW MATERIALS
CONVERT PROBLEMS into OPPORTUNITIES
REUSE OF GARBAGE
JOB CREATORS →
ALTERNATE FUELS
the NEW ROLE OF BHARAT's FARMER
• DIVERSIFICATION OF AGRICULTURE to FUEL AND ENERGY
SOCIO-ECONOMIC EQUALITY →
LEADERSHIP → APPROPRIATE VISION AND ATTITUDE
PERFORMANCE AUDIT VERSUS FINANCIAL AUDIT
WELCOME to OUR SMART VILLAGE

4b. Viksit Bharat: Bringing the vision to life

Jayant Chaudhury
Minister of State (Independent Charge) for Skill Development and Entrepreneurship, Minister of State in the Education Department, Government of India

S Krishnan
Secretary, Ministry of Electronics and Information Technology

The vision of Viksit Bharat is a roadmap towards a self-reliant and developed India by 2047. The collaborative efforts of government bodies, private enterprises and academia drive this mission. Technological innovation and skill development are key focus areas in this developmental journey. Bringing the fruits of technological advancements to the grassroots levels is crucial for inclusive development. This chapter highlights the initiatives shaping India's future, with key leaders discussing the technological, educational and sustainability efforts necessary to achieve the goal of Viksit Bharat.

Leaders Speak: A Vision for Viksit Bharat
Speaker:
S Krishnan, Secretary, Ministry of Electronics and Information Technology (MeitY), Government of India

Moderator:
Deepti Sagar, Chief People and Experience Officer, Deloitte South Asia

> *Ease of doing business is something that has to be established at the state government level in terms of providing the infrastructure, power, water and land, which are essential for all industries, especially so in the case of semiconductors.*
>
> **S Krishnan**
> Secretary, Ministry of Electronics and Information Technology (MeitY), Government of India

In an engaging and insightful discussion, S Krishnan shared his vision for *Viksit Bharat* through the lens of technological innovation and adoption. He discussed various steps his ministry is taking to ensure the country is at the forefront of this technological revolution and that Indian citizens enjoy its benefits.

Public-Private Partnerships (PPPs) are vital to advancing technological innovation at the grassroots level and pursuing an Atmanirbhar and Viksit Bharat. This requires a cooperative effort involving the Government of India, the Ministry of Electronics and Information Technology (MeitY), private corporations, academia and state governments, with the government working to secure industry support for success.

MeitY has made significant strides in developing the foundational framework, referred to as the DPI. This infrastructure serves as a platform upon which the private sector and academia can innovate, developing applications that reach and influence the lives of citizens across the nation.

> *We work with various institutions to create a platform and then allow the genius of innovators who want to use this to provide services.*
>
> **S Krishnan**
> Secretary, Ministry of Electronics and Information Technology (MeitY), Government of India

National Supercomputing Mission and India AI Mission

The National Supercomputing Mission (NSM) and the India AI Mission are instrumental in realising the vision of *Viksit Bharat 2047.* The NSM is being repurposed to enhance computing capacity, particularly for AI-related applications. The India AI Mission has been allocated over INR10,372 crore. Of this amount, INR4,500 crore is designated to enhance AI computing capacity through a PPP model.[2] This model is structured in two ways: first, using existing AI computing infrastructure by making it accessible to innovators, start-ups and academic institutions at subsidised rates, and second, potentially supporting the creation of new computing capacity, depending on market needs. These initiatives ensure that India's AI capabilities are robust, accessible and geared towards innovation.

India Semiconductor Mission

Closely related to the NSM and India AI mission, the India Semiconductor Mission is another cornerstone of India's technological future. India is finally seeing progress after six years of consistent efforts, with five semiconductor manufacturing facilities under construction and is focusing on certain viable mature nodes. The focus is also on ensuring the supply chain's resilience for various applications where these chips will be used and on export manufacturing. These initiatives aim to enhance the country's competitiveness as a global semiconductor hub. The inaugural Semicon India 2024 global summit marked a turning point, establishing India's credibility in the global semiconductor market. While fabrication and manufacturing provide job opportunities, the real employment boost will come from building a whole ecosystem, encompassing everything from design to end-product development. Collaboration among the central government, state governments and private companies is crucial, with state governments playing a significant role in providing infrastructure and subsidies and enhancing the ease of doing business.

With the success of the Semicon India 2024 global summit, India's credibility as a destination for manufacturing semiconductors has been decisively established.

However, the real challenge is ensuring these innovations penetrate deeply into rural areas and remote regions, bringing digital services and opportunities to those who need them most.

[2] https://pib.gov.in/PressReleasePage.aspx?PRID=2012375

Bringing these technological advancements to rural, tier-3 and tier-4 areas remains challenging. MeitY's efforts in the country's Northeastern region, where start-up ecosystems are flourishing, demonstrate that innovation is possible even in remote areas. However, for these start-ups to scale, they need more than just government grants. Collaborations with venture capitalists and private companies are essential for sustainable growth. MeitY and other government ministries are working on aggregating start-ups and venture capitalists, fostering connections that can fuel growth in rural and underserved areas.

Various interventions by the government are focused on building systemic capabilities within India in the near term. Alongside that, there's a strong push to expand the boundaries of innovation, ensuring we are future-ready for what lies ahead.

Deepti Sagar

In conclusion, the journey towards Viksit Bharat involves creating cutting-edge technology and ensuring that it is accessible, inclusive and transformative for citizens, from urban centres to the most remote villages. The confluence of public and private efforts will determine the success of India's mission to become a global leader in technology and innovation. The following key undertakings across these missions and projects will be key to achieving the long-term vision for *Viksit Bharat*:

- Electronics manufacturing must grow significantly to reduce imports and create a robust domestic industry.
- India must focus on design and product development, creating technology that is made for India by India.
- Access to devices is vital for the spread of digital services; without affordable, widespread device availability, technological progress will remain out of reach for many.
- Enhancing the productivity of government departments and civil servants is crucial to ensure that the backend operations supporting these innovations are efficient and scalable.

Leaders Speak: A Vision for Viksit Bharat

Speaker:

Jayant Chaudhury, Minister of State (Independent Charge) for Skill Development and Entrepreneurship, Minister of State in the Education Department, Government of India

Moderator:

Nitin Razdan, Partner, Deloitte India

In an insightful one-on-one session, the Honourable Minister, Jayant Chaudhury provided a compelling vision for India's future under the National Education Policy (NEP) 2020 and its emphasis on aligning education with skill development. As India steps into its growth trajectory, the minister outlined the critical role education, sustainability and industry collaboration will play in shaping a developed India by 2047.

NEP 2020

The NEP 2020 is a forward-looking and progressive policy that will guide the transformation of India's education system in the digital era. India's youthful population, with a median age of 28, positions the nation as a demographic leader. However, the country's diversity, which is its strength, presents unique challenges in scaling education and skill development to meet diverse regional needs. NEP's focus on localisation and contextualisation is a solution, allowing each state to adapt educational practices to suit their unique cultural and social contexts. Thus, NEP can bridge the gap between traditional education and modern skills.

Tech-driven education and skilling

Technology will be a key enabler of transformation in education and skill development. Virtual Reality (VR), Augmented Reality (AR) and smart classrooms gradually make hands-on learning accessible even in remote regions. Adding 25 new national skill university courses and integrating innovative subjects, such as AI and green technology, into the school curriculum is considered a vital move in preparing students for the future.

The capability of our young minds to grasp something quickly is our great power.

Jayant Chaudhury
Minister of State (Independent Charge) for Skill Development and Entrepreneurship, Minister of State in the Education Department, Government of India

Sustainability and circular economy

Embedding sustainability into the education system, with a focus on creating a clean and green economy, is of paramount importance. Initiatives under Samagra Shiksha promote student engagement in eco-clubs and projects such as vegetable gardening to raise awareness about climate change and sustainable development.

