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Jharkhand State

Bagalkote District, KA

IVANI

Homomorphic Encryption

Hailakandi District, AS

TechConclave'22

e-Hospital

Pg No. 12 Civic Services Suite for MCD



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Editorial

he history of printing dates back to 3500 BC. Ever since, humans have used several kinds of surface for printing—stone, wood, metal, paper, cloth and many more! Likewise, civilisation has found many purposes for printing: stamps of authority, icons, paintings, text, coins, et al. All these have served a valuable end goal, i.e., to communicate! However, one thing that has remained constant through the various eras & purposes is the spirit, to leave a lasting impression for generations to come, by transcending the barriers of time and passing on a legacy in the form of the written words.

Informatics as a publication completes 30 years with this edition, having served as an enabler of discussions amongst decision-makers and technology enthusiasts to thoughtfully review the use of technology for solving citizencentric issues. Informatics has also been an observer of the digital solutions that are built with the fire and passion of NICians, which keeps burning as bright as NIC's founding father, Dr. N. Seshagiri, with a visionary spirit, intended it to when he first laid the foundation of NIC and later Informatics. The guiding force of Dr. Neeta Verma, Director General, NIC and the current Patron of Informatics has further nurtured the publication to keep a keen and sharp hold over developments in technology. Informatics now covers various NIC-developed products and services that are driving India's digital transformation and building an accessible landscape to empower individuals and communities. A review of editions of Informatics over the years reveals how it has served as a technology chronicle - reporting both facts and salient details, thus becoming an inspiration source for all technology enthusiasts.

In this special 30th anniversary issue, focusing on current tectonic shifts in eGovernance, we are glad to present you, an article on, IVANI, an AI powered tool by which Governments have tried to reach their last mile citizens. Furthermore, we have an array of articles on the success stories of Jharkhand briefly covered in the State in Focus section alongside Bagalkote, Karnataka and Hailakandi, Assam featured in the District Informatics. e-Hospital and Civic Service Suite are the talks of the Infocus section. Brief information on the prominent mobile applications recently launched by or released with support of NIC in various States is covered in the Appscape section. Then regular sections such as Accolades and In The News bring you some interesting reads.

Also, we are on a constant grind to enhance the look, feel, and quality of the content to improve your reading experience. The reader's suggestions are the most valuable and help us to further improve. It would be great if you could take some time to write to us. The suggestions and feedback may be sent to editor. info@nic.in.

Wish you a happy reading. Please take care, stay healthy and safe.

-Editor













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e-Hospital Suite Augmenting the Public Healthcare

System Digitally

ational Health Policy (NHP) 2017 envisages the attainment of highest possible levels of health and wellbeing for everyone in each and every age group through a preventive and promotive healthcare orientation in all developmental policies and universal access to good quality healthcare services without anyone having to face financial hardship as a consequence. It would be achieved through increasing access, improving quality and lowering the cost of healthcare delivery system. The policy advocates the scaling up of various initiatives taken in the area of teleconsultation. It warrants linking tertiary care institutions (medical colleges) to sub-district and district hospitals that would provide secondary care facilities for specialist consultations. The policy will promote the utilization of the National Knowledge Network (NKN) for Tele-education, Tele-CME, Teleconsultations and access to the digital library. The policy also advocates establishing federated national health information architecture to roll out and link systems across public and private healthcare providers at both state and national levels, consistent with Metadata and Data Standards (MDDS) and Electronic Health Record (EHR). To achieve the goals and objectives of NHP 2017, multi-dimensional efforts are being made to strengthen the ICT initiatives in the health sector prior to the policy as well as new initiatives which have brought the concept of an ecosystem into practice. Efforts are being made to create an EHR for every citizen of this country.

The utilization of ICT in Public Health Facilities started way back in 2009 when the e-Hospital module was first developed and implemented with the help of on-premises servers and web technologies. About 50 hospitals implemented e-Hospital on their on-premises servers from 2009 to 2016. The procurement and maintenance of servers along with the availability of human

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NIC has developed the e-Hospital suite with a vision to improve the delivery of healthcare services to the citizens across the country under the Ayushman <u>Bharat Digital Mission. It is a</u> one-stop solution which helps in connecting patients, hospitals and doctors on a single digital platform. Built on decentralized multi-instance architecture, it is a cloud based opensource Hospital Management Information System that has digitized the internal workflows and processes of over 630 hospitals across various states and union territories. Since September 2015, it boasts over 245 million OPD transactions, ensuring and easing public healthcare services the to citizens.

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jor hassles faced by the hospitals. There were around 1.89 lakhs Public Health Facilities in India and it was realized that the on-premises model for scaling the e-Hospital will not be going to work. A new approach with the end-user (patient) in background was considered. The new journey started in July 2015 when the Hon'ble Prime Minister launched Online Registration System (ORS) during the first Digital India Week. It made appointments, fetched various lab reports, and displayed the status of blood availability online from big 3 hospitals (AIIMS, New Delhi, Dr. RML Hospital, New Delhi and NIMHANS, Bengaluru). The on-premise server-based e-Hospital module was already functional in these 3 hospitals, however, connectivity remained a challenge to provide the latest status of appointment availability in these hospitals. To scale up the implementation of e-Hospital, the on-premises version was upgraded to the cloud based version in 2017 and offered to hospitals on the basis of Software-asa-Service (SaaS) model. e-BloodBank was another application that was implemented independently in Blood Banks. Integration among these applications was another challenge. As we know Challenges create opportunities, so was the case with us. This was the time when the e-Hospital suite started taking shape with 3 applications: e-Hospital Hospital Management Information System (HMIS), ORS - the Patient's Portal and e-Blood-Bank. The suite was further strengthened during the COVID-19 pandemic when services like Telemedicine and Teleradiology were launched. Now, the e-Hospital suite consists of five applications. Ayushman Bharat Health Account (ABHA) ID. Health Facility (HF) ID, Consent Management and ABHA App, Mera Aspatal, and eRaktkosh. These applications are well-integrated with Ayushman Bharat Digital Mission (ABDM) ecosystem. During the journey of cloud enablement of e-Hospital

resources to manage them were some of the ma-



suite applications, NIC has touched around 1000 hospitals. During the implementation process, it was realized that the existing monolithic architecture based e-Hospital suite would not be able to scale up, so a Next-Gen microservices based architecture e-Hospital suite in the container environment has been initiated to keep future integrations and simplified user interface and user Experience.

e-Hospital HMIS

The e-Hospital HMIS is a cloud based application that takes care of internal workflows of any tertiary, secondary and primary hospitals. It has 11 modules, namely, Patient Registration (OPD and Emergency), Admission, Discharge and Transfer (IPD), Billing, Lab Information System (LIS), Radiology Information System (RIS), Clinics, Store and Inventory, Pharmacy, Dietary, Laundry and OT Management. The e-Hospital HMIS has been developed based on the global healthcare standards like HL7, SNOMED-CT, ICD10 and LOINC, and MetaData and Data Standards (MDDS) recommended and published by the Ministry of Health & Family Welfare (MOHFW).

Through these modules, the healthcare information of patients is being captured by hospiKing George Medical University, Lucknow is the largest residential Medical University in India with a large hospital of nearly 4000 beds It also has one of the biggest IT based healthcare infrastructure powered by hospital information software "e-Hospital" from NIC that caters to an patient load of 20-25lac per annum, providing full online facility with bi-directional lab information system that provides online pathology reports even up to patients mobile through ORS portal of NIC.

KGMU also manages appointments, diet, laundry, stores, pharmacy and other patient related services through the HMIS.

KGMU is also digitized with human resource software - 'manav sampada' as well as 'eOffice' -an Office digitization portal of NIC, making KGMU the single largest implementation medical site of NIC bouquet.

This sheer transaction volume and load of KGMU implementation itself highlights the kind of support and infrastructure that NIC is capable of providing. I hope this HIS achieve even greater levels of implementation with the upcoming Ayushman Bharat Digital Mission.



Dr. Sandeep Bhattacharya Professor & Deputy Registrar King George Medical University Lucknow, Uttar Pradesh

tals under one umbrella and is being utilized for record, statistics and planning purposes. It has helped in streamlining the internal processes and services for the patients.

Implementation of e-Hospital starts with onboarding and configuration of any Hospital. Every module has its configuration also. Counter based OPD and Casualty Registration is the first module, which is implemented by any hospital, and facilitates in basic reporting and classification of new and follow-up patients. In case hospital implements ORS, then appointments taken online by patients are reflected in e-Hospital HMIS for registration purposes. Counter based appointments are facilitated through this module for follow-up. As of now, patients can do the registration by submitting PM-JAY ID or ABHA ID, which is authenticated from respective platforms and basic demographics are captured. The data is then used for further integration as well. Counter based QR Code OPD registration has been tested which will further facilitate fast and validated registration and will strengthen the crowd management.

In-Patient Department (IPD) Module has various sub-modules like Admission, Doctors Visit, Orders, Nursing Station, Ward Management (Bed Allocation, Transfer), Discharge Services, and interfaces with Dietary, Laundry, Stores, Labs and Radiological Services. e-Hospital HMIS IPD Module includes Admission, Discharge and Transfer (ADT) Services. However, all other services have been integrated with it to facilitate the in-patients.

Billing is another important module of e-Hospital HMIS. Billing is the process of generating an invoice to recover services provided to patients. The billing process is the final step in the hospital which is directly proportional to patient satisfaction. Billing plays a vital role in the discharge process. Billing documents are important for any hospital, its operations enclose clinical aspects, financial aspects and administration for better functioning and decision making. Hospitals can define the services and configure normal as well as subsidized rates. It handles all types of billing workflows and facilitates cashier and billing operators for managing billing functions related to billing receipts, advances and refunds.

Maintenance of EHR is one of the prime objectives of bringing IT enablement to hospital operations. ePrescription during OPD and eOrders during IPD by doctors are the prime source for EHR. This is where healthcare standards like SNOMED-CT, LOINC, ICD, Drug Registry and other directories come in picture. e-Hospital HMIS captures vitals, history, symptoms, diagnosis, medication, orders diagnostics tests of the patients as a part of ePrescription and eOrders. e-Hospital HMIS has been developed using HL7 development platform and standards as recommended by MoHFW.

Orders by doctors are issued for diagnostic tests. It involves laboratory services or radiological services. e-Hospital HMIS has Laboratory Information System (LIS) and Radiological Information System (RIS). LIS module automates the ordering of tests and procedures on patient specimens, collection and accessioning of specimens into the laboratory database, processing and analysis in the appropriate department or work areas, review and verification of results, reporting of results and/or diagnoses for clinical treatment. In many hospitals, LIS has been integrated with Lab Analyzers using the HL7 interface, which pushes the output directly to e-Hospital HMIS. However, the RIS module automates the ordering and scheduling of tests and procedures, review and verification of results, and reporting of results and/or diagnoses for clinical treatment.

Two more services, which are important from an IPD patient's services perspective, Dietary and

N IC e-Hospital & ORS application is running smoothly in AIIMS, New Delhi. The new requirements during COVID era were swiftly taken care of by this application. Also, the Queue Management System developed and running at new RAK OPD building is proving beneficial for patients.

We are able to deliver effective and efficient health care services to patients as per AIIMS standards.



Dr. A Shariff Professor & Head, Department of Anatomy All India Institute of Medical Sciences New Delhi

Under the Digital India Initiatives, NIC, MeitY developed a stan-dard-compliant, state-of-the-art ABDM ready e-Hospital platform aimed at public hospitals of all levels, with varying facilities and sizes, where the immediate need is to deploy and adopt an EHR solution that is robust, interoperable, and integrated with medical vocabularies that conform to global standards – to reduce treatment costs by empowering citizens with EHR in line with the National Health Policy, 2017. The e-Hospital platform is an end-to-end solution for managing hospital processes and services, including telemedicine. It's simple to onboard, scale able, and <u>is used by</u> more than 650 public hospitals across the country.



Deputy Director General & SIO NIC Tripura

• overnment Medical College & Hos-**G** pital, Chandigarh is one of the leading medical institution in Punjab and India. It has an attached hospital of 975 beds. It offers many undergraduate courses and post-graduate courses including MBBS. To meet ever-increasing ICT demands, GMCH opted for e-hospital in 2014. Over the years, almost all modules of e-hospital have been activated and made functional to provide critical information for the management of patients and other related activities. It has improved the efficiency and accessibility to critical information, which in turn, has improved the healthcare services. It has provided easy access to patients reports online. Most of the activities have become paperless.

Through e-hospital, GMCH is also running Online Registration System (ORS) with its unique features of scheduling an appointment at a chosen time with a chosen consultant.

Recently, NIC has integrated e-hospital with ABDM which will further help in improving the healthcare services.

NIC has provided timely support for implementation, upgradation and trouble-shooting if needed.



Dr. Sudhir Kumar Garg Medical Superintendent Govt. Medical College & Hospital Chandigarh

Laundry. The objective of the dietary module is to make provision for clean, hygienic and nutritious diet plans for the patient as per their nutritional requirement. The dietary module automates the functions of dietary services provided to the patients in the hospitals. Its functioning includes capturing patient wise dietary requirements, their consolidation, generating the diet sheet and using it for planning and distribution.

The laundry module automates the functions and workflows of laundry services in hospitals. It facilitates the laundry service in providing a safe, clean, adequate, and timely supply of linen and laundry to different units of hospitals. Its functionality includes indent generation, verification, returns and declaring not-for-use.

Stores and Pharmacy are another important

back-end module of e-Hospital HMIS for managing the hospital resources. The concept of the main store and sub-stores have been implemented. The main store prepares indents to purchase department and receive items and further distribute them to sub-stores and maintain stores. Sub-stores, Pharmacy and Departments, raise indent to the main store and receive items from the main store and distribute them to patients, internal staff.

The OT Management module automates the functions and workflow of operation theatres, which include pre-operation and post-operation notes. In addition, OT supports the recording of anaesthesia notes, OT checklist, ward checklist and so on.

During the COVID-19 pandemic, e-Hospital HMIS was enabled to capture data items related to it so that better monitoring can be done. A separate COVID-19 e-Hospital HMIS was carved out for dedicated COVID-19 Hospitals to take care of their end-to-end operations with integration with COVID-19 Lab Information System from ICMR. The COVID-19 version of e-Hospital HMIS module was implemented in Sardar Patel Covid Care Centre and Hospital (SPCCCH), Chhatarpur, Delhi facilitating end-to-end digitization of registration, admission, treatment, transfer and discharge processes of COVID-19 patients. The Government of Puducherry also implemented the same solution at Indira Gandhi Medical College and Research Institute (IGMCRI).

e-Hospital HMIS also supports the external systems, which are part of the ecosystem. Mera Aspataal captures patient feedback on the services received from both public and empanelled private health facilities. It works through multiple communication channels, including Short Message Service (SMS), Outbound Dialing (OBD), a mobile application, and a web portal. e-Hospital HMIS has been integrated with Mera Aspataal for 198 hospitals. It has also been integrated with ABDM Building Blocks as well to the support registration of authenticated patients and sharing of their electronic health record by taking electronic consent. Over 100 hospitals have been integrated with Health Facility ID of ABDM and more than 20,000 ABHA IDs have been linked with health records in e-Hospital HMIS. LIS module of e-Hospital has been integrated with the Lab Analyzers in major hospitals like AIIMS Delhi, Dr. RML Hospital Delhi, KGMU Lucknow, NIMHANS Bengaluru and NDMC Charak Palika Hospital Delhi and many such hospitals. Similarly, e-Hospital HMIS has been integrated with Uttarakhand CM Dashboard, Central Dashboard of MoHFW and eRakatkosh application in Dr. RML Hospital.

