

GOVERNANCE **now**

VOL 2 - QUARTERLY | APRIL- JUNE 2025

LET'S MAKE IT WORK

SPECIAL ISSUE

GOVERNANCE REIMAGINED



MP's Digital
Blueprint Inspires
Replication Across
India

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Gujarat is The
Powerhouse
of Digital
Governance

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Mizoram
Reimagines
"Last-Mile" as
"First Village"

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POWERING INCLUSIVE TRANSFORMATION VIA DIGITAL INDIA

Kailashnath Adhikari
MD, Governance Now

As India marks the 10-year milestone of the Digital India programme on 1st July 2025, we reflect with pride on how far we've come—and the possibilities ahead. Launched in 2015 under the visionary leadership of Prime Minister Narendra Modi, Digital India has not only redefined governance but has laid the very foundation of our nation's digital economy. According to the State of India's Digital Economy Report 2024, India is the third largest digitalised country in the world in terms of economy-wide digitalization, and 12th among the G20 countries in the level of digitalisation of individual users.

The primary survey and stakeholder insights reveal that digitalisation across sectors is uneven but steadily advancing. Retail sales are adopting digital tools more rapidly than wholesale, and many firms are investing in digital channels for customer acquisition, including AI

and chatbots. In the BFSI sector, over 95% of banking payment transactions are now digital. Retail is moving toward omni-channel models, blending e-commerce with physical stores. Education is leaning toward hybrid learning, combining online and offline methods. Hospitality and logistics sectors are leveraging AI, digital platforms, and even the metaverse, with large enterprises leading the transformation while smaller businesses trail.

From remote Himalayan villages to tribal districts in Daman & Diu, and from AI-driven platforms in Telangana to multilingual citizen portals in Jammu & Kashmir, states and ministries across India are working in harmony to build a transparent, secure, and citizen-first digital governance ecosystem.

This transformation is not just about connectivity or convenience—it is about empowerment, equity, and creating a resilient nation that thrives on innovation.

This special edition of “Digital India: Governance Reimagined” stands as a testament to that transformation, capturing the spirit of Digital India through real stories, data-driven insights, and replicable models from across the nation. It is both a celebration and a blueprint for the road ahead.

We hope readers find this special edition both insightful and engaging. It serves as a valuable repository of key learnings and best practices from states, union territories, and central ministries that are driving India's digital transformation. By capturing a wide spectrum of innovations, from AI-enabled citizen services to digital infrastructure in remote regions, “Digital India: Governance Reimagined” reflects the collaborative spirit of Digital India. It highlights how diverse regions and departments are embracing technology to enhance governance, inclusivity, and efficiency. This edition stands as a testimony to the collective efforts shaping a truly digital-first nation and offers inspiration for future-ready governance. □

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SRI ADHIKARI BROTHERS ENTERPRISE

GOVERNANCE **now**
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DISCLAIMER

All the information presented here has been compiled from respective states, centre government departments, districts and feedback to our questionnaire. Governance Now has not independently verified it.

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Message

I am delighted to learn that Governance Now is publishing a special edition titled 'Building Digital-First Governance: Innovation for a Smarter Future.' This crucial initiative comes at a perfect time, demonstrating how government ministries are harnessing digital innovation to significantly boost efficiency, improve service delivery and increase transparency. Through its presentation of best practices, insightful case studies and expert perspectives, this edition will provide vital direction for accelerating digital transformation and cultivating more inclusive and responsive governance. As technology continues to rapidly redefine governance in our world, adopting a digital-first strategy is no longer merely an advantage—it is an absolute necessity. The chosen theme powerfully reflects the urgent demand for citizen-centric digital innovation across every sector, including the foundational Steel and Heavy Industries.

The Ministry of Steel is actively adopting digital technologies—from real-time dashboards for monitoring to integrated platforms for ease of doing business. These efforts are laying the foundation for smarter and more transparent governance. In the steel sector, embracing technologies is essential for driving sustainability, competitiveness, and aligning with national priorities such as *Make in India*, *Aatmanirbhar Bharat*, and *Green Steel*.

Digital-first governance is about more than technology—it is about reimagining service delivery and stakeholder engagement. I commend this initiative and wish it great success in inspiring transformative change.

I extend my best wishes to the Governance Now team for their diligent efforts in compiling this special edition, filled with essential insights for industry.


(Bhupathiraju Srinivasa Varma)

मुरलीधर मोहोळ
MURLIDHAR MOHOL



राज्य मंत्री
नागर विमानन एवं सहकारिता
भारत सरकार
Minister of State for
Civil Aviation and Cooperation
Government of India

MESSAGE

In an era where technology is redefining governance across the world, India is taking confident strides towards a future that is digital-first, inclusive, and citizen-centric. The theme "*Building Digital-First Governance: Innovation for a Smarter Future*" resonates deeply with the transformative journey we are witnessing across sectors.

The Ministry of Civil Aviation has been a pioneer in adopting digital innovations to transform India's aviation sector. Initiatives such as **DigiYatra** facilitate contactless, seamless passenger experiences by leveraging facial recognition technology, significantly enhancing convenience and safety. The **AirSewa** portal provides a unified platform for grievance redressal and real-time updates on flight services, ensuring transparency and prompt resolution of passenger concerns. Additionally, e-governance reforms have streamlined regulatory processes through paperless approvals and comprehensive digitization of flight and air traffic data, thereby boosting operational efficiency and compliance throughout the aviation ecosystem.

Beyond service delivery, digital tools play a vital role in the planning and management of airport infrastructure, logistics integration, and supporting India's ambition to become a global aviation hub. These advancements not only enhance operational efficiency but also contribute to reducing environmental impact and lowering costs.

Similarly, in the Ministry of Cooperation, digital innovation is reshaping cooperatives, historically crucial for rural socio-economic empowerment. Digitization of thousands of Primary Agricultural Credit Societies (PACS) ensures real-time financial data access, faster credit disbursal, and improved governance. Integration with national systems promotes interoperability and informed decision-making. Digital platforms also empower cooperative members through training, capacity-building, and enhanced market access, ensuring the cooperative movement thrives in a technology-driven economy.

I commend Governance Now for highlighting this vital theme. I am confident this special edition will offer valuable insights into how ministries and institutions can continue to embrace technology to build a smarter, more connected, and resilient India.

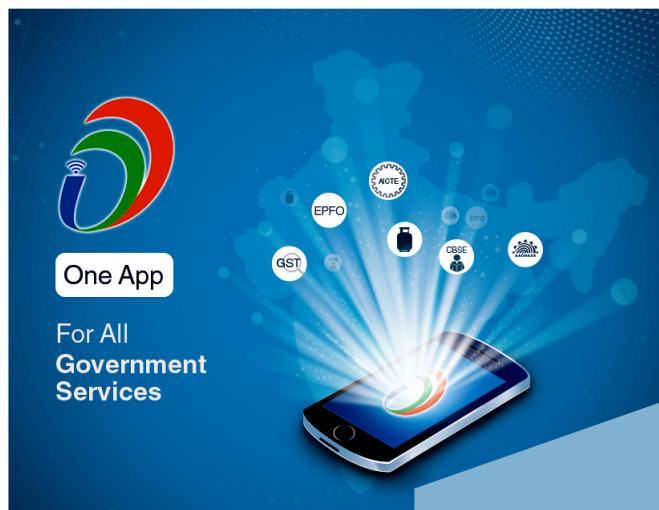
best wishes,

(Murlidhar Mohol)

BEYOND CONNECTIVITY

HOW DIGITAL INDIA REIMAGINED GOVERNANCE FOR 1.4 BILLION PEOPLE

As India celebrates a decade of the Digital India programme on 1st July 2025, the initiative stands as the backbone of the nation's digital transformation. Launched in 2015 by Prime Minister Narendra Modi, it has redefined governance, empowered citizens, and bridged the urban-rural divide. From online delivery of public services to expanding internet access in remote regions, Digital India has reshaped how the country connects, functions, and grows. Contributing over 13% to national income, India now ranks third globally in digitalisation. By 2030, the digital economy is projected to power nearly 20% of the GDP.



The impact is measurable. Internet connections surged from 25.15 crore in 2014 to 96.96 crore in 2024. BharatNet connected 2.18 lakh Gram Panchayats with high-speed internet. With 4.74 lakh 5G towers installed, 99.6% of districts enjoy next-gen connectivity. In April 2025 alone, UPI recorded 1,867.7 crore transactions worth ₹24.77 lakh crore. DigiLocker has 53.92 crore users, while UMANG offers over 2,300 services in 23 languages. The digital economy's contribution to GDP rose from 11.74% in 2022–23 to a projected 13.42% in 2024–25—solidifying Digital India's role as the foundation of inclusive growth.

India's digital governance revolution is a collective achievement—an interplay of national vision and state-level innovation.

Northern states like Uttarakhand and Himachal Pradesh are overcoming geographical challenges through technology. They've deployed 4G in remote areas, adopted e-Office systems, and use drones for disaster response and monitoring. AI training for officials underlines a commitment to future-ready governance.

In the Northeast, Meghalaya leads with "Mission 10," targeting a \$10 billion economy by 2028. Platforms like MeghEA, MeghalayaONE, e-Proposal, and MyMeG are digitizing governance, while tech parks and India's first state-sponsored OTT, Hello Meghalaya, boost innovation. Manipur, under Potsangbam Henry, is implementing cloud infrastructure, AI-enabled e-Hospitals, and paperless legislatures via NeVA. Sikkim has emerged as a digital frontrunner with e-Cabinet, GIS planning, and real-time school monitoring.

In the West, Goa is enhancing service delivery through GoaOnline, GBBN, and Gramin Mitra. Integration of AI, blockchain, and IoT reflects a forward-thinking approach. Dadra & Nagar Haveli and Daman & Diu are setting a UT benchmark with the Safe Daman Project, e-District, CSCs, and localized digital platforms, ensuring inclusion in tribal areas.

In the South, Telangana leads in tech-driven governance—reducing urea usage via nano urea and drones, and establishing four Centres of Excellence in AI, cybersecurity, additive manufacturing, and e-waste.

In the North, Jammu & Kashmir is creating a modern, citizen-first governance framework with telemedicine, e-education, and multilingual digital literacy initiatives—built from the ground up, not just retrofitted.

At the national level, MeitY (Ministry of Electronics and IT) drives the Digital India mission. With platforms like DigiLocker, UMANG, and India Stack, MeitY ensures citizen-centric service delivery and standardized experiences. Its

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**BY 2030,
 THE DIGITAL
 ECONOMY
 IS PROJECTED TO
 POWER NEARLY
 20% OF INDIA'S
 GDP.**

focus on AI, blockchain, and IoT has set global benchmarks in digital governance. Cybersecurity, digital skilling, and cloud migration remain core to its strategy.

Supporting MeitY, NICSI provides cloud infrastructure, develops AI models, enables secure services like e-passports, and leads legacy system modernization.

ERNET India powers educational and research transformation through

secure satellite connectivity, AI-based platforms, and international academic networks like GEANT and TEIN.

HUDCO, a Navratna CPSE, supports urban development through digital innovation in housing, training, and project consultancy—contributing to flagship missions like PMAY and Smart Cities.

The Ministry of Information & Broadcasting (MIB) is digitally modernizing public communication through platforms like Press Seva Portal, India Cine Hub, and WAVES—India's first AI-powered OTT for public broadcasting. Misinformation monitoring, AR/VR tools, and

multilingual content ensure inclusive engagement.

Foundational infrastructure—Aadhaar, UPI, BharatNet, ONDC, and CSCs—has enabled seamless service delivery, financial inclusion, and small business empowerment.

Together, these national and state-level efforts reflect a shared vision of a transparent, resilient, and citizen-centric digital-first India. As Digital India turns 10, the country is poised to lead the world in inclusive, tech-driven governance where innovation meets opportunity—for all.