Agriculture, technology and skilling

Technology can transform the agricultural sector, a key part of India's economy. Modern technologies, such as AI, drones and the Internet of Things (IoT), are key to improving yields and farmer incomes. The government facilitates this transformation by creating cooperatives, organising farmers and fostering collaborations between the private sector and smallholder farms. Taking a fresh look at the market structures is crucial. The corporate sector needs to implement more CSR initiatives to engage with farmers in villages.

Farmers don't need prescriptive policies. If a technology makes sense to them, they will adopt it. The government's role is to organise and demonstrate how these innovations can improve their livelihoods.

Jayant Chaudhury
Minister of State (Independent Charge) for Skill Development and Entrepreneurship, Minister of State in the Education Department, Government of India

Corporate collaboration in skilling

India is set to become one of the largest workforces in the world. By 2047, we're talking about 40 percent of the global workforce—over a billion people, give or take. In this context, skilling and education are key to preparing this workforce for future opportunities.

Nitin Razdan

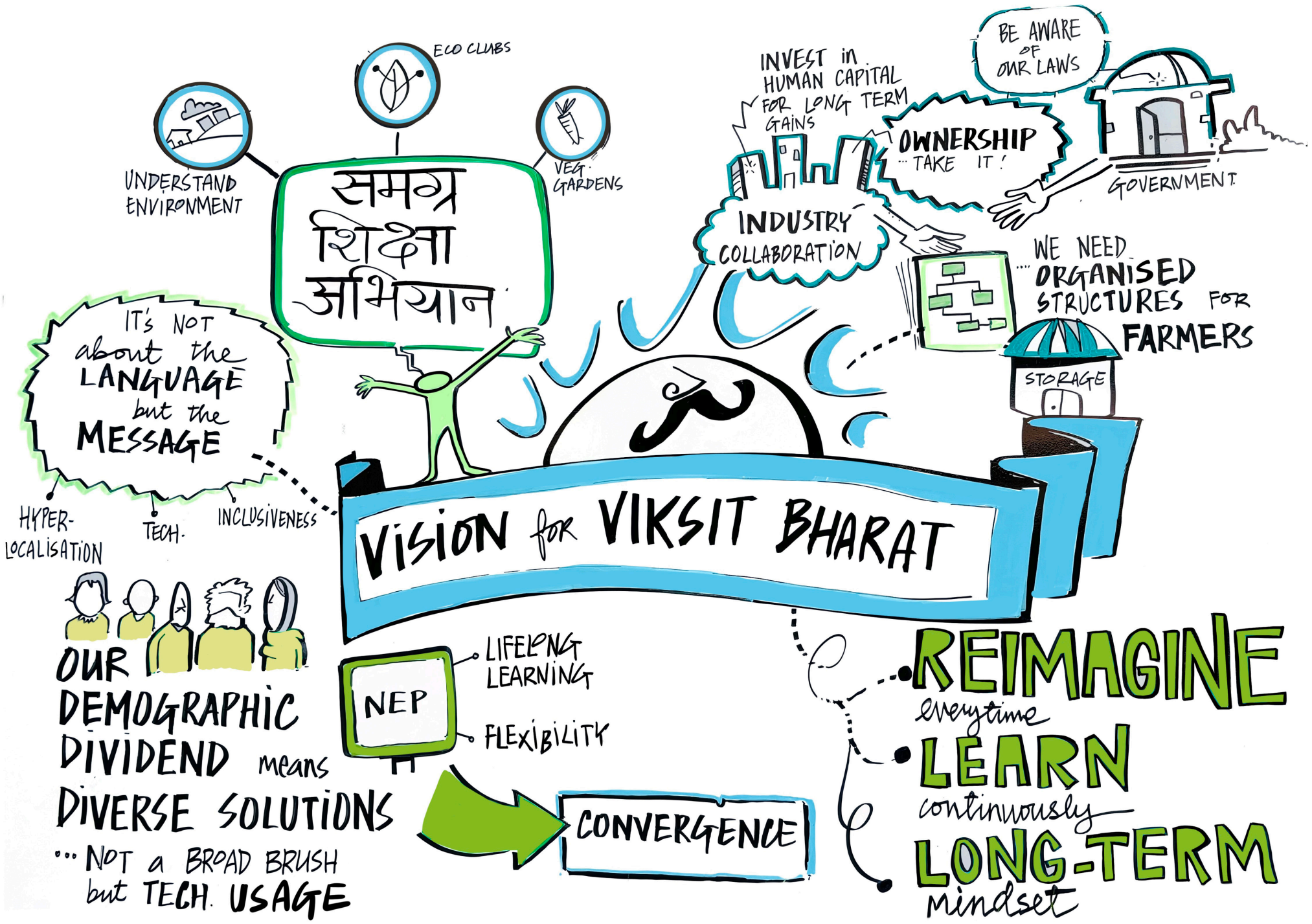
In a large and diverse country such as India, the government cannot be the sole agency to upskill the workforce. Corporate India plays a crucial role in skilling the workforce and the government. Various CSR initiatives to train the workforce in the logistics and service sectors have been implemented to enhance the skilling programmes across the country. However, a strong need exists for more private-sector involvement. Companies must take responsibility for investing in human capital, as innovation and skills are the currency of competitiveness in the digital age.

Corporate India must understand that investing in human capital is not a short-term game. To remain competitive, companies need to invest in the future workforce through apprenticeships, internships and collaborations.

In conclusion, India's education and skilling efforts are converging to build a more resilient and future-ready country. The vision for *Viksit Bharat* revolves around the seamless convergence of education, technology, sustainability and industry collaboration. With strategic planning and concerted efforts by the government in synergy with the private sector, India is on its way to becoming a global leader in education and economic development.

Key takeaways

- **PPP for technological growth:** Collaboration between the government and the private sector is crucial for advancing innovation and delivering the benefits of technological transformation to grassroots levels. MeitY's DPI allows private and academic innovators to build impactful solutions for citizens.
- **National Supercomputing and AI Missions:** The NSM and India AI Mission are pivotal to enhancing India's computing and AI capabilities. These initiatives, structured around PPPs, aim to complement each other in building the computing capacity required to expand AI infrastructure.
- **Semiconductor manufacturing hub:** India is making significant strides in semiconductor manufacturing, with five facilities under construction. The India Semiconductor Mission focuses on creating resilient supply chains and fostering a complete ecosystem for semiconductor design, fabrication and product development.
- **Rural accessibility of technology:** Bringing technological advancements to rural and underserved areas remains challenging. Initiatives in Northeastern India show promise, but scaling them requires collaborations among start-ups, venture capitalists and private companies.
- **NEP 2020 and skilling:** NEP 2020 aims to bridge traditional education with modern skills, emphasizing localisation and context-based learning. Technology-driven education, such as smart classrooms empowered with AI and VR, prepares students for future challenges.
- **Sustainability and circular economy in education:** Embedding sustainability into the education system is crucial to creating a green economy. Initiatives under *Samagra Shiksha* promote climate awareness and eco-friendly practices among students to align with the SDGs.