Implementation of e-Hospital HMIS requires lots of effort on the hospital end also. It includes ICT infrastructure in terms of personal computers, Local Area Network (LAN), and dual internet connectivity from different Internet Service Providers (ISPs). The hospital administrator needs to depute a Nodal Officer, who can identify Doctors, Nurses and other staff for the purpose of training D r. RML Hospital has a robust IT infrastructure of extensive LAN with 1500 users spread over 13 buildings. The e-hospital HMIS has been in place in Dr. RML Hospital since 2014. It has multiple modules encompassing all essential hospital functions viz OPD, Ward, Casualty, Lab, Radiology, Inventory, Laundry, Dietary, Online payment and blood bank. The e-hospital suite is a cloud based user friendly software that can be accessed through any browser.

Since its inception, e-hospital has made the hospital function smooth and time efficient. The OPD registration is fast and linked to the Online Registration System. During the Covid pandemic, telemedicine was started on this platform and has been a boon to a lot of patients.

There has been regular improvement by NIC in the e-hospital modules driven by needs of the hospital. To name a few, the inventory module has included provision of department and patient specific demands. We are also collaborating with NIC to develop an Equipment Management System in the inventory module.

e-hospital has made patient data archival and retrieval easy and secure. It has made inventory management efficient and paperless.

Recently with the initiative of NIC, e-hospital suite of Dr. RML Hospital has got integrated with ABDM which will benefit patients in OPD registration and digital maintenance of patients' health records.

We are on a path of making the hospital paperless and our collaboration with NIC will definitely lead us to that end, in line with the mission of Dig-



Prof (Dr.) Sameek Bhattacharya Chairman, eGovernance ABVIMS & Dr. RML Hospital, New Delhi

and capacity building, and providing the master data for the purpose of basic and module wise configuration.

Over 740 hospitals have onboarded on e-Hospital HMIS and about 631 hospitals have already started to offer this facility across the country. Major States/UTs who have onboarded on e-HosGovernment Multi Specialty Hospital, Sector-16, Chandigarh has a robust IT infrastructure of extensive LAN network with 300+ users spread across the entire campus of the hospital. The e-Hospital HMIS – a Hospital Management Information System, has been in place in the hospital since April, 2017. The multiple modules of e-Hospital has been implemented in GMSH-16 encompassing all essential hospital functions viz OPD, Casualty , IPD Registration, Billing , Store and Inventory Module, and e-BloodBank. Also we are in process of implementing Clinic and LIS modules very soon.

e-hospital is a cloud based user friendly software that can be accessed through any internet browser from anywhere anytime. Since its implementation in GMSH-16, e-Hospital has made the hospital function smooth and time efficient. The OPD registration is fast and linked to the Online Registration System (ORS) due to which patients are getting benefited a lot.

NIC has improved the software over the years and most of the modules are customized as per the needs of the hospital. Many MIS reports were also developed during these five years as desired by the higher authorities of Health Department.

e-Hospital Software has improved the efficiency and accessibility

to critical information which has improved the healthcare services. It has provided fast and easy access to patients for the lab reports just at one click of mouse sitting in the comfort of their homes and made several activities paperless.

From the past 7-8 months, hospital has started the integration of e-Hospital with Ayushman Bharat Digital Mission with the technical support of NIC, which is providing lots of benefits to patients during OPD registration and maintenance of health records of patients in Digital form.

With the technical guidance and constant support from the NIC, GMSH-16 is progressing towards the paperless hospital tag and is moving very fast to achieve the purpose and aim of Digital India.

Dr. Parmjit Singh Deputy Medical Superintendent Govt. Multi Specialty Hospital, Chandigarh





e-Hospital Suite

pital HMIS include Karnataka, Uttar Pradesh, Madhya Pradesh, Chandigarh and Andhra Pradesh. Since September 2015, over 24 crore transactions have been done using e-Hospital HMIS. There is a Dashboard, with data for both National and State levels, has been provided for monitoring purposes.

Online Registration System

With an objective to make patient services available on a common platform, Online Registra-

tion System (ORS) was launched in July 2015 by the Hon'ble Prime Minister Shri Narendra Modi during 1st Digital India Week. ORS is an online interface where the patients can book online appointments with or without Aadhaar using his/her mobile number from the hospital based on their preference of location and department. Apart from this, patients can also access their lab investigation reports online and check the blood availability status and make payments online in the hospitals. ORS is ABDM enabled and patients can register and create ABHA ID and also book appointments using ABHA ID. ORS is also available on the UMANG platform for facilitating patients to book appointments using the mobile app. Online Payments have been enabled for the hospitals for taking registration fees and donations. A hospital needs to sign the MoU with the Payment Gateway Provider for enabling it on ORS.

ORS is a platform that can be integrated with the OPD Registration Module of any Hospital Management Information System (HMIS) like N IC has developed and implemented the cloud-based e-Hospital Suite of 10+ modules under digital India programme of Ministry of Electronics and Information Technology (MeitY). The e-Hospital suite being offered to public health facilities in Software-As-a-Service (SaaS) mode and is compliant with ecosystem of Ayushman Bharat Digital Mission (ABDM) and integrated with PM-JAY. 700+ hospitals in 29 states/ UTs across the country have been onboarded on e-Hospital platform, providing comprehensive support to the hospital administration to

provide multiple services to the patient and monitor them efficiently. For the citizen the e-Hospital suite, provide the interface to digitally book the appointment and view the health records, thus citizens can escape the long queue for appointment and report collection. I hope that implementation of the e-Hospital Suite has effectively reduced the turnaround time for number of

services, enabling responsive governance.



Dr. Neeta Verma Director General, NIC



- e-Hospital Dashboard by MoHFW and MeitY
- Online Registration System Dashboard by MoHFW and MeitY



e-Hospital and it also facilitates its functioning in any hospital without any HMIS solution. Similarly, On-Boarded Hospitals, which have automated Lab reports, can also push it to ORS using Application Programming Interface (API) for public view using OTP and Blood Banks can push blood typewise availability to ORS using API for public view. On-boarded hospital declares Nodal Officer, who can configure ORS as per requirement and monitors using Dashboard.

As of now, 476 hospitals have been on-boarded to ORS and 54.5 Lakhs+ appointments have been taken since July 2015. About 4000 appointments are taken on average using ORS.

e-BloodBank

e-BloodBank facilitates the implementation of operations for internal workflows of blood banks. e-BloodBank has all modules required for a blood bank like Donor Registration, Checking of Donors, Blood Collection, Component Preparation, Blood Issue, Blood Transfer and Receive from other Blood Banks. From successful donor screening to optimal blood distribution in the field, e-Blood-Bank application can compile diverse data into readable reports to strengthen decision making. e-BloodBank application also facilitates organizing the Blood Camps. Blood Banks, already implementing e-BloodBank are integrated with ORS for making blood availability status to public. e-BloodBank has been implemented in 65 Blood Banks across the country and more than 2 Lakhs Blood Donors have been registered on this. 2522 Blood Camps have been arranged using the e-BloodBank application.

Telemedicine

Telemedicine application of e-Hospital suite is an initiative to bring health care service to the location & time that suits patients. The telemedicine application is integrated with e-Hospital HMIS. During follow-up teleconsultation, the EHR of existing patient of a hospital helps doctor to provide better treatment. For new patients, service to create an EHR during **e**-Hospital Suite has been strengthback-end services in public hospitals in India since 2010. Services like Online Appointment, Registration, Viewing of Lab Reports, IPD (ADT) and Billing had left significant mark in the hospitals like KGMU, Lucknow, AIIMS, New Delhi, NIMHANS, Bengaluru, Dr RML Hospital, New Delhi and about 200 district hospitals across the country.

I congratulate State Governments, Hospital Administrators, Nodal Officers and NIC officers, who worked tirelessly to bring e-Hospital

tool implementation to this level.

Sunil Kumar Deputy Director General & HOG e-Hospital and ORS NIC, New Delhi

first teleconsultation is also available, which can be accessed during subsequent follow-up consultations. During COVID-19 pandemic, more than 17,000 teleconsultations have been done in 44 hospitals/institutions across the country.

CollabDDS

CollabDDS (Collaborative Digital Diagnosis System) is a teleradiology application by which health facilities, not having radiologist, can upload the x-ray images and radiologist sitting at the remote location can visualize image data online and prepare the report. Such reports and images are also visible to doctor, who uploaded it, for further diagnosis and prescription.

Different modules of the CollabDDS are hospital and user registration, role-based authentication and authorization, Collaboration/Reviewer, and DICOM/Image viewer with functionality to image manipulation and annotations. CollabDDS is also integrated with external applications like telemedicine for uploading of images from application side.

Artificial Intelligence (AI) enabled CollabDDS has been envisaged during COVID-19 pandemic to detect COVID-19 through Chest X-Rays. In CollabDDS, an interface has been developed to upload an image from the health center which is sent to the AI model for prediction. The AI model returns the probability of COVID-19 infection with a confidence score which is sent to the Radiologist for validation. Once the validation is done by the Radiologist, the result is sent back to the requested health facility for further action. Similar work has been done for detection of Tuberculosis (TB) through Chest X-Rays.

CollabDDS has been implemented in Karnataka and more than 1700 cases have been diagnosed by remote radiologists.

Development Stack & Architecture

e-Hospital Suite has been developed using open source technologies with Linux as Operating System, Apache as Web Server, Tomcat as Application Server, PostgreSQL as database, Java as Programming Language. HL7 Development Framework has been used as per recommendation of MoHFW. Health Standards for EHR including SNOMED CT, ICD, LOINC and DICOM have been used.

Coverage of e-Hospital Suite

The e-Hospital suite has touched upon all the states implementing one or more of its applications. But some of the implementation has left major impact and come up after facing lots of challenges. Major hospitals which implemented e-Hospital HMIS includes AIIMS - Delhi, Rishikesh, Bhopal; NIMHANS Bengaluru; Dr. RML Hospital, Delhi; Safdarjung Hospital, Delhi; King George's Medical University, Lucknow; NDMC Charak Palika Hospital, Delhi; Silchar Medical College, Assam; RIMS Manipur; NEIGRIHMS, Meghalaya; Lady Hardinge Medical College, New Delhi.

Major hospitals, which implemented ORS includes AIIMS – Delhi, Rishikesh, Bhopal, Patna, Jodhpur, Bhatinda; RIMS Jharkhand; NIMHANS Bengaluru; IGIMS Patna; Dr. RML Hospital, Delhi; Safdarjung Hospital, Delhi; PGIMER Chandigarh; Lady Hardinge Medical College, New Delhi; Sports Injury Centre, New Delhi.

Karnataka and Tripura have been able to implement e-BloodBank effectively in their states covering most of their Blood Banks. Karnataka state has implemented CollabDDS in effective manner however tele-medicine has been implemented in Uttrakhand effectively during Covid-19 era.

Training and Capacity Building

Once a hospital takes the decision to implement any of e-Hospital suite's application, the request for training and capacity building is immediately received and hospital identifies officials for the training. Mostly, training is provided to Nodal Officer, Doctor, Nurses, Hospital Staff, Data Enter Operators. The training is customized as per the plan of implementation based on ICT infrastructure and staff availability. Mostly, training is imparted module by module on the training server. Handholding is done during the practice sessions. User Manuals are made available to the end-users. 474 Training Sessions have been conducted so that and 7549 officials have been trained on different applications and their modules.

Way Forward

It has been realized that Healthcare delivery requires every healthcare professional to leverage technology. To bring fast implementation, provide scalability and better UI/UX, Next-Gen e-Hospital Suite has been initiated and agility has been brought into development. CollabDDS is being enhanced with the support of Artificial Intelligence (AI). It will help radiologists to find anomalies that could escape the human eye or are simply missed because of overworked experts. Patient Services will be further strengthened on ORS so that patients get more services at their homes. Solutions around AI based disease-specific analysis especially to end TB are being developed. Big Data Analytics is required as lots of patient data has already been accumulated. IoT based wearable devices integration with e-Hospital HMIS is another area where exploration is.

There are immense possibilities to integrate numerous applications, devices and platforms with e-Hospital Suite to realize the dream of electronic health records of every citizen of India.



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Civic Services Suite for Municipal Corporations of Delhi

he journey started in late 2019 when South Delhi Municipal Corporation (SDMC) entrusted NIC with a fresh design, development and hosting of a suite of IT applications in the cloud computing environment for implementation across the three sister civic bodies, namely, East, North and South Delhi Municipal Corporations. These three civic bodies came into existence in 2012 after the trifurcation of the "Municipal Corporation of Delhi" (MCD), then the second largest civic body in the world after the Tokyo Metropolitan Area. Before 2019, MCD was running the entire IT ecosystem in-house with the support of the third party vendors. Over the period, with growing functional requirements and advancement in technology, the system started facing challenges with respect to data security, data sharing, data availability, application performance, upgrade, and escalation of the codebase to meet the growing requirements. Therefore, the MCD felt the need to design afresh to overcome such problems and ensure the development of a configurable, scalable, secure, re-usable, compatible system for API integration, payment services, eSign services, authentication, and common processing workflow to render seamless services to a large population.

Suite of IT applications

The development of applications started in January 2020 and went forward during the entire COVID-19 pandemic period. Following suite of IT applications were successfully implemented across three (South, North, and East) municipal corporations:

- Unified Web Portal
- Community hall booking system
- Property Tax Return (PTR) submission
- eMutation (change ownership in property records)

eSBM (GPS-based tracking of auto tippers & MIS)

- Registration of Birth & Death
- Attendance Mobile App (GPS enabled)
- Property Notices Issuance U/s 123 D
- Property Tax General Amnesty Scheme
- Mobile app for payment of Tax
- Town Plans (TP) Approval System
- User Charges Collection (Mobile and Web app)
- eCarts Health Trade Licence
- Factory Trade Licence
- GTL / SL (General Trade and Storage Licences)
- Hackney Carriage LIcence
- Hawker's Registration

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NIC has played a pivotal role in the design, development and implementation of IT landscape of MCD civic services. It is **Faceless, Cashless and Paperless** system by design which has been helpful in reducing the role of middlemen and long aueues in-front-of offices. are accessible Services on mobile phones as well as at CSCs to facilitate a common man at their door-steps or near to their homes. Paytm & PoS systems are also integrated for easy payments. Data-analytics dashboards and help-desks are maintained for effective monitoring of services by the administration to ensure better ecosystem, responsiveness and transparency.

