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Editorial

India has been witnessing a remarkable revolution driven by the adoption of digital technologies. The rapid advances in digital infrastructure, coupled with a burgeoning startup culture, have propelled India onto the global stage as a digital superpower. India's digital transformation has transcended barriers and empowered its citizens in profound ways. The impact is felt across every facet of life, encompassing governance, education, healthcare, and commerce. Through the relentless efforts of both the government and private sectors, access to digital services has become more widespread, effectively bridging the urban-rural divide and bringing unprecedented opportunities to the farthest corners of the country.



At the core of India's digital success story lies the India Stack. This initiative has revolutionised access to services for Indians, transforming the nation into a truly connected society. India Stack has streamlined processes, reduced bureaucratic delays, and paved the way for efficient delivery of services, such as digital payments, identification, and financial inclusion. Furthermore, it has played a pivotal role in bridging the gap between urban and rural populations, forging new pathways for inclusive development.

Another fundamental pillar of India's digital transformation is the vibrant startup culture that has ignited the imagination of the youth. In recent years, the nation has experienced an exponential growth in startups that are founded with innovative ideas not only to disrupt traditional sectors but also to propel economic growth. These startups, in collaboration with government entities, are leveraging the power of technology to bring about transformative change within multiple communities. SugamyaWeb, one of the latest offerings by NIC, highlights the remarkable achievements that can be accomplished through such partnerships.

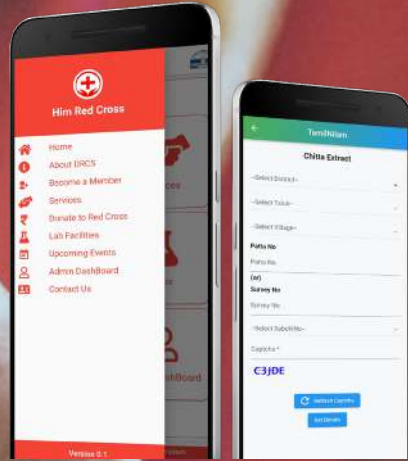
As we are approaching the Digital India Week '23, celebrating the unprecedented digital transformation of our country, it is crucial to acknowledge the profound impact that digital technologies, India Stack, and the startup culture have had and will continue to have on India's transformation. The nation has wholeheartedly embraced the digital wave, fostering connections among its people, bridging socio-economic divides, and opening up unparalleled opportunities for the youth. India's remarkable journey towards becoming a digital superpower serves as a testament to the limitless potential of technology and innovation in shaping the future of a nation.

Continuing the tradition of excellence, we at Informatics are happy to present you with an array of articles celebrating the impact made by NIC on the lives of common citizens. Behind the scenes, we are constantly working to enhance the reading experience by experimenting with different ways to present the content and graphics. It would be much appreciated if you could take out some time to write to us with your opinions and suggestions which may be addressed to editor.info@nic.in.

Before concluding, I would like to express my heartfelt gratitude to the Advisory Panel, Editors, State News Correspondents and rest of the Informatics team, for their invaluable contribution.

Thank you for reading!

Editor-In-Chief



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Mizoram State

Supporting the government through ICT

Edited by **KAVITA BARKAKOTY**

Established in 1989, NIC Mizoram State Centre has been a pioneer in ICT activities in the state. Over the years, the State Centre has played a crucial role in the digital transformation of Mizoram. With the presence of eight NIC District Centres, it serves as a catalyst for driving digital initiatives in Mizoram.

Currently, housed at the Old Secretariat, Aizawl, it offers a wide range of services. Utilising its technical expertise and adopting a collaborative approach, it ensures the availability of robust technology infrastructure. In addition, the Centre has been developing and maintaining state-level websites, portals, and applications. These platforms serve as important mediums of interaction between the government and citizens, promoting transparency, efficiency, and accountability. Through these initiatives, the Centre facilitates access to information and online services, enabling better delivery of public services to the people of Mizoram.

Established in 1989, NIC Mizoram has played an instrumental role in driving the digital transformation of the state. Through its innovative solutions, it has established a vital channel of communication between the government and citizens, fostering transparency, efficiency, and accountability in governance. By providing easy access to online services, the Centre has empowered the people to actively engage in governance processes and contribute to the development of the state.

To address this issue, an initial version of the software was developed using Visual Basic 6, but it only covered a portion of the system. This version was used for a certain period. In 2013, the software was redesigned and redeveloped using .NET technology, significantly improving its performance. The backend database system was powered by SQL Server, ensuring efficient data management.

eGPF (electronic GPF) system has been used to record GPF subscriptions, withdrawals, and recoveries, and to calculate interest and deposit linked insurance, as well as to generate Annual GPF Statements for every GPF subscriber employed by the Government of Mizoram.

Currently, there are more than 50,000 subscribers. Since the implementation of the redeveloped software in 2013, some features have been added and others have been modified due to changes in GPF rules in 2015, 2016, 2019, and 2023; the latest iteration, eGPF version 6, has been in operation since April 2023.

Treasury Computerisation

In collaboration with the user department, the State Centre customized the 'COMPACT' software developed by NIC Delhi. The software was implemented in 2012 at the Aizawl South Treasury, which is the largest treasury in the state, on a pilot basis to test the functionality and effectiveness of the software. Subsequently, it was implemented in three other treasuries. By 2016, all the remaining treasuries had been computerised, resulting in a total of 10 treasuries operating the COMPACT system. The system involves entering all government bills into the software, enabling streamlined processes for bill checking, passing, and payments. With this system, payments are efficiently made using cheques that are directly printed from the software.

Starting from October 2015, an e-Payment system was introduced in two largest treasuries, namely Aizawl South Treasury and Aizawl North Treasury, with the assistance of a state NIC-de-



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ICT Initiatives in the State

Since 1989, NIC Mizoram has undertaken various ICT Projects for promoting good governance in the state. Some of the major projects are profiled below:

eGPF

Before the implementation of this project, the General Provident Fund (GPF) for all State Government Employees was maintained manually in the Accounts & Treasuries Department Office. It was extremely time-consuming and interest calculation was not an easy task. Throughout the manual labour, numerous errors and corrections were made. The need for computerization of the system became imperative.

veloped software called eBillDDO. This software enables Drawing and Disbursing Officers (DDOs) to create bills in a digital format and generate a text file. The generated file is then submitted to the treasuries and seamlessly integrated into the COMPACT system, eliminating the need for manual entry of bill details. In these two treasuries, all salary bills and personal claim bills are paid using the e-Payment system. Subsequently, contingent bills are also processed and paid electronically.

e-Lekha

e-Lekha is a web-based financial management application that provides the State Finance Department with an electronic payment and accounting information system in order to improve the accounting process's efficacy and precision. It features a core accounting system with integration of daily, monthly, and annual accounting processes for near real-time value-added reporting and financial monitoring and control, and is built around the State Treasury Offices' COMPACT application. Mizo e-Lekha has been hosted and operational since June 2017. All treasuries are uploading data to e-Lekha on a daily basis.

GST-GRAS

NIC Mizoram has implemented the GST-GRAS application developed by NIC Pune in the State. The application is deployed on RHEL Server and technology used are PHP, jQuery Bootstrap and PostgreSQL. The application performs the following tasks :

- Download/upload Credit Notification files received from RBI SFTP server
- Download/upload Account Statement files received from RBI SFTP server
- Download / upload CIN files from GSTN portal
- Download / upload CPIN files from GSTN portal

- Reconcile files received from RBI and GSTN portal using GST-GRAS

- Generate and submit account statement to Accountant General of Mizoram

ILP

According to the Constitution of India, Indian citizens have the freedom to live and work in any state. However, entry into certain protected states requires special permissions from the state government. The Inner Line Permit (ILP) is an official travel document issued by the concerned state government to allow Indian citizens to enter these protected areas for a limited period. Mizoram is one such protected state. This application is designed for issuing and collecting revenue for Temporary Inner-Line Permits at Vairengte and Bairabi check gates in Kolasib District, Mizoram. It also maintains a database of this information for future reference. This software was awarded the First Prize in the Team Category for the Chief Minister's Award for Excellence in Public Administration (2019).

NGDRS

National Generic Document Registration System (NGDRS) Mizoram is a collaborative effort between NIC Pune, the IGR Department of Mizoram, and NIC Mizoram State Centre. It is a generic application hosted on the NIC Cloud Meghraj. NGDRS Mizoram is an online system that provides document registration services to citizens in compliance with the Registration Act and facilitates revenue collection in accordance with the Stamp Act.

This web-based, open-source application follows the "One Country One software" principle and is designed for all States / UTs across the country. It ensures Unicode compliance, offers a complete user interface, enables citizen data entry, calculates stamp duty, captures photos / fin-

NIC Mizoram has been extending excellent support to the Government of Mizoram in various verticals of e-governance in the State of Mizoram. I appreciate the good work done by NIC Mizoram at State as well as District level.

I would like to have NIC's more proactive participation in development of IT support systems. I look forward for creation of new synergy between NIC and State Government Departments for continued support and effective results.

I wish all the best to NIC in its endeavor.



Robert Romawia Royte

Minister of State
Information & Communication Technology
Government of Mizoram

gerprints / iris data, and provides role-based authentication and authorization. NGDRS has been implemented in six districts and can be accessed through the portal: <https://igmizoram.nic.in>.

Mizoram Safety App

Launched on December 13, 2019, the Mizoram Safety App is a mobile application developed to enhance safety and security measures for the residents and visitors of Mizoram. It is an initiative by the government of Mizoram in collaboration with the NIC Mizoram to leverage technology for the well-being of its citizens. The app aims to provide a convenient platform for reporting emergencies, accessing emergency services, and promoting community safety.

DM Dashboard (DARPAN)

Dashboard for Analytical Review of Programmes / Projects Across Nation (DARPAN) helps in transforming complex government data into easy and compelling visuals and aims to provide state and district administration the status of different departmental activities at a glance. It also provides the state and district administration a tool to deliver real-time, dynamic project monitoring systems using APIs / Web services. It enhances analysis through data collection by consolidating multiple data sources into one centralised, easy-to-access platform.

DARPAN has been implemented for all districts of Mizoram (except for 3 new districts) and DM Dashboard can be accessed through <https://mz.dmdashboard.nic.in>.

Fig 1.1 : Chief Minister Award for Excellence in Public Administration received by Shri Laltanpuia Hnamte, Additional Deputy Collector, Kolasib along with Shri Raphael Herliana Hauzel, DIO, NIC Kolasib



AeBAS

Aadhar enabled Biometric Attendance System (AeBAS) is an attendance management system designed for government organisations by Government of India to improve productivity of employees. The system authenticates attendance using Aadhaar Number created by Unique Identification Authority of India (UIDAI). It is a cloud based BAS that monitors attendance of government employees in real-time. The AeBAS device authenticates users by utilising their Aadhaar Number stored in the smart card and fingerprint in less than 1.5 sec. It offers unique advantages in terms of connectivity, technology, usage environment and ease.

AeBAS has been implemented across the NIC State and District Units. Other government departments like Archeological Survey of India, Aizawl, Geological Survey of India, Office of the Commissioner, Central Goods and Services Tax, Aizawl have also been successfully onboarded the system.



▲ Fig 1.2 : Shri Tawnluia, Hon'ble Deputy Chief Minister of Mizoram, launching NGDRS at the State Guest House, Aizawl on 6th September 2019

Under the direction of MoRTH, NIC has successfully executed various Transport Projects like VAHAN, SARATHI, e-Challan, iRAD, etc. The successful execution of these projects results in efficiency, transparency, accountability and reliability. I feel that NIC is praiseworthy for the actions taken for the success of their projects and follow up actions to maintain these projects.



Er. R. Lalrammawia
Director, Transport Department
Government of Mizoram

eRAM

eRAM is a web-based land records software developed by NIC Mizoram to ensure easy access of land records data for various stakeholders, including department staff, officers, and citizens. The project was launched in May 2021. The software facilitates the quick delivery of Digitally Signed Records of Right (RoR) to RoR holders and verifies the authenticity of the printed RoRs.

Future enhancement:

- Integration with Bhunaksha software to display digital maps, enhancing the visualisation of land records
- Integration for online land tax payment, streamlining the process of paying land taxes through the software

CSAS

Civil Supplies Accounting System (CSAS) is an accounting software system for Account Branch, Food Civil Supplies and Consumer Affairs, Govt of Mizoram. It has following modules-

- Tax and Non-Tax Revenue Management
- Monthly Stock Account Management
- K-Deposit
- Carrying Contractor Bill Management

The development of this software commenced on June 27, 2022. As of October 2022, two modules, namely "Tax and Non-Tax Revenue Management" and "Carrying Contractor Bill Management," have been successfully implemented. These modules have enhanced the efficiency and effectiveness of revenue management and carrying contractor bill processes within department.

S3WaaS

S3WaaS (Secure, Scalable & Sugamya Website as a Service) is a comprehensive web content management system designed to facilitate the creation and deployment of secure websites. It is built on the principles of the Guidelines for Indian Government Websites (GIGW). The system ensures that the websites adhere to the specified standards and guidelines set by the Indian government.

Currently, it is primarily being used for district-level websites. The ownership of these websites lies with the District Administrator, who assumes responsibility for the website's content and its accessibility to the public, whereas the District Informatics Officer acts the technical user, responsible for the development, maintenance, and overall management of their respective district websites.

▼ Fig 1.3 : Shri Lalchamlia, Hon'ble Home Minister of Mizoram, launching eChallan System along with Mizoram Safety App at the Aizawl Police Station Complex, Aizawl



Other Major Initiatives

CCTNS

Crime and Criminal Tracking Networks and Systems (CCTNS) is a central project which aims to create a comprehensive and integrated system for effective law enforcement across the country. The primary objective of CCTNS is to digitize and connect all the police stations and law enforcement agencies in India, enabling real-time sharing of information and seamless coordination among them.

e-Procurement / e-Tender

In order to promote transparency, efficiency, and reduce procurement cycles, the Government of Mizoram has mandated the use of the e-Procurement System for all state government departments and agencies. This mandates open tenders with a threshold value of 1 crore and above must be conducted through this system. A dedicated portal (<http://mizoramtenders.gov.in>) to streamline the entire procurement process for goods, and services has also been developed.

e-Court

e-Courts was conceived based on the National Policy and Action Plan by the e-Committee of the Supreme Court of India in 2005, with an aim to modernise and transform the Indian Judiciary through the use of ICT. The primary objective of the e-Courts project is to make the justice delivery system more accessible, affordable, and efficient. As the part of this project, the CIS software has been successfully installed and implemented in eight District Courts and the Gauhati High Court Aizawl Bench.

IVFRT

In order to modernise and upgrade the immigration services, Immigration, Visa and Foreigners Registration & Tracking (IVFRT) has been identified and included as one of the mission mode projects (MMPs) to be undertaken by the Ministry of Home Affairs under the National e-Governance Plan (NeGP). It aims to develop and implement a secure and integrated service delivery framework that facilitates legitimate travellers while strengthening security.

It has been implemented in all the District Foreigner's Registration Office (District FROs). For smooth implementation, online training was recently organised by NIC Mizoram IVFRT Team in collaboration with Foreigner's Registration Team, Delhi in January, 2023.

eTransport Project

Vahan & Sarathi: Vahan & Sarathi are software applications integrated into the Parivahan Web Portal. They are responsible for vehicle registration and driving license issuance, respectively. The Ministry of Road Transport and Highways (MoRTH) entrusted the NIC with the development and deployment of these software applications in



▲ Fig 1.4 : Launching of e-Payment system for Vahan and Sarathi at the Department of Transport Office, Aizawl

compliance with the Motor Vehicle Act, 1988, and Motor Vehicle Rules, 1989. The implementation of Vahan and Sarathi began in Aizawl District Transport Office on November 9, 2003, and expanded to all other districts over following years. Mizoram adopted Vahan 4.0 on August 29, 2017, and Sarathi 4.0 was successfully implemented in all districts on November 1, 2019. In the period from 2019 to 2022, various features such as Dealer Point Registration, Online Payment Services, and Faceless application of Learner's License were introduced.

e-Challan: This application was developed for android smartphones to serve as a digital solution for issuing traffic violation challans. Its main purpose is to simplify the process of checking vehicle documents and issuing challans. The app enables compounding of offences and verification of document validity, with all relevant data recorded and stored in the Vahan database. Transactions of fees are restricted until the compounding fees are cleared. e-Challan for the Traf-

fic Police Aizawl unit was launched on December 13, 2019.

VLTD: In response to the Nirbhaya case and to enhance the safety of women and prevent crimes, the Government of India mandated the installation of Vehicle Location Tracking Devices (VLTD) in all passenger-carrying vehicles.

Vehicles without VLTD and alarm buttons are restricted from registration. An MoU was signed on April 20, 2022, between the Transport Department, Government of Mizoram, NIC, and NISCI to establish a monitoring centre for tracking and monitoring public service vehicles as per the AIS-140 Standard under the Nirbhaya Framework.

mParivahan: This app was developed under the guidance of MoRTH and serves as a digital platform for citizens to access various services and information related to their vehicles and driving licenses.

The app is designed to provide convenience,

▼ Fig 1.5 : Hon'ble Home Minister of Mizoram Shri Lalchamlia inaugurating iRAD at DGP Conference Hall, Police Headquarters, Khatla, Aizawl





▲ Fig 1.6 : Hon'ble Minister of Food, Civil Supplies & Consumer Affairs of Mizoram, Shri K. Lalrinliana launching eDaakhil portal at the Mizoram Secretariat, MINECO, Khatla

efficiency, and transparency in dealing with transport-related matters.

iRAD: iRAD (Integrated Road Accident Database) is an application developed for the purpose of collecting, managing, and analyzing data related to road accidents. It aims to create a centralized and comprehensive database of road accident information to facilitate effective accident management, analysis, and policy-making.

With iRAD, relevant stakeholders such as police departments, traffic authorities, and health departments can input and access information about road accidents, including details about vehicles involved, casualties, location, date, time, and other relevant data. This data can be used for various purposes, including understanding accident trends, identifying high-risk areas, evaluating the effectiveness of road safety measures, and developing targeted strategies to reduce accidents and improve road safety.

Notably, since its initial launch in October 12, 2021, Mizoram is among the first states to implement the iRAD project across all its districts on September 15, 2021.

PUC Certificate Testing Centre: Transport Department has outsourced the Pollution Under Control (PUC) Certificate testing centers to private firms. Uploading PUC details to Vahan is necessary to obtain the certificate. NIC plays a crucial role in implementing these testing centers and their integration with the Vahan database. Mizoram integrated PUC with Vahan in 2019, with the first permission to conduct emission tests granted to the New Capital Complex testing site in Khatla on January 10, 2020.

Election Project

Since early 1990s, NIC Mizoram has played a crucial role in overseeing ICT-related activities for election management in the State Government. Serving as the State Level Agency (SLA) for the Election Department, NIC has been instrumental in providing comprehensive support for all elections, including Parliamentary, Legislative, and more, across all districts and at the state headquarters. The assistance offered by NIC at different stages of the election process has garnered widespread recognition and appreciation.

▼ Fig 1.7 : Shri K. Lalrinliana, Minister of Food Civil Supplies and Consumer Affairs launching the Electronic Point of Sales (ePoS) device at the Government's Fair Price Shop (FPS), Zonuaam, Aizawl.



CONFONET

Computerization of Consumer Commissions is a nationwide initiative aimed at digitizing the operations of the Commissions in both the State and District Forums. Its website (<http://confonet.nic.in>) offers citizen an interface for accessing cause lists and judgment copies. On June 20, 2022, the Minister of Food, Civil Supplies, and Consumer Affairs, Shri K. Lalrinliana launched an online portal named e-Daakhil to further bolster the system and receive consumer complaints online.

NDAL-ALIS

National Database on Arms Licence-Arms Licence Information System (NDAL-ALIS) is an all-comprehensive system developed for issuing arms licenses. It manages the entire process, starting from the application receipt to license approval, and printing. It aims to ensure that applicants go through all the necessary verification processes before being granted a license to carry a weapon within a specific jurisdiction. NDAL-ALIS is a sub-module of the IVFRT project and has been implemented in all 11 districts.

ePrison

ePrison system (<https://eprisons.nic.in>) was developed by the Prison Division, NIC-HQ, to computerise and integrate all the activities related to prison and prisoner management. Since September 2018, it has been implemented across all prisons in the state, including the Central Jail, 8 District Jails, and 1 Women Jail.

NSP

National Scholarship Portal (NSP) is an online portal by the Government of India for applying, processing, verifying and sanctioning Government scholarships to students. It aims to reduce discrepancies and provide a common, effective and transparent way to disburse scholarships to students. It is implemented as an MMP under the National e-Governance Plan in Mizoram and various schemes can be availed by the students.

Public Distribution System

End-to-end Computerization of TPDS Operations: This scheme aims to digitise various operations related to the Targeted Public Distribution System (TPDS). It was initially implemented during the 12th Five Year Plan (2012-17), but due to delays, it was extended until March 31, 2020. It aimed to digitise ration cards (RCs), depots, and other databases, computerise online allocation and supply chain management, establish transparency portals and grievance redressal mechanisms, and automate fair price shops.

Integrated Management - Public Distribution System (IM-PDS) : This scheme was started in April 2020 and extended until March 31, 2023, focussed on national portability of RCs along with de-duplication of RCs and beneficiaries at the state and national levels.



▲ Fig 1.8 : Hon'ble Speaker of Mizoram Legislative Assembly , Shri Lalrintiana Sailo, launching the 10th Session of Eighth Assembly through Neva on 6th September 2022

Scheme for Modernization and Reforms through Technology in PDS (SMART-PDS) : SMART-PDS scheme, starting from April 2023, aims to prevent food grain leakage, improve distribution chain efficiency, and ensure provision availability for migrants.

As of April 2023, approximately 284,034 ration cards and 1,161,804 beneficiaries have been digitised. The distribution of 9,543.364 metric tons of rice is done through digital systems using ePOS devices and digital weighing scales, accounting for 98.61% of the total distribution.

NeVA

National eVidhan Application (NeVA) facilitates smooth proceedings and efficient legislative business in the House. It enables the Chair of the House to conduct proceedings seamlessly and allows Hon'ble Members to perform their duties effectively. NeVA also enables the House to go paperless by hosting a secure page for each Member to submit questions and notices. The Mizoram NeVA portal can be accessed at <https://mizo.neva.gov.in>.

Fig 1.9 : Inauguration of Thenzawl Golf Course by Union Minister of State for Tourism, Shri

▼ Prahlad Singh Patel, in presence of Shri Robert Romawia Royle, Minister of State, through NIC Video Conferencing Services



Infrastructure and Networking Services

NICNET / NKN

NIC Mizoram is equipped with a 10 Gbps Leased Line connectivity from PGCIL as the primary link, and a 2.5 Gbps connectivity from BSNL as the secondary link. These two core links ensure redundant and reliable network connectivity. Additionally, the NKN link is connected to 7 Educational and Research Institutes, including the State Data Centre of Mizoram State ITC department.