India is scripting a powerful digital success story, emerging as a global leader across multiple digital domains. According to

“

INDIA IS ON A STEADY PATH TO BECOMING A \$1 TRILLION DIGITAL ECONOMY BY 2028, FUELED BY RAPID INTERNET PENETRATION, AND ROBUST DIGITAL INITIATIVES.

the Estimation and Measurement of India's Digital Economy 2025 report, with 1.14 billion mobile subscribers, India ranks second globally after China, reflecting its expansive mobile connectivity. The country also boasts 16.9 GB of average monthly data consumption per user, making it one of the world's top consumers of internet data. Saudi Arabia has the highest average monthly data traffic, at 35 GB. In digital payments, India leads with a staggering 1,644 billion transactions in FY 2023–24, far ahead of global peers. The Aadhaar ecosystem, with over 1.3 billion biometric IDs, exemplifies India's scale in digital identity. Rapid 5G adoption is underway, with India becoming the second-largest 5G smartphone market globally by early 2024. On the tech frontier, India contributed 23% of AI projects on GitHub, the highest worldwide. With USD 162 billion in ICT exports and a growing base of unicorns, India stands tall as a digital powerhouse driving innovation, inclusion, and global tech leadership.

India is on a steady path to becoming a \$1 trillion digital economy

by 2028, fueled by rapid internet penetration, affordable 4G and 5G connectivity, and robust government-led digital initiatives. According to a recent report by Ask Capital, these digital enablers are accelerating financial inclusion, e-governance, and innovation across sectors. India has outpaced several developed nations in digital advancement, according to the Indian Council for Research on International Economic Relations (ICRIER). The country's overall digitalisation score now exceeds that of countries like Japan, the United Kingdom, and Germany. This reflects India's rapid progress in adopting and scaling digital technologies across sectors, solidifying its position as a global leader in digital transformation and innovation. As digital infrastructure deepens and more citizens and businesses come online, India's tech-driven transformation is expected to unlock massive economic potential, create jobs, and boost productivity, positioning the country as one of the world's largest and most dynamic digital economies within the next three years. □



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About Belagavi Smart City

Often called "Venugrama," Belagavi is an emerald on the Karnataka and Maharashtra border. It is one of the biggest cities in the area, and therefore, acts as a magnet for cultural and socio-economic diversity. Belagavi Smart City, established in 2016 under the Smart Cities Mission, has won various National & International Awards for its pioneering Smart Education Services. These awards include the United Nations Inclusivity Award; ISAC Best South Zone Award; Multiple Smart Urbanation, Indian Express and Smart Urbanation awards; The best ICCC (Integrated Command Control Center) Award; and The Best Leadership Award for BSCL's Managing Director - Sayeeda Afreen Banu Bellary. It was one of the only 18 Smart Cities out of 110 to be renewed under Cities 2.0, receiving a whopping funding of Rs. 135 Crores.

The pride of the City is its Healthcare and Education Services using Smart Technology. The Ravindra Kaushik eLibrary & Kids Zone at the heart of the Smart City provides a cognitive haven with learning-conducive centers within the Library - The Cognitive Language Lab, Skill Development Center, Competitive Examination Center, Digital Library and Kids Zone. The eLibrary and Kids Zone are renowned for their Inclusive and Neurodiverse efforts. The eLibrary is linked to Belagavi Smart City's ICCC, for educational monitoring and management. The eLibrary and Kids Zone utilize Advanced Technologies such as Artificial Intelligence, Deep Learning and Machine Learning to effectively teach and engage students. This eLibrary and Kids Zone is one of BSCL's greatest Monetization efforts, drawing National & International Acclaim.



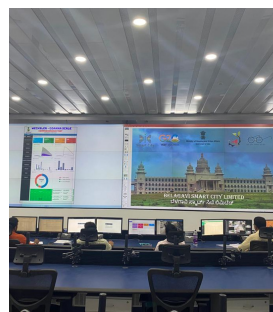
Dr. Peter Gordon

The renowned neuroscience professor from the world-famous Columbia University's Teacher's College, New York, was highly impressed.



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Sanjay Dubey, IAS
Additional Chief
Secretary, Department
of Science &
Technology, Government
of Madhya Pradesh

Madhya Pradesh has emerged as a frontrunner in digital governance and technological innovation. Could you share the state's overarching vision, strategic roadmap, and policy initiatives aimed at fostering a digital-first government?

Madhya Pradesh has embraced a dual strategy for digital transformation, placing equal emphasis on attracting investments and improving services for citizens. While many tend to associate departments such as Science & Technology and IT primarily with investment prospects, the state understands that true success is measured by the effectiveness of technology in enhancing the lives of its citizens.

On one side, Madhya Pradesh has actively implemented investor-friendly policies, which include specialized frameworks for drones, semiconductors, global capability centers (GCCs), and IT. These initiatives aim to streamline the investment process, minimizing the need for manual intervention.

Conversely, the state has positioned itself as a national frontrunner in e-governance. Numerous digital initiatives are not only functioning at scale but are also being replicated throughout the nation. The strategic vision is to maintain this leadership by consistently evolving and incorporating advanced technologies into the delivery of public services. The roadmap emphasizes minimal interaction between citizens and the government, reduced discretion at various touchpoints, and complete digital enablement of

MP'S DIGITAL BLUEPRINT INSPIRES REPLICATION ACROSS INDIA

Madhya Pradesh has emerged as a trailblazer in India's digital transformation journey, combining cutting-edge innovation with a strong citizen-centric approach.

Sanjay Dubey, IAS, Additional Chief Secretary, Department of Science & Technology, Government of Madhya Pradesh believes that with in-house platforms like SAMPADA, e-HRMS, and e-Cyber Tehsil, Madhya Pradesh has redefined how governance is delivered, efficiently, transparently, and remotely. Leveraging AI, blockchain, and data analytics, MP's digital ecosystem is designed for scalability, sustainability, and inclusivity. Its proven models are not just transforming services locally but are also being replicated across other states, setting new national standards.

government services. The ultimate objective is to create a system where citizen services are provided efficiently, transparently, and remotely, eliminating the necessity for physical visits to government offices.

In conclusion, Madhya Pradesh's digital governance framework is characterized by its capacity to merge innovation with accessibility, utilizing technology not only to enhance economic investment but also to facilitate seamless governance that prioritizes citizens.

The Department of Science and Technology has played a key role in driving digital transformation in the state. What are some of the flagship initiatives or programs under the DST that have had a significant impact on this journey?

Madhya Pradesh has established itself as a national frontrunner in e-governance, not only by drawing investments through forward-thinking policy measures but also by providing citizen-focused services via strong in-house technological solutions. In contrast to numerous other states



Photo courtesy: <https://www.mpigr.gov.in/#/home>

that depend on external consultants, the Department of Science and Technology and IT in Madhya Pradesh has internally developed, enhanced, and sustained its complete range of digital governance tools.

One of the most revolutionary initiatives is the enhanced version of the SAMPADA platform, which was launched in August 2024. SAMPADA facilitates end-to-end document registration from any location, available 24/7. Citizens can now remotely register property transactions, calculate stamp duty, utilize built-in document templates, make payments, complete Aadhaar-based e-verification, and receive registration documents instantly through email and WhatsApp. This platform removes the necessity for physical visits, notarial assistance, and manual processing, simplifying an otherwise intricate process. The automation of mutation and land records updates is incorporated into the workflow, ensuring smooth service delivery. This innovation is unmatched in India and worldwide.

Another significant initiative is e-HRMS, a digital human resource management platform that maintains comprehensive records for over 700,000 government employees in the state. It tracks data from recruitment to retirement, encompassing promotions, transfers, performance records, and disciplinary actions. With a single click, the government can retrieve the complete employment history of any individual, promoting transparency, administrative efficiency, and eliminating the need for last-minute record collection at retirement.

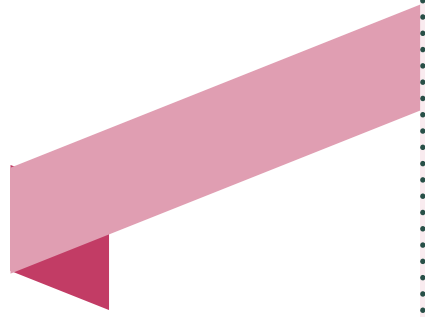
The state also uses facial recognition, authenticated by Aadhaar, for marking attendance at the Secretariat, likely one of the largest such implementations in the country. In agriculture, the e-Crop Insurance platform has revolutionized claim processing. By mapping every farm monthly via drones, and comparing historical data with post-damage imagery, the system calculates real-time losses and initiates insurance settlements, often within hours. This

removes discretionary delays, prevents false claims, reduces corruption, and ensures timely relief to farmers, while also reducing premium costs for the government.

From crop insurance and mining to water supply and mapping, Madhya Pradesh has rolled out dozens of such digital-first governance models. Each initiative emphasizes transparency, speed, and citizen convenience, anchoring the state's strategic roadmap to remain a frontrunner in deploying emerging technologies for public good.

How is Madhya Pradesh leveraging emerging technologies such as Artificial Intelligence, blockchain, and data analytics in public service delivery? What have been the key outcomes or measurable benefits of these integrations?

Emerging technologies such as AI, data analytics, and blockchain are revolutionizing governance in Madhya Pradesh by facilitating predictive, data-driven decision-making.



One of the most impactful applications of AI is in crime prevention through the Crime and Criminal Tracking Network System (CCTNS). The state examines extensive datasets of FIRs to forecast crime hotspots and offender profiles. For example, by pinpointing specific times and locations that are susceptible to chain snatching, often in poorly lit areas near colleges, authorities can proactively deploy constables, leading to a significant reduction in incidents.

AI is also utilized in health and nutrition, particularly under the Integrated Child Development Services (ICDS) program, to identify malnutrition risks among children based on indicators such as recent illnesses, inadequate weight gain, or disease outbreaks.

Blockchain technology is being implemented for the efficient issuance of caste certificates. Once a parent possesses a verified certificate, blockchain guarantees tamper-proof records that automatically establish eligibility for their

children, eliminating the necessity for repeated verifications.

In urban governance, municipal authorities are harnessing AI and blockchain to evaluate property taxes with greater accuracy. Drones are employed to map properties, assess covered areas, and integrate geospatial data with ownership records to identify defaulters and enhance tax collection processes. Collectively, these initiatives illustrate how technology is being effectively integrated into essential public services, thereby enhancing transparency, efficiency, and public trust.

With increasing emphasis on citizen-centricity and sustainability, how is the state ensuring that digital initiatives are inclusive, accessible to all sections of society, and aligned with long-term sustainability goals?

Madhya Pradesh has focused on inclusive digital governance by minimizing entry barriers related to language, access, and affordability. All platforms are available in both Hindi and English, ensuring language inclusivity. Services can be accessed via mobile apps (iOS and Android), websites, Common Service Centres (CSCs), and MPOnline kiosks, ensuring last-mile reach across towns and villages. The state consistently ranks among the top in Government of India's e-governance performance indices due to timely service rollouts and widespread accessibility.

Importantly, Madhya Pradesh emphasizes continuous improvement and citizen feedback integration. For example, suggestions led to the

evolution of SAMPADA 2 and the development of a comprehensive e-HRMS system that tracks employee data from recruitment to retirement. Unlike many states, MP ensures longevity of digital platforms by regularly upgrading them. Other states like Jharkhand, Tamil Nadu, and Rajasthan have studied these models for replication, reflecting their scalability and sustained relevance. These efforts reflect a strong, citizen-first digital governance model.

Several initiatives of the Madhya Pradesh Government are being replicated by other states. In your view, which path-breaking initiatives have had the most significant impact and are now being adopted at the national level?

Back in 2011, while heading the Rural Roads Development Authority under PMGSY, GIS technology was introduced in Madhya Pradesh to monitor road quality. Citizens could upload geotagged photos of potholes, triggering contractor-led maintenance, enforceable for five years post-construction. This model evolved into e-MARG, later adopted by central and state agencies. Similarly, e-SAMPADA—offering Aadhaar-based property registration without physical visits—has attracted interest from 17 states and influenced national policy. The state's e-HRMS tracks a government employee's full lifecycle, and e-Cyber Tehsil, which enables online land mutation without visiting government offices, recently earned the Prime Minister's Excellence Award for its innovation and replicability. □

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Mona Khandhar, IAS,
Principal Secretary,
Department of Science
and Technology (DST),
Government of Gujarat

G

ujarat has been recognized as a pioneer in digital governance and innovation. Could you outline the state's overarching vision, key policies, and strategy for building a digital-first government?

Gujarat's digital governance journey began under the leadership of the current Prime Minister, who, as Chief Minister at that time, prioritized reaching the most remote citizens first. This vision led to the launch of the e-Gram initiative, delivering real-time, citizen-centric services through a digital platform in rural areas. Over time, e-Gram expanded to over 14,000 centers operated by village-level digital entrepreneurs, becoming a model for inclusion. This initiative also laid the foundation for Gujarat's seamless implementation of BharatNet, which now boasts over 95% uptime. Complementing this are Digital Seva Setu for revenue services and e-Nagar for urban areas, creating a comprehensive architecture of service delivery. Notably, Swagat, a direct grievance redressal platform, allows citizens to raise issues that escalate to the Chief Minister's office when necessary, ensuring timely resolution and accountability. Gujarat's model remains dynamic, integrating new technologies continuously while staying focused on last-mile, real-time service delivery across both rural and urban landscapes. Gujarat's digital architecture is designed with citizen-centricity and real-time responsiveness at its core. The system is dynamic, integrating emerging technologies as they become relevant, be it cloud platforms,

GUJARAT IS THE POWERHOUSE OF DIGITAL GOVERNANCE

Gujarat's digital transformation began with e-Gram, delivering real-time rural services via 14,000+ centers, and expanded through BharatNet, achieving 95% uptime across villages. Urban services are streamlined via e-Nagar and Digital Seva Setu, while Swagat ensures CM-level grievance redressal. According to
Mona Khandhar, IAS, Principal Secretary, Department of Science and Technology (DST), Government of Gujarat, *DST is building a Unified Digital Architecture, "Gujarat Stack", with SSO, a data lake, and AI-driven services. Key projects include e-Sarkar, HRMS for 8 lakh employees, the AI Center of Excellence, Mission Schools Project, and Vishwas CCTV network. Sustainability is prioritized through renewable-powered infrastructure and reduced paper use. Cybersecurity, inclusion, and digital skilling anchor future growth.*

AI, or mobile-based services. This adaptability keeps the governance model robust and forward-looking.

What key initiatives has the Department of Science and Technology led to drive Gujarat's digital transformation under your leadership?

The Department of Science and Technology has initiated several significant projects, with the latest being the creation of a Unified Digital Architecture for Gujarat. Drawing inspiration from India Stack, the state is in the process of developing its own "Gujarat Stack" by merging databases from all government departments. As part of this initiative, a Single Sign-On (SSO) system is being implemented to provide citizens with a seamless digital experience, thereby removing the necessity to engage with multiple departments using various formats. With a single unique ID, citizens will have the capability to apply for any government scheme

and efficiently receive benefits through a consolidated platform.

On the backend, a data lake framework has been established to unify departmental databases. These datasets are organized by reliability, with the most current and Aadhaar-linked information categorized in a 'Gold Standard' tier. Essential citizen-related data, including birth, death, marriage records, PAN, GSTIN, and property tax, are being integrated to create a foundational layer. This architecture is being upgraded with contemporary tools and design features, and is fully connected with platforms such as DigiLocker and payment gateways. Upon completion, the Gujarat Stack will facilitate real-time, citizen-centric service delivery, representing a major achievement in the state's digital transformation.

How is Gujarat integrating emerging technologies like AI, blockchain, and data analytics into public service delivery? What measurable impacts

have these technologies had, and how is your department enabling their adoption at both the government and citizen levels?

Gujarat is taking a holistic approach to implementing emerging technologies across sectors. Rather than limiting innovation to internal government use, we're also working closely with MSMEs, startups, and academia. Gujarat was the first state to establish a Center of Excellence for AI, and currently, around 20 startups are actively co-developing AI use cases based on real problem statements from government departments and industries. Over 125 startups have registered through monthly innovation challenges, helping drive solution-based applications of AI.

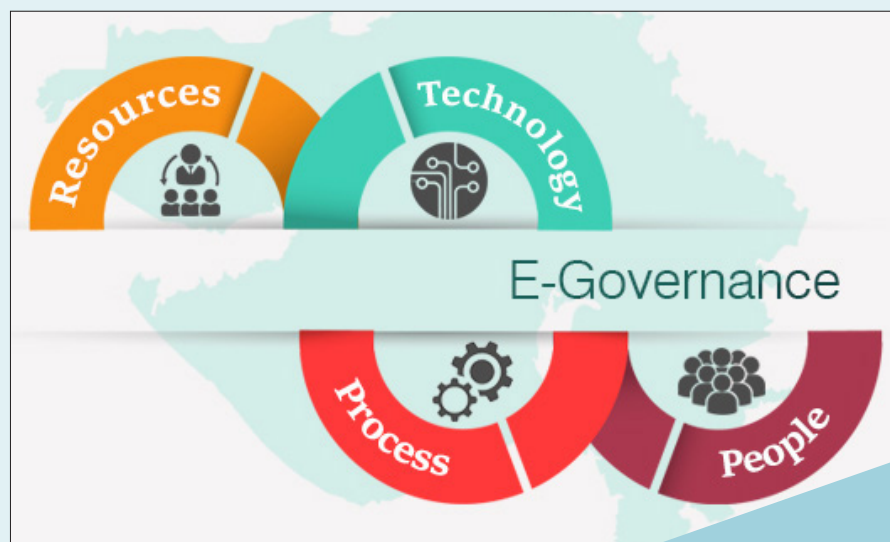
To democratize access and adoption, capacity building is a major focus. We're training not just technical teams and government officials, but also students and the broader IT workforce. Additionally, under the

leadership of our Hon'ble Chief Minister, Gujarat has formed an AI Task Force to drive a five-year action plan for AI integration across key sectors.

We're working to build high-quality data pools, which are foundational for any AI model, and are in the process of developing foundational AI models in priority sectors like finance and biotechnology. Infrastructure-wise, we're upgrading our state data centers with GPU capabilities, cloud infrastructure, and AI design tools to support large-scale compute needs.

This end-to-end strategy, covering data, infrastructure, policy, capacity building, and startup collaboration, forms the core of Gujarat's comprehensive plan for integrating futuristic technologies into effective, citizen-centric public service delivery.

Gujarat has been actively aligning with the Digital India vision through the adoption of emerging technologies like AI and data analytics. Could



you share some standout digital governance models or success stories from the state that hold potential for replication across other states or at the national level?

Yes, Gujarat has implemented several impactful digital governance initiatives that could serve as replicable models. One of the key innovations is e-Sarkar, a robust digital governance platform that extends beyond conventional e-office systems. It supports real-time tracking of administrative processes, offers comprehensive dashboards, and enables seamless file movement and decision-making. The platform has significantly improved efficiency, particularly at the Secretariat level, where officials can access and process files remotely, hold virtual meetings, and manage workflows digitally.

The World Bank-supported Mission Schools Project has transformed classroom learning through digitization and it includes smart classrooms and smart labs, helping both teachers and students with digital tools and real-time academic progress tracking. It has earned multiple

recognitions for its innovation and impact.

Another noteworthy initiative is the Vishwas Project, led by the Home Department as part of the Smart Cities Mission. This project has deployed a citywide network of CCTV cameras to regulate traffic and maintain law and order, proving highly effective in urban safety management.

Additionally, the Human Resource Management System (HRMS), developed in-house, is a comprehensive platform managing over 8 lakh government employees, including both regular and outsourced staff. The system streamlines records, payroll, service requests, and administrative processing.

All these initiatives are now being integrated into Gujarat's evolving unified digital architecture, further strengthening the state's position as a leader in citizen-centric, scalable digital governance.

How is Gujarat ensuring that its citizen-centric digital infrastructure aligns with principles of sustainability, and what progress has been made in integrating the two?

In Gujarat, the integration of sustainability with digital-first governance is a key priority. As a leader in renewable energy, the state leverages clean power to support its growing digital infrastructure, including data centers. A major step towards sustainable governance is the implementation of a Unified Digital Architecture, which minimizes duplication of data, infrastructure, and services, ensuring efficient resource

use. Additionally, the BharatNet Phase-III rollout has enabled extensive horizontal connectivity across rural areas. Not only are Gram Panchayats connected, but so are Anganwadis, health centers, schools, and police stations, creating a robust digital backbone. This connectivity has significantly reduced paper usage across departments, even at the village level, where digital presentations and online agendas have replaced printed documents. While full paperless governance is a work in progress, Gujarat has already achieved considerable progress. The continued rollout of these initiatives promises further consolidation, cost savings, and environmentally responsible growth across the state.

Looking ahead, what do you see as the key opportunities and potential threats in integrating digital technology into governance, especially from a SWOT perspective?

Cybersecurity remains a critical concern in Gujarat's digital journey. The state has established an integrated Security Operations Center and Network Operations System, an innovative model unique to Gujarat, to safeguard against cyber threats. By collaborating with private and non-governmental sectors, the state is proactively gathering intelligence to prevent attacks and protect sensitive data. At the grassroots level, digital literacy is equally essential. With technology reaching rural areas, citizens must be continuously educated on safeguarding their digital credentials to prevent fraud and misuse. □



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Sanket S Bhondve, IAS
Joint Secretary,
Ministry of Electronics
and Information
Technology, Govt of India

W

What is MeitY's vision for the impact of digital-first governance on the development of public services in India?

The Ministry of Electronics and Information Technology (MeitY) wants to create digital-first governance as a cornerstone in the Indian public service transformation, with the aim of enhancing accessibility, efficiency, and citizen engagement. Initiatives like Digital India are planned to develop a digitally empowered nation and knowledge-based economy, ensuring that government services reach all citizens through electronic media. This approach not only makes processes easier but also fosters transparency and inclusivity in the governance process.

What are the key priorities and initiatives under MeitY to accelerate digital transformation across ministries and government agencies?

MeitY has launched several programs with the purpose of accelerating digital transformation, which include Digital Brand Identity Manual, Central Content Publishing System and Capacity-Building Initiatives.

The Digital Brand Identity Manual (DBIM) has been formed to establish a standardized appearance of the government online that presents a unified appearance on all online platforms. Whereas the Central Content Publishing System (CCPS) aims to centralize access to key government policies, schemes, and updates, thus promoting transparency and public involvement. The Capacity-Building initiatives

MEITY'S DIGITAL-FIRST GOVERNANCE

TRANSFORMING INDIA'S PUBLIC SERVICES

Sanket S Bhondve, Joint Secretary, Ministry of Electronics and Information Technology stresses on MeitY's commitment to create and strengthen digital-first governance to drive transformation in public services and encourage inclusive citizen engagement. At the core of this is the Digital India initiative, focused on closing the digital divide by enhancing infrastructure and encouraging mass digital literacy, he says. Excerpts:

were launched to enhance digital governance by equipping government officials with the necessary digital skills.

How do you see the role of AI, Blockchain, and other emerging technologies in making governance more efficient and transparent?

Emerging technologies like AI and Blockchain are pivotal in enhancing governance. Artificial Intelligence (AI) is utilized to improve service delivery, predict citizen needs, and automate routine tasks, thereby increasing efficiency. Blockchain is used for secure data sharing and supply chain management, ensuring data integrity and transparency in government operations.

Can you share successful case studies of digital-first initiatives implemented by MeitY or other ministries?

A notable example is the UMANG (Unified Mobile Application for New-age Governance) application, which brings together over 1,200 services of various state and central government departments onto a single platform, thus making it easier for citizens to access government services.

What role does digital skilling and capacity building play in ensuring the success of digital-first governance?

Digital skilling and capacity building are crucial for the success of digital-first governance. MeitY's capacity-building initiatives aim to equip government officials with the necessary digital skills to effectively implement and manage digital governance projects, ensuring that technological advancements translate into improved public services.

Looking ahead, what are the next big milestones for MeitY in making India a global leader in digital governance?

MeitY is focusing on standardizing and harmonizing the digital footprint of the government by implementing the Digital Brand Identity Manual (DBIM), propelling AI Governance by creating guidelines and frameworks for the ethical and effective use of AI, and strengthening Digital Public Infrastructure by incorporating innovative technologies such as AI

and blockchain to enhance service delivery and transparency.

How is MeitY addressing concerns related to digital inclusivity and bridging the digital divide while implementing large-scale technological advancement?

MeitY's response to digital inclusiveness is to create citizen-centric platforms to make digital services available to all sections of society and to encourage digital literacy through efforts of improving digital skills among the population, especially rural populations.

What are the biggest challenges in implementing digital-first governance in India, and how can they be addressed?

Digital divide and cybersecurity are some of the challenges which can be addressed by various effective measures. Digital divide can be addressed by promoting digital literacy and infrastructure

development in underserved areas where cybersecurity concerns can be mitigated through robust cybersecurity measures and policies to protect data and maintain public trust.

How is MeitY working to bridge the digital divide, ensuring inclusivity in digital governance across rural and urban India?

MeitY is working to bridge the digital divide by implementing the Digital India Initiative, aimed at transforming India into a digitally empowered society and knowledge economy through providing high-speed internet and digital infrastructure to all citizens, and by promoting digital literacy programs to ensure that citizens across rural and urban areas have the necessary skills to access and benefit from digital services. These efforts collectively aim to create an inclusive digital ecosystem that benefits all citizens, regardless of their geographic location. □





Prithul Kumar,
Joint Secretary
(Broadcasting-II),
Ministry of IB,
Government of India

W

hat are the key applications of AI and ML within India's Ministry of Information & Broadcasting to improve the efficiency and reach of content dissemination, forecast evolving media landscapes, and foster deeper audience engagement on multiple platforms?

This initiative is being conducted through the Central Bureau of Communication (CBC), although it does not directly result from the Ministry of Information and Broadcasting (MIB). The MIB's direct outcomes pertain to our business processes involving interactions with individuals and consumers. Initially, the government fully digitized all processes; for instance, the role of the Registrar of Newspapers has evolved into that of the Press Registrar General of India. Previously, applications were submitted to district administrations and subsequently to the New Delhi headquarters. Today, all these processes have been digitized through the online Press Seva portal, allowing individuals to apply for registration of any magazine or newspaper across India without the need for physical documents. This has streamlined the process, as not only are applications submitted online, but the processing within the department and with state governments has also been integrated into the system. This transition has resulted in complete transparency and a well-mapped workflow that enhances our performance. When we began digitizing these applications, there were thousands pending due to numerous gaps and missing data from physical transactions. This backlog has been significantly reduced, and we now

FROM STREAMLINED ONLINE SERVICES TO AI-POWERED MISINFORMATION CONTROL

*The Ministry of Information and Broadcasting (MIB) of India is currently experiencing a profound digital transformation, utilizing technology to enhance its operations, engage with stakeholders, and tackle modern issues such as misinformation. While certain initiatives are executed through organizations like the Central Bureau of Communication (CBC), the MIB is enacting extensive reforms across multiple sectors, including the optimization of media registration processes, the facilitation of film production, and the integration of advanced technologies such as AI and AR/VR. An interview with **Prithul Kumar**, Joint Secretary (Broadcasting-II) at the Ministry of Information and Broadcasting, Government of India, delves into the significant applications and effects of this digital advancement. Selected excerpts:*

process applications in the hundreds. The standard verification cycle for district magistrates is two months, which is a normal timeframe, and re-registration is now completed much more swiftly than in the past. This serves as one example of improved business operations.

Additionally, the government launched a film facilitation office in 2016, primarily aimed at attracting foreign filmmakers to shoot in India, thereby promoting film production within the country. The initiative yielded two primary results: it aimed to attract increased foreign investment in India by creating job opportunities for local residents and utilizing local resources. It sought to

enhance India's image on the global stage, thereby boosting tourism and fostering a positive perception of the country. This objective extended to domestic cinema as well. Recently, we introduced a revamped portal known as the India Cine Hub, designed to streamline film presentation processes. This platform serves as a comprehensive single-window clearance system for all cinema shooting requirements, facilitating foreign filmmakers in obtaining the necessary film visas and permissions for various locations, including railways. All necessary approvals are now consolidated within this portal, eliminating the need for filmmakers to engage with multiple organizations, state governments, or local authorities. We have successfully integrated seven key components, ensuring that even states with limited IT infrastructure can access the application. This initiative was launched at the International Film Festival in Goa last year and has proven to be highly beneficial. The increase in the number of films seeking permissions to shoot in India is a testament to the effectiveness of this streamlined process. The integration of IT into our business operations has significantly simplified interactions within the industry, making it easier for all stakeholders to conduct business.

With misinformation and fake news being critical challenges, how is the Ministry proactively utilizing big data analytics and AI-powered tools for real-time sentiment analysis, media monitoring, and misinformation tracking?

A dedicated Joint Secretary oversees this area and likely employs digital methods within their systems. Furthermore, we have a tender in progress for integrating AI, big data, and machine learning to tackle these challenges, including the dissemination you mentioned. As a result, online multilingual dissemination is now standard practice, driven by AI and machine learning models that are continuously updated within our IT system.

Are we tapping on Augmented Reality (AR) and Virtual Reality (VR) Technologies for interactive communication for cultural education and for awareness campaigns, many foreign countries are doing this.

Regarding filming, another key aspect is showcasing to the world the diverse and shootable locations and resources we possess. This includes physical equipment like cameras and lighting, as well as skilled cinematography professionals. To this end, we will widely utilize AR and VR. We are developing a comprehensive resource pool, drawing from state governments and crowdsourcing, making this information accessible to everyone. In the backend, AI will power the search functionality, providing relevant suggestions.

How are these digitized channels making communication more citizen-focused?

The ministry has enhanced the transparency of its services across various sectors, including channels, press, media, and film, through the integration of information technology. By digitizing these services, the

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THE FILM FACILITATION OFFICE, LAUNCHED IN 2016, AIMED TO ATTRACT FOREIGN FILMMAKERS TO INDIA, BOOSTING LOCAL JOBS, INVESTMENT, TOURISM, AND INDIA'S GLOBAL IMAGE.

“
ALTHOUGH
THE MINISTRY
HAS LIMITED
ENGAGEMENT WITH
THE PUBLIC, THE IT
IMPLEMENTATION
HAS
REVOLUTIONIZED
ALL CRITICAL
INTERACTIONS
WITH THE
MEDIA AND
ENTERTAINMENT
SECTOR, ITS MAIN
STAKEHOLDER.

Ministry has established a system that operates independently of individual officials and is not limited by time constraints. Applications can now be submitted anytime, resulting in quicker and more uniform processing. This transition has significantly improved service delivery in multiple areas. Although the ministry has limited direct engagement with the public, the IT implementation has revolutionized all critical interactions with the media and entertainment sector, its main stakeholder. This digital transformation has enabled the ministry to foster a more transparent, accessible, and efficient environment for all users of its services.

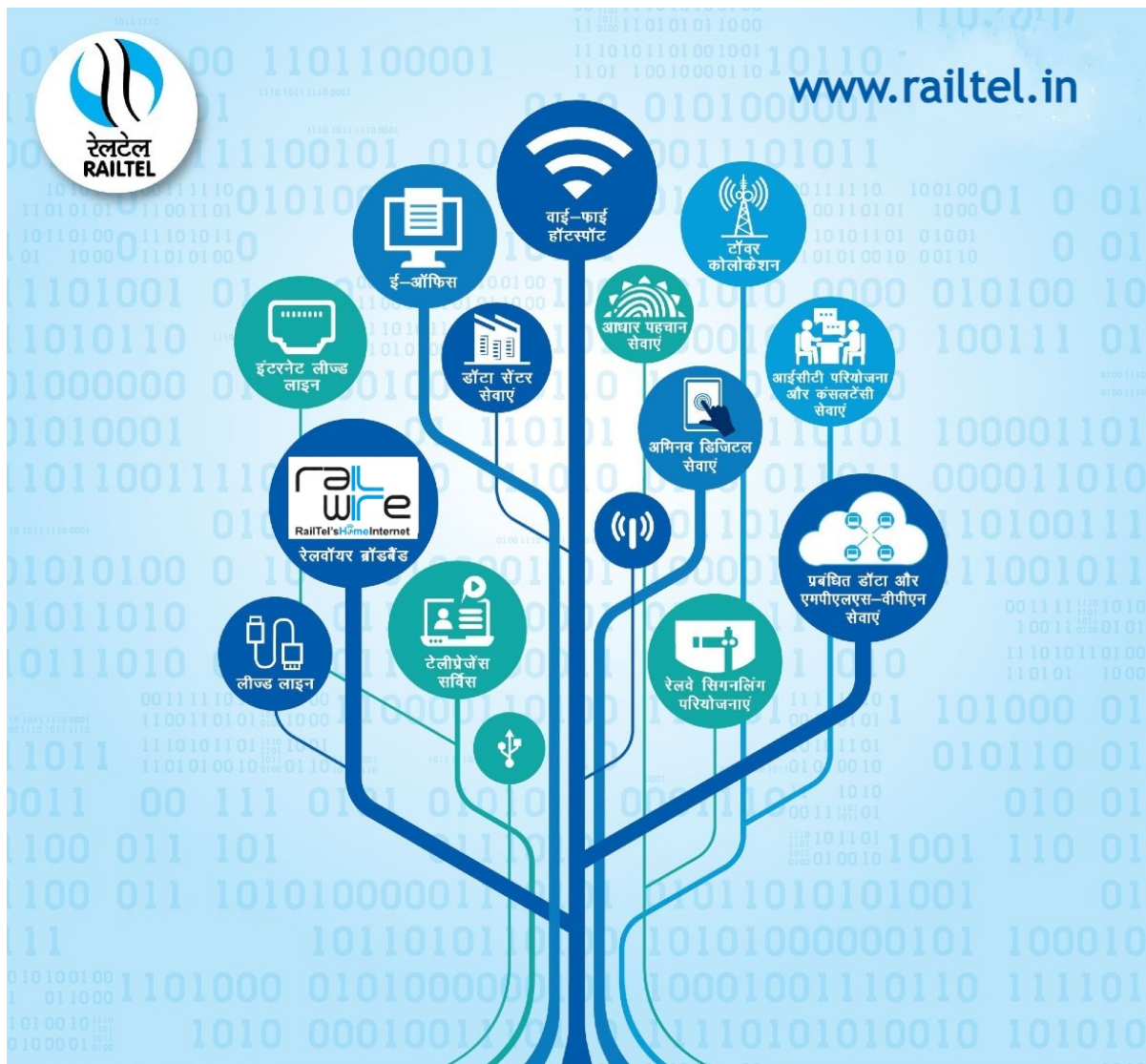
The Broadcast Infrastructure Network Development (BIND) scheme is a key modernization effort. Could you share the key milestones achieved under BIND?



The recent initiative represents a notable advancement in the enhancement of public broadcasting in India. Specifically targeting Prasar Bharati, the program aims to improve the infrastructure of public broadcasting services nationwide. This includes the modernization of both TV and radio broadcasting networks, exemplified by Doordarshan and All India Radio. The initiative seeks to broaden the reach of these services by establishing additional FM radio stations, launching new television channels, and enhancing overall coverage. Furthermore, Prasar Bharati has introduced an OTT platform named WAVES, which serves as a crucial technological advancement. This platform allows content that lacks visibility to be showcased through a revenue-sharing model, making it accessible to the public. Additionally, WAVES employs advanced backend systems powered by AI and ML, which improve user experience by offering intelligent content recommendations and creating a more intuitive and user-friendly interface. Consequently, users can effortlessly discover and engage with content that matches their preferences, resulting in a more personalized and immersive experience. Overall, this initiative not only modernizes the public broadcasting infrastructure but also promotes a more inclusive and citizen-focused approach to media, integrating digital innovation with public service broadcasting to foster a more connected, informed, and participatory society. □



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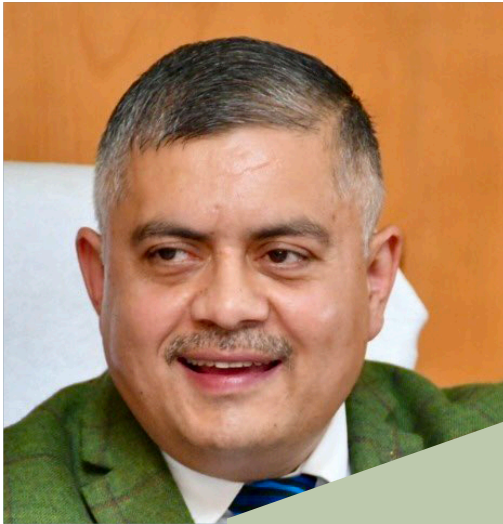
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Amit Sharma, IAS
Secretary, ICT & Cooperation
Departments,
Government of Mizoram

W

What is the Department of IT's vision for building a digital-first and citizen-centric governance model in Mizoram, and how is this vision being implemented across various departments?

The primary objective is to enhance connectivity and digital services in the most isolated and geographically difficult regions, areas previously referred to as "last-mile" villages are now viewed as the "first villages" at the borders of India. Whether situated along the borders of Myanmar or Bangladesh, the aim is to close significant connectivity gaps and promote inclusion.

Telecom connectivity is now deemed essential, not merely for communication or entertainment, but as a basic requirement. The telecom revolution in India, driven by ICT and Digital India initiatives, has facilitated the widespread use of digital payment systems and electronic services. The goal is to provide these advantages directly to remote villages, thereby reducing the necessity for citizens to visit government offices through initiatives such as Common Service Centres (CSCs).

In accordance with the International Year of Cooperatives, there is also a focus on digitizing registrar and cooperative offices and empowering multipurpose cooperative societies to function as local service centers. Despite the geographical challenges in states like Mizoram, the mission remains to guarantee dependable connectivity and inclusive digital access, propelling the next stage of development.

MIZORAM REIMAGINES "LAST-MILE" AS "FIRST VILLAGE" FOR DIGITAL INCLUSION

Amit Sharma, IAS, Secretary, ICT & Cooperation Departments, Government of Mizoram, is leading a transformative digital push to connect remote border villages, repositioning them as "first villages" rather than "last-mile" outposts. Under his leadership, Mizoram is advancing e-Office systems, integrating local language AI tools, and expanding fiber connectivity across the state. With a strong focus on cybersecurity, inclusive digital access, and partnerships for AI skilling, Sharma is shaping Mizoram into a resilient, future-ready digital governance model. Some excerpts from a candid conversation with him:

Could you highlight key digital initiatives or platforms launched by the department that have improved public service delivery, administrative efficiency, or citizen engagement in Mizoram?

The state is currently undergoing significant reforms in the ICT sector, shaped by the accumulated experience of its senior leadership. I have previously served as IT Secretary in Jammu & Kashmir, Ladakh, and now I am in a third consecutive state with challenging terrain and border sensitivities. One of the key initiatives being implemented is e-Office, a project that may appear basic on the surface but is transformational for states with logistical and administrative challenges. In Jammu & Kashmir, for instance, the shift to e-Office eliminated the historic practice of biannual physical relocation of secretariat operations, an arduous task involving truckloads of files. Building on that success, the officer spearheaded a similar transition in the current state. With full backing from the Chief Minister and Chief Secretary, the Secretariat has now been almost fully digitized and operates as a paperless office.

The next phase involves extending e-Office



to all Heads of Departments and District Collector offices, with a goal of reaching the grassroots block level. Recognizing the foundational stage of IT adoption in the state, the focus remains on strengthening the basics, including connectivity and digital service delivery.

The state is also looking ahead. A proposal has been submitted to the Ministry of Electronics and IT (MeitY) for the second phase of support. Additionally, an MoU is being prepared with MeitY's Bhashini division to integrate the Mizo language into national AI and language tools, marking a step toward inclusive digital governance. These gradual but strategic moves aim to position the state as a future-ready digital entity.

How is the department leveraging emerging technologies such as cloud computing, AI, IoT, and data analytics to modernize governance and support evidence-based policymaking in the state?

Mizoram finds itself at a crucial

inflection point in its digital journey, not at the initial stage of tech adoption, nor at the saturation level seen in more mature IT ecosystems like Karnataka or Telangana. The state is strategically positioned to harness cutting-edge technologies, including AI, and is actively working to integrate AI-driven solutions into governance.

One such initiative is a collaboration with MeitY's Bhashini platform to integrate local languages into large language models, ensuring AI applications are inclusive and accessible. Additionally, following a recent meeting with Microsoft's global leadership, plans are underway to launch AI certification programs for students and government employees under CSR initiatives, offered free of cost. These programs will build AI readiness at the grassroots level.

Mizoram has also built robust institutional capacity to support its digital ambitions, including a dedicated Directorate of ICT, the Mizoram State e-Governance Agency,

and entities like ZENICS. A major infrastructure initiative, the Mizoram Fiber Grid Network, is nearing launch and will extend connectivity to the block and village levels.

With digital expansion comes the critical responsibility of securing data and ensuring ethical tech use. The state is proactively exploring cybersecurity frameworks by engaging with industry leaders. During a recent Digital Transformation Conclave, attended by senior officials from MeitY, DARPG, and MEA, various cybersecurity solutions were evaluated for local relevance.

Recent incidents, including an attempted breach of the Mizoram Public Service Commission website, have reinforced the urgency of these measures. The incident, reported to CERT-In and resolved swiftly, served as a wake-up call. Given the state's international borders with Myanmar and Bangladesh, the risk of cyber threats from foreign IPs adds another layer of complexity. To mitigate this, Mizoram is strengthening its

“MIZORAM IS NOT ONLY EXPANDING DIGITAL ACCESS BUT IS ALSO EMBEDDING RESILIENCE, RESPONSIBILITY, AND SECURITY INTO ITS DIGITAL GOVERNANCE FRAMEWORK



State Data Centre and introducing safeguards to protect sensitive government data from potential breaches.

Overall, Mizoram is not only expanding digital access but is also embedding resilience, responsibility, and security into its digital governance framework.

Looking ahead, what are the department's key priorities and challenges in scaling digital infrastructure, enhancing inter-departmental collaboration, and building a resilient and future-ready digital governance ecosystem?

A key strategic focus for Mizoram's digital governance is to build a system that is resilient, robust, and future-ready by integrating the latest technologies. Upgradation of existing infrastructure is actively encouraged, alongside the broader mission of ensuring last-mile connectivity and digital inclusion for all citizens. The long-term vision is clear: visiting a government office should eventually become an exception, not a necessity, reserved for informal dialogue over

tea, not for availing basic services. Every essential service should be accessible online, efficiently and transparently.

In parallel, the state is aiming to scale its digital infrastructure to support larger economic ambitions. Drawing from experience with Invest India, leadership within the state has proposed the creation of Global Capability Centres (GCCs), an evolution beyond traditional BPOs. Given Mizoram's strategic location between two international borders, the state is well-positioned to offer end-to-end human resource and digital service solutions to the region.

To support this transformation, ongoing collaborations are underway with institutions like STPI, NIELIT, and Mizoram University, which is hosting major conferences on AI-driven financial inclusion. Cybersecurity awareness is also being ramped up. Over the coming year, these efforts are expected to reshape Mizoram into a dynamic, IT-driven state prepared for the digital future. □

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Sanjay Kulshrestha,
Chairman and
Managing Director,
HUDCO Ltd.

H

UDCO has been playing a critical role in nation building. Could you please elaborate HUDCO's strategic initiatives in affordable housing and infrastructure development in the country?

Housing and Urban Development Corporation Limited (HUDCO) is a premier techno-financing Navratna CPSE in the housing and urban development sector and has been playing a pivotal role in the socio-economic development of India since its inception in 1970. With a mission to facilitate inclusive and sustainable habitat development, HUDCO, has emerged as one of the unique CPSEs for building assets for the nation with multi-sectoral focus for more than five and half decades, making significant contributions to the nation, fostering growth and improving the quality of life for millions, particularly for economically weaker sections and lower income groups.

Commencing its business operations with a meagre capital of Rupees two crores in 1970, HUDCO, which is going to complete 55 years on 25th April 2025, has cumulatively sanctioned a total of 17,433 housing and urban infrastructure projects with a total loan sanction of ₹ 4,28,208 crore and disbursements of ₹ 2,54,914 crores, as of February 2025 to state governments and its agencies/ parastatals. The city-level core infrastructure projects ranging from water supply, sewerage, sanitation, waste management, roads & bridges, transport, to Power/Energy, Commercial and industrial infrastructure projects, benefit the poor and marginalized communities to a larger extent.

WHERE PROSPERITY MEETS PURPOSE: HUDCO'S VISION

Established in 1970, Navratna CPSE, HUDCO drives India's socio-economic progress through inclusive and sustainable habitat development, prioritizing "profitability with social justice." It has sanctioned over ₹ 4.28 lakh crore for 17,433 projects, benefiting millions, with 94% of over 20 million financed houses for EWS/LIG. HUDCO also actively supports key government programs like PMAY and AMRUT with financial, consultancy, and training assistance, playing a crucial role in urban development. HUDCO, chairman and managing director (CMD), Sanjay Kulshrestha interacted with Governance Now and shared some key initiatives of the state run organisation. Excerpts:

HUDCO has sanctioned financial assistance to over 20.18 million housing units both in rural and urban areas, of which 18.87 million (94%) pertains to EWS/LIG categories with the motto of 'profitability with social justice', thereby promoting social inclusivity.

How HUDCO is supporting various flagship programmes of Govt. of India such as PMAY, AMRUT, etc.?

Apart from being the think tank in formulation of various policies and programmes, HUDCO has also been a catalyst in supplementing various Government of India flagship programmes such as Pradhan Mantri Awas Yojana (Urban)- Housing for All (PMAY-U), Smart Cities Mission, Swachh Bharat Mission, Atal Mission for Rejuvenation & Urban Transformation (AMRUT), Jal Jeevan Mission, etc. providing a range of support such as counterpart funding, consultancy, appraisal and monitoring, and training. HUDCO was one of

the three Central Nodal Agencies (CNA) for CLSS component of PMAY-Urban, apart from providing viability gap/counterpart funding to other three components of PMAY. For PMAY 1.0, HUDCO has provided lending assistance of ₹ 42,850 crore, including funding of ₹ 5,750 crore under PMAY-Grameen, and channelized subsidy of ₹ 2,667 crore for 1,13,137 beneficiaries belonging to EWS/LIG/MIG categories as CNA.

Similarly, under AMRUT, HUDCO has extended financial assistance of ₹ 450 crore towards viability gap funding (ULB Share) to Rajasthan in implementation of the various infrastructure works (water supply / drainage / sewerage / green space etc.) in 20 urban local bodies (ULBs). Under AMRUT 2.0, HUDCO has sanctioned a loan of ₹ 135.36 crore in Rajasthan for undertaking sewerage works under its jurisdiction.

What are the plans of HUDCO about

its participation in the recently launched PMAY-Urban 2.0 Mission?

The Centre has launched PMAY-U 2.0, aiming to construct one crore houses for urban poor and middle-class families over the next five years with a ₹ 10 lakh crore investment, including ₹ 2.20 lakh crore in subsidies. HUDCO will play a key role by providing financial assistance, channelizing subsidies under the Interest Subsidy Scheme and Technology Innovation Grant, offering consultancy services, constructing rental houses with NBCC, and lending for associated infrastructure, thus contributing significantly to India's housing infrastructure and addressing shelter shortages.

Does HUDCO have a roadmap to support rental housing models in urban areas to address the needs of migrant workers and lower-income groups?

PMAY-U 2.0 emphasizes Affordable

Rental Housing for various groups, supported by a new ₹ 2,500 crore industrial scheme. HUDCO is collaborating to create Indian models based on international successes, significantly aiding the national push for affordable rental housing.

Regarding the new ₹ 1 lakh crore Urban Challenge Fund (UCF) aimed at making cities growth hubs, HUDCO is poised to be a key financier for bankable urban infrastructure projects (water, sewage, waste, air, land management), leveraging bonds, banks, and PPPs. Beyond funding,

भारत के विज्ञान को नई आकृति के


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HUDCO will provide crucial consultancy, appraisal, monitoring, DPR preparation, and capacity building support to ULBs for effective UCF project implementation.

Recently HUDCO has been granted permission to issue Capital Gain Tax Exemption Bonds under Section 54EC of the Income Tax Act 1961. How significant is this for HUDCO?

HUDCO is diversifying funding (bonds, loans, FCNR, ECB) for competitive lending. Starting April 1, 2025, the government of India has allowed HUDCO to issue Capital Gain Tax Exemption Bonds (Sec 54EC), reflecting commitment to Viksit Bharat @ 2047. This will boost HUDCO's capital market participation, offering a long-term, competitive funding source for infrastructure beyond housing. Investors can exempt capital gains (max ₹ 50 lakh) from land/building transfer if invested in these 5-year redeemable bonds within six months.

What are the measures HUDCO has taken in the last 15 months

to optimize its borrowing cost, thereby adding competitive edge to its lending operations?

Besides, raising resources through a diversified resource pool based on ALM profile, liquidity, and market conditions, HUDCO has established its footprints in international markets. HUDCO has raised JPY denominated long-term ECB loan equivalent to around US\$ 1.20 Billion at a cost of around 6.15%, which is almost one per cent lessor when compared with domestic loans of similar tenor. HUDCO has robust risk management framework, thereby ensuring adequate hedge against foreign exchange volatility. Besides, ECB Loans, HUDCO has also raised FCNR Loans from Domestic lenders at competitive rates. All these efforts have together enabled HUDCO raise resources at competitive rates despite rising interest rate trajectory being witnessed in domestic markets. Further, cost optimization has added competitive edge in HUDCO's lending operations, which has increased significantly over last the 15 months.

CBDT has recently notified HUDCO as an entity permitted to issue Zero coupon Bonds. How are Zero coupon Bonds different from conventional Bonds and how is HUDCO expected to benefit from the said notification?

Zero-coupon bonds (discount bonds) are bought at a discount and pay no periodic interest; investors profit from the difference between the discounted purchase price and the face value received at maturity. Unlike regular bonds, they eliminate

interest reinvestment risk. Investors in notified zero-coupon bonds pay only 12.50% capital gains tax on maturity, unlike conventional bonds where the price difference is taxed as interest at slab rates. Their tax advantage allows for a lower yield, helping HUDCO optimize its funding costs.

How does HUDCO help in Consultancy and Capacity Building in the sector?

HUDCO actively provides consultancy in architectural design, urban planning, project appraisal and monitoring, and environmental engineering for housing and urban development, with notable projects including the Namchi Pilgrim Complex, Delhi's Dharohar Bhawan (ASI), and the Thirunallar Temple Town Development. Its dedicated Human Settlement Management Institute (HSMI), established in 1985, conducts training and capacity building for urban development stakeholders, fostering innovation.

How is HUDCO leveraging digital technology to streamline its housing and urban development initiatives?

HUDCO has embraced digital technology with ERP, e-office, online meetings, and record digitalization, significantly speeding loan processing and enabling paperless workflows. For consultancy, it uses AEC 2023 software and has MoUs to enhance its portfolio. HUDCO also collaborates with IIT-Delhi (bamboo tech) and other institutes like TERI and NITs for R&D. □

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POWERING THE FUTURE

THE JOURNEY OF POWERGRID

In the evolving world of energy transmission, few names resonate with as much strength, success and ambition as Power Grid Corporation of India Limited (POWERGRID). From its modest beginnings in 1989, this state-run utility has grown into one of the world's largest and most innovative power transmission companies, driving India's energy revolution while making its mark globally. With a unique blend of operational excellence, forward-thinking strategies, and commitment to sustainability, POWERGRID today, is not just a leader in India's power sector but a trailblazer on the global energy landscape.

As of April 2025, the company owns and operates a staggering 180,239 circuit kilometers of transmission lines, over 283 substations, and a transformation capacity exceeding 564,961 MVA. This vast network connects the length and breadth of India, ensuring electricity flows seamlessly into the National

Grid - A varied energy mix from the hydroelectric plants in the Himalayas to the sun-drenched solar farms in deserts to mega power plants spread across countries diverse geographies, POWERGRID has become the lifeblood of India's energy system, powering homes, industries, and businesses across the country.

From Vision to Reality: The Foundation of Grid

POWERGRID's journey began with a vision: to create a robust, unified transmission network that could support the country's growing energy demands. In the 1960s, India's electricity grid was divided into five regional grids. Recognizing the need for a stronger, more resilient system, the Government of India established POWERGRID in 1989. This pivotal move laid the foundation for establishment of one of the world's largest synchronous grids. The crowning achievement of this vision came in 2019, when the Hon'ble Prime Minister of India inaugurated the Srinagar-Leh Transmission System (SLTS), connecting Ladakh to the National Grid for the first time. This milestone was not just a technical achievement it symbolized a new era of connectivity, where electricity could flow seamlessly from the high peaks of the Himalayas to the southern tip of India. This transformation has allowed for optimal use of the country's natural resources, ensuring that electricity is efficiently distributed from resource-rich areas to high-demand regions. The iconic phrase "One Nation-One Grid-One Frequency" symbolises not only POWERGRID's determination but is also a reflection of India's rapid progress in energy sector.

Powering Growth & Enabling Transition

In line with global trends toward sustainability, POWERGRID has made significant investments in renewable energy and green power evacuation initiatives. As India aims for 500 GW of renewable energy capacity by 2030, POWERGRID will continue to play a central role in ensuring that this energy reaches every corner of the nation. Today, POWERGRID's transmission line length is enough to encircle the earth more



than 4 times. Some of POWERGRID's iconic projects -

- **World's longest multi-terminal HVDC 6000 MW - Agra Biswanath Chariali HVDC system**
- **1765 km long HVDC Raigarh-Pugalur-Thrissur (RPT) Transmission System- Adopts Voltage Source Converter technology for the first time in India**
- **Srinagar-Leh Transmission System - Project includes 4 GIS substations including Drass; World's highest altitude S/S and the second coldest place inhabited in the world**
- **World's Highest voltage line - 1200 kV Transmission at Bina, Madhya Pradesh**

A Commitment to Innovation

Innovation is at the heart of POWERGRID's success. The company has pioneered several technologies that have transformed the power transmission landscape. From the world's longest HVDC multi-terminal system connecting Agra and Biswanath Chariali, to India's first Voltage Source Converter technology, POWERGRID has consistently pushed the envelope in terms of technical advancement. The establishment of POWERGRID Advanced Research and Technology Centre (PARTeC) is driving the next generation of energy solutions. Following the principle of constant upgradation and tech advancements in project planning, construction & asset management/operation some of the indigenously developed solutions include -

- **Patented POWERGRID Asset Life Management System (PALMS V2.0)**

- **Development of Asset Management Dashboard UDAAN (Unique Digital Analysis of Assets and Network)**
- **Integration of AI/ ML based defect identification in PG-DARPAN**
- **Computer based Relay Setting Management**
- **Development of Substation Inspection Robot**
- **Data driven decision process using AI/ML**
- **Establishment of Virtual Smart Grid Knowledge Centre (SGKC)**
- **Aerial Patrolling using Drones and helicopters**
- **Hotline Maintenance**

Some of the company's most innovative solutions include AI-driven systems for defect identification and the creation of substation inspection robots, which use drones and helicopters to monitor and maintain the transmission network.

Charting New Pathways

POWERGRID has made a mark beyond Power Transmission, in the areas of Telecom, Distribution, Grid Automation and Communication, Renewables & Renewable Integration, Capacity Building, Smart Grid, Smart Metering systems and Energy Efficiency. It is foraying into Solar Power generation and other new age businesses such as Battery Energy Storage Systems & Green Hydrogen. POWERGRID's diversification into telecommunications infrastructure has also been a significant growth driver. By leveraging its vast transmission network, the Company has laid down optical fiber cables along side power lines, offering telecom infrastructure services to

other companies. POWERGRID is set to enter data centre services business with a data centre coming up soon. POWERGRID's Green Hydrogen Pilot Project at Neemrana aims to provide hands-on experience in Green Hydrogen technologies, with plans for commercial-scale projects in the future.

A Future Built on Sustainability and Digital Transformation

Looking ahead, POWERGRID is doubling down on sustainability and digital transformation. As part of India's commitment to reducing carbon emissions and transitioning to clean energy, the company is investing in smart grids, energy storage systems, and advanced grid management technologies to accommodate the growing importance of renewable energy. POWERGRID is committed to achieving net zero by 2047, water positive by 2030, and zero waste to landfill by 2030. Through its ambitious growth plans, strategic diversification, and relentless pursuit of excellence, POWERGRID is not just powering India's present— it is illuminating the path to a brighter, greener future. □



Dr. Rajesh Kumar Mishra,
Managing Director,
NICS I

How is NICS I aligning its technology roadmap with the Government's digital initiatives and the evolving landscape of AI, cloud, and cybersecurity to ensure these technologies play a transformative role in enhancing governance efficiency?

NICS I, a non-profit entity under the National Informatics Centre (NIC) and operating within the Ministry of Electronics and Information Technology of the Government of India, was founded in 1995 with the aim of promoting socio-economic development. NICS I was initially conceived to assist NIC in executing various projects and its mandate encompasses government organizations at both the central and state levels, public sector undertakings, and autonomous bodies.

What distinguishes NICS I in the realm of Information and Communication Technology (ICT) is its access to technical support, guidance from NIC, and mentorship from the Ministry of Electronics and IT. Following the launch of the Digital India initiative by the Government of India in 2015, there has been significant growth in ICT and rising citizen expectations, with NICS I playing a pivotal role in this expansion. NICS I has established itself as a center of excellence in Data Analytics and has developed AI Meta, a platform designed for AI applications and models. This platform will include various models tailored for e-government applications, beginning with those developed by NIC. In terms of cloud infrastructure, NICS I currently operates four cloud data centers, with a fifth one under construction in Guwahati, designated as the National Data

NICS I: DRIVING DIGITAL INDIA THROUGH AI, CLOUD, AND CYBERSECURITY

Dr. Rajesh Kumar Mishra, *Managing Director, NICS I* says that NICS I supports socio-economic development by providing ICT solutions to various public sector entities and it plays a key role in India's digital transformation, focusing on areas like AI, cloud infrastructure, and cybersecurity. Excerpts:

Center for the Northeastern region, aimed at serving the states in that area.

We are supporting the government in developing data centers and cloud infrastructure. As a not-for-profit organization, NICS I reinvests any surplus from our operations into enhancing ICT infrastructure. Cybersecurity is a crucial issue affecting everyone, especially users of smart devices, who are increasingly vulnerable to cyberattacks. There has been a notable increase in cyber incidents globally, including in India, where the expanding economy correlates with rising cybersecurity threats. Consequently, NICS I is assisting the government in these three essential areas.

What measures is NICS I taking to ensure smooth interoperability between legacy government systems and new digital technologies?

Digitization in India began two decades ago, significantly advancing the Digital India initiative. An analysis of the application landscape reveals that many older applications have become obsolete, and the supporting infrastructure, developed after 2002, is also outdated. Thus, both the infrastructure and applications are no longer effective, necessitating redevelopment in both areas. Additionally, evolving user needs and rising citizen expectations are driving structural changes in software, leading to new hosting infrastructure requirements. How is NICS I

ensuring and demonstrating the interoperability of these applications? We comply with various standards established by the Government of India, including metadata standards. For example, e-gov standards are being implemented in applications developed in collaboration with system integrators for this government department.

One significant application is the e-passport, a project by NICS I for the Ministry of External Affairs. I emphasize the e-passport as it serves as an authenticated resource document at all borders, both Indian and international, containing information about countries at various development levels. It is crucial to acknowledge the established standards for e-passports, particularly those from the International Civil Aviation Organization (ICAO), as we aim to align with these international benchmarks. Countries sharing biometric data for verification engage in bilateral or multilateral agreements to ensure interoperability.

Additionally, Indian passports can be processed at various immigration checkpoints, regardless of e-passport technology, similar to foreign e-passports. Traditional passports also undergo validation at Indian immigration. NICS I's role involves identifying suitable technology for specific use cases and selecting appropriate partners. We recognize that no single technology or partner can address all governance areas, prompting us to strategically identify the best options.

How is NICS I using AI to improve how

the government works, especially when dealing with both old and new computer systems?

When we talk about AI and its application, the respective use case is very important to the area of governance. So, let us see how AI or any data analytics helps. Government is basically, number one, policy planning; number two, service planning. This resource generalization and eventual stabilization are moving from e-governance to smart governance. So, these are the primary two areas: the planning of resources for public service and policy planning where this is working. When we talk about planning, we also talk about execution. In the field, for example, health and agriculture, these are the areas where AI-driven applications and initiatives are basically helping both the government and citizens. What NICS I is doing is basically, NICS I has partnered with the NIC Center for Excellence for AI of NIC, and we are developing various models that shall be domain-specific. These models will be hosted on AI platforms and will be used for applications that will ultimately help the government. Based on the use case and the domain, our teams are identifying the KPIs for the effective implementation of AI.

What strategies has NICS I implemented to accelerate cloud adoption while ensuring compliance and security?

NICS I is evaluating different models for cloud execution. Initially, we created our own cloud framework, but due to rising demands from

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**AS A NOT-
FOR-PROFIT
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INTO
ENHANCING ICT
INFRASTRUCTURE**

departments and ministries, we have shifted to a quantity model in partnership with industry collaborators. The cloud infrastructure will be set up on NICS I premises, maintaining strategic control with NICS I. All operations, including cybersecurity and physical security, are overseen by NICS I. We are consistently upgrading our technology to improve scalability. To address the growing needs for cloud infrastructure, we are pursuing the empanelment of cybersecurity data centers and have established guidelines for Cloud Service Providers (CSPs).

Applications will no longer be hosted on NICS I premises but will instead be located within India.

“ NICS I IS SHIFTING FROM ITS IN- HOUSE CLOUD FRAMEWORK TO A SCALABLE, QUANTITY-BASED MODEL THROUGH INDUSTRY PARTNERSHIPS

Users of less sensitive applications can choose whether the available cloud infrastructure meets their requirements. This strategy aims to provide a consistent technical framework and standardized pricing. NICS I is also exploring the establishment of collocations, allowing users to select their own hosting infrastructure for certain applications. Currently, NICS I is collaborating with industry partners and state departments to identify suitable data centers. Ongoing discussions will soon lead to a proposal where state data centers with excess capacity may share resources, or we may utilize space in industry-developed data centers, offering users more options. In this setup, the user department will manage the ICT infrastructure, while the non-IT infrastructure will be

provided by them.

There are various options that this will be under physical access of user departments or on need basis or otherwise this would be a common infrastructure means eventually we will have our own cloud infrastructure, we will have PPP model for cloud infrastructure. We will have empanelled cloud service providers.

Given the ethical challenges of AI, such as bias, transparency, and accountability, and considering the citizen-centric nature of governance, how is NICS I addressing these ethical considerations to ensure fairness in AI-driven decision-making?

You are right to point out that artificial intelligence poses several challenges, especially in social issues and cybersecurity. Currently,

NICS I has no specific initiatives targeting bias and accountability, but we have launched an awareness program. On February 11th, we held an event with the ministry for Safer Internet Day, marking our first outreach across all states, with at least one block in each district. Nearly three hundred thousand individuals participated, and the event received media coverage. This initiative is just the beginning, as we plan to conduct similar programs in October to raise public awareness about AI and cybersecurity, while also addressing other ethical concerns in the future. □



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NIC: The Foundation of Digital India

IPS Sethi, *Director General, National Informatics Centre, MeitY, Government of India*

The National Informatics Centre (NIC) is the backbone of India's digital governance, serving key offices from the President and Prime Minister to all cabinet ministers and over 750 districts nationwide. Driving the Digital India program, NIC is committed to bringing government services to every citizen. This goes beyond mere infrastructure; it's about creating seamless, transparent, and efficient delivery for welfare schemes.

The impact is evident. During the COVID-19 crisis, NIC's 'One Nation One Ration' card enabled 810 million beneficiaries to access subsidized food through 530,000 enabled fair price shops, eliminating the need for physical cards. Similarly, NIC manages the end-to-end supply chain for the ₹2 trillion fertilizer subsidy, benefiting 65 million farmers.

When demonetization was announced in 2016, NIC rapidly developed the Unified Payments Interface (UPI). By January 2025, UPI recorded 16.99 billion transactions

PSUS: THE BACKBONE POWERING INDIA'S GROWTH AND SELF-RELIANCE

worth ₹2.4 trillion. Today, India accounts for 46% of global digital payment transactions, with 83% of its citizens using digital payments. NIC securely records these transactions across various platforms, providing real-time data.

This robust digital infrastructure, including data centers and cloud services, prioritizes security and cybersecurity. While India was recognized in the top tier for cybersecurity in 2024, the 370 million malware and nearly one million ransomware attacks last year underscore the constant need for vigilance against evolving threats.

NIC also powers the central public procurement (CPP) platform, used by 170 public sector organizations. The NCRTC, for example, floated ₹30,000 crore worth of RRTS tenders on this platform without a single dispute. To date, nearly 1.4 million hassle-free tenders have been processed. This illustrates the substantial power and reach of NIC's support to PSUs, with Maharatna companies alone floating tenders worth ₹1.4 trillion through this system.

NIC provides crucial digital infrastructure for key government processes, facilitating coal block auctions for Coal India, oil block

auctions for Indian Oil, and managing work and maintenance tenders with customized bidding options. We are also developing electronic bank guarantees and actively supporting state-run PSUs in adhering to the government mandate of utilizing GeM and, when necessary, the central public procurement portal.

Our e-office platform, adopted by 120 PSUs, is driving paperless governance which enables seamless electronic movement of files and receipts, resulting in swift decision-making. During the COVID-19 pandemic, e-office proved invaluable, allowing government operations and policy decisions to continue uninterrupted while personnel worked remotely.

NIC is proactively embracing emerging technologies like AI, blockchain, and data analytics. Implementing solutions at India's scale generates vast datasets, enabling us to build data lakes and warehouses for actionable insights. This empowers informed decision-making, predictive analysis based on historical patterns, error correction, and scheme enhancement.

In the realm of Artificial Intelligence, we are leveraging large language models and multi-



modal models to address complex challenges. For instance, our AI-powered text summarization service provides concise summaries of lengthy Supreme Court judgments, crucial for judges and key stakeholders. Furthermore, through Bhashini-powered AI, we are translating judgments into 22 Indian languages, ensuring accessibility for litigants in their local tongues.

Konkan Railway: An Engineering Marvel and Tourism Gateway

Santosh Kumar Jha, *Chairman & Managing Director, Konkan Railway Corporation Ltd*

Konkan Railway Corporation Limited (KRCL) manages the Indian Railways' most beautiful and challenging territory. Unlike other railway PSUs, KRCL uniquely operates train services, running 80 trains daily on a single 740-kilometer track – a remarkable feat given the 130% line



capacity saturation and constant demand for more services. This route is a marvel of engineering, featuring 91 tunnels (the longest being 6.5 km), 1900 bridges (including a 2.4 km giant), and 563 cuttings, some reaching 50 meters high. Operating in this picturesque terrain comes with significant challenges, as 43% of the track runs through areas prone to boulder falls – inside tunnels, over water bridges, or through high cuttings and large embankments – making it the toughest railway for operations. Despite these hurdles, last year KRCL's single line carried 31 million passengers and 11.2 million tons of freight, a significant increase from its previously negligible freight traffic, now reaching three million tons of originating cargo. The enhanced infrastructure has also enabled faster travel; the Vande Bharat now connects Mumbai VT to Goa in approximately 7.5 hours, a previously unimaginable speed improvement that benefits Rajdhani, Tejas, and other express trains running at their highest sectional speeds.

Konkan Railway is a significant gateway to numerous tourist destinations. For freight customers, container transport, once unavailable, is now a regular operation with 30-35 trains monthly – a transformation driven by the operating and engineering departments, not just marketing. This efficiency is reflected in Konkan Railway's lean workforce of 5200, compared to the 16,000-20,000 typically seen on similar-sized Indian Railways networks, making it a highly innovative and efficient organization.

“ NIC IS EMBRACING EMERGING TECHNOLOGIES LIKE AI, BLOCKCHAIN, AND DATA ANALYTICS.”

Konkan Railway's engineering marvels extend beyond its operational efficiency. We constructed the world's highest arch bridge, the Chenab Bridge, on the challenging Katra-Srinagar section. This 52-kilometer stretch includes 16 tunnels (up to 9.3 km long) and 22 bridges, with the Chenab Bridge towering 39 meters above the Eiffel Tower's base, built with 30,000 tons of steel and capable of withstanding extreme conditions. The Anji Khad Bridge on the same section is India's first cable-stayed railway bridge. The upcoming launch of the first train from Katra to Srinagar will reduce travel time from 12-20+ hours by road to just four hours, dramatically changing the region's connectivity.

Konkan Railway has also embraced sustainability, achieving complete electrification of its 740-kilometer network and sidings, saving ₹200 crore in annual fuel costs. Demonstrating a long-standing commitment to innovation, Konkan Railway pioneered Roll-on/Roll-off (RORO) services 26 years ago in 1998, significantly reducing carbon emissions by transporting trucks on flat wagons between Mumbai and Mangalore. Furthermore, Konkan Railway manages the entire Nepal Railway and the Navi Mumbai Metro (ONM), showcasing its diverse project capabilities.

Konkan Railway generates a ₹5000 crore turnover, with passenger and freight contributing approximately ₹1800 crore, and the

“ DIGITAL TOOLS OF GOVERNANCE ARE STREAMLINING ADMINISTRATIVE PROCESSES

remainder from our diverse project portfolio. Demonstrating its evolving capabilities, KRCL is currently undertaking two 25 KV electrification projects across 11 Zonal Railways – a first for Konkan Railway. Furthermore, KAVACH, the indigenous anti-collision system, was pioneered and initially tested on our network and is now being adopted across all Zonal Railways. KRCL's expertise is now recognized globally. Konkan Railway is actively bidding on international projects and has already secured work in Nairobi, Congo, Nigeria, Turkey, Israel, and Argentina. While traditionally focused on mainline rail, KRCL has strategically entered the metro sector, securing its first UNM contract for the Navi Mumbai Metro. This expansion leverages its core strength in tunnel technology, a field where Konkan Railway's expertise is unmatched.

PSUs Embrace AI, Automation, and Data for Smarter Operations

Pitamber Verma, CPE/ICT, Center for Railway Information Systems



The evolving technological landscape is witnessing a significant shift

as public sector units (PSUs) increasingly harness the power of intelligence, artificial intelligence (AI), automation, and data analytics. These technologies promise to transform operations and enhance decision-making processes, leading to improved efficiency, responsiveness, and service delivery within the public sector. Indeed, the combination of AI, automation, and data analytics forms a powerful toolkit enabling smarter operations and better services for PSUs.

The benefits PSUs are reaping from AI include increased efficiency through the automation of routine tasks, which reduces manual labor and accelerates workflows. Cost reduction is another significant advantage, as AI techniques streamline operations and lower operational expenses. Furthermore, AI improves accuracy by minimizing human error, resulting in better data integrity and reliability. Enhanced service delivery is also achieved through automation and AI, enabling faster and more effective public services. Collectively, these benefits lead to a more adaptable and resilient public sector capable of meeting the evolving needs of citizens.

Automation, in this context, refers to streamlining repetitive tasks through automated workflows, thereby improving efficiency and reducing human error. Smart contracting, a newer development, facilitates immediate payments



and reduces delays in financial transactions. Robotic Process Automation (RPA) automates routine administrative tasks, freeing up human resources for more strategic activities.

Data analytics plays a crucial role in PSU operations and decision-making. In operations, it enables optimized resource allocation by analyzing data to improve distribution and utilization. Customer insights are gained by using data analytics to understand customer needs and enhance service delivery. Performance monitoring is improved through real-time analytics that track and refine operational performance. In decision-making, data is utilized to guide choices, ensuring that strategies are based on empirical evidence rather than intuition, leading to more successful outcomes.

Several use cases highlight the vital role of data analytics. Predictive maintenance, for instance, allows PSUs managing public transportation to use sensors and data analytics to monitor vehicle performance and predict failures proactively. In Railways, sensor data can be analyzed to anticipate potential failures. Resource optimization is demonstrated by urban planning PSUs using data analytics to strategically place public facilities based on population density and usage patterns. For example, Railways can analyze demand and trends before commissioning ticketing counters, and banks can determine ATM placement based on population density and usage trends. Enhanced customer services are provided

through AI chatbots on PSU websites, which answer frequently asked questions about services, policies, and procedures. Finally, risk management and compliance are strengthened as PSUs employ AI to analyze transaction data, detect anomalies indicative of fraud or non-compliance with financial regulations.

Implementing AI and automation in PSUs presents several challenges. These commonly include resistance to change among staff, data privacy concerns, the initially high cost of technology, and a lack of skilled personnel trained in AI and automation techniques. Strategies to overcome these challenges involve comprehensive staff training, the incremental implementation of technology to manage initial investment costs, and clear communication of benefits to all stakeholders.

Digital tools of governance, such as e-governance platforms, are streamlining administrative processes and improving decision-making. Data analytics provides crucial insights for policy formulation and resource allocation. Blockchain technology enhances transparency and security in transactions and records. Enhancing transparency and improving citizen services involves open data portals for public access and accountability, digital audit trails for tracking processes, and public dashboards displaying real-time performance metrics and project statuses. To improve customer or citizen services, mobile apps offer convenient access to services, AI chatbots provide instant assistance,

“ KONKAN RAILWAY IS ACTIVELY BIDDING ON GLOBAL PROJECTS AND HAS ALREADY SECURED WORK IN NAIROBI, CONGO, NIGERIA, TURKEY, ISRAEL, AND ARGENTINA

and online feedback systems collect and analyze citizen input for service improvement, as seen with Rail Madad in Indian Railways.

Case studies further illustrate the impact of these technologies. Indian Railways has implemented the Rail Drishti dashboard for real-time information and transparency, building public trust. Western Railway has introduced AI-powered chatbots for enhanced customer support, and Delhi Metro utilizes mobile apps for seamless ticketing and real-time updates.

“

**EARLIER,
SYSTEMS WOULD
TAKE 4-5 YEARS
TO BECOME
LEGACY,
BUT NOW THEY
CAN BECOME
OBSOLETE IN
MONTHS.**



Rahul Malhotra – *Manager, Solution Engineering – Enterprise and Government, Zscaler*

Cybersecurity has emerged as a vital issue for organizations in the present day.

While businesses are eager to utilize emerging technologies such as Generative AI to boost productivity, these advancements also introduce new risks. The challenge is to manage these risks effectively while maximizing the advantages of technological progress.

At Zscaler, we focus on three fundamental pillars: Simplify, Secure, and Transform Business. Organizations universally strive to enhance their security by mitigating malicious threats, safeguarding against ransomware, and ultimately minimizing overall business risk. At the same time, they pursue simplification, aiming to streamline infrastructure management, protect critical assets, and lessen operational complexity. This pursuit of efficiency

and protection facilitates essential transformation, providing businesses with the agility required to swiftly penetrate markets and optimize their digital operations.

Zscaler provides solutions tailored to assist organizations in achieving their goals by modernizing both their security and networking infrastructure. The tangible impact of Zscaler's strategy is reflected in numerous success stories: NOV, a prominent U.S. energy firm, achieved a remarkable 35-fold reduction in malware infections while decreasing infrastructure expenses by 70%. Similarly, Instruments, a warehouse company, significantly brought down warehouse rollout time to merely one day, enhancing their market agility. Worldwide, Zscaler safeguards over 45 million users, with an impressive 40% of Fortune 500 companies depending on its solutions.

The cybersecurity landscape has undergone a significant shift from traditional security models to a Zero Trust Architecture (ZTA). Traditional models, heavily reliant on firewalls and VPNs, inherently create vulnerabilities. They interconnect every branch, remote user, and data center, enabling lateral movement within the network if a breach occurs. Attackers frequently exploit public-facing VPN gateways and firewalls to infiltrate networks, and once inside, they can move freely to locate and exfiltrate sensitive data. ZTA eliminates these risks by ensuring users connect only to authorized applications, not entire networks. This approach means there are no public IP addresses to expose, and all access



decisions are dynamically governed by identity-based security.

Zscaler functions as a secure intermediary between users and applications. Its process involves three key steps: first, it rigorously validates user identity, second, it performs continuous risk assessments based on device posture, user behavior, and the security of the destination and the third one is about establishing a secure connection to applications, whether they are on-premises, in the cloud, or SaaS-based, all without exposing the underlying network.

To understand cyber threat prevention, consider the analogy of preventing a bank robbery. Attackers first scout vulnerable targets, then exploit weak security measures to break in. Once inside, they move laterally to find valuables, and finally, they steal data or encrypt it for ransom. Zscaler thwarts these attacks by eliminating attack surfaces (as there are no public IP addresses), blocking unauthorized access before a compromise can occur, and restricting lateral movement by ensuring users can only access necessary applications.

The key benefits of Zscaler's Zero Trust approach are multifaceted. With no public-facing infrastructure, attackers simply cannot find a way in. Zscaler also provides 100% SSL inspection, allowing for the scanning of encrypted traffic at scale without performance degradation. This model prevents lateral movement, as users can only access approved applications and not the entire network. Ultimately, it delivers enhanced data protection by preventing unauthorized

data transfers and enforcing stringent security policies.

Resilience, Innovation, and Technology

Rethinking the Digital-First PSU: Enhancing Resilience and Driving Innovation through Emerging Technologies



Ashish Rathi, Director, KPMG

No sector or industry can afford to ignore digital transformation. The speed at which digital transformation is occurring today, particularly with AI and Generative AI, is remarkable; new models are emerging almost daily rather than yearly. Every 15 days, a new model or platform is introduced, while the previous ones quickly become outdated. Previously, systems would take 4 to 5 years to become legacy, but now they can become obsolete in a matter of months, if not sooner. This transformation is not merely about adopting technology; it is about harnessing the value that various emerging technologies can provide.

“**CYBER ATTACKERS SCOUT, EXPLOIT WEAKNESSES, MOVE Laterally, AND STEAL DATA, ZSCALER BLOCKS ACCESS, LIMITS MOVEMENT, AND ELIMINATES ATTACK SURFACES.**”

As industries increasingly shift towards AI and Generative AI, my role as part of the digital transformation practice at KPMG has been focused on AI applications across different domains for the past few years.

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Vishal Rathore, General Manager (IT) & CIO, India Infrastructure Finance Company Ltd

When I began my career around 2003, many Public Sector Banks (PSBs) in India did not yet have core banking solutions, and each bank branch operated using standalone desktop computers. Transaction data was manually entered at the end of the day, stored on floppy disks, and consolidated on a single main computer. This system then generated daily reports, such as profit and loss statements, customer transactions, and daybooks.

Gradually, the system evolved. Branches connected their individual computer nodes to a central branch server. All data was stored locally and later extracted—quarterly, half-yearly, or annually—and sent to the head office for consolidation into financial reports like balance sheets.

Then in 2005–06, the core banking systems truly emerged which enabled all the branches across the country to

connect to a central server, housed in a main data center in Mumbai. Major banks established their data centers there, allowing for real-time data synchronization across the network.

However, despite this advancement, customer service still posed challenges. Customers were required to visit branches for routine transactions like withdrawals or checkbook requests. The emergence of internet banking brought a significant shift, allowing customers to conduct many transactions remotely from a desktop. This was followed by the introduction of ATMs, which enabled convenient cash withdrawals without visiting a bank.

Eventually, internet banking evolved into mobile banking. Today, customers carry out nearly all their banking activities from the comfort of their home.

Wallets have emerged that eliminate the need for opening any bank account. They are merely a few minutes away. UPI has revolutionized the current generation. This transformation is largely attributed to demonetization, which instilled a digital culture within the Indian populace. Previously, many Indians were quite reluctant to utilize ATMs or any mobile banking applications, as well as other forms of internet banking. However, it was only when they found themselves without cash that they resorted to using ATMs or wallet applications for their daily transactions. Therefore, we owe a debt of gratitude to demonetization for altering the cultural landscape and facilitating a digital transformation in mainstream India.



In addition, the Government of India introduced a significant financial inclusion initiative- the Jan Dhan Yojana, which extended banking services to even the most isolated rural regions. Rather than requiring individuals to travel to bank branches, Banking Correspondents (BCs) began visiting villages with handheld devices. Villagers were able to access their accounts through biometric authentication, such as fingerprints, which had already been recorded in the system. By confirming their identity on the device, they could withdraw cash directly from the BC. This represented a crucial advancement in India's journey towards digital transformation.

While my approach to technology may not have been perfect, the banking industry has effectively transformed through IT. From computerization in 1985 to now, we've collected massive data over 40 years. Today, with mobility and the internet at the core, it's the right time to harness AI, blockchain, and IoT—turning data into fuel for smarter, more powerful systems.

Pitamber Verma, CPE/ICT, Center for Railway Information Systems

Indeed, the IT revolution has made significant progress over the years. The railway industry was at the forefront from the very beginning. The railway reservation system was introduced in 1985, a time when mainframe technology was just emerging, characterized by monolithic software. This marked the starting point, followed by advancements in



technology, the onset of distributed computing, and the evolution into client-server architecture, including two-tier and three-tier systems.

Consequently, the reservation software became state operation software, both of which were built on these technologies. Eventually, the internet emerged, necessitating the enabling of these applications. Previously, there were only terminal systems that emulated clients, with backend servers processing transactions. However, with the arrival of the internet, clients transitioned to user devices, and mobile technologies allowed devices such as iPads and touchpads to run client applications, facilitating transaction processing at the backend, which was then displayed on these devices. Mobile phones and laptops put an end to the need to visit ticket counters.

People today prefer not to remember multiple website URLs or download numerous apps. This shift led to the rise of portals and now super apps—like the one Indian

“PEOPLE TODAY PREFER NOT TO REMEMBER MULTIPLE WEBSITE URLS OR DOWNLOAD NUMEROUS APPS. THIS SHIFT LED TO THE RISE OF PORTALS AND NOW SUPER APPS

Railways is set to launch, currently in beta testing. According to the NIC Director General, the government holds vast data collected over decades, which holds immense value.

To unlock insights from this data, tools like data lakes, warehouses, and analytics are essential. These help identify patterns and trends for smarter decision-making. With a skilled team and new talent, CRIS has successfully built systems that serve millions, improving public services through advanced railway software.

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**NHPC'S FOCUS IS TO
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 AND GENERATOR
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 LEVELS OF
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 IS CONSTANTLY
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 NOT ONLY IN
 DEPLOYING NEW
 TECHNOLOGIES
 BUT ALSO IN
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 AND COST-SAVING
 STRATEGIES.**



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Dharmesh, DGM IT, NHPC Limited

he hydro and renewable energy industries are undergoing major advancements, especially in areas that encounter unique challenges, like gathering data from remote and dynamic environments. One of our primary goals is to acquire historical data. Since rivers have been in motion for centuries, we aim to gather nearly a century's worth of inflow data, and we are even attempting to estimate data from up to 400 years ago to better model peak season flows. This significantly enhances our generation profile and planning efficiency.

NHPC is constantly innovating—not only in deploying new technologies but also in construction and cost-saving strategies. For instance, tailrace tunnels are among the most expensive elements in hydro projects. To reduce costs, we've adopted innovative methods like cofferdams and internal diversion

tunnels, which are later repurposed for unit discharge. These design improvements yield substantial savings.

From a digital standpoint, IoT devices play a vital role in monitoring real-time electrical parameters, testing conditions, and supporting design enhancements, leading to generation efficiency and cost-effectiveness. We've also set up a Security Operations Center (SOC) and operate our own Data Center at headquarters. Our focus is to enhance turbine and generator efficiency and achieve combined availability levels of 94–95%.

Weather monitoring, especially in remote and hilly regions, is critical. We use advanced techniques to gather accurate, real-time data from distant stations. We're also exploring innovative generator designs—like a 24 kV model—to address heating issues in block lines and boost overall performance.

A major milestone has been implementing Real-Time Monitoring (RTM) systems across 22 stations, with 14 already providing live data. These systems enhance operational monitoring, protection mechanisms, and line management while integrating with our cybersecurity framework to ensure data integrity and infrastructure security.

Overall, sensors and IoT have transformed machine intelligence. With AI, we're unlocking new potential in predictive analytics, real-time health monitoring, and advanced diagnostics—enabling proactive maintenance and system optimization. □



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