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- Hawking Permits
- Health Trade Licence (MHA Unified Portal Integration)
- Health Trade Licence 2.0 (other than Eatables and Lodging)
- Pet Dog Registration and Pet Shop Licence
- Tehbazari Permits Renewal
- Veterinary Trade Licence
- Dairy Licence
- PRICE Project Information and Cost estimation (By NIC Kerala)
- Form Processing Engine (workflow for approvals)
- Payment Gateway services
- Online slip generation at Burial / Cremation grounds
- COVID-19 related information webpages

Some applications under development are Advertisement and Parking Management, Online Building Plan Approval, Land Lease Management and HTL 2.0.

Coverage and Processing

The developed applications have covered over 1.4 crore people over 3332 colonies in 272 wards among 12 zones as mentioned in the following illustration. The licensing applications, once submitted by the applicant, are automatically routed to the respective ward for processing by the concerned inspector and accordingly forwarded to the next officer in the hierarchy.

Components and Development Platform

Applications have been designed and developed using open-source tools and are deployed on the NIC Cloud (owned by MCD) to ensure high availability on a 24 x 7 basis. Deployment instances are corporation wise. For seamless access and usability, integration of CSC Connect, payment gateway services of ICICI Bank, AXIS Bank, HDFC Bank, PayTM, and PoS has been ensured. The citizen interface is simple and intuitive. One can easily sign up and access the service from anywhere at any time by using their mobile. The processed certificates, licences, and payment receipts are available all time for download by the citizens free of cost. The MCD officials are authenticated by using PARICHAY and authorised by assigning roles in Personnel Information Management System (PIMS).

Open Technology Stack

The technology stack for the MC-Suite of applications is detailed as:



Fig. 2.1: Technology stake for in MC-Suite of Applications

• Packages: Jenkins, Apache SVN, Open JDK v1.8 (Spring / MVC)

- Middleware: Apache / Tomcat v8.5
- Database: Postgres SQL database v12.2

• Operating System: Red Hat Enterprise Linux Server 7.7

• NIC Cloud Infrastructure: (Hardware server, Storage, VMs, NAS, SAN

Basic Features and Benefits of MC-Suite

• Single Sign-On: Officials can authenticate themselves by using mobile OTP and Parichay. However, citizens can access it using Mobile and OTP, likely to be shifted to JanParichay

• Data Analytics Dashboards: Officials can view data and generate reports for effective monitoring of services and improvement of the ecosystem

• Helpdesk Support: Helpdesk support is available on a 24 x 7 basis. A predefined escalation matrix of officials is in place to resolve the issues in time

• Digital Payment Service: Payment gateway service is integrated with all the MC-Suite applications. Payments can be done by using a Credit / Debit card, INB, UPI, Paytm and PoS. Complete transactional data is maintained in a separate schema

• Common Form Processing and approval workflow system for all applicable applications

- SMS Alert Service: An SMS alert service is integrated for all users
- Roles Management: To authorise MCD officials

During and after COVID-19 pandemic, people are more technologically empowered and virtually-networked than ever before. Though, the challenges of revenue collection and seamless delivery of services to the citizens at their 'doorstep' have been met efficiently with the technical partnership of NIC. During COVID-19 era the team NIC in collabora tion with nodal South Delhi Municipal Corporation has been developing and implementing the sustainable systems consisting of both Mobile and Web based applications for Collection of Property Tax, Registration of Birth Death, GPS enabled attendance mobile App, and other licensing applications of Factory, Veterinary, Health and General trade etc. Going forward, the NIC MCD team has almost done with the development of prestigious apaproval, tracking of auto tippers, issuance of notices etc for effective monitoring of civic services for efficient and transparent governance for better echo system and 360 degree awareness & empowerment of common man. I must complement NIC for developing & maintaining the suite of IT applications during such a short span of time and replicating them across the sister Municipal Corporations of Delhi. I wish them all success in their future endeavours.



Gyanesh Bharti, IAS Commissioner, SDMC

to access particular applications as per the role assignment in PIMS

• Secure & Verifiable Features: A user needs to perform Two Factor Authentication for login using OTP and Parichay. Every document is printed with a QR code for verification

 Cloud Hosting: Besides having a secure environment, we can add and share need-based resources on the cloud.

NDMC

- 62 Lakh Citizens
- 594 Sq. Kms
- 6 Zones
- 104 Wards
- 1168 Colonies
- 36 Departments
- 58,049 Employees
- SDMC
- 60 Lakh Citizens
- 663 Sq. Kms
 4 Zones
- 104 Wards
- 1423 Colonies
- 36 Departments
- 51,936 Employees
- April 2022 informatics.nic.in 13

In Focus

The all-pervasive and overarching influence of the world wide web has not just enabled a real-time and faithful exchange of ideas, experiences and knowledge across the globe but also offered hitherto unheard and unimaginable tools and IT solutions for better governance, efficient service delivery and launching initiatives for larger public good and technological empowerment of common man. IT solutions during COVID-19 Pandemic have acted as virtual express-ways for successful execution of our plans. The conception, development and implementation of systems by NIC for efficient delivery of services to the citizens of Delhi under jurisdiction of corporations is a progressive step in our continuous endeavour of marching towards a citizen centric, responsive and transparent governance. It is my sincere hope and belief that the suite of IT applications developed by NIC will succeed in achieving its intended objectives by creating greater awareness amongst the citizens and the administration.

I heartily congratulate the National Informatics Centre (NIC) for its perseverant efforts and hard work in designing, developing and implementation of citizen centric IT applications.



Vikas Anand, IAS Commissioner, EDMC

• There is a live replication of DC site data at the DR site

• The turnaround time has been reduced

• Need based Data sharing using the API interface

• Applications are audited for any security issues and most of them are tested for QA and Performance testing

Major Applications

Major applications of MC-Suite are briefly described here along with specific events, features and statistics of implementation in three municipal corporations of Delhi.

Unified Web Portal

www.mcdonline.nic.in

Anybody can access the portal of the respective corporation to get the required information. Its contents are configurable and database-driven along with a change management facility. For example, users can change their photos, create menus, and so on by using their credentials.

Registration of Birth and Death (RBD)

The application has been developed as per the RGI Act. A common person for non-institutional events can apply for a birth / death certificate from the vicinity of the home. The institutional events are registered by approved Hospitals, Nursing Homes and Clinics. More than 80 lakh legacy records were migrated to the new system for processing of birth and death certificates. Using the new application, so far 5.8 lakh birth certificates and 1.6 lakh death certificates have been issued and more than 850 hospitals are registered.

Property Tax Return (PTR)

PTR is submitted online by respective taxpayers on the basis of self-assessment to municipal corporations of respective areas. So far,

▼ Fig. 2.4: Launch of Mobile App for Property Tax Return by the Commissioner, MCD and DG, NIC



it is done annually. More than 13 lakh properties are registered among three corporations. The system, on the basis of applied tax calculation factors, property & owner details, calculates tax and rebates, which is paid online by the taxpayer. The tax factors and master details vary from one corporation to other. It has basic modules for UPIC generation, Legacy property search, Offline PTR submission, UPIC transfer, Tax-Payment for previous years, general amnesty schemes, eMutation, Issuance of Notices, QR code on payment slips, Taxpayers ledger and Officers login for approval.

Community Hall Booking

The application has been developed and is hosted for booking in 292 community halls scattered over three corporations (of which 125 are in NDMC, 97 are in SDMC and the rest 70 are in EDMC). It takes care of subsidised and reserved bookings for vulnerable citizens of the society



▲ Fig. 2.3: Unified mobile app home screen

and retired / working officials of MCD. It has a workflow for approval of reserved / privileged booking. All payments are done online with a provision for refund to security and cancellation amount.

Attendance Mobile App

The smart app allows MCD employees to register devices based on their unique BMID. The registered employees mark their attendance using registered mobile numbers. Since the app is GPS enabled, it automatically captures the user's coordinates (latitude and longitude) along with exact date and time. The reporting officers can track the attendance of all the subordinates vis-à-vis their in or out timings. A supervisor can also mark attendance especially for "Safai Karamcharis" and those who do not have a smartphone. So far, more than one lakh employees of three corporations are registered. This mobile application is available for both the Android and iPhone users.

In Focus



Unified Mobile App

All mobile apps developed independently have been made available under a single app known as Unified Mobile App. This App facilitates fetching all properties or birth / death certificates registered against a mobile number among all three corporations and one can also check and pay tax and download certificates as per requirement. Presently, four apps form the unified app.

GPS-based Tracking of Auto Tippers under eSBM

Under Swachh Bharat Mission (SBM), an application has been developed to track the movement of auto tippers (carrying waste) on their pre-decided routes. Tracking is done by receiving and analysing the data from GPS devices installed in the respective vehicles. Accordingly, data is analysed for penalty calculation along with report and MIS generation.





Pet Dog Registration

As per the government guidelines, each dog owner is required to register their pet dog with the MCD. The MCD portal allows users to register their pet dogs online. For registration, vaccination details and a photo of the pet are mandatory. After uploading the required documents and payment of fees, a registration certificate is generated.

Town Plan Approval System

This is a workflow-based application that has been developed to facilitate town planning. It has an interface for architects to upload plans, pay fees, download layouts and rectify deficiencies as raised by Town Planning Officers. On the MCD interface, an officer can see modules for architect's registration approval, verification & scrutiny, approval of plans and raising of deficiency. Other Departments (for No Objection Certificate) also need to verify part of the application pertaining to them and accord approval.

PRICE (Project Information and Cost Estimation)

A system for Project information and Cost Estimation, customised by NIC Kerala state unit, has been successfully replicated in three municipal corporations of Delhi. The customised instances are hosted on the MCD cloud. The updation of the Delhi Schedule of Rates (DSR) 2019 for Electrical and Civil specifications, preparation of estimates, BoQ, NIT has been implemented successfully. Post-tender task of project management is in progress. Over 2400 estimates have been prepared whose AS and TS are completed.

Suite of Licensing Applications

There are 8 licensing applications that have been designed, developed and implemented in all three municipal corporations. The common process flow comprises application submission by traders, issuance of provisional licence, along with processes for application scrutiny, deficiencies, rectification, approvals, rejections, surrender, amendment, and renewal takes place. The sole idea is to issue a licence as soon as possible in compliance with the Ease of Doing Business. The renewal of each licence is based on legacy data, hence migration of huge legacy data and to sync with newly designed applications has been completed. The validity of most of the licences has been made optional for 1 / 2 / 3 Financial Years duration depending on the trader's requirement. The licence has now been linked to UPIC to know and verify the property details of trade premises.

Factory Licences

On successful submission of application along with required documents and payment of

ollaborative development and implementation of suite of IT applications by NIC for the Municipal Corporations of Delhi is our incessant attempt and desire to consistently engage with our enlightened and noble citizenry and other esteemed stakeholders so as to achieve ever-greater levels of success and proficiency in our common goals of seamless delivery of services and collection of revenue which further enables the civic body to provide better services. Due to the unparalleled contribution of NIC and our officers in development of systems, we could improve in achieving a better echo system and transparent governance in many areas of our endeavours. Despite the challenges of the COVID-19 pandemic, we were able to achieve our goals successfully with the continuous support of NIC in development and implementation of IT applications. I firmly believe that the suite of IT applications developed and maintained by NIC will go a long way and will keep helping the corporation

efficient service delivery, transparent, and responsive governance.

Sanjay Goel, IAS Commissioner, NDMC

In Focus



worked tirelessly to ensure an uneventful, smooth and seamless transition.

A.A. Tazir, ITS Addl. Commissioner (IT), SDMC

fees, a provisional licence is issued for 3 months duration, and in due course of time, its scrutiny and approval process take place. As of now, over 8000 licences have been issued and renewed.

Veterinary Trade Licences (VTL)

It includes 4 types of licences namely horse buggies, dairies, meat shops and meat processing units. The licences are issued to applicants who are 18 or above, on meeting conditions of distance from religious places, hygiene conditions of premises, and body test reports of the licensee. Over 3200 licences have been issued or renewed.

General Trade / Storage Licence

The General Trade / Storage licence (GT / SL) is required for the establishment of permitted trade activities. There are 15 trade premises and over 450 trade activities like shops, show rooms and small home industries. GT / SL system has provision for instant issuance of a licence on successful submission of an application along with required documents and payment of fees. Scrutiny, inspection, and approval processes start later in due course of time by the concerned

area inspector and other officers in the hierarchy. As of now, 25,000 licences have been issued or renewed.

Health Trade Licence (HTL)

The trade consists of 2 major licensing categories. First, for eatable and lodging establishments (restaurants, hotels, banquets, etc. and Second consisting of over 60 small trades related with other health aspects i.e. eCarts, SPA centres, water trolleys, chilling centres, among others. For the first type of licences, NIC has developed and maintained a portal to receive applications from traders centrally under MHA, and then such applications are downloaded at MCD backend for scrutiny, processing and issuance of licences. Over 2500 licences have been issued or renewed in this category. The second type of trade licence deals with the MC-Suite itself.

Tehbazari (Squatting) Permits

It is a kind of marketer sitting on the roadside selling small household goods. They have to obtain a permit (renewable annually after payment of prescribed fees) for selling goods as per the size of the squat that may be 4'x6', 8'x12' etc. Generally, these permits are issued to vulnerable people, widows, or very poor citizens to enable them to earn their survival. Presently, data for 4588 (South), 6949 (North), and 1121 (East) Tehbazari is available. The owners keep on renewing their permits every year online by simply using Mobile OTP and paying the prescribed fees. However, for the time being, the Hon'ble Supreme court has ordered not to issue new Tehbazari permits. Only renewal and mutation are permissible.

Hackney Carriage and Hawking Permits

Hackney Carriage refers to any wheeled vehicle pulled by an animal or a man and used for the conveyance of passengers and to carry goods. The types of hackney licences are Rickshaw puller, Cycle rickshaw and Cycle trolley. Presently, 106150 in South Delhi, 91206 in North Delhi, and 68950 in East Delhi, hackney carriages are going to be renewed. However, this permit is issued for 5 years. By the time of renewal, the rickshaw / trolley may not remain in use. Therefore, instead of renewal, new permits are issued on payment of prescribed fees online. There are only less than 400 hawking permits renewed across three

▼ Fig. 2.8: Hon'ble Mayor & the Commissioner Launching Licensing suite at EDMC



The Civic Services Suite of over 20 IT applications developed and implemented by NIC for the Municipal Corporations of Delhi is, by design, a purely faceless, cashless, and paperless solution for citizens to avail hassle-free services at anywhere, anytime. The stateof-the-art system architecture and its design help in securely and seamlessly sharing data across Government Departments. The Data-analytics & dashboards help in better monitoring across the improved ecosystem. I hope that implementation of the suite has effectively reduced turnaround

time for a number of services, enabling responsive governance.