ECO CLUBS
UNDERSTAND ENVIRONMENT
VEG. GARDENS
समग्र शिक्षा अभियान
INVEST in HUMAN CAPITAL FOR LONG TERM GAINS
BE AWARE OF OUR LAWS
OWNERSHIP ... TAKE IT!
GOVERNMENT
INDUSTRY COLLABORATION
WE NEED ... ORGANISED STRUCTURES FOR FARMERS
STORAGE
IT's NOT about the LANGUAGE but the MESSAGE
HYPER-LOCALISATION
TECH.
INCLUSIVENESS
VISION for VIKSIT BHARAT
OUR DEMOGRAPHIC DIVIDEND means DIVERSE SOLUTIONS
... NOT a BROAD BRUSH but TECH. USAGE
NEP
LIFELONG LEARNING
FLEXIBILITY
CONVERGENCE
REIMAGINE every time
LEARN continuously
LONG-TERM mindset

4c. Building Digital Bharat: One technological pillar at a time

Vipin Kumar
Additional Secretary,
Department of School
Education and Literacy,
Ministry of Education

Lav Agarwal
Resident Commissioner,
Government of
Andhra Pradesh

Building a Digital Bharat is crucial to ensure India's success in the digital era. Education, healthcare, financial inclusion and public service delivery are the major pillars of Digital Bharat. Technology plays a foundational role in ensuring affordability, accessibility and equity across these sectors. Initiatives such as the NEP 2020 and PM e-Vidya are transforming education by integrating digital solutions to reach and empower over 250 million students. In healthcare, platforms such as eSanjeevani facilitate telemedicine, making health services accessible to even the remotest parts of the country. Financial inclusion initiatives, such as Prime Minister Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi), are digitising micro-credit services for street vendors. As India advances towards a fully digital economy, it is essential to design inclusive, interoperable and scalable digital solutions that address the needs of the country's diverse population.

Panel: Tech4Good – Building for Bharat
Participants:
Vipin Kumar, Additional Secretary, Department of School Education and Literacy, Ministry of Education; Lav Agarwal, Resident Commissioner, Government of Andhra Pradesh; Rahul Kapoor, Joint Secretary, Housing and Urban Affairs; Shankar Maruwada, CEO, EkStep; and Vineet Kshirsagar, Country Director, Public Sector, Palo Alto Networks

Moderator:
S Anjani Kumar, Partner, Deloitte India

Streamlining learning

Skilling and reskilling human resources play a crucial role in driving growth and success in the digital era, especially for a nation as vast and diverse as India. The NEP 2020 strongly emphasizes integrating information and communication technology into the school education system. With over 250 million students in India's school system, ensuring equitable and accessible education for everyone is crucial. PM e-Vidya is a significant step in this direction, encompassing multiple digital education initiatives under a single framework. It gives students nationwide access to quality digital/online education. Technology has enabled children to engage with a broader range of learning content, allowing them to learn at their own pace and according to their interests. Strategic PPPs can help bridge the resource gap and strengthen digital initiatives. Another key area where technology is a key enabler is teacher training. Advanced digital tools can help assess teachers' competencies and learning needs and offer customised training programmes.

Initiatives such as NEP 2020 and PM e-Vidya emphasize the importance of integrating digital tools in education, paving the way for a more inclusive and effective learning ecosystem in India.

Accessible and equitable service delivery

During COVID-19, technology was efficiently used at an unprecedented scale. This was an excellent example of what can be achieved strategically using technology. It acts as an equaliser, ensuring efficient service delivery across both urban and remote areas. India successfully administered billions of vaccine doses across thousands of inoculation centres, using digital platforms and applications to track and monitor service delivery and logistics. This ensured real-time accessibility and equitable distribution of resources.

By using technology, healthcare services can now penetrate even the most isolated regions, advancing digital health equity and accelerating progress towards achieving Universal Health Coverage (UHC).

The Aarogya Setu app, which became India's most downloaded application during the pandemic, simplified contact tracing across the country. Other applications helped healthcare specialists manage control groups and get real-time data about the available infrastructure from every healthcare facility. These data-driven interventions empowered teams to respond effectively and make timely decisions. eSanjeevani, India's National Telemedicine Service, represents a major step towards achieving digital health equity. It offers quick and seamless access to doctors and medical specialists through smartphones, significantly improving healthcare access.

Without the use of technology, you cannot ensure accessibility.

Lav Agarwal
Resident Commissioner, Government of Andhra Pradesh

Credit cycle for street vendors

PM SVANidhi exemplifies the effective use of technology to ensure financial assistance to the underprivileged. PM SVANidhi is a dedicated micro-credit facility that enables street vendors to access financial assistance digitally. It is a digital platform where the entire credit cycle, from loan application to assessment and disbursal of loans, can be managed online. Vendors can register on the portal and submit their applications along with the required documentation.

One of the platform's key features is its integration with multiple financial services. More than 400 public and regional banks have been integrated into the PM SVANidhi digital ecosystem. Vendors who register on this platform can also access other government programmes, such as the PM Mudra Yojana.

To date, INR12,000 crore has been disbursed through the PM SVANidhi programme, benefiting over 65 lakh vendors. Technology continues to drive the success of this initiative, uplifting marginalised sections by enabling access to formal credit systems.[3]

Equitable digital solutions for a diverse audience

Despite significant advancements in digital initiatives for service delivery, India's vast social, cultural and linguistic diversity presents a major challenge. This diversity requires customised digital solutions that effectively address various user needs. In this context, how do we build equitable digital solutions to address such a wide range of expectations? What principles should guide the design of widely accessible digital platforms?

This calls for an inclusive and human-centric design approach. For example, when Aadhaar was designed, special provisions were made

[3] https://www.financialexpress.com/business/sme/pm-svanidhi-micro-credit-scheme-for-street-vendors-crosses-rs-12000-crore-in-loans-disbursed/3599215/

for vulnerable and marginalised groups, such as orphans, individuals facing challenges with biometric registration due to disabilities and members of the third gender. Even if these groups represent just 1 percent of India's population, this still equates to 14 million people, comparable to an entire country's population.

To ensure accessibility, digital design must be multimodal, considering multiple languages, literacy levels and technological access points. This is achieved by establishing minimum standards across these considerations and ensuring effective exception handling that is strong and accountable.

India's diverse social, cultural and linguistic landscape demands carefully crafted, multimodal solutions that accommodate varying literacy levels, access and resources.

Inclusive design also necessitates extensive stakeholder engagement. For instance, when the Diksha portal was launched for digital learning content, local NGOs were involved in creating region-specific content, ensuring linguistic and cultural relevance. Thus, using the existing service providers and including them in the design process is key to successful exception handling.

Some key considerations to ensure that the design process is equitable for all sections:

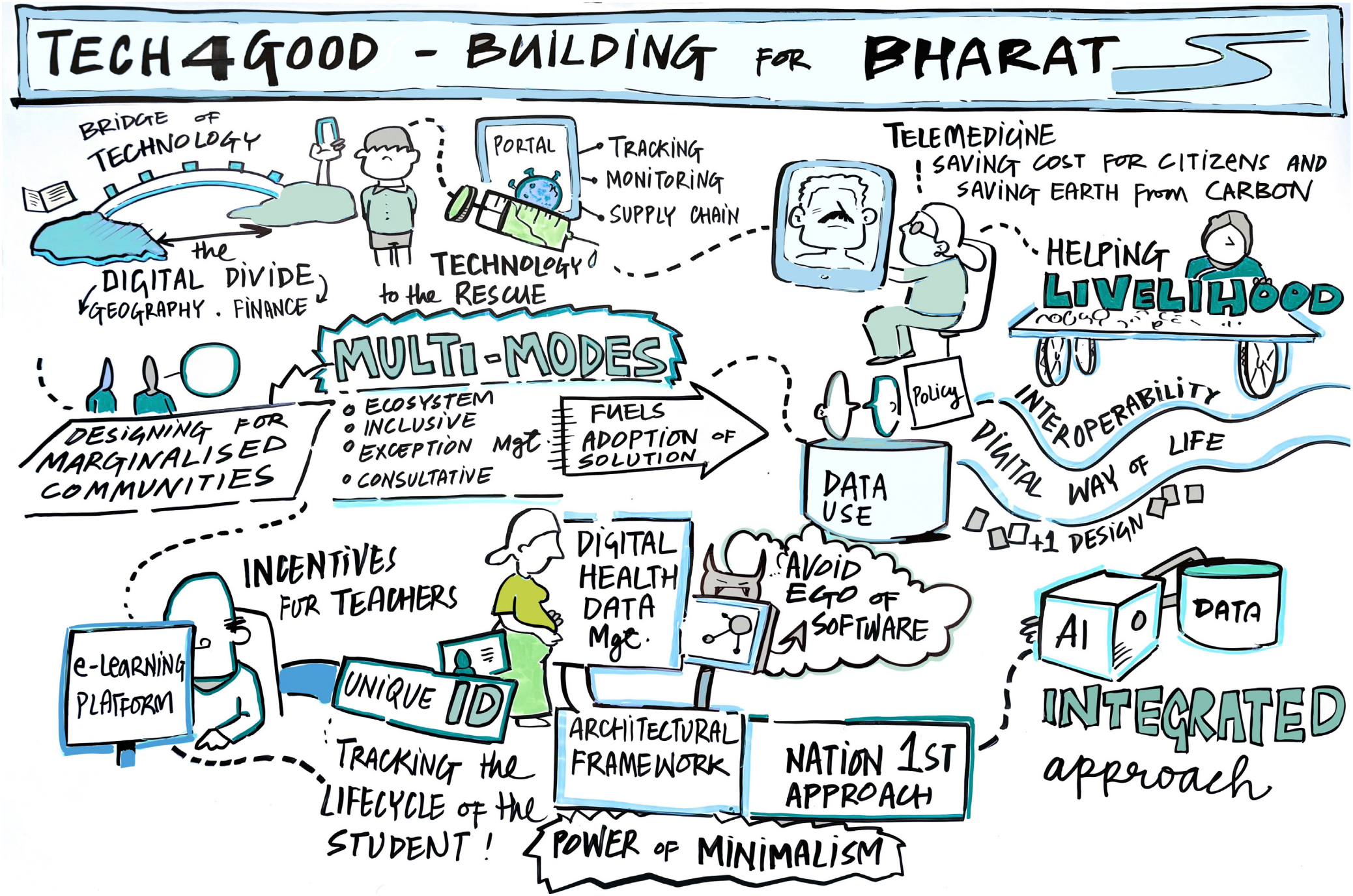
- **Minimal design:** Simplicity enables scalability. GPS is a great example because it provides basic location data, allowing multiple layers of services to be built on top of it.
- **Design for infrastructure:** Thinking of something as an infrastructure rather than a solution allows solving it on a much larger scale.
- **Plus 1 design:** A series of small, iterative enhancements leads to substantial progress over time.
- **Interoperability:** Ensuring interoperability during the design process helps in interconnecting the silos that exist between systems. Interoperability is a way for systems to talk to each other. It enables combined innovation.
- **Ecosystem-based design:** Taking the ecosystem-based design approach helps improve inclusivity. Using the existing ecosystem of experts adds value to the solution by absorbing authentic ideas into the design.

Nobody knows what a good design is. Nothing is a good design if it is not adopted.

Shankar Maruwada
CEO, EkStep

Key takeaways

- **Digital education transformation:** Initiatives such as the NEP 2020 and PM e-Vidya are essential to creating a Digital Bharat by providing accessible education through technology.
- **Empowering teachers:** Digital tools assess and support teachers' training needs, enhancing education quality and expanding digital literacy nationwide.
- **Equitable healthcare access:** Platforms such as eSanjeevani bring healthcare to the remotest regions, helping build a more inclusive Bharat with equitable health services.
- **Financial inclusion:** PM SVANidhi exemplifies how digitising financial services can empower underprivileged communities, particularly street vendors, with easier access to loans and resources.
- **Inclusive digital design:** Building a Digital Bharat requires designing solutions that are accessible to everyone, regardless of region, language or literacy level.
- **Interoperable systems for scalability:** Interoperability in digital systems fosters innovation and scalability.


TECH 4 GOOD - BUILDING FOR BHARAT
BRIDGE OF TECHNOLOGY
the DIGITAL DIVIDE
GEOGRAPHY . FINANCE
PORTAL
TRACKING
MONITORING
SUPPLY CHAIN
TECHNOLOGY to the RESCUE
TELEMEDICINE
SAVING COST FOR CITIZENS AND SAVING EARTH from CARBON
HELPING LIVELIHOOD
MULTI-MODES
ECOSYSTEM
INCLUSIVE
EXCEPTION Mgt.
CONSULTATIVE
FUELS ADOPTION OF SOLUTION
DESIGNING FOR MARGINALISED COMMUNITIES
Policy
DATA USE
INTEROPERABILITY
DIGITAL WAY OF LIFE
+1 DESIGN
INCENTIVES FOR TEACHERS
DIGITAL HEALTH DATA Mgt.
AVOID EGO OF SOFTWARE
AI
DATA
e-LEARNING PLATFORM
UNIQUE ID
TRACKING the LIFECYCLE of the STUDENT!
ARCHITECTURAL FRAMEWORK
NATION 1ST APPROACH
POWER of MINIMALISM
INTEGRATED approach

4d. A Bharat beyond borders: The global development dream

Dr Pramod Varma
Former Chief of Aadhaar,
UPI and India Stack,
CTO EkStep Foundation

India's digital transformation is paving the way for global scalability, demonstrating that if it works for Bharat, it can work for the world.

India's digital transformation journey has set a global standard, with Aadhaar and UPI showing how technology can reshape governance and public services. This future of governance is expected to be human-centric and driven by AI, big data and new technologies. This shift aims to increase productivity, promote digital equity and strengthen cybersecurity resilience.

Addressing local challenges while promoting the principle of *"Building Bharat"* for a global impact is essential to ensuring India's progress. India's digital infrastructure serves as a practical model for other countries in the Global South, demonstrating how to achieve scalability and inclusivity through open-source solutions. India's democratisation of digital access for millions has brought a sharp focus on small, decentralised projects and the adoption of innovations for global markets.

The following chapter explores how governments harness technology to improve efficiency and inclusiveness and examines the influence of India's digital transformation on local and global landscapes.

Talk: Building for Bharat and Taking it Global
Speaker:
Dr Pramod Varma, Former Chief of Aadhaar, UPI and India Stack, CTO EkStep Foundation

India is a powerful example of how technology can address large-scale, complex challenges in an ever-evolving digital society. Aadhaar and UPI have already disrupted the very nature of how services are being delivered and the way citizens engage with financial transactions. Dr Pramod Varma states that this is just the beginning of what digitisation can achieve in India, which has only begun to tap into its full potential.

The next step is to introduce these homegrown innovations to the global market, especially in the Global South. This involves addressing local problems, such as language and literacy barriers in India, while building scalable, long-lasting solutions. In an increasingly digitised world, India's innovations are maturing fast and have immense potential to inspire and even drive global digitisation with a strong focus on inclusivity and accessibility.

India's digital growth and global potential

We run 500 million UPI transactions a day, but we have sized it for a billion. India's digital infrastructure is built to scale.[4]

Dr Pramod Varma
Former Chief of Aadhaar, UPI and India Stack, CTO EkStep Foundation

Aadhaar for identity verification and UPI for payments are pillars of India's DPI. They process over 17 million daily authentications and 500 million daily transactions, proving their effectiveness. However, Dr Pramod Varma notes that India is only halfway on its journey. The tricky part now is getting the next 500 million people online. This can be achieved by prioritising transport and digital literacy first and foremost.

The potential for global expansion is clear. India's open-source solutions, which already account for scalability, can be adapted to similar challenges in other countries, especially the Global South, where digitisation is still ongoing. India's success might just be the blueprint for other countries seeking to build their digital economies.

The role of small projects in the next digital wave

Digital transformation in India is gaining momentum, moving beyond a narrow focus on large, government-driven initiatives to embrace innovation across various sectors. The emphasis is now also on smaller, more decentralised efforts. These initiatives, which are all about digitising everything from school certificates to salary slips via a platform such as DigiLocker, are crucial for pulling more citizens into the digital fold.