NICNET connectivity is provided to 8 districts, and there are over 6000 nodes within government offices that are connected through NICNET / NKN within the state.

Video Conferencing Services

The State Centre has implemented a comprehensive video conferencing (VC) system, which includes 14 VC studios strategically located in various important locations. These studios have been set up in 8 District Collector Offices, as well

as in key government establishments such as Raj Bhavan (Governor's residence), Chief Secretary Office, Director General of Police (DGP) Office, NIC State Headquarters, State Informatics Office (SIO), and the High Court.

By establishing these VC studios, the State Centre aims to enable seamless and effective communication and collaboration among government officials and stakeholders across different locations.

Accolades

- CSI-Nihilent e-Governance Awards (2010-11) for Vaahan
- e-North East Award (2012) for Query and Alert-based SMS Service for Mizoram Transport Department
- e-North East Award (2014) for Real Time Courtesy & Information SMS Service on Vehicle Registration Without Using SMS Gateway
- Chief Minister's Award for Excellence in Public Administration (2019) for Introduction of Temporary ILP Software

Way Forward

With its committed teams at State / District Centres, the NIC Mizoram State Centre is committed to making a positive contribution to digital governance. It is working toward the launch of a number of projects, including eHospital, Online Building Permission System, Xtended Licensing and Laboratory Node, Bhu-Naksha, ICJS, and Service Plus.

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Puducherry UT

French Riviera of the East

Edited by **SANGEETHA MANJUNATH**



The UT Government of Puducherry is very keen on providing paperless, contactless and cashless services to the citizens. To achieve its goals, it has collaborated with NIC Puducherry to deliver transparent, effective and efficient citizen-centric services which has resulted in bringing governance to the citizen's doorstep.

ICT Initiatives in the State

Makkal Peredu

Makkal Peredu - Unified Data Hub - is an important e-governance initiative by the Government of Puducherry for online validation, de-duplication and cross referencing for identifying eligible beneficiaries for welfare schemes. This would help in plugging in pilferages to the exchequer and also provide various paperless services to the public. To start with, 35,000 duplicate beneficiaries were identified during the integration of Aadhaar Data Vault with that of 13.5 lakh beneficiaries. This has resulted in transparency and efficiency in the digital system. Currently, 23 departments and 120 schemes have been onboarded. The array of services by the system include 360-degree view of beneficiaries, integrated certificate, API services, etc. Further, it is planned to provide necessary API service to integrate with Digital Life Certificate (DLC), NPCI lookup, Blockchain Technology (BCT) based Integrated certificates. This would bring in greater efficiency in beneficiary management.



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NIC, Puducherry UT plays a vital role in designing, developing and implementing ICT solutions which has helped in achieving transparency and efficiency in the delivery of the citizen centric services. In addition to core infrastructure for networks, VC and cloud services, NIC Puducherry has established comprehensive solutions like Unified Data Hub, Online Services for Ration cards, Direct benefit transfer for social sector schemes, Online Building Permission system, Recruitment portal, Birth & Death Registration system, Online services for Electricity billing for consumers, taxation services like Property tax, Issue of driving licenses, Issue of patta copy, encumbrance certificate etc., have made it possible for the government to function as a backbone for various essential services.

Online Services for Ration cards

The UT of Puducherry has initiated the implementation of electronically signed ration cards (RCs) as part of a comprehensive computerization effort for RC services. This includes the introduction of 12 services going online which are integrated with SMS notifications, e-signing of documents and online payment systems. The electronically signed RCs and certificates can be conveniently downloaded by the beneficiaries. To streamline the distribution process, the UT Government has established a Direct Benefit Transfer (DBT) Portal through which the cash equivalent of ration is directly transferred to the beneficiaries. This portal is seamlessly connected to the Public Financial Management System (PFMS) and incorporates workflow-based modules for tasks such as beneficiary list preparation, member modifications, and calculation sheet generation.

By implementing DBTs in place of food grains, approximately 1.72 lakh households and 6.7 lakh beneficiaries are provided with monthly benefits. Additionally, 10 services related to the Public Distribution System (PDS) are made available through the UMANG platform.

Under the Ayushman Bharath Prime Minister Jan Arogya Yojana (ABPMJAY), real-time National Food Security Act (NFSA) beneficiaries data are utilised for issuing Health cards, ensuring efficient utilisation of resources. Furthermore, the UT serves as a registration hub for ONORC migrant beneficiaries from various states, with approximately 602 individuals currently receiving DBT benefits.

Puducherry Electricity Consumer Billing Portal

A citizen centric portal aimed towards a transparent and faster processing of bills and remittances is made available for the UT. Various facilities for payment of Bills – Online, Counter and BBPS Payment systems have been integrated. On the spot data entry of meter reading is also carried out using TAB / Mobile and bills are printed.

Other services include services for new service connection, load enhancement, load reduction, change of service category, and name change. The implementation of the above has resulted in bringing in transparency to the system and has increased the efficiency of the workforce.

NICeGST

<https://gstprime.py.gov.in>

NICeGST is a back office web application for GST Administration. It helps tax administrators to analyse and monitor the tax collection and compliance in their jurisdiction. The recently upgraded NICeGST 3.0 is another milestone to improve upon the hitherto existing system. Also onboarded on the national GST analytical system GSTPrime 3.0.

OBPS

<https://obps.py.gov.in>

Online Building Permission System (OBPS) for Town and Country Planning Department facilitates the citizens to receive the building plan permission from the Planning Authority. This application has features such as Online Payment, eMail, SMS, Auto Scrutiny of Plan & eSign. Additional modules such as Regularizations of Individual Plots and Land Use Conversion are also implemented.

iRAD

Integrated Road Accident Database (iRAD) is a centralised accident database for hosting accident related data for the Transport Department, Police Department, Health Department and Highways Department. This is a national initiative and is being successfully implemented in the UT.

eChallan

This is a comprehensive solution for issuing on-spot challan (online / offline) by the Traffic Enforcement officials. Further on-spot challan settlement module using PoS / QR Code / UPI based payment for citizens is also implemented.

Property Tax Information System for UT Local Bodies

This system allows all local bodies of the UT to issue property / house tax demand notices in vernacular language viz Tamil, Malayalam and Telugu. In addition, online payments by web and mobile are enabled. The system further helps to apply or renew trade licences online without visiting local bodies.

Online Portal for Government Recruitments

A generic recruitment portal for Puducherry is made available online for the Department of Personnel and Administrative Reforms, Govt. of Puducherry. Recently, the Government has published recruitments for various posts catering 14 departments including Police, General Administration, Transport, Revenue, Industries, Agriculture etc., The portal has received around 1,50,000 lakhs applications from the aspiring candidates. The Recruitment portal is comprehensively developed including Pre-Exam, Exam and Post exam phases which has resulted in the minimal turnaround time in the recruitment process

Investor Portal

Investor portal of Puducherry aims in facilitating prospective entrepreneur by providing a single transparent platform to avail various government services, such as online submission of application, uploading of supporting documents, payment, status tracking, uploading / downloading of final certificates, third party verification etc. under one platform. As of now, one can avail 62 such state services. Further, out of total notified reforms of 352 in Business Reforms Action Plan (BRAP) 2022, 305 action points have been worked upon.

e-Pathira Pathivu

e-Pathira Pathivu is an online Property Registration System providing secured access to the property valuation, appointment booking, cap-

Digital Technology has become the backbone of Governance and Administration enabling services and schemes to be directly delivered to the citizens. NIC Puducherry has been the technology partner with the Government of Puducherry UT in all the citizen centric applications. The State achieved laurels in many e-initiatives, thanks to NIC for technical support. ICT for conduct of Elections, DBT for various Social Sector schemes, Unified Data Hub, Online services for Ration Cards, Recruitment Portal, e-Pathirapathivu, GST Prime, PuduvaiKalal, Investors Portal(EoDB) for Puducherry, SARATHI, VAHAN, iRAD, Online Property Tax Collection System, e-Thirumanam, Nilamagal, Paysoft for Govt. employees, e-Prisons are some of the important web and software applications. The payment gateway integration, mobile payments, messaging services, VC services, cloud supports, SMS services have provided tremendous support for the effective Governance.

The contribution of NIC Puducherry in leveraging IT has been significant and to a great measure through various citizen centric systems. The UT Administration is pushing technology in every sphere of governance. With the capability of NIC and its recalibrated efforts as per the State's mandate in adoption of emerging technologies such as Blockchain, AI, Cloud and Mobile computing, Puducherry is sure to achieve the overall growth of ICT in the State.



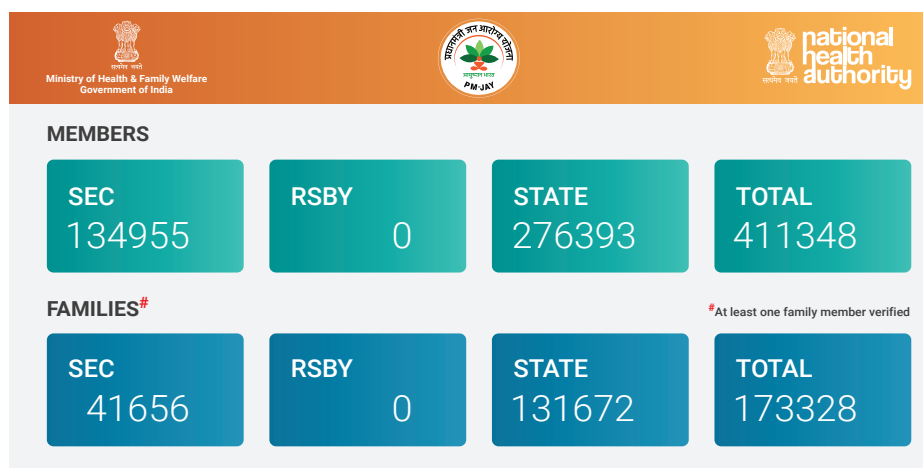
Dr. D. Manikandan, IAS
Secretary (Information Technology)
Government of Puducherry

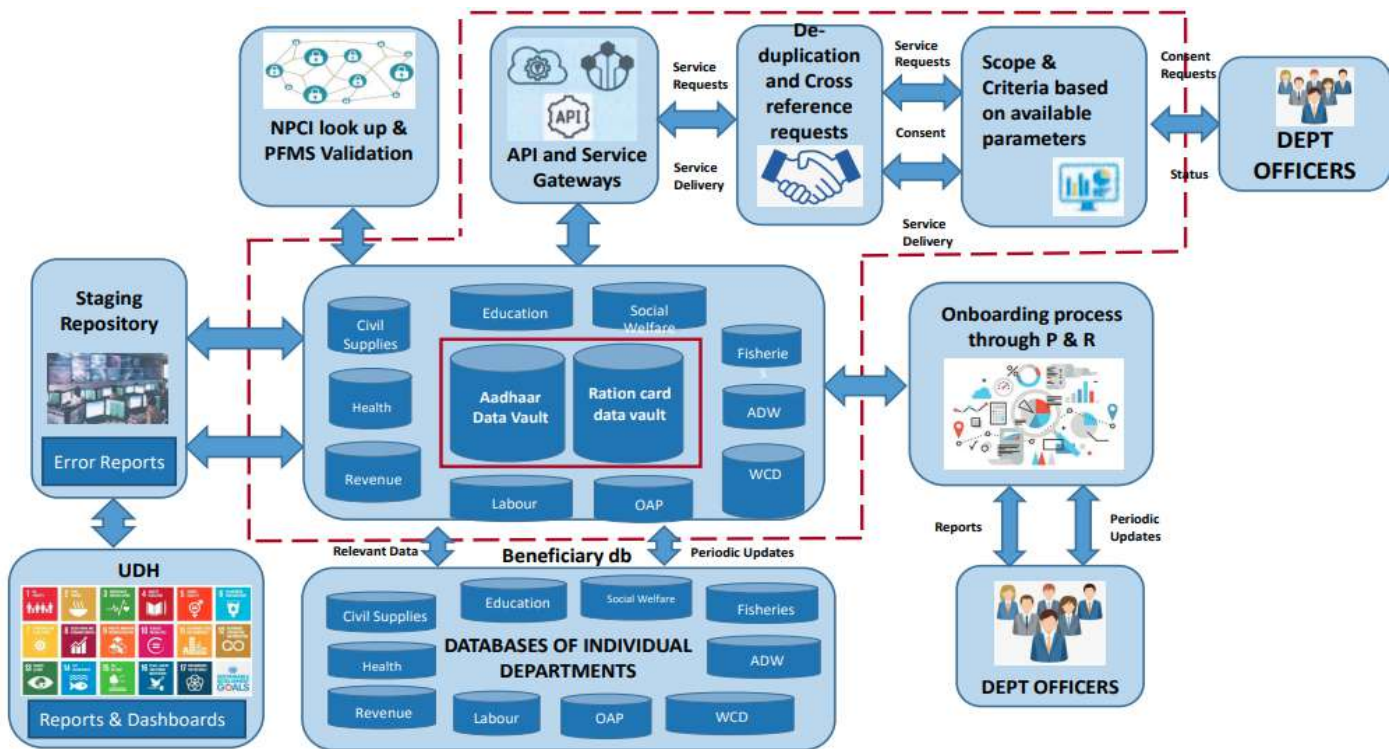
turing photographs, biometrics and scanning of the documents. The system is integrated with payment and SMS gateways.

Citizen-Centric services for Labour Department

At present, 23 citizen-centric services developed in Service Plus have been rolled out by the Labour Department. The services include Registration and Grant of Renewal of License for factories, Amendment of license, application for Licence Registration for Boilers Issue/ Renewal of Boiler Certificate, Registration for Boilers & Economizer, and eight services for Labour enforcement like Registration/Renewal for Shops

▼ Fig 2.1 : NHA dashboard linked with PDS live database of Puducherry UT





▲ Fig 2.2

Architecture diagram of Unified Data Hub

and Establishment Registration/ Renewal for Catering Establishment, Application for Registration/Renewal of Motor Transport Undertaking, Application for Registration of Establishments Employing Building Worker.

PuduvaiCalal

Excise duty is a major source of revenue to the UT. Various measures have been taken to streamline the procedures and convert the department into a smart department. This application manages licensee registers and issues permits. All payments by the registered dealers are made online through this application. Auction of arrack and toddy shops is also being carried out online (100%). This has resulted in a fair, transparent, and reliable system.

CPGRAMS

The UT Government observes Public Grievance Redressal Day on 15th every month. For this, all Government departments are given access controls to Centralised Public Grievance Redress and Monitoring System (CPGRAMS), an online platform to physically as well as electronically receive the petitions from the citizens to the public authorities on any subject related to service delivery. Necessary training is imparted to all stakeholders as well as given technical support including network / systems support.

eHospital

eHospital is a Health Management Information System for Government Hospitals, where a pa-

tient can avail various hospital facilities such as OPD, Casualty, IPD registrations by either creating and linking of patient records with ABHA-ID. As of now, the system has been rolled out in following hospitals viz., Indira Gandhi Government General Hospital & Post Graduate Institute (IGGGH&PGI), Rajiv Gandhi Government Women and Children Hospital (RGGW&CH), and Indira Gandhi Medical College and Research Institute (IGMC&RI).

Rice Procurement Portal

A rice procurement portal has been developed where the farmers of Puducherry are registered online. The procurement centres and FCI godown are linked. The truck challan is also generated through the system. Necessary web services are provided to update the details in the Central Food Procurement Portal (CFPP).

ICT support for Elections and State Elections

NIC Puducherry has successfully implemented various IT initiatives including Real Time Poll Monitoring system for the General Elections 2021. A mobile app has been developed for real time updation of all pre-poll and poll day events along with hourly poll statistics from the Polling booths. The initiative has received appreciation from ECI, CEO, office of DEOs and the Election officials. The randomization of polling personnel is one of the other major initiatives. Video Conferencing support was extensively used for the preparatory activities. During, Voters' Day 2022, NIC received a special award for the exampla-

ry contribution during the GEPLA 2021 from the Chief secretary, Puducherry UT.

Other Major Initiatives

Paysoft

This is a web-based software that helps state departments to prepare payslips, and paybills. Nearly, 3500 bills are generated every month.

BEAMS

BEAMS (Budget Estimation, Allocation and Monitoring System) is an online computerised web based application for preparation and authorization of budget. It enables online flow of resources and the departments can allocate funds to their field offices through this system.

eGazette

This is a web-based app, which serves as a one-stop-source for all government publications. It has a cataloguing mechanism to enter the details of a gazette along with a published page of the gazette document. It also has a comprehensive search page to retrieve information with the matching criteria.

Scheme Tracking System

This system facilitates all Heads of Departments, Office of Resident Commissioner to track all the proposals and their correspondences between the Ministries and the Line departments related to Centrally Sponsored / Central Sector schemes and other communications. The system

It is a well-known fact that the e-Governance had dramatically changed the way Government functions and reduced the distance between Government and Citizens. NIC Puducherry plays a major role in implementing e-governance project in the U.T. of Puducherry.

In the recent "Rozgar Mela" of Government of Puducherry, the Generic Recruitment portal of NIC, provides the state of art solution, for the recruitment cell of the Personnel Department with all the functionalities from notification to publishing of Results. The portal helps to recruit more than 24 categories of post from different departments.

The Online Building Permission Platform developed by NIC for the Puducherry Planning Authority is the state of art application. The application customized to the local building bye law with all technical tools and the citizens are easily availing this service. This application, automatically screening the proposed building plan and indicate even small deviations transparently to public and help them to correct it. The support given by NIC for developing this application is landmark in Puducherry e-governance evolution.

I highly appreciate the team NIC Puducherry for their immense contribution to the Government and the Citizens of Puducherry.

Wishing them a successful future.



R. Kesavan, IAS
Secretary (Town & Country Planning)
Government of Puducherry

will help the Government to register the actions and responses over central schemes with the Central Government ministries, pending for action.

Event Management

International Yoga Festival is one of the major events conducted by the Tourism Department where participants from all over the world visit Puducherry and perform Asanas in the yoga competition and workshops. Online registration, Issue of ID Cards, Evaluation of performance and Certificates are issued through a web enabled system. Apart from these, online reservation bookings for government guest houses, tourist information systems, and an app for booking boating tickets have been developed.



▲ Fig 2.3 : Meter reader generates the bill using Mobile app and print the bill at the doorstep of the consumer

e-Thirumanam

This is an online Marriage Registration System that covers booking appointments, capturing of photographs and biometrics with scanning of certificates. It is implemented in Puducherry, Karikal, Mahe and Yanam regions.

e-Services of Registration Department

This is an online application to view and download encumbrance certificate, registration certificate copy, and marriage certificate with payment of a small fee. The system has been implemented in the entire UT.

NILAMAGAL

This web app allows users to view land details, owner details and guideline register. It also allows one to download settlement copy, patta copy, and FMB copy.

Integrated Temple Management System

Developed by NIC Tamil Nadu, this system is

implemented across more than 120 temples in the UT. It aims to facilitate monitoring of details related to the temples, online temple services to citizens, revenue collection from temple properties, dashboard services etc.

eDaakhil

The e-Daakhil portal facilitates consumers to file consumer complaints at their convenience, from anywhere, eliminating the requirement of their physical presence at the Consumer Commission by paying a nominal complaint fee through the portal. It allows the consumer commission to scrutinise the complaints submitted online and to accept, reject and forward the complaints to the concerned commission for further processing.

JAGRATA

JAGRATA is an Oxygen Demand Supply Management System portal that has been implemented in all hospitals to provide a comprehensive to-

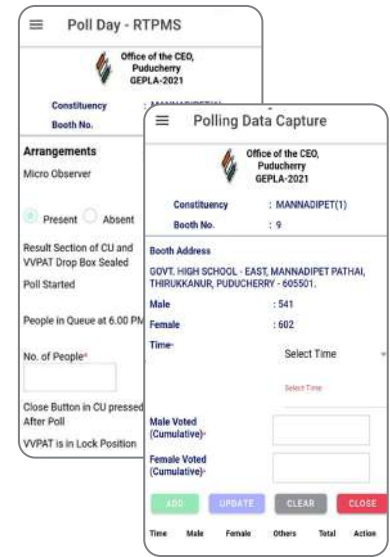
▼ Fig 2.4 : Inauguration of Online Building Permission System by Hon'ble Chief Minister of Puducherry UT, Shri N. Rangaswamy at Town and Country Planning Office, Puducherry



Mobile Apps

Following are the mobile applications configured by the UT Centre

App	Users
Electricity Meter Reading App	Meter Readers from Electricity Department utilise this app to generate and print the bill for consumers. The dynamic dashboard shows the progress of bill generation.
Real Time Poll Monitoring System	Exclusively used by Presiding Officers to update the pre-poll day events, poll day statistics and visit of VIPs in the polling booth. Alert is sent when EVM is interrupted, law and order situation is disturbed or any event of casualty.
RC Services	10 Major RC services are integrated in UMANG for all the Puducherry residents
Puduvaicalal Dashboard App	Helps the department to have a fair, transparent and effective functioning of the Excise machinery.



▲ Fig 2.6 : RTPMS mobile app

tal oxygen management solution for managing oxygen supply in real time. This is used in various government and private hospitals that treat COVID-19 patients to monitor the supply of oxygen and to effectively handle emergency situations.

AEBAS

Since March 2015, AEBAS (Aadhaar Enabled Biometric Attendance System) has been implemented in 37 Central Government Organisations and 14 State Government Organisations of Puducherry UT. Officials can mark the attendance based on online Biometric authentication using UIDAI.

e-Office

eOffice is a digital workplace solution for Government offices. Currently, the File Tracking Module is being used in 75 departments. The IT department has already initiated migration to

eOffice 7.0 in order to automate the entire workflow.

VAHAN & SARATHI

The UT Centre has implemented Vahan and Sarathi software in all UT RTO offices. Developed by eTransport Project, NIC Headquarters, these softwares automates all the processes at the RTO level thereby making the delivery of services faster and transparent.

ICJS Project

Interoperable Criminal Justice System (ICJS) is a national platform built upon the bedrocks of CCTNS, eCourts, ePrison, eForensic and eProsecution to access crime and criminal insights in order to aid crime investigation to safeguard society. As of now, ePrison application has been implemented in Central Jail, Karaikal, Mahe and Yanam Jails. The eForensic application has been

implemented in Regional Forensic Science Laboratory, Puducherry and eProsecution implemented in the Prosecution department located in Puducherry, Karaikal, Mahe and Yanam.

PSARA

Private Security Agency Regulation Act (PSARA) is a web application built on the behest of Ministry of Home Affairs for availing private security agency licence and its renewal in Puducherry.

eSanad

eSanad is a service portal for verification and attestation of documents of Indian Citizens going abroad.

Online Indian Citizenship (OIC) Portal

OIC Portal is a workflow based online system that is used by the foreign nationals to apply for Indian citizenship.

Arms Licence Issuance System (ALIS)

ALIS provides around 20 services related to arms licences. The services include obtaining new arms licence, additional licence, endorsement of firearms, acquisition of firearms, addition and deletion of retainer and change of quantity of ammunition, change of address.

IVFRT Project

e-FRRO Online Portal is being used by foreigners in Puducherry to avail visa related services. This portal is aimed to build a centralized online platform for foreigners for visa related services. Its key objective is to provide faceless, cashless and paperless services to the foreigners with user friendly interface. There is no need to take appointments and visit immigration authorities unless specifically called upon by the authority. Apart from these, necessary technical support has been extended for the implementation of major

▼ Fig 2.5 : A demonstration of the e-Challan mobile app was provided to the Puducherry UT Traffic Police officials during the e-Challan workshop





▲ Fig 2.7 : NIC, Puducherry receives the Award for Exemplary Contribution during GEPLA 2021

central projects like Jeevan Pramaan and DARPAN.

Network and Infrastructure Services

National Knowledge Network (NKN)

Since its inception, NKN Puducherry Point of Presence (PoP) has been operational 24 x 7 x 365 at the NIC in Puducherry. All four NIC district centres in Puducherry UT are linked to this PoP via 100 Mbps/34 Mbps links provided by NKN / NICNET-approved service providers. The NKN Puducherry PoP is equipped with two 10G Core links from the NKN Chennai PoP (10G-PGCIL) and the NKN Bangalore PoP (10G-RAILEL). Approximately 12 links between diverse institutions (hospitals, universities, research institutions, etc.) have been made operational via 100Mbps/1Gbps link. NKN links have also been extended to two

NIC district centres in Puducherry, namely Karikal and Mahe. At Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), around 96 VC sessions, 9773 teleconsultation sessions, 1382 mobile teleconsultations, 1481 tele-monitoring sessions and 654 virtual classes have been conducted successfully using NKN connectivity in the period of April 2022 to June 2023.

NICNET Services

NKN PoP is integrated with NICNET and around 10 last mile links of NICNET were provisioned. LAN / WAN connectivity, Internet Services and support NICNET services extended to all NIC District Centres of Puducherry UT.

Web Hosting Services / Cloud Services

The UT Centre provides web hosting and cloud services to all UT and Central Government de-

partments in Puducherry. Services offered are Infrastructure as a service (IaaS), Application and Database fine tuning, server hardening, backup & restore, collocation support, State Data Centre support.

VC Services

NIC Puducherry UT VC Services facilitates government departments for conducting meetings in a secured environment. VC services are provided to Raj Bhawan, Office of the Hon'ble Chief Minister, Government of Puducherry (GoPY), and Office of the Chief Secretary of Puducherry UT. NIC Puducherry UT is also providing technical support and coordination to VCs conducted from the President House, PM Office, Central Ministers, Cabinet Secretary, and Ministries. Around 778 VC sessions were conducted during 2022 including President and PMO office VC sessions. As of May 2023, 255 VC sessions have been conducted so far.

Messaging Services

About 22,000 email accounts were created for officers and staff of State and Central Government departments in Puducherry UT. NIC Delegated Admin Console has been set up and presently with NIC, Puducherry UT. From January 2023, all the email accounts of GoPY were migrated to their domain py.gov.in which is managed and operated by DIT, GoPY. Email relay services were provided to various departments of GoPY. Around 8 departments are using SMS gateway of NICNET.

Accolades

- Silver Medal at API Design Competition by NIC, MeITY for Online Meter reading and Bill Calculation (2021)
- Award for Exemplary Contribution for General Elections 2021 by ECI
- Commendation for the ICT initiative for PDS-DBT (2020)
- Special Award by ECI for ICT Services for Elections (2017)
- eINDIA Award for Supply Chain Management with Smart Card Based PDS (2014)

Way Forward

Dedicated officials at NIC Puducherry UT and District centres work together with administrative officials to drive innovative solutions and provide better next-generation digital services for state and central Government.

▼ Fig 2.8 : Presiding officer using the RTPMS Mobile app at the Polling station



Contact for more details

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Banaskantha, Gujarat

ICT for Good and Digital Governance

Edited by **RAJEEV JOSHI**

NIC Banaskantha came into existence in late 80's and since then, it has been instrumental in fostering an ICT culture throughout the district. The District Centre has been pioneering in the design, development and implementation of various eGovernance Projects. It has developed a mobile app named My Ration under the District Governance through Mobile Challenge, which was adopted by the Department of Food, Civil Supplies & Consumer Affairs for a state-wide roll out.

ICT Initiatives in the District

Banaskantha District Website

(<https://banaskantha.nic.in/>)

Banaskantha District launched a new website using the Secure, Scalable & Sugama Website as a Service (S3WaaS) Framework, becoming the second in Gujarat to adopt this platform. It serves as an authoritative source of information on the district and offers content in both Gujarati and English.

RC Module

NIC Banaskantha played a vital role in creating and maintaining the Ration Card (RC) Module for the PDS project in Gujarat. The module is now used by all districts in the state for tasks like issuing new RCs, updating membership, and conducting transactions. Over 1.36 crore barcoded RCs have been issued through this module, benefiting 6.09 crore individuals.

The Centre also designed and developed services for targeted initiatives such as the 'Kerosene Free State' campaign, NFSA survey, and gas stamping. The RC data is shared with the Gujarat CM Dashboard for better policy making by the state government. Citizens can access their RC copies through DigiLocker, UMANG, and PM-JAY



NIC Banaskantha District Centre has been instrumental in developing and implementing successful ICT projects in Banaskantha. Its contributions in e-Governance projects, technical support, and government service delivery have greatly benefited the citizens. These efforts have improved transparency, efficiency, accessibility, and fostered overall growth and development in the district.



platforms. Citizens can also apply for RCs online through the Digital Gujarat portal.

GAH App

NIC Banaskantha developed the Gujarat Animal Husbandry (GAH) Application to safeguard and monitor pet animals' health. It gathers crucial information on vaccinations and treatment camps for the Gujarat Directorate of Animal Husbandry, and supports state authorities by generating necessary reports.

Initiatives During COVID-19

- Developed an online portal for issuance of e-pass for essential services, with a total of 2,466 e-passes issued

- Developed a portal for remdesivir distribution in hospitals for its efficient management. It also displayed availability of vacant beds in different hospitals

- Set up a district command and control room for monitoring COVID-19 suspects and patients along with technical support was given to various COVID-19 portals and apps

- Developed and designed an application for Mukhyamantri Garib Kalyan Package in order to collect data of poor families. It had provision for direct funds transfer to bank accounts using PFMS, benefitting 65,08,969 citizens in the state

Mobile Apps

Following are the mobile apps designed and developed by NIC Banaskantha:

My Ration

Designed for the FCS Department, My Ration provides RC information and entitlements with a single tap. Users can access details such as member information, address, card type, attached FPS detail, bill receipts, available stock on FPS, and vigilance committee details.

iOjN Gujarat

This app facilitates the monitoring of development projects by GAD (Planning) through geo-tagged photographs. Its primary purpose is to create a database of geo-tagged images for ongoing work/projects.

Other Major Initiatives

PM Kisan Sanman Nidhi

For the successful implementation of the PM KISAN project in the district, NIC Banaskantha had trained 2200+ users to facilitate data entry in a smooth way. Due to this, Banaskantha became the first district in Gujarat to complete the target within a given timeline. As of 23 Feb. 2019, the beneficiary count was 2,81,693.

iRAD

Launched by the Hon'ble Chief Minister of Gujarat on 1st May, 2022, iRAD aimed to establish a structured framework for road accident data collection across the State. It generates various



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▲ Fig. 3.1 : Launch of My Ration mobile app by Shri Anand Patel, Collector & DM Banaskantha

Accolades

- Certificate of Appreciation from Director General, NIC for My Ration mobile app
- Letter of appreciation from District Collector for work done during COVID-19 pandemic
- Letter of appreciation from District Collector for work done in General and Assembly Election - 2019 and 2022
- Letter of Appreciation from Gujarat Water Supply & Sewerage Board, for successful VC interaction of Hon'ble Chief Minister of Gujarat with 5 villages of Banaskantha during the inauguration of the Dantiwada Regional Water Supply Project

reports by analyzing the data in order to make better and safer roads. The District Centre has conducted over 80 hands-on training to all the stakeholder departments including Police, RTO and R&B department.

Digital Gujarat & Seva Setu

NIC Banaskantha has implemented the Digital Gujarat portal, a common platform where citizens can apply for various services online, across multiple Jan Seva Kendra, Tahsil offices, and Gram Panchayats in the district. In order to promote the use of Digital Gujarat portal, the District Administration has launched Seva Setu campaigns, where citizens can avail the services for free. The

applications received were processed by authorities on the same day.

The District Centre has also implemented several State and Central Government projects to boost eGovernance in the District, namely iRCMS, PDS, CM Dashboard, Vahan, Sarathi, eCourts, ePrison, IVFRT, NDAL & ALIS, PM Gatishakti, RFMS, iiLMS, City Survey Information System, Track the Missing Child, Kisan Credit Card, e-Dhara, GP Office and PG Portal.

Technical and Network Services

- Provides 24 x 7 ICT and network support to the District Administration and other offices. It also provides NKN connectivity to educational institutions
- Provides extensive technical support during Parliamentary & Legislative Assembly Elections and manages ENCORE, ETPBS (Electronically Transmitted Postal Ballot System), Suvidha portals of ECI and LAN infrastructure of counting centers

Important Events Organised

- Provided VC services and IT setup for Hon'ble Prime Minister Visit at Deodar and Danta Tehsil during December 2022
- Provided technical support during visit of Hon'ble Chief Minister and other important dignitaries in district
- Provided technical support during district events including Ambaji Mela, Krushi Mahotsav, Garib Kalyan Mela, DRDA events, Seva Setu, Gujarat Khel Mahakumbh, Pragati Setu, Bus Port Inauguration, Ambaji 51 Shaktipeeth Mahotsav, e-Lokarpan and Yoga Day
- Conducted training workshops for newly launched applications to the concerned officials

NIC District Centre is providing continuous support in implementation of various IT related projects in Banaskantha District. I am hopeful that NIC will continue to spread IT awareness to actively support the eGovernance initiatives of the District Administration. I want to thank NIC Banaskantha for their support and cooperation in implementing various eGovernance initiatives in the district. I believe that NIC will keep up this good work and continue to provide us with technical expertise, innovative ideas and action plan for successful implementation of ICT for the benefit of citizens.



Varun Kumar Baranwal, IAS

Collector & District Magistrate
District Banaskantha

Way Forward

NIC Banaskantha is deeply committed to the transforming dream of Digital India and fostering a culture of e-Governance in the district. With a strong determination, NIC Banaskantha actively provides full-fledged ICT support to the District Administration. Its unwavering dedication is aimed at leveraging technology and digital solutions to enhance governance, streamline processes, and improve service delivery.

Contact for more details

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Palanpur, Banaskantha
Gujarat-385001
Email: dio-bkt@nic.in, Phone: 02742-252314

NIC, Banaskantha has played an important role in COVID-19 pandemic situation as well as in election, video conferencing, providing support for the management and monitoring of e-Governance projects. NIC Banaskantha actively supported and participated in the programs and functions organized in the Banaskantha district. I have taken special note of the good work done by NIC, Banaskantha. I foresee that NIC, Banaskantha will work with the same zeal and enthusiasm and serve with the same spirit and energy.



Anand Patel, IAS

Collector & District Magistrate
Banaskantha

Dhubri, Assam

Making Citizens believe in impact of e-Governance

Edited by **KAVITA BARKAKOTY**



NIC Dhubri District Centre was founded in 1990 with a clear objective to spearhead advancements in Information and Communication Technology (ICT) within the realm of District Administration. Since its inception, it has consistently upheld its role as a pioneer, actively working towards fostering transparency and facilitating accessibility. Through its unwavering commitment to these core principles, it has emerged as a reputable institution, driving transformative progress in the district.

ICT Initiatives in the District

Dhubri District Website

<https://dhubri.assam.gov.in>

The Dhubri District Website has been redeveloped under the “ePrastuti” framework to promote transparency, efficiency, and citizen participation. It provides up-to-date information on the district’s latest inputs, serving as a user-friendly platform for residents, businesses, and stakeholders to access essential services and stay informed.

eOffice

<https://districtseoffice.assam.gov.in>

The implementation of eOffice in Dhubri has been successfully accomplished with the assistance of NIC Dhubri. The technical support provided by NIC Dhubri facilitated the establishment of a structured Local Area Network (LAN), procurement of computer hardware, scanners, and Digital Signature Certificates (DSC). Comprehensive training programs were conducted in phases and batches to familiarize staff with the eFile system. Currently, eOffice has been successfully deployed in the Office of the Deputy Commissioner Dhubri

and is being gradually extended to the Sub-divisional (Civil) office as well.

iRAD/eDAR

<https://irad.parivahan.gov.in>

Integrated Road Accident Database (iRAD), now known as e-Detailed Accident Report (eDAR), aims to enhance road safety across the state by collecting accident data from various stakeholder departments including Police, Transport, Road



NIC Dhubri District Centre has been playing a vital role since its inception in terms of Technical support and skill development amongst various stakeholders. Equipped with ICT skills, NIC Dhubri is implementing various National and State level ICT Projects with transparency and efficiency. The NIC District Centre could make its presence felt by creating awareness about the importance of ICT applications and today the citizens are enjoying the benefits and usefulness of ICT applications in their day to day life.



owning Agencies, and Health. Comprehensive batch-wise training on the iRAD Application was provided to all stakeholders. To date, 262 live accident cases have been recorded, 119 motor vehicle inspection reports have been submitted, and road inspection reports are actively entered into the live portal using both the mobile and web applications.

e-Prosecution

<https://eprosecution.gov.in>

e-Prosecution is a valuable tool for public prosecutors, enabling them to effectively manage case proceedings for crimes filed by the state police in court. The project, successfully implemented by the District Centre, has undergone multiple training sessions to ensure its seamless operation. Currently, the system boasts 5064 registered cases, with 1417 cases already disposed of, and daily activities consistently recorded in the live portal.

e-Prison

<https://eprisons.nic.in>

NIC Dhubri collaborated with the District Jail to ensure a smooth implementation of e-Prison, a prison facility management system. Training sessions were conducted for stakeholders to enhance their proficiency in using the system and constant support is provided, ensuring a seamless transition.

IVFRT

The IVFRT project has been successfully implemented by the District Centre at the Integrated Check-Post, Brahmaputra River Port in Dhubri. The Centre also played a vital role in supporting the operation, capturing visa and verification information for foreign tourists upon their arrival and departure, particularly those arriving in Dhubri via the River Cruise “Ganga Villas.”

Initiatives During COVID-19

The District Centre provided technical support to the district administration and health department during COVID-19, such as

- Issuance of ePass for movement of vehicles during lockdown
- Registration of Sample Collecting Centres and Lab Technicians
- Training to Lab Technicians and Health Officers on operating RT-PCR Mobile App for capturing details and generating Specimen Referral Form
- Assisting NHM personnel for online submission of request for oxygen



Kailash Kalita

Sr. Technical Director
& DIO
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▲ Fig. 4.1 : Training on eOffice being provided to the District Administration officials

Other Key Initiatives

NDAL-ALIS

<http://alis.nic.in>

The District Centre successfully implemented the NDAL-ALIS project, focused on establishing a national database of arms licenses across all categories throughout the country. It assigns a Unique Number (UIN) to both existing and new license holders. Training sessions were conducted for the staff of the Magistracy Branch and ADM. UINs have been generated for all existing arms licenses, facilitating the seamless process of issuing, renewing, and canceling licenses. As of now, 1655 UINs have been generated, with 1513 of them active and 142 licenses deactivated.

The District Transport Officer and its entire staff convey their gratitude to the NIC Dhubri District Centre for its untiring support right from setting up of the ICT Infrastructure at the DTO Office, Dhubri, to smooth implementation of projects viz. Vahan – Sarathi and eDAR. We are highly indebted to the NIC Centre for its technical support and guidance in execution of such national level projects flawlessly, which converts service delivery system into complete digital.

It is also worthy to mention that whenever there is any issue, those have been resolved at the earliest due to proactive effort from NIC Dhubri.



Purabi Kalita

District Transport Officer

Mission Basundhara

<https://basundhara.assam.gov.in>

Mission Basundhara' is an online platform in Assam, led by the Honourable Chief Minister, aimed at improving the transparency and accessibility of land revenue services for citizens. The mission strives to reduce the backlog of land record updates, expedite service delivery, and create a business-friendly land management ecosystem across Assam. In Dhubri district, NIC Dhubri District Centre provided extensive support to ensure timely disposal of a significant number of applications received through the portal, meeting the set deadlines.

Right to Public Service (RTPS)

<https://sewasetu.assam.gov.in>

The RTPS portal, established under the "Assam Right to Public Service" Act, enables the timely delivery of public services to citizens across Assam's districts. Through this online portal, citizens can easily apply for available services. NIC Dhubri District Centre conducted training sessions for Revenue Circles' staff and officers on the demo portal, creating login credentials for all staff, including DPS (Designated Public Servant), in the live portal. Ongoing support was provided as needed. The portal has now been renamed as "SEWA SETU" with the URL <https://sewasetu.assam.gov.in>.

Network and Other Technical Services

NIC District Centre boasts two robust links, both operating at a speed of 100 Mbps, which serve as the backbone for District's Network Connectivity. Over 100 nodes in the DC Office are connected via a structured LAN, ensuring seamless access to the internet. Additionally, this also benefits other state and central government offices.

The District Centre also extends technical support for Video Conferencing, attended by district authorities, line departments, and VVIPs. NIC Dhubri takes charge of arranging link-based as well as outdoor Video Conferences.

Furthermore, the District Centre provides valuable support in various aspects, including the creation of government email accounts for officers, VPN Connectivity for user departments, and facilitating the submission of APAR (Annual Performance Appraisal Report) by ACS and IAS officers through Smart Performance Appraisal Report Recording Online Window (SPARROW).

Important Events Organised

NIC District Centre played a significant role in organizing various important district-level events, including the celebration of Bir Lachit Borphukan's 400th Birth Anniversary, PM CARES initiative, Laying of Foundation Stone of Dhubri-Phulbari Bridge by the Hon'ble Prime Minister, live stream-

NIC Dhubri District Centre has been playing an active role in implementation of various State and National level e-Governance projects. Its support in the areas of ICT make District Administration more transparent and accessible due to which citizens are enjoying the benefits in their reach. NIC helps in dissemination of information regarding different Central and State Govt. schemes and is hence promoting participatory e-governance in the district.

I appreciate the NIC Dhubri District Centre for their support and wish for continuous performance in the near future too.



Dibakar Nath, IAS

Deputy Commissioner, Dhubri

ing of the meeting with the Union Home Minister, and the commemoration of the 4th Anniversary of Digital India.

Way Forward

NIC Dhubri District Centre provides seamless support to the district administration, enabling the transparent, efficient, and speedy delivery of services for the benefit and development of citizens at the grassroots level. With the advancement of technology, the Centre remains dedicated to supporting the district administration in an increasingly effective and efficient manner in the future.

Contact for more details

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NIC Dhubri District Centre

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Jagatsinghpur, Odisha

Embodying the Spirit of Digital India

Edited by **KAVITA BARKAKOTY**

NIC Jagatsinghpur was established in 1996 and has since been recognized as an essential component of the District Administration, playing a crucial role in driving ICT and e-Governance initiatives within the district. The Centre serves as a central hub for comprehensive IT solutions, consultation, and implementation of various e-governance projects and applications.

The Centre actively supports and executes several significant e-governance initiatives, some of which include:

ICT Initiatives in the District

Jagatsinghpur District Website

<http://jagatsinghpur.nic.in>

The dynamic bilingual district website has been designed, developed in the S3WaaS framework and acts as an authoritative source of government information.

eOffice

<https://jagatsinghpur.eofficeodi.nic.in/>

Jagatsinghpur is one of the first districts in Odisha to successfully implement the e-office system, starting from the office of the Collector and extending it to the Gram Panchayat (GP) level. This initiative aimed to replace the traditional paper file system with an electronic workflow. As of now, the system has been rolled out to all municipalities, 23 district level offices, 8 Tehsils, 8 Block offices, 5 Sub-registrar offices, 8 CDPO of-

fices, Block education offices, 76 Revenue Inspector (RI) offices, and 198 GP offices. With over 1600 active users, e-office has facilitated the creation of 60,350 e-files, with a remarkable movement of 763,269 e-files to date. It has proven to be instrumental, especially during the COVID-19 pandemic, in enabling officials to seamlessly work from home during lockdown.



The unwavering dedication of NIC Jagatsinghpur has resulted in significant improvements in the accessibility of digital government services, playing a pivotal role in the overall development of the district. The organization has implemented various eGovernance initiatives, provided technical support, and administered government services, all of which have been of immense value to the citizens.



General Elections & PRI Elections

Since 1999, the District Centre has been providing an all-comprehensive ICT solution towards management of the election process. The main activities include IT enabled randomization of polling personnel, formation of polling parties, generation of appointment orders, prepare TA/DA acquittance, EVM management through EMS portal, nomination process, voter turnout data processing, counting day data management and result transmission through SUVIDHA portal.

LRMS

Land Records Management System (LRMS) ensures the maintenance of up-to-date Records of

Rights (RoRs) by facilitating transaction-based interactions with the e-Registration application. It empowers Mutation Officers (Tahasildar/Addl. Tahasildar) to initiate mutation cases instantly. To enhance security, the application incorporates Digital Signature Certificate and biometric authentication. Additionally, NIC's in-house tool, BHUNAKSHA, integrated with the LRMS application, allowing users to correct cadastral maps online.

DAMPS

Disaster Assistance Monitoring & Payment System (DAMPS) enables government departments to collect data on disaster affected casualties / injured / missing persons from various resources and visualise them at each revenue level for compilation and disbursement of financial assistance to affected persons subsequently.

e-District

e-District facilitates issuance of various certificates such as caste certificates, income certificates, legal heir certificates among others. It has a purely web-based workflow where footfall of citizens is not required at government offices.

iRAD

iRAD (Integrated Road Accident Database) was implemented on the 10th February 2022 at Jagatsinghpur. It helps to capture road accident data from police, RTO, highway authorities, and health departments. By analysing this data, iRAD helps authorities to understand root causes and allows them to make better policies for road safety.

e-Abkari

e-Abkari is a workflow based application developed for the Excise department. It includes issuance of permits and licences for liquor retail shops, distilleries, breweries and bottling plants.

IVFRT

This project has its importance in National Security Level & it is one mission mode project under the National e-Governance Plan (NeGP). Its various modules such as c-fro, c-form and s-form are already operational. District Intelligence Bureau from SP Office is the implementing agency for the project.



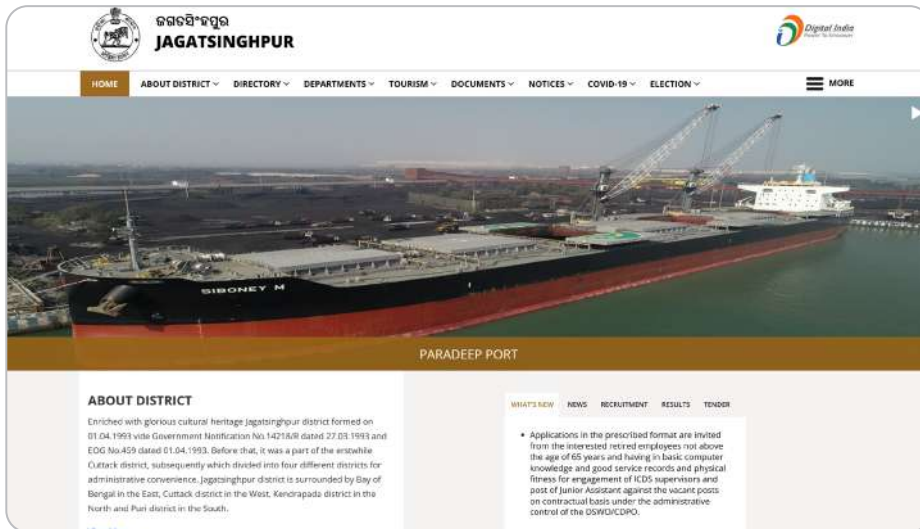
Jyoti Prakash Behera

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▲ Fig. 5.1 : Jagatsinghpur Website Home Page

Harischandra Sahayata Yojana

This is a G2G online service where the assistance money will be directly transferred to the concerned Sarpanch/Mayor after online verification done by respective Block Development Officer. This scheme aims to provide financial assistance to the poor and destitute for conducting the last rites of their family members and cremation of unclaimed dead bodies. An interactive dashboard facilitates the District Collector for monitoring the entire process.

Other Major Initiatives

NIC Jagatsinghpur provides vital ICT support to the district administration, enabling efficient governance and service delivery. Here are some of the key services and activities offered:

- **NICNET** : A high-speed 100 Mbps leased line network connects the District Administration, Sub-collector's Office, and Superintendent Police's Office. This ensures seamless connectivity and supports various sections within the Collectorate.
- **NIC VC services** : The district boasts an extensive video conferencing network, facilitating com-

munication with national-level entities such as the PMO, Cabinet Secretary, ECI, and State Headquarters. Outdoor video conferencing facilities are also available.

- **Disaster Management** : During natural disasters, the District Centre provides round-the-clock ICT support to the District Administration. This includes development of WEBGIS, daily situation reporting, and MIS support for damage assessment and the District Disaster Management Plan.
- **Training & Capacity Building Programme** : As a master trainer (technical), the District Centre conducts training sessions and hands-on workshops for various stakeholders involved in implementing ICT projects and e-governance applications. Capacity building programs are offered post-implementation as well.
- **Recruitment** : The NIC Centre assists the District Administration in managing applicant databases, generating admit cards, preparing merit lists, and conducting computer skill tests during recruitment processes.
- **Seminars and Awareness Programs** : Computer awareness programs are organised to enhance IT literacy among district-level officials and staff.

▼ Fig. 5.2 : NIC Jagatsinghpur team with Smt. Parul Patawari, District Collector at a district level event



The NIC Centre also participates in seminars and delivers talks on digital literacy, cyber fraud, and data optimization techniques.

- **IT Advisor** : The NIC District Centre serves as an IT advisor to the district administration, providing support in system study, gap analysis, hardware and software requirements, and application functionality testing for various projects.

Currently, the NIC Centre is in the final stages of designing a content management-based official website for Jagatsinghpur Municipality. The application, which can be replicated with minor customization, is scheduled to launch within a couple of weeks.

NIC Jagatsinghpur, is an indispensable part of the District Administration, driving ICT and e-Governance initiatives. The centre serves as a central hub for comprehensive IT solutions and the implementation of various e-governance projects. Some notable initiatives include implementation of e-office up to grass root level, ICT support during Election, LRMS for land records, DAMPS for disaster assistance, iRAD for road accident data analysis, and e-Abkari for the Excise department, updation of dynamic district website. NIC Jagatsinghpur also provides crucial services like NICNET connectivity, video conferencing, disaster management support, training programs, recruitment assistance, and IT advisory. Their commitment to efficient governance and technical expertise is truly commendable.

PARUL PATAWARI, IAS
Collector & District Magistrate

Way Forward

NIC Jagatsinghpur is performing a pivotal role in the digital journey of the district to achieve the visionary mission “5T” of Hon’ble Chief Minister of Odisha through Teamwork with application of Technology within stipulated Time, adhering to the principles of Transparency and Transformational eGovernance under the guidance of NIC Odisha State Centre.

Contact for more details

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West Champaran, Bihar

Where Tradition and Innovation Unite

Edited by **KAVITA BARKAKOTY**

Since its establishment in 1989, NIC West Champaran has been instrumental in the successful implementation of various ICT projects within the district. The introduction of numerous services such as Video Conferencing, NICNET, SPARROW, Sewa-Itihaas, EPMIS, Vahan-Sarthi, e-Prison, PM-KISAN, NDAL-ALIS, and CPGRAMS, has significantly improved the lives of the local community, facilitating smoother monitoring and development tasks for the District Administration, thus, the lives of the general public while enabling efficient administration and progress in the region.

ICT Initiatives in the District

West Champaran Website

The official website of West Champaran district serves as a comprehensive online platform offering valuable insights into the district's administration, historical background, tourist destinations, and a range of government services. With the aim of providing a user-friendly experience, the website has been recently revamped utilising the S3WaaS platform. It features a bilingual interface in both English and Hindi, ensuring easy access to information for citizens. Regular updates are made to the website to ensure the inclusion of the latest announcements and align with the guidelines and advisories issued by government authorities.

ALIS (Arms Licence Issuance System)

<https://ndal-alis.gov.in/alis>

This platform serves as a convenient avenue for individuals, and industrial institutions alike to apply for licences pertaining to the manufac-

turing of arms and ammunition. Furthermore, it provides citizens with a streamlined process for applying for arms licences in accordance with the Arms Act, 1959, and Arms Rules, 2016. To date, a total of 3,144 arms licences have been successfully processed through this platform.



NIC West Champaran is recognized for its remarkable technological advancements and initiatives in the district. They have made significant progress in strengthening digital infrastructure, enhancing capacity building and training, engaging with the community, fostering innovation and collaboration, and ensuring regular updates and maintenance. By focusing on these areas, NIC West Champaran continues to lead in technological advancements, drive positive change, and deliver efficient services to the residents of the district.



eOffice

In order to enhance the efficiency and timeliness of service delivery, the District Centre has implemented a customised version of the eOffice suite. Since 2022, all document processing has been seamlessly carried out through this platform. To ensure optimal utilisation, several training sessions have been conducted for all officials, equipping them with the necessary skills to effectively navigate and utilise the platform.

Bhu-Samadhan

https://homeonline.bih.nic.in/LandDispute/Login_Default.aspx

The Bhu-Samadhan Portal has been developed through collaborative efforts between NIC Bihar, the Home Department and Land Revenue Department of the Government of Bihar. It serves as a dedicated digital platform for the resolution of land disputes at the Thana (police station) level. To ensure its smooth functioning, the NIC West Champaran has extended its support to SHOs (Station House Officers), COs (Circle Officers), and the District Magistrates. The support includes various tasks such as monitoring, and reporting

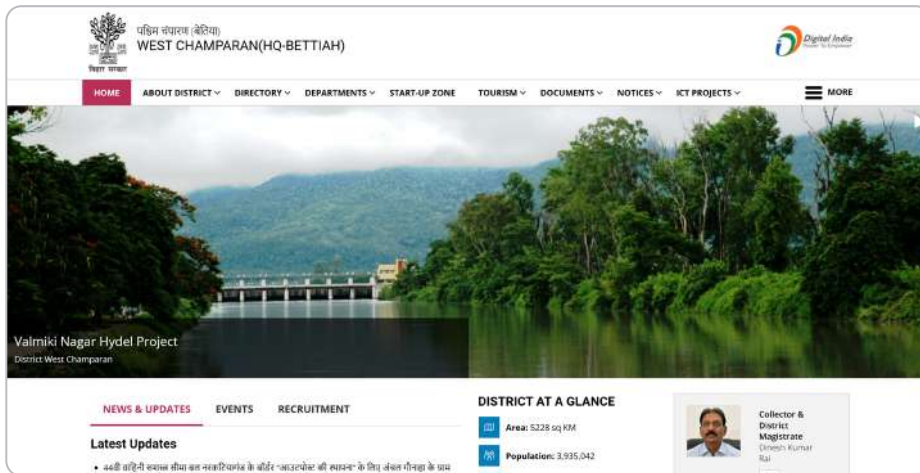
I appreciate the dedicated efforts of Shri Abhishek Kumar Mishra, DIO, West Champaran, and the NIC team for their regular and diligent endeavors in ensuring the success of eGovernance initiatives in the district. NIC West Champaran has effectively implemented numerous ICT applications and provided essential technical support to the District Administration. Additionally, the district has witnessed the implementation of various Central and State level projects such as EPMIS (Elecon), TPDS, BHU-Samadhaan, NDAL-ALIS, Sewa Itihaas, SPARROW, Government e-Mail services, S3WaaS Website, and more. The proactive support from NIC in the rollout of various eGovernance projects, sharing government information through the District website and other official websites, as well as their active assistance during General elections, By-elections, GP-elections, and ULB-elections, is highly commendable.



Dinesh Kumar Rai, IAS
District Magistrate
West Champaran, Bihar



Abhishek Kumar Mishra
Scientist-B & DIO
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▲ Fig. 6.1 : Jagatsinghpur Website Home Page

related to land disputes, thereby facilitating real-time updates and streamlined communication among stakeholders, enhancing the efficiency of the resolution process.

Elections

<http://elecon.bihar.gov.in/>

The District Centre plays a vital role in facilitating a smooth and efficient execution of General, Assembly, and Local Body elections, including Zila Parishad, Gram Panchayat, and Primary Agricultural Credit Societies (PACS) elections within the district. A wide range of services are provided to ensure the successful conduct of these elections. This includes the randomization of polling personnel and Electronic Voting Machines (EVMs), live webcasting of polling day events, training programs for polling personnel covering various aspects of the counting day processes, utilisation of AI-based OCR technology for obtaining online counting results, and any other election-related activities assigned by the District Election Officer-cum-District Magistrate of West Champaran.

Infrastructure, Network and Web Services

Video Conferencing (VC)

The District Centre has successfully set up a

cutting-edge, high-speed studio-based Video Conferencing (VC) facility within the District Collectorate premises. This state-of-the-art VC facility has been extensively utilised by the District Administration to foster efficient communication and collaboration.

During the challenging period of COVID-19 lockdowns, the VC services were further expanded to encompass various other departments, ensuring uninterrupted support on a 24x7 basis. This proactive approach to leveraging technology has not only facilitated seamless connectivity but also enabled effective decision-making and coordination, even in the face of unprecedented circumstances.

NICNET

In order to guarantee the uninterrupted operation of crucial email, VC, and other essential network services, the District Centre has implemented a high-speed network infrastructure, providing a reliable connection of 100 Mbps to all government departments across the district. This robust network architecture ensures seamless and efficient communication, enabling swift collaboration and information exchange among various government entities. With this advanced network in place, the District Centre empowers government departments to effectively carry out

their responsibilities and serve the community with enhanced connectivity and streamlined operations.

Support during VIP Visits

The District Centre plays a crucial role in providing technical support for establishing Internet and VC facilities in remote regions of the district. This support is especially vital during visits by government officials and esteemed state dignitaries. By ensuring seamless connectivity, the District Centre ensures effective communication and collaboration in even the most remote areas. This support enables efficient interactions and information exchange during official visits while also bridging the digital divide and promoting inclusivity in remote communities.



ANIL KUMAR, IAS
Deputy Development Commissioner
West Champaran, Bihar

Way Forward

NIC West Champaran has shed light on the impressive technological advancements and initiatives undertaken by the district. Moving forward, they can focus on several key areas to continue their positive trajectory. This includes strengthening digital infrastructure, enhancing capacity building and training, engaging with the community, encouraging innovation and collaboration, and ensuring regular updates and maintenance. By prioritising these areas, NIC West Champaran can remain at the forefront of technological advancements, driving positive change, and delivering efficient services to the district's residents.

▼ Fig. 6.2 : INICNET and Videoconferencing at the forefront: NIC West Champaran facilitating seamless support during the Chief Minister's Bihar Samadhan Yatra



Contact for more details

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ePrayuktiSewa

Online Portal for Mobile App & Bharat Map Service

Edited by **KAVITA BARKAKOTY**

ePrayuktiSewa, proudly offered by NIC Assam, is an exceptional online platform providing mobile app builder as a service for government departments / organizations. It provides highly configurable mobile apps along with Bharat Map service integration, catering to diverse needs. As an integral part of NIC Assam offerings, ePrayuktiSewa encompasses three key services: 1) Mobile Apps with Geotagging and Image Capturing, 2) Integration of NIC Bharat Map Services, and 3) AI Services. This platform empowers government departments/organisations with an extensive suite of features and functionalities to build custom mobile applications tailored to their unique requirements.

The ePrayuktiSewa Portal was soft launched on 31st May 2023 by Shri Paban Kumar Borthakur, IAS, Chief Secretary, Assam, in presence of Smt. Kabita Roy Das, SIO, Assam and senior NIC officials at Assam Sachivalaya, Dispur, Guwahati.



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e-PrayuktiSewa, created by NIC Assam, is a platform that helps government entities in Assam make better decisions, allocate resources wisely, and stay aware of their surroundings. It does this by offering tools like the Mobile App Builder, Bharat Map services, and AI algorithms, which allow government entities in Assam to provide improved services and better governance for the people of their state.

Features

- Integrated portal for registration, requirements gathering, and real-time service status tracking
- Comprehensive portal with various service templates and mobile responsive interface for enhanced user experience and cross browser compatibility
- Supports role-based authentication and authorization, enabling access control based on user roles for enhanced security and privacy
- email-based authentication for end-to-end security, ensuring a secure and reliable user authentication process
- Incorporates both physical and digital signatures for User Acceptance Testing (UAT), ensuring a secure and legally binding process for signing the UAT documentation
- Feedback system for requirements modification by the Department to ensure that the necessary requirements have been fulfilled
- Facilitates generation of application form and

other documents with the facility to view and download the documents

- Enables the creation of dynamic customizable forms for mobile applications. If required, departments can opt for multirole authentication, offering personalised dashboards and custom features based on user roles for an optimised mobile experience.

Technologies Used

ePrayuktiSewa portal is built using PHP Laravel Framework, which is responsible for accepting user requests. The app builder interface to process the request has been developed using Django and the app is built using Flutter. This minimises recurring licence fees and other costs involved in purchasing a secure and reliable mobile app service from other sources. Various open source technologies and tools such as PostgreSQL, JavaScript, HTML5, CSS3 and Bootstrap are used to ensure scalability, availability, concurrency, reliability, maintainability and performance.

Services Provided

Government Departments / Organizations in Assam can easily apply for services through e-PrayuktiSewa portal. Simply fill out the required information and select from a variety of templates to fit their specific needs. Once the user department has submitted the requirements, the system processes the request and delivers the requested service within a specified time-frame. This holistic approach ensures that the platform remains at the forefront of technology. Following are the services which can be availed through the e-PrayuktiSewa portal.

Mobile / Monitoring App Service

Allows non-technical users to effortlessly submit their requirements about the mobile app. The app allows users to monitor and track existing data, providing insights and facilitating data analysis for informed decision-making.

Bharat Map Service

Offers an advanced geospatial data management system, enabling precise mapping, spatial analysis and visualization of crucial information. Region-wise data representation with GIS inte-



▲ Fig 7.1

Features of e-PrayuktiSewa

NIC Assam has been an integral part of the digitalisation of Assam. In most spheres of IT activities of the Government of Assam, NIC's Projects have played a major role. In the rising demand of latest technology services for various government initiatives, NIC Assam always provides exceptional support with secure and efficient digital solution. Assam Government almost always opts for services offered by NIC Assam which has always been a part of the IT ecosystem in the State. We look forward to the continuing IT partnership with NIC Assam. This is an age of mobile technology as mobiles can reach almost every citizen. This ePrayuktiSewa will enable all departments to build a mobile app as per their requirements in a very short time without much technical input.



Paban Kumar Borthakur, IAS
Chief Secretary
Government of Assam

gration allows for the visual representation of data based on regions, enhancing data analysis and understanding.

AI Service

Tools assist in automating processes, analysing large datasets, and generating valuable insights for efficient decision-making. By harnessing the power of AI, Government Departments/Organizations in Assam can unlock new avenues of innovation, improve service delivery, and create a data-driven ecosystem.

Benefits

- Provides a number of services to the State Government Departments/Organizations as a part of Digitization & Transformation in Government.
- Quickly develops custom mobile applications (Generic, Monitoring & AI-based) based on specific user requirements
- Empowers government entities to deliver innovative services and interact with citizens in a modern and efficient manner

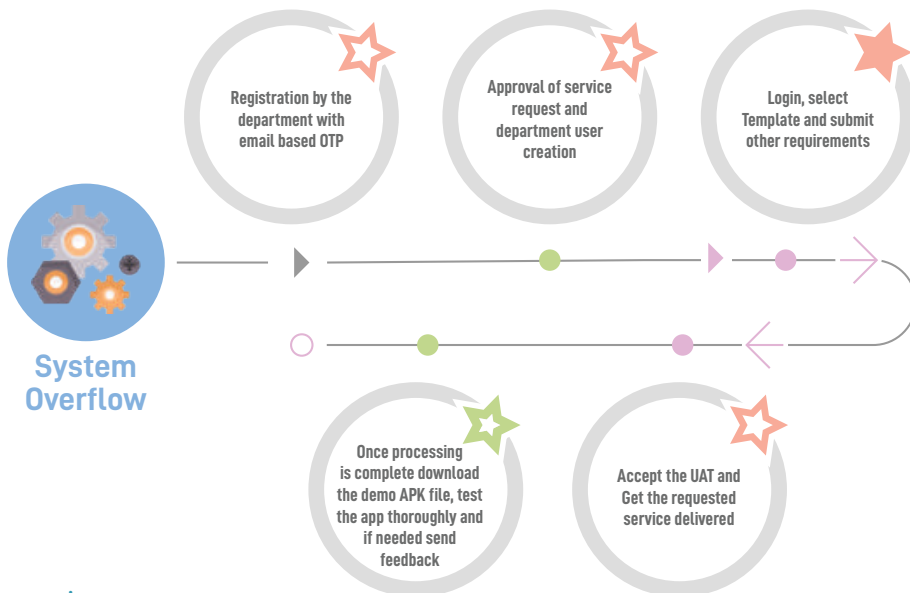
- Helps the government to verify certain cases by capturing geo location and image with accuracy
- Revolutionised the digital landscape for government entities by providing a comprehensive and user-centric platform

Way Forward

e-PrayuktiSewa Online Portal, offered by NIC Assam, is committed to continuous improvement. The portal remains dedicated to providing cutting-edge solutions and services. Future developments include expanding services, advanced analytics, enhanced security, seamless integration, and user feedback for refinement. As technology advances and requirements evolve, the portal will continue to evolve and adapt to meet the ever-changing needs of Assam's government departments and organizations.

Contact for more details

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▲ Fig 7.2

GPCB-VLTS

Hazardous Waste Real Time Vehicle Location Tracking System

Edited by RAJEEV JOSHI

The Hazardous Waste Management System is an extension of the services of the eXtended Green Node (XGN) – a online consent management portal of the Gujarat Pollution Control Board (GPCB) which is developed by NIC and is operational since 2008 as a technological innovation tools for the prevention and control of environmental pollution.

As per the state pollution prevention law and policy, it is mandatory for safe disposal of the industry produced hazardous waste. The industry is sending the hazardous waste either to recyclers or to different industries for safe disposal. The XGN software facilitates the concerned industry for online generation of hazardous waste manifest. It was a big challenge for the GPCB to track the location of those vehicles carrying hazardous waste and also to ensure its safe disposal at the real destination place. To overcome such issues NIC Gujarat along with the close associa-

GPCB-VLTS is a comprehensive web-based application for real-time tracking of the vehicle carrying the hazardous waste from industrial sites to waste management facilities for safe disposal of it. The application is developed by NIC Gujarat in collaboration with NIC Uttarakhand team. It provides a very rich dashboard through which the GPCB Control Unit can track and monitor the vehicle carrying the hazardous waste from source place to destination place on predefined route.

tion of NIC Uttarakhand team, has developed a web based Vehicle Location Tracking System for the GPCB.

The system provides the dashboard for real-time tracking of the vehicles carrying the hazardous waste during the disposal of waste. The system automatically generates various alert messages to all the concerned stakeholder including if the vehicle is diverted from its pre-defined routes. The system also provides the facility to view the trip history. Approximately 20,000+ manifests are generated monthly basis online on the XGN Portal of the GPCB. This XGN-hazardous waste manifest portal is integrated with the GPCB-VLTS system to track vehicles carrying the hazardous waste from source to destination in real-time mode.

Features of the Product

- Dashboard to monitor the live trips of vehicles carrying the hazardous waste from source indus-

try to destination industry

- Integrated with GPCB's XGN portal through which online Hazardous Waste Manifests can be created by the Sender Industries
- Sender Industry can draw the proposed route between source and destination point on the map on which the vehicle will be passing towards the destination.
- Once the route is created the trip can be said as started and then it will be available on the

Environmentally safe disposal of a Hazardous Waste is very important for pollution control as its mismanagement has a direct impact on the quality of the environment. Movement of hazardous waste for its ultimate disposal has already been governed by the online manifest system on XGN of GPCB. By technological intervention, a novel first of its kind in hazardous waste management online system on XGN has been developed namely "Vehicle Location Tracking System (VLTS)" whereby route of hazardous waste carrying vehicle would be monitored to ensure that such truck ply only on the pre-decided route for the disposal/transportation of the hazardous waste only at the destination as decided at the time of generation of the manifest. The system has been developed by NIC, Gujarat with the help of NIC, Uttarakhand. Hon'ble Chief Minister of Gujarat, Shri Bhupendrabhai Patel has launched this system on 5th June, 2022 during the World Environment Day celebration; marking its importance. This e-surveillance will further enhance tracking of hazardous waste movement in a very transparent manner.



R. B. BARAD, IAS
Chairman, Gujarat Pollution Control Board



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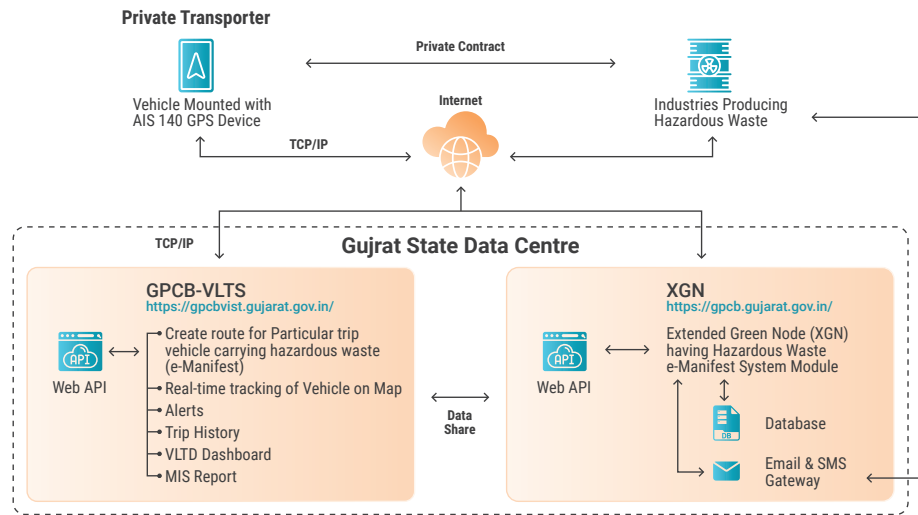
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▲ Fig 8.1 Software Architecture

VLTS portal for real time tracking

- Shows the live status of the ignition and speed of the vehicle on the dashboard
- Live tracking is available to the GPCB control room, Sender, Receiver and the concerned GPCB Regional Office
- One can re-play the entire trip history of a specific trip or for a chunk of specific period of time of the trip
- Alerts on portal as and when the vehicle is diverted from their defined route. Also a SMS will be send to concern Regional Office, Sender and Receiver
- Alerts to the concerned stakeholder when the trip is halted for too much time
- Allows searching of vehicle on dashboard by vehicle registration number OR by Manifest ID or by Sender or Receiver
- Role Based Access

Technologies Used

- 2 Web Server (16 GB 4 core each one)
 - 1 For socket application
 - 1 For VLTS web Application
- 1 DB Server (Windows 2022) – 12 core, 32 GB

- MS SQL Server 2019 Ent
- Google Map Service Purchased by GPCB
- Daily 600+ trips monitored by GPCB
- AIS 140 Compliant GPS Device sending data directly to XGN-VLTS Server

Innovations Applied

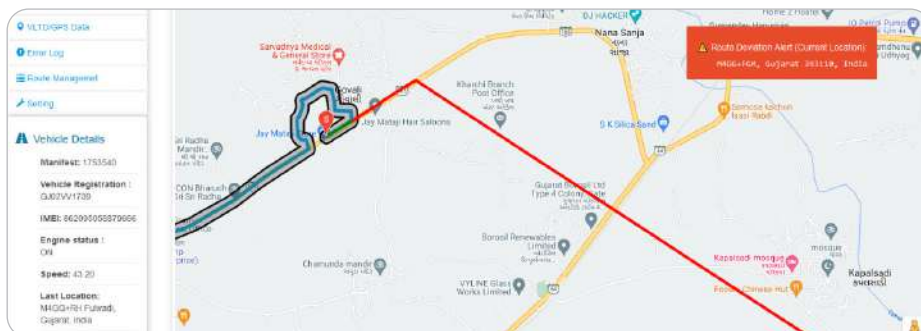
GPCB-VLTS listener is directly receiving Transmission Control Protocol (TCP) packets sent by GPS AIS 140 device on the TCP/IP port of the VLTS. The servers are hosted at Gujarat State Data Centre.

Benefits

- Real-time location tracking of vehicle carrying hazardous waste
- Alerts in case of route deviation, unexpected delay, too much halt, no logical end of the trip etc.
- Hazardous waste inventory is strengthened
- Availability of the precise data
- Irregular trips are easily detected (without e-Manifest)

Accolades

GPCB-VLTS has been honored by the SKOCH GOLD award under the environment category



▲ Fig 8.2 : Alert of Deviation of route

Under the ambit of “Vehicle Location Tracking System (VLTS)”; all the vehicles of Gujarat State carrying hazardous waste are going to be covered in coming months. However, it is planned to implement it in a phased manner starting with common facilities for the smooth roll out of the system. NIC has not only developed this system but also conceptualized related all the activities viz. vehicle registration, data transmission – analysis – storage – its retrieval, shooting alert message etc. as well as its continuous maintenance. NIC has proved a technological partner that has made it possible to materialize the idea of GPCB that has resulted into such a novel system. The system helps real-time monitoring of the hazardous waste movement for fulfilling “cradle to grave” approach and thereby has further strengthened the overall efforts of GPCB in environment preservation.



D. M. THAKER
Member Secretary
Gujarat Pollution Control Board

and the same has been jointly received by official staffs of GPCB, NIC Gujarat & Uttarakhand in a ceremony held at New Delhi on 27th May 2023.

Way Forward

In the near future, the implementation of the GPCB-VLTS will progress through several important steps. First, there will be a focus on finalizing the Action Framework for addressing violations within the VLTS. Additionally, efforts will be made to strengthen the capacities of relevant stakeholders involved in the transportation of hazardous waste. Furthermore, vulnerable hot-spots will be geofenced to provide heightened protection. Lastly, comprehensive analytics will be applied to various alerts generated by the VLTS. These collective measures aim to improve the efficiency of the VLTS, facilitate better management of hazardous waste transportation, ensure compliance with regulations, minimize environmental risks, and safeguard public health and safety.

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iHRMS Punjab

Tool for Effective HR Management & Decision Support

Edited by RAJEEV JOSHI



iHRMS Punjab is a unified human resource management (HRM) platform for all government entities in Punjab, including State Government Departments, PSUs, Boards, Corporations, Universities, and Medical Colleges. Designed and developed by NIC Punjab State Centre, the platform streamlines the HRM processes from employee entry to exit, promoting standardization and efficiency. It has become an enabler of Government to Enterprise (G2E) governance having standardized process flow for each stakeholder be State Government, Administrative Secretaries, Department Heads, Office Heads, DDOs for defined set of activities in role-based workflows manner, both in the front-end and back-end.

Over the course of six years, Punjab has witnessed a complete transformation in HRM, transitioning from limited to comprehensive and up-to-date online employee information. This data pool supports various G2E applications and has enticed organizations to replace outdated HRM systems with iHRMS, which caters to diverse human resource (HR) needs and promotes data aggregation across government.



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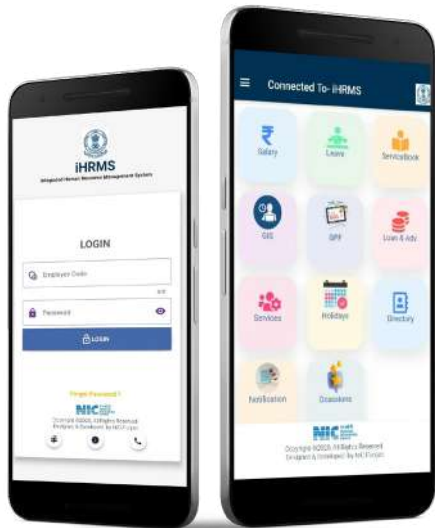
Devi Singh Thakur
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iHRMS Punjab is a unified HRM platform that encompasses all government entities in Punjab. It simplifies and standardizes HR processes from employee onboarding to offboarding, ensuring efficiency. With role-based workflows, it enables stakeholders to carry out tasks seamlessly. Over six years, Punjab has undergone a significant HRM transformation by adopting iHRMS. This platform provides comprehensive and real-time employee information, supporting various G2E applications. Its success has encouraged organizations to replace outdated HRM systems with iHRMS, which caters to diverse HR needs and promotes data aggregation across the government. The implementation has revolutionized HR practices in Punjab, promoting transparency and streamlining operations.

Features

iHRMS Punjab incorporates several innovative features that have revolutionized the HRM process. Some of the key features are:

- **Unified Platform:** iHRMS Punjab serves as a single platform for all government entities in Punjab, consolidating HRM processes and promoting standardized operations.
- **Comprehensive Financial Details:** In addition to the service book, iHRMS Punjab includes financial details such as Payroll, GPF, and GIS, providing a holistic view of employee records.
- **Real-time Service Book Updates:** iHRMS Punjab enables automated real-time updates in service books, ensuring accurate and up-to-date employee records.
- **Unified Employee ID:** A single employee ID is used across various applications, allowing for easy access to up-to-date employee records.
- **Role-based Workflows:** iHRMS Punjab implements role-based workflows, streamlining activities and ensuring efficient governance processes.
- **Versatility for Different Entities:** iHRMS serves as a single application for different entities, including departments, boards, corporations, PSUs, universities, and medical colleges, ensuring consistency and efficiency.
- **Migration and Integrates with Existing Systems:** Many departments, such as PUDA and PSPTL, are transitioning from their existing HR systems to iHRMS. The system also integrates with other applications for data sharing and user authentication.
- **Integration with Other Applications:** iHRMS Punjab seamlessly integrates with other applications, promoting data sharing and user authentication.
- **Data Aggregation:** iHRMS Punjab facilitates data aggregation across government entities, allowing for comprehensive analysis and decision-making.
- **Social Media Presence:** iHRMS Punjab leverages social media platforms like YouTube and Facebook to provide instructional videos, updates, and engage with government officials, fostering a collaborative and user-friendly approach.



▲ Fig 9.1: iHRMS Application

These features enable uniform implementation, standardization, customization, and user management. These features are tightly coupled with financial services. They enforce government rules, and support activities like loan recovery.

iHRMS also offers two-factor authorization, system and SMS-based alerts, status reports, graphical dashboards, analytics reports, and open API services for data access and integration and eSign integration.

Further it adds transparency in the personnel

▼ Fig 9.2: iHRMS Portal Home Page



and financial management and makes available projections of financial liabilities and manpower requirements to the government.

Technologies Used

Latest Technology Stack along with Microsoft .Net and SQL Server with MVC framework is used for the development of the portal with local level interface. Front-end technologies such as HTML, CSS, JavaScript, jQuery bootstrap are also part of the technology stack being used.

Impact

- **Cost Efficiency:** iHRMS reduces the need for manual work, resulting in significant cost savings for the government.
- **Fraud Prevention and Data Integrity:** iHRMS helps prevent fraudulent activities and ensures data integrity, particularly in areas like GPF and leave management.
- **Streamlined Operations:** iHRMS streamlines workflow by providing a role-based and work-flow-driven approach, improving efficiency and standardization.
- **Data-driven Decision Making and Support:** iHRMS provides accurate and up-to-date employee data, enabling data-driven decision making and supporting activities such as loan recovery and district administration for elections.
- **Reduction in Paper Usage** enabled by online transfer of papers thus resulting into carbon credit for the state.

These features collectively enhance efficiency, reduce costs, improve data accuracy, and empower decision makers in the government entities using iHRMS.

I am delighted to introduce iHRMS Punjab portal, an exclusive platform designed to revolutionize HR management across all government entities. With its comprehensive features and user-friendly interface, iHRMS Punjab enables effective and efficient handling of human resources, ensuring standardized processes and optimal productivity. This state-of-the-art portal serves as the foundation for numerous government business applications, providing a unified and streamlined approach to HR management. We are experiencing the power of iHRMS Punjab and unlocking a new era of excellence in HR management.

Sending my heartfelt best wishes to NIC Punjab!



Vijay Kumar Janjua, IAS
Chief Secretary, Punjab

Way Forward

In the next phase, the objective is to achieve an automated integration between iHRMS and the IFMS of the state government, leading to streamlined processes and improved operational efficiency. Furthermore, there are plans to develop and implement additional modules, including an Automated & Intelligent Transfer module based on department transfer policies, tours and employee grievances. Emphasis will also be placed on creating a robust and dynamic Dashboard that offers a comprehensive overview of the system's functionalities and data.

The iHRMS application, which is built upon the Civil Service Rules of the Punjab Government, incorporates business rules directly into its software database. This approach enables easy replication with minimal customization for other states, minimizing the need for extensive modifications and simplifying the implementation process.

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SugamyaWeb

Enabling accessible web experience of the Indian Governments websites

Edited by MOHAN DAS VISWAM



In India, ensuring equal access to internet technology and digital experiences is crucial, where around 2% of the population faces disabilities. Web Accessibility is essential for individuals with disabilities to access information and resources online. Inaccessible websites create barriers that hinder effective internet usage, impacting work, communication, learning, and social participation.

Conventional testing approaches with manual validation and reliance on multiple formats and isolated systems can introduce inaccuracies and human errors. The absence of futuristic technologies like Artificial Intelligence limits growth, competitiveness, and cost-effectiveness.

To overcome these challenges and enhance the accessibility of the Indian Government Websites, the Ministry of Electronics & Information Technology (MeitY) launched an Innovation Challenge in 2021-22 for Startups. This challenge aimed to develop a Cloud-based Web Accessibility Reporting System. Several Indian startups participated, progressing through ideation, building a Minimum Viable Product (MVP), and ultimately developing a functional product.



SugamyaWeb is a cloud enabled Web Accessibility reporting platform, which provides end-to-end web testing. The tool classifies and prioritizes accessibility issues based on end user impact along with recommendations on how to fix the issue. So, as to enable the teams to target the right to fix, instead of being buried in the bug reports.



During the ideation stage, a distinguished selection panel shortlisted five startups based on their innovative ideas. These selected teams were then tasked with developing the MVP. Eventually, two teams were chosen to build the Functional Product, and Sumatak Technologies was selected as the winner by the Grand Jury.

The final tool, SugamyaWeb, was developed in consultation with NIC and was deployed at the NIC Cloud in December 2022. It leverages automation and system intelligence to streamline testing and decision-making processes, ensuring accuracy. It generates comprehensive audit reports with guidance, recommendations, root cause analysis, and advanced visualization capabilities.

Key Features & Technology

Comprehensive Testing: SugamyaWeb uses advanced test rules and human-like scanning to assess web pages for accessibility. It evaluates websites based on GIGW 3.0 and WCAG 2.1 guidelines, promptly reporting any accessibility issues for resolution. It also supports periodic tests to ensure ongoing accessibility readiness as websites evolve.

Smart Reporting, Insights & Analysis: Unlike typical accessibility tools, SugamyaWeb prioritizes issues based on impact and provides

SugamyaWeb, is for the Divyangjan Sisters and brothers who need support and facilities to prevent discrimination. It is a noble initiative by NIC as inclusivity and accessibility have always been our underlying principles.



Alkesh Kumar Sharma

Secretary
Ministry of Electronics and IT

guidance for resolving them. User-specific dashboards display accessibility scores, trends, and outstanding issues. It generates alerts for delayed resolution of non-compliant issues.

Intuitive and easy-to-use interface: This tool offers a user-friendly interface, reducing the learning curve and increasing productivity. The accessibility reports include fix recommendations, expediting accessibility compliance.

Integration with Parichay SSO and the NIC ecosystem: SugamyaWeb seamlessly integrates with Parichay and the NIC ecosystem, streamlining the workflow from user onboarding to reporting and monitoring. It also allows API-based



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integration with existing systems for website onboarding, test triggering, and accessing results.

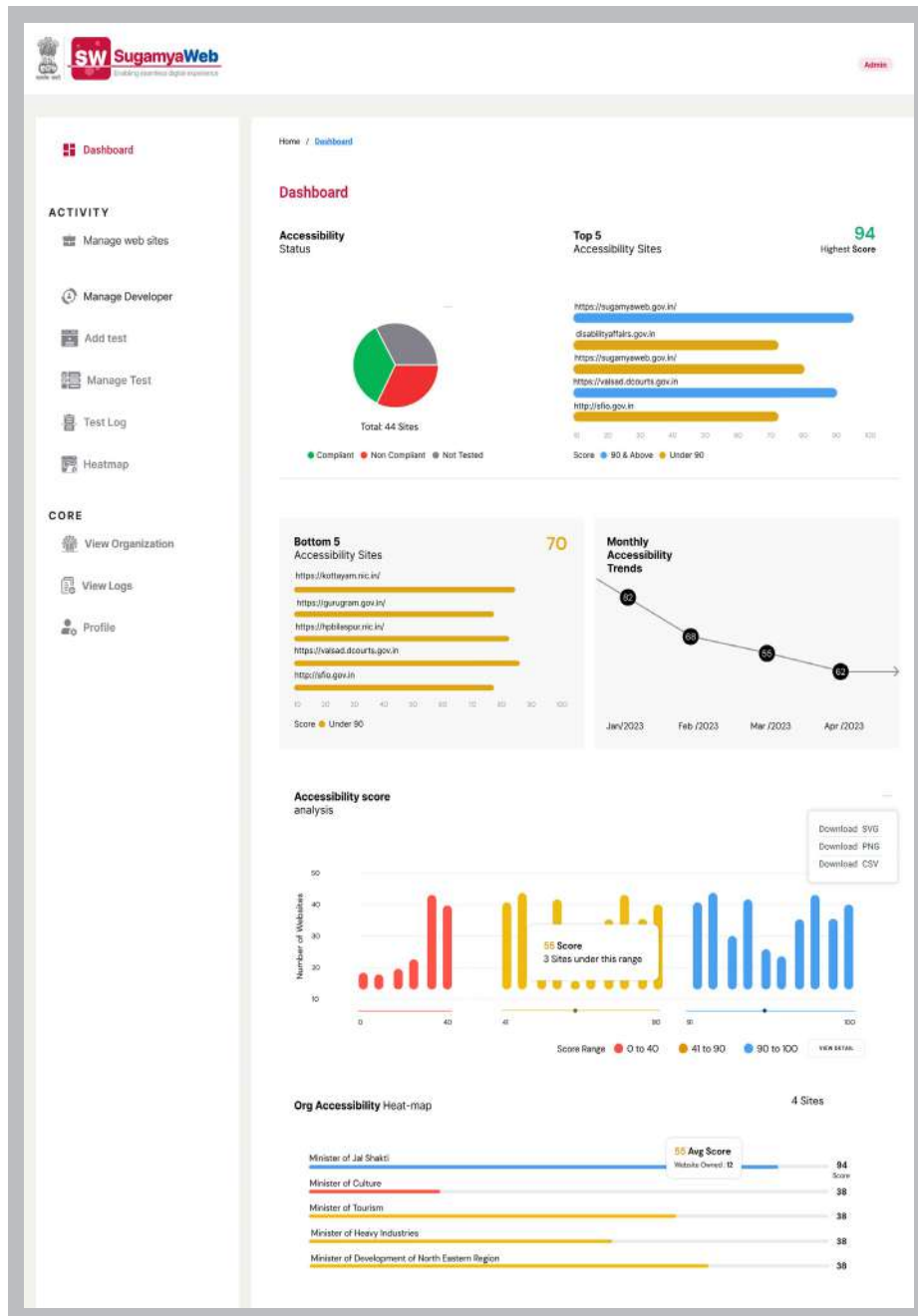
Role based access: It provides role-based access to Web Information Managers (WIMs) and QA Testers

Comprehensive accessibility testing: The tool has a test suite consisting of 170+ tests in 14 categories to assess accessibility criteria. These categories include keyboard, semantics, parsing, Accessible Rich Internet Applications (ARIA), name-role-value, color, structure,

forms, language, time-and-media, sensory-and-visual-cues, text-alternatives, tables, and experimental. Each web page undergoes these tests to evaluate its accessibility readiness.

Test Impact: Tests are categorized as minor, moderate, serious, or critical-based on their impact on users with disabilities. Minor impacts cause frustration, while moderate impacts hinder content access. Serious impacts lead to screen reader inconsistencies, and critical impacts render core content and features inaccessible.

▼ Fig 10.1 : SugamyaWeb Dashboard



The global market for assistive technology is estimated to be worth 32 billion dollars. In India, the current market size stands at around INR 5000 crores. It is delightful to witness that MeitY is promoting Startup Ecosystem in the field of accessibility and the innovative contributions made by our young talent.



Rajesh Aggarwal

Secretary
Department of Empowerment of Persons with Disabilities (Diyangjan)

Technology: SugamyaWeb uses a microservices architecture and modern tech stack on open source and cloud computing for scalability. The test framework allows future custom test rules and can aggregate results and generate reports. It can integrate new test rules and framework to enhance its capabilities over time.

Running Accessibility Tests

Set Test Modes: There are 2 test modes – Single Page or Full Site. For a given URL, that page alone can be tested or the entire website with all the pages under that domain can be tested

Set Guidelines: Tests can be configured to run against a specific WCAG Guideline (v2.0 or v2.1) and Level (A or AA or AAA)

Schedule Test: Tests can be scheduled to run once or at a pre-set interval e.g. days, weeks, months

Run Test: Tests can be triggered to start immediately or at a specific date-time

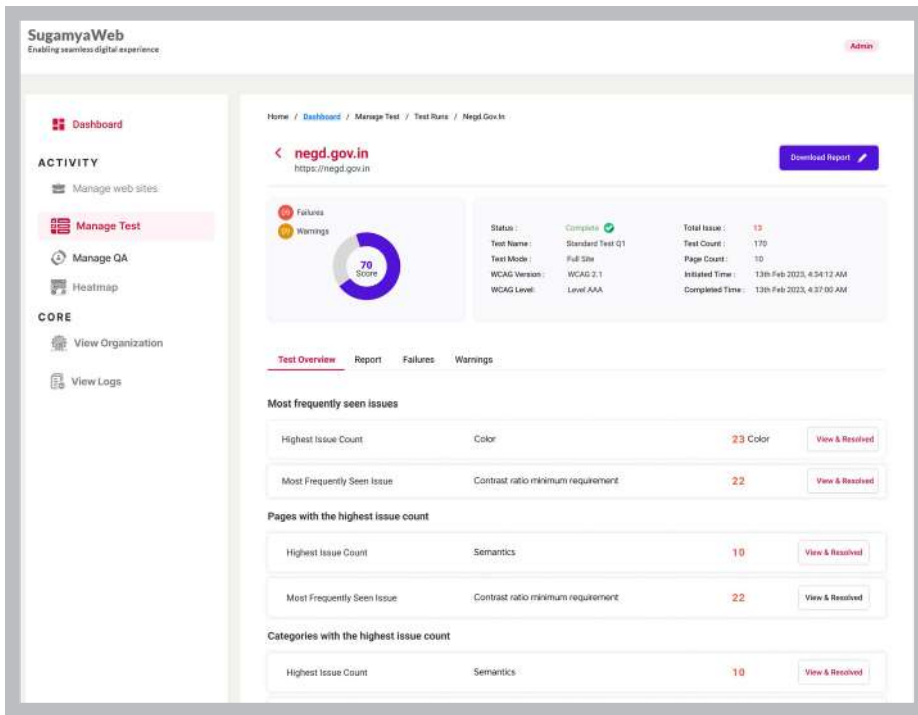
Report Generation

Once the test is completed, every website/page undergoes an evaluation process, resulting in a test score and a summarized overview of the test results. The test score is determined by considering the impact and quantity of failures encountered during the test. A score of 0-39 is considered poor, 40-89 needs improvement, and 90-100 is good. The test report contains failures and warnings including:

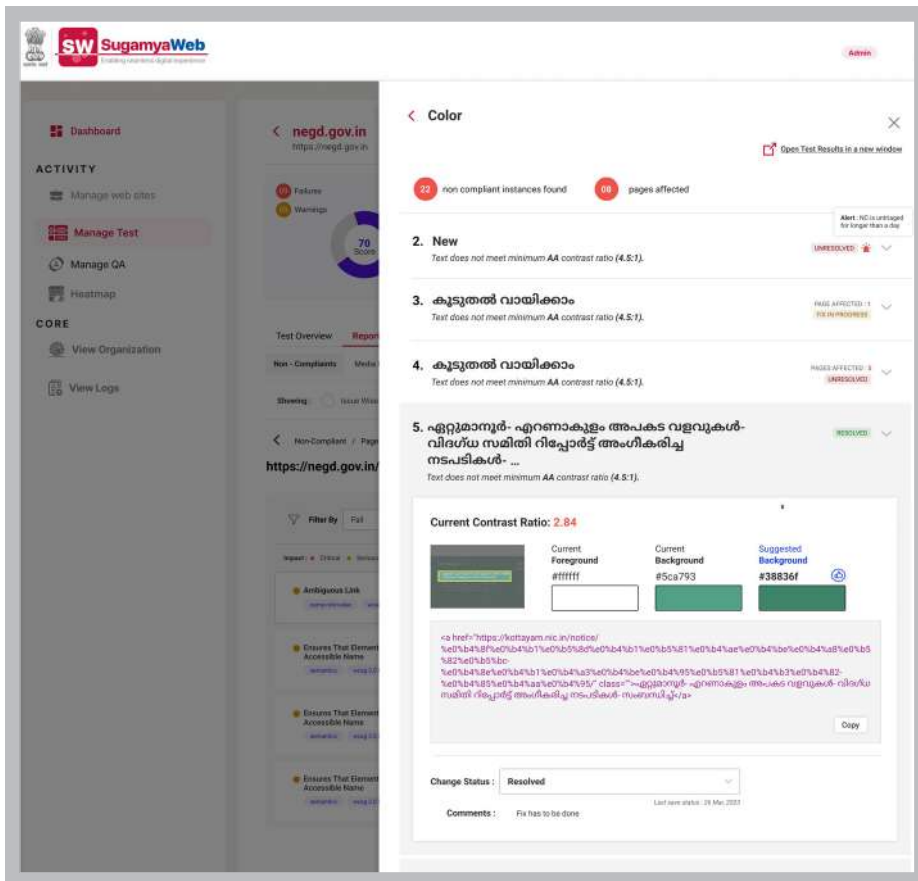
Non-Compliance: Elements on the webpage that don't meet accessibility standards

Snippets: Code blocks of the non-compliant elements that caused failures

Screenshots: Visual representations of non-compliant elements with highlighted markers



▲ Fig 10.2 : Sugamyaweb Test Report Sample



▲ Fig 10.3 : Sugamyaweb Detailed Test Report Sample

Recommendations to Fix: Resources such as test descriptions, reference links, and recommendations to address the issues

Historical Dashboard

The dashboard tracks accessibility improvements by showing the website’s overview, trends in accessibility scores, and issue count over time. It helps monitor the progress of accessibility changes implemented on the website.

Limitations

It must be understood that automated tools in general do not identify 100% of the accessibility issues. Manual intervention would be required in some cases to validate the test results.



We are honoured to win the Innovation Challenge for a Cloud-based Web Accessibility Reporting Solution. This recognition validates our commitment to inclusive technology and empowers us to push boundaries in creating accessible solutions for all. As a start-up we would keep striving to contribute in the digital transformation of India.

Anand Kanagraj
Cofounder & Technical Lead
Sumatak Technologies

Conclusion

Sugamyaweb empowers Indian government entities to evaluate the accessibility of their websites, promoting barrier-free access for all individuals. Its impact extends beyond government sites, inspiring private organizations to prioritize Web Accessibility as well. Through the Innovation Challenge and the deployment of Sugamyaweb, MeitY has taken significant steps towards enhancing web accessibility, empowering individuals and fostering inclusivity in the digital realm.

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REST vs. Messaging for Microservices

Discover how to choose the right communication style for Microservices

Edited by **SANGEETHA MANJUNATH**

Microservices enable developers to develop applications that provide consistent user experiences across a range of platforms like web, mobile, IoT, wearable and fitness trackers. Microservices are autonomous by allowing code and state to be independently developed, versioned, deployed, and scaled. The popularity of microservices is that they can solve many current IT challenges such as increasing speed, quick deployment, scalability of applications and rapid test processes.

While identifying and designing microservices, it is highly essential to ensure that the services are as small as possible so that each microservice can be Continuously Integrated (CI) and Continuously Delivered (CD) for Deployment. The proper understanding of microservices is necessary for planning, documentation and testing in order to achieve the desired results.

REST Vs Messaging for Microservices

A microservices architecture is a well-established approach to build complex systems composed of loosely coupled modules. It has gained significant traction as one of the most prominent software architecture trends in recent years. The concept behind it is surprisingly straightforward: break down a large, interconnected system into multiple small, lightweight modules, which simplifies software management.

However, a crucial question arises once the

monolithic application is divided into these smaller modules — how should they be effectively interconnected? While there isn't a definitive answer to this question, several approaches can be considered based on the specific application



Two common protocols used in microservices are HTTP request/response with resource APIs and lightweight asynchronous messaging when communicating updates across several microservices. This way the small, lightweight modules in MSA architecture can achieve the business domain process. MSA is the established pattern which can make software management easier with the agile development, fast delivery, highly scalable and maintain high availability.



and use case. Two common protocols used in microservices are HTTP request/response with resource APIs and lightweight asynchronous messaging when communicating updates across several microservices. Let's explore these protocols.



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Types of Communication

Microservices can communicate through many different modes of communication, each targeting a different use case. These types of communications can be primarily classified in two dimensions. The first dimension defines if the communication protocol is synchronous or asynchronous. The second dimension defines if the communication has a single receiver or multiple receivers. Refer to Table 11.1 and 11.2 to understand key difference between all these dimensions.

The most common type of communication between microservices is single-receiver communication with a synchronous protocol like HTTP/HTTPS when invoking a REST API. Microservices typically use messaging protocols for asynchronous communication between microservices. This asynchronous communication may involve a single receiver or multiple receivers depending on the application's needs.

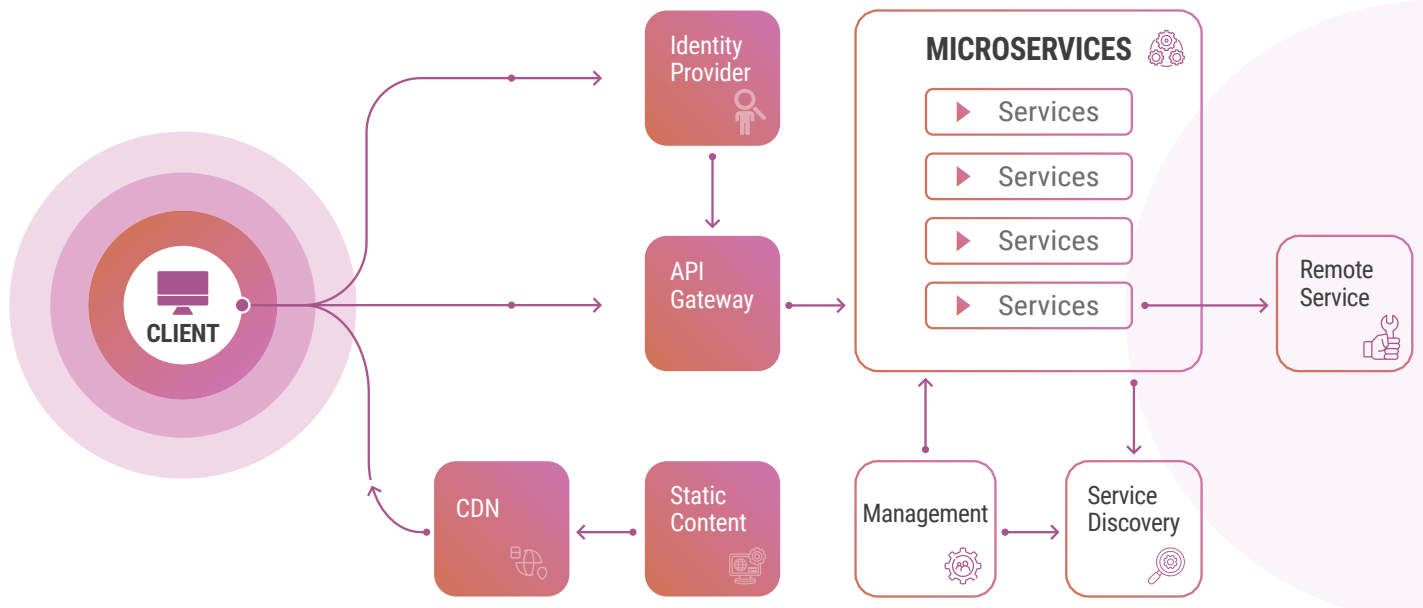
Representational State Transfer

Representational State Transfer (REST) is a popular architectural style for request and response communication, and it can serve as a good example for the synchronous communication type. This is based on the HTTP protocol, embracing verbs such as GET, POST, PUT, DELETE, etc. In this communication pattern, the caller waits for a response from the server.

REST is the most commonly used architectural style for communication between services, but heavy reliance on this type of communication has some negative consequences when it comes to Microservices Architecture (MSA). The disadvantages include: 1. Multiple round trips (latency), 2. Blocking and Tight Coupling.

Asynchronous Messaging

Messaging is widely used in a microservices architecture, which follows the asynchronous protocol. In this pattern, a service sends a message



▲ Fig 11.1

Architecture of Microservices

without waiting for a response, and one or more services process the message asynchronously. Asynchronous messaging provides many benefits but also brings challenges such as idempotency, message ordering, poison message handling, and complexity of message broker, which must be highly available. It is important to note the difference between asynchronous I/O and the asynchronous protocol.

Asynchronous I/O means that the calling thread is not blocked while the I/O operations are executed. This is an implementation detail in terms of the software design. It also means that the sender does not need to wait for a response.

Asynchronous messaging has matured into a number of messaging patterns. These patterns apply to scenarios when several parts of a distributed system must communicate with one another in a dependable and scalable way. Let's take a

look at some of these patterns.

Pub/Sub Pattern

The pub/sub pattern implies that a publisher sends a message to a channel on a message broker. One or more subscribers subscribe to the channel and receive messages from the channel in an asynchronous manner. This pattern is useful when a microservice needs to broadcast information to a significant number of consumers.

Advantages

- Decouples Publishers and Subscribers
- Increases Scalability
- Improves Responsiveness
- Separation of Concerns

Disadvantages

- High Semantic Coupling

- Difficult to Gauge the Health
- Becomes a Bottleneck for scaling

Queue-Based Pattern

In the queue-based pattern, a sender posts a message to a queue containing the data required by the receiver. The queue acts as a buffer, storing the message until it is retrieved by the receiver. The receiver retrieves messages from the queue and processes them at its own pace.

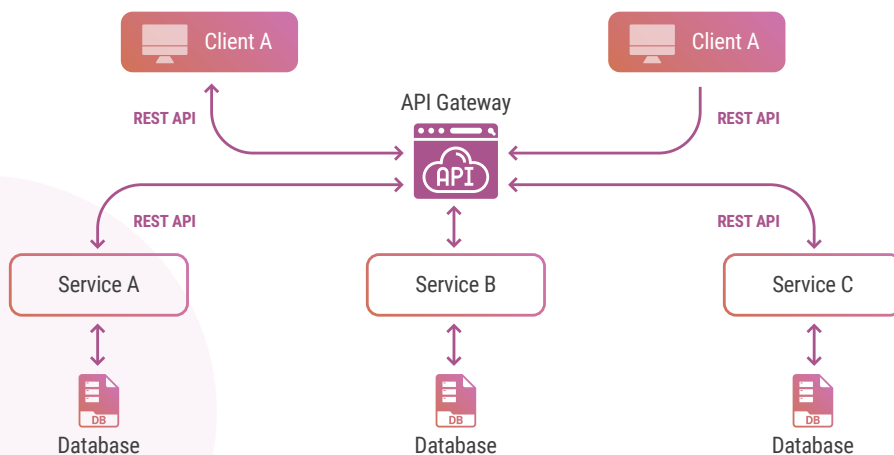
This pattern is useful for any application that uses services that are subject to overloading.

Advantages

- Maximize Scalability
- Maximize Availability

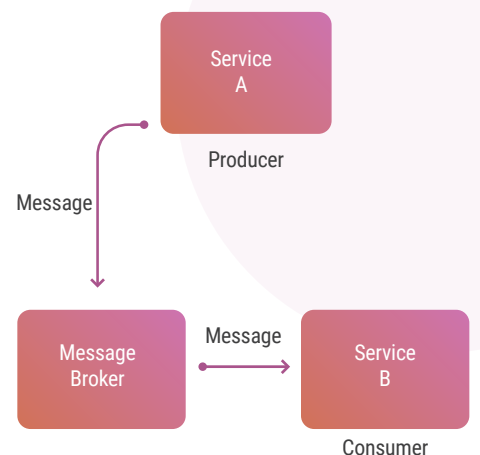
Disadvantages

- No Longer Available after receipt
- Operational Complexity



▲ Fig 11.2

Rest API-based Communication



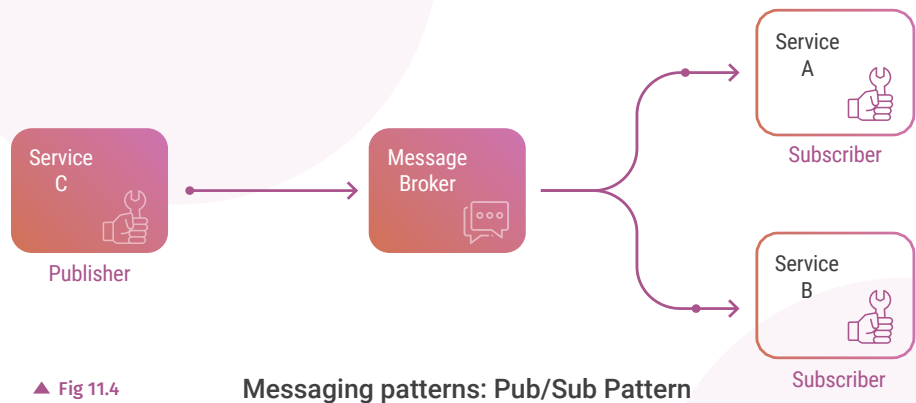
▲ Fig 11.3

Messaging-based communication

Keys to Streamlined Messaging Infrastructure

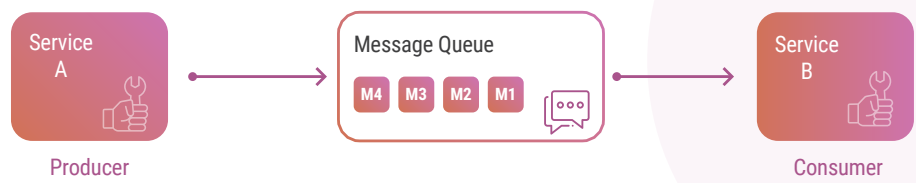
Asynchronous communication is usually managed through a message broker. There are some factors to consider when choosing the right messaging infrastructure:

- **Scalability** – ability to scale automatically when there is a load surge on message broker
- **Data persistency** – ability to recover messages in case of reboot or failure
- **Consumer capability** – whether the broker can manage one-to-one and/or one-to-many consumers
- **Monitoring** – whether monitoring capabilities are available
- **Push and pull queue** – ability to handle push and pull delivery by message queues
- **Security** – proper authentication and authorization for messaging queues and topics
- **Automatic failover** – ability to connect to a failover broker automatically when one broker fails without impacting publisher / consumer



▲ Fig 11.4

Messaging patterns: Pub/Sub Pattern



▲ Fig 11.5

Messaging patterns: Queue-Based Pattern

Synchronous Vs. Asynchronous Communication

What are the various concerns with respect to the first dimension: synchronous or asynchronous are tabled below.

	Communication Pattern	Protocols	Coupling	Failure Isolation
Synchronous	The client sends a request and waits for a response from the server.	HTTP/HTTPS	The client code can only continue its task further when it receives the server response.	It requires the downstream server to be available or the request fails.
Asynchronous	Communication is not in sync, which means it does not happen in real time.	AMQP, MQTT	In the context of distributed messaging, coupling implies that request processing will occur at an arbitrary point in time	If the consumer fails, the sender can still send messages. The messages will be picked up when the consumer recovers.

▲ Table 11.1

Communication via Single Vs. Multiple Receivers

With respect to the communication receiver's instances the concerns related are tabled below.

	Communication Pattern	Use Case
Single Receiver	It implies that there is point-to-point communication that delivers a message to exactly one consumer that is reading from the channel, and that the message is processed only once.	It is well-suited for sending asynchronous commands from one microservice to another.
Multiple Receivers	Communication from the sender is available to multiple receivers.	The publish/subscribe mechanism is where a publisher publishes a message to a channel and the channel can be subscribed by multiple subscribers/receivers to receive the message asynchronously.

▲ Table 11.2

Conclusion

Microservices are becoming the de facto approach for designing scalable and resilient systems. It cannot be defined discretely the best and suitable approach for communications among the microservices.

Restful APIs provide a request-response model for communication between services, whereas asynchronous messaging offers a more scalable producer-consumer relationship among different services. Both messaging and REST APIs can be utilized for communication between microservices.

Messaging architectures, in particular, are highly beneficial for enhancing agility and facilitating rapid development. They are commonly employed among the modern applications that employ microservices or any application featuring decoupled or distributed components.

When selecting the appropriate communication style for microservices, it is crucial to ensure a harmonious alignment between the requirements of the consumer and one or more communication types. This alignment guarantees the provision of a robust interface for the services.

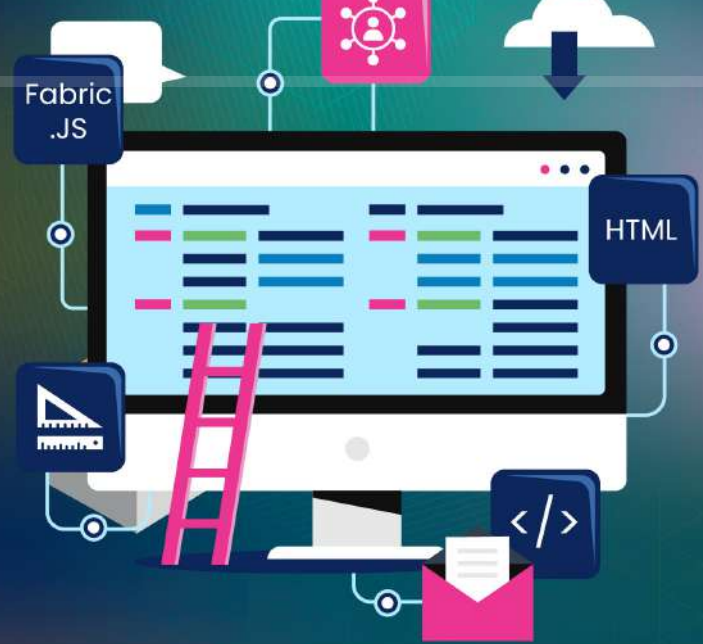
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HTML Canvas & Fabric.js

Open-source 2D Geometry Rendering JavaScript Library

Edited by **MOHAN DAS VISWAM**



Every era has its own technological breakthrough, and in today's digital age, computer graphics plays a crucial role in shaping this advancement. Initially, web browsers were not planned for graphics applications, but were designed for rendering simple web pages with static text content. With the use of dynamic content and scripting languages, the demand for graphics support in browsers has grown immensely. This article sheds light on Fabric.js, an open-source JavaScript-based 2D graphics library that enables captivating visual effects, game design, interactive art, geometric calculations, and more. The revolution of 2D graphics in web design and its

application in school education are also explored, featuring CollabGEO – an exemplary Collaborative 2D geometrical tool – developed by the Education

Projects Division, NIC, adhering to National Digital Education Architecture (NDEAR) standards. set of features and APIs, Fabric.js simplifies the process of creating stunning visual experiences, from simple to complex diagrams.

Features

Object oriented model

Fabric.js embraces an object-oriented approach, treating each graphical element on the canvas as an object with its own methods and properties. Developers can leverage Fabric.js's seven basic objects (fabric.Circle, fabric.Ellipse, fabric.Line, fabric.Polygon, fabric.Polyline, fabric.Rect, fabric.Triangle) or create custom objects to suit their specific needs. This model provides a structured and intuitive way to work with graphical elements.

Interactivity

Interactivity means the interaction with an object using a peripheral device such as mouse, keyboard, or joysticks. It is a vital aspect of 2D graphics, and Fabric.js simplifies event handling by offering a comprehensive set of event listeners. Developers can easily attach these listeners to graphical objects, enabling seamless interactions with mouse clicks, movements, and drag-and-drop actions. Fabric.js enhances the user experience by facilitating intuitive and responsive interactions.

Rendering and animation

Fabric.js renders graphics efficiently on the canvas. It has optimised rendering techniques, making it possible to handle a large number of graphical objects without compromising performance. Additionally, Fabric.js provides built-in methods to apply various animations as well as customised animations can also be created, enabling creation of dynamic and interactive visuals.

Serialisation and Deserialization

Fabric.js offers built-in support for serialising objects and their properties into JSON or SVG format. This feature allows developers to save the state of the canvas, making it easier to implement functionality like undo / redo or project saving.

Fabric.js is an open source 2D graphic library which can be used to give attractive visual effects, design games, interactive art, geometrical entities and calculation, etc. 2D graphics has brought a revolution in web design by proving scenes and animations. CollabGEO – Collaborative 2D geometrical tool developed by Education Projects Division, NIC using Fabric.js.

Projects Division, NIC, adhering to National Digital Education Architecture (NDEAR) standards.

About HTML Canvas and Fabric.js

The HTML <canvas> element allows for drawing graphics on a web page using the Canvas API in JavaScript. However, when it comes to effectively manipulating and interacting with graphical objects, this low-level API falls short. Enter Fabric.js (<https://fabricjs.com>), an open-source JavaScript library licensed under MIT that builds upon the HTML5 Canvas to provide a wide range of functionalities for creating and manipulating 2D graphics on the web, which involves the representation of visual elements in two dimensions: width and height. With its robust



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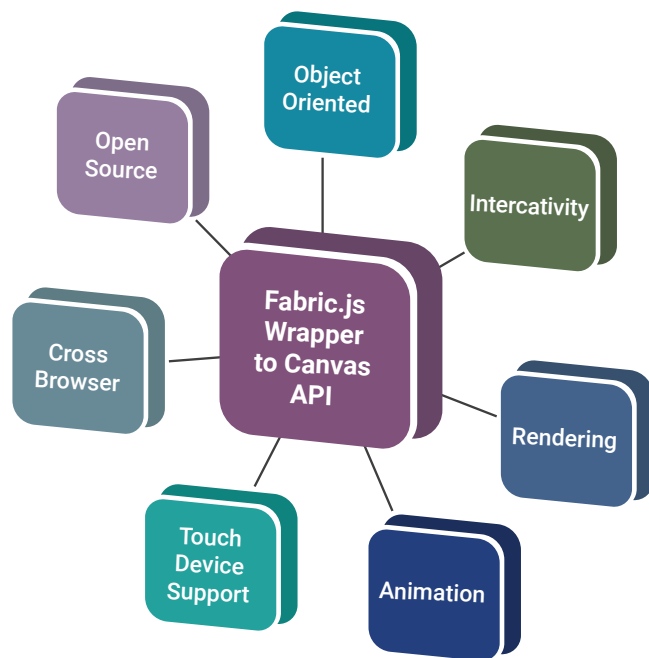
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▲ Fig. 12.1: Features and benefits of Fabric.js

Deserialization allows for decoding serialised objects or saved data, effectively re-rendering or loading them in web applications.

Other advanced functionality

Fabric.js offers an array of advanced features that expand its capabilities. These include support for layers, grouping and ungrouping objects, image filters, clipping, masking, and text manipulation. These features provide developers with versatile tools to create intricate and highly customizable graphics effortlessly.

How to use Fabric.js

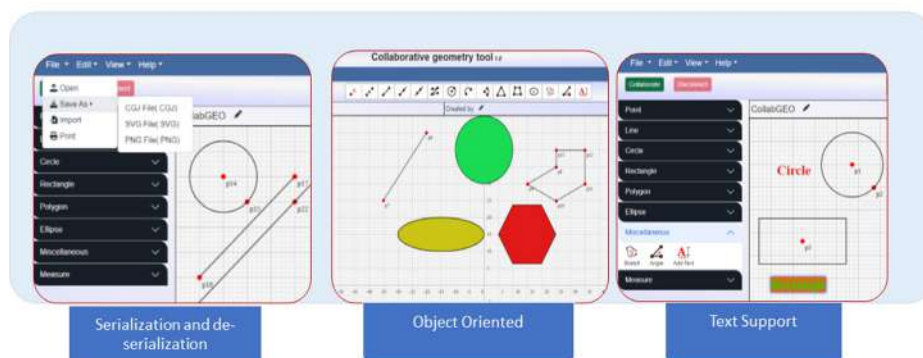
To start using Fabric.js, it requires to include the library in the web project by including the Fabric.js script file. This can be achieved by multiple ways. One way is to import the entire library using the <script> element. The Library's 'js' distribution file (fabric.min.js) can either be obtained from their official GitHub repository

(<https://github.com/fabricjs/fabric.js>) or use a public CDN link such as jsDelivr. (<https://cdn.jsdelivr.net/npm/fabric@5.3.0/dist/fabric.min.js>). Another way is to use a package manager such as NPM to install it as a dependency. Instructions to download and install the fabric package can be obtained from npmjs (<https://www.npmjs.com/package/fabric>).

Application areas

The world of 2D graphics offers endless possibilities for creating captivating, interactive and visually appealing experiences on the web. There are numerous areas and applications where 2D graphics come in picture such as Image and Photo Editors, Games, Animations, Website Designers, Data Visualization, Geometry representations etc. A list of example applications can be seen at Fabric.js website (<https://github.com/fabricjs/fabric.js/wiki/Who%27s-using-Fabric>).

▼ Fig. 12.2: Fabric.js features used in CollabGEO



Education Projects Division, NIC has also explored the capabilities of Fabric.js and developed a web-based Collaborative 2D geometry tool, CollabGEO. It aims to enhance the teaching and comprehension of geometrical concepts through collaborative interaction in real time. It will aid teachers in explaining and practising theoretical concepts for students to comprehend and solve in a virtual setting. It adheres to the NCERT curriculum for classes 6th through 10th and is adaptable to the other Indian school board curriculum. Numerous features such as Geometry creation (line, circle, ellipse, triangle, rectangle, polygon, hexagon, pentagon, octagon, parallel lines, perpendicular lines etc.), annotations and labels, Measurements (length, area, perimeter), Scaling, Transformations, Serialization and De-Serialization of objects in CGJ format, Real time collaboration among others have been offered in this application.

Benefits of Fabric.js

Integration with web technologies - Fabric.js seamlessly integrates with other web technologies, making it a versatile choice for web development. It can be used in combination with HTML, CSS, and JavaScript frameworks to build interactive dashboards, data visualisations, image editors, and much more.

Touch devices support - Fabric.js also has support for touch events such as dragging, shaking, long pressing orientation change etc, enabling smooth interaction on touch-enabled devices.

Cross-browser compatibility - Fabric.js works seamlessly across major web browsers, ensuring broad compatibility with modern browsers such as Chrome, Firefox, Safari, and Edge.

Active community - Fabric.js benefits from an active and supportive community that provides help, resources, maintains comprehensive documentation, API references, guides, and tutorials. The Fabric.js project is hosted on GitHub (<https://github.com/fabricjs>), allowing the community to actively contribute to the library's development. The community has created a number of extensions and plugins that extend the functionality of the library.

Conclusion

Fabric.js provides developers with a powerful toolset to unlock the potential of 2D graphics on the web. With its simple object model, and extensive feature set, Fabric.js enables the creation of captivating data visualisations, image editors, geometry renderings, and interactive interfaces, which are compatible with modern browsers.

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Appscape

Showcasing latest mobile apps developed by National Informatics Centre

Mobile technology has emerged as a primary tool for governments to serve their citizens. It has bypassed the need for 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.

Him Red Cross

Him Red Cross mobile app revolutionises humanitarian aid by leveraging technology. The app aims to automate services provided by the Hamirpur District Red Cross Society and serves as a handy tool for the public. Some of its key features are:

- **Membership Enrollment:** Users can easily become society members by following guidelines and entering personal details.
- **Approval and Membership Type Change:** Authorised users can approve or reject membership requests and modify membership types.
- **Service Information:** Up-to-date details on Red Cross services and contact information of Nodal Officers. In-app calling is also available.
- **Donation Directory:** Directory of authorised Nodal Officers for cash or item donations like medical supplies, clothes, and books.
- **Pathological Lab Details:** Information on labs, available tests, and rates.
- **Event Updates:** Details on upcoming medical camps, blood drives, and fairs organised by the District Red Cross Society.

By empowering individuals and communities, the app contributes to the mission of minimising human suffering and inspires compassion within society.

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Aasaish

Aasaish, which translates to "convenience" in Urdu, is a mobile app created for the citizens of Anantnag District to report their complaints and demands pertaining to the district's various departments. This app intends to revolutionise the conventional approach to redressing grievances.

With the implementation of Aasaish, it is no longer necessary for citizens to physically visit departments and wait in long lines to register their complaints. The app streamlines the entire procedure, significantly improving the efficacy of complaint redressal and promoting good governance.

One of the key benefits of this app is increased accountability, as it ensures that all grievances are acknowledged and addressed promptly. Moreover, Aasaish promotes transparency by providing citizens with an overview of the status of their complaints, thereby encouraging citizens to participate actively in the governance process.

Overall, Aasaish has revolutionised the grievance redressal and service delivery process in District Anantnag. Through its user-friendly interface and comprehensive features, it has effectively bridged the gap between citizens and the administrative set-up. This innovative app not only improves efficiency but also reinforces accountability, transparency, and effective tracking of grievances.

👤 *Shri Jan Mubarak Ahmed Bhat (jan.mubarak@nic.in)*

Unified MCD App

The MCD App serves as a vital connection between the municipal corporation services and the residents of Delhi. Developed by the NIC MCD team, some of the key services available through this app are property tax payment, tracking the status of birth and death certificates, and user charges. The app also offers features such as eSBM, enabling users to download digitally generated certificates with unique registration numbers.

The app's major features include the ability to track the status of birth and death certificates, download digitally generated certificates, and pay property taxes. The app eliminates the need for a web browser and remembering specific URLs, making it easily accessible to users. It also provides a user-friendly interface and is particularly beneficial in areas with limited internet connectivity.

Obtaining birth and death certificates through the app is crucial, as these documents are required for various purposes. Similarly, the property tax service allows users to pay taxes and access property details conveniently.

Overall, the Unified MCD App is designed to engage residents and increase the number of registrations by providing a streamlined and accessible platform for availing municipal corporation services in Delhi.

👤 *Smt. Manie Khaneja (sio-del@nic.in)*

Sewayojan

The Sewayojan app, developed by NIC Uttar Pradesh for the Department of Training and Employment, Government of Uttar Pradesh, aims to provide unemployed candidates with job opportunity information through career counseling. Key features of the app include:

- Candidates can easily register for employment through the app
- Keeps candidates updated with information about the job market
- Provides information on career counseling cells, job fairs, and training and guidance centers in order to help candidates in their career development
- Provides notification of amendments to the Employment Office (Compulsory Notification of Vacancies) Act, ensuring candidates are well-informed.

The Sewayojan app streamlines the process of connecting unemployed candidates with job opportunities in Uttar Pradesh. It serves as a comprehensive platform that not only provides job listings but also offers support and guidance through counselling services and career-related information. By facilitating employment and addressing the challenges of unemployment, the app plays a vital role in promoting economic growth and prosperity in the state.

👤 *Shri Rizwan Ul Haq Khan (sio-up@nic.in)*

TamilNilam

TamilNilam app is an android-based mobile application that provides citizens with easy access to various e-services related to land records in Tamil Nadu. With this app, users can conveniently view and access important information pertaining to rural land details.

One of the key features of the app is the A-Register, where citizens can enter specific details to access information on survey number, land type, soil type, rate per hectare, irrigation source extent of the Sub-division, patta number and the name of the pattadar. Users can also review any remarks associated with the land. This provides an efficient way for citizens to instantly view and verify these essential details. Additionally, users can download this information in PDF format.

The TamilNilam app also offers the facility to check the application status for Patta transfer, both in rural and urban areas. Moreover, users can quickly access information regarding whether the land is classified as 'Private' or 'Poramboke' land.

Overall, the TamilNilam app simplifies the process of accessing land records, empowering citizens with easy and efficient means to view crucial information related to rural land details in Tamil Nadu.

👤 *Shri CJ Antony (sio.tn@nic.in)*

iGOT Karmayogi

IGOT Karmayogi is an innovative mobile app as a part of the Integrated Government Online Training (iGOT) program. It aims to enhance the skills and capabilities of government employees across various departments and sectors.

The app offers a comprehensive learning platform that covers diverse areas such as governance, management, public administration, technology, and soft skills, allowing government employees to improve their knowledge, expertise, and performance. The app also incorporates adaptive learning techniques, ensuring that training programs are tailored to the individual's proficiency level and learning pace.

Furthermore, the app provides a platform for participants to connect, discuss ideas, and collaborate on projects. This promotes a culture of continuous learning and professional growth within the government sector.

iGOT Karmayogi app is designed to promote lifelong learning and skill development for government employees. By equipping them with the necessary knowledge and capabilities, the app aims to enhance the overall efficiency, effectiveness, and quality of public service delivery.

👤 *Smt. Nalini Sharma Nautiyal (nalini@nic.in)*

My Ration Gujarat

My Ration Gujarat app aims to streamline the process of ration card management and ensure transparency in the distribution of essential food items to eligible beneficiaries.

With this app, citizens can easily apply for a new ration card or make modifications to their existing card, thereby eliminating the need for lengthy paperwork and reduces manual errors, making the process faster and more efficient.

Once registered, users can access their ration card details through the app. They can view information such as the cardholder's name, family members, and the quantity of essential commodities entitled to them. It provides real-time updates on the availability of food grains and other items at the designated fair price shops.

Furthermore, it ensures transparency and accountability by allowing beneficiaries to check the status of their ration distribution, ensuring that they receive their entitled quota without any disruptions.

Additionally, the app provides a digital wallet feature that facilitates online payment for ration items. Users can make payments conveniently through the app, eliminating the need for cash transactions and promoting a digital economy.

👤 *Shri Pramod Kumar Singh (sio-guj@nic.in)*

Hon'ble Chief Justice of India launches Digital Courts to help Citizens to contest Traffic Challans

Dr. Justice D.Y. Chandrachud, the Hon'ble Chief Justice of India, in the presence of Mr. Justice Satish Chandra Sharma, the Chief Justice of the High Court of Delhi, Mr. Justice Rajiv Shakdher, Judge & Chairperson of the Information Technology Committee, launched the Digital Courts for Contested Traffic Challans', and 'Bail Orders Sharing Module on the e-Prison platform for Delhi High Court through Video Conferencing on 28th April 2023.

Expressing appreciation for the initiative, the Chief Justice of India stated that this would provide seamless access to citizens wishing to contest the challans issued to them. He further emphasised that by launching such an initiative, the goal is to ensure that not only are orders communicated to the jails but also compliance with those orders.

Two Digital Courts for Contested Traffic Challans have been established in the East and North-East Districts of Karkardooma Courts in Delhi. These Digital Traffic Courts will handle the adjudication of contested challans through the Virtual Traffic Court, conducting proceedings virtually, which include recording of evidence, hearing arguments, and following the eFiling Rules of the High Court of Delhi, 2021, as well as the High Court of Delhi Rules for Video Conferencing for Courts, 2021. Violators can now appear before the court through video conferencing, and if convicted, they can pay the fine online via the web portal <https://pay.ecourts.gov.in>. The plan is to establish one digital traffic court in each District Court of Delhi.

To comply with the Supreme Court of India's directive, a 'Bail orders sharing module' has also been conceived. The module was developed by the NIC-ICJS division in consultation with the High Court of Delhi, Delhi State Legal Services Authority, and Delhi Prison. This module will serve as a platform for the High Court and District Courts to digitally share bail orders,



Hon'ble Chief Justice of India launching Digital Courts for Contested Traffic Challans', and 'Bail Orders Sharing Module on the e-Prison platform for Delhi High Court through Video Conferencing

signed with authenticity, to inmates and undertrials in any prison across the country. Additionally, the e-Prison system will generate a list of cases where prisoners are not released despite being granted bail. This mechanism aims to safeguard the rights of prisoners and assist the Legal Services Authority in taking appropriate actions.

The Delhi High Court has already been providing ICT facilities such as e-Filing, e-Inspection, e-RTI, etc. The introduction of the Digital Traffic Courts and the Bail Orders Sharing Module: e-Prison will further expand the digital ecosystem within the judiciary, enhancing access to justice for citizens at their doorstep.

- Informatics News Desk, NIC-HQ

Hon'ble Chief Minister Assam launches eMantriSabha to digitise Cabinet Proceedings

On 31st May 2023, the Hon'ble Chief Minister of Assam, Shri Himanta Biswa Sarma, officially launched eMantriSabha application by conducting a fully digital and paperless Cabinet Meeting utilising this application.

The eMantriSabha application has automated all activities associated with the Cabinet Meeting, streamlining the entire process from the preparation of memorandums by departments on the web portal to obtaining approvals and submitting approved memorandums to the Cabinet Cell for inclusion in the meeting agenda. This digital platform enables the scheduling of Cabinet Meetings, generation of meeting notices and agendas, and facilitates the addition of additional items to the agenda in real-time until the conclusion of the meeting.

To ensure seamless access to the meeting agenda, ministers are provided with two types of applications:

Windows Desktop Application: Installed on the desktop computers available in the Cabinet Meeting room.

Android Application: Installed on each minister's Android Tablet.

Both applications serve as a means to view the agenda points of the meeting, where all the memorandums and annexure documents are displayed. This technology-driven approach eliminates the need for physical documents, promoting efficiency and accessibility in decision-making processes.

The eMantriSabha application not only facilitates the deliberation and decision-making process but also enables the recording and sharing of Cabinet decisions with the concerned departments through the portal. Addi-



A Digital Cabinet Meeting headed by Hon'ble Chief Minister, Shri Himanta Biswa, using eMantriSabha application

tionally, the portal serves as a comprehensive dashboard for the Chief Minister's Office and the Chief Secretary's Office, enabling them to monitor the progress of work related to Cabinet decisions. By eliminating the physical movement of files and enabling real-time information sharing, the objective of eMantriSabha Assam is to enhance transparency, accountability, and efficiency while significantly reducing paper usage during Cabinet meetings.

The adoption of eMantriSabha marks a significant milestone in the digitization process. By embracing technology and transitioning to a paperless system, a precedent for other states to follow, showcasing the benefits of leveraging technology to enhance governance and drive progress.

- Kavita Barkakoty, Assam

Hon'ble Minister of Agriculture and Farmer's Welfare launches SATHI to empower farmers

As a part of the Digital India Initiative, the Hon'ble Minister of Agriculture and Farmers' Welfare, Shri Narendra Singh Tomar, has launched the Seed Authentication Traceability & Holistic Inventory (SATHI) portal. This state-of-the-art, technology-based platform developed by NIC is set to transform the way farmers access seed certification, traceability, and inventory management services across India.

SATHI signifies a comprehensive solution that encompasses the entire seed life cycle spanning multiple generations. Through its automated features, this pioneering portal facilitates seamless management of the seed supply chain, starting from production and certification, all the way to licensing, inventory control, and sales conducted by certified dealers to seed growers. Crucially, it guarantees complete transparency and traceability of seeds, empowering farmers with greater control over their agricultural operations.

At the heart of the SATHI portal lies the remarkable GIS reports based on the Bharat Map Interface. This cutting-edge functionality provides farmers with geographical insights into their seed-related activities, enabling them to make informed decisions and optimise resource allocation. Additionally, the portal offers a wallet service, allowing farmers to efficiently handle their financial transactions associated with seed procurement and sales.

A major highlight of the SATHI portal is its offline-friendly and device-agnostic mobile application, designed to bridge the digital divide and ensure accessibility for farmers in all corners of the country. Farmers can leverage the portal's features without internet connectivity or limitations based on the type of device they possess, democratising access to critical information and services.

Quality assurance is paramount in the seed industry, and the SATHI portal takes this into account with its integrated quality inspection module. This feature empowers farmers to conduct thorough quality checks during the inspection process, ensuring that only top-notch seeds are distributed. Furthermore, the portal generates system-generated sample slips based on processed verification data, streamlining the process of forwarding samples



Hon'ble Minister of Agriculture and Farmers' Welfare, Shri Narendra Singh Tomar, dedicates SATHI portal to Farmers of India

to seed testing laboratories for comprehensive analysis.

The services provided by the SATHI portal cater to various stakeholders within the seed ecosystem. Seed Producing Agencies can effortlessly apply for registration or track the status of their applications under the respective Seed Certification Agencies in different states. Similarly, Seed Processing Plants can conveniently apply for registration or verify their existing status. Businesses aiming to obtain Seed Dealership Licences can easily submit applications or keep track of their progress. Moreover, farmers can readily download field inspection reports uploaded by quality inspectors and trace crucial details of seeds, including their origin and destination, along with associated quality certificates.

With the launch of the SATHI portal, the Indian agricultural sector witnesses a momentous leap towards digitization and streamlining of seed-related processes. This initiative promises to empower farmers with unprecedented access to information, enhanced transparency, and heightened efficiency within the seed supply chain.

– Informatics News Desk, NIC-HQ

Enhancing the Pilgrimage Experience through Digital Donation and Darshan System

Uttarakhand, known as the land of spirituality and natural beauty, has taken another significant step towards enhancing the pilgrimage experience for devotees. The Hon'ble Chief Minister of Uttarakhand, Shri Pushkar Singh Dhami, has launched a POS-based Donation Collection System and a Protocol Darshan Management System for the revered Char Dham Yatra. These initiatives aim to streamline and modernise the process of donation collection and provide a seamless darshan experience for the pilgrims.

Launched on the 7th May 2023, the POS-based Donation Collection System, allows the state government to collect donations even in offline mode, even at a height of 11,000 feet. The system will ensure a reliable and efficient donation collection process in such challenging terrains. It will also ensure transparency and accountability in the collection of funds.

The Protocol Darshan System is another significant development introduced for the Char Dham Yatra. Under this system, pilgrims will be able to avail themselves of a streamlined and well-organised darshan process at the sacred shrines. It aims to eliminate long waiting times and provide an efficient and hassle-free experience for devotees.

With the implementation of these systems, pilgrims can expect a smoother and more orderly visit to the revered temples of Yamunotri, Gangotri, Kedarnath, and Badrinath.



Hon'ble Chief Minister of Uttarakhand, Shri Pushkar Singh Dhami, launching POS-Based Donation Collection System and Protocol Darshan System for Char Dham Yatra

– Rajeev Joshi, Uttarakhand

National Conference on Electronic Procurement to address evolving needs in Public Procurement

The Ministry of Finance, Department of Expenditure, in collaboration with the National Informatics Centre (NIC) and the Ministry of Electronics and Information Technology (MeitY), organised a National Workshop on Electronic Procurement at the esteemed India Habitat Centre on 27th March 2023. This conference aimed to address the evolving needs and expectations in public procurement, focusing on key aspects of electronic procurement and fostering fairness, efficiency, and transparency. The event brought together eminent figures from various sectors, including leading public procurement portals such as GeM, Railways, and GePNIC.

The inaugural session witnessed the presence of distinguished personalities, including Shri Rajesh Gera, Director General of NIC, and Shri Prashant Kumar, CEO of GeM. Shri Rajesh Gera shed light on the exceptional features of the eProcurement system and the Government e-Marketplace (GeM) portal. He emphasised the pivotal role played by the eProcurement system in the government, streamlining procurement processes and enhancing efficiency.

Shri Prashant Kumar, in his address, provided valuable insights into GeM, highlighting its key features and the incorporation of new functionalities. GeM has revolutionised public procurement in India, serving as a unified platform for government organisations to procure goods and services effortlessly. The CEO's speech underscored the continuous efforts to enhance GeM and make it more user-friendly and efficient.

Shri Sanjay Aggarwal, Advisor to the Procurement Policy Division (PPD) in the Department of Expenditure, Ministry of Finance, discussed the journey and future road map of the eProcurement system. His address shed light on the remarkable progress made in electronic procurement and highlighted the government's commitment to further enhance its efficiency and effectiveness.

A significant highlight of the workshop was the release of the GePNIC compendium by Shri Rajesh Gera, DG, NIC. This compendium encapsulates the journey of the Government eProcurement System, showcasing its



Shri Rajesh Gera, DG, NIC unveiling the GePNIC compendium, in presence of Smt. Alka Mishra, Shri Prashant Kumar, Shri Sanjay Aggarwal and K. Srinivasa Raghava

growth, achievements, and impact on public procurement in India. It serves as a valuable resource for organisations seeking to leverage the eProcurement platform for exceptional results.

The National Workshop on Electronic Procurement served as a platform for knowledge exchange and collaboration among experts and stakeholders in the field. Eminent speakers from GeM, Indian Railways, the World Bank, and users across central government, state governments, and central public sector entities shared their insights and experiences. Furthermore, the workshop recognized and awarded entities that have demonstrated outstanding performance and leveraged the eProcurement platform effectively. Awards were presented to entities, which have exemplified the transformative power of electronic procurement in achieving exceptional results.

– Informatics News Desk, NIC-HQ

Hon'ble Chief Minister of Goa unveils AI-Based Traffic Management System

On 27th March 2023, the Hon'ble Chief Minister of Goa, Shri Pramod Sawant, unveiled an Intelligent Traffic Management System powered by artificial intelligence (AI) at the Mercedes junction in Goa. This state-of-the-art system is designed to provide comprehensive support to state authorities in ensuring security and efficient signal management. By utilising AI technology, the system automatically identifies violations and promptly dispatches an e-challan to the address of the violator.

Hon'ble Chief Minister Sawant expressed his excitement, stating that this marks the first implementation of an AI-powered traffic signal system in Goa. He emphasised the system's potential to revolutionise traffic management, benefiting the traffic police force by enabling them to efficiently monitor traffic and enhance security measures.

The primary objective of this system is to reduce human errors and curb corruption in traffic management. Real-time photographs will be captured as evidence in cases of traffic rule violations, ensuring accurate documentation. It is noteworthy that this system is already operational in other Indian states such as Delhi, Tamil Nadu, and Karnataka.

The system possesses advanced capabilities, including the ability to detect various violations such as exceeding speed limits, running red lights, stop lane breaches, riding without a helmet, driving without a seatbelt, triple-riding, and using mobile phones while driving.

The process of identifying traffic violations begins with the Automatic Number Plate Recognition (ANPR) system, which captures violations through CCTV cameras. The system then retrieves vehicle and licence details from



Hon'ble Chief Minister of Goa, Shri Pramod Sawant, launching ITMS at the Mercedes junction in Goa

the Vahan and Sarathi databases. Upon identifying a violation, a notice is generated and sent to the violator. The violator can conveniently pay the challan amount online through the eChallan system.

Overall, the implementation of the Intelligent Traffic Management System (ITMS) allows the traffic police to focus on effective traffic management and regulation. The collected data is securely stored on a server owned by the traffic police, enabling comprehensive analysis and monitoring of traffic patterns. Moreover, the police force has future plans to leverage this system to track vehicles without number plates and identify stolen vehicles, further enhancing security measures on the roads.

– Archana Nagvekar, Goa

Shrinkhala - a Blockchain-enabled Academic Certification System - launched by Hon'ble Chief Minister of Chhattisgarh



Hon'ble Chief Minister of Chhattisgarh, Shri Bhupesh Baghel launching the blockchain-enabled academic certification project "Shrinkhala" at Indira Gandhi Krishi Vishwavidyalaya, Raipur

In a significant step towards accelerating the digitization of the education sector, the Hon'ble Chief Minister of Chhattisgarh, Shri Bhupesh Baghel, launched the groundbreaking blockchain-enabled academic certification project, "Shrinkhala." The project aims to revolutionise the way academic certifications are stored and shared, leveraging the transparency and immutability of blockchain technology. The launch took place at Indira Gandhi Krishi Vishwavidyalaya in Raipur on Saturday, 22nd April 2023, marking a significant milestone for the state's education system.

The traditional method of storing academic certificates and degrees on paper has long been a cumbersome and vulnerable process. It often leads to issues such as counterfeit certificates, delays in verification, and difficulties in accessing academic records. The implementation of Shrinkhala seeks to address these challenges by introducing a secure and tamper-proof system for academic certifications.

Blockchain technology, known for its decentralised and transparent nature, provides an ideal solution for the digital transformation of academic certifications. By leveraging blockchain, Shrinkhala ensures that academic records are securely stored and easily verifiable. The inherent immutability of the blockchain ensures that once a certification is recorded, it cannot be altered or tampered with, enhancing the credibility and authenticity of the entire process.

Shrinkhala allows individuals, educational institutions, and employers

to easily verify the authenticity of academic certifications. With just a few clicks, users can access the blockchain-based system and verify the details of a certification, eliminating the need for manual verification processes that are often time-consuming.

By embracing blockchain technology, Chhattisgarh demonstrates its commitment to leveraging innovative solutions to enhance the efficiency and credibility of its education sector. The introduction of Shrinkhala aligns with the larger national vision of transforming India into a digitally empowered society, where technology is harnessed to drive progress and inclusivity.

The successful implementation of Shrinkhala in Chhattisgarh has the potential to serve as a model for other states and educational institutions across the country. It paves the way for the adoption of blockchain technology in various sectors, providing a secure and transparent framework for data storage and verification.

With blockchain technology powering the future of academic certifications, we can anticipate a more streamlined, secure, and reliable system that will benefit students, employers, and educational institutions alike. As other states and organisations recognize the potential of blockchain, we can expect the widespread adoption of similar projects, transforming the landscape of education in India and beyond.

- Y V Shreenivas Rao, Chhattisgarh

Hon'ble Chief Minister of Haryana launches Jan Samvaad Haryana to address Citizen Grievances

The Hon'ble Chief Minister of Haryana, Shri Manohar Lal Khattar, inaugurated the Jan Samvaad Portal on Friday, the 7th April 2023 in Chandigarh. He highlighted that the portal will now make it easier for citizens to reach the government with their complaints. Previously, when citizens submitted written complaints, it was often challenging for them to reach the appropriate officials due to the nature of written communication. As a result, grievance resolution was hindered. However, with the launch of the Jan Samvaad Portal, citizens can now submit their written complaints on the portal, ensuring that the information reaches the government.

- Deepak Sawant, Haryana



Hon'ble Chief Minister of Haryana, Shri Manohar Lal Khattar, inaugurating the Jan Samvaad Portal on Friday in Chandigarh

Hon'ble Chief Minister Rajasthan aims to streamline HRH Management with RajHealth Portal

Hon'ble Chief Minister of Rajasthan, Shri Ashok Gehlot, unveiled the RajHealth portal, an integrated digital platform for the Medical and Health Department of Rajasthan, in presence of the Hon'ble State Minister of Health, Shri Parsadi Lal Meena, and other senior state government representatives on Wednesday, the 19th April 2023 at the Rajasthan International Centre, Jaipur.

This groundbreaking portal serves as a comprehensive solution for all Human Resource in Health (HRH) related activities across the state's 17,000+ healthcare institutions. By digitising processes, it minimises redundancies and optimises human resources, fostering a more productive and efficient healthcare system. Furthermore, it maintains real-time data of doctors, nurses, para-medical staff, officers, and non-gazetted employees associated with health institutions, ensuring accurate and up-to-date information.

The launch of the RajHealth portal marks a significant milestone in streamlining HRH management within the healthcare sector of Rajasthan. With an estimated 1.5 lakh employees working in health institutions and offices of the health department, maintaining real-time data has always posed a formidable challenge. The introduction of the RajHealth portal aims to address this issue effectively.

The portal serves as a one-stop solution, offering a range of features to tackle various human resource challenges. It provides real-time accessibility, transparency, and tracking, facilitating efficient management and utilisation of healthcare personnel. As an integrated digital platform, the RajHealth portal functions as an in-house e-Office for the health department. Its implementation will lead to a digital transformation of numerous manual processes, reducing systemic redundancies and saving valuable human effort. Ultimately, the portal will establish a more productive and effective healthcare system for the benefit of the people of Rajasthan.



Hon'ble Chief Minister of Rajasthan, Shri Ashok Gehlot, unveiling the RajHealth portal, at Jaipur

The development of the RajHealth portal is the result of collaborative efforts between the Medical and Health Department of Rajasthan and the National Informatics Centre Rajasthan State Centre. It aims to empower the state's healthcare system to address emerging challenges and provide better healthcare services to its citizens. By centralising and digitising crucial data, the portal will enable more informed decision-making, efficient allocation of resources, and improved coordination among healthcare institutions.

With the launch of the RajHealth portal, Rajasthan takes a significant step forward in leveraging technology to transform its healthcare landscape. The integrated digital platform sets the stage for a more efficient and effective healthcare system, reflecting the government's dedication to improving the well-being of its citizens. As the portal becomes fully operational, it is expected to unlock new possibilities for healthcare delivery, setting a benchmark for other states to emulate in their pursuit of advanced healthcare management systems.

– Amit Agarwal, Rajasthan

Hon'ble LG of Jammu & Kashmir launches Kisan Sathi to empower J&K Farmers

Kisan Sathi is a comprehensive portal designed for the Agriculture Production Department of Jammu and Kashmir. It was launched by the Hon'ble Lieutenant Governor, Shri Manoj Sinha, in the presence of two Hon'ble Parliamentarians, Shri Jugal Kishore Sharma and Er. Gulam Ali Khatana, Chief Secretary Dr. Arun Kumar Mehta and other higher UT officials. Developed by NIC J&K UT Centre, the Kisan Sathi also serves as an IT Dashboard for the holistic Agriculture Development Programme and can be accessed at <https://hadp.jk.gov.in/AgriDash/AgriDashPage>.

The portal offers a one-stop access point to all the services and schemes provided by the Agriculture Department. It provides real-time information on weather, market prices, and crop diseases, empowering farmers with valuable insights. Moreover, it plays a significant role in digitising agriculture in the UT, enabling farmers to enhance their productivity and income.

Key features of the portal include:

- Farmer Registration: Farmers can easily register and obtain a unique ID.
- Crop Advisory: Farmers receive crop-specific guidance on sowing, fertilizers, irrigation, and pest control.
- Market Price Information: Real-time updates on market prices of agricultural produce.
- Weather Forecast: Accurate weather forecasts tailored to specific areas.
- Crop Disease Information: Detailed information on crop diseases and their management.
- Training and Skill Development: Access to agriculture-related training and skill development programs.



Hon'ble Lieutenant Governor, Shri Manoj Sinha, launching Kisan Sathi portal during Kisan Sampark Abhiyan event at Jammu, J&K

- Farmer Helpline: Assistance provided by the Agriculture Department through a helpline.

The portal is available in both English and Urdu, catering to a wide range of users. It serves as a valuable resource for farmers in Jammu and Kashmir, supporting them in improving productivity, increasing income, and achieving self-reliance.

Kisan Sathi represents a major stride towards the transformation of agriculture in Jammu and Kashmir. It empowers farmers with a powerful tool to enhance their livelihoods and overall well-being.

– Mohd. Saleem Khan, Jammu & Kashmir

India, New Zealand to increase cooperation in UPI facilitation

During a high-level commissionerate meeting, the potential of a partnership between India and New Zealand was acknowledged, emphasising the importance of fostering synergy to strengthen their economic relations. The discussions primarily revolved around facilitating the Unified Payment Interface (UPI) system, promoting technological collaboration, and enhancing cooperation in banking-related matters.

The meeting was co-chaired by representatives from India's Department of Commerce, Shri Rajesh Agarwal, and the High Commissioner of New Zealand in India, Shri David Pine. Both officials underscored the significance of establishing an operational framework that would benefit both nations mutually.

Representatives from various Indian industries, including IT and ITeS, actively participated in the meeting, providing valuable insights on bilateral issues. They highlighted the vast potential and opportunities for collaboration between the two economies, emphasising the need for sustained interactions.

The UPI system, developed under India's Digital India initiative and managed by the Reserve Bank of India (RBI), enables users to access multiple bank accounts through a single mobile application. Recognizing the value of this innovative system, both countries agreed to explore avenues beyond a free trade agreement to complement each other in diverse areas.

India has been proactively collaborating with several countries to promote digital payments. Earlier this year, the RBI and the Monetary Authority of Singapore (MAS) successfully linked Singapore's PayNow and India's UPI, facilitating real-time cross-border transactions. This pioneer-



ing linkage, utilising a scalable cloud-based infrastructure, represents the world's first-ever real-time payment systems connection and includes a non-bank financial institution as a participant. The MAS and RBI have plans to expand the linkage by incorporating more participating financial institutions and expanding the applicable use cases in the future.

Source- <https://www.outlookindia.com/>

India Signs MoU with Armenia, Sierra Leone, and Suriname for India Stack Sharing

India has taken a significant step towards global digital collaboration by signing a Memorandum of Understanding (MoU) with Armenia, Sierra Leone, and Suriname. The agreement aims to share India Stack, a revolutionary digital infrastructure that has successfully implemented scalable solutions for identity, data, and payments. This landmark signing took place during the third meeting of the G20 Digital Economy Working Group (DEWG) on Monday, 12th June 2023, highlighting India's commitment to fostering international cooperation in the digital realm.

The signing of the MoU with Armenia, Sierra Leone, and Suriname reflects India's commitment to sharing its expertise and technological advancements with other nations. By extending the benefits of India Stack, India aims to support these countries in their digital transformation journeys, empowering their citizens and businesses with scalable and inclusive digital solutions.

The collaboration between India and the partner countries will focus on sharing knowledge, best practices, and technical expertise. It will enable the partner nations to leverage the foundational elements of India Stack to develop their own digital infrastructure, customised to their unique requirements and local contexts. This strategic partnership paves the way for inclusive growth, enhanced economic opportunities, and improved citizen services in the partner countries.



Source- <http://www.uniindia.com>

AI and Wearable Devices Enhance Defence Capabilities

Smartwatches and wearable devices offer significant benefits for protecting military personnel from biological and chemical warfare risks. The University of South Australia, in collaboration with the Department of Defence and the University of Adelaide, is leading an innovative project that leverages artificial intelligence to enhance these devices. By continuously monitoring vital signs and detecting early signs of infection, this project aims to advance the field.

The research team is developing statistical machine-learning algorithms to identify early indications of infection using data from consumer wearables. Unlike traditional diagnostic methods that are costly and time-consuming, wearable devices monitor vital signs such as heart rate, skin temperature, and sleep patterns, which undergo rapid changes during infection.

Wearable devices have the potential to detect physiological and behavioural changes at an earlier stage, providing valuable insights before symptoms manifest. Equipped with advanced sensors, consumer wearables enable the collection of extensive datasets at a minimal cost, making them ideal for early detection of infections.

The project utilises recorded data from wearables to identify molecular and cellular changes associated with pathogen exposure, even before active infection occurs. An integrated cloud service and smartphone application will connect with wearables, employing advanced algorithms to detect irregular sensor readings and categorise individuals based on their health profiles.



By developing advanced algorithms and utilising continuous monitoring capabilities, this groundbreaking project aims to detect early signs of infection, providing valuable insights and timely warnings. The research holds great promise for safeguarding defence personnel from biological and chemical warfare threats, utilising artificial intelligence and the human body as a sensor.

Source- <https://www.unisa.edu.au/>

NIST Lays Groundwork for Future Ultra-Precise Timing Links to Geosynchronous Satellites

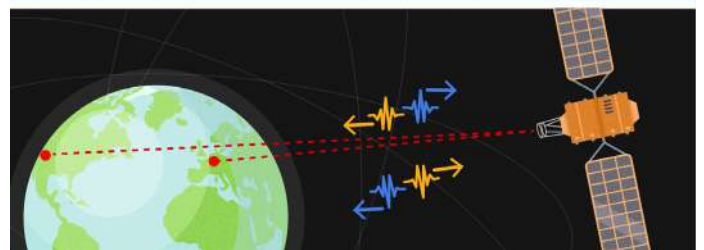
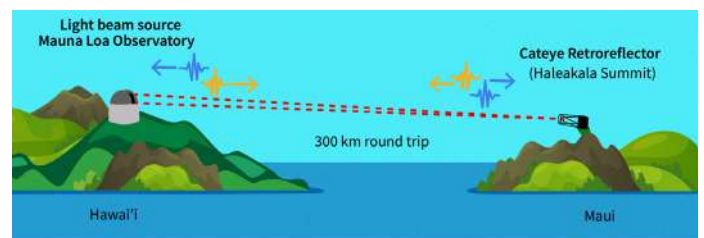
Scientists have achieved a groundbreaking feat by transmitting precise time signals through the air using laser technology. The experiment involved directing laser pulses over a distance of 150 km, from Mauna Loa volcano to Haleakala peak. Despite the faintness of the pulses, they successfully transmitted highly accurate time signals between these far-flung locations, making them suitable for future space missions.

This achievement, accomplished by a team including scientists from NIST, has the potential to enable time transfer from the ground to geosynchronous orbit satellites, positioned 36,000 km above Earth's surface. The method offers unparalleled precision, surpassing current satellite approaches by a factor of 10,000. Additionally, the system remains robust in the face of atmospheric disturbances, thanks to its minimal timing signal strength requirement.

This breakthrough opens up exciting possibilities for coordinating distant devices. Existing microwave-based methods fall short in conveying precision over long distances for comparing optical atomic clocks across continents. However, the new approach allows optical clocks on opposite sides of the planet to be linked through geosynchronous satellites, preserving precision. This advancement supports redefining the SI second to an optical standard and enables a range of fundamental physics measurements, including investigations into dark matter and tests of general relativity.

The benefits extend beyond optical atomic clocks. Synchronising widely separated sensors holds promise for advancing applications like very long baseline interferometry (VLBI), which can improve imaging of far-away planets and black holes.

Laura Sinclair, a physicist at NIST, emphasised the unprecedented distributed coherent sensing made possible by this technology. Sensor arrays could observe both space and Earth, relying on highly accurate opti-



cal clocks for connectivity. The success of the experiment relied on the team's innovative creation, the time programmable frequency comb, which represents a significant advancement in frequency comb technology. The expanded functionality of this frequency comb enabled the transmission and reception of the high-frequency time signal.

Looking ahead, the NIST team aims to optimise the system further by reducing its size, weight, and power requirements, as well as adapting it for use on moving platforms. These advancements have the potential to revolutionise time signal transmission and make a significant impact across various scientific disciplines.

Source- <https://www.nist.gov/>

Cutting-Edge AI/ML System for Accurate Monsoon Rainfall Predictions in India

A state-of-the-art AI/ML model has been developed collaboratively by the Department of Science and Technology Centre of Excellence in Climate Modeling at the Indian Institute of Technology in Delhi (IIT-Delhi), the Indraprastha Institute of Information Technology (IIIT-Delhi), and universities in the United States and Japan. This cutting-edge model accurately predicts monsoon rainfall, providing valuable information for sectors such as agriculture and water resource management.

The AI/ML model predicts an All India Summer Monsoon Rainfall (AISMR) of approximately 790 mm for the upcoming monsoon season, indicating a normal monsoon this year. To make this prediction, the model utilized historical AISMR data, the Niño3.4 index, and categorical Indian Ocean Dipole (IOD) data from 1901 to 2001. Its performance surpasses that of existing physical models used for monsoon predictions in the country, achieving an impressive forecast success rate of 61.9% during the test period from 2002 to 2022.

The model can make forecasts several months in advance, contingent upon the availability of Niño3.4 index and IOD forecasts. These inputs can be continuously updated to reflect evolving conditions. The data-driven models offer flexibility and better capture the nonlinear relationships among monsoon drivers, while being computationally efficient.

Accurate monsoon predictions have significant implications for critical decision-making across multiple socio-economic sectors, including agriculture planning, energy resource management, water resource utilisation, disaster management, and addressing health concerns. The techniques developed in this study will also be extended to provide state-wise monsoon rainfall predictions, enhancing their regional applications.

Rainfall erosivity, a key factor in soil degradation, affects approximately



68.4% of eroded soil in India. Globally, rainfall-induced soil erosion poses a significant environmental challenge. However, traditional assessments in India are often limited to specific catchments or regions, hindering a comprehensive evaluation in a geographically diverse country like India.

To address this, a study at IIT-Delhi conducted the first-ever pan-India assessment of rainfall erosivity. By utilizing multiple national and global gridded precipitation datasets, the researchers created a high-resolution map identifying erosion-prone areas in India. This step contributes to building a national-scale soil erosion model, enabling watershed managers to identify and prioritize locations for essential watershed development activities to mitigate soil erosion.

Source- <https://opengovasia.com/>

Machine Learning to Resolve Aircraft Stability and Evasion Challenge

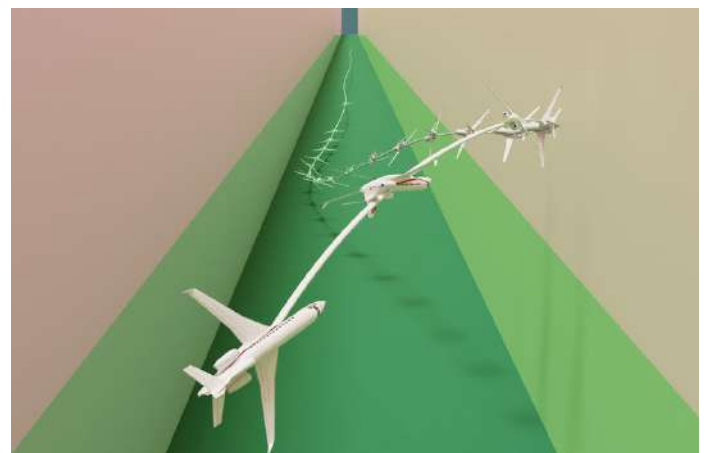
MIT researchers have developed an innovative method inspired by the movie "Top Gun: Maverick" to address complex challenges related to aircraft stability and evasion. Using a machine learning approach, their technique surpasses current safety standards and enhances stability by a factor of ten. The method successfully guided a virtual fighter jet through a narrow passage, impressing even experts in high-dimensional dynamics.

Traditional approaches simplify complex stabilise-avoid problems using mathematical techniques, while reinforcement learning trains an agent through trial and error. However, balancing stability and obstacle avoidance in these problems is challenging. The MIT researchers tackled the problem in two steps: redefining it as a constrained optimization problem and transforming it into the epigraph form for deep reinforcement learning.

To handle the epigraph form, the researchers derived new mathematical expressions specific to their system. They combined these with established engineering techniques, creating a controller that outperformed baselines by preventing crashes and achieving stable alignment with the desired goal.

This technique has potential applications in designing controllers for dynamic robots and assisting in stabilising autonomous vehicles. It excels in extreme scenarios, providing reinforcement learning with safety and stability guarantees for mission-critical systems.

Future enhancements will focus on better handling uncertainty during



the optimization process and testing the algorithm on physical hardware. The researchers aim to bridge the gap between model dynamics and real-world dynamics for practical implementation.

Source- <https://news.mit.edu/>

NIC Chandigarh wins big at National Workshop on Electronic Procurement Awards



The Chandigarh Administration has been honoured as one of the Best Performers in the Special Category for its exemplary implementation of electronic tendering. This recognition was bestowed upon them among various States, Union Territories (UTs), Central Ministries, and Public Sector Units (PSUs) across the country. The prestigious award was jointly received by Shri Rupesh Kumar, IAS Director, Information Technology, Chandigarh UT, Shri Ramesh Gupta, SIO, NIC Chandigarh UT, and Shri Girish Pant, Director (IT), NIC Chandigarh UT. The award ceremony took place on March 27, 2023, at the India Habitat Centre in New Delhi, during the inaugural session of the National Workshop on electronic procurement.

The event witnessed the participation of approximately 400 delegates representing different States, UTs, Central Ministries, and PSUs. The Government eProcurement System of NIC (GePNIC) has been operational in UT

Chandigarh since April 2010, and it has been instrumental in processing a significant number of tenders. To date, 86,543 tenders worth 26,541 crores have been successfully processed using GePNIC. The implementation of GePNIC has resulted in reduced procurement cycle times and increased transparency in the procurement process. Moreover, it has attracted a greater number of bidders, leading to competitive rates in bid submissions.

GePNIC has also played a vital role in conducting the auction of liquor shops over the past four years. Furthermore, the Chandigarh Housing Board achieved notable success by utilising GePNIC for the sale of 283 properties during the last 20 months. These achievements highlight the effectiveness and positive impact of GePNIC in streamlining and enhancing various procurement processes within the Chandigarh Administration.

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