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Editorial

e-Governance apps and services have become essential tools, transforming the way citizens interact with public institutions. They have not only enhanced accessibility and efficiency but also paved the way for a more transparent and inclusive government. However, this progress comes with its own set of challenges; chief among them being cybersecurity. In an era where digital threats are evolving rapidly, safeguarding the integrity of these systems is no longer optional but a necessity.

India's journey in e-Governance has been remarkable, with initiatives like MeriPehchaan, eHospital, and UMANG redefining citizen service delivery. These platforms ensure that individuals can access critical services at their fingertips, reducing barriers of time and geography. Yet, the rapid digitization of government services has brought along an increased surface area for cyber threats. As services move online, the security of personal data, financial transactions, and even national databases becomes paramount.

Cybersecurity is no longer an ancillary component of digital transformation; it is its cornerstone. The exponential growth of ransomware, phishing attacks, and other malicious cyber activities highlights the urgent need for robust measures to protect the integrity of e-Governance platforms. Initiatives like the National Cyber Security Strategy (NCSS) and CERT-In's proactive response mechanisms have been instrumental in bolstering India's cyber defenses. However, a robust cybersecurity framework cannot rely solely on government efforts. Collaboration between stakeholders-government agencies, private sector entities, and academia-is vital to ensure comprehensive digital security.

One of the most pressing needs is to instill a culture of cyber hygiene among citizens. Public awareness campaigns, training programs, and educational drives can empower users to identify and mitigate risks while using e-Governance services. Simple practices like enabling two-factor authentication, using strong passwords, and being cautious of phishing attempts can go a long way in safeguarding digital interactions.

Moreover, the integration of artificial intelligence and machine learning into e-Governance apps is an exciting development. These technologies not only enhance the efficiency of service delivery but also enable predictive analytics for better threat detection. The move toward blockchain-based systems for transparency and tamper-proof transactions is another promising step. However, these innovations must be accompanied by equally innovative security measures to maintain public trust.

As we embrace the endless possibilities of a digital future, let us not lose sight of the need to protect the systems that empower us. Cybersecurity must remain at the forefront of e-Governance planning, ensuring that technology continues to serve as an enabler of progress, not a source of vulnerability.

As 2025 unfolds, let us collectively resolve to stay vigilant and informed in our digital journeys. May this new year bring greater advancements, stronger collaborations, and a safer cyberspace for all. Here's to a year of innovation, security, and shared growth. Happy New Year!

-Editor-In-Chief

Contents

New DG of NIC assumes office

Shri I.P.S. Sethi steps in as the 17th Director General of the National Informatics Centre

Shri I.P.S. Sethi has been appointed as the new Director General of NIC, a pivotal organization at the forefront of the Government of India's digital transformation efforts. Bringing extensive experience and a dedicated focus on enhancing digital governance and cybersecurity, his leadership marks a renewed commitment to innovation and excellence in the digital domain.

Shri Ashwini Vaishnaw, Union Minister (E&IT) congratulates Shri IPS Sethi on his assumption of charge as the DG of NIC

Shri Jitin Prasada, Hon'ble Minister of State (E&IT) wishes Shri IPS Sethi for all success in leading the organization to new heights

Upon assuming office, Shri I.P.S. Sethi met with Hon'ble Union Minister of Electronics and IT (E&IT), Shri Ashwini Vaishnaw, underscoring their shared vision for advancing digital governance and fortifying the nation's digital infrastructure. In a similar vein, his meeting with Hon'ble Minister of State for E&IT, Shri Jitin Prasada, reaffirmed their mutual commitment to fostering a resilient and inclusive digital ecosystem. He also met Shri S. Krishnan, Secretary, MeitY, highlighting a shared commitment to advancing digital infrastructure and governance.

With a proven track record and a clear vision to deliver digital platforms for whole of Government, Shri IPS Sethi is poised to guide NIC in its mission to deliver efficient, secure, and citizen-centric digital services, ensuring its continued role as a cornerstone of India's digital ecosystem.

Before becoming Director General, Shri Sethi served as Deputy Director General at NIC, leading transformative digital initiatives. He spearheaded the PRAYAS Dashboard for the Prime Minister's Office, integrating 186 key schemes of Government with performance metrics, and the Digital Payment Dashboard, enabling real-time monitoring of cashless transactions across 110 banks post-demonetization. He also developed the eTaal portal, tracking about 4400 e-Services, and the DARPAN Dashboard, a real-time performance monitoring tool for central ministries and states. His innovations include CollabFiles, a secure collaboration platform, and contributions to the ePassport project, secure Gov.in Intranet, Cooperative Core Banking Solution (CCBS), and international ICT projects like Lao PDR–India.

Shri S. Krishnan, Secretary (MeitY) conveys best wishes to Shri IPS Sethi for his new role as DG NIC

Shri IPS Sethi met with Shri Bhuvnesh Kumar, Addl. Secretary, MeitY. Also present were Dr. Shubhag Chand, DDG (NIC) and Shri Sandeep Singhal, DDG (NIC)

As Managing Director of NICSI, Shri Sethi championed transparency and efficiency through technology. Now as Director General, he envisions NIC driving a digitally empowered nation, setting new standards in innovation, collaboration, and citizen-centric services, solidifying its role in India's digital journey.

I.P.S. Sethi
Director General

सत्यमेव जयते
Government of India
Ministry of Electronics
& Information Technology
National Informatics Centre

Dear Readers,

As the calendar turns to 2025, I hope this message finds you in good health and high spirits. A new year is not just a marker of time but a moment of renewal—a chance to reflect on past achievements and embrace the promise of what lies ahead.

Looking back, NIC's journey has been one of resilience and innovation. In partnership with State Governments and Central Ministries, we have pioneered digital solutions that make governance accessible, transparent, and citizen-centric. From remote villages to bustling cities, our work has united diverse communities through technology.

As we step into 2025, the mission of safeguarding government digital assets takes center stage. The rapid growth of digital infrastructure has not only brought incredible opportunities but also unprecedented challenges in cybersecurity. Protecting the integrity of our systems is not just a technical necessity but a critical responsibility in ensuring trust in e-Governance.

At NIC, we are committed to fortifying our nation's digital infrastructure. Through advanced security measures, continuous monitoring, and collaboration with stakeholders, we strive to secure data, applications, and networks. In a world of evolving cyber threats, our collective vigilance will serve as the foundation for resilient governance.

Let this new year be a call to action—to innovate with purpose, safeguard with determination, and build a future where technology empowers every citizen without compromise. Together, we can transform challenges into opportunities and set new benchmarks for secure and inclusive governance.

I wish you all a prosperous and fulfilling year ahead. Let us move forward with renewed passion and an unwavering commitment to excellence.

Warm regards,
I.P.S. Sethi

Jammu and Kashmir UT

Jammu's Heritage, Kashmir's Splendor: Driven by Technology

Edited by **VINOD KUMAR GARG**

Jammu and Kashmir, the northernmost Union Territory of India, often referred to as "Paradise on Earth," is renowned for its awe-inspiring natural beauty. Beyond its breathtaking landscapes of majestic mountains, lush valleys, and pristine lakes, the region is a hub of cultural and historical significance. Historically a princely state, it joined India in 1947 and was restructured as a Union Territory in August 2019 to enhance governance and development.

In the digital age, Jammu and Kashmir is also emerging as a beacon of technological transformation. Leveraging its strategic potential, the Union Territory has embraced cutting-edge advancements to redefine governance, citizen services, and administrative efficiency.

NIC J&K UT Centre plays a pivotal role in the digital transformation of Jammu and Kashmir, driving innovation and e-Governance to enhance the region's operational efficiency and citizen experience. With its state-of-the-art technological infrastructure, the UT Centre has developed over 330 online services, contributing significantly to the 1,165 digital services available across the Union Territory. These solutions span critical sectors like healthcare, education, agriculture, finance, and public grievance management, ensuring tailored, tech-enabled accessibility for citizens.

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Jammu and Kashmir, India's northernmost Union Territory, blends cultural richness with technological progress. Since its restructuring in 2019, NIC J&K UT Centre has driven digital transformation, offering over 330 e-Services across key sectors like healthcare and education. Milestones include eliminating the Darbar Move and streamlining governance with centralized databases. By leveraging advanced technologies, NIC ensures scalable, inclusive solutions, making Jammu and Kashmir a model for digital-first governance in challenging terrains.

One of the most significant milestones of the UT Centre's digital initiatives is the elimination of the traditional Darbar Move practice. This biannual relocation of government offices between Jammu and Srinagar not only strained resources but also disrupted administrative workflows. Through robust e-Governance frameworks, including centralized databases and real-time information access, administrative operations have been streamlined. Tasks that once required weeks are now resolved in hours, exemplifying the efficiency of digital-first governance.

The UT Centre's contribution extends beyond e-Services. The development of 156 government department websites and 68 custom web applications underscores its commitment to transparency, accountability, and service optimization. These platforms ensure seamless citizen engagement, reduce bureaucratic hurdles, and foster a culture of accountability. Key features include user-friendly interfaces, secure authentication protocols, and multi-device compatibility, making services accessible to urban and rural populations alike.

Jammu and Kashmir's digital transformation, driven by NIC J&K UT Centre, sets a benchmark for governance innovation in challenging terrains. By integrating advanced technologies, such as cloud computing, data analytics, and AI, the region is bridging the gap between policy-making and grassroots implementation. The focus remains on delivering inclusive, scalable, and secure digital solutions to unlock the full potential of Jammu and Kashmir's unique position in India's technological evolution.

ICT Initiatives in the State

In recent years, Jammu and Kashmir have positioned themselves as a trailblazer in e-Governance, establishing new benchmarks in service delivery across India. The Union Territory secured the top spot in the National e-Governance Service Delivery Assessment (NeSDA) conducted by the Department of Administrative Reforms and Public Grievances (DARPG), outperforming states like Madhya Pradesh and Kerala. This accolade highlights the region's unwavering dedication to harnessing technology for transformative and efficient governance.

Following is the small snapshot of activities undertaken by the UT Centre:

JanSugam

https://jansugam.jk.gov.in/

The Union Territory (UT) Government of Jammu and Kashmir has made remarkable advancements in governance through transformative IT initiatives designed to deliver a seamless and efficient public service experience. At the heart of these efforts is the JanSugam (ServicePlus) platform, a Low Code No Code framework enabling rapid deployment of Government-to-Citizen (G2C) online services. Initially launched during the COVID-19 pandemic to provide movement passes, the platform was subsequently expanded to other departments in March 2021.

With 105 services currently operational, the platform has significantly enhanced service delivery in key sectors such as Revenue, Housing and Urban Development, Social Welfare, Agriculture, and Rural Development. To date, approximately 39 lakh digitally signed certificates have been issued through ServicePlus. Capacity-building initiatives are ongoing across departments to empower them to independently develop and manage services on this versatile framework.

Key Features:

- **Payment Gateway Integration:** Facilitates seamless online transactions.
- **SMS and Email Alerts:** Keeps both authorities and citizens informed.
- **Aadhaar Integration:** Enabled for a Social Welfare Department service, ensuring identity verification.
- **Jan Parichay Integration:** Recently implemented for enhanced citizen authentication.
- **DigiLocker Integration:** Provides secure access to government-issued documents.
- **External System Integration:** Allows interoperability with third-party systems.
- **Rapid Assessment System (RAS):** Enables real-time feedback on service quality.
- **UMANG Integration:** Expands accessibility through the unified government app.

The JanSugam platform is revolutionizing service delivery in Jammu and Kashmir by combining technological innovation with user-centric design, setting a new standard for e-Governance in the region.

Auto Appeal System

https://aas.jk.gov.in

The Auto Appeal System (AAS) ensures timely and effective delivery of government services under the Public Service Guarantee Act (PSGA) 2011. Following the amendment on 06/08/2022, the Act now includes online services (Rule 3A) and empowers citizens to automatically raise appeals to Appellate Authorities if services are delayed beyond the stipulated timeframe.

Adopted and customized from Haryana's SARAL system, AAS was launched in July 2023 and integrated with eUNNAT, onboarding 194 services to date. Accessible at https://aas.jk.gov.in, the platform streamlines governance by enabling digital appeals and ensuring accountability.

Key Features:

- **Data Aggregation and Processing:** Efficiently handles large volumes of service data.
- **Appellate Workflow:** Automates appeals to first and second Appellate Authorities.
- **Citizen-Centric Tools:** Simplifies grievance redressal with user-friendly features.
- **Custom Reporting:** Generates insightful reports for monitoring and analysis.
- **System Integration:** Scalable and adaptable to evolving requirements.

The Auto Appeal System exemplifies citizen-first governance, ensuring transparency, accountability, and timely service delivery.

eUNNAT

https://eunnat.jk.gov.in

Over the years, various G2C online services in Jammu and Kashmir were developed and deployed using diverse platforms and technologies by multiple departments. However, these services were scattered across multiple websites and portals, creating accessibility challenges for users.

To address this, the Government of Jammu and Kashmir launched a single Integrated Services Delivery Portal (IDSP) to centralize and streamline access to these services. This portal, branded as eUNNAT (Unified, Integrated, Accessible, and Transparent), serves as a one-stop solution, consolidating all G2C, G2G, and G2B services under a unified platform.

Developed collaboratively by the NIC J&K and the Information Technology Department, eUNNAT currently hosts 1,166 services, offering citizens, businesses, and government entities a seamless and efficient digital experience.

eUNNAT reflects a significant step towards modernizing governance, enhancing transparency, and simplifying service delivery for the people of Jammu and Kashmir.

Atal Dulloo IAS
Chief Secretary
Government of Jammu & Kashmir

J&K Estates Portal

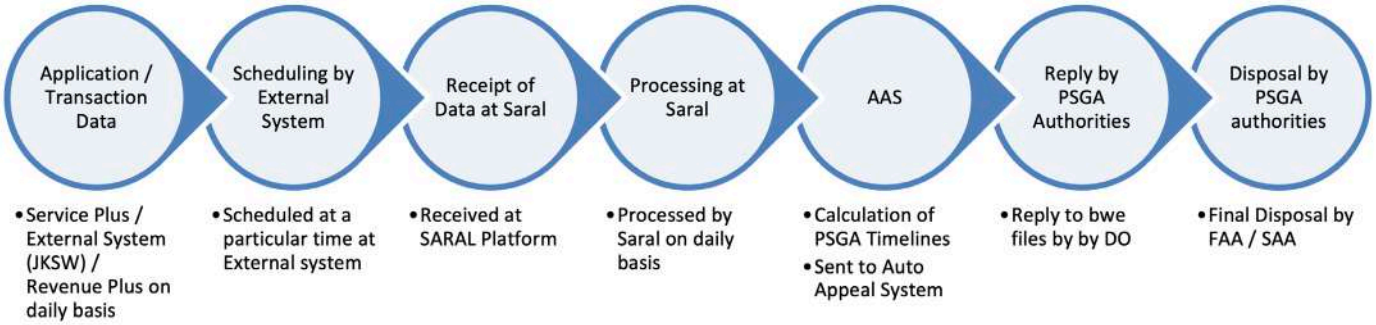
https://estates.jk.gov.in

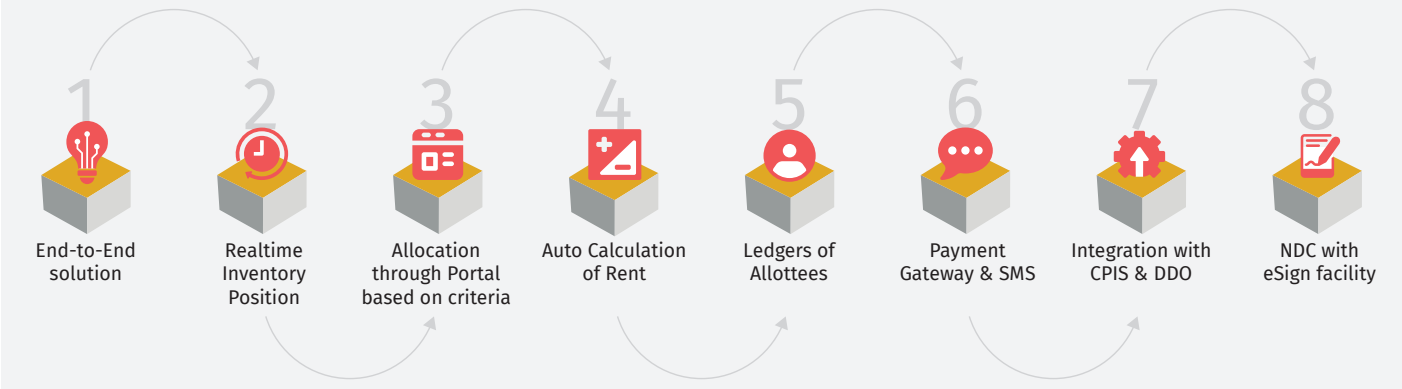
The J&K Estates Portal has been revamped by NIC J&K to meet the evolving needs of the department and deliver a more transparent and efficient digital interface. This upgraded platform addresses gaps in the earlier version, ensuring a seamless and user-friendly experience for both departmental users and citizens.

Designed as a comprehensive end-to-end solution, the portal was developed in-house by the IT Cell of the J&K Government, with guidance and coordination from NIC J&K. The platform streamlines estate management processes and provides a robust digital framework. Efforts are currently underway to integrate and prepare legacy data for enhanced functionality.

The new portal represents a significant leap toward modernized governance, offering improved efficiency and transparency in managing estate-related services.

▼ Fig 2.1 : Data Aggregation and Processing Framework of the Auto Appeal System (AAS)





▲ Fig 2.2 : Workflow Diagram of the J&K Estates Web Application

JKIFMS

The Jammu & Kashmir Integrated Financial Management System (JKIFMS) is a flagship initiative of the Finance Department, designed to revolutionize public financial management and governance within the Union Territory. This transformative platform streamlines and integrates all processes related to managing public funds, ensuring transparency, efficiency, and accountability in fund allocation, utilization, and monitoring.

The JKIFMS connects key stakeholders, including government departments, treasuries, Accountant General (AG)-J&K, the Reserve Bank of India (RBI), and citizens, automating workflows such as budget formulation, payroll processing, and expenditure tracking. By reducing manual errors and delays, it enhances overall financial administration across the UT.

Key Benefits

- **Enhanced Financial Transparency:** Clearer visibility into fund flow and utilization.
- **Improved Efficiency and Time Management:** Automated workflows reduce processing times.
- **Real-time Monitoring and Reporting:** Ensures accurate and timely insights for decision-making.
- **Cost Savings and Error Reduction:** Streamlined processes minimize redundancies and inaccuracies.
- **Budget Control and Compliance:** Adherence to financial rules and guidelines.
- **Better Financial Planning:** Data-driven decision-making improves resource allocation.
- **Secure Fund Management (GRAS):** Ensures safe handling and tracking of government receipts.
- **Elimination of Scheme Misclassification:** Accurate classification and allocation of funds.
- **Increased Public Trust:** Transparency fosters greater citizen confidence.
- **Integration with Other Systems:** Seamless interoperability with government platforms.

JKIFMS embodies a significant leap forward in financial governance, aligning with the UT's commitment to modernization and public accountability.

BEAMS

Budget Estimation, Allocation & Monitoring System (BEAMS) enhances budget planning, allocation, and monitoring in Jammu and Kashmir by enabling digital estimation of sectoral and departmental fund requirements. It ensures resource allocation aligned with developmental priorities and government plans.

Key features include real-time tracking of fund utilization, budget control registers, and monitoring of Centrally Sponsored Schemes (CSS). By promoting transparency and reducing mismanagement, BEAMS ensures public funds are allocated and utilized efficiently and judiciously.

Payment System (PaySys)

PaySys streamlines the generation of payment bills for budget expenditures, including salaries, arrears, works payments, grants-in-aid, and GPF. Primarily used by Drawing and Disbursing Officers (DDOs), it ensures compliance with budget allocations, reduces errors, and accelerates payment processing, enhancing administrative efficiency.

TreasuryNet

TreasuryNet modernizes financial management in J&K by enabling real-time tracking of government receipts and payments. Bills are audited at multiple levels before payment authorization, and funds are credited directly through RBI's e-Kuber module, ensuring secure and efficient cash management with reconciliation and reporting.

Government Receipt Accounting System (GRAS)

GRAS simplifies government receipt collection by providing a secure platform for generating challans and making payments online or at J&K Bank branches. With features like digital challans and fraud prevention mechanisms, GRAS ensures transparency, accessibility, and ease of use for citizens and businesses alike.

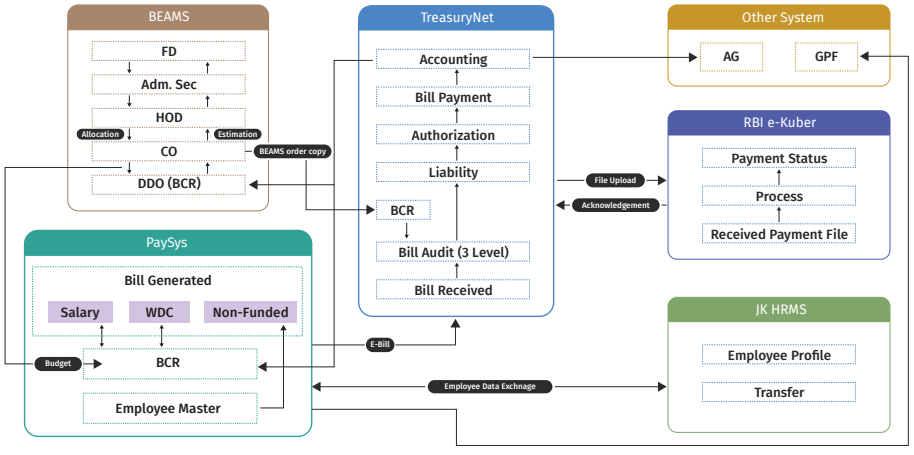
Janbhagidhari

The Janbhagidhari platform fosters citizen participation in governance by offering real-time access to details of developmental projects in J&K. It promotes accountability in public fund utilization and empowers citizens to monitor progress, provide feedback, and contribute to decision-making.

JKHRMS

The J&K Human Resource Management

▼ Fig 2.3 **Workflow of IFMS Application**



System (JKHRMS), an initiative of the General Administration Department, is a comprehensive platform designed to automate and streamline the management of government employees. The system facilitates efficient handling of employee data, payroll, promotions, transfers, and other HR-related processes.

A key feature of JKHRMS is the Common Personal Identification System (CPIS ID), a unique identifier assigned to each employee for seamless tracking and management of their professional records. This ensures continuity and accuracy, even during transfers, as digital records are automatically accessible to new Drawing and Disbursing Officers (DDOs). Employees and DDOs can digitally manage essential information, such as salary details, promotions, transfer records, family data, and service documents, significantly reducing paperwork and administrative inefficiencies.

The system also supports document uploads, including appointment orders and service books, ensuring that all employee records are complete, accessible, and up to date.

Benefits

- **Streamlined Employee Data Management:** Centralized database for all employees.
- **Unique CPIS ID:** Ensures accurate record tracking and continuity during transfers.
- **Rationalized Staffing Patterns:** Eliminates redundancies and addresses fake employee records.
- **Salary Drawl Compliance:** Salaries processed only for sanctioned posts.
- **Efficient Transfer Management:** Simplified employee movement.
- **Performance Monitoring:** Transparent and structured evaluations.
- **Leave Management:** Digital tracking and application of leaves.
- **Accessible Salary Slips:** Easily available for employees.
- **Improved Payroll & Benefits:** Automation reduces errors and delays.
- **Transparency & Accountability:** Strengthens governance through digital systems.
- **Reduced Administrative Burden:** Minimizes manual processes and paperwork.

Allied Applications

Haryana's iFMS (Integrated Finance Management System) integrates financial management systems such as OBAMAS, eBilling, OTIS, eGRAS, and ePension to ensure smooth financial operations across the state. It supports real-time bill processing, electronic payments, and the management of over 1.59 lakh pensioners, streamlining financial workflows and reducing administrative delays.

Employee Performance Monitoring (EPM)

The EPM System streamlines performance evaluations, enhancing employee efficiency, productivity, and accountability. Employees submit quarterly performance reports detailing tasks, achievements, and challenges, which are reviewed and graded out of 10 by their controlling officer. The structured process ensures transparency and consistent performance tracking.

Leave Management System (LMS)

The LMS simplifies the leave application, approval, and management process. Employees can apply for various types of leave online, eliminating manual paperwork. Leave records are securely tracked using the CPIS ID, ensuring accuracy and ease of access.

JKHRMS represents a significant step forward in modernizing employee management in Jammu & Kashmir, fostering transparency, efficiency, and accountability in HR processes across the government.

▲ Fig 2.4 : Pilgrims Displaying RFID-Enabled Identity Cards Issued for Shri Amarnath Ji Yatra by the Shri Amarnath Ji Yatra Board in Collaboration with NIC J&K UT Centre

Shri Amarnath Ji Cave Yatra Application

The Shri Amarnath Ji Cave, situated at an altitude of 3,888 meters in Jammu and Kashmir, is one of the holiest shrines dedicated to Lord Shiva. Accessible only during the summer months, this sacred site remains snowbound for most of the year. Pilgrims can register for the yatra through various channels, including online self-registration, designated bank branches of PNB, SBI, J&K Bank, and YES Bank, as well as on-spot registration at Jammu, Srinagar, Pahalgam, and Baltal, subject to daily quotas. The registration process relies on Aadhar-based e-KYC verification to ensure authenticity, with fingerprints and details matched via the UIDAI server. Pilgrims must report to the base camp 24 hours before the yatra for e-KYC verification, following which they are issued RFID cards, mandatory for undertaking the journey. This robust system has effectively flagged over 1,000 counterfeit registrations, preventing misuse and ensuring a secure pilgrimage. By integrating advanced technology, the Shri Amarnath Ji Yatra offers a seamless, efficient, and secure experience for devotees undertaking this spiritual journey.

GST-Prime

The State Tax Department plays a pivotal role in the collection and administration of taxes, now unified under the Goods and Services Tax (GST) regime. Implemented on July 1, 2017, GST replaced the Value Added Tax (VAT), Central Sales Tax (CST), and other revenues collected under the State Tax Act, consolidating the taxation of goods and services. However, specific items such as petrol, diesel, crude oil, aircraft fuel, natural gas, and liquor for human consumption remain outside GST's purview and are taxed under the UPVAT Act, 2008.

GST-Prime is an advanced analytical platform designed to assist tax administrators in monitoring and enforcing compliance within their jurisdiction. Tailored for field-level officers and enforcement/intelligence teams, the system delivers actionable insights to improve tax collection efficiency and effectiveness.

Key Features

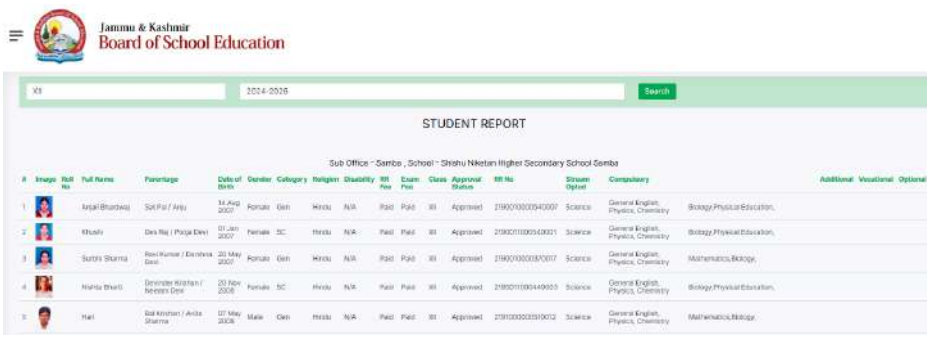
- **GST Compliance Monitoring:** Ensures adherence to tax laws and timely filings.
- **Real-Time Data Analytics:** Provides instant insights for informed decision-making.
- **Role-Based Access:** Offers secure, tailored access for different administrative roles.
- **Intuitive Interface and Reports:** Simplifies data interpretation with user-friendly tools.
- **Evidence-Based Outcomes:** Facilitates enforcement actions based on data-backed findings.
- **Matching Statements (e.g., R3B, R1):** Ensures consistency and accuracy in taxpayer filings.
- **360° Taxpayer View:** Provides a comprehensive profile for efficient monitoring and compliance checks.

The State Taxes Department, supported by innovative tools like GST-Prime, ensures effective tax administration, fostering transparency, accountability, and fiscal stability.

SRO

The Government of Jammu & Kashmir has introduced a Special Revenue Order (SRO) scheme to provide budgetary support to eligible industrial units. This scheme offers partial reimbursement of GST paid on finished goods after adjusting tax credits, encouraging the establishment and growth of small, medium, and large-scale industries in the Union Territory.

Under the J&K GST Act 2017, the scheme provides reimbursement of state taxes to manufacturing units operating in the UT. The



▲ Fig 2.5 : Student Report Dashboard of J&K BOSE

initiative is supported by an online module for streamlined processes such as e-filing for registration and sanction generation.

Key SROs and Their Focus Areas

- **SRO 519:** Reimbursement of State Taxes to promote industries.
- **SRO 63:** Reimbursement of taxes to support small, medium, and large-scale industries.
- **SRO 521:** Reimbursement of Central Taxes for industrial promotion.
- **SRO 431:** Reimbursement of Integrated Taxes for industrial development.

Impact of the SRO Scheme

To date, 1,842 industrial units have registered and benefited from this scheme, reinforcing the government's commitment to fostering industrialization and economic growth in the region.

The SRO framework ensures a transparent, efficient, and supportive environment for industries, empowering businesses and boosting economic development across Jammu & Kashmir.

Motor Spirit Taxes (MST)

Under the MST Act, dealers are required to pay taxes on the sale of motor spirit and diesel oil, applicable on the first sale after import into Jammu & Kashmir. A dedicated software module has been developed to streamline tax administration with features such as:

- Assessment of motor spirit and diesel oil sales and purchases.
- Tax Payment and recovery, including interest liabilities.
- Dashboard for Petrol Taxation Officers for real-time monitoring.
- E-Challan (Form P5) for secure payment processing.
- Monthly MST Returns via Form P4 and P4A.
- Form ST-13 for detailed tax documentation.

The MST system ensures efficiency, compliance, and transparency in managing motor spirit and diesel oil taxation.

JKBOSE

The Jammu & Kashmir Board of School Education (JKBOSE) web portal is a comprehensive platform designed to manage student-related data efficiently, offering a range of digital services to students and administrative users.

Key Features

- **Online Registration:** For students of Class IX, X, XI, and XII.
- **Unique RR Number Assignment:** For Class IX students, ensuring seamless tracking.
- **Role-Based Logins:** Specific logins for Clerks, Principals, IT sections, and Examination Sections for application entry and approvals.
- **Document Generation:** Includes centre notices, micro packs, admit cards, and attendance sheets.
- **Student Services:** Online access to results, re-evaluation, migration, eligibility verification, and duplicate certificates.
- **Advanced Reporting:** Parameter-based reports for monitoring application progress at all levels.

This modernized system simplifies processes, enhances transparency, and ensures easy access to essential academic services for students, parents, and educators across Jammu & Kashmir.

▼ Fig 2.6 : Stakeholders of the e-Imprest System

J&K Bose Impact

547,725
Total Students Registered

1,445,242
Examination Forms Processed

25,047
Migration & Eligibility Cases

156,669
Re-Evaluation & Xerox Applications

61
Results Declared

e-Imprest

https://budgam.jk.gov.in/imprest

The e-Imprest web application, developed by NIC J&K, is designed to manage financial activities related to Imprest accounts and office telephone bills efficiently. This digital platform streamlines processes and enhances financial transparency across district centres and the UT divisions of NIC Jammu and Kashmir.

Key Features

- **Bill Upload:** Simplifies submission and documentation of financial claims.
- **Imprest & Telephone Claim Generation:** Automates claim creation for improved accuracy.
- **Claim Tracking:** Enables real-time monitoring of claim status.
- **Online Stock Register:** Ensures efficient inventory management.

Additionally, the platform integrates seamlessly with the District Integrated Monitoring Portal (DIMP), providing a comprehensive solution for financial and administrative oversight.

The e-Imprest system exemplifies innovation in financial management, ensuring transparency, accountability, and streamlined workflows for effective governance in Jammu and Kashmir.

Hospitality and Protocol Department

https://jkhospitalityprotocol.nic.in

The Hospitality and Protocol Department of Jammu and Kashmir manages policies and services related to the reception, boarding, and lodging of VVIPs, VIPs, dignitaries, and delegations. To enhance operational efficiency, NIC J&K developed an Online Guest House Booking Application, streamlining the booking process for guest houses under the department's jurisdiction.

Key Features

- **User-Friendly Interface:** Simplified online booking form capturing essential details like guest house selection, room type, dates, and booking purpose.

- **Secure Authentication:** OTP verification integrated with the SANDESH App ensures secure and verified bookings.
- **RESTful API Integration:** Facilitates seamless functionality with platforms like UMANG, enabling OTP verification, dynamic dropdowns, and booking status updates.

The system is built using advanced technologies, including the DotNet Framework 4.7, IIS 10.0, and Microsoft SQL Server Management Studio 19. These technologies ensure the platform's scalability, security, and accessibility, delivering a seamless and efficient booking experience for both departmental users and citizens.

HADP

https://hadp.jk.gov.in

The Holistic Agriculture Development Programme (HADP), a flagship initiative of the Government of Jammu and Kashmir, is designed to transform the region's agricultural economy. Developed by NIC JKUT, the program integrates 29 projects across Horticulture, Crop and Livestock Husbandry, with 135+ activities supported by a robust, multi-tier scrutiny mechanism for efficient implementation.

With secure authentication modules and advanced bank integration, HADP facilitates post-approval loan disbursement and seamless subsidy allocation, ensuring financial efficiency. To date, over 2 lakh farmers have registered, with 3.5 lakh applications received and 2.7 lakh approvals granted.

The HADP leverages advanced technologies, including the DotNet Framework 4.7, IIS 10.0, and Microsoft SQL Server Management Studio 19, to provide a unified platform for farmers, entrepreneurs, and government users. This robust system ensures transparency and scalability, supporting efficient agricultural governance. Future enhancements include integration with citizen-centric applications and the addition of new activities to further boost agricultural productivity and welfare in Jammu and Kashmir.

GePNIC

The Government e-Procurement System of NIC (GePNIC) in Jammu and Kashmir, accessible at https://jktenders.gov.in, is an advanced online platform designed to streamline all stages of the procurement process. GePNIC transforms traditional procurement into an economical, transparent, and secure system, promoting fairness, competition, and efficiency. Its generic design allows easy adoption for various procurement needs, particularly for works-related tenders. The system ensures non-discrimination among bidders, provides free access to tender documents, and facilitates secure bid submission and opening from any location. Key features include bidder and government official registration, tender creation and publishing, bid encryption, multi-cover bid systems, online bid submission and withdrawal, and automatic financial bid evaluation. With robust security measures like two-factor authentication with digital signatures, role-based access, and bid encryption, GePNIC ensures a secure and reliable procurement process.

As of November 30, 2024, 7,90,859 tenders worth ₹2,47,629.45 crores have been floated. Jammu and Kashmir achieved the No. 1 position in October 2024 and No. 2 in November 2024 among all States/UTs in the number of online tenders floated, reflecting the system's impact and efficiency.

Employment Portal

https://jakemp.nic.in

The Employment Portal bridges the gap between job seekers and employers, offering a unified platform to meet their respective needs efficiently. It enables job seekers to register seamlessly, access job notifications, and apply online, while employers can post vacancies, search for skilled candidates, and manage recruitment processes.

Key Objectives

- Create a dynamic portal for the Labour and Employment Department.
- Connect job seekers and employers on a single platform.
- Provide job notifications in one place for easy access.
- Facilitate online grievance registration and NOC applications.
- Offer online employment cards for job seekers.

This portal also empowers the department with tools to analyze the unemployment scenario effectively, improving information dissemination and decision-making.

OBPS

https://obps-pdapahalgam.nic.in

The Online Building Permission System (OBPS), developed by NIC JKUT, modernizes and streamlines the building permission process for the Pahalgam Development Authority (PDA). Pahalgam, a major tourist destination in Kashmir, accounts for over 70% of the valley's tourist flow, necessitating sustainable infrastructure development.

Built on the ASP.NET MVC framework with a secure SQL Server database, OBPS ensures modularity, scalability, and user convenience. Key features include area calculations, PDF generation, and a secure payment gateway. This system balances tourism growth with environmental preservation, ensuring transparent and accountable operations while addressing the needs of users and administrators.

The OBPS reflects the PDA's commitment to fostering responsible development in Pahalgam, safeguarding its natural and cultural heritage.

Infrastructure and Networking

NIC Connectivity Augmentation

The NIC Connectivity Augmentation project in Jammu and Kashmir enhances NIC/NKN network infrastructure, delivering resilient, high-speed, and cost-effective connectivity, even in remote districts.

- **Bandwidth Upgrade:** From 34 Mbps to 100 Mbps in 10 districts.
- **Redundant Connectivity:** Dual ISP links with BSNL, RailTel, and PGCIL to minimize downtime.
- **Triangle Topology Design:** Ensures high availability and optimized performance with pairwise district connectivity.

This initiative supports 24x7 reliable connectivity, aligning with modern operational standards.

Events Organized

The NIC Jammu & Kashmir hosted several notable events in 2024, including the 10th International Yoga Day at SKICC on 21st June, and the Viksit Bharat - Viksit J&K program on 7th March. The Thana Diwas Event took place on 1st July, while specialized training sessions were conducted on MedLeaPR and Next Gen eHospital systems. Additionally, the Phase II launch of the SATHI Portal was inaugurated by the Director of Agriculture Kashmir in the presence of the HOD of Agriculture NIC HQ, highlighting NIC's commitment to technological advancements and community engagement.

Way Forward

With RTI Online and Pension Suvidha as future-focused initiatives, NIC J&K aims to ensure seamless e-Governance by enhancing user experiences, integrating related services, and building capacity among stakeholders. RTI Online will focus on simplified navigation, grievance portal integration, and actionable analytics, while Pension Suvidha will prioritize post-retirement services, mobile accessibility, and automated notifications. By leveraging innovation and cross-departmental collaboration, NIC J&K is poised to deliver scalable, citizen-centric solutions and drive digital transformation in the Union Territory.

▼ Table 2.1 : Employment portal stats

Name of service	No. of registrations	Service availed	Min. Days of delivery	Average days of delivery
Job Seekers registered	370279	344613	1	3
NOC Issued	16742	16539	1	8
Employers registered	616	NA	NA	NA

Contact for more details

State Informatics Officer
NIC Jammu and Kashmir UT Centre
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Meghalaya State

Empowering Governance, Enabling Growth

Edited by **KAVITA BARKAKOTY**

Meghalaya, often referred to as the "Abode of Clouds," is renowned for its breathtaking natural beauty, featuring lush green hills, cascading waterfalls, and picturesque valleys. This serene landscape fosters a profound connection to nature and provides the perfect backdrop for progress. The Government of Meghalaya is steadfast in its vision to embrace technology as a cornerstone of sustainable development and digital empowerment.

At the forefront of this transformation is NIC Meghalaya, an invaluable partner in driving the state's digital journey. Through its collaboration with the state government, NIC has spearheaded the development and implementation of various e-Governance initiatives aimed at enhancing public service delivery, ensuring transparency, and promoting digital inclusivity. By leveraging innovative applications and tailored solutions, NIC has enabled government departments to streamline operations, boost efficiency, and improve citizen access to services.

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NIC Meghalaya has been a cornerstone in driving digital innovation and e-Governance across the state, bridging gaps between technology and public service delivery. Through initiatives like e-District, e-Prisons, and Meghalaya Sign Bank, it has revolutionized access to services, enhanced transparency, and fostered inclusion. With a robust infrastructure and a commitment to excellence, NIC Meghalaya continues to empower governance and uplift the lives of citizens.

ICT Initiatives in the State

As a vital contributor to Meghalaya's digital evolution, NIC continues to create a more connected and accessible governance system. Below is a list of some key home-grown applications implemented by NIC in Meghalaya.

Online Recruitment Application System

NIC Meghalaya has developed an online recruitment portal (https://megrecruitment.nic.in/) to streamline government job applications through District Selection Committees (DSCs), the Meghalaya Public Service Commission (MPSC), and departmental boards. This portal enables candidates to apply for various posts, track application status, download admit cards, and receive updates, ensuring convenience and accessibility.

The system has significantly reduced paperwork, expedited the application process, and enhanced transparency and efficiency in recruitment. A robust backend supports administrative tasks such as initializing forms, managing advertisements, scrutinizing applications, generating roll numbers, allocating venues, and issuing admit cards and call letters.

Implemented across 32 departments in Meghalaya and the Sikkim Public Service Commission, the portal has facilitated 945 job postings, received 12,53,733 applications from 2,92,101 registered users, and revolutionized the hiring process.

OBPS

The Online Building Permission System (OBPS) is a mission-mode project under the Ministry of Housing and Urban Affairs, designed to simplify and expedite the building permit process as part of the Ease of Doing Business initiative. OBPS provides an end-to-end solution, enabling citizens to scrutinize building plans, submit applications, and receive building permission certificates entirely online.

Citizens can verify if their building plans comply with city-specific bye-laws within seconds. Any required corrections are highlighted in a scrutiny report generated upon uploading the plan.

Developed by NIC with eGov Foundation providing the core scrutiny engine, OBPS is tailored to state-specific bye-laws. Currently operational in Gangtok and Imphal Municipal Corporations, the system is set to expand to Itanagar and Guwahati Municipal Corporations, aiming for implementation across all urban local bodies in the Northeast.

Meghalaya Enterprise Architecture (EA)

The Government of Meghalaya, with IT support from NIC, has implemented the Enterprise Architecture-Finance Solution to digitize and streamline financial services using the State API

Gateway. This unified platform integrates budgeting, fund allocation, bill preparation, treasury operations, revenue collection, and e-employee services such as pay slips, GPF, salaries, and pensions. Centralized financial transactions enable advanced analytics for actionable insights.

Key Components of Meghalaya's Finance Solution Architecture

1. Budget Estimation Allocation & Monitoring System (BEAMS)

BEAMS is an online system for fund proposals, release, and allocation, integrated with applications like TreasuryNET and e-Billing. It centralizes budget distribution, enabling expenditure authorization and validation through API calls during treasury transactions. It is accessed at https://megbeams.nic.in/MeghBeams/BudgetMVC/index.jsp

2. TreasuryNET 2.0

This system digitizes treasury operations, enabling real-time payments via RBI's e-Kuber system. Integrated with BEAMS and e-Billing, TreasuryNET facilitates seamless workflows and instant access to receipts and payments.

3. e-Billing System

This solution allows Drawing and Disbursing Officers (DDOs) to prepare, process, and submit bills online, ensuring streamlined integration with BEAMS for expenditure authorization. Over 1,200 DDOs statewide use this system for efficient financial processing.

4. Megh-ePayment System (GRAS)

GRAS enables citizens and taxpayers to make 24/7 online payments via multiple modes, such as net banking, debit/credit cards, and UPI. It supports both registered and unregistered users, offering instant receipts and transaction tracking.

5. Pensioner's Life Certificate Verification App

This AI-driven mobile app enables pensioners to update their life certificates using face verification and liveness detection. Designed for convenience, it eliminates the need for physical visits to the treasury. A chatbot, MEDA, provides additional support and guidance.

Download:

https://play.google.com/store/apps/details?id=com.plc.meg

https://apps.apple.com/in/app/govt-of-meghalaya-pension-app/id1578867309

6. Meghalaya Employees Information System (MeghEIS)

This e-HRMS solution automates salary generation and maintains an employee database covering personal details, salary data, and service history. Integrated with TreasuryNET, BEAMS, and e-Billing, it supports 99% of state employees, processing over 9,500 salary bills monthly.

MeghAbility

The MeghAbility portal (https://meghability.megscpwd.gov.in/) is a groundbreaking platform developed for the Office of the State Commissioner for Persons with Disabilities (SCPwD). It streamlines the management and analysis of data for Persons with Disabilities (PwDs) holding a Unique Disability ID (UDID) card. Designed to collect vital information, the portal tracks UDID enrollment, assistive aids, education, and access to government schemes, underscoring Meghalaya's commitment to inclusive growth.

At the heart of this initiative are Disability Empowerment Facilitators (DEFs), who have meticulously gathered comprehensive data from every block and district in the state. This extensive repository provides a detailed overview of PwDs, enabling targeted and impactful interventions.

More than a data management tool, MeghAbility empowers the government to make evidence-based decisions. By leveraging this platform, policymakers can plan targeted interventions, monitor resource allocation, and address service delivery gaps to ensure that no one is left behind. This innovative integration of community-driven efforts and technology sets a benchmark for inclusive and equitable governance in Meghalaya.

The MeghAbility portal is a testament to the state's vision of fostering empowerment and accessibility for all.

Meghalaya Sign-Lex

The Meghalaya Sign-Lex initiative is a groundbreaking effort to document and preserve sign language, spearheaded by the Office of the Commissioner for Persons with Disabilities, NIC Meghalaya, and linguistics experts from NERIE NCERT. Focused on Meghalaya Sign Language (a variant of Indian Sign Language), this project emphasizes capturing rural and semi-urban varieties to ensure inclusivity and linguistic diversity.

Key Highlights

- **Meghalaya Sign Bank:** Launched in 2019, this mobile app bridges communication gaps for the deaf community in education and public domains.
- **Collaborative Documentation:** Sign-Lex enables native users to contribute signs, fostering a diverse and representative database.
- **Standardization Support:** Aligns with NEP 2020 goals to standardize Indian Sign Language across India.

Features

- **Video Uploads:** Users can submit YouTube links with metadata, including meaning, region, and context.
- **Multilingual Translation:** Facilitates translation of gestures into English, Khasi, and Garo.
- **Search & Filter:** Allows users to find signs by keywords, language, or categories.
- **Interactive Dictionary:** A searchable database of signs categorized alphabetically or by common phrases.
- **Collaborative Tools:** Users can rate, comment, and suggest corrections for accuracy.
- **API Integration:** Seamlessly connects with the Meghalaya Sign Bank app.

NIC played a pivotal role in digitising the processes in Meghalaya which ensured seamless integration of all procedures related to financial management. The systems were robust and secure and end-to-end integrated which reduced the processing time for financial releases from more than a week to less than a day.

Ramakrishna Chitturi IAS
Joint Secretary, Finance Department
Government of Meghalaya

Meghalaya Sign Bank Mobile App

The app preserves sign language by providing searchable videos for words, with translations in Khasi and Garo, empowering the deaf community and promoting accessibility.

How to Contribute

Linguists, educators, and researchers can email megsignlex@gmail.com to request access and contribute to the sign language corpus. Once approved, login credentials will be provided.

This initiative is a testament to Meghalaya's commitment to inclusivity, setting a benchmark for linguistic preservation and empowerment.

TMIS

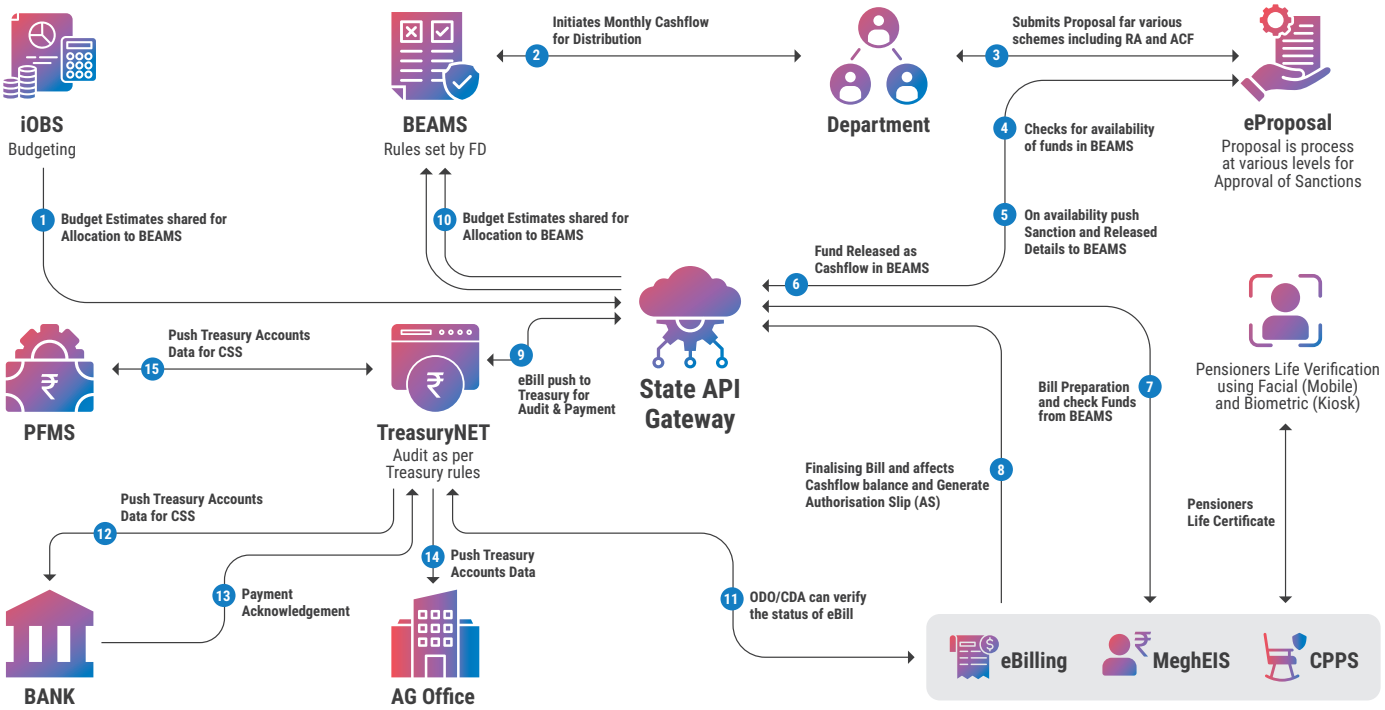
The Training Management Information System (TMIS) is a digital platform designed to streamline training programs at the Meghalaya Administrative Training Institute (MATI). It centralizes scheduling, participant registration, resource allocation, and feedback, enhancing the efficiency of six specialized cells:

- Case Development & Documentation
- Disaster Management
- e-Governance
- Good Governance
- Management Development
- Professional Development

Each cell is managed by an Assistant Director and Dealing Assistant under the Director's leadership.

Key Features

- **Training Calendar:** Drafted annually by Dealing Assistants, verified by Assistant Directors, and approved by the Director.
- **Participant Registration:** Options include self-registration with a 6-digit PIN, government nominations, spot registration, or QR-based registration.
- **Lifecycle Support:** Facilitates attendance



▲ Fig 3.1 **Integration diagrams of Meghalaya Enterprise Architecture (Finance Solution)**

tracking, program material management, feedback collection, report generation, and certificate issuance.

- **Real-Time Insights:** Enables stakeholders to monitor progress, assess program effectiveness, and make data-driven decisions.

Benefits

- Digitized participant tracking and resource management.
- QR-based attendance and automated certificate generation.
- Centralized feedback and detailed reporting for enhanced decision-making.
- Streamlined processes reduce administrative workload, improving coordination and focus on strategic tasks.

Future Enhancements

- Advanced analytics for deeper insights.
- Expanded learning management capabilities.
- Integration with government platforms.
- Online room booking for participants and resource persons.
- Mobile accessibility for real-time updates.

TMIS revolutionizes training management at MATI by enhancing transparency, reducing manual workloads, and enabling data-driven optimizations for improved outcomes.

Meghalaya State Public Services Delivery Commission Portal

The Meghalaya State Public Services Delivery Commission Portal (https://mspsdc.meghalaya.gov.in), officially launched on 15th July 2022 by Hon'ble Chief Minister Shri Conrad Sangma, represents a transformative step in delivering citizen-centric services. Aligned with the RTPS Act 2020, this initiative focuses on efficiency, transparency, and accountability, eliminating middlemen and reducing time and travel costs for citizens. By streamlining processes, the portal enhances the government's public image while ensuring seamless service delivery.

Key Features

- **Access to Services:** Citizens can avail themselves of 190 online services notified under the RTPS Act 2020.
- **Appeal Mechanism:**
  - File appeals online if services are delayed or denied.
  - Unsatisfied with the first appeal? Submit a Second Appeal to the Commission.
- **Information Hub:** The portal provides essential details on the RTPS Act, related rules, official notifications, and commission contact information.
- **Integrated Communication Channels:**
- **SMS and Email Notifications:** Real-time updates for all workflow stakeholders.
- **Video Conferencing:** Applicants can participate in online hearings conveniently.
- **Single Window Access:** Offers a unified platform for both online and offline applications, allowing citizens to track and manage requests efficiently.
- **Dashboards for Accountability:** Dedicated dashboards for the Commission, Appellate Authority, Designated Officers, and Deputy Commissioners ensure streamlined workflow and accountability.

This initiative reinforces Meghalaya's commitment to improving governance through citizen empowerment, transparency, and efficient public service delivery.

Meghalaya eDistrict Project

Launched on 21st January 2016 by Hon'ble Chief Minister of Meghalaya, the Meghalaya eDistrict Project (https://megedistrict.gov.in) revolutionizes public service delivery across all districts and sub-divisions of the state. As of 9th December 2024, the platform offers 30 services, issuing 13,14,325 digitally signed certificates to date.

Key Objectives

- Provide anywhere, anytime access to government services with efficiency and transparency.
- Minimize citizen visits to government offices by promoting online interactions.
- Enable real-time application tracking and digital certificate verification.
- Ensure seamless issuance of digitally signed certificates, verifiable by QR codes or online URLs.

Features

- **Notifications:** SMS updates at every stage – submission, delivery, rejection, or call to service unit.
- **Streamlined Dispatch:** Fully online certificate processing and issuance.
- **Mobile App:** Dedicated app for citizens and officials ensures seamless interaction on the go.
- **Feedback Mechanism:** Encourages citizen input for continuous service improvement.
- **Citizens can apply for services via:** Direct online submission, Public Facilitation Centres (PFCs) and Common Service Centres (CSCs). Aligned with

the Digital India initiative, the Meghalaya eDistrict Project ensures secure, accessible, and efficient public services, empowering citizens and promoting accountable governance.

e-HRMS

e-HRMS is an ICT solution designed to address personnel management needs for state government employees, offering a centralized electronic system to enhance governance efficiency. By maintaining comprehensive service records, e-HRMS supports workforce planning, recruitment, retirement projections, and resource allocation. It tracks key data such as retirement patterns, seniority lists, ACR/Property Return status, and surplus employee reallocation, enabling top management to make data-driven decisions.

Initially launched in 2022 for select offices in the Personnel & AR Department and the Directorate of Local Fund Audit, e-HRMS scaled to the Health & Family Welfare Department in 2023. The backlog entry of employee service records is currently underway. Looking ahead, the leave module is set to roll out for the Establishment of Deputy Commissioner, East Khasi Hills, in 2025. Additionally, the system is being customized for the Health & Family Welfare Department to include training management and a module to assist Transfer Authorities in decision-making.

With its focus on efficiency, transparency, and strategic planning, e-HRMS is transforming government personnel management.

MEGRSSA

The Government of Meghalaya, in collaboration with NIC Meghalaya, has introduced a digital registration system under the Meghalaya Resident Safety and Security Act (MEGRSSA). This initiative streamlines the registration of landlords and tenants with local authorities and police, ensuring a comprehensive database to enhance safety and security in the region.

The online system (https://megrssa.nic.in/) is designed for flexibility, allowing registration by tenants, landlords, local authorities, and police personnel, facilitating seamless verification. Built using open-source technologies like React, Springboot, and PostgreSQL, the platform is mobile-responsive for easy access via smartphones. It has undergone rigorous security audits by the NIC Cyber Security Division and is hosted on the Meghalaya State Data Centre.

Currently, the project covers 16 localities within Shillong City as part of its first phase, with plans for statewide expansion. This initiative represents a significant step toward ensuring safety and security for residents across Meghalaya.

Online Booking and Reservation System for Meghalaya Houses

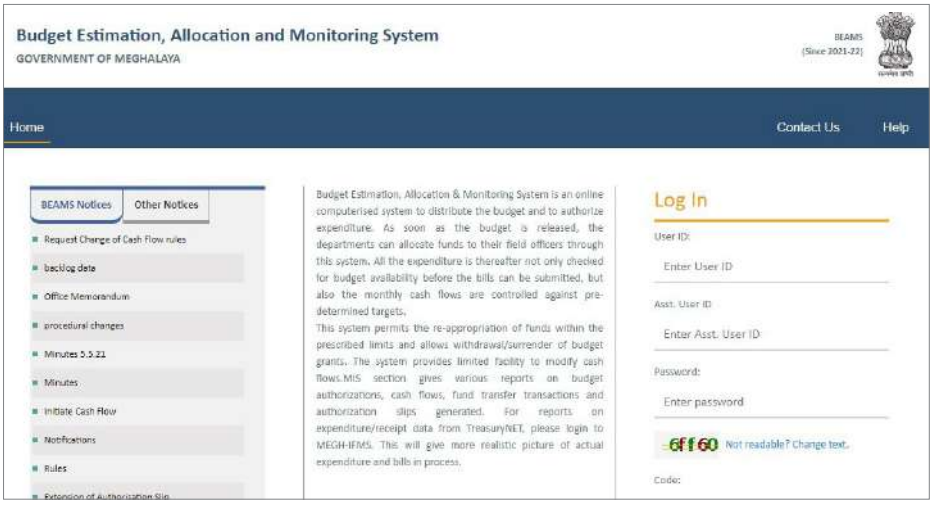
The Government of Meghalaya has launched an Online Booking and Reservation System for convenient accommodation and conference hall reservations at Meghalaya Houses across various cities. This digital platform simplifies the reservation process for government officials and citizens, offering a seamless, paperless experience.

Key Features

- **End-to-End Management:** From application to checkout, including stay extensions and cancellations.
- **User-Friendly Access:** Available via mobile apps and web browsers for anytime, anywhere bookings.
- **Secure Transactions:** Automated billing and online payments through GRAS ensure transparency and accountability.
- **Real-Time Updates:** SMS notifications keep users informed about application statuses and changes.
- **Operational Flexibility:** Features like cancellation management and extension requests.
- **Robust Data Security:** Includes SMS OTP, password protection, JWT tokens, and HTTPS hosting.

This system empowers government officials to efficiently manage room allotments and offers detailed reporting for full accountability, enhancing operational efficiency and user convenience.

▼ Fig 3.2: Budget Estimation, Allocation and Monitoring System Dashboard



Working with the us, the office of the Commissioner for Persons with Disabilities, NIC Meghalaya has been instrumental in transforming our vision for inclusivity into reality. From the MeghAbility App to revolutionary tools like Meghalaya Sign Lex and Meghalaya SignBank, their innovations empower persons with disabilities to access opportunities and services seamlessly. Through their work on accessible websites and the use of AI to bridge the gap between text and sign language, NIC is setting new benchmarks in inclusive technology for Meghalaya.

Camelia Doreen Lyngwa MCS
Joint Secretary & Director
Social Welfare Department and Commissioner for Persons with Disabilities, Govt. of Meghalaya

STEMS

Launched by the Government of Meghalaya under the Sustainable Transport and Efficient Mobility Society (STEMS) on January 11, 2023, the STEMS School Bus Tracking System promotes sustainable public transport and enhances safety, comfort, and punctuality for schoolchildren in Shillong. This pilot project, inaugurated by Chief Minister Shri Conrad K. Sangma, introduces the "Shared Mobility" concept, aiming to reduce traffic congestion and encourage a shift from private cars to public transport.

Key Features

- **STEMS App:** Available on Google Play and iOS App Store, the app enables registration, bus pass purchases, and real-time bus tracking.
- **Caretaker App:** Ensures SMS updates to parents about their child's boarding and de-boarding.
- **Online Bus Passes:** Convenient purchase for specific routes and periods with integrated payment options.
- **Live Bus Tracking:** Real-time monitoring for parents and students.
- **Efficient Management:** Web application with dashboards for STEMS and schools, seat allocation, crew duties, and route management.

Supported by NIC Meghalaya and NIC Uttarakhand, this initiative represents a step forward in sustainable and safe school transportation, benefiting students, parents, and the community.

Other Initiatives in the State

Meghalaya has implemented diverse e-Governance initiatives to enhance public services,

The Meghalaya State Public Services Delivery Commission (MSPSDC) Web Portal has been developed by NIC Shillong in collaboration with the MSPSDC and with funding from National eGovernance Division (NeGD), Ministry of Electronics and Information Technology, Government of India.

Since it's launch in July 2022, MSPSDC Web Portal has recorded as on December 11, 2024, an impressive 2,43,217 visitors, reflecting its growing relevance and engagement with citizens.

The portal's impact is further exemplified by its inclusion in the "Best Practices – Right to Services Portal" section of the 14th Monthly Report by the Department of Administrative Reforms and Public Grievances (DARPG)'s National e-Governance Service Delivery Assessment. This accolade highlights the Commission's dedication to setting high standards in service delivery, ensuring citizens have access to reliable and efficient services.

The MSPSDC Web Portal continues to play a pivotal role in transforming public service accessibility, aligning with the broader vision of Digital India to empower every citizen through technology.

M.S.Rao IAS (Retd.)
Chief Commissioner
Meghalaya Public Services Delivery Commission

transparency, and digital inclusion. Covering sectors like agriculture, health, education, and public distribution, these projects streamline operations, ensure accessibility, and empower citizens. Tailored to address Meghalaya's unique challenges, these innovations drive sustainable development and foster digital inclusivity.

NEGP AGRISNET Meghalaya State Agricultural Marketing Portal

The portal provides market information on 79 commodities across 39 markets, with 2.4 million SMS alerts sent. It collects data from 62 rural primary markets and two daily markets in the state capital. It can be accessed at https://megamb.gov.in/

Registration of Farmers and Digital Farmer ID Card

Launched on October 26, 2019, this project uses Service Plus for farmer registration and digital ID issuance. Of 392,777 applications, 264,582 IDs were issued. It can be accessed at https://megedistrict.gov.in/getServiceDesc.html?serviceId=11140004

State Farmers' Portal

This portal offers comprehensive agricultural services, including crop cycle management and farmer achievements. It has verified 97,928 farmers and issued 92,294 digital IDs. It can be accessed at https://megfarmer.gov.in/

Online Reporting System for DGROS

Launched on February 25, 2022, this system allows District Grievance Redressal Officers to report on food grain distribution efficiently under the National Security Act 2013.

Computerization of Election Department

Begun in 2007, this initiative digitizes electoral rolls and voter services, including voter enrollment, updates, and ID issuance. It also manages election logistics like polling personnel and LAN setup for counting halls.

Excise Permit & Revenue Tracking System (EXPERT)

Operational since 2014, this system manages excise permits and revenue tracking, integrated with GRAS for online payments. It has issued 3,254 permits and collected ₹37.31 crore. It can be accessed at https://excise.meghalaya.gov.in.

Disability Portal

A barrier-free platform offering maximum accessibility with assistive technologies. It complies with WCAG 2.0 and GIGW guidelines. It can be accessed at https://megscpwd.gov.in.

eHospital Management System

Enhances patient care and record management across government hospitals. It supports OPD registrations, lab reports, and discharge summaries. It can be accessed at https://ehospital.gov.in.

Computerization of Employment Exchange

Digitizes employment services, including online registration and job card issuance. As of November 2024, it recorded 67,504 entries and 4,370 renewals. It can be accessed at https://dectmeg.nic.in.

Skilled Hands Portal

Connects skilled unemployed individuals with jobs across 69 skill categories. It has 1,187 registered users and is accessible via mobile and employment exchanges. It can be accessed at https://megskillhands.gov.in.

Meghalaya State Portal

The official government website provides access to information and services in health, education, and employment sectors. It received 18.4 million visitors as of November 2024. It can be accessed at https://meghalaya.gov.in.

MegPGRAMS

A grievance redressal system integrated with CPGRAMS, it offers dashboards, notifications, and NFSA data integration for efficient resolution. It can be accessed at https://megpgrams.gov.in.

Online RTI Application

Allows Indian citizens to file RTI requests and appeals online, integrated with GRAS for secure payments. It has processed 3,189 applications and 145 appeals. It can be accessed at https://megrti.gov.in.

e-Prisons

Provides real-time inmate data and visitor management systems to streamline prison operations. It can be accessed at https://eprisons.nic.in/.

e-Challan for Traffic Police

An Android app for on-the-spot fine collection, integrated with Vahan and Sarathi. It has issued 99,301 challans, collecting ₹8.87 crore since March 2021.

Faculty & Student Management Systems under NERIE

These systems manage academic materials, assignments, attendance, and evaluations for faculty and students. It can be accessed at https://nerie.nic.in/.

e-Litigation

Tracks court cases and sends SMS notifications for hearings, covering cases from district courts to the Supreme Court.

VAHAN and SARATHI

VAHAN manages vehicle registration and permits, generating ₹835.246 crore from 556,692 vehicles. SARATHI supports driving license issuance, generating ₹45.03 crore from 311,445 licenses.

Tourism Information System

Tracks tourist data through hotel entries, recording over 7.1 million domestic and 112,971 foreign tourists. It can be accessed at https://megtouristinfo.nic.in/Public/TouristHome.aspx.

Horticulture Approved Rates Software

Streamlines rate comparison and entry for quick publication of approved rates.

Vehicle Condemnation Web Application

Enables data submission for vehicle removal, simplifying transport department processes.

Meghalaya E-Cabinet Portal

Automates Cabinet meeting processes, ensuring security with two-factor authentication.

Online Mining and Quarry Permit Systems

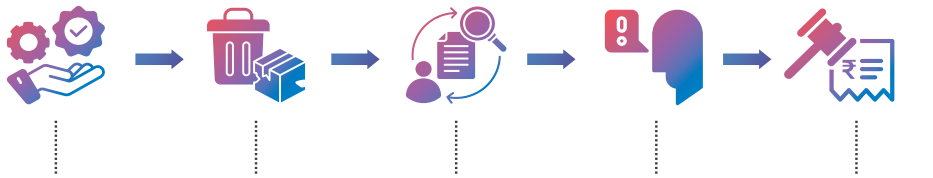
Streamlines applications for mining leases, quarry permits, and reconnaissance permits, improving transparency.

Mineral Gallery and Demurrage Systems

Provides a virtual gallery of Meghalaya's minerals and tools for calculating demurrage charges.

Natural Resource Accounting

Tracks mineral lease data, generating detailed reports verified by district offices.



▲ Fig 3.3 **Key features of MSPSDC Portal**

TPDS Computerization

Digitizes the Public Distribution System, integrating ePoS devices and supporting the 'One Nation One Ration Card' scheme.

Central Government Projects

Several central government projects have been successfully implemented in Meghalaya, enhancing governance and service delivery across various sectors. These include e-Office for digital administration, e-Court Project for judicial efficiency, and the National Database of Arms Licenses (NDAL) for secure arms management. The Confonet Project (http://confonet.nic.in/) supports consumer forums, while the Health Management Information System (HMIS) (http://nrhm-mis.nic.in/) improves health data management. Social welfare initiatives like Mission Vatsalya, Indira Gandhi National Disability Pension Scheme, and National Family Benefit Scheme ensure targeted support for vulnerable populations.

Projects like e-Granthalaya digitize library systems, and SPARROW (Smart Performance Appraisal Report Recording Online Window) streamlines performance appraisals. Housing initiatives such as Indira Awaas Yojana (IAY) and Pradhan Mantri Awaas Yojana – Gramin (PMAY-G) enhance rural housing development, while the Farm Mechanization Application benefits the agriculture sector.

Ease of Doing Business (EODB) reforms by the Labour Department and projects like Interoperable Criminal Justice System (ICJS) and IRAD (Integrated Road Accident Database) boost efficiency in law enforcement and road safety. Additionally, the National e-Vidhan Application (NeVA) digitizes legislative processes, supporting transparent and efficient governance. These projects demonstrate a comprehensive approach to leveraging technology for socio-economic development in the state.

Infrastructure and Network

NKN/NICNET Services

NIC Meghalaya is equipped with two 10 Gbps core links, integrating NICNET and SWAN for seamless data sharing and virtualization across the state. This extensive network connects over 20,000 nodes across 238 offices and buildings. Additionally, 11 NIC District Centres are linked via NICNET/NKN with bandwidths of 1 Gbps, 100 Mbps, or 34 Mbps. Central WiFi access supports over 1,000 users, and 15 prominent institutions, including IIM, NIT, NEIGRIHMS, and NEHU, are connected to NKN. The network has handled more than 1,500 calls and incidents, ensuring prompt and reliable support.

NIC Mini Cloud

In 2022, the NIC Mini Cloud was deployed, featuring advanced network infrastructure, HCI nodes, VMware, backup solutions, and load balancers. The 500-square-foot data centre hosts three racks for Mini Cloud, deploying 200-2,000 virtual machines with standard configurations.

Video Conferencing Services

NIC Meghalaya provides Video Conferencing Studios at the State Centre, 11 District Centres, Governor's House, Main and Additional Secretariats, NEC Secretariat, Meghalaya High Court, District Courts, and District Prisons. Over 900 video conferencing sessions were conducted in the past year.

Messaging Services

More than 80,000 email accounts have been created for state and central government officers and staff, supporting efficient communication across departments in Meghalaya.

Awards

NIC Meghalaya has been recognized for its outstanding contributions to digital innovation and governance through several prestigious awards, highlighting its commitment to leveraging technology for citizen-centric services.

Winner at 8th North East Award 2023 (Guwahati):

- e-Prison
- Meghalaya Sign Bank
- Pensioner's Life Certificate Verification Mobile Apps

Special Mention at 8th North East Award 2023 (Guwahati):

- Digital Fish Farmer Identity Card
- Crop Pest & Disease Surveillance and Advisory Portal

Digital India Awards 2018 (Special Mention Category) (India Habitat Centre, New Delhi):

- Meghalaya e-District Project
- Awarded on 22nd February 2019.

Way Forward

NIC Meghalaya envisions a future where emerging technologies drive smarter and more inclusive governance. The focus is on enhancing citizen engagement through intuitive mobile apps and real-time service portals while strengthening cybersecurity to protect sensitive data. By integrating AI, machine learning, and big data analytics, the aim is to enable predictive and efficient decision-making. Efforts will also prioritize digital inclusion, ensuring accessible interfaces for all citizens, especially in remote areas. Collaborations with academic institutions, industries, and startups will foster innovation, creating a robust digital ecosystem. NIC Meghalaya is dedicated to establishing the state as a benchmark for digital governance and sustainable development in the North-East region.

▼ Fig 3.4: Meghalaya Employees Information System (Megh-EIS) Dashboard

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Hyderabad Urban Telangana

Rising Hyderabad in e-Governance

Edited by **NISSY GEORGE**

Hyderabad Urban District, though the smallest in area among all districts in Telangana, pulsates as the state's social, economic, and cultural epicenter. Known as the "City of Pearls," Hyderabad was once a global hub for the trade of rare diamonds. Today, it stands as a testament to history, innovation, and technological progress. The district's dense population symbolizes its vibrant dynamism, making it the beating heart of Telangana.

At the forefront of this transformation is the NIC Hyderabad, a pioneer in leveraging science, innovation, and technology to enhance governance. Since its inception, NIC Hyderabad has spearheaded various ICT initiatives, transforming public administration and empowering citizens with seamless digital solutions. This article explores the district's key ICT initiatives, their impact, and the vision for a digitally empowered Hyderabad.

ICT Initiatives in the District

S2BHK Randomization

The 2BHK Randomization software, developed by NIC Hyderabad, streamlines the allocation of two-bedroom flats to eligible citizens in the Greater Hyderabad Municipal Corporation (GHMC) region. This standalone application ensures transparency by randomizing the selection process:

- **Step 1:** Eligible candidates identified by GHMC are listed.
- **Step 2:** Randomization software selects beneficiaries separately for each constituency.
- **Step 3:** Flats are allocated randomly to the beneficiaries, ensuring equitable distribution.

Special provisions ensure people with disabilities receive accessible flats marked as PH (Physically Handicapped) by GHMC. This initiative has allocated approximately 58,000 flats across the GHMC area, including Rangareddy, Medchal-Malkajgiri, and Sangareddy districts. Such transparent processes are a hallmark of NIC Hyderabad's commitment to fairness and inclusivity.

NIC Hyderabad's initiatives aim to create a digital ecosystem where opportunities abound for individuals and institutions alike. For citizens, this means improved access to essential services, simplified processes, and real-time grievance redressal. For the government, it translates to enhanced efficiency, cost savings, and better resource management.

Land Bank System

The Land Bank System is a robust application developed for the Hyderabad District Collectorate to manage land records efficiently. It categorizes each land parcel into five sections:

- **Desk Exercise:** Officers input data in the first four sections.
- **Field Visit:** Tahsildars or special officers complete the final section based on field visits.

The system offers two levels of access:

- **Officers:** Can create, edit, and delete land parcels.
- **Admin:** Has privileges to view dashboards and reports but cannot modify land parcel data.

This system enhances the accuracy of land records, simplifies data management, and supports informed decision-making at the administrative level.

Integrated Road Accident Database

Under the iRAD project, Hyderabad District has conducted over 100 training sessions for more than 1,000 employees across 71 police stations, five RTO offices, and other stakeholder offices. This initiative emphasizes real-time data collection on road accidents, enabling evidence-based strategies to enhance road safety. By integrating web and mobile applications, NIC Hyderabad ensures efficient data management and inter-departmental collaboration.

AeBAS

The implementation of Aadhaar-enabled Biometric Attendance System (AeBAS) in state and central government offices has transformed attendance tracking in Hyderabad. By eliminating manual entries, this system saves time, enhances accuracy, and ensures accountability. Notable achievements include the migration of L0 to L1 fingerprint biometric devices, showcasing NIC Hyderabad's adaptability to technological advancements.

Computer Proficiency Tests

NIC Hyderabad conducts Computer Proficiency Tests for candidates recruited through compassionate appointments. These tests ensure that recruits are well-equipped with essential digital skills, aligning with the district's vision of a digitally literate workforce.

Other Key Initiatives

Court Case Monitoring System

The Court Case Monitoring System (CCMS) application organizes case details for the Hyderabad Collectorate and Mandal offices. Its user-friendly dashboards allow stakeholders like District Collectors, RDOs, and Tahsildars to:

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▲ Fig 4.1 : Hon'ble Minister for Housing clicking the button for random allocation of flats

- Track pending cases.
- Receive alerts for contempt cases.
- Access status updates via SMS.

Features like computerized registers, cause lists, and disposal lists make this system an invaluable tool for judicial administration.

Hyderabad District Website

https://hyderabad.telangana.gov.in/

The Hyderabad District Website (developed using the S3waas framework) acts as a bilingual hub for authentic government information. Regular updates ensure citizens have access to:

- History and culture of the district.
- Demographics and administrative setup.
- Tenders, recruitments, and citizen services.

This user-centric platform reflects NIC Hyderabad's focus on transparency and accessibility.

Prajavani

https://cpgrams.ts.nic.in

Prajavani serves as a one-stop platform for addressing public grievances. NIC Hyderabad provides technical support, ensuring seamless operations and quick redressal of citizen concerns.

eOffice

https://hyderabad.eoffice.telangana.gov.in

The implementation of eOffice in 44 departments and two RDO offices has revolutionized file management in Hyderabad. Inaugurated on 15th August 2020 by Smt. Swetha Mohanty, IAS, the system simplifies workflows, reduces paperwork, and enhances productivity. Training programs for district staff ensure effective adoption.

Key Events and VIP Visits

NIC Hyderabad's expertise in managing large-scale technological setups ensures that every event runs smoothly. From enabling virtual conferencing to maintaining secure digital workflows, NIC Hyderabad's contributions underline its commitment to excellence in governance and administration. Notable events include:

- Rozgar Mela for the Department of Posts and CRPF.
- ICT arrangements during the President's visit to Raj Bhavan.
- The Bhima Sakhi Event, inaugurated by the Hon'ble Prime Minister.
- Serving as an observer during NTA examinations.
- Training on e-filing and Case Information System at the Judicial Academy.

Conclusion

The future of Hyderabad Urban District is intrinsically linked to its digital growth, and NIC Hyderabad is at the helm of this journey. The district centre envisions a smarter, more connected Hyderabad where technology enhances every aspect of life, from governance to education to public safety. By fostering innovation and collaboration, NIC Hyderabad is laying the foundation for a resilient, future-ready district. Its initiatives not only solve current challenges but also pave the way for sustainable development, ensuring Hyderabad remains a beacon of progress for Telangana and the nation.

▼ Fig 4.2 : Hyderabad District Website Home page

NIC Hyderabad has been providing critical ICT support for district administration. NIC developed 2BHK randomization software which is quick, seamless and transparent in allocating Dwelling units (2BHK flats) to the Citizens of the city. The software is well organized and significantly streamlined the distribution process.

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Karaikal, Puducherry UT

Building Digital Systems for Transparency, Accountability in Governance

Edited by **NISSY GEORGE**

Karaikal, a scenic district in Puducherry, blends serene beaches, historic temples, and vibrant cultural heritage with Tamil-French influences. Since 1988, NIC Karaikal has been a key partner to the District Administration, enhancing governance through ICT initiatives. Key achievements include e-Governance platforms for services like Land Records, Ration Cards, and Grievance Redressal, streamlining processes, improving transparency, and boosting citizen engagement.

ICT Initiatives in the District

SoftLicense

https://swscollectorate.py.gov.in

SoftLicense simplifies licensing processes under the District Collector's office through a dynamic, workflow-based system. During Deepavali, cracker shop licenses were issued entirely online, showcasing its efficiency. Citizens can apply for licenses, NOCs, and renewals, upload documents, track status, and benefit from seamless department clearances. Features like real-time monitoring, inspections, and MIS dashboards ensure effective service delivery.

DM-Dashboard

The DM-Dashboard transforms complex government data into clear visuals for project monitoring. NIC Karaikal, in collaboration with the District Administration, tracks 60 services, enabling the Collector to oversee progress across departments. With real-time insights, trends, and drill-down analytics, the platform enhances decision-making.

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NIC Karaikal, with support from NIC State and Central teams, empowers the District Administration through Open Data platforms, real-time dashboards, citizen-centric portals, mobile apps, and social media integration. It ensures transparency with accessible datasets, real-time tracking of projects, and centralized services, while fostering digital ethics by prioritizing privacy, security, and inclusivity. By bridging governance and citizens, NIC Karaikal makes public services efficient, accessible, and accountable.

Karaikal District Website

https://karaikal.gov.in

Karaikal District website provides updates, circulars, tenders, and ambient air quality reports. It hosts dedicated pages for events like Carnival Celebrations, Sanipeyarchi festival, elections, and disaster management. Regularly updated, it serves as a tool for public engagement.

PEDServices

https://pedservices.py.gov.in

PEDServices allows Karaikal citizens to pay electricity bills online, offering multiple payment modes like credit/debit cards, IMPS, and BBPS. Developed by NIC Puducherry, the platform ensures convenience, with features like payment history access and receipts.

KINETICS

KINETICS tracks Public Works Department (PWD) projects, integrating physical assets like schools and monuments. The mobile app enables field data collection through site photos, supports project arbitration, and includes complaint redressal. It provides key stakeholders with insights into project progress, ensuring timely completion and dispute resolution.

SSLC Mobile App

NIC Karaikal facilitated the implementation of a mobile app for SSLC candidates' registration with Puducherry Employment Exchange. Demonstrated successfully to students, the app streamlines the process, earning praise from the District Collector for its user-friendly design and significant impact.

Other Key Initiatives in District

e-Services of Registration Department

Citizens can access Encumbrance Certificates, Certified Copies, and Marriage Registration Certificates online, with OTP-enabled logins, secure payments via PayGov/GRAS, and SMS status alerts. Features include a Citizen Dashboard for requests and a DR Dashboard for oversight, ensuring transparency and convenience.

CPGRAMS

On the 15th of every month, grievances are addressed via CPGRAMS, allowing citizens to submit petitions online or physically. Comprehensive training and technical assistance ensure efficient grievance redressal across departments.

SEETRAM

SEETRAM monitors flood-prone water resources with automatic alerts based on water levels. It issues warnings during monsoons, tracks incidents like road damage, and documents pre/post-incident responses, improving disaster preparedness and management.

Professional Tax System (LAD)

This system enables online/offline collection of profession tax for employees and individuals.

Organizations can bulk pay, covering employees across Puducherry UT, including Karaikal. It simplifies compliance and tax management.

iRAD

The iRAD application captures real-time road accident data. Training sessions for Police, RTO, Health, and PWD/NH ensure structured reporting. A District Roll-out Manager supervises implementation, offering support and streamlining accident data management.

State and Central Project Support

NIC Karaikal plays a vital role in implementing and supporting key State and Central projects, enhancing governance through ICT solutions.

- **State Projects:** ePathirapathivu, eThirumanam, Nilamagal, Collabland, eSalary, GRAS, BEAMS, UDH, Ration Cards Monitoring, Puduvai Canal, ePrison, Property Tax, and Birth & Death Registration.

- **Central Projects:** MGNREGA, AeBAS, VAHAN, SARATHI, Jeevan Pramaan, NRHM-MIS, PM-Kisan, GeM, IVFRT, eHospital, eOffice, and SATHI.

Through infrastructure, software support, and data management, NIC Karaikal ensures efficient service delivery, empowering governance and benefiting citizens.

Important Events Organized

Cyber Security Awareness Campaign

In October 2024, NIC Karaikal conducted a cybersecurity training session for government officials, covering hacker tactics, email safety, password management, firewalls, and reporting incidents. To foster proactive digital safety, a cybersecurity quiz was organized for college students, accompanied by pamphlet distribution for officials and students.

VVIP Web VC Events

NIC Karaikal ensured seamless webcasting arrangements for significant events, including:

- The inauguration of JIPMER Karaikal and PM-SURAJ programs, where the Hon'ble Prime Minister interacted with the public.

- Live streaming of the Hon'ble Prime Minister's Covid-19 vaccination inaugural function at General Hospital, Karaikal.

- Webcasting support for the Hon'ble LG's camp at Mayiladuthurai during the launch of the eRUPI program by the Hon'ble Prime Minister.

Accolades

- NIC Karaikal received a Certificate of Appreciation from the Hon'ble Minister, Government of Puducherry (GoPY), and the Collector-cum-District Magistrate for its commitment and dedicated services in implementing IT initiatives and digital e-Governance solutions in Karaikal District.

- The JIPMER Karaikal Dean awarded an appreciation letter to the NIC Karaikal team for their outstanding efforts during the inauguration of the JIPMER Karaikal campus by the Hon'ble Prime Minister of India.

NIC Karaikal has been an indispensable partner in the digital transformation of Karaikal District providing cutting edge solutions to enhance e-Governance and citizen-centric digital service delivery. The District Administration is constantly impressed by NIC, Karaikal Team's performance which is filled with brilliant ideas and excellence in work. DIO's leadership brings everyone together with his teamwork abilities and positive attitude to constantly push the bar and motivates the entire unit to exceed expectations.

I appreciate the tremendous hard work put by the team for the successful launch of innovative new platforms, Soft Licence, DM Dashboard, SEETRAM, KINETICS in Karaikal District by reaching the target sooner than expected. These platforms have brought- in fresh perspective to the project monitoring and decision making process besides empowering the citizens to avail hassle free public services and information on the go. NIC, Karaikal is providing excellent services in hosting various meetings, trainings, webinars, workshops, high-profile virtual events involving PMO, LG Secretariat and CMO in hybrid mode. NIC, Karaikal's contribution to cyber security awareness and the support services extended during general elections is commendable. In the ever- changing digital landscape, NIC Karaikal continues to make enormous impact on the digital identity of the Karaikal district through its pioneering e-Sevas and solutions to the citizens of the district. Keep-up the great work!

Dr. D. Manikandan IAS
District Collector, Karaikal District

Way Forward

NIC Karaikal has been pivotal in the district's digital transformation, delivering robust ICT solutions and streamlining state and central projects. From real-time dashboards and e-Governance platforms to citizen-centric applications like SoftLicense, DM-Dashboard, and SEETRAM, it has enhanced transparency and service delivery. Supporting systems like ePathirapathivu and MGNREGA, NIC empowers both administration and citizens. Additionally, it ensures seamless webcasting for VVIP events, including those attended by the Hon'ble Prime Minister. With a focus on innovation, inclusivity, and cybersecurity awareness, NIC Karaikal continues to lead in leveraging technology for governance and public service.

▼ Fig 5.1 : SoftLicense Application Launch by the District Collector, Karaikal: Simplifying Licensing Processes for Citizens

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Namchi, Sikkim

Bridging Tradition and Technology in the Land of Monasteries

Edited by **KAVITA BARKAKOTY**

Namchi, meaning "Sky High," is not just a picturesque town in the lush hills of the young Himalayas but also a burgeoning hub for technological advancement. As the district headquarters of Namchi, Sikkim, the town has gained recognition for its forward-looking initiatives, underscoring its commitment to leveraging technology to enhance governance and improve the quality of life for its residents.

NIC Namchi District Centre, established in 1993, has been at the forefront of this transformation. From its inception, NIC Namchi has played a critical role in embedding technology into the district's administrative framework. By enabling e-Governance solutions, digital infrastructure development, and innovative IT applications, NIC has streamlined public service delivery and enhanced citizen engagement. Its efforts have firmly positioned Namchi as a leader in technology-driven governance within the region.

ICT Initiatives in the District

Certificate of Identification Management Software

The Certificate of Identification (COI) serves as a crucial document for citizens of Sikkim, verifying their domicile status. It is a mandatory requirement for securing permanent government jobs, conducting land transactions, and accessing various state government services.

The COI Management System is a client-server-based application developed using Microsoft Visual Studio 2008 in C#, with Microsoft SQL Server 2008 as the database. This software streamlines the end-to-end process of application submission, verification, approval, and delivery of the Certificate of Identification.

Objective

- Provide efficient citizen services through a Single Window System that ensures timely application processing and certificate issuance.
- Maintain a comprehensive digital record of issued certificates and their associated police and special branch verification reports.
- Enhance transparency through real-time tracking of applications at every stage of processing.

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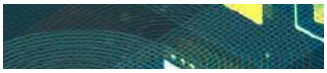


NIC Namchi has been a pioneer in using technology to improve governance and citizen services. From automating document issuance with management software to revolutionizing disaster management with the Apada Sewa Mobile App, NIC Namchi has set a benchmark for efficiency, transparency, and innovation, establishing itself as a leader in regional e-Governance.

Key Features

- **Role-Based Access:** Each user, including officials, is assigned specific roles and responsibilities within the system.
- **Unique Token Generation:** Every application receives a unique token number upon submission through the single window system.
- **Application Status Updates:** The system provides real-time status updates as the application progresses through various stages.
- **Document Upload:** Scanned photographs of applicants and required documents, including police and special branch verification reports, can be uploaded to the system.
- **Approval and Rejection Management:** Applications can be approved or rejected by the Additional District Collector (ADC), with provisions to reference rejected applications for future use.
- **MIS Reports:** The system generates various Management Information System (MIS) reports for monitoring and analysis.

Defined Roles

The software assigns specific roles to ensure efficient processing and accountability:

- Additional District Collector (ADC)
- Confidential Assistant
- Single Window Operator
- Dispatch Official

Impact

The implementation of the Single Window System, powered by the COI Management Software, has revolutionized service delivery:

- Applicants can now submit, track, and collect their certificates seamlessly from a single point of contact.
- The digital record-keeping system has improved the efficiency of tracking applications and accessing records.
- Officers can easily retrieve information during inquiries and respond to RTI requests with greater convenience and accuracy.

This system exemplifies how technology can simplify governance, ensuring transparency, efficiency, and improved citizen satisfaction.

Residential Certificate Management Software

The Residential Certificate (RC) is issued to individuals who do not possess a Certificate of Identification (COI) but fall under one of the following categories:

- **Category 1:** Applicants who can prove, beyond all reasonable doubt, that they were residents of Sikkim on or before April 26, 1975, and have continuously resided in the state since then.
- **Category 2:** Applicants who are natural legal descendants of individuals meeting the criteria in Category 1 and have continuously resided in Sikkim since birth.

To streamline the issuance process, the

Residential Certificate Management Software was developed. It is a client-server-based application built using Microsoft Visual Studio 2010 in C#, with Microsoft SQL Server 2012 as the database backend. This software automates the application receipt, processing, and certificate generation, mirroring the efficiency of the COI Management Software.

Roles and Responsibilities

The software simplifies the workflow by defining two primary roles:

- **ADC:** Responsible for reviewing and approving applications.
- **Data Entry Operator:** Handles the receipt of applications, their forwarding for review, and the printing of approved certificates.

This role-based structure ensures clear accountability and efficient processing at every stage.

Impact

The Residential Certificate Management Software has significantly enhanced the application process by:

- Ensuring a streamlined, role-based workflow.
- Reducing delays through efficient handling of application receipts and approvals.
- Providing a digital platform for record maintenance, enabling quick access and retrieval for future reference.

Apada Sewa Mobile App

The Apada Sewa Mobile App revolutionizes disaster reporting, surveying, and claims processing by introducing a digital solution designed for efficiency, transparency, and accuracy. Previously, disaster reporting relied on WhatsApp and mobile calls, with surveys and claim forms being manually filled for relief or restoration work. This method was time-consuming and lacked assurance that surveyors visited the disaster sites. Recognizing these challenges, the District Collector of Namchi proposed the development of a mobile app that integrates geotagging, photographic evidence, and digital reporting for streamlined claim processing and false claim mitigation.

Key Features and Functionalities

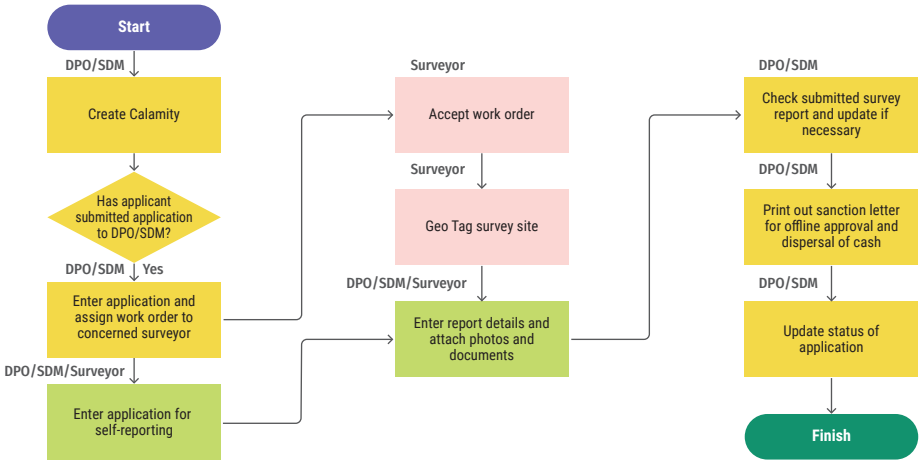
The Apada Sewa Mobile App addresses the shortcomings of traditional disaster management systems through the following advanced features:

- **Offline Report Saving:** Survey reports can be saved locally on the device when internet connectivity is unavailable. These reports are automatically submitted once connectivity is restored.
- **Draft Report Saving:** Users can save incomplete survey reports as drafts, allowing them to add missing details later before submission.
- **Geotagging:** Mandatory geotagging of disaster sites ensures authenticity and precise location mapping for each report.
- **Self-Reporting Module:** Users can independently report disasters and submit survey data without requiring a survey order if the calamity is created within the app.
- **Prefilled Sanction Orders:** The app auto-generates sanction orders based on correctly entered survey data, minimizing manual intervention and errors.
- **Application Tracking:** Real-time tracking of the status of submitted applications ensures transparency and keeps users informed throughout the process.

Process Flow

- **Disaster Reporting:** Surveyors or self-reporting users record incidents with geotagged photographic evidence.
- **Survey Assignment:** Survey orders are assigned and tracked digitally.
- **Data Submission:** Surveyors submit detailed reports, complete with photos and geotags.
- **Approval and Sanction:** Reports are reviewed, and sanction orders are auto-generated in a prescribed format.

▼ Fig 6.1 : Workflow Diagram of Apada Sewa Mobile App



▲ Fig 6.2 : Apada Sewa Mobile App

- **Offline and Draft Support:** Reports can be saved offline or as drafts for submission when conditions permit.

Impact

The Apada Sewa Mobile App has modernized disaster site surveys and claims processing, delivering multiple benefits:

- **Enhanced Efficiency:** Automating the entire workflow has significantly reduced delays in disaster reporting and claim approvals.
- **Increased Accuracy:** Geotagging and photographic evidence ensure site authenticity and reduce the chances of false claims.
- **Transparency:** Real-time application tracking builds trust and eliminates ambiguity for users and officials alike.
- **Reduced Duplication:** Public submission of duplicate applications has been minimized, thanks to digital record-keeping.

By embracing a fully digital approach, the Apada Sewa Mobile App has set a new standard in disaster management, ensuring faster, more reliable relief efforts while simplifying the workload for surveyors and administrators.

Way Forward

The way forward for NIC Namchi includes adopting AI and Blockchain for secure, efficient services, expanding mobile-first solutions with multi-language support, and enhancing citizen engagement through feedback systems. It aims to digitize more public services and introduce advanced analytics for better decision-making. Capacity-building programs and advanced training for officials will ensure sustained innovation, fostering inclusive growth and a seamless digital experience for citizens.

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eGov Products & Services

Ente Bhoomi

Integrated Land Information Management System of Kerala

Edited by **NISSY GEORGE**

Kerala's Integrated Land Information Management System (ILIMS), epitomized by the groundbreaking Ente Bhoomi digital land survey project, marks a transformative leap in land governance. In the domain of sustainable land administration, precise and up-to-date cadastral data is indispensable for managing land tenure, ownership, valuation, and utilization. Kerala, a pioneer in innovative governance, has continuously evolved its land administration systems since 1905. However, the separation of textual and spatial records often hindered the reflection of real-time land transactions and updates.

To address these challenges, the Kerala government launched the Digital Resurvey Mission under the Ente Bhoomi initiative. This ambitious project reimagines land administration, creating a holistic, citizen-centric Integrated Land Information Management System (ILIMS). Aligned with the Revenue Department's mission statement—"Land for all, records for all the land, and all services smart"—ILIMS sets a new standard for transparency, efficiency, and inclusivity in land governance.

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Kerala's Ente Bhoomi, the Integrated Land Information Management System (ILIMS), stands as a trailblazing initiative in land administration, setting new benchmarks for accuracy, transparency, and efficiency. Developed by NIC Kerala, ILIMS seamlessly integrates the Survey, Registration, and Revenue Departments, offering a unified platform that transforms land record management in the state. By leveraging advanced technology, the system reduces delays, enhances security, and fosters citizen-centric governance. This revolutionary approach not only streamlines service delivery but also underscores Kerala's commitment to sustainable and efficient public service reforms, exemplifying how innovation can reshape governance for the better.

Background

Kerala's diverse topography and fragmented landholdings have historically posed challenges for traditional land administration. The 2018 and 2019 floods exposed the vulnerabilities of outdated and incomplete land records, underscoring the urgent need for digital transformation.

- Previous resurvey attempts struggled due to:
- Paper-based inaccuracies
- Outdated spatial records
- Limited accessibility to data

Incompatibility of legacy survey data with modern geospatial platforms

To overcome these issues, Kerala launched the Digital Land Survey Program, a comprehensive initiative integrating advanced technologies to enable real-time data sharing, ensure disaster preparedness, and enhance overall governance efficiency.

Objectives

Accurate and Transparent Land Mapping

- Conducting comprehensive cadastral surveys to generate precise Land Parcel Maps (LPMs) with geospatial accuracy.

Kerala has made significant progress in delivering efficient revenue services to its citizens. To further enhance revenue records and seamlessly integrate them with land parcel sketches, the state launched the Digital Survey Mission. This initiative established a unified portal combining services from the Revenue, Registration, and Survey departments.

Through this implementation, Kerala's land records are now seamlessly integrated with spatial geometry and ownership details, marking a major milestone in the State's land administration process. This comprehensive system is setting a benchmark and emerging as a model for land administration across India.

Dr. A Kowsigan IAS
Land Revenue Commissioner

- Eliminating land record discrepancies and ensuring legally binding land demarcation for dispute-free ownership.

Seamless Land Records Integration

- Unifying revenue, registration, and survey systems to facilitate a single-window digital service for land transactions.
- Enabling real-time synchronization between textual and spatial records to reflect accurate land ownership details.

Issuance of Tamper-proof Records of Rights (RoR)

- Providing legally authenticated Records of Rights (RoR) to landowners to establish ownership security.
- Digitizing land records to prevent fraudulent claims, unauthorized land conversions, and encroachments.

Development of a Multipurpose Cadastral Database

- Creating a centralized digital repository of land information to support urban planning, disaster management, and infrastructure development.
- Utilizing GIS-based analytics for data-driven policymaking and resource management.

Technologies Used

Given Kerala's challenging terrain and dense tree coverage, cutting-edge technologies were adopted, including:

- **Continuously Operating Reference Stations (CORS):** Ensuring high-precision geospatial data.
- **RTK-based GNSS systems and Robotic Total Stations (R-ETS):** Delivering positional accuracy within 3–5 cm.
- **Drones:** Supporting aerial mapping and detailed terrain analysis.

These advanced technologies enable precise and reliable data collection, perfectly tailored to Kerala's complex landscape.

▲ Fig 7.1 : Hon'ble Chief Minister of Kerala, Shri Pinarayi Vijayan addressing during the launch of ILIMS 'Ente Bhoomi' integrated portal

Complete Re-engineering and Digital Transformation

This program signifies a complete overhaul of traditional land administration practices, replacing manual processes with digital solutions to achieve:

- **Enhanced efficiency:** Automation of pre-survey, survey, and post-survey operations.
- **Improved accuracy:** Digital tools minimize human error and enable real-time updates.
- **Transparency:** A centralized platform empowers citizens and stakeholders to track progress and access services effortlessly.

Phased Implementation Strategy

To ensure effective execution, the program adopts a phased implementation strategy:

- Surveying 200 villages simultaneously within six months.
- Annual coverage of 400 villages to ensure steady progress.
- A unified portal to manage continuous land record updates and transactions.

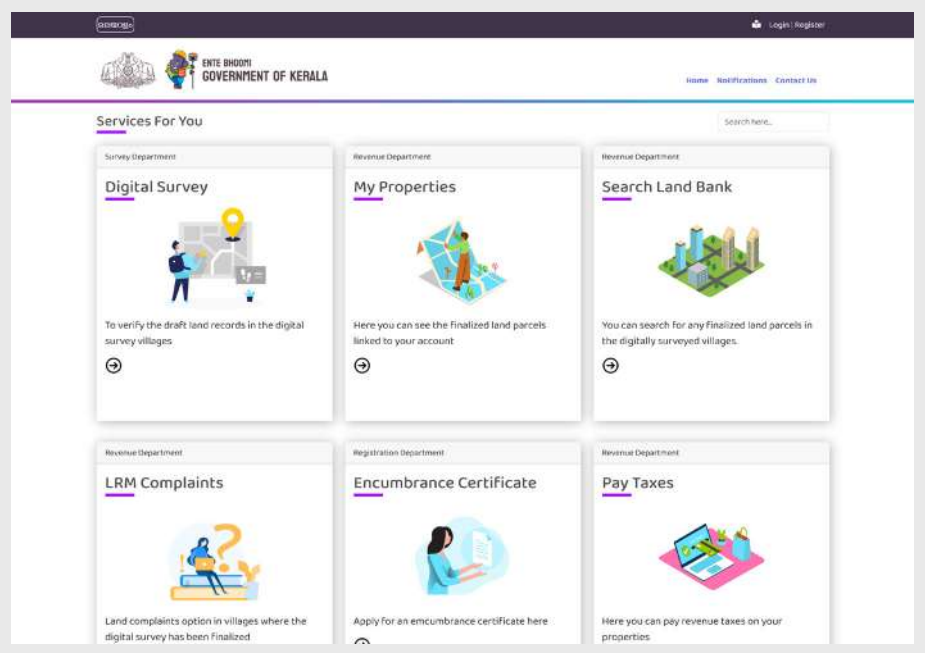
This phased approach ensures scalability, efficient progress tracking, and timely achievement of ambitious targets.

Major Technological Achievements

The program has achieved significant milestones through innovative technology:

- **Advanced Survey Instruments:** RTK rovers, R-ETS, and rugged tablet PCs enhance accuracy and reliability.
- **CORS Network:** A robust network of 28 sta-

▼ Fig 7.2 : Chief Minister of Kerala, Shri Pinarayi Vijayan officially launches the ILIMS 'Ente Bhoomi' integrated portal, by switching on the launch video



▲ Fig 7.3 : "Ente Bhoomi" portal home page

tions covers over 80% of the state, delivering unmatched geospatial accuracy.

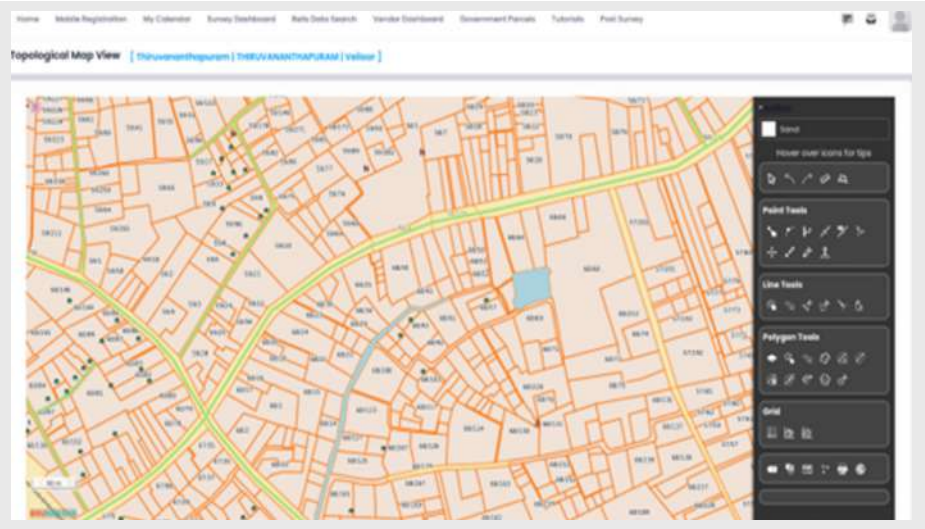
- **Ente Bhoomi Portal:** A single-window platform integrating revenue, registration, and survey services, ensuring continuous updates and citizen-centric service delivery.

Innovative Features

The Digital Land Survey Program incorporates cutting-edge features that redefine efficiency, accuracy, and citizen-centric service delivery:

- **Automated Pre-Mutation Sketches:** Real-time generation of essential sketches required for land transactions.
- **Auto-Mutation:** Seamless synchronization of textual and spatial data to ensure real-time updates.
- **Online Services:** Providing access to critical documents like Thandaper certificates, location sketches, and encumbrance certificates through an integrated portal.
- **Grievance Redressal Mechanism:**
  - **OLC (Original Land Complaints):** For raising survey-related grievances.
  - **ALC (Appeal Land Complaints):** For appeals against survey resolutions.
  - **LRM Complaint Module:** An online platform for addressing post-survey land complaints.

▼ Fig 7.4 : Bhunaksha 5.0



Powered by Bhunaksha 5.0

The management of land parcel maps is driven by the advanced Bhunaksha 5.0 platform, offering an array of innovative tools:

- **Interactive Map Visualization:** Provides users with layered, marker-rich maps for easy interaction and analysis.
- **Geospatial Data Management:** Ensures efficient storage, querying, and analysis of geographic data.
- **Online Digitization Module:** Enables the creation and editing of geographic features directly on the map.
- **ULPIN (Unique Land Parcel Identification Numbers):** Automates the generation and management of ULPINs for every land parcel.
- **Reporting Module:** Produces detailed reports with sketches, measurements, area calculations, and attribute summaries.
- **Quality Check and Fixing:** Identifies and resolves topology errors, overlaps, gaps, and boundary inconsistencies in cadastral maps, guaranteeing superior data quality.

Kerala's Ente Bhoomi System launched with a groundbreaking digital survey of the entire state, setting a new standard for accurate, up-to-date land records. This effort created a pioneering model for integrated digital surveys, enabling seamless access to land-related services—registration, revenue, and survey—through a single portal. Citizens now receive instant, updated land records and digital maps, ensuring transparency and efficiency in every transaction. This transformative initiative offers a superior, user-friendly experience, empowering citizens with real-time access to vital services.

Seeram Sambasiva Rao IAS
Director, Survey & Land records

ILIMS Architecture

The Integrated Land Information Management System (ILIMS) is built on a robust microservices architecture, consisting of core microservices, authentication and proxy services, and departmental services. These components work in unison to deliver a unified citizen portal and enable cross-department workflows. Key components of the ILIMS architecture include:

- **Ente Bhoomi Portal:** A single-window citizen

portal for all land-related transactions, providing seamless access to services.

- **ILM Gateway:** An internal API gateway enabling access to departmental services and the integrated land bank.
- **ILT Service:** The Integrated Land Transaction service acts as a transaction broker and workflow engine for all land-related transactions. It generates a unique Land Transaction Identification Number (LTIN) and facilitates data exchange between departments during transaction workflows.
- **Integrated Land Bank (ILB):** A centralized repository of land records, registered document information, and cadastral maps. It includes the Unique Thandaper (UTR) for ownership representation and ULPIN data published by the Revenue Department.
- **Authentication Proxy Services:** Integration microservices that streamline the incorporation of departmental systems into the ILIMS framework.
- **Single Sign-On (SSO) Service:** A cornerstone of Ente Bhoomi's e-Governance strategy, enabling seamless integration across the Survey, Registration, and Revenue Departments. It uses FIDO-compliant WebAuthn technology for passkey integration, ensuring enhanced security and user convenience.
- **ReLIS Service:** A service provided by the Revenue Department for integrated workflows like tax and fee collection and land records management (LRM).
- **Pearl Service:** A service offered by the Registration Department to track the status of registrations in both front-office and back-office systems.
- **RMIS Service:** A service from the Survey Department for map-related transactions within the integrated workflow.

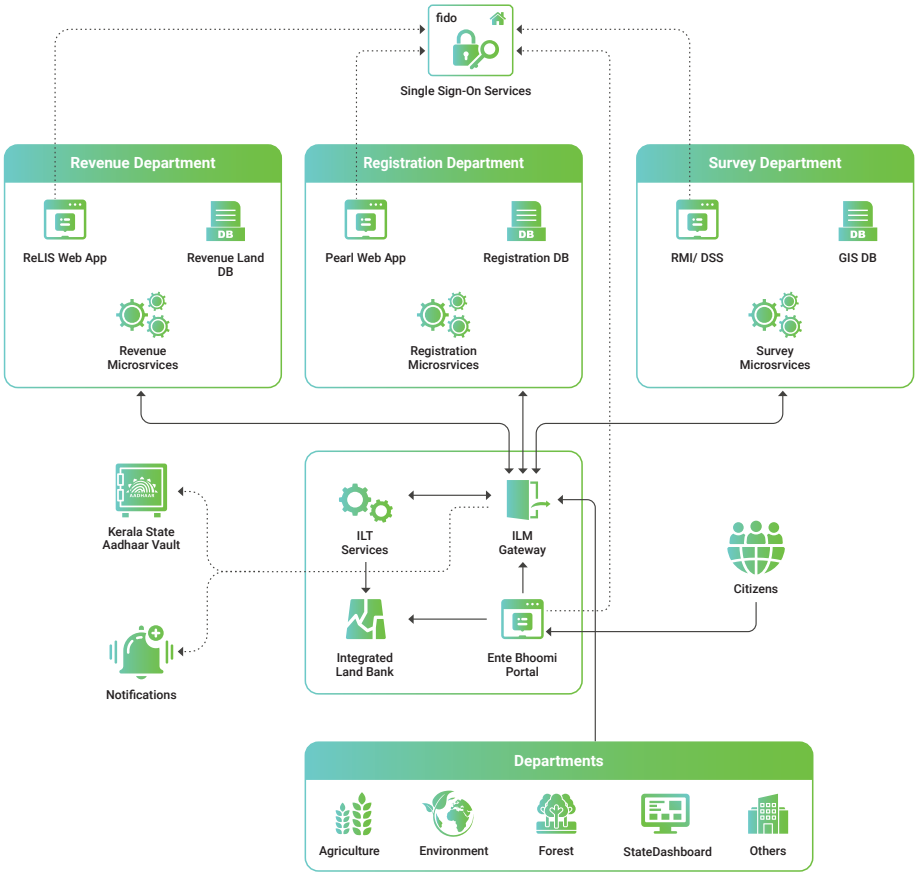
Integrated Land Transactions

One of ILIMS's flagship implementations is the Integrated Land Sale Process, which spans the Registration, Revenue, and Survey Departments. The process is initiated by citizens through the Ente Bhoomi portal, leveraging the SSO service for front-end integration and the ILT service for back-end workflow coordination.

Key Stages of an Integrated Land Transaction

- The citizen initiates a land sale through the Ente Bhoomi portal, generating a Land Transaction Identification Number (LTIN).
- The Revenue module collects fees for the digital premutation sketch and Thandaper certificate.

▼ Fig 7.5 **ILIMS Architecture**



ILIMS has transformed the citizen experience in land registration by seamlessly integrating land transactions. Starting with the registration process, it extends to the survey and revenue department systems, culminating in the mutation process. Template based registration simplifies the process for citizen and encourage self-preparation of documents. Mandatory pre-mutation sketch for registration enables auto-mutation.

Sreedhanya Suresh IAS
Inspector General of Registration

- The Survey system prepares the digital premutation sketch as per requirements.
- The Registration system facilitates template-based registration of the sale deed.
- The Revenue system performs auto-mutation of land records using the registered document and digital premutation sketch.
- The updated land parcels are pushed to the Integrated Land Bank for record management.

The LTIN enables transparent tracking of the transaction's status through the Ente Bhoomi portal, while SMS/Sandes notifications provide instant updates to stakeholders (buyers and sellers).

Way Forward

The program has already achieved significant milestones, including the completion of field surveys in 230 villages, with work progressing in an additional 228 villages, as part of its target to survey 1,550 villages within four years. It has also integrated blockchain technology to ensure secure and immutable storage of land transaction records, while enabling external stakeholders to access the comprehensive integrated land data bank. Additionally, the program has streamlined unified service delivery, offering all land-related services across various departments through the Ente Bhoomi portal, ensuring transparency and efficiency.

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Gram Manchitra

Transforming Rural India with Geo-Spatial Technology

Edited by **MOHAN DAS VISWAM**

The Gram Manchitra application has been envisioned and developed as a powerful visualization tool to foster self-sustainable villages. To support this vision, a range of planning tools has been created, enabling the preparation of Gram Panchayat Development Plans (GPDPs) that incorporate block and district-level statistical information.

In recent years, NIC has introduced a comprehensive multi-layer planning framework called Bharatmaps. This framework includes administrative boundaries down to the Gram Panchayat and village levels, base infrastructure layers mapped at 1:10,000 scale, and a repository of 3.5 million assets across critical sectors such as education, healthcare, public distribution, banking, and postal services. The Gram Manchitra application, a web-based GIS platform, is built on this robust foundation. It is seamlessly integrated with the Ministry's flagship eGramSwaraj scheme, offering spatial planning and analytical tools tailored to the needs of Gram Panchayat functionaries.

The Survey of India has played a pivotal role in supplying abadi (inhabited) area data under the SVAMITVA Scheme during the project's initial stages. This data requires meticulous curation and preparation to ensure it is analysis-ready, forming a crucial input for the Gram Manchitra platform's tools and capabilities.

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Gram Manchitra is a GIS-based platform designed to empower rural governance and planning. It integrates geospatial data with existing schemes to provide visual insights for effective decision-making at the grassroots level. From mapping resources to tracking development projects, Gram Manchitra enhances transparency, accountability, and data-driven governance. By enabling local authorities to visualize assets, infrastructure, and demographic patterns, it bridges the gap between planning and implementation, fostering sustainable rural development.

Vision

The integration of digital technology with community participation and local governance structures offers a transformative approach to improving the quality of life in villages. By leveraging data-driven tools and GIS-based platforms like Gram Manchitra, Gram Panchayats can make informed decisions, enhance transparency, and foster self-sufficiency, laying the foundation for sustainable development.

This approach combines cutting-edge technology with the collective wisdom of local communities, enabling effective resource planning, monitoring, and execution of development initiatives. To achieve meaningful and long-lasting results, it is essential to customize these solutions to address the unique needs, priorities, and capacities of each village, ensuring their relevance and successful adoption.

Objectives

The Gram Manchitra application (https://grammanchitra.gov.in/) has been designed with specific objectives to empower rural governance and enhance the quality of life in villages:

- **Promoting Structured Planning:** By utilizing geo-spatial technology, the application encourages resource-efficient and structured planning for rural development.
- **Supporting GPDPs:** Gram Manchitra plays a pivotal role in the preparation and implementation of GPDPs, enabling data-driven decisions for project planning and resource allocation.
- **Enhancing Transparency and Accountability:** Integration with tools like mActionSoft ensures that developmental works are traceable and geo-tagged, fostering transparency and accountability at all stages.
- **Leveraging SVAMITVA Scheme:** High-resolution maps at a 1:500 scale, generated under the SVAMITVA Scheme, provide detailed data for land and property management, as well as solar energy potential assessments.
- **Facilitating Sustainable Development Goals (SDGs):** The application embeds SDGs into local development plans, ensuring balanced and inclusive growth at the village level.
- **Empowering Data-Driven Decision-Making:** Comprehensive tools and features empower Gram Panchayats to visualize, analyze, and implement development initiatives effectively.
- **Fostering Inclusive Growth:** By providing a decision-support system tailored to the unique needs of each village, Gram Manchitra ensures that no community is left behind in the development process.

Key Features

The Gram Manchitra application is equipped with a wide array of features that aim to revolutionize rural planning and development. These advanced functionalities empower Gram Panchayats to make data-driven decisions for better governance and resource utilization:

- **Visualization Platform:** Offers an intuitive, user-friendly interface to view and analyze developmental plans and resources.
- **Advanced Spatial Analysis Tools:** Includes tools such as Solar Tool, Street Light Analysis, and Proximity Tool, which assist in identifying optimal locations for infrastructure and amenities.
- **Geo-Tagging Integration:** Through mActionSoft, developmental works are geo-tagged with GPS coordinates and photographs, ensuring transparency and real-time monitoring.
- **Comprehensive Gram Panchayat Profiles:** Provides detailed demographic, economic, and resource information for each Gram Panchayat.
- **DIGIPIN Integration:** Simplifies address identification in rural areas, providing precise location-based details, especially useful for areas lacking formal address systems.
- **Natural Layers Integration:** Incorporates critical data on natural resources such as rivers, dams, wildlife sanctuaries, and coastal zones to support environmentally sustainable planning.
- **Reports and Metadata:** Generates sector-specific reports (e.g., health, education, public distribution systems) and ensures transparency with detailed metadata for all spatial layers.
- **Resource Envelope:** Displays fund allocations for various schemes, aiding financial planning and management.

Integrations and Collaborations

Gram Manchitra operates as a core part of a broader ecosystem, integrating seamlessly with flagship schemes and applications to enhance its functionality and usability. Key integrations include:

- **eGramSwaraj:** Linked with eGramSwaraj, Gram Manchitra allows users to plan, execute, and monitor developmental works aligned with the GPDP framework. This integration ensures efficient planning, budgeting, and resource allocation.
- **mActionSoft:** Enables geo-tagging of assets at all stages of development (before, during, and after completion), enhancing transparency and real-time monitoring.
- **SVAMITVA Scheme:** Data from the SVAMITVA Scheme is used in applications like the PM Surya Ghar Portal, which assesses the solar potential of rooftops. This integration promotes renewable energy adoption and supports sustainable development initiatives.
- **BharatNet Project:** The BharatNet Project, which connects Gram Panchayats with high-speed broadband, enhances the usability of Gram Manchitra by ensuring reliable access to digital tools and geospatial resources, thereby strengthening digital governance at the grassroots level.
- **AuditOnline:** Integrated with AuditOnline, Gram Manchitra supports transparency by facilitating the online auditing of Panchayat accounts. This ensures accountability and good governance by providing detailed, verifiable records of financial transactions.

▲ Fig 8.1: Gram Manchitra web application home page

Through these integrations, Gram Manchitra becomes a comprehensive platform that not only supports planning and monitoring but also promotes transparency, accountability, and the adoption of sustainable practices in rural governance.

Tools and Functionalities

The Gram Manchitra application offers a comprehensive suite of tools to address various aspects of rural planning and development. These tools empower Gram Panchayats with data-driven insights to make informed decisions. Key features include:

Spatial Tools

- **Connectivity Analysis:** Evaluates vehicle navigation feasibility based on road types, aiding the efficient transport of essential goods.
- **Solar Tool:** Assesses the potential for solarization of houses and public buildings, promoting renewable energy adoption.
- **Street Light Analysis:** Estimates the number of light poles required based on illumination levels and type of lighting, ensuring proper coverage.
- **Weather Tool:** Provides real-time data on temperature, rainfall, humidity, cloud cover, and wind speed to aid in planning daily activities.
- **Proximity and Buffer Tools:** Identifies nearby assets and facilities, such as schools, hospitals, police stations, and public distribution centers, which is especially useful for disaster management and emergency planning.
- **Natural Layers Integration:** Incorporates data on rivers, dams, wildlife sanctuaries, and coastal zones, supporting environmentally sustainable development.

Advanced Functionalities

- **Query Builder:** Enables users to retrieve specific information from the map by building customized queries for targeted analysis.
- **Resource Envelope:** Displays fund allocations for various government schemes, facilitating financial planning and efficient resource utilization.
- **Reports:** Generates detailed summaries of

▼ Fig 8.2: Spatial Layers Integrated

Administrative
- State Boundaries
- District Boundaries
- Block Boundaries
- GP Boundaries
- State HQ
- District HQ
- Sub-district HQ
- Census Villages

Rural Electrification
- Transformer
- Power Sub-Station

Assets
- Banks
- Health Centre, PHC
- Sub Center
- PDS
- Post Office
- Higher Education
- Agri Resources
- Industries
- Transport
- Tourist
- Misc.
- Airport
- Monuments
- Internet Connectivity

Water body

Watershed

Cadastral Data

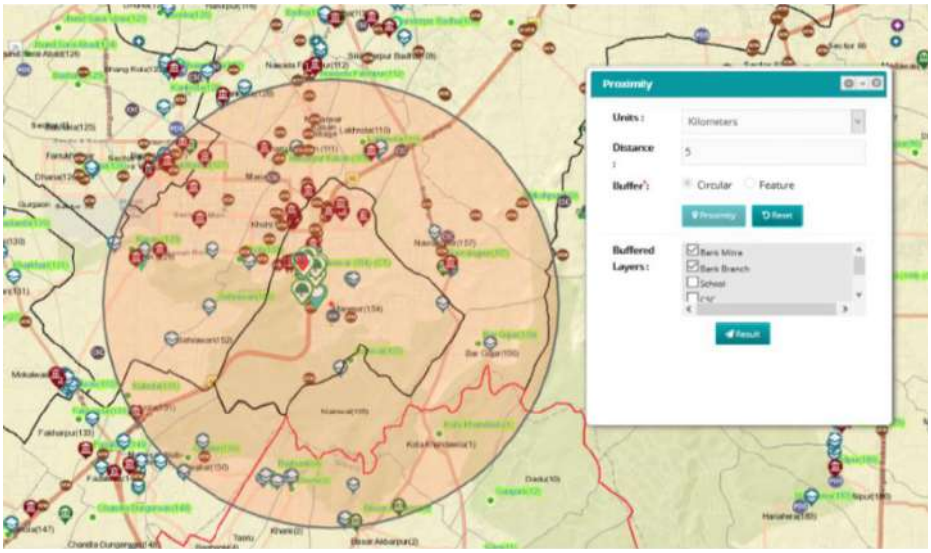
Abadi Data

Work Status 2022-23
- Work yet to start
- Work in Progress

Skill Development Center

Drinking Water Resources

MGNREGA Works



▲ Fig 8.3: Proximity tool

assets, public services, and infrastructure.

- **Metadata Module:** Offers descriptions and details about various spatial layers for informed decision-making.

Applications in Rural Governance

The Gram Manchitra application has revolutionized rural governance by enabling Gram Panchayats to:

- **Plan Infrastructure Development:** Tools such as the Road Construction Tool and Street Light Analysis help identify and address infrastructure gaps.
- **Monitor and Evaluate Projects:** Geo-tagged assets and photographs provide real-time updates on developmental works, ensuring accountability and transparency.
- **Disaster Management:** Proximity tools enable faster responses during emergencies by identifying nearby assets, critical facilities, and evacuation routes.
- **Natural Resource Management:** Spatial data layers for rivers, reservoirs, dams, and wildlife sanctuaries ensure that development plans are environmentally sustainable and do not harm natural resources.

Impact

The Gram Manchitra application, along with its integrated platforms like eGramSwaraj, has achieved remarkable adoption and success across all states and union territories in India. As of FY 2024-25, the following key milestones highlight its impact:

- **Preparation of Development Plans:** 2.44 lakh Gram Panchayats have successfully prepared and uploaded their GPDPs, ensuring data-driven, participatory local planning.
- **Financial Transparency and Accountability:** 2.06 lakh Panchayats have completed online transactions for the 15th Finance Commission grants, enhancing transparency and efficiency in fund utilization.
- **Widespread Participation in Local Governance:** 2.32 lakh Gram Panchayats have conducted Gram Sabha meetings, fostering inclusive and participatory governance at the grassroots level.

▼ Fig 8.4: Metadata Module

Challenges

Despite the transformative impact of Gram Manchitra, several challenges hinder its full potential. Addressing these issues is critical for maximizing its effectiveness:

- **Lack of Digital Literacy:** Many Gram Panchayat functionaries and stakeholders are not well-versed in using digital tools, limiting the adoption and utility of the application.
- **Inadequate Infrastructure:** Insufficient internet connectivity in remote areas, coupled with limited access to digital devices, hampers the seamless use of Gram Manchitra.
- **Data Accuracy and Updates:** Geo-spatial data requires regular updates and validation to maintain its relevance. Errors or outdated information can lead to inefficiencies in planning and decision-making.
- **Resistance to Change:** Traditional governance practices often resist the adoption of modern, technology-driven solutions, slowing the integration of digital tools like Gram Manchitra.
- **Limited Community Participation:** While the application encourages participatory governance, active engagement from local communities remains inconsistent.
- **Technical Challenges:** Complex functionalities, such as Query Builder and Proximity Tools, may pose difficulties for users unfamiliar with advanced GIS platforms.

Way Forward

To fully realize the transformative potential of Gram Manchitra, a comprehensive approach addressing existing challenges is essential. Capacity building is crucial, with regular training programs to enhance the digital literacy of Gram Panchayat functionaries. Simplified user guides, video tutorials, and real-time assistance within the application can make its advanced functionalities more accessible. Infrastructure development must be prioritized by accelerating the rollout of BharatNet to ensure reliable internet connectivity in remote areas, coupled with the provision of necessary hardware and technical support to enable seamless usage.

Encouraging community participation is equally important. Awareness campaigns and active involvement in Gram Sabha meetings can help integrate local needs into planning processes, fostering ownership and accountability among villagers. Improving data accuracy is another vital step. Mechanisms for regular updates and validation of geo-spatial data, along with automated processes to minimize errors, will ensure the platform remains a reliable resource for decision-making.

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Technology Update

Human-Centered AI Design

A Synergy of Design Thinking and Data Science

The journey of AI began with rule-based expert systems and evolved into complex machine learning and deep learning models. Initially, AI systems were designed for efficiency and automation, often without considering human-centric factors such as transparency and fairness. However, the rise of ethical concerns, biased algorithms, and the lack of explainability has fueled the demand for a new approach—HCAI.

Unlike traditional AI, which emphasizes automation and data-driven optimization, HCAI prioritizes human needs and values. AI design has transitioned from merely improving computational efficiency to developing systems that work collaboratively with humans, ensuring decision-making processes remain accountable and inclusive.

Why Human-Centered AI Matters

For AI to be effective and ethical, it must align with diverse human needs. Key pillars of HCAI include:

- **Accessibility:** AI should cater to people across different linguistic, educational, and technological backgrounds.
- **Transparency & Trust:** AI-driven decisions must be understandable to users, especially in high-stakes domains like healthcare, finance, and governance.
- **Fairness & Bias Mitigation:** AI models should be trained on diverse datasets to prevent discriminatory outcomes.
- **Ethical Deployment:** AI should support, rather than replace, human professionals, particularly in fields like education, healthcare, and legal systems.

Additionally, AI should empower users through interactive and explainable interfaces that promote trust and comprehension. Designing AI with a human-centric mindset ensures inclusivity, ethical responsibility, and social alignment.

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Human-Centered AI (HCAI) design ensures AI-driven solutions are aligned with human needs, behaviors, and ethics, integrating design thinking and data science to enhance user experiences. Unlike traditional Human-Centered Design (HCD), HCAI goes beyond usability to incorporate AI's computational power while ensuring fairness, transparency, and interpretability.

Human-Centered AI vs. Traditional AI

Unlike traditional AI, which focuses on maximizing efficiency and automating tasks, HCAI emphasizes human-AI collaboration and ethical decision-making. Here are key differences:

- **Education:** Traditional AI automates grading and content delivery, while HCAI creates personalized learning platforms that adapt to individual students' needs.
- **Healthcare:** Traditional AI optimizes diagnosis and data processing, while HCAI ensures AI respects patient comfort, privacy, and emotional well-being.
- **Finance:** Traditional AI maximizes risk analysis for investments, while HCAI ensures transparency and prevents biased credit scoring.
- **Transportation:** Traditional AI focuses on developing fully autonomous vehicles, while HCAI enhances driver-assistance systems to improve safety and comfort.
- **Customer Service:** Traditional AI chatbots handle queries efficiently, whereas HCAI-powered assistants detect user frustration and escalate issues to human agents when necessary.

The Human-Centered AI Design Process

Stage 1: Empathize & Hypothesis

The Empathize & Hypothesis stage is where designers, engineers, and data scientists collaborate to:

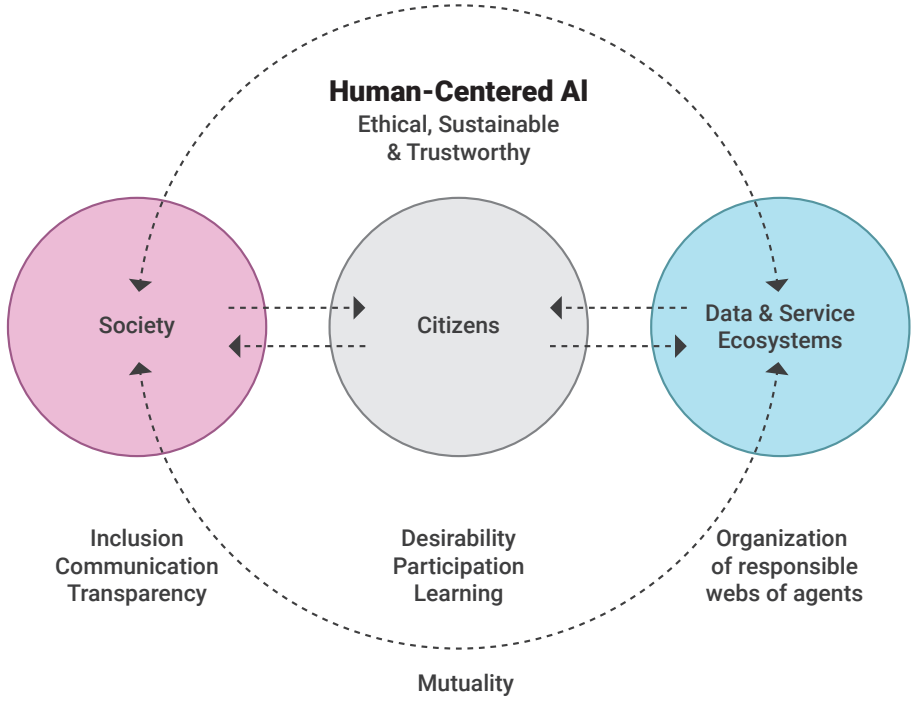
- Understand user needs deeply
- Assess AI's potential to enhance user experience
- Identify key opportunities where AI provides unique value
- Develop initial hypotheses about how AI should function

This phase relies on qualitative and quantitative insights to inform AI development, ensuring that technology does not dictate design but rather serves as an enabler of better human experiences.

Key Design Goals for Empathize & Hypothesis

To create user-centered AI solutions, teams should:

- **Engage in User Research:** Conduct qualitative interviews, surveys, and ethnographic studies to understand the motivations, pain points, and workflows of target users.
- **Apply Design Thinking Techniques:** Use methodologies such as Jobs-to-be-Done (JTBD) and User Journey Mapping to contextualize user challenges.
- Leverage AI Ideation Frameworks: Use tools like:
  - AI Design Sprints to rapidly prototype AI concepts
  - AI Prompt Card Decks for brainstorming AI use cases
  - AI Canvases to visualize potential AI applications and associated risks
- **Assess Uncertainty & Risk:** Categorize AI-driven decisions into levels of uncertainty to mitigate risks early in the process:
  - Low uncertainty → Low risk
  - Medium uncertainty → Some risk
  - High uncertainty → High risk



▲ Fig 9.1 **An overview of Human-Centered AI Design**

Pairing Designers with Data Scientists

A significant shift in AI development is the close collaboration between designers and data scientists. This partnership ensures that:

- Designers bring human insights to data science models
- Data scientists align their models with real-world user needs
- AI solutions are designed with a balance between automation and augmentation.

A notable example of this approach is IBM's AI Fairness 360 Toolkit, which helps designers and data scientists detect and mitigate biases in AI models collaboratively.

Optimizing AI: Precision vs. Recall

When developing AI models, teams must decide whether to prioritize precision or recall:

- High Precision → Reduces false positives but may miss relevant cases
- High Recall → Captures all relevant cases but may include false positives

For example, in a medical diagnosis AI, it's more critical to prioritize recall to avoid missing potential cancer patients (false negatives). In contrast, for fraud detection AI, prioritizing precision may be better to prevent blocking legitimate users.

Using frameworks like the Google People + AI Guidebook, teams can design reward functions that balance these trade-offs effectively.

Stage 2: Define

In the Define phase, teams refine the problem statement based on insights from Stage 1. This phase involves:

- Synthesizing research data to define user pain points
- Creating personas to represent user types
- Developing a problem statement that captures the core challenge AI aims to solve
- Identifying AI opportunities within constraints like ethical considerations, feasibility, and regulatory compliance

A clear problem definition ensures that AI solutions remain focused and impactful, preventing scope creep.

Stage 3: Ideate

The Ideate phase encourages brainstorming multiple solutions. Methods used include:

- **Storyboarding AI Interactions:** Mapping user journeys to visualize AI integration points
- **Sketching AI Workflow Models:** Conceptualizing AI behaviors and outputs
- **Using AI-Specific Brainstorming Tools:** Google's People + AI Guidebook provides frameworks for AI-specific ideation

Teams should generate diverse ideas before narrowing down the best solutions based on feasibility, user impact, and ethical considerations.

Stage 4: Prototype

The Prototype phase involves creating tangible AI-powered experiences. Approaches include:

- **Wizard of Oz Testing:** Simulating AI behavior manually before full-scale implementation
- **Low-Fidelity Mockups:** Using tools like Figma or Sketch for early UI/UX prototyping
- **Building AI Proof-of-Concepts (PoCs):** Developing small-scale AI models for usability testing

Rapid prototyping allows teams to validate AI assumptions early, reducing development risks.

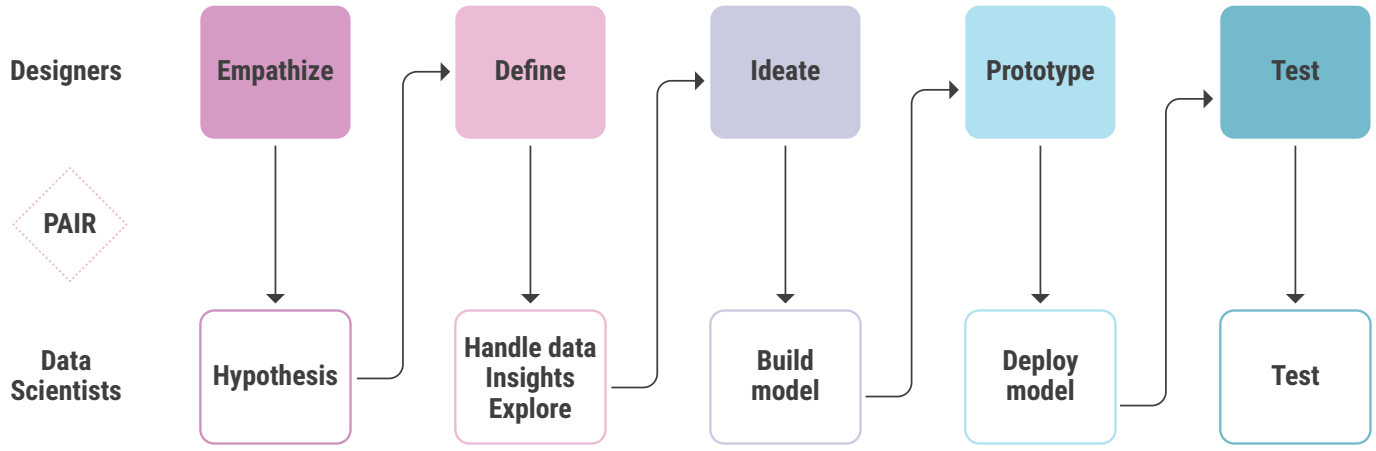
Stage 5: Test

The Test phase ensures AI aligns with user needs through:

- **User Testing with AI Prototypes:** Gathering real-world feedback
- **Bias & Fairness Audits:** Using tools like Microsoft's Fairlearn to detect biases

▼ Table 9.1 : Human-Centred Design vs Human-Centered AI design

Aspect	Human-Centered Design (HCD)	Human-Centered AI (HCAI)
Focus	User needs & usability	User needs + AI capabilities
Design Approach	Iterative problem-solving	AI-driven co-creation
Decision-making	Human-driven	AI-augmented & human-guided
Primary Concern	Usability & accessibility	Fairness, transparency, & interpretability
Data Utilization	Limited	Extensive AI-driven insights



▲ Fig 9.2 **Human-Centered AI Design Process**

- **Iterative Refinements:** Improving AI interactions based on testing insights

Continuous testing is vital to refining AI-driven experiences before full deployment.

Trends & Challenges in HCAI

- **Ethical AI Governance:** Organizations are developing AI ethics committees to oversee design and implementation
- **Adaptive AI Systems:** AI that evolves based on user interactions and real-time feedback
- **Regulatory Challenges:** Navigating GDPR, AI Act, and other compliance frameworks

As AI continues to shape our world, integrating human-centered principles into AI development is not just a best practice, it is essential for creating technology that empowers people and enriches lives.

Conclusion

The Empathize & Hypothesis phase in Human-Centered AI Design sets the foundation for AI solutions that are not only technically robust but also deeply aligned with human needs. By fostering collaboration between designers and data scientists, organizations can:

- Develop AI that is more intuitive, ethical, and impactful
- Reduce risks associated with bias and poor user experiences
- Create AI-driven services that truly enhance, rather than replace, human capabilities

As AI continues to shape our world, integrating human-centered principles into AI development is no longer optional-it is essential for governments to create technologies that empowers citizens and enriches lives.

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Technology Update

Building Secure Applications

Cybersecurity Best Practices for Modern Architecture

Edited by **C.J. ANTONY**

In today's hyper-connected world, cybersecurity is essential in application architecture. As businesses grow reliant on digital platforms, securing applications from cyber threats is critical for protecting data, maintaining trust, and ensuring business continuity. Cybersecurity in application architecture involves safeguarding hardware, software, and data from unauthorized access, breaches, and attacks. Without proper security, hackers can exploit vulnerabilities, steal data, or disrupt services. Cyberattacks can result in financial loss, legal repercussions, and reputational damage. Securing application architecture helps prevent these risks, ensuring systems remain resilient against emerging threats.

Secure System Development Life-Cycle (SSDLC)

To effectively secure applications, organizations must adopt a proactive approach, starting from the very beginning of development. Integrating security into every phase of the Software Development Life Cycle (SDLC) is the primary step to ensure security of applications. Instead of treating security as an afterthought, it should be embedded in design, development, testing, and deployment.

- **Early Security Integration:** Address security concerns from the design stage to identify risks and vulnerabilities before development begins.
- **Static / Dynamic Application Security Testing:** Use SAST and DAST tools to detect and fix vulnerabilities in code and applications.
- **Threat Modelling:** Conduct early threat modelling to anticipate security risks.
- **Security Training for Developers:** Train developers and stakeholders in secure coding and keep them updated on vulnerabilities like the OWASP Top Ten.

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Applications expose resources to targeted users and potential attackers. A secured architecture is the foundation of any application's defence against cyber threats. It provides a proactive and strategic defence, anticipating and mitigating potential risks before they manifest. It ensures a robust framework for protecting sensitive data and maintaining the integrity of the application as a whole.

Role-Based Access Control (RBAC)

Role-based access control is a method for managing user access to systems and resources based on a user's role or job function. RBAC allows IT administrators to assign roles to users with the appropriate permissions so that they are allowed access only to the information they need to know or perform their job duties. Access control is essential to protect sensitive parts of an application.

- **Limit Access by Role:** Implement RBAC to ensure users only access necessary data.
- **Backend and Frontend Enforcement:** Apply access controls at both user interface and backend levels.
- **API Restrictions:** Block unauthorized API access using reliable gateways.

Secure Authentication

Authentication confirms that only the right people with the right permissions can get access to the applications and data. Proper authentication mechanisms ensure sensitive data remains protected. Some of the tools and technologies that can be employed for this purpose are:

- **Multi-Factor Authentication (MFA):** Strengthen authentication with multiple forms of identity verification like DSC, OTP (Time-Based One-Time Password), FIDO2, Tokens, or app-based authenticators.
- **Password Policies:** Enforce long and strong passwords, with minimum 12 characters including special characters, numbers, and case variations.
- **Secure Session Management:** Implement secure session handling, automatic timeouts, and safe password reset mechanisms.
- **Password Communication:** Any change in password should be intimated to the user by SMS.

Proper Security Configuration

Security configuration is the process of setting up security controls and parameters for computer systems, networks, or software applications to reduce security risks. Proper security configuration is the key to security of any enterprise application. Incomplete and incorrect configurations can leave applications vulnerable, resulting in unauthorized access and exploitation.

- **Remove Default Settings:** Replace default credentials and configurations with secure alternatives.
- **Custom Error Pages:** Use custom error pages to obscure technical details.
- **Limited Privilege:** Provide only the required access to the users over the folders, databases and other resources.

Regular Patching and Vulnerability Management

Use of outdated software components in applications makes the application susceptible to cyber-attacks as the miscreants exploit the known vulnerabilities in these components. Regular and continuous patching to keep the components up-to-date reduces the risk of an application falling victim to attacks.

- **Patch Updates:** Apply security patches and updates regularly to frameworks and software.
- **Vulnerability Scanning:** Continuously scan applications for vulnerabilities.

- **Monitor Alerts:** Stay informed about vulnerabilities and patch them promptly.

Secure Communication Protocols

Secure communication protocols are rules and procedures that ensure that data transmission across a network is secure. A secure connection is one that uses encryption protocols to protect the data being transferred. Secured connections protect data from man-in-the-middle attacks, and ensures the data has not been tampered with during transit.

- **Enforce HTTPS:** Encrypt data between clients and servers using strong SSL/TLS configurations.
- **Disable Insecure Protocols:** Turn off outdated protocols like SSLv3.

Logging, Monitoring, and Incident Response

Logging, monitoring, and incident response are the three important activities for detecting and responding to security incidents. Log monitoring is essential for incident response as it enables organizations to detect and analyze security incidents, system failures, and operational issues. Hence, these activities should be envisaged while architecting the application itself.

- **Comprehensive Logging:** Record security-related events such as access attempts and system errors.
- **Log Security:** Ensure logs are securely stored and access is restricted to authorized personnel.
- **Incident Response Plan:** Develop formal procedures for handling security incidents.

DevSecOps Integration

DevSecOps is a framework that integrates security into every stage of the software development lifecycle. It stands for development, security, and operations. Each term defines different roles and responsibilities of software teams when they are building software applications. Integrating security into the DevOps process ensures continuous protection.

- **Security as Code:** Use tools like SonarQube and OWASP Dependency-Check in the CI/CD pipeline.
- **Container Security:** Secure containerized applications by using minimal base images and performing regular scans.

Database Security

Database security is crucial for protecting sensitive data from accidental and intentional threats. Data being the new oil, modern day hackers focus on data exfiltration or encryption through some ransomware. Compliance to legal frameworks like data protection laws also necessitates secure database management.

- **Use Stored Procedures:** Implement stored procedures and parameterized queries for database interactions instead of direct SQL queries.
- **Limited access to Data:** Access Privilege may be need to know basis, like Read Only access for Reports and Dashboard.
- **Secure file names and folders:** Do not keep files in directly accessible directories to prevent unauthorized access through the web server. Generate unique filenames using Global Unique Identifier (GUID) to prevent guessing and overwriting files.
- **Encryption at Rest:** Encrypt data using strong Keys to protect sensitive information stored in the database. Consider field level encryption for highly sensitive data like credit card information. Implement a secure key management system to handle encryption keys.

Traditional Security Approach	Modern Security Approach
Firewalls & VPNs	Zero Trust & Micro-Segmentatio
Basic Authentication	Multi-Factor & Passwordless Authentication
Patch Management	Continuous Security Monitoring & AI-driven Threat Intelligence
Perimeter-Based Security	Identity-Centric & Context-Aware Security
Manual Security Checks	Automated Security Testing & DevSecOps
Centralized Data Access	Role-Based & Least Privilege Access Control

API Security

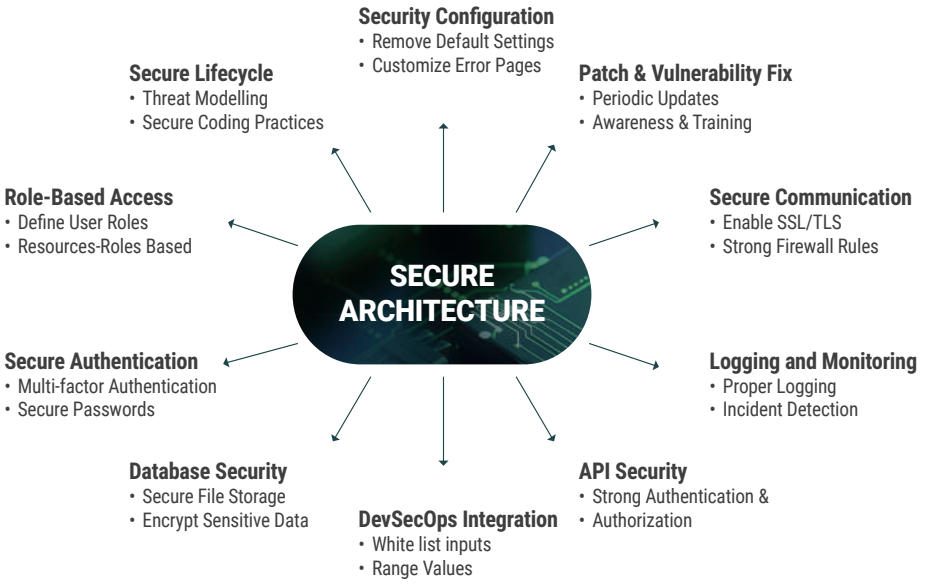
APIs (Application Programming Interface) are the communication channels between software systems. Protecting APIs from attacks deserves attention while architecting the application. API security is important because it protects sensitive data and prevents unauthorized access to APIs.

- **Strong Authentication and Authorization:** Implement robust authentication mechanisms to ensure that only authorized users and applications can access API. Enforce role-based access control (RBAC) to limit user permissions based on their roles.
- **Encryption in Transit:** Use appropriate protocols, like TLS (Transport Layer Security), to encrypt data being transmitted between the client and the server, as well as between different database components.

Conclusion

Implementing cybersecurity best practices is crucial for protecting systems, data, and users from evolving threats. By securing all stages of development, from design to deployment, organizations can prevent vulnerabilities, reduce the risk of attacks, and maintain compliance. Organisations may also formulate a Cyber Security Policy that govern how the information systems, data, and resources are protected from internal and external threats. The policy may be reviewed periodically for maintaining an effective cybersecurity strategy to ensure that the policies remain relevant, up-to-date, and aligned with evolving threats, technologies, and compliance regulations. These practices foster trust, reliability, and resilience in today's digital world.

Fig 10.1 **Benefits of Secure Architecture**



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Passkeys and WebAuthn

Revolutionizing Authentication with the Passwordless Technology

Edited by **C.J. ANTONY**

In today's digital era, securing online identities is more critical than ever. Traditional password-based authentication systems are increasingly vulnerable to cyber threats such as phishing, credential stuffing, and brute-force attacks. In this context, Passkeys and WebAuthn represent transformative advancements poised to redefine authentication paradigms.

What is WebAuthn?

Web Authentication (WebAuthn) is a core component of the FIDO2 (Fast IDentity Online) standard, developed by the FIDO Alliance and the World Wide Web Consortium (W3C). WebAuthn eliminates the reliance on passwords by leveraging public key cryptography. It allows users to authenticate using more secure methods, such as biometrics (fingerprint or facial recognition) or hardware security keys.

At its core, WebAuthn works by:

- Generating a unique key pair (public and private keys) for every service or application.
- Storing the private key securely on the user's device.
- Sending the public key to the server for authentication.

The server never has access to the private key, reducing the risk of credential theft during breaches.

The Rise of Passkeys

Passkeys build upon the WebAuthn standard to create a seamless, user-friendly authentication experience. A passkey is a passwordless credential tied to a device and secured through biometric or PIN-based verification. It eliminates the need for users to remember complex passwords while maintaining robust security.

Passkeys work by synchronizing between devices via cloud storage—like Apple's iCloud Keychain or Google Password Manager—ensuring accessibility across platforms while maintaining strong encryption and privacy controls.

Passkeys and WebAuthn are revolutionizing digital authentication by eliminating passwords and enhancing security. WebAuthn, a FIDO2 standard, uses public key cryptography for secure authentication, storing private keys on devices and preventing phishing and credential theft. In Kerala's Entebhoomi Integrated Land Information Management System (ILIMS) project, passkeys are integrated into the Single Sign-On (SSO) system to ensure secure access to land-related services. With stringent measures like single-passkey registration per user and OTP-based verification, the system balances usability and robust security. As global adoption grows, these technologies promise a safer, passwordless future for digital interactions.

Why Passkeys and WebAuthn?

Enhanced Security

- **Protection Against Phishing:** Passkeys and WebAuthn are resistant to phishing attacks because they rely on domain-bound credentials that cannot be reused on malicious websites.
- **Elimination of Passwords:** By removing passwords entirely, these technologies mitigate risks from weak, reused, or compromised credentials.

Improved User Experience

- **Ease of Use:** Users no longer need to create or remember passwords. Authentication becomes as simple as scanning a fingerprint or using facial recognition.
- **Cross-Platform Support:** Passkeys work seamlessly across devices, making the user experience consistent and hassle-free.

Compliance and Privacy

- WebAuthn is designed to comply with global data protection regulations. User credentials are stored locally on devices, ensuring privacy and reducing centralized storage risks.

Devices Compatible with Passkeys

Passkeys are compatible with a wide range of modern devices equipped to handle FIDO2/WebAuthn standards. Smartphones, particularly Android and iOS devices, are highly feasible due to their robust security features, including secure hardware like Android's Secure Element and iOS's Secure Enclave for storing cryptographic keys. These devices also feature built-in biometric authentication, such as fingerprint or facial recognition, enabling seamless, secure, and user-friendly passwordless authentication. In addition to smartphones, tablets and laptops with secure hardware (e.g., Secure Enclave, TPM) and biometric capabilities are common choices. Dedicated physical options like hardware security keys (e.g., YubiKey, Google Titan) provide enhanced security for sensitive environments. Furthermore, desktops with compatible biometric devices and cloud-based platforms like iCloud Keychain and Google Password Manager extend passkey functionality, offering cross-platform synchronization and accessibility for modern digital interactions.

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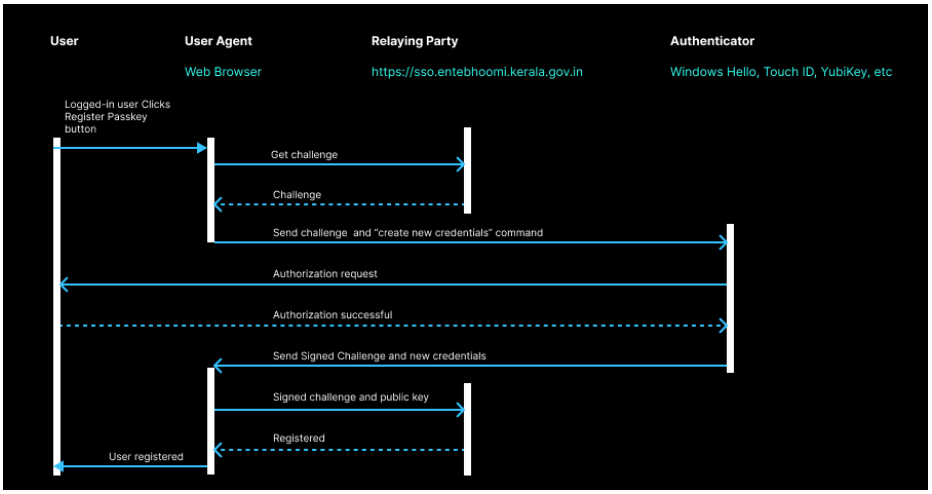
Key Components in Passkey Authentication

Passkey authentication involves four critical components working seamlessly together: the user, user agent, relying party, and authenticator.

- **User:** The individual who initiates the authentication process by interacting with a service or application. The user provides a biometric input (e.g., fingerprint or facial recognition) or a PIN to verify their identity.
- **User Agent:** This is typically the web browser or application acting as an intermediary between the user and the service. Popular user agents include browsers such as Google Chrome, Microsoft Edge, Mozilla Firefox, and Apple Safari. The user agent handles communication with the relying party and interacts with the authenticator to facilitate secure authentication. These web browsers provide built-in support for WebAuthn through JavaScript APIs. These APIs enable seamless integration of passwordless authentication into web applications, allowing developers to securely register and authenticate users using Passkeys.
- **Relying Party:** The service or application requesting authentication (e.g., a government portal like Entebhoomi). The relying party stores the public key generated during passkey registration and uses it to verify the user's authentication response.
- **Authenticator:** The device or system that securely generates and stores cryptographic keys. Examples include:
  - **Built-in Authenticators:** Modern devices such as iPhones, Android smartphones, Windows laptops (with Windows Hello), and macOS devices (with Apple Secure Enclave) that securely handle authentication.
  - **External Authenticators:** Hardware security keys like YubiKey, Google Titan Key, or Feitian keys that connect via USB, NFC, or Bluetooth.
  - **Cloud-based Authenticators:** Services like Apple's iCloud Keychain, Google Password Manager, and Microsoft Authenticator that enable synchronized Passkeys across multiple devices.



▲ Fig 11.1: Diagram illustrating the Passkey Registration process

These components, supported by industry leaders like Apple, Google, and Microsoft, work together to deliver a seamless, secure, and passwordless authentication experience. This ensures robust security while maintaining ease of use for end users in modern digital interactions.

Use Case: Passkeys in the Entebhoomi, the Integrated Land Information Management System Project

The Ente Bhoomi Project, spearheaded by the Government of Kerala, aims to modernize and digitize land-related services across the state. As a part of the Integrated Land Information Management System (ILIMS), it integrates and streamlines services from the Survey, Registration, and Revenue Departments. Leveraging advanced technologies, the project provides citizens with seamless access to land records, digital survey services, and real-time updates on land activities.

A key innovation in the Entebhoomi Project is its integration of passkeys to enhance both security and user experience. The project employs an in-house developed Single Sign-On (SSO) system, connecting the Survey, Registration, and Revenue Departments. This SSO facilitates secure user authentication using passkeys.

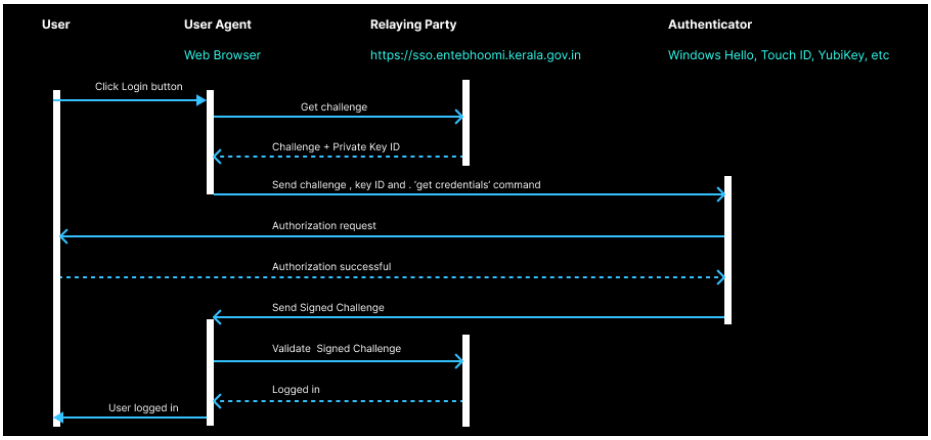
To address the critical security needs of government applications, the implementation of passkeys adheres to strict measures. Authentication is restricted to the specific passkey registered for the user within the application. The registration process is further secured through OTP verification, ensuring that only the rightful user can complete it. These comprehensive safeguards establish a robust framework for secure and efficient access to digital services.

Conclusion

The transition to Passkeys and WebAuthn in eGovernance systems marks a paradigm shift, promising a future where citizens can interact with public services securely and effortlessly. These technologies offer governments the ability to safeguard sensitive data, enhance user trust, and reduce operational costs, making them a vital component of modern digital strategies.

As governments and organizations increasingly embrace passwordless authentication, they pave the way for a secure, transparent, and citizen-centric digital ecosystem. Passkeys and WebAuthn are not just technological advancements but strategic investments that ensure resilience in an interconnected and threat-prone world. By adopting these solutions today, eGovernance systems can position themselves at the forefront of the digital revolution, delivering unparalleled value to citizens and stakeholders alike.

▼ Fig 11.2: Diagram illustrating the Passkey based authentication process



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Appscape

Mobile technology has emerged as a primary tool for governments to serve their citizens. It has bypassed the need of traditional physical networks for communications and collaborations. It is also much more affordable and accessible, thus strengthening the nation through better citizen-government interaction. To further nourish this interactivity, NIC has created a repository of more than 730 mobile apps available through both the Android and iOS platforms. This issue of Appscape covers some of the more popular mobile apps launched recently. These apps belong to different sectors such as Administration, Development, Finance, Public Distribution, Health and Education.

School Safety App

The School Safety mobile app, developed by the NIC Himachal Pradesh, for the State Disaster Management Authority (SDMA), is a powerful solution to enhance school safety and disaster preparedness. Tailored to meet the unique needs of schools across the state, the app boasts a range of features designed to streamline the creation and management of Disaster Management Plans (DMPs). Its key features are:

- **Data Collection and Entry:** Schools can input vital safety-related parameters such as emergency exits, fire safety equipment, evacuation plans, and infrastructure details.
- **Automated DMP Generation:** Based on the data provided, the app generates a comprehensive and customized DMP for each school, saving time and ensuring accuracy.
- **User Accessibility:** App access is provided to school administrators and relevant officials, enabling them to review and update safety measures.
- **Centralized Data Repository:** The app maintains a secure database of all school safety parameters, ensuring consistent disaster preparedness.

By integrating these features, the app not only fosters a culture of safety in schools but also empowers institutions to be well-prepared for emergencies, ensuring the safety of students and staff alike.

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D-Krishi

D-Krishi app is designed to facilitate the efficient allocation and distribution of seeds, micro-nutrients, and seed treatment chemicals to genuine cultivators, including tenant farmers, across Andhra Pradesh. Through its integration with Rythu Bharosa Kendrams (RBKs) located at the village level, it ensures transparency in agricultural resource distribution. Its key features are:

- **Tailored Seed Allocation:** Village Agriculture Assistants record farmers' requirements at RBKs for major crops like Groundnut, Paddy, and Bengal Gram. The app calculates seed entitlement automatically based on the farmer's cultivation area.
- **Digital Payment Integration:** Farmers pay the non-subsidy portion seamlessly through a digital payment system.
- **Consolidated Demand Management:** Confirmed seed demands are consolidated and shared with seed suppliers. Stock is strategically positioned at accessible village locations for distribution.
- **Streamlined Distribution:** RBKs serve as the distribution hubs, where farmers receive their allocated resources promptly, reducing delays and ensuring equitable access.

Over 15 lakh farmers benefit from the D-Krishi app, enjoying a hassle-free process to secure subsidized seeds and other agricultural inputs.

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Gram Samvaad

Gram Samvaad, developed by NIC-MoRD Group in collaboration with the Ministry of Rural Development, is a transformative tool aimed at empowering rural citizens by providing seamless access to vital information. Designed as a citizen-centric mobile application, it serves as a single-window platform for information at the Gram Panchayat level, covering key rural development programs. Its key features are:

- **Comprehensive Program Coverage:** The app provides details on seven flagship programs of the Ministry of Rural Development, including their objectives, scope, and performance metrics.
- **14th Finance Commission Insights:** Users can access information about grants to local bodies recommended by the 14th Finance Commission and track fund releases.
- **Transparency and Accountability:** By offering real-time information, the app promotes transparency in the implementation of rural development schemes and enhances accountability among stakeholders.

The app is a significant step toward empowering rural communities, fostering awareness, and improving governance. By bridging the information gap, it encourages active participation of citizens in the developmental process.

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Thittam App

Thittam app, developed for the Rural Development and Panchayat Raj Department, Tamil Nadu, is a powerful digital tool designed to enhance transparency, efficiency, and accountability in the implementation of rural development projects across the state. Its key features are:

- **User Authentication:** Assistant Engineers and Overseers across 388 blocks in 37 districts log in with credentials provided through the Tamil Nadu Rural Development Department Portal.
- **Work Progress Tracking:** The app displays ongoing works within the user's jurisdiction, allowing them to monitor and capture the progress of over 500 types of projects.
- **Geo-Coded Photo Documentation:** Stages of project execution are documented with geo-coded photographs, ensuring precise location-based tracking of works.
- **Geo-Fencing:** Each project site is geo-fenced, allowing users to mark/monitor locations accurately.
- **Offline and Online Functionality:** The app supports both online and offline modes, ensuring seamless usage even in remote areas.

The app generates detailed reports at block, district, and state levels, facilitating effective monitoring and decision-making for schemes covering over 80,000 habitations across 12,525 village panchayats.

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e-Employment Kerala

The Employment Department under Government of Kerala, has introduced the e-Employment Kerala mobile app to modernize the employment exchange process, providing seamless connectivity between job seekers and employers. Some of the Key Features of the app are:

- **Registration and Renewal:** Job seekers can renew their employment registration effortlessly, including special renewal options for those who missed their deadlines as per government guidelines.
- **Profile Management:** Users can request updates to their personal and communication details directly through the app.
- **Exchange Transfers:** Candidates can transfer their employment exchange registration when they relocate, ensuring continuity in job opportunities.
- **Private Job Listings:** Offers job opportunities from private employers.
- **Helpline Support:** Provides district-wise helpline numbers with a tap-to-dial feature for easy assistance.

By integrating these services, e-Employment Kerala empowers job seekers to stay informed and proactive, fostering transparency and accessibility in the job market.

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eGranthalaya

eGranthalaya mobile app transforms library access, bringing a wealth of articles, e-books, journals, and news items to your fingertips. With your member login, you can explore global e-resources from anywhere in the world, ensuring that knowledge is always within reach. The app supports a common platform for all libraries, enabling multi-tenancy access through a single instance. Its advanced search capabilities, including basis, faceted, and Boolean filters, make finding resources quick and efficient.

Through eGranthalaya, users can discover local e-resources and news items relevant to their interests while exploring books and holdings across libraries. With just a click, you can request book issuance, inter-library loans, or reserve your selected titles, simplifying the borrowing process. Union catalogs across multiple libraries enhance access, making the app a one-stop resource for library users.

The app goes beyond traditional library services with features like an e-books manager, integrated Z39.50 search, and digital library access. It supports cataloging for shared and non-book materials while adhering to MARC 21 and AACR2 standards. Notifications through SMS and email ensure users stay updated on their reservations and requests.

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PM-KUSUM App

The Ministry of New and Renewable Energy (MNRE), Government of India has introduced the Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM-KUSUM) Scheme to support farmers in adopting renewable energy for agricultural purposes.

The PM-KUSUM mobile app is a vital tool designed for farmers, State Implementing Agencies (SIAs), and empanelled agencies to streamline the scheme's benefits and ensure efficient management.

Through this app, farmers can monitor the functioning of their solar-powered pumps in real-time, ensuring optimal performance and reducing downtime.

Additionally, the app provides a platform for farmers to log complaints related to pump operations and track their status, fostering transparency and timely resolution of issues.

By integrating renewable energy with digital solutions, the PM-KUSUM app not only enhances the efficiency of agricultural operations but also contributes to sustainable energy practices, empowering farmers to adopt eco-friendly methods while addressing their energy needs effectively.

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Empowering Aged Care with Technology: Australia's Digital Vision for the Elderly

Australia has introduced its first Aged Care Data and Digital Strategy, emphasizing the transformative power of data and digital technologies to enhance care and well-being for the elderly. This strategy focuses on preserving personal choice while making in-person services more accessible and efficient through technology.

A key component of the strategy is better use of aged care data, which aims to reduce administrative burdens for workers and service providers. This allows more time for direct, person-centered care. The strategy also includes developing AI systems for aged care, designed to protect privacy while improving service delivery.

The Strategy aims to achieve four key outcomes:

- Assist older adults and their support systems in managing and participating in their care.
- Digitally empower aged care workers and professionals to offer higher quality, more connected care.
- Facilitate data sharing to create a sustainable, continuously improving aged care system.

Establish modern data and digital foundations for a collaborative, standards-based care system.

By integrating digital technology, the strategy aims to save up to one-third of administrative time, enhance workforce digital skills, and introduce new data-sharing policies.

A detailed action plan will guide the strategy's implementation, with regular updates on progress and new activities. The Albanese Government will collaborate with state and territory health departments and other Commonwealth agencies to integrate aged care with health, disability support, and veterans' care.

The Minister for Aged Care highlighted the Digital Strategy's role in boosting the digital health literacy of older individuals, granting them greater choice and independence. The strategy's vision includes short-term goals of enhancing service efficiency and long-term goals of establishing robust digital infrastructures to keep the aged care sector adaptive and resilient.

Australia's Department of Health and Aged Care is committed to transforming aged care with modern technologies, aiming to deliver the highest quality person-centered care for older people. They support research to ensure safe and effective use of data and technology for patients and healthcare professionals.

With more older Australians accessing care than ever before, valued at AU$ 26.8 billion, the aged care sector is expected to grow by 5.5% annually over the next five years. By 2030-31, aged care is projected to account for 5% of total government spending.

Source- *https://www.health.gov.au/*

Connected Vehicle Technology: A Smart Approach to Traffic Management

Traffic congestion is a growing concern for urban planners and policymakers worldwide. In an effort to enhance road safety and optimize traffic flow, the city of Tampa, Florida, is expanding its connected vehicle program on the Selmon Expressway. This initiative aims to leverage data-driven insights to improve driver behavior, facilitate efficient traffic management, and even incentivize responsible driving through potential toll discounts.

The Tampa Hillsborough Expressway Authority (THEA), in collaboration with the University of South Florida's Center for Urban Transportation Research (USF CUTR), has been awarded a $4 million grant by the U.S. Department of Energy. This funding will support the development of the Smart Eco-Driving Connectivity for Urban Roadway Efficiency platform. The goal is to use connected vehicle technology to analyze traffic patterns, reduce congestion, and enhance real-time communication between vehicles and roadway infrastructure.

This project builds upon previous THEA initiatives, which integrate vehicle data, mobile device analytics, and roadside unit inputs to generate comprehensive traffic insights. The technology enables transportation agencies to monitor roadway conditions, issue timely alerts, and improve traffic response mechanisms.

The project will be implemented in three key phases:

Data Collection and Analytics: The initial phase, expected to last a year, will involve gathering detailed traffic data using INRIX, mobile devices, and roadside units. Researchers will analyze this information to pinpoint congestion sources, whether due to increased traffic volume or specific incidents.

Driver Communication and Alerts: Based on analytics, targeted messages will be sent to drivers to encourage behavior that promotes smoother traffic flow.

Driver Scoring and Incentives: A potential future phase may introduce driver scoring mechanisms, where responsible drivers could earn toll discounts for adhering to optimal driving behaviors.

The application of connected vehicle technology extends beyond managing congestion. It can also facilitate better maintenance project planning and inform adaptive traffic signal timing. By integrating AI-driven predictive analytics, authorities can proactively address traffic bottlenecks and streamline road operations.

Other metropolitan areas, such as Austin, Texas, have explored mode-shift incentives, offering free public transport passes, bike-sharing memberships, and cash-based rewards to reduce reliance on private vehicles. Such multi-modal approaches provide a blueprint for integrating diverse transportation options in smart cities.

Source- *https://www.govtech.com/*

DeepSeek-R1: China's Open-Source Leap in AI Reasoning

The global AI landscape is witnessing a significant shift as open-source models continue to challenge proprietary giants. DeepSeek, a Chinese AI startup renowned for its commitment to open technologies, has unveiled DeepSeek-R1, an advanced reasoning model that rivals OpenAI's o1 in mathematics, coding, and logical reasoning. The highlight? It delivers comparable performance at a fraction of the cost.

Built on the DeepSeek V3 mixture-of-experts model, DeepSeek-R1 advances the open-source movement by narrowing the performance gap between publicly available models and proprietary solutions. Notably, the model has been instrumental in distilling six Llama and Qwen models, enhancing their capabilities. In some benchmarks, a distilled Qwen-1.5B model outperformed GPT-4o and Claude 3.5 Sonnet in select mathematical tasks, proving the potential of open-source AI.

All these models, including DeepSeek-R1, are open-source and accessible on Hugging Face under an MIT license, reinforcing the drive towards AI democratization.

DeepSeek-R1 exhibits performance on par with OpenAI's o1, demonstrating its strength in logical reasoning and problem-solving:

- **Mathematics:** Scored 79.8% on AIME 2024 (vs. o1's 79.2%) and 97.3% on MATH-500 (vs. o1's 96.4%).
- **Coding:** Achieved a Codeforces rating of 2,029, outperforming 96.3% of human programmers.
- **General Knowledge:** Attained 90.8% accuracy on MMLU, closely trailing o1's 91.8%.

These numbers demonstrate that open-source models are rapidly closing the gap with proprietary solutions, providing scalable and cost-effective alternatives.

DeepSeek-R1's development followed a multi-stage training approach, combining reinforcement learning (RL) and supervised fine-tuning:

- **RL-Driven Self-Evolution (DeepSeek-R1-Zero):** The initial model was trained entirely using trial-and-error reinforcement learning, leading to significant reasoning advancements but also challenges in readability and consistency.
- **Refinement Through Supervised Learning:** Addressing these issues, DeepSeek incorporated supervised fine-tuning on curated datasets, improving fluency, coherence, and factual accuracy.
- **Final Optimization:** The model underwent an additional RL phase, fine-tuning responses across mathematics, logical reasoning, factual QA, and cognitive tasks.

This hybrid approach enabled DeepSeek-R1 to achieve performance parity with OpenAI's o1-1217 while maintaining language precision and logical consistency.

A major differentiator for DeepSeek-R1 is its affordability. Compared to OpenAI's premium-priced o1, DeepSeek-R1 offers a 90-95% cost reduction:

Model	Input Token Cost (per million)	Output Token Cost (per million)
OpenAI o1	$15.00	$60.00
DeepSeek-R1	$0.55	$2.19

This drastic price advantage makes DeepSeek-R1 a compelling choice for enterprises, developers, and AI researchers seeking high-performance reasoning models at a sustainable cost.

DeepSeek has made its model widely accessible:

- Test as "DeepThink" on DeepSeek's chat platform (akin to ChatGPT).
- Download the model weights & code from Hugging Face (MIT license).
- Use the API for seamless integration into applications.

DeepSeek's move strengthens the open-source AI movement, proving that publicly available models can rival closed commercial solutions. With the continued push toward Artificial General Intelligence (AGI), advancements like DeepSeek-R1 demonstrate that the future of AI is not just exclusive to tech giants—but a collaborative and accessible endeavor.

By prioritizing affordability, transparency, and high performance, DeepSeek is reshaping the AI landscape, proving that open-source models are no longer just alternatives—they are contenders. The race for AI dominance is now an open battlefield.

Source- https://www.govtech.com/

Bharat 6G Alliance Joins Global Forces to Shape the Future of Telecom

India is fast-tracking its 6G ambitions with strategic global partnerships. The Bharat 6G Alliance (B6GA) has signed MoUs with the 6G Smart Networks and Services Industry Association (6G IA) of Europe and 6G Flagship of Oulu University, Finland, strengthening India's role in next-gen telecom innovation. This follows an earlier agreement with the NextG Alliance of the USA.

Spearheaded by the Department of Telecommunications (DoT), Ministry of Communications, these collaborations aim to:

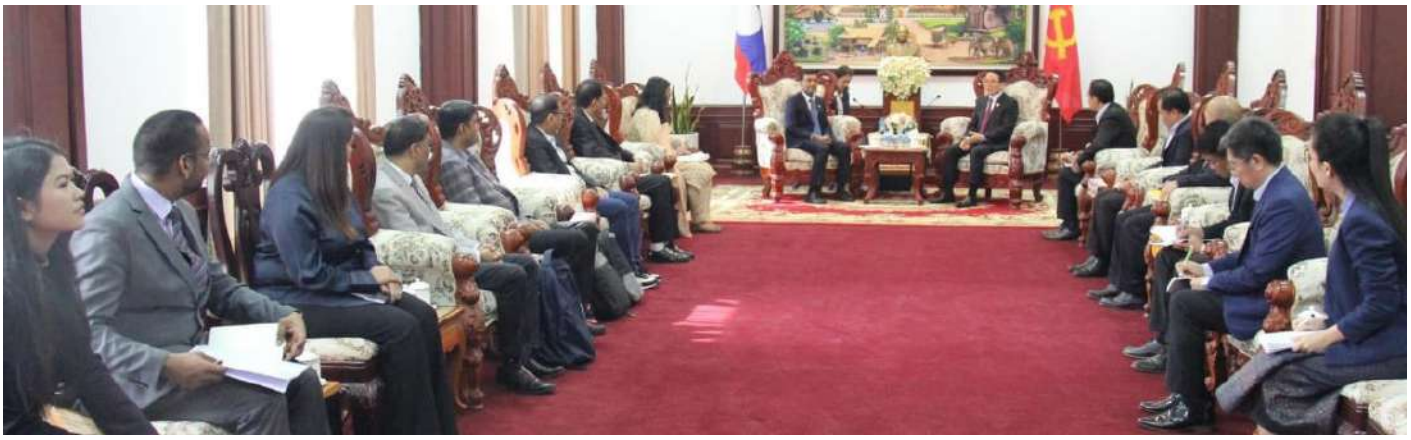
- Align 6G research between India, Europe, and the USA.
- Develop secure, resilient telecom networks and supply chains.
- Conduct pilots and real-world trials of 6G technologies.
- Influence global standards and shape the future of connectivity.

India's Bharat 6G Vision is already evaluating 470 research proposals to accelerate innovation. With zero-latency networks, AI-driven communications, and robust cybersecurity, 6G will revolutionize industries—from smart cities to space tech.

This telecom diplomacy strengthens India's digital leadership, economic growth, and national security, aligning with Viksit Bharat's vision of a globally competitive, future-ready nation. The future of telecom is being built today—and India is leading the charge.

Source- https://pib.gov.in/

Indian Delegation Discusses Digital Governance Cooperation with Lao PDR



A high-level delegation from India's Ministry of Electronics & Information Technology (MeitY), National Informatics Centre (NIC), and the Ministry of External Affairs (MEA), led by Ambassador Prashant Agrawal, met with H.E. Vilayvong Bouddakham, Minister of Home Affairs of the Lao People's Democratic Republic on 5th December 2024 in Vientiane, Lao PDR. The delegation briefed the Honorable Minister on digital governance cooperation between the two nations.

During the discussions, the Indian delegation shared insights into India's advancements in e-Governance, digital public infrastructure, and emerging technologies. The meeting underscored India's commitment to fostering bilateral collaboration in digital transformation, capacity building, and technology-driven governance initiatives.

H.E. Vilayvong Bouddakham welcomed the delegation and acknowledged India's expertise in digital governance. He expressed keen interest in leveraging India's experience in digital platforms to enhance public service delivery and administrative efficiency in Lao PDR.

The engagement reflects the growing partnership between India and Lao PDR in the realm of digital governance and technology exchange. Both sides emphasized the importance of knowledge sharing, technical cooperation, and exploring avenues for joint initiatives in digital transformation.

This meeting marks a significant step in strengthening bilateral ties and expanding India's cooperation with Lao PDR in the field of e-Governance and digital public services.

longer just alternatives—they are contenders. The race for AI dominance is now an open battlefield.

Source- https://www.govtech.com/

Danish National ID Centre Delegation Visits NIC Headquarters to Strengthen ICT Cooperation

A three-member delegation from the National ID Centre of Denmark visited the National Informatics Centre (NIC) Headquarters in New Delhi on 27th November 2024, marking a significant step towards strengthening ICT cooperation and exploring avenues for innovation and growth.

During the visit, NIC officials showcased a range of digital solutions that have been instrumental in facilitating e-Governance at all levels across India. The discussions focused on digital identity management, secure authentication frameworks, and technology-driven public service delivery, highlighting India's advancements in digital infrastructure and governance.

The Danish delegation expressed keen interest in NIC's scalable and inclusive digital initiatives and engaged in knowledge-sharing on best practices in identity management, cybersecurity, and digital public services.

This exchange of expertise underscores the commitment of both nations to leveraging technology for enhanced governance and secure digital ecosystems. The meeting also paved the way for potential future collaborations in e-Governance, digital identity frameworks, and emerging ICT innovations.

Source- NIC HQ, New Delhi

Sikkim's First Free Wi-Fi Village Inaugurated at Rabdang

In a significant step towards digital transformation, Sikkim has inaugurated its first Free Wi-Fi Village in Rabdang on 1st October 2024. The Hon'ble Minister of Roads & Bridges, Nar Bahadur Dahal, led the ceremony, marking a milestone in bridging the digital divide in the state.

Located 40 km from Gangtok and 10 km from Singtam, Rabdang Village, part of the 17-Khamdong-Singtam constituency, is home to 72 households with a population of approximately 500. With Wi-Fi facilities now available in every house, this initiative aims to connect the village to the wider digital world, opening opportunities for education, business, and communication.

The Hon'ble Minister applauded NIC Sikkim for their pivotal role in realizing this project. "This initiative is not just about connectivity; it's about empowering our rural communities, revitalizing their economies, and equipping them with the tools to thrive in today's digital landscape," he said during his address.

Known for its serene landscapes and vibrant culture, Sikkim, the least populous and second-smallest state in India, is making notable strides in digital inclusion. By equipping Rabdang with internet access, the state reinforces its commitment to modernizing rural areas while preserving its unique identity.

The Free Wi-Fi Village initiative aligns with the government's vision of fostering inclusive growth and ensuring that even remote communities benefit from digital advancements. Rabdang's success story now stands as an inspiring model for other villages to follow, reaffirming Sikkim's dedication to bridging the urban-rural divide through technology.

Hon'ble Minister of Roads & Bridges, Nar Bahadur Dahal, addresses the community at Rabdang Village, emphasizing the transformative power of digital governance during the launch of Sikkim's first Free Wi-Fi Village

As the Hon'ble Minister concluded his visit, the residents of Rabdang celebrated not just the arrival of internet services but the promise of a more connected and empowered future.

– Dr. Laxmi Prasad Sharma, Sikkim

e-Sanad Portal Launched at Chandigarh University

The Ministry of External Affairs, in collaboration with the National Informatics Centre (NIC), launched the e-Sanad portal at Chandigarh University on 30th September 2024, marking a significant step toward simplifying document verification, attestation, and apostille processes. This digital platform, in line with the Digital India vision, aims to provide faceless, cashless, and paperless services for applicants requiring attestation and apostille of personal and educational documents.

The inauguration event, held in the university auditorium, was graced by Shri Dilip Kumar, IAS, Principal, Department of NRI Affairs, Government of Punjab, as the chief guest, and Shri Sanyam Aggarwal, IAS, Director, Department of Higher Education, as the guest of honor. Senior officials from NIC and the Ministry of External Affairs, including Shri IPS Sethi, Deputy Director General & Head of Group, MEA Informatics Division, and Shri Vivek Verma, Deputy Director General & State Informatics Officer, Punjab, also attended the ceremony.

The e-Sanad portal streamlines the traditionally cumbersome and time-intensive process of document verification. Applicants no longer need to make multiple visits to Document Issuing Authorities (DIAs), state government offices, or the CPV Division at the MEA in New Delhi. Instead, they can complete the entire process online.

Speaking at the event, Shri IPS Sethi highlighted the importance of NIC's efforts in supporting citizen-centric digital initiatives, emphasizing how e-Sanad aligns with the Hon'ble Prime Minister's vision for Digital India. A detailed demonstration of the portal was presented by Shri Raj Kumar Tickoo, Sr. Director (IT), showcasing its seamless functionality and benefits to both domestic and international students.

The Government of Punjab has fully implemented e-Sanad for personal documents across all districts as of September 2024. In just one month of operation, the portal processed approximately 5,700 applications, with 3,200 verified by DIAs and the Department of NRI Affairs and 2,300 attested and apostilled by the MEA.

Launch of e-Sanad Portal by Chief Guest and esteemed dignitaries on dias

Chandigarh University stands out as the first educational institution in North India to adopt the e-Sanad platform for educational document verification. This milestone underscores the university's commitment to student welfare and technological advancement.

Prominent attendees included Prof. (Dr.) Manpreet Singh Manna, Vice Chancellor of Chandigarh University, and Shri Satnam Singh Sandhu, Member of Parliament (Rajya Sabha), who praised the initiative's potential to empower students and ease the administrative burdens of overseas education and employment.

– Parminder Kaur, Punjab

Cyberabad Police Launches Digital Permissions Management System for Seamless Event Approvals

The Cyberabad Police Permissions Management System (CPPMS), a digital platform designed to simplify event permissions and improve efficiency for both citizens and authorities, was officially launched in Telangana on October 13, 2024. Developed by NIC, this user-friendly platform replaces the traditional process of physical submissions, enabling event organizers to apply for necessary permits online.

The new portal allows organizers to submit applications for all required permissions through a single interface, eliminating the need to visit multiple offices and significantly reducing paperwork and delays.

Applications must be submitted at least 10 calendar days or 7 working days in advance to ensure timely processing. Cyberabad Police officials stated, "Permissions will be granted within a specified timeframe, and in case of delays, applications will automatically escalate to higher officials to prevent unnecessary hold-ups."

The CPPMS empowers event organizers with a streamlined process for obtaining permissions and NOCs while providing authorities with an efficient, centralized system to manage approvals. This initiative aligns with Telangana's broader vision of leveraging technology to enhance governance and public service delivery.

With this launch, Cyberabad has taken a significant step toward improving transparency, accessibility, and efficiency in police services, ensuring a hassle-free experience for citizens.

The Cyberabad Police Permissions Management System (CPPMS) Launched by Cyberabad Police Commissioner Avinash Mohanty on 13th October, 2024

- Raynil John, Hyderabad

PM E-DRIVE Face Recognition System Revolutionizes Beneficiary Identification in EV Subsidy Disbursement

In a landmark step towards enhancing transparency and efficiency in government schemes, the PMeDRIVE Face Recognition System, the first of its kind in a Government of India initiative, has been unveiled on 3rd October 2024. This cutting-edge technology leverages a simple Android smartphone to perform Aadhaar-based face recognition, enabling accurate beneficiary identification and seamless subsidy disbursement for the purchase of electric vehicles (EVs).

The system's ability to recognize individuals using a standard mobile camera eliminates the need for complex hardware, making it both cost-effective and user-friendly. This innovation aligns with the government's commitment to fostering digital transformation across public services.

Speaking on the occasion, the Secretary, Ministry of Heavy Industries, lauded NIC for its pioneering contributions to digital innovation, stating that the PM E-DRIVE Face Recognition System sets a new benchmark for leveraging technology in governance.

By ensuring accurate identification of beneficiaries, the PM E-DRIVE system eliminates discrepancies and speeds up the process of subsidy disbursement under the electric vehicle purchase scheme. This initiative not only promotes the adoption of EVs but also exemplifies the government's vision of integrating technology to achieve a sustainable and efficient future.

With this groundbreaking development, the Ministry of Heavy Industries, in collaboration with NIC, reaffirms its commitment to empowering citizens through innovative and transparent digital solutions.

Shri Kamran Rizvi, Secretary, Ministry of Heaving Industries speaking on the benefits of PM E-Drive during the event

- Archana Sharma, NIC-HQ

Kendriya Vidyalaya Sangathan Migrates 153 Websites to NIC's S3WaaS Framework

In a significant move to enhance accessibility, security, and citizen-centric information dissemination, 153 Kendriya Vidyalaya Sangathan (KVS) websites have been successfully migrated to the S3WaaS Framework developed by NIC.

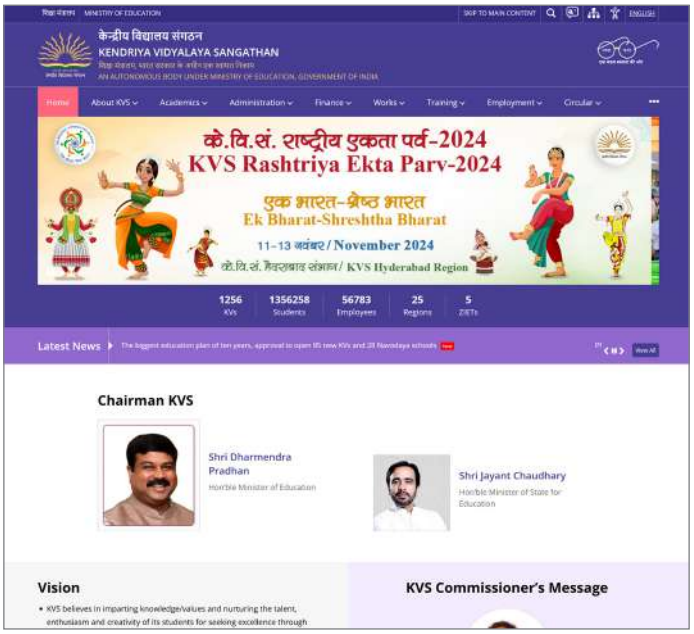
TThe S3WaaS (Secure, Scalable, and Sugamya Website as a Service) platform offers a robust and user-friendly solution for website development, providing government entities with ready-to-use templates designed for efficiency and inclusivity.

This migration ensures that the KVS websites align with global accessibility standards, enabling seamless access for all users, including those with disabilities. Additionally, the framework enhances security measures to safeguard sensitive information and ensures scalability to accommodate growing traffic and content needs.

The migration reflects the government's commitment to leveraging technology for citizen-centric governance. By adopting the S3WaaS platform, KVS can streamline information dissemination, making updates and essential details readily available to students, parents, and stakeholders.

NIC continues to play a pivotal role in empowering government institutions with innovative digital solutions, strengthening the nation's digital ecosystem while fostering transparency and accessibility.

- Hemendra Kumar Saini, NIC-HQ



GST e-Invoice System Marks 4 Years of Transforming Tax Compliance in India

The GST e-Invoice System, a landmark initiative in India's tax administration, celebrates its 4th anniversary, marking a significant milestone in simplifying and digitizing tax compliance for businesses. Launched in October 2020, the system has revolutionized invoice generation and reporting, enhancing transparency, reducing tax evasion, and streamlining operations for taxpayers and the government alike.

Over the past four years, the e-Invoice system has witnessed widespread adoption across industries, empowering businesses with real-time invoice validation and seamless integration with GST systems. This has not only reduced manual intervention but also minimized errors, ensuring accuracy and efficiency in tax reporting.

The e-Invoice system is a cornerstone of the Digital India mission, driving the transition to a paperless and technology-driven economy. Its features include automatic reporting to the GST portal, interoperability across businesses, and enhanced compliance monitoring by tax authorities.

Highlighting the system's success, a senior GSTN official said, "The GST e-Invoice System has transformed the tax compliance landscape, making it simpler and more efficient for businesses. As we celebrate four years of this initiative, we reaffirm our commitment to leveraging technology for better governance."

Achievements and Way Forward

- **Enhanced Compliance:** Over X million invoices have been generated, ensuring greater transparency and accountability.

- **Ease of Doing Business:** Streamlined processes have reduced the compliance burden for businesses.
- **Future Innovations:** Plans are underway to integrate advanced analytics and AI-driven solutions to further enhance the system's capabilities.

As the GST e-Invoice System enters its fifth year, it continues to be a testament to the power of technology in transforming governance and fostering a digitally empowered economy.

- Archana Sharma, NIC-HQ

Karnataka's eJanMa Revolutionizes Issuance of Digitally Signed Birth and Death Certificates

The eJanMa platform, a standardized software application developed by NIC, has set a new benchmark in Karnataka by providing digitally signed birth and death certificates with enhanced efficiency and accessibility. The platform is designed to streamline the registration and issuance process, offering citizens a seamless experience through integration with key government services.

Accessible at ejanma.karnataka.gov.in, eJanMa is a pivotal step toward Karnataka's digital transformation. It is integrated with platforms like Seva Sindhu, Aadhaar, Kutumba, Reproductive and Child Health (RCH), and SAKALA, ensuring interoperability and providing a comprehensive ecosystem for service delivery.

eJanMa empowers citizens with easy access to vital documents, reducing paperwork and eliminating the need for physical visits to government offices. Digitally signed certificates are not only secure but also align with the government's goal of making public services more transparent and efficient.

The integration with platforms such as Seva Sindhu and SAKALA ensures time-bound service delivery, while Aadhaar and RCH integration enhances accuracy and reliability. By linking with Kutumba, eJanMa contributes to a unified family database, further simplifying access to other government benefits.

NIC's development of eJanMa underscores its commitment to supporting Karnataka's push for digital governance. The platform is a testament to the power of technology in improving service delivery, ensuring citizens receive timely, secure, and accessible solutions for critical life events.

eJanMa dashboard

With eJanMa, Karnataka continues to lead the way in leveraging technology for a citizen-first approach, setting an example for other states to emulate.

- B. P. Srinivasan, Karnataka

Phulkari Web Portal to Empower Local Punjab Artisans

Phulkari Web portal - a digital initiative designed to promote the marketing of Phulkari and other handmade products crafted by women artisans associated with Self Help Groups (SHGs) under the Department of Cooperation, Punjab, was officially launched on November 20, 2024. The launch took place during a State-level event at Tagore Theatre, presided over by the Hon'ble Finance Minister, Punjab Shri Harpal Singh Cheema.

The event witnessed the esteem presence of senior officials, including Shri V.K. Singh, Special Chief Secretary cum Finance Commissioner Cooperation, Shri Vimal Kumar Setia, Registrar of Cooperative Societies (RCS), Smt. Anindita Mitra, Secretary Cooperation, Shri Girish Dayalan, Managing Director, Markfed and other dignitaries from across the state.

During the function Shri Vivek Verma, Deputy Director General & State Informatics Officer Punjab, who played a pivotal role in bringing this initiative to fruition, was also present with other officers of NIC Punjab including Shri Dinesh Sharma, Scientist F and HoD, Shri P.P. Singh, Scientist E and Smt. Parminder Kaur, Scientist E. During the launch event, SIO Punjab briefed about the features of the portal to Hon'ble Finance Minister Punjab.

The Phulkari Web Portal has been developed as a Progressive Web Application (PWA), adhering to GIGW 3.0 guidelines. It has been designed and developed through NICSI empaneled vendor under the supervision of NIC Punjab, led by Shri Dinesh Sharma, Sr. Director (IT) and HoD Div-5.

This platform enables the Department of Cooperation/Markfed, Punjab to showcase Phulkari and related artisan products, complete with detailed descriptions and pricing. Buyers can browse the portal, place online orders, and make payments seamlessly through an integrated CCAvenue Payment Gateway. Additionally, both sellers and buyers can track orders in real-time.

The portal features SMS, Email, and Sandes gateways, ensuring stakeholders stay informed about order status, payment updates, and delivery notifications. Integrated with India Post's shipping services, the system guarantees streamlined logistics. It also supports multimedia uploads, allowing artisans to showcase videos, images, and documents of their products. With a Content Management System (CMS), administrators can easily create and customize product categories and catalogs.

Hon'ble Finance Minister of Punjab, Shri Harpal Singh Cheema, launched the Phulkari Web Portal on November 20, 2024, to empower and promote local Punjabi artisans

Deployed at the State Data Centre, the portal is accessible at https://phulkari.punjab.gov.in.

- Parminder Kaur, Punjab

NIC's Rythu Bima and School Safety Mobile App Shine at National Awards

The 15th National Digital Transformation Conclave & Awards 2024, held on 13th December 2024 at Vivanta The Taj, Guwahati, recognized two exceptional digital initiatives developed by the National Informatics Centre (NIC) - the Rythu Bima web application and the Schools Safety Mobile App. These trailblazing projects exemplify the transformative power of technology in addressing critical social and governance challenges.

The Rythu Bima web application, developed by the NIC Telangana State Centre in collaboration with the Department of Agriculture, Government of Telangana, won the prestigious Digital Transformation in Digital Payments Award. This innovative platform, part of the Farmers Group Life Insurance Scheme, is the first of its kind in Telangana and India. It automates the entire workflow of the scheme, providing financial assistance of ₹5 lakhs to the dependents of deceased farmers, ensuring their social and economic security.

Key features of the platform include automated farmer identification, capturing nominee details, seamless integration with LIC for policy generation and claim settlement, and complete process automation to eliminate delays. This initiative highlights how digital innovation can effectively address critical social issues, offering timely financial support to vulnerable farming communities. The award was received by Smt. K. Radha Krishna, Sr. technical Director & ASIO (State), NIC Telangana State Unit, and Smt. Usha, Assistant Director, Agriculture Department, Government of Telangana.

The Schools Safety Mobile App, developed by NIC Himachal Pradesh for the Himachal Pradesh State Disaster Management Authority (SDMA), received the prestigious m-Governance Initiative of the Year Award 2024. Designed to ensure the safety of students, teachers, and stakeholders from natural disaster risks, the app aligns with the National School Safety Policy Guidelines. Available on Android and iOS, it facilitates the preparation of annual Disaster Management Plans (DMPs) through automated templates based on data entered by schools. Complemented by the School Safety MIS web application, it allows real-time monitoring by State, District, and Block authorities using a role-based dashboard.

Since its launch on 1st April 2023, the app has enabled 24,237 DMPs to be prepared and submitted, with a ranking system recognizing top-performing schools annually. This innovation has streamlined disaster preparedness processes and fostered accountability across schools. The award was received by Shri Sandeep Sood, Senior Director (IT), and Shri Sanjay Kumar, Director (IT), NIC Himachal Pradesh.

Union Minister Pralhad Joshi Commends NIC Team for Developing Subsidy Claims Application for NFSA

The Hon'ble Minister of Consumer Affairs, Food & Public Distribution, Shri Pralhad Joshi, lauded the efforts of the National Informatics Centre (NIC) team for their instrumental role in developing the Subsidy Claims Application for NFSA (SCAN Portal) in a event held on 7th December 2024 on New Delhi.

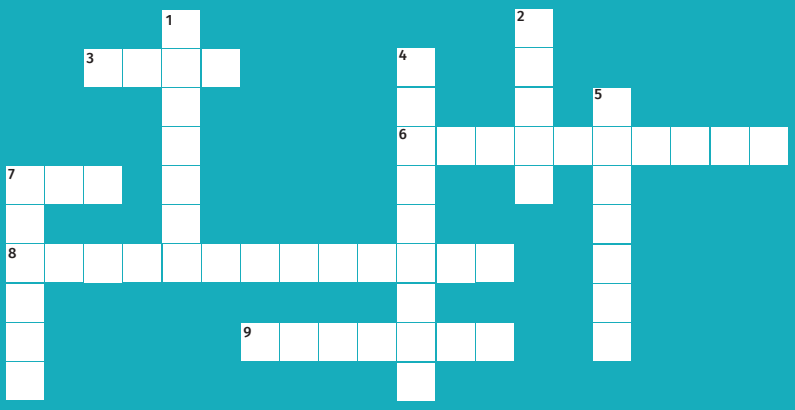
Shri Joshi specifically appreciated the contributions of Shri Alok Tiwari, Deputy Director General (DDG), Smt. Meenu Arora, and Shri Ravi Gupta, Senior Technical Directors (IT) for their dedication and technical expertise in creating a streamlined digital solution for subsidy claims under the National Food Security Act (NFSA).

The SCAN Portal is designed to enhance transparency, efficiency, and accountability in the subsidy disbursement process, ensuring seamless coordination between stakeholders. By leveraging technology, the platform aims to simplify claim processing, reduce delays, and enhance monitoring mechanisms within the food subsidy ecosystem.

Recognizing the NIC team's efforts, Shri Pralhad Joshi emphasized the importance of digital interventions in improving governance and public service delivery. He highlighted the critical role of technology in ensuring that benefits reach the intended beneficiaries efficiently.

The development of the SCAN Portal aligns with the government's vision of leveraging digital solutions to enhance efficiency and transparency in welfare schemes, reinforcing India's commitment to technology-driven governance.

NICROSSWORD #2



Scan QR code for the answers

Across

3. State Wide Area Network to connect state administration offices
6. Software with source code that anyone can inspect, modify, and enhance
7. NKN for connecting educational and research institutions
8. Protection against cyber threats and securing digital infrastructure.
9. Extremely large data sets analyzed computationally to reveal patterns and trends.

Down

1. A unique identification project by the Government of India
2. Unified Mobile Application for New-age Governance
4. An ICT solution for the management of hospital services
5. A paperless office solution by NIC for government departments
7. A nationwide communication network by NIC