Dr. Neeta Verma Director General, NIC

corporations as per the request of the permit holders. There is no such potential in the scheme. e-CART Licences

e-CART is a kind of Rehari / Rickshaw for selling packed eatables. EDMC has brought in a policy for issuance of such licences to poor people (<5 in a ward) after verification of the area by the traffic police department. The application has been developed for issuance of licences under Health Trade Licence 2.0.

User Charges Collection

User-charges mean payment to the respective MCD in lieu of household garbage collected by the MCD people / auto tippers. Mobile and Web based Application has been developed for collection of user charges. It is linked with the Property tax unique ID to properly map the payment with the property. Different property types (commercial, residential, non-residential, religious) have different charges as set by MCD. One can pay charges online monthly, bimonthly or as per his capacity.

e-Mutation in Property Tax Records

eMutation is a workflow-based application which enables the property owners to apply for change of ownership details in the property tax records. The change may be due to Sale-Purchase, Gift, Inheritance and Partition. For successful submission, required documents and prescribed fees need to be paid online. Subsequently, the concerned officers scrutinise and verify the application for approval. After the approval, applicants can download the mutation certificate and have records updated automatically.



▲ Fig. 2.9: NDMC Commissioner inaugurating integration of Property Tax Payments with PayTM

Property Tax - General Amnesty Scheme

At the end of each year, corporations launch an amnesty scheme for property taxpayers to pay their tax balance in one go on reduced or waived off penalty. It has increased tax collection and brought new taxpayers under tax regime. It has been successfully implemented for NDMC and other corporations are likely to follow it.

Integration with PayTM

Paytm has been integrated with the MC-Suite of applications for NDMC. Initially, it was linked with property tax payments. By adding this option, payment system has become fluent and transparent. More than Rs. 6,75,000 worth of payments were made through PayTM on the launch day itself.

▼ Fig. 2.10: An overview of properties covered by MCD



▼ Fig. 2.11: NIC Team behind the MC-Suite of Applications Sitting (L-R) : Shri Rahul Jain (Sr. TD), Dr. Susheel Kumar (DDG & HoD), Shri Vishal Gupta (TD), Shri Nirvesh Kumar (TD) Standing (L-R) : Shri Rajeev Kumar (Sci-B), Shri Mukesh Kumar (Sci-B), Shri Raju Kumar (STA), Shri Rahul Kumar (Sci-B)



Data Analytics Dashboard

Every application has its separate dashboard indicating the number of applications received, processed, pending, approved, rejected according to date, zone, ward along with revenue collected. It gives a clear view and reports on performance, which helps in improving the ecosystem.

Applications Rollout in MCD

Major applications / products of NIC namely PRICE, Sparrow, eOffice, LIMBS, eHRMS, Appellate Tribunal, and eHospital are either implemented or under the process of implementation.

Impacts Analysis

- Applications are faceless in nature, no one needs to visit offices and stand in queues
- Users can access the applications 24 x 7 from anywhere
- Overall process timeline has been reduced (turnaround time)

• Online document uploading, common form process and approval workflow system

• Integration of PoS (point of sale machines) and Paytm has helped common man at doorstep payments

• Processed licences and certificates are secure and verifiable scanning QR codes

 Personal dashboard for each applicant that allows them to access and download each document

Awards

CSI SIG has conferred an award of recognition to the MC-Suite of applications based on their evaluation in September 2021.

Unification of MCDs

It is also pertinent to mention here for the readers that after a decade of trifurcation of the MCD, a bill has been passed in the Parliament to unify three civic bodies again in one. Accordingly, a mammoth task of revamping applications, processes, business logics, database systems in respect of unification shall be taken up.



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JharKhand State

Enabling Digital Transformation in Governance Through Cloud Infrastructure

Edited by Dr. DIBAKAR RAY

Since its inception in 2000, NIC Jharkhand State Centre has been taking tremendous strides in providing various ICT-based solutions for service delivery to citizens in the State enabling convenience and transparency. NIC State Centre provides ICT solutions for the Government to deliver schemes for the upliftment of the poor and underprivileged. Many eGovernance projects were implemented which in effect eliminated both the middle man and the pilferage of precious resources.

ICT Initiatives in the State

Jharkhand Mini Data Centre

NIC Jharkhand houses a mini data centre comprising 10 racks with 34 physical servers running 145 virtual machines catering to 45 different user departments for their hosting services. Some of these services are Excise, Election, Land Records, Education, Planning,



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Rajiv Kumar Sinha Senior Technical Director rk.sinha@nic.in



NIC Iharkhand State Centre has been providing various ICT support and services for various Government Departments District Administrations, Judiciary and Public Sector Undertakings at multiple levels. This includes Cloud services, Networking, Video Conferencing, Consultancy, Training, Software Development and Project implementation under the umbrella of the Digital India initiative of the Government of India.

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Building Construction, Cooperative, Jharkhand Education Project Council, Shri Krishna Institute of Public Administration, and various Microservices for different districts of the state.

National Knowledge Network (NKN)

NKN Point of Presence (PoP) was set up at Yojna Bhawan, Nepal House Complex, Jharkhand. All 24 NIC district centres are connected to the PoP through 1 Gbps / 100 Mbps / 34 Mbps links through NKN / NICNET approved service providers. Additionally, 19 research and 9 educational institutes are connected to NKN and NMEICT through a 1 Gbps link or 100 Mbps link.

Web Hosting Services / Cloud Services

NIC provides web hosting and cloud services to various State and Central Government departments. The solution involves the design, planning, implementation, management and monitoring of the cloud infrastructure. Services offered are Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) with various predefined Windows and Linux templates along with Application and Database Fine Tuning, Server Hardening, Backup and Restore services.

Video Conference Services

NIC Jharkhand provides VC services to Raj Bhawan, CM office, and other Government Departments to conduct meetings in a secured environment. VC services are also provided at all 24 NIC Districts, District Courts and Central Information Centres (CICs) for hearing cases. In the last year, around 1150 VCs were facilitated, comprising 1750 VC hours.

Chancellor Portal

https://jharkhanduniversities.nic.in

Chancellor Portal has been developed and

From the States



 Fig. 3.1: Hon'ble Governor-cum-Chancellor of State Universities, Shri Ramesh Bais, reviewing the progress of Chancellor Portal.



▲ Fig. 3.2: Yearwise Number of Applications received and Admissions taken in UG and PG Courses

implemented for the Department of Higher & Technical Education, Jharkhand to facilitate all the eight state universities, their 205 constituent /affiliated colleges and post-graduation departments. Inviting online applications, fee payment, merit list generation, and online registration are the important services offered through this portal for both UG and PG courses. The college-wise subject mapping, subject combination mapping, and eligibility criteria are readily available for all and are updated regularly by each university. Based on this, a student can apply for admission with multiple preferences for a number of courses as per their choice through a single login.

CM Support Mobile App (Petrol Subsidy)

Hon'ble Chief Minister, Shri Hemant Soren, recently launched the Android-based CM Support mobile app, designed and developed by NIC, in the presence of the Cabinet Ministers, Chief Secretary and other officials of the state. Under the scheme, a subsidy of Rs. 25 per litre, Rs 250 per month for a maximum of 10 litres of petrol per month for two-wheelers to the beneficiaries covered by the ration card are transferred into their bank account using Aadhaar based DBT through PFMS.

To receive the benefit, the verified Aadhaar numbers of all the family members should be mentioned on the ration card. The bank account number and mobile number linked to the applicant's Aadhaar should be updated. The vehicle should be registered in the name of the applicant in the state of Jharkhand. The applicant should have a valid driving licence. The vehicle number is sent to the DTOs for verification. The subsidy is provided only to the DTO approved records through PFMS. Each month, the beneficiary has to confirm the use of the vehicle.

Open Data Collection Toolkit App

Open Data Collection Toolkit (ODCT) App is designed to collect citizen data from different sources or surveys. It can be used to create form,

▼ Fig. 3.3: CM Support Mobile App



view / share / reuse data using a web interface, while an app can be used to collect / edit data. To collect data, one must be a registered member of the app. Through the web portal, a registered user can design a form as per the requirements. Users may give access to this form to any registered user of the app. It supports text, numbers, and lists as data types.

Unregistered users can only participate in the public survey. To access the private forms, a user must be registered with this app. A user can register through the app or web. Once a user is registered, the user gets the password in their registered email, which can be used to login into the app. The user can see three tabs viz. My Forms, Shared Forms and Third Party Forms. In My Forms, users can see the form that was designed by the users themselves. In Shared Forms, users can see the form designed by someone but have given access rights to this user. In the Third Party Forms, users can see the form that was designed by others but shared privately through Keys. Users may enter, edit or delete any record that is owned by them. A 'Form owner' user can add, update, and delete any user's data. But once he updates the data, the ownership of the data will automatically change to "Form User."

This system can be used by any department where data collection is required either daily or at a certain time interval. The system can be used to capture data in a prescribed format, survey data, or meet the requirements for unstructured data. The Department can also use / reuse the existing data available in the system.

iRAD

Integrated Road Accident Database (iRAD) aims to enrich 'accident database' from every part of the state. It generates various types of insights by analysing the collected road accident data using data analytics techniques.

It represents the analysis output through monitoring, reporting and analytics dashboard for easy understanding and can accordingly forecast decision making for apex authorities towards the formulation of new policies and strategies.

To reduce data entry effort and collection time, iRAD is integrated with Vahan and Sarathi services. A web service interface is created between iRAD application and Vahan & Sarathi to pull data of vehicles and driving licences respectively so that the task at on-site data entry can be minimised.

Integrated Finance Management System

IFMS is a budgeting and accounting system which manages spending, payment processing, budgeting and reporting of all financial transactions for Government. It provides data for Public Finance accounting, and enables payments to / from the public with enhanced transparency. It provides solutions in following areas:

Budget Estimation

• Fund Management (Distribution to field level DDOs)

From the States

- Bill generation, Payment and Processing
- Treasury Core Module: e-Payments
- Treasury Accounts

• Jharkhand Online Government Receipts Accounting System (JeGRAS): Integration with all Dept Portals

- Online GPF Accounting
- Cyber Treasury Core Module
- ePension Application & Processing

• Integration with AG VLC, Pension Application of AG, HRMS, PFMS, RBI, GSTN, Agency Banks

- Employee Portal and Mobile App
- MIS Reporting Portal (eDashboard)
- Payslip Portal

Highlights

• Online portal and mobile app for accepting pre-budget suggestions from citizens

Budget eBook through mobile app

• ePayments from Treasury Desk: eKUBER platform of RBI and Cash Management Product (CMP) of State Bank of India

• JeGRAS: Common receipt portal of State of Jharkhand which facilitates single point receipt (Tax / Non-Tax) from Citizens in real-time. It acts as a gateway to 34 State or Central departmental

▼ Fig. 3.4: Scope and Reach of Integrated Finance Management System



Portals for real-time collection of state revenues

• Three-way reconciliation of Receipts (JeGRAS Portal – Aggregator Bank – RBI)

JharSewa

JharSewa, a mission mode project, has been a tremendous success in the state. Over 36 services are configured on this platform using the 'Serviceplus Framework'. Some of the major services provided by JharSewa are issuance / renewal of caste, income, residence, social security pensions, and marriage registration certificates. These services are available through Jan Suvidha Kendras by simple online registration. A person can download Digitally Signed Certificates (DSCs). which can be fetched and stored in Digilocker app.

Jharbhoomi

(https://jharbhoomi.jharkhand.gov.in)

Jharbhoomi is a digital platform designed to implement the Digital India Land Record Modernisation Program (DILRMP) in order to usher in a system of updated land records, automated mutation, integration between textual and spatial records, inter-connectivity between revenue and registration, and to replace the existing deeds registration and presumptive title system with that of conclusive titling with title guarantee. The



official land records of mapped and unmapped villages have allowed the government to provide landowners with access to basic facilities. Following services are available to citizens:

• Jharbhoomi MIS: It enables citizens to view their updated land records, file online mutation

their updated land records, file online mutation cases, track mutation application status and so on.

• JharMutation: It is an online role-based, end-to-end solution for filling, processing and

▼ Fig. 3.6: Flow diagram of Jharbhoomi



▲ Fig. 3.7: Jharbhoomi in Numbers

tracking of online mutation cases.

• JharBasudha: It is an online role-based solution for updation of Record of Rights (RoRs).

• JharBhuLagan: It is an online service for the collection of land rent from citizens with facilities to download receipts.

• JharBhuNaksha with ULPIN: BhuNaksha is an end-to-end solution for cadastral mapping. It offers map services to the citizens combined with the RoRs. ULPIN (Unique Land Parcel Identification Number) is a unique 14-digit alphanumeric identity assigned to each land parcel as the next step toward DILRMP. The identification is based on the longitudinal and latitudinal coordinates of a land parcel and is dependent on the detailed surveys and geo-referenced cadastral maps. As of now, ULPIN has been enabled for 85% villages in the state.

• Land Demarcation System (LDS): It is a service to citizens for hassle-free booking of an appointment for demarcation of land by government officials.

• **Parisodhan:** It is an online platform for registering and tracking land record-related grievances by citizens.

• **SVAMITVA:** It is a flagship scheme of the Ministry of Panchayati Raj towards the establishment of clear ownership of property in rural areas, by mapping land parcels using drone technology and providing RoRs to village household owners with the issuance of legal ownership cards. The scheme has been piloted recently in the Khunti district of Jharkhand.



The excellent technical support and expertise of NIC, Jharkhand State Centre, Ranchi has undoubtedly been one of the key ingredients in the successful development and implementation of major IT projects like Integrated Finance Management System (IFMS), Transport (Vahan, Sarathi), Land record Computerisation (Jharbhoomi), NG-DRS, Website development, PDS system, Excise, JharSewa, e-Hospital, Revenue court management system, Integration of NICNET and SWAN, Video Conferencing Support etc. Thanks to NIC, apart from the basic implementation of the project, NIC Jharkhand has been instrumental in providing IT support to various departments of the state government falling in different delivery models like G2G, G2B and G2C which have been launched in the state. Needless to say, the role of NIC in facilitating the state government in its efforts to deliver ef-

services on e-governance platform is commendable.

Kripa Nand Jha, IAS

Secretary, Department of IT & eGovernance Jharkhand

• Suo Motu Mutation: Land mutation process has been integrated with land registration to eliminate the need to file mutation cases separately, resulting in a hassle-free transfer of land.

Budget eBook

https://finance.jharkhand.gov.in

Jharkhand Budget eBook mobile app was developed to provide State Budget related information on topics like Budget Books, Grants, and Supplementary Budget. It can be downloaded from both Jharkhand finance website and Google play store. With the launch of this app, the Jharkhand Budget can be accessed digitally anytime and anywhere in Hindi and English.

eChallan

eChallan is a comprehensive solution for Transport Enforcement Officers (TEOs). It is integrated with Vahan & Sarathi applications and provides a number of user-friendly features while covering all the major functionalities of the Traffic Enforcement System.