As Dr Pramod Varma stressed, the real future of digitisation lies in thousands of small but impactful projects.

No other country has set up something as large as that—to convert data, as it's rightly said, not as oil—data as soil for people to actually build their life upon.

Dr Pramod Varma
Former Chief of Aadhaar, UPI and India Stack, CTO EkStep Foundation

The emergence of the Account Aggregator (AA) framework has introduced digital wallets. This transformation allows individuals and enterprises to monetise their data into an economic asset that can promote financial inclusion. By decentralising projects, India is democratising access to digital services, paving the way for the global adoption of these systems.

Global South's digitisation and India's leadership

With its current DPI, India is well-positioned to help global markets scale quickly and efficiently. As countries in the Global South digitise, India's open-source, cloud-based solutions are proving to be effective implementation models that can be followed. The Open Network for Digital Commerce (ONDC), an open, interoperable network powered by the Beckn Protocol to democratise e-commerce, exemplifies how India is pioneering digital ecosystems that can be replicated in other regions.

[4] https://www.business-standard.com/finance/news/upi-crosses-500-million-daily-transactions-value-falls-flat-in-september-124100100627_1.html

India has definitely shown the playbook of non-linear changes that can be done to the economy.

Dr Pramod Varma
Former Chief of Aadhaar, UPI and India Stack, CTO EkStep Foundation

With the rise of global digital technology, India's leadership can drive transformation by ensuring small and medium enterprises worldwide gain equitable digital access.

Fireside Chat: The Future of Government
Speakers:
Srini Subramanian, Global GPS Consulting Leader, Deloitte; Adithi Pandit, Partner, Deloitte New Zealand

Moderator:
Nitin Kini, Chief Operating Officer, Deloitte South Asia

At its core, government is about people, making sure no one is left behind and that every citizen can access basic services.

Governments worldwide are undergoing a rapid transformation fuelled by digital technology. Initiatives such as Aadhaar and the rural broadband programme have set global benchmarks for how governments can use technology to streamline services, promote inclusivity and build greater trust among the people. Adopting these new technologies alone is not enough. Human-centric governance, where digital tools enhance efficiency and ensure that no individual is left behind, defines the true future of governance.

In the forthcoming decades, governments worldwide will encounter challenges and opportunities that were unimaginable just a few years ago. From integrating quantum computing AI to addressing digital equity and cybersecurity, these applications will be the blueprint for using technology to improve lives and build a resilient, inclusive and future-ready public sector.

Digital identification and hyper-personalisation in governance

The world's most extensive digital identification programme, Aadhaar, has enabled more than a billion people to access services easily. For governments, this means everything from property rights to education can be streamlined into the massive scale of digitisation. However, the future of governance must go beyond just accessibility. The discussion focused on the next step in governance, which is hyper-personalisation. Governments should use data to create personalised experiences, drawing inspiration from how digital platforms tailor content based on user preferences. This can enhance engagement and services by meeting the population's specific needs.

Creating a government that works for one person in a billion involves using big data to offer services that anticipate individual needs. It is especially relevant in India, where huge and diverse populations need specific answers. For instance, creating personalised digital platforms that suggest specific government programmes or benefits based on a citizen's profile can boost efficiency and trust in public services. It also enhances the capacity of public service providers to serve their customers.

AI's role in enhancing government productivity

AI has vast potential to improve worker productivity, automate routine processes and improve government services. The technology can assist architects of regulatory policies in conveying complex rules to workers and delivering services to citizens. Often, government officials need to make decisions about providing services based on the nuances of varying policies. In this regard, AI can standardise this process to ensure every citizen receives relevant services based on the same criteria.

Government services can also be scaled by using AI. The technology automates manual tasks more effectively, allowing workers to focus on higher-priority tasks. When governments integrate AI into their operations, citizen satisfaction and efficiency will increase.

Cybersecurity and resilience

Cybersecurity serves as a foundation for building trust in a digitally powered government.

Srini Subramanian

In today's interconnected world, providing services is not enough; governments are also responsible for protecting the vast amounts of sensitive data available to them. Cybersecurity has become critical, as any data breach could cause catastrophic damage to public trust and even disrupt essential services.

During the fireside chat, it was reiterated that governments should prioritise cybersecurity via a proactive approach rather than a reactive one, with a strong focus on vigilance, resilience and protection. While governments must protect their systems from cyberattacks, they must also remain vigilant to detect them early and build resilient systems that can bounce back quickly from cybersecurity incidents. As cyberthreats become more sophisticated, governments must keep pushing the boundaries of innovation to face their potential adversaries.

Quantum computing: The next frontier

Quantum computing could transform government operations where large amounts of data are processed, and security is paramount. While this technology is in its infancy, it has the potential to transform encryption and render current security protocols obsolete. As quantum computing evolves, its seismic impact on data security is coming into focus, and governments must prepare for a whole new era of cybersecurity measures.

Beyond cybersecurity, quantum computing will enable governments to process data like never before, make and implement real-time decisions, and improve services such as healthcare, defence and disaster response. The technology will also address sophisticated issues that today's computers cannot solve, such as optimising traffic flows in megacities or predicting economic trends with greater accuracy.

Digital equity: Ensuring inclusivity in a digital world

Digital inclusion isn't just about connectivity; it's about empowering rural communities to drive their own digital transformation.

Adithi Pandit

One of the major challenges for future governments will be digital equity, which will ensure that citizens, including those from different geographical and socioeconomic strata, have access to digital services.

In the session, it was pointed out that rural broadband programmes have seen significant success in bridging the digital divide in India. However, such programmes fall short if the connectivity is not accompanied by policy measures addressing imbalances in technology access. The government should bring accessibility and support systems to encourage marginalised communities to embrace digital platforms.

Family-based digital inclusion, where children are provided with laptops or tablets for school, is already showing promising results. By allowing children to take these devices home, entire families, especially women, are becoming more digitally literate. Additionally, neurodiversity is vital, and government services should reflect this by making it more accessible to citizens with diverse capabilities and needs.

Human-centric governance: Prioritising people in a digital world

The future of government is being shaped by technology that serves people, creating systems that are inclusive, responsive and built on trust. It is about humanising governance through innovation, shifting from process-driven to people-centric.