It is an end-to-end automated system with a digital interface for all stakeholders in the challan ecosystem. It covers two types of



▲ Fig. 3.8: Workshop on e-Challan at Shri Krishna Institute of Public Administration

offences: 1. Compoundable - where challan is defined and Non-Compoundable - where challan is not defined. Challans of Non-compoundable offences are directly sent to the designated court. The offender of compoundable offences can pay challan on the spot using PoS or online through the web.

It offers customised interfaces for the following stakeholders:

• Enforcement Officers / Traffic Police

• Citizens (Private or Commercial Car Owners/ Drivers)

- State Transport Office
- Regional Transport Office
- Ministry of Road and Transport

e-Hospital

e-Hospital is aimed towards the Hospital Management Information System (HMIS) for proper internal workflow of a hospital. The patient interface is facilitated through Online Registration System (ORS) where services related to patients are delivered electronically. ORS

Fig. 3.9: Jharkhand Budget eBook App



services include taking an online appointment, viewing lab reports and checking the status of blood availability in blood banks. The system is integrated with 'Ayushman Bharat Digital Mission' and PMJAY for facilitating patients and hospitals.

The main objectives of e-Hospital Application are:

- Hospital-wide management and seamless integration of information across various hospital departments
- Comprehensive information about patients
- Data derived from medical records helps the system in medical research
- Automation of mundane tasks helps the hospital focus on patient needs
- Efficient monitoring of day-to-day activities in the hospital

• Continuous process improvement through the integration of information available at various departments for better patient care

- Remote access to relevant information in order to ensure better service to patients
- Possibility of inter-hospital transfer of patient's records etc.

e-Hospital is migrated / hosted at Jharkhand SDC and separate instances are created for/ onboarding of district hospitals of Chatra, Giridih, Khunti, Ramgarh and Ranchi. Rajendra Institute of Medical Science (RIMS) and Central Institute of Psychiatry are running at a national instance. Modules like OPD, IPD and Billing among others are operational at aforementioned hospitals.

Transport Computerisation

• Vahan and Sarathi: The combination of Vahan and Sarathi apps are implemented across all 24 districts of Jharkhand. Approximately, 61 lakh registrations and 53.5 lakh driving licence transactions respectively, have been done till the date through the apps.

• State Carriage Permit: It is an online application implemented for permit applications and issuance of vehicle's movement certificate.

From the States

• Pollution under Control Certificate (PUCC): Integration of PUCC in Vahan application has been completed for all the districts. More than 1200 PUCC centres are functional and approximately 18 lakh PUCCs are generated. A prepaid wallet system is also integrated to collect revenue in advance.

• Checkpost for Online Border Tax Collection: This application provides services to citizens as online checkpost tax payment of vehicles. (https://vahan.parivahan.gov.in/checkpost)

• Permit for Goods Carriage Vehicles: It is a portal for permit grants under the Motor Vehicles Act, 1988, for goods carriage vehicles operating within the state. These permits are granted to a particular vehicle for carrying a particular load for plying in a particular area only. The number of bases and temporary permits generated are 5758 and 7606 respectively.

eHRMS (Manav Sampada)

It has modules for Employee Profile Management, Service Book, Property Details, Leave, Performance Appraisal, and Online Transactions like transfer, joining, and increment.

It is implemented across the state covering 33 departments, 67 offices and 1.95 lakh employees from State to Panchayat Level.

eOffice

To enhance efficiency, transparency and accountability, a workflow-based office automation suite - eoffice - has been introduced in state government offices.

eOffice is a digital workplace solution made available in government offices with a vision to achieve a simplified, responsive, and transparent working environment in all government offices based on the Central Secretariat Manual of eOffice Procedure (CSMeOP).

As of now, the suite has been implemented at Raj Bhawan and IIT Dhanbad.

Jharkhand High Court

Issuance of certified copy by Jharkhand High Court has been made online and hassle-free for advocates and litigants along with online payments of fees.

The highlights of Jharkhand High Court Issuance module are:

• Role Based: Administrator, Copy Section, Copy Counter

• For a web copy, cases can be searched online

• For a hard copy, documents details are to be entered

• Applicant details like name, mobile number and email are required

• Online payment is integrated with JeGRAS

• Applicant gets digitally signed PDF copy through email or at the Counter with SMS alert

• Applicants can track their requested copy status

Apply(Web C	opy)	PApply(Hand Copy)	Truck R	equest				
ase Informa	ntion					Payment		
Case D	etail -					Namei	Rahul Thakur	
Case No. A R & /3743/2015		3743/2015	CNR	JHHC010130052015		Mobile No:	8252696364	
			Number:			Email: rahul.thakur.bca@gmail.com		
Petitioner: BIKASH CHANDRA		CHANDRA	Respondent:	nt: THE STATE OF JHARKHAND AND		Apply By:	Petitioner	
	THAKU	ĸ		ANK		Urgent fee	2.00	
- Order [Detail	2				Payble Amount	13.50	
Order No		Order Date	No of	Page	Amount	Pay Now		
1		27-09-2016	2		6			
2		13-01-2017	1		5.5			

▲ Fig. 3.10: Online Certificate issued by Jharkhand High Court

Food and Public Distribution

PDS is one of the biggest welfare programs of the government, helping farmers to sell their produce at remunerative prices as well as the poorer sections of society to buy food grains at affordable rates.

It covers 60% of the population of Jharkhand. It is linked with Ayushman Bharat Yojna. It has been enabled for National Portability to facilitate cardholders lifting ration from any state in India after giving biometric authentication.

It uses more than 50 Virtual Machines (VMs) with MySQL 5.6 as the database and CakePHP 3.6 for the front-end. All of these VMs are hosted at State Data Centre and has RabbitMQ technology for logging activities with connection pooling

and ELK (Elasticsearch, Logstash, and Kibana) stack for analytics purposes.

The various modules of Jharkhand Food and Public Distribution System are:

• Ration Card Digitisation: eRCMS developed by NIC covers NFSA beneficiaries under the central scheme while JSFSS covers those left out from central allotment. An option is given in the software to transfer a card from JSFSS to NFSA as and when a vacancy is created in NFSA due to death, surrender, duplicate etc. Beneficiaries are both APL & BPL families and can apply online through the system which is verified by the block level officer and finally approved by District Supply Officer.

 Fig. 3.11: Hon'ble Chief Minister of Jharkhand Shri Hemant Soren distributing dhoti / lungi to NFSA and JSFSS beneficiaries under Sona Sobhran Scheme



• Online Grain Allocation System: The system generates the allocation of grains and oil, based on the distribution policy decided by the government.

The system decides the quantity and price of items based on number of members and ration card holders.

After the completion of allocation, an SMS is sent to all the dealers.

• Supply Chain Management System (SCM): The SCM covers the supply of grains from Food Corporation of India (FCI) and vendors to dealers via JSFC (Jharkhand State Food Corporation) based on grain allocated to each dealer decided in advance. The grain requirement is sent to FCI through JSFC.

All activities are role-based and captured in the system so that department can check the supply chain of grains.

• FPS Automation: Aadhaar enabled biometric authentication for ration distribution is implemented through Electronic Point of Sale (ePoS) system provided to all dealers for ration distribution, mobile seeding, UID seeding, Aahar distribution, dhoti distribution, stocking of sugar, salt, rice, wheat and other essential items alongside generating daily transaction report, and printing invoice.

• Sona Sobhran Scheme: The scheme provides a dhoti or lungi to NFSA and JSFSS beneficiaries twice a year. A provision is added in ePoS through which a dealer distributes the items to cardholders after taking their biometric authentication against Aadhar.

• Aahar Dashboard: Aahar dashboard has been designed and developed for citizens through whom they can check ration distribution, card details and information related to public distribution status.



Fig. 3.12: An overview of Revenue Court Management System

• Kerosene Oil Management system: The system has been developed to computerise kerosene oil distribution. The kerosene oil distributed by the wholesaler is captured in the system and also confirmed by BSO / MO. After confirmation, it reflects in ePoS thereafter the dealer distributes kerosene oil to the cardholders.

• Mukhyamantri Sukanya Yojna: Mukhyamantri Sukanya Yojna initiated by the state government gives financial support to girls of different age groups for motivating them for education. Application has been developed for capturing the data at the block level, to be verified and approved by the Child Development Project (CDPO) and the Jharkhand State Officer Department of Social Welfare (DSW) respectively. Payment is generated by DSW at district level and is transferred to the beneficiaries account if they are ration cardholders.

Revenue Court Management System (https://erevenuecourt.jharkhand.gov.in)

Towards compliance with Ease of Doing Business, a web application named Revenue

Court Management System (RCMS) has been developed to file, process, and monitor revenue

cases online for various revenue courts functioning under Circle Officer, Deputy Collector (Land Reforms), Additional Collector and District Commissioner in all the 24 districts of the state. It provides updates on notices, orders and hearing dates and sends an SMS alerts to the petitioners, respondents and their lawyers.

The dashboard facilitates viewing Court wise statistics, online / pending cases, cause lists, notices and orders. The application is also integrated with 'Land Record Management System' through web for searching land records. Moreover, it has facility to upload Lower Court reports into the system and vice versa for speedy disposal of cases at the revenue courts.

Excise and Prohibition

(https://jharkhandutpad.nic.in/jsbcl)

This application was developed for Jharkhand State Beverage Corporation, the nodal agency behind procurement, sale, monitoring and control of liquor in the state. It helps the Corporation to prevent spurious liquor and generate revenue collection. It has following features:

- Online sale and Procurement
- Stock Management
- Ledger Management
- Bank Integration
- JSBCL Accounting

IELONS

(https://jharkhandutpad.nic.in/excise)

It is a generic portal for issuance of all types of excise licences related to permissions regarding doing business. It facilitates both new as well as renewal of licences. These applications are fully Integrated with JeGRAS for payment of fees. As of now, 36 services have been defined.



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NextGen Technologies for Digital Government



eading the conversation on the impact of ICT on Governments, NIC hosted the third edition of its TechConclave at Vigyan Bhawan, New Delhi, on the 3rd and 4th March 2022. Themed "Next-Gen Technologies for Digital Government," the two-day event saw earnest participation of IT experts and industry leaders. The entire event was covered and webcasted through NIC's webcast services.

In Focus

The TechConclave2022 was formally inaugurated by the Hon'ble Minister of State for Skill Development and Entrepreneurship and Electronics and Information Technology, Shri Rajeev Chandrashekhar, by lighting the ceremonial lamp alongside Shri K. Rajaraman IAS, Secretary, MeitY, Dr. Rajendra Kumar, IAS, Additional Secretary, MeitY, and Dr. Neeta Verma, Director General, NIC. The Hon'ble Minister of Electronics and Information Technology, Shri Ashwini Vaishnaw, who was the chief guest, could not attend the function due to an urgent official engagement. But, he conveyed his good wishes for the event and congratulated NIC for organising the event in his message to participants.

In the inaugural address, Dr. Neeta Verma



As the digital brain of the government, NIC has been contributing to all the sectors of digital governance by leveraging new and innovative technologies through its various products, platforms and services thereby ensuring efficient and transparent citizen-centric delivery of eServices.

Shri Rajeev Chandrashekhar

Hon'ble Minister of State for Skill Development and Entrepreneurship and Electronics and Information Technology highlighted the role of NIC as the flag bearer of digital technology to address the grass-root problems and promote digital inclusiveness. She also brought attention to the Digital India Programme and exclaimed, "the programme has transformed the Digital Profile of the Country. The immense growth in broadband technology, mobile apps, digital payments, cloud infrastructure and startup ecosystems is leading to a whole lot of technologyled innovation."

Hon'ble MoS, Shri Rajeev Chandrashekhar, also applauded the continuous efforts of MeitY and NIC in building the larger platforms that aim at changing the paradigm of Digital Governance by making the services seamless and accessible. Over the course of two days, there was an array of talks led by top industry experts and leaders. Dr. Anand Deshpande, Founder and MD, Persistent Systems, Smt. Daisy Chittilapilly, President, Cisco India, Shri N. S. N. Murty, Partner, Smart Cities Project, and Shri Hari Nair, Vice President, Tata Communications were among prominent speakers who talked about the application of emerging technologies in eGovernance.





75 Digital Solutions from National Informatics Centre

Digital Solutions from NIC

ommemorating Azaadi Ka Amrit Mahotsav at National Informatics Centre, the Hon'ble Minister of State for Skill Development & Entrepreneurship and Electronics & Information Technology, Shri Rajeev Chandrasekhar, released an eBook titled "75 Digital Solutions from NIC" during inaugural ceremony of TechConclave 2022 held at Vigyan Bhawan, New Delhi on 3rd March 2022.

The eBook showcases the impact of 75 major solutions designed and developed by NIC for the citizens of the nation. These solutions cover key social developmental sectors like healthcare, education, agriculture, transport, rural development, women welfare and child development, public distribution, labour, finance, budget, legislature, and judiciary among others. These digital offerings by NIC have played an instrumental role in the digital transformation of the entire Government apparatus, thus, helping the Government to reach the last person in the queue. Some of the solutions featured in this eBook are One Nation One Ration Card, e-Hospital, PM-KISAN, Jeevan Praman, MyGov, NREGASoft, Soil Health Card Portal, Digital India Land Records Modernisation Programme, Integrated Finance Management System, Integrated Road Accident System, eCounselling alongside Aadhaar Authentication Services and Aadhaar Vault. The flipbook version of the book can be read or downloaded at https://uxdt.nic.in/flipbooks/75-Digital-Solutions-from-NIC





Citizen Empowerment through Digital Transformation in Government

he Hon'ble Minister of State, Shri Rajeev Chandrashekhar, released the book titled "Citizen Empowerment through Digital Transformation in Government" during the inaugural ceremony of TechConclave 2022 held on 3rd March at Vigyan Bhavan, New Delhi.

Edited by Dr. Neeta Verma, Director General, NIC, the book captures the backstory of technology led evolution of India presented through the lens of NIC officers working Pan India digital infrastructural products and services.

The book takes us through the four-decade long transformational journey of various key industries and social sectors of India where Information and Communication Technology has played a major role in reimagining government services, thus, bringing the government closer to its citizens across the country.

The book also touches upon the emergence of the National Informatics Centre as a premier technology institution of the Government of India and its collaborative efforts with the Central, State Governments, as well as the District level administration, to deliver best-in-class solutions.

Inspiring and informative, the book is filled with real-life digital transformation stories that have helped to lead the people and the Government of India to realise their vision of a digitally empowered nation.

Published by CRC Press, the book is now available at all leading bookstores and online marketplaces.



CITIZEN EMPOWERMENT THROUGH DIGITAL TRANSFORMATION IN GOVERNMENT

Hailakandi, ASSAM NIC lends helping hand in Digital India Aspirations

Edited by KAVITA BARKAKOTY

Since its inception, NIC Hailakandi District Centre has been pioneering in the design, development and implementation of various e-governance projects. During the General Elections to the Lok Sabha 2019, an IoT device named "NICetr" was developed by NIC Hailakandi as a helping hand to the Polling officials in polling stations to count the number of voters automatically and relay the same to the higher authorities without any human intervention during poll hours. NIC Hailakandi Centre has also developed a mobile app named Prashikshan under the District Governance through Mobile Challenge (DGMC).