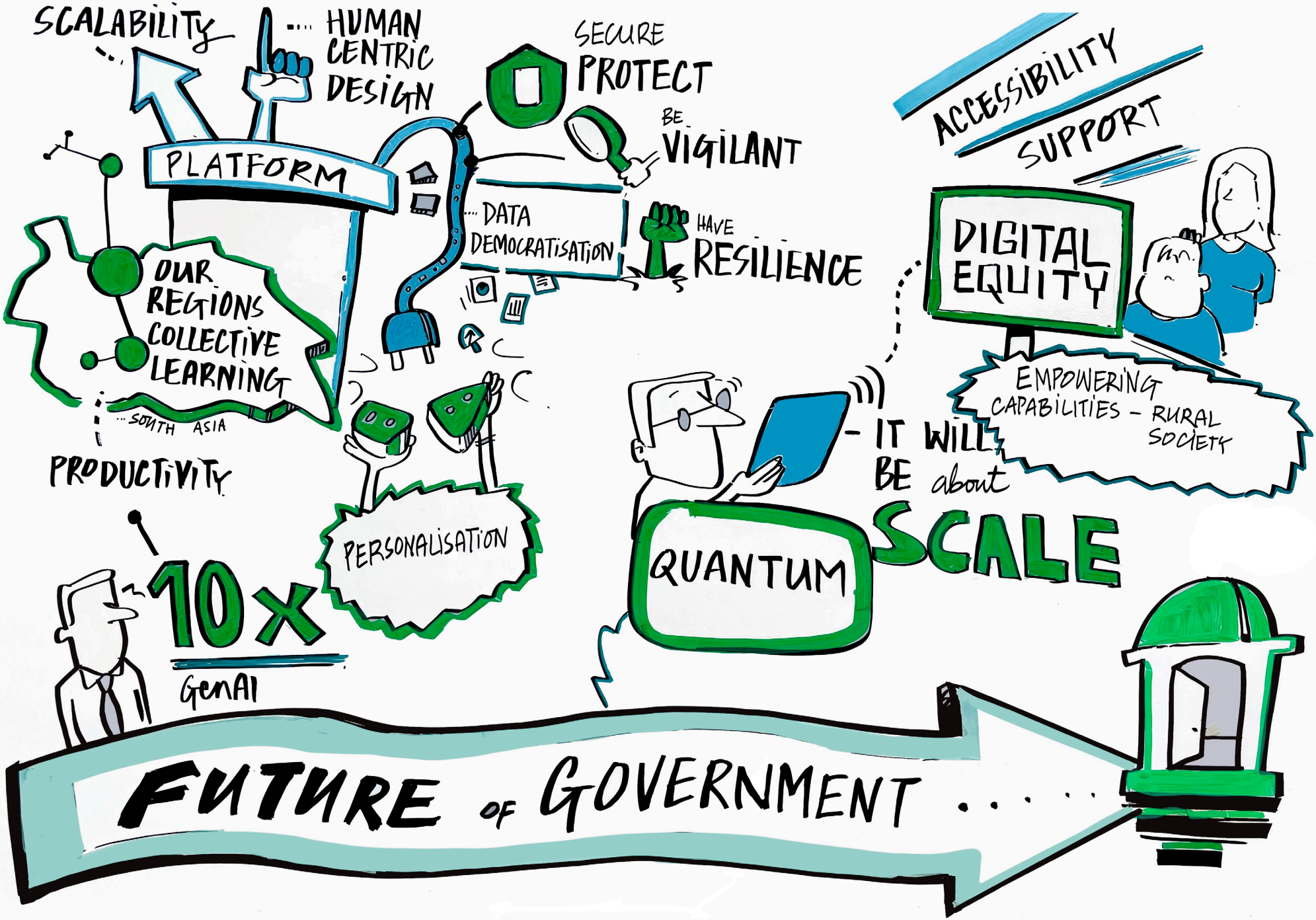
Nitin Kini

The very essence of governance is serving people. The ever-evolving power of technology must be used to enhance human lives. As governments adopt emerging tech such as AI and big data, they must also ensure that these tools improve everyone's quality of life.

Human-centric governance is defined by policies and services that are empathetic, inclusive and responsive to individual needs. Governments cannot push technology while ignoring the social implications. They must design policies that leave no one behind, especially vulnerable populations, such as older adults, low-income families and remote communities.

Key takeaways

- **Scalability for global reach:** India's scalable digital infrastructure, such as Aadhaar and UPI, can serve as models for countries looking to digitalise large populations efficiently.
- **Global South's digital future:** India's leadership in creating inclusive, open-source digital solutions can help accelerate digitisation in underserved regions across the Global South.
- **Small projects, big impacts:** The future of India's digitisation lies in small, decentralised projects that democratise access to services, from government certifications to salary slips.
- **Human-centric governance:** Technology should always serve people, and governments should focus on designing empathetic, inclusive and human-centred policies and services.
- **Digital identification and personalisation:** Governments must use digital identification systems, such as Aadhaar, to offer personalised, citizen-centric services that anticipate individual needs.
- **AI in government productivity:** AI has the potential to improve government worker productivity by automating routine processes and assisting in policy implementation.
- **Cybersecurity:** Protecting sensitive citizen data is crucial, and governments must adopt a three-pronged approach that includes protection, vigilance and resilience against cyberthreats.
- **Quantum computing:** As quantum computing evolves, it will transform data processing and security. Governments must prepare for quantum-safe encryption to safeguard critical data.
- **Digital equity:** Access to digital services is vital for citizens, particularly in rural and underserved areas, to ensure an inclusive digital future.


SCALABILITY
HUMAN CENTRIC DESIGN
SECURE
PROTECT
BE VIGILANT
HAVE RESILIENCE
ACCESSIBILITY
SUPPORT
PLATFORM
DATA DEMOCRATISATION
DIGITAL EQUITY
OUR REGIONS COLLECTIVE LEARNING
SOUTH ASIA
EMPOWERING CAPABILITIES – RURAL SOCIETY
PRODUCTIVITY
IT WILL BE about
SCALE
PERSONALISATION
QUANTUM
10x
GenAI
FUTURE OF GOVERNMENT . . . . .

4e. Establishing an urban innovation hub

Urban Platform for Delivery of Online Governance (UPYOG) digitises urban governance across India, connecting 3300+ local bodies through a unified platform that streamlines essential services and citizen engagement.

India's aspiration for a *Viksit Bharat* by 2047 is an ambitious vision rooted in digital transformation within its urban governance structures. The success of this mission relies on how effectively Indian cities adopt cutting-edge technologies to improve service delivery and engage with their citizens.

At the heart of this transformation is the UPYOG, a key DPI designed to modernise the core functions of Urban Local Bodies (ULBs) across the country.

Manthan: Urban Platform for Delivery of Online Governance (UPYOG)

Participants:

H. Deleep Singh, IAS (Retired), Chairman, Manipur Municipality Board
Abhi Ray, Partner, Deloitte India, and the Deloitte Technology team;
Pankaj Sharma, Lead, NIUA, and NIUA technical team and AWS technical team

Guru:

Abhi Ray, Partner, Deloitte India

> *The power of UPYOG lies in its technology and in its ability to unify and standardise urban service delivery across India.*
>
> **Abhi Ray**

UPYOG was launched under the broader Digital India campaign and provides authorities with a means for better urban governance. It is reshaping how cities operate, bringing transparency, efficiency and innovation to areas traditionally bogged down by manual, paper-based processes. This transformation was critical for India's urban centres and serves as a blueprint for how technology can drive sustainable development and inclusive growth.

With over 31 states and 3300+ urban local bodies already adopting this platform, UPYOG is a cornerstone of India's urban digital mission. This session provided a deep dive into its current achievements, challenges and the future roadmap for scaling digital governance across Indian cities.

In the context of *Ārohaṇa: Growth with Impact,* leaders and experts explored how UPYOG is setting the stage for the future of urban

governance. By bringing together key stakeholders, the session explored how a unified platform such as UPYOG can streamline urban governance, making it more transparent, efficient and citizen-centric.

Challenges in urban governance

The primary challenge is ensuring that UPYOG stays ahead of the technological curve while remaining accessible and adaptable to the needs of different states. Regular updates and continuous innovation are crucial for the platform's long-term success.

Despite its successes, scaling UPYOG across India's diverse urban landscape presents several challenges. One of them is the integration of legacy systems, which vary greatly among states. Many ULBs continue to rely on vendor-specific software, making it challenging to adopt a unified, open-source platform such as UPYOG. However, this challenge is also an opportunity for innovation and collaboration.

The speakers also highlighted the traditional challenges urban governance systems face. These challenges include fragmented service delivery and inefficiencies in managing urban resources, which can create inefficient service delivery bottlenecks. Lack of coordination among multiple projects and departments can lead to delays, inefficiencies and increased citizen complaints.

An integrated digital solution, such as UPYOG, can address these challenges. The platform's main strength lies in integrating more services as and when needed, covering the entire service delivery ecosystem and making governance easy for citizens and officials.

The role of technology in driving urban innovation

UPYOG is ready with a bouquet of service modules that different ULBs can use to increase the efficiency of their service delivery.

UPYOG is a good example of adopting a digital-first approach to create a more agile governance system with real-time data. It helps address issues related to service delivery effectiveness within cities and ensures urban management is more efficient, given society's prevailing needs.

The speakers discussed how such open-source platforms allow continuous improvement and collaboration across states. This collaborative development model keeps the platform aligned with city needs, ensuring it stays relevant and effective over time.

Citizens as central stakeholders

One of the session highlights was the focus on citizens as the core beneficiaries of this transformation. The ability to track service requests, pay taxes online or apply for permits from a single platform empowers citizens to engage with their city administrations more effectively. This shift is crucial for building trust between governments and their citizens. By reducing bureaucratic hurdles and simplifying access to essential services, UPYOG ensures that urban governance delivers efficiency, inclusivity and transparency.

Shaping the future of urban governance

UPYOG is helping to create a framework for delivering urban services efficiently, securely and sustainably, focusing on DPI.

UPYOG is a pioneering initiative in India's urban digital transformation, offering a scalable and adaptable solution for the complex challenges of urban governance. Its ability to provide real-time data, streamline processes and enhance transparency has already begun to revolutionise how cities function. As more ULBs continue to adopt the platform, UPYOG is poised to play a central role in realising India's *Viksit Bharat 2047* vision.

As the nation advances on its Digital India journey, it will continue to develop smart cities that are robust, equitable and sustainable for future generations. Looking ahead, the continued evolution of UPYOG will be critical in shaping the future of urban governance. The success of this platform relies on technological advancements and on the collaboration of ULBs, state governments and various private sector stakeholders. With the right support, the UPYOG programme could become the cornerstone of a new era of smart and sustainable urban planning for Indian citizens.

Key takeaways

- **Unified digital platform for governance:** UPYOG consolidates multiple urban services, making governance more efficient and transparent. Cities can better manage resources and respond to citizens' needs in real time.
- **Collaboration for success:** The session highlighted collaboration among government bodies, private technology collaborators and local urban administrations. UPYOG demonstrates how shared digital infrastructure drives innovation and improves service delivery.
- **Citizen-centric approach:** UPYOG focuses on citizens. By streamlining services and reducing manual intervention, the platform places citizens at the centre of urban governance, ensuring efficient and transparent service delivery.

URBAN PLATFORM FOR DELIVERY OF ONLINE GOVERNANCE (UPYOG)

EXPANSION OF NUDM FOR URBAN DIGITAL TRANSFORMATION

- COMPREHENSIVE PLATFORM
- REAL-TIME DATA DASHBOARDS
- ENHANCED GOVERNANCE MODULES
- REVENUE GENERATION TOOLS

INNOVATIVE USE OF DIGITAL PUBLIC GOODS (DPGs)

- UPYOG PLATFORM
- INTEGRATING MODULES - PROPERTY TAX, e-WASTE MANAGEMENT, BIRTH/DEATH REGISTRATIONS

DATA-DRIVEN DECISION-MAKING AND FUTURE INTEGRATION

- ADVANCED ANALYTICS AND AI INTEGRATION
- IoT SENSOR DEPLOYMENT
- VOICE-BASED INTERACTIONS via BHASHINI

COLLABORATION FOR CONTINUED GROWTH

- NIUA AND DELOITTE TO EXPAND UPYOG's CAPABILITIES INTO NON-URBAN SECTORS
- TRUST BUILDING ACROSS MULTIPLE STAKEHOLDERS

4f. Defining success metrics

Success in any endeavour hinges on well-defined metrics that distinguish outputs from outcomes. Outputs reflect completed activities, such as constructing a school, while outcomes measure actual impact, such as improved literacy rates. Measuring intangible effects, such as societal well-being, adds complexity and requires quantitative and qualitative assessments. Quantitative metrics capture tangible outcomes, but complete impact evaluation often depends on subjective and qualitative methods. Balancing these approaches is essential for ensuring that efforts lead to effective and sustainable results, as comprehensive metrics provide clearer insights into long-term benefits and success.

Manthan: Measuring the Immeasurable

Participants:

Dr Arun Kumar, Research Officer, Ministry of Sports, India; Rajul Raiwkar, Consultant, Research, National Human Rights Commission; Vinit Kumar, Chief Electrical engineer, Services, Indian Railways; Shweta Verma, Assistant Director, Bharat Serum and Vaccine Limited; and professionals from cybersecurity, sports, research and others.

Gurus:

Shrupti Shah, Managing Director, Deloitte US; Abhinav Vikas, Partner, Deloitte India

Defining success metrics to measure the immeasurable rests on three pillars, which are policy, process and feedback mechanism.

Measuring the success of activities that yield intangible results is tricky, to say the least. Both governments and enterprises need to figure out how to quantify something that is qualitative. Historically, the success of public service initiatives has been determined using input-based metrics, such as what percentage of the allocated budget has been used and how many staff members have been deployed. However, these fail to give a reasonably accurate idea of, for instance, whether the usage of the budget yielded the desired results or whether the staff members fulfilled their roles as expected. In other words, using quantitative metrics to gauge the qualitative impact of an initiative or project on people's lives is futile.

To measure what truly matters, this *Manthan* explored the potential of AI and data-driven approaches to measuring the immeasurable.

The evolution of measurement

Quantitative metrics that governments and non-government organisations have been using to evaluate the success of their initiatives include the number of services delivered and the amount of money spent. These metrics are good for capturing the execution and completion of various initiatives. However, the timely execution and completion of a project do not indicate whether it achieved the upliftment of the masses as intended.

Setting ambitious but carefully designed goals in public policy is crucial, as bold targets can drive innovation and lead to greater progress, even if they are not fully achieved. In the UK, for example, setting high standards in literacy or numeracy led to meaningful changes, while in the US, the fear of political backlash can make it harder to take similar risks. Goals must also be thoughtfully constructed to avoid unintended consequences; measuring inputs such as emergency room wait times rather than outcomes such as patient satisfaction can create incentives for harmful behaviour. Equity plays a crucial role in defining success. In Washington, D.C., rather than focusing on reducing average unemployment, which often benefits already prosperous areas, leaders set a target that no neighbourhood should have an unemployment rate above 10 percent. This approach focuses on the most disadvantaged communities. The way a goal is framed determines who benefits, and actual progress requires aligning strategies and resources to support equitable outcomes. The unemployment rate strategy was designed as a four-year plan, launched in 2019, but the onset of COVID-19 disrupted its implementation, making it difficult to assess its full impact.

If success is measured by no neighbourhood having an unemployment rate of greater than 10 percent, it forces you to ignore the places that look after themselves, and it forces you to focus on the poorest parts.

Shrupti Shah

However, there's been a gradual but steady shift in the mindset in recent years. Strategists are increasingly acknowledging the need to move from traditional, input-based metrics to outcome-oriented metrics. Outcome-oriented methods of evaluating success focus on measuring the benefits that people receive collectively. For example, overall health improvement of people, reduced poverty or increased educational attainment. By focusing on outcomes, governments and enterprises will better understand the effectiveness of public programmes and allocate resources accordingly.

The role of data and technology

Data is being generated at an astronomical rate today, serving as the raw ingredient needed to decide, plan, execute, rectify or optimise any project. At the same time, AI and its subfields, such as ML, have been evolving rapidly. As a result, data is no longer the only resource; technology also facilitates learning from that data to make intelligent, autonomous decisions.

The discussion covers several key points about design thinking, data analysis and the role of AI in decision-making. It starts with an example of how small changes, such as adding mirrors in elevators or timers at traffic lights, can improve outcomes by reducing impatience or anxiety, even though they don't directly impact the system's efficiency. The main idea is that focusing on outcomes (how people feel or behave) is just as important as focusing on output (quantifiable results).

With AI, you can measure the smile, too.

Dr Arun Kumar
Research Officer, Ministry of Sports

For governments, businesses and public welfare institutions, the stage is set for harnessing the power of data to its maximum potential. The discussions in the *Manthan* highlighted several real-world examples of how AI is being used to improve public services in various sectors.

For instance, AI and ML can analyse voluminous datasets generated every second. They can thus identify patterns, predict trends and make recommendations for correcting or optimising future courses of action. For example, AI tools can also analyse social media data to identify public sentiments, anticipate potential crises and much more. This will enable policymakers to take necessary actions proactively and pre-emptively rather than reactively.

Another example is the healthcare sector. AI tools can enable medical professionals to analyse patient records, document treatment procedures accurately, identify patterns in disease outbreaks, chart personalised treatment plans and so on. Opportunities are seemingly endless. Similarly, in the education sector, academics can plan lessons efficiently, personalise learning experiences, conduct exams and generate performance reports faster and drive literacy outcomes and more.

Transportation is another major industry with multiple use cases for data and modern technologies. The data generated through surveillance cameras, IoT, satellites, the weather department, etc., can be analysed collectively to uncover correlations and dependencies. Moreover, this diverse data will enhance AI tools in the transport sector, driving further innovation. With autonomous vehicles inching closer to being a reality, the significance of data and AI cannot be understated.

Challenges and opportunities

Organisations must assess their data analytics capabilities and strive for continuous improvement to harness the full potential of AI.

While the potential of AI and data-driven approaches cannot be overstated, several challenges must be addressed. The major ones are:

- **Data quality and accessibility:** High-quality data is essential for effective AI applications. The American idiom, “garbage in, garbage out”, stands true in this context entirely. Ensuring data accuracy, logical data structuring and ease of data accessibility is crucial to using data as fuel for AI engines.
- **Technical capacity:** To unlock the potential of next-generation technologies, a solid infrastructure foundation is essential. The infrastructural prerequisites include continuous digital transformation, the adoption of "phygital" systems and strategic "cloudification," among other key elements. Besides, a steady supply of skilled workforce is equally critical, which calls for collaboration between academics and professionals.
- **Ethical considerations:** AI systems must be designed and used ethically to avoid bias and discrimination. AI lacks the instinctive subjectivity that human intelligence brings along. In this regard, cinema has done a good job. Numerous films have encapsulated the limitations of AI and the ethical dilemmas related to AI autonomy. Knowing when to switch off autopilot and take manual control is as critical as it is difficult in the heat of the moment. That is why government regulations and industry standards are imperative for AI-fuelled innovations.

- **Public trust:** The application of AI extends to everyday life, from optimising routes in real-time based on crowd-sourced data to OTT platforms tailoring recommendations. However, the discussion also touches on the need for AI governance, particularly regarding autonomous systems, ensuring responsible AI operations and minimising risks such as AI hallucinations. Building public trust in AI-enabled systems is an effort that governments, enterprises and academia must pursue alongside strategising AI use cases. Change management is a make-or-break factor in any technological revolution, especially when the general sentiment is that it will render people jobless.

Importance of the feedback mechanism

The discussion highlights the importance of accurate feedback in policymaking and execution, emphasizing the need to distinguish between outcome and output. Rapid changes in user behaviour in India necessitate efficient data analysis to understand and predict customer needs.

For instance, the UK implemented a strategy to reduce administrative burdens on businesses, saving US$20 billion by streamlining processes and consolidating forms.

A Middle Eastern airline used AI topic modelling to analyse 20,000 customer complaints from social media. They discovered that the primary issue was not leg space, as initially thought, but the temperature of the food served. Addressing the food issue was far more cost-effective than modifying leg space.

Predictive shipping and hyper-personalisation are other examples of AI's capability to anticipate customer orders and manage returns and cancellations based on customer profiles.

Stakeholder engagement, honest feedback, team alignment and genuine input are crucial for effective implementation.

Collaboration among government, industries and academia is imperative to address these challenges. As AI and other technologies continue to advance, it is crucial to harness their potential to address complex societal challenges while mitigating potential risks. Embracing innovation and ethical considerations is the key to creating a future where public services are more effective, efficient and equitable.

Key takeaways

- **Input-based metrics:** Traditional metrics focus on inputs such as budget allocations and staff numbers, which do not accurately reflect the impact of public services.
- **Outcome-based metrics:** Shifting the focus to outcome-based metrics will provide a more accurate picture of public satisfaction.
- **Data-driven decision making:** Using data and technology for decision-making will lead to more effective and efficient execution of initiatives.
- **AI and ML:** These technologies analyse large datasets to identify trends and patterns and generate insights for informed policymaking.
- **Technical capacity:** A skilled workforce and up-to-date technical infrastructure are essential for developing and implementing AI-powered solutions.
- **Ethical considerations:** Addressing the ethical implications of AI, such as privacy, bias and transparency, is critical for the widespread use of the technology.
- **Collaboration:** Coordination among government, industries and academia is key to addressing the challenges and harnessing opportunities pertaining to AI.

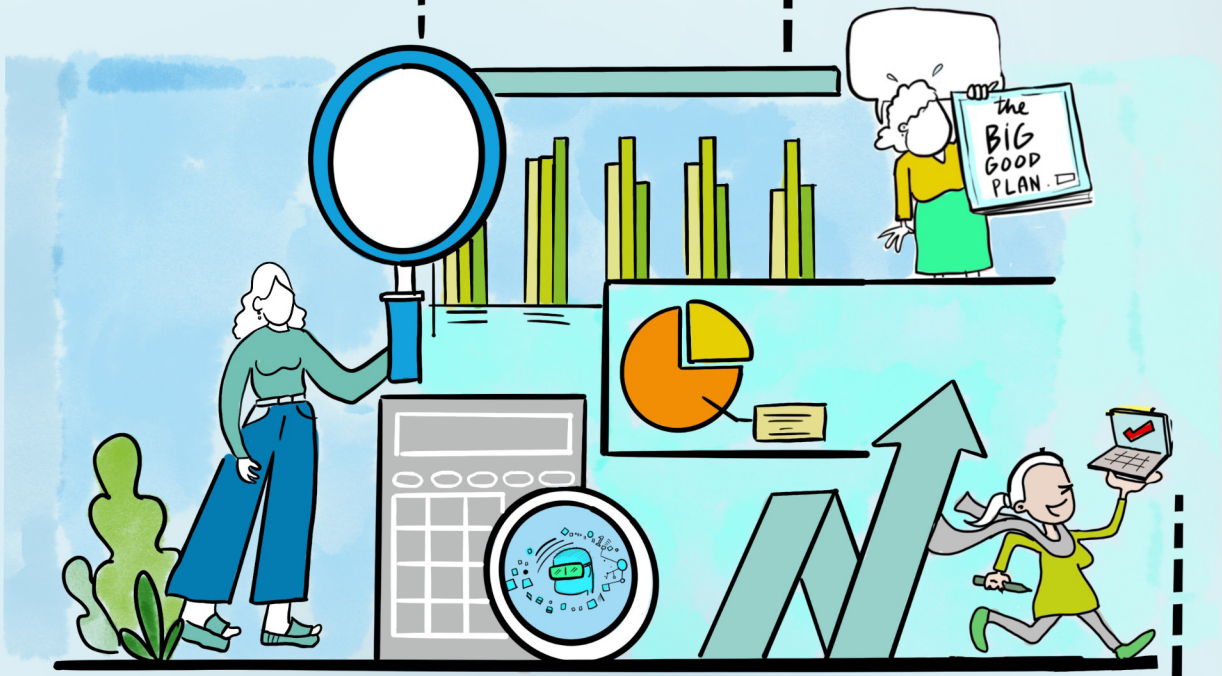
MEASURING THE IMMEASURABLE

PRIORITISE ETHICS

- RESPONSIBLE AI PRACTICES
- ADDRESS PRIVACY CONCERNS

OUTCOME-ORIENTED APPROACH

- RESOURCES TO RESULTS



USE AI AND DATA SCIENCE

- INFORMED DECISIONS
- IMPROVED EFFICIENCIES

REAL-WORLD APPLICATIONS

- EXPLORE AI APPLICATIONS FOR POSITIVE CHANGE