ICT Initiatives in the District

Prashikshan App

This app has been developed as a ready reckoner for the polling personnel who have undergone training for the upcoming General Election to the Legislative Assembly 2021 in the three legislative constituencies of Hailakandi, Katlicherra, and Algapur. The details of the poll process from Day 1 (one) till the end of the exercise will be available for the polling personnel in the app. In the app, there is provision to take selfassessment tests for what they have learnt during the training period. The main agenda regarding building this app is to train polling personnel digitally. Also, it ensures social distancing and makes the city less crowded during the COVID-19 pandemic. The app was selected among the top 20 mobile apps in the District Governance Mobile Challenge 2021.



Monsoor Akhtar Barbhuiya Scientist-B & DIO a.monsoor@nic.in



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NIC Hailakandi, since its inception, has been supporting the District Administration with the stateof-the-art ICT services, and spearheaded many eGovernance projects. It has participated jointly with NIC Dibrugarh in development of Jaltarangini, for monitoring rain water and also developed Prashikshan app to train the polling personnels.

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General Elections

NIC Hailakandi District Centre has provided extensive technical support and related services during Parliamentary & Legislative Assembly Elections. Activities such as Polling personnel and Counting randomisation using PPMS portal and allied activities such as looking after ENCORE, ETPBS portals of ECL, LAN infrastructure of Counting centre etc. were undertaken.

Jaltarangini

Jaltarangini, an automated river-water level monitoring system, was jointly developed by NIC Hailakandi and NIC Dibrugarh. This IoT device has been developed to re-establish the traditional way of collecting river water level manually through a scientific and minimally human dependent mechanism. The device has the capability to capture, transmit and present real-time accurate water-level reports without human intervention. The project is currently being implemented over the river Brahmaputra in the Dibrugarh district of Assam. The IoT lab of NIC Hailakandi has also tested the LoRA network over a 5 km range in ISM band, which will enable

🔻 Fig. 5.1: Parikshan App Dashboard





▲ Fig. 5.2: Jaltarangini Device During **Development Phase**

the IoT infrastructure to transmit data over a long range and with low power.

NICetr

On the poll day, the Poll officials are responsible for identifying valid voters, putting a mark with indelible ink, recording the diary along with maintaining the conformity set by ECI, and while doing so, it becomes very difficult for them to report the count of votes casted to the higher authorities on-time. To help these officials, the need for automating the process of hourly reporting of voters' activities without human intervention is always felt. Hence, as a helping hand to them, NICetr was developed. It counts the number of voters automatically and relays the same to the higher authorities without any human intervention.

Hailakandi District Website

(http://hailakandi.gov.in)

Hailakandi District Website has been designed and developed afresh using the e-Prastuti Framework. The Website provides comprehensive information on a spectrum of domains such as

Fig. 5.3: Hailakandi District Website

history, tourism, etc., along with access to utilities, government schemes and citizen services related to the Hailakandi district.

E-Pass Application

NIC Hailakandi was highly involved in designing and implementing the e-Pass System during the lockdown period. Hailakandi was one of the pilot districts where E-Pass was first implemented before it was replicated in other districts of Assam.

Aspirational District Program

Hailakandi is one of the 15 Aspirational Districts 115 across India. Hailakandi was ranked Delta 1 (one) for the month of February 2020. NIC Hailakandi has provided all the ICT support to the Aspirational District Program of the NITI Aayog.

Other Key Initiatives

Support for General Election to Assam Assembly 2021

NIC Played an active role and extended technical support in conducting Assembly Elections2021. Training and technical support were provided for various software of the ECI. Other activities such as polling personnel randomisation, party formation, training allocation, with various reports printing and allied activities were undertaken with the help of the NIC-developed Polling Personnel Management System (PPMS) portal.

Technical Support

• NIC Hailakandi has provided technical support for the implementation and roll-out of State-level projects such as e-Panjeeyan, e-Rupantor, Bakijai



▼ Fig. 5.4: NICetr in action during General Election 2019



NIC Hailakandi has played an im-**IN** portant role by developing and implementing various eGovernance projects of both Central & State Governments. The Centre has <u>extended</u> trict Program of the NITI Aayog. ICT infrastructure & services such as NICNET connectivity, Videoconfer-encing etc. are pivotal for the Discitizens. It has extended full support during the General Elections. Many digital initiatives taken with the help of NIC have improved the parservice delivery, re-sulting in good gov-

Rohan Kumar Jha, IAS Deputy Commissioner, Hailakandi

etc., and National level projects such as ALIS, e-Procurement, e-Prosecution, Vahan, Sarathi, Track the Missing Child, etc.

 Over 300 High-Definition Video Conference services covering various Central and State Government Departments annually

Accolades

 Prashikshan app by NIC Hailakandi was selected among the top 20 mobile apps throughout the country in the District Governance Mobile Challenge 2021

• District Informatics Officer, Hailakandi, Shri Monsoor Akhtar Barbhuiya along with Shri Surajit Phukan, Scientist-B, NIC Dibrugarh, won the Gold Award in the TechGov 2018 Competition conducted by NIC

Way Forward

Keeping with the latest technological advancements, NIC Hailakandi is spearheading the development of cutting-edge solutions to facilitate good governance by leveraging the potential of IoT, AI & ML, Data Analytics, Mobile applications and web-based applications.

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Bagalkote, Karnataka Marching towards Digital India with ICT Solutions

Edited by REUBAN K.

Whith the reorganisation of districts in 1997, the new Bagalkot district came into existence during the 50th year of India's independence. The district is located in the northern part of Karnataka. Historically, it was the homeland of the great Chalukyas. Aihole, along with Badami, emerged as the cradle of experimentation for temple architecture, stone artwork, and construction techniques. Aihole is famous for its Hindu, Jain, Pattadakal temple c and Buddhist temples whereas Badami is famous for its single stone caves carved in the period of Immadi Pulakeshin-I, along with the historic temples of Pattadakal. UNESCO has identified the Pattadakal temple complex as a World Heritage Site.

NIC Bagalkote Centre, which was established in July 1998, has completed 24 years since its inception. Over the years, it has provided many ICT solutions to district administration by developing software locally and implementing several State and Central projects.

Because of its strategic location in the District Administrative Building, NIC District Centre able to provide High Speed Net Connectivity to all departments with more than 180 nodes.

ICT Initiatives in the District

SURAKSHINI

(http://bagalkote.kar.nic.in/surakshini)

The SURAKSHINI application was designed and developed by NIC Bagalkote to monitor and protect children from child marriages. It captures the details of children's lives affected or going to be affected due to child marriage. First, the depart-



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A number of projects based on ICT have been developed by NIC Bagalkote District Centre since its inception in 1998. The Centre provides multi-faceted support to the local administration and related departments by ensuring the reach of Digital India programme upto last-mile citizen

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ment makes detailed entries of child parameters to monitor their age (before / after / during marriage), address, date of marriage, marriage type (happened during individual or mass marriage), caste, religion along with other details. Then, they track various stages of the act, for example, monitoring of the child by various field officers. Software captures each activity of various officials and departments involved and also tracks the action taken by them. It helps the District Administration to stop remarriage of the child illegally and also bring awareness among the society against child marriages. The system generates various analytical reports such as abstracts indicating various category children affected, details of visits made to children by officials, so that if officials have not made any visits, the administration can take immediate action. The system also tracks and monitors FIRs filed and court cases related to children who are or crossed 18 years of age. The application has received an appreciation letter from Hon'ble Minister of Women and Child Welfare, Karnataka.

Integrated Livestock Information System (ILVS) version 2.0 (http://ahvs.kar.nic.in/ahvsmis)

ILVS is a portal to monitor activities and progress regarding the Animal Husbandry department. It captures periodic information from nearly 45000 institutions on animals treatments for various diseases, disease outbreaks, untimely death count, vaccinations (received, issued, utilised and availability in each institution), semen straws of animals (received, issued, and utilised), artificial insemination done, pregnancy, animal treated (outpatient and inpatient), castration and infertility camps held, progress in socio-economic programs, number of cows born, feed and fodder, animal slaughtered, liquid nitrogen utilised, cattle insurance, cattle deaths and village wise institution mapping. The system generates nearly 140 reports that have helped the department to regulate livestock in the state.

BTDA MIS

(https://www.btda.kar.nic.in/)

BTDA MIS is a G2C Management Information System developed by NIC Bagalkote for Bagalkot Town Development Authority. For this application, 64 sectoral maps were digitised, with a provision to capture 18000 rehabilitated families information. The allotment of sites to families was captured and updated online. The data was analysed and duplicate allotments were rectified. The maps of each site are related to each allotted family to give a clear identity to the public. The status and other details of the property sites are made available using MIS. Many other reports were also made available to BTDA. Citizens can also search information about vacant sites, site



▲ Fig. 6.1: BDTA MIS Dashboard Homepage

Child marriage cases were frequent in the Bagalkote District. To over-SURAKSHINI was designed and devel-oped by NIC Bagalkote to protect children from the evil of child marriage. The por-tal tracks the visits of various officers to till they attain adulthood. This move-ment has created a lot of awareness in the society and we are able to control more than 250 child marriages in last helped us to escalate the project to the state level. Now Department of Women and Child Develop-



T. Bhoobalan, IAS Chief Executive Officer Zilla Panchayath, Bagalkote allotments, project displaced families (PDF) and non-PDF sites along with commercial sites. The application logic links structures and land acquisition with rehabilitation through site distribution.

The shape files of the sectors were developed to provide details at the click of a button. ASPMAP objects were used to render the maps on asp.net web forms. The asp.net web forms for data entry and local data reports were also developed for the system. The application uses a uniform master page, style and theme.

Major Projects Implemented

• eOffice implemented in District Collectorate and ZIla Parishad Office

- RCMS: Revenue Court Monitoring System
- i-RAD (Integrated Road Accident Database) Project
- KLLAD: MLA and MLC Funds Monitoring System
- RTO: Computerisation
- National Animal Disease Control Programme (NADCP): A G2G Vaccines Monitoring System

• eHospital implemented in District upto Taluka Level Hospitals

• Aahaar: It covers activities of the Food Department implemented in district. Now, training is given to change FPS to work as CSC centres

General Elections: NIC Bagalkote provided technical support and related services during the elections. For example, polling personnel data, management polling personnel and counting personnel randomisation, party formation, training allocation, with various allied activities

 During COVID-19 pandemic, created Bed Availability Portal capturing COVID-19 Hospital and Care Centre details along with monitoring and updation of COVID report which includes new positive cases, discharged and deaths with total active cases on daily basis

• eSwasthu: Grama Panchayat Properties Computerisation and integration to land Registration Department

Other Central and State Schemes: NREGA, Panchatantra, Nemmadhi, etc.

Important Events Organised

NIC Bagalkote provided technical support to the "Depositors First: Guaranteed Time-bound Deposit Insurance Payment up to Rs 5 Lakh," a programme addressed by Hon'ble Prime Minister Shri Narendra Modi on 12th December 2021.

Hon'ble Union Minister of State, Smt. Shobha Karandlaje, Hon'ble Member of Lok Sabha, Shri PC Gaddigoudar, Hon'ble MLA Bagalkote, Shri Veeranna C. Charantimath, and Hon'ble MLA Terdal, Shri Siddu Savadi along with bank officials from leading banks attended the programme.

Under the leadership of Shri V. Giriachar, Nodal Officer, Digital India Program, NIC Bagalkote has converted more than 130 FPSs into CSC centres at village level, and extended digital services to the

NIC Bagalkote District Centre has played a vital role in development and implementation of projects in the Districts. Projects like Surakshini, Revenue Court Monitor-ing System, eOffice BTDA MIS, and AHVS brought a lot of changes in

We are very proud that many of our district projects are escalated to state level for implementation trict Centre in providing technical support to the dis-

trict administration for smooth and successful implemen-tation of eGover-nance application.

Dr. K. Rajendra, IAS Deputy Commissioner Bagalkote

rural masses. This has enabled the Digital India Program to reach more rural areas. A lot of efforts were put into creating an awareness on Digital Literacy through digital payments workshops and training in a phased manner with District Administration.

Accolades

• Vocational Award 2013 for contribution in Information Technology to the district by Rotary Club, Bagalkote

 National Award in recognition of Exemplary Services towards Digital Payment Initiatives

• A letter of appreciation for BTDA MIS web application by the State Government of Karnataka

Way Forward

In order to realise the dream of Digital India given by Hon'ble Prime Minister of India, Shri Narendra Modi, officials at NIC Bagalkote District Centre are working together while discovering new ideas to drive innovative solutions and provide next-generation digital services to citizens.

District Informatics Officer NIC Bagalkote District Centre Room No. 18, District Administrative Building Navanagar, Bagalkote, Karnataka -587103 Email: dio-bgk@nic.in, Phone: 08354-235084

Unified Workers Monitoring Initiative for Effective Governance in Chhattisgarh

An exclusive interview with Shri Alex V. Paul Menon, IAS, Labour Commissioner, Chhattisgarh, on receiving National eGovernance Gold Award from DARPG, Govt. of India for Unified Labour Portal (on various paradigms along with challenges faced during implementation of Unified Labour Portal)



Sir, Hearty Congratulations. Please throw some light on Government service delivery steps taken during the COVID pandemic by the Labour department.

Labour Department, being the nodal authority for welfare of workers, was supported by NIC Chhattisgarh with various online applications for effective management of movement of migrant workers. eShramik Aawa Gaman Application and Call Centre Helpline Module facilitated migrants to travel, finding relief camps and monitor their complaints. The Rojgar Sangi Mobile App, along with Chhattisgarh State Skill Development Authority portal, facilitated skilled job seekers and employers to get registered and be connected based on the skillset mapping.

You took over the charge of Labour department after the first wave of the COVID pandemic. After joining the department, what was your initial observations with respect to eGovernance?

While the above discussed technology solutions were developed as a part of the response to the COVID-19 pandemic, they also led to increased technology adoption by the department, workers, contractors, and boards alike, many of whom were not active technology users earlier. However, data of different boards (Labour Welfare Board - LWB, Unorganised Workers' Welfare Board - LWB, and Building and other Construction Workers Welfare Board - BoCWB) existed in silos. Family was not used as the base for registration of labourers, resulting in data duplication and inflation of database.

Then Sir, you thought about Unified workers portal. What is your vision for the initiative?

Yes, along with departmental officers, NIC

and consultants of PMU, we had a number of brainstorming sessions and formulated the vision statement. The vision statement is – "to design and implement an evidence-based comprehensive and foolproof social security framework for labourers and their families in the state of Chhattisgarh by ensuring suitable policy frameworks, budgetary support and implementation mechanisms that provides ease of doing business to employers as well as ease of working with due compliances to labour legislations." The vision statement was further supported by eleven mission statements.

Great, you have not only thought about eGovernance intervention, but also how it can be sustained through implementation mechanism, policy framework, and budgetary support. Can you please discuss on the mission statements related to ICT intervention?

Out of eleven mission statements, four mission statements were directly linked to ICT intervention. First, to create and maintain a credible database of labourers and their families; Second, comprehensive Ease of Doing Business (EoDB) online systems to manage the affairs of the department; Third, conducting a detailed analysis of existing schemes, design new schemes and suitably modify existing schemes based on an evidence-based scheme redesign approach and fourth to create a comprehensive budgetary support system for implementation of the intended social security benefits.

What was your plan for developing a credible database of labourers?

We planned to create a unified database that can be seamlessly operated by different boards and moved between them as per the entitlements. First, the registration

questionnaire was revised to include questions that would give the department a 360-degree understanding of the labourer's lives, thus, throwing light on their various vulnerabilities. The questionnaire included critical information fields on education, wage rates, landholding, migration and workplace. Secondly, the registration process was made available both online and offline via NIC-developed mobile application that could be used in areas with no connectivity. Thirdly, the registration format was changed to make family-based. Fourthly, we used the time-tested, Aadhaar-based PDS database (which is also maintained by NIC) to identify unregistered labourers. Finally, we have simplified the data entry process by ensuring that 75% of all questions have dropdown options.



What benefits you expected from these initiatives?

All of these steps had multiple benefits. We were now collecting more comprehensive information on labourers, which helped us

with evidence-based policy design. Secondly, information once provided to the department did not need to be provided again, meaning the department would collect far lesser information from labourers at the time of scheme applications. Thirdly, the reach and availability of the Labour Department portal was greatly expanded via the agnostic mobile application. Next, the new database created by the department automatically prevented duplicate entries. Fifth, the department was able to streamline its efforts to ensure that all unregistered labourers were now registered. By analysing the number of unregistered labourers in each district, we were able to set specific targets and mobilise our district teams to carry out this work.

May I request you to throw some light on the special migration module developed.

Yes, the questionnaire was created specifically to help register and track the movements of migrant workers into and out of the state. The Labour Department tied up with the Department of Rural Development (Panchayat Sachivs) and the Department of Urban Affairs and Development (Ward Moharrirs) to maintain a live, updatable register of migrant workers. This database was synced to the larger registration database to once again ensure that information that was already with the department was not collected unless necessarily. Through this system, Chhattisgarh will be able to track migration trends, and work with the destination states to ensure that its labourers continue to receive scheme benefits even while migrating.

With increase in number of workers your targeted beneficiary will be more and for that you would require more budgetary support. How do you look at that aspect?

You may be aware that the main source of budgetary provision comes as cess from establishment and factories. The cess collection from Building and other Construction Workers Welfare Board - BoCWB is around 150 crore now. There is lack of system for calculation or assessment of cess. We are now targeting to increase the cess collection to 450 crore. For this we also need to increase the registration of establishments. There are different registration systems for different kind of establishments and factories under different Acts, Rules and Boards leading to loopholes in the registration system. We are targeting to increase establishment registration under LWB to increase from 6420 to 15,000.

What are the steps being taken towards this?

We are developing Unified registration and licensing system with support of NIC for all establishments / factories across new labour codes. Integrated systems will avoid data mismatches and reduce harassment and duplication. Unified Annual Returns is being planned to monitor compliance and auto renewals. This will facilitate ease of compliance for establishments and tracking of labour entitlements. Auto renewal of licences would happen on furnishing of annual returns and online payment of licence fee.

You were talking about Scheme Redesign based on analytics platform. Would you elaborate on this please?

As of now there are 68 schemes under which workers can avail benefits. All these schemes have been made online. However, there are various problems that plagued the system. Firstly, the workers need to be aware about all schemes and benefits available to them. Secondly, a lot of the schemes were designed many years ago – there was no guarantee that the benefits provided under these schemes addressed the current needs and problems of the workers. Thirdly, the application process under the schemes (specifically the documentary requirements) were complicated, and workers often got stuck at this stage.

So, to address the above issues, we decided to analyse the data available to us. Based on a five years trend and time series analysis of the



beneficiaries and the data, we are now focused on designing four schemes - Death and Disability, Maternity Benefits, Severe Illnesses and Scholarships. Finally, we are also working on moving towards a system of automated entitlement tracking and benefits disbursal. Under this system, the Labour Department will tie up with other state departments to proactively track important life events / triggers such as birth, education, pregnancy, injury and death, and automatically provide benefits to labourers when any such trigger event takes place.

That's a great idea. Under your leadership Labour department of Chhattisgarh has achieved 100% reforms under Ease of Doing Business.

Yes, under comprehensive Ease of Doing Business there are 102 reform points. All points have been complied. It covers Single Online Window System, Labour Regulation Enablers, Inspection Reform Enablers, Compliance Inspections under different Acts, Registration and Renewal under different Acts, Licence and Renewal of licences under different Acts, License for contractors, Approval of plan and permissions.

You have also done process reengineering for different processes.

Reengineering governance processes, under Unified Registrations & Licences for all Acts, Rules and Boards, we have reduced eight existing forms to just one form. Towards developing system for ease of compliance for establishments and tracking of labour entitlements, existing 91 registers have been reduced to two registers only. Centralised online system to track workers health and ensure assistance to the workers is being developed. This will track accidents to ensure receipt of workers entitlements and compensation. Finally, an Online Grievance Redressal system is being developed which would facilitate Choice centres to fill application form on behalf of workers. Labour Inspectors can approve this from their panel.

We are grateful to you for sharing your vision with us. Before concluding would you like to share any important point you have in mind.

I would like to thank Dr. AK Hota, DDG & SIO, Chhattisgarh, Shri Satyesh Kumar Sharma, TD and HoD, Shri Saurabh Dubey, Scientist-C, Smt. Jyoti Sharma, Scientist-B and their team, Shri SS Painkara, Dy. Labour Commissioner, Labour Department for taking the initiatives ahead.

I have a vision to develop Enterprises Architecture (EA) in the Labour Domain. You see, several stakeholders like Health, Education, Urban Development, Tribal development, Industry, ESIC and EPFO need to be integrated to track the establishment registration, entitlement tracking and automated benefit disbursal. Enterprise architecture (EA), so developed, can proactively and holistically lead enterprise responses to disruptive forces by identifying and analysing the execution of change towards desired vision and outcomes. I would like to request NIC to extend support towards this.

Chhattisgarh is being among the first few states across the country to adopt such eGovernance application in labour domain is certainly a positive message for the government and citizen. Thanks a lot Sir.

Interviewed by



Satyesh Kr. Sharma Technical Director satyesh@nic.in

eGov Products & Services

IVANI AI enabled Image & Video Analytics by NIC for effective & efficient eGovernance

Edited by Dr. DIBAKAR RAY

rganisations are increasingly making use of computer vision across domains, from autonomous driving to healthcare, in order to improve operations and enhance productivity. This has been made possible due to the rapid increase in computing power and the availability of large data sets in recent years. This is why computer vision, with the help of deep learning algorithms, is giving highly accurate results, thus, boosting confidence among users in this aspect.

Technology Brief

Computer Vision (CV) can be defined as a field of Artificial Intelligence (AI) that enables machines and systems to derive meaningful information from images, videos and other visual inputs – and take actions or make recommendations based on the information. One of the major challenges CV has to face is that a machine needs to scan through an infinite number of images taken from



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Computer Vision is a field of Artificial Intelligence (AI) that enables computers and systems to derive meaningful information from digital images, videos and other visual inputs with help of Deep Learning Networks in Ideal Conditions. Some of the major applications of image analytics are object detection, face recognition, image classification among others.

different angles under different illuminations and still be able to define what is meaningful.

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Of late, CV is showing potential solutions to major problems faced by the end users. Some of them are:

• Document Analysis with tasks like optical character recognition, text localisation, and layout analysis

• Image Classification, Object Detection and Segmentation

• Face Detection and Recognition

Let us look at some of the major tasks to understand the results that deep learning is capable of achieving in the field of CV:

Object Detection: It deals with detection of semantic objects of a certain class and classifies them accordingly.

Automatic Image Classification: It helps the system to classify the photographs / visuals into one or more known categories.

Automatic Face Recognition: It helps the system either identify a person in the photographs / visuals based on their face or verify that person in the photographs is the same person who they claim to be.

AI Model Development – Steps

Annotation: Annotation means the image needs to be annotated or labelled with classes that one wishes the model to detect or not. If one wants the system to detect a beneficiary in an image, one needs to detect a face first for labelling the image with a bounding box where the said face needs to be carried out through thousands of images. For example, to detect COVID-19 in a Chest X-Ray (CXR) image, the model has to be trained by keeping the CXR with COVID-19 in a separate folder to that of a normal CXR and further one needs to do lung segmentation to extract the lung portion, so that model does not learn from the periphery of the images. (Refer Fig. 8.1)

Model Training: The next step is to transfer learning from pre-trained models that have been trained on large datasets (i.e., for face or COVID-19 detection). There may be more than one model and a preliminary study needs to be done to find out which is giving better performance. After downloading the model, one needs to further train the last few layers of that model again with the type of records that the model is going to predict. Deep Learning algorithms help in learning the patterns from the images without requiring us to do feature engineering, which is usually the case with machine learning where domain experts select the attributes that go into modelling.

 Fig. 8.1: Chest X-ray Images Preprocessing – Preparation for detecting Tuberculosis through Lung Segmentation and AI Modelling



eGov Products & Services

IVANI in eGovernance

Satyapikaanan

Satyapikaanan is an API-based service for Face Verification that has been made available over MeghRaj Cloud. It is utilised in various governance projects like:

• Face Recognition Based Attendance System (FRBAS) Mobile App that facilitates Contactless Attendance in Utkarsh Bangla Program for Skill Development Trainees & Trainers Attendance in West Bengal

• Face Verification & Liveness Detection for Life Certificate for Pensioners through a mobile app provided to Meghalaya

• RTO's Online eLearners License Exam & Automatic License Renewal Services

• Real Time Face Quality Analytics in candidate registration for various examinations conducted by National Testing Agency (NTA)



IVANI in Sanitation

In Swachh Bharat Mission (SBM) Urban, there were approximately 16000 constructed toilet images with beneficiaries in the background and toilet seats visible or otherwise. With these many images, one can expect around 99% accuracy in prediction. Hence, a binary classifier with two classes "toilet seat" and "beneficiary detection" modules were designed for SBM Urban. It was launched as a mobile app to help citizens upload correct images so that workflow cycles in receiving scheme benefits or waiting time in queue can be reduced, which would otherwise be longer with sanitary inspectors individually going through each and every photograph and rejecting them. The citizens, otherwise, have to reload the correct images and get back in the queue for approval.



▲ Fig. 8.3: Identification of SBM Urban Beneficiaries through IVANI

IVANI in Healthcare

AI has found its application in medical training, monitoring, imaging, early detection, diagnosis, decision making, and treatment.

It is envisaged that triaging of patient care can be done through one or more AI models.

Recently, a tripartite MOU between ICMR, NIC and Central TB Division (Ministry of Health & Family Welfare) has been signed for providing AI Services in the National Tuberculosis Elimination program. The proposed AI based model will be used for identifying potential TB patients for follow-up testing. The risk profiling of patients along with Cough Spectral Analysis as well as Sputum Molecular Image Analytics will help in checking First and Second Line Drug Resistance in tuberculosis patients.

Fig. 8.4: Tuberculosis detection from Chest X-rays through AI can help in early detection of TB in Primary Health Care Centres

Radiologist Annotated	Model Prediction Results
R	With segmentation (0.99992657. Normal') Without segmentation (0.86889344, 'Abnormal)
	With segmentation (1.0, 'Normal') Without segmentation (0.8339354. 'Abnormal')
	With segmentation (0.9997485."Normal") Without segmentation (0.7004077.'Normal")
	With segmentation (0.9999757. 'Abnormal'') Without segmentation (0.766502. 'Normal')

am happy to inform you that the Contactless Attendance through Smart Mobile App (FRBAS-PBSSD) designed by National Informatics Centre (NIC) has been a very convenient end-to-end application that has been incorporated into Utkarsh Banela Skill Development Program. I am told it is built with highly accurate deep learning models for Al based face verification, Liveness detection and other technologies like Geo fencing. It is proving to be a good tool with a high value proposition. I would like to congratulate team NIC for developing such a cutting edge technology solution which is more meaningful in the post-pandem-

ic era where contactless services are more required.

Anoop Kumar Agrawal, IAS Principal Secretary Government of West Bengal

Advantages

Some of the advantages of IVANI are:

• Reduced Workflow Cycle & Process Automation: Al-driven automatic verification of records helps in reducing the workflow. It reduces human intervention and errors. This results in productivity enhancement and cost reduction

• **Citizens facilitated:** Citizens are greatly benefitted through some AI enabled services which may be made available at their homes

• Fraud Detection: AI greatly facilitates fraud detection in various eGovernance use cases

• **Transparency:** AI-enabled Faceless Services usher in more transparency

• Better & Faster Reach: Reducing the human interaction in the workflows and providing services over the network has enabled users to enjoy service

• New Paradigm of Efficiency: The Al driven Image & Video Analytics tools as developed by NIC facilitate in achieving a new paradigm of efficient and effective eGovernance

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Homomorphic Encryption

Next-Generation Encryption Technology



Edited by MOHAN DAS VISWAM

rganisations handle a variety of sensitive information such as personally identifiable information (PII), Health care data, financial data etc. Privacy of such data is a prevalent issue. Traditional encryption schemes protect data at rest and data in transit. The problem with encrypting data is that, to perform computations or operations, data needs to be decrypted first, which makes it vulnerable to hackers. Protecting data integrity and privacy while processing 'data in use' is a major challenge. Sharing data in an untrusted environment is unavoidable in the digital world.

Homomorphic Encryption is an emerging Privacy Enhancing Technology which responds to the above challenges and enables data sharing for computing without compromising privacy. It allows direct mathematical operations on encrypted data without requiring decryption during the process. After computation, the results are returned directly in encrypted format, ensuring that only the owner of the data can see the pro-



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Savita Bhatnagar Sr. Technical Director savita.bhatnagar@nic.in cessed results by decrypting it. The confidentiality of data is maintained in Homomorphic Encryption even when the computations are performed on data residing in an untrusted environment.

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security Data is extremely important in today's data driven world. The Homomorphic Encryption (HE) is a Privacy Technology Enhancing (PET) which enables data sharing and collaboration stored in silos, while preserving the privacy of data throughout its processing life cycle.

Homomorphic Encryption is widely defined as "A form of encryption allowing one to perform calculations on encrypted data without decrypting it first".

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Traditional encryption schemes contain threestep algorithms: Key Generation, Encryption and Decryption. Homomorphic Encryption schemes involve one more algorithm which is called evaluation. Homomorphic evaluator f takes encryptions of *m*1, ..., *mk*, which is (*c*1, *c*2, ..., *ck*) as inputs and output a ciphertext that decrypts to *f*(*m*1, ..., *mk*).

Types of Homomorphic Encryption

There are three types of Homomorphic Encryption schemes. The primary difference between them is based on the types and frequency of mathematical operations that can be performed on the ciphertext.

• Partially Homomorphic Encryption (PHE): Allows only one operation either addition or multiplication on encrypted data, but not both. Selected operations can be performed an unlimited number of times on the ciphertext. The most popular PHE methods available are ElGamal encryption (a multiplication scheme) and Paillier encryption (an addition scheme).

• Somewhat Homomorphic Encryption (SHE): Allows more than one operation to be performed on encrypted data but only a limited number of times. The Boneh-Goh-Nissim (BGN) method is one of Somewhat Homomorphic Encryption schemes. This method allows an unlimited number of additions but only one multiplication to be performed on data.

• Fully Homomorphic Encryption (FHE): It allows an unlimited number of different types of evaluation operations on the encrypted data and the resulting output is within the ciphertext space. The first fully Homomorphic Encryption algorithm was invented in 2009, which allows performing arbitrary secure computations over encrypted data. Since then, many algorithms have been developed that improve on the original FHE algorithm. Brakerski-Gentry-Vaikuntanathan (BGV), Cheon-Kim-Kim-Song (CKKS) are some of FHE schemes.



Fig. 8.1: Homomorphic Encryption Scheme

Applications of Homomorphic Encryption

Organisations are taking greater interest in Homomorphic Encryption because it is expected to play an important role in protecting data privacy in cloud platforms while allowing collaborative projects. Companies like IBM, Google, Microsoft are working on Homomorphic Encryption. Eventually, Homomorphic Encryption is moving from theoretical cryptography research area to applied cryptography research. Tools & libraries are available for organisations to experiment with Homomorphic Encryption and start designing prototype solutions. Some of the applications are discussed below:

• Secure Data in the Cloud: There are many debates about data residency, data ownership, and data privacy on the cloud. Homomorphic Encryption allows organisations to leverage cloud services securely. Data can be kept in the cloud in encrypted form while retaining the ability to perform calculations and search on ciphered information.

• Data Analytics as Service: Homomorphic Encryption allows us to utilise the services of analytics service providers without putting data privacy at risk. Service providers never see the client's private data. Homomorphic Encryption makes it possible for the service provider to perform analytics and draw insights from encrypted user data without compromising the confidentiality of user information.

 Enhance Collaboration: Homomorphic Encryption allows organisations to share sensitive data in encrypted form for computation. This can accelerate collaboration and innovation without the risk of sensitive information getting compromised.

• Outsourcing of Research and Analytics in Regulated Industries: Homomorphic Encryption allows heavily regulated industries, such as healthcare and finance, to get outsourcing services for research and analytical purposes without the risk of non-compliance. There is no need to mask or drop any features in order to preserve the privacy of data. All features may be used in an analysis without compromising privacy.

Conclusion

Homomorphic Encryption is an emerging, cutting-edge, privacy-preserving computation technology that offers collaborative and secure computing in an untrusted environment. Gartner has also listed Privacy-Enhancing Computation as one of the 12 top strategic technology trends for 2022. Considering the volume of data and requirement for round-the-clock availability, it is unavoidable for industries and organisations to keep the data on a third party cloud environment.

This ground-breaking technology will enable governments and industries to utilise outsourced storage and computation services securely.

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Appscape

Showcasing latest mobile apps developed by National **Informatics** Centre

obile technology has emerged as a primary tool for governments to serve their citizens. It has bypassed the need of traditional physical networks for communications and collaborations. It is also much more affordable and accessible, thus strengthening the nation through better citizen-government interaction. To further nourish this interactivity. NIC has created a repository of more than 230 mobile apps available through both 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.

Meghalaya PBR

eghalaya People's Biodiversity Register (PBR) is a vital document that records use and the associated traditional knowledge locally available in the region. It is expected to serve as a tool to prevent biopiracy and a guide in conservation and action planning at the ground level. It records various components of bioresources found under various ecosystems in a region.

Meghalaya PBR has been prepared scientifically, in collaboration with the local people, with their inputs, and endorsed and owned by them through their respective Biodiversity Management Committees. Thus, PBR helps in sustainable resource management of traditional habitats.

Meghalaya PBR mobile app is the next step in the evolution. It empowers the local communities by creating a mechanism to make them participate in development planning which would be ecologically sustainable and socially justifiable. The app enables the citizens to document their rich biological heritage. Thus the app will help in the enrichment of the biological resource database of the state.

2 Shri Aiborlang Wanswett (aiborlang.wanswett@ nic.in)

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Budget Rajasthan

he Budget Rajasthan Mobile App provides an easy access to various budget-related documents of the Government of Rajasthan for a selected financial year such as budget speech, budget study, budget at a glance, finance bills, FRBM documents, budget summary, revenue receipts, revenue expenditures, analytical statements among others.

The app simplifies the viewing of current status of the budget allocation, expenditure, and availability in a particular budget head for a selected financial year. Allocation and expenditure details can also be viewed at departmental levels. The app provides a master list of state departments along with their current flagship schemes, names of administrative heads and budget allocated to the scheme with a proper linkage.

A user can simply access the app without any need to register under guest login. However, a user can further explore various budget-related reports in-depth with their credentials for Budget Rajasthan application provided by the Integrated Financial Management System (IFMS).

The app also allows a user to view the report in different formats (Interactive or PDF) and languages (Hindi and English) based on the availability of internet connectivity.

😩 Shri Manoj Nagar (manoj.nag<u>ar@nic.in)</u>

Arogya Lakshmi

he Department of Women and Child Welfare, Government of Telangana, is working tirelessly towards the holistic development of women and children in the state. For this purpose, they have implemented the world's largest outreach program of ICDS providing a package of services comprising supplementary nutrition, immunisation, health check-ups and referral services along with pre-school nonformal education. As of now, there are 35,973 Anganwadi Centres functioning in the state.

Developed by NIC, the Arogya Lakshmi app helps in monitoring and management of Anganwadi Centres across Telangana. The app enables ANMs (Auxiliary Nurse Midwife) to track the target data on the food distribution, child growth, infrastructure, adolescent girl growth, supplementary nutrition program among others. Thus, it maintains the database of registered beneficiaries and food distribution, ensures proper health check-ups and immunisation, improves enrollment of mothers at Anganwadi Centres, reduces malnutrition among pregnant women, lactating mothers and children and reduces the incidence of infant and maternal mortality.

😩 Sushri R. Jayashree (dio-hyd@nic.in)

RozgarApp Budgam

District Administration Budgam, Jammu and Kashmir has launched 'RozgarApp Budgam' on both mobile and web platforms to provide easy access to information about 255 schemes implemented by both central and union territory governments for unemployed youth in the Union Territory of Jammu and Kashmir.

A number of Centrally Sponsored Schemes (CSSs) are already being implemented throughout the UT to empower the young citizens, but due to a lack of awareness, they were not able to avail these schemes. The RojgarApp Budgam consolidates the information regarding these schemes under one roof.

This digital initiative has enhanced the awareness of these schemes so that one can reap maximum benefit. The app holds important information like name of the scheme, scope, incentives, eligibility, subsidiary and financial support in a PDF format which applicants can avail with one click on their phone.

Some of the departments linked with the application are JKEDI, Horticulture, Animal Husbandry, and Agriculture. Both mobile application and web portal for RozgarApp Budgam application are designed and developed by National Informatics Centre Budgam and can be accessed through URL https://budgam.jk.gov.in/rozgar.

😩 Dr. Suchitra Pyarelal (sio-asm@nic.in)

😩 Shri Mohammad Rauf Wani (dio-bdg@nic.in)

Bihar VanMitra

B ihar VanMitra mobile app has been developed by the Department of Environment, Forest and Climate Change, Government of Bihar to support the Mission 2.51 crore Plantation Campaign under the Jal Jeevan Hariyali Abhiyan. The objective of this campaign is to increase awareness and sensitivity towards the environment. It will help to reach every citizen in the state to expand the green cover by accessing the services offered by the department.

The app provides a user-friendly interface for individuals to register and avail services such as requesting plants, choosing the nearest nursery, and managing plantation site information. The app also tracks the progress at plantation sites under the Mission 2.51 crore Plantation Campaign using data provided by the monitoring in-charge of the actual site with its location and photographs. The cumulative progress of the plantation site can also be monitored by the Department on a reporting dashboard within the app.

In the future, this app will be expanded with more services to have an effective department-citizen interface to avail all the services provided by the department.

Shri Rajesh Kumar Singh (sio-bih@nic.in)

AePDS – AP

thenticity.

GeoRurban

tagged images at regular intervals.

> eoRurban mobile application helps the users

to monitor the status of works being executed

at ground level under Shyama Prasad Mukherji

Developed by NIC Assam, GeoRurban mobile

Rurban Mission (SPMRM) by capturing the geo-

application also facilitates the user to upload the

geo tagged images of the works through their smart

phone. This supplements extra details to the gov-

ernment regarding the ongoing project. A feedback

mechanism is also available to users to give feed-

out internet connection in the case of photograph-

ing the concerned work. The user has to download

concerned cluster work before capturing the images.

This can be done by downloading the master data of

that particular cluster. The captured images will con-

sist of longitude, latitude and server capture time. At

a time, a maximum of four images can be taken for

each work at one stage. Later, the Sync Master Data

Module will help the user to upload the images when

they receive internet connectivity. The uploaded im-

ages will be visible under the Geo Tagged module,

and authorised users can inspect the images for au-

The application is also designed to work with-

back on the basis of concerned work cluster.

ePDS-AP mobile application is a unique attempt to improve the quality of services under the PDS in Andhra Pradesh. It leverages the Aadhaar platform in delivering the food commodities to the eligible beneficiaries by making a fool-proof PDS, free from hoarding, stock diversions and corruption. It monitors the movement of PDS stocks right from the FCI warehouses to the fair price shop (FPS) point until the stock reaches the consumers, thus, improving service delivery through online real-time transactions. It also allows the beneficiaries to withdraw ration from anywhere in the state, irrespective of their local FPS outlet.

The mobile app is developed by Central AEPDS Unit, NIC Hyderabad and acts as a gateway for public services, PDS login and offline card mapping. Following modules are included in the mobile app:

• Statistics report for availed cards, portability cards and active shops

• Dynamic reports for transaction details based on ration cards

Reports for stock register of Fair Price Shops

Monthly abstract reports

• Ration card details with member details and entitlement

Dr. Iniya Nehru E (sio-ap@nic.in)

Hon'ble Prime Minister, Shri Narendra Modi, releases Rs. 20,900 Crore to more than 10.09 Crore farmers under PM-KISAN initiative through NIC Video Conferencing Service



Hon'ble Prime Minister, Shri Narendra Modi, releasing the 10th instalment of financial benefits virtually through NIC Video Conferencing Service

on'ble Prime Minister, Shri Narendra Modi, released the 10th instalment of financial benefit amounting to more than Rs. 20,900 crore to over 10.09 crore farming families' under the Pradhan Mantri KISAN Samman Nidhi (PM-KISAN) scheme on 1st January 2022 via video conference by using ICT solution of the PM-KISAN web portal (https://pmkisan.gov.in). During the programme, the Hon'ble PM also released an equity grant of more than Rs. 14 crore to about 351 Farmer Producer Organisations (FPOs), which will benefit more than 1.24 lakh farmers.

The PM-KISAN Samman Nidhi portal is designed and developed by the National Informatics Centre (NIC) and launched by the Hon'ble PM Shri Narendra Modi on 24th Feb 2019. Since then, it has helped in transferring the

funds directly into the accounts of the farmer families. It provides an end-toend technology solution for transferring benefits directly into the accounts of farmers registered under the PM-KISAN Scheme.

The Hon'ble Union Minister of Agriculture and Farmers' Welfare, Shri Narendra Singh Tomar, Hon'ble Minister of State, Shri Kailash Choudhary, and Hon'ble Minister of State, Sushri Shobha Karandlaje were present at the event. Chief Ministers, LGs, Agriculture Ministers and farmers from several states were linked to the event. The Prime Minister interacted with FPOs during the event.

-Informatics News Desk, NIC-HQ

Hon'ble Minister of Forest & Environment, Meghalaya launches the Mobile and Web Applications for the Meghalaya People's Biodiversity Register

on'ble Minister of Forest and Environment, Government of Meghalaya, Shri James P.K. Sangma launched the Mobile and Web Applications of the Meghalaya People's Biodiversity Register (PBR) for the Meghalaya Biodiversity Board on the 24th February 2022 in a program organised at the Conference Hall of the Main Secretariat Shillong

Meghalaya PBR is an inventory of rich flora and fauna of the State to be organised village-wise together with the village credentials including the Biodiversity Management Committee (BMC) of each village. The PBR Web App was developed by NIC to update and enrich the inventory database of biological resources of the State whereas the Mobile App can be used not only by domain related officials but by the general public to complement and supplement capturing data for documentation of our rich biological heritage which will help in fair and equitable sharing of benefits with our villages (bioresource owners) through the Biodiversity Management Committees.

Hon'ble Minister applauded the technological intervention in this respect with the efforts made by NIC and Meghalaya Biodiversity Board. He reiterated that every State developmental plan should consider its rich biodiversity and also try to conserve the same. The web application will come in handy as a ready reference for all conservation efforts.

-Candida B.M. Booth Shadap, Meghalaya



Hon'ble Minister of Forest & Environment, Shri James PK Sangma, launching the Mobile & Web Applications for the Meghalaya People's Biodiversity Register

Hon'ble Chief Minister of Assam launches 10 online Contactless Vahan and Sarathi Services

on'ble Chief Minister of Assam, Dr. Himanta Biswa Sarma, publicly launched 10 online contactless citizen services on February 19, 2022 in the presence of Hon'ble Minister of State Transport Shri Chandra Mohan Patowary. With these 10 services, a total of 13 high-utility contactless citizen services are now operational in Assam. These services include services for Learner Licence, Duplicate Registration Certificate (RC), Transfer of Ownership, Hypothecation Addition, Hypothecation Cancellation, Change of Address in Registration Certificate, No Objection Certificate in Vahan, Renewal of Driving Licence, Duplicate Driving Licence, International Driving Permit, Surrender of Class of Vehicle (COV), Driving Licence Extract and Replacement of Driving Licence.

In his speech, Hon'ble Chief Minister pointed out how three contactless services launched in September and October 2021 had resulted in reduction of almost 9 lakh footfalls in the District Transport Offices (DTOs) of Assam. They had contributed significantly to the surge in revenue collection by the Department in spite of the COVID-19 situation.

Hon'ble Chief Minister offered some highly significant insights into how these services could be made more effective. He suggested that all online validation and approvals of applications should not be directed only to the DTO of origin but should be randomly assigned even to other DTOs depending on working capacity. This would result not only in more uniform distribution of work and speed up the whole process, but would also eliminate any intervention by middlemen as it would not be known which DTO the application would be referred to by the system for validation and approval.

Hon'ble Chief Minister also suggested that online approvals for No Objection Certificates for Registration and Change of Address could be done away



with as the applicant would already be authenticated by Aadhaar. He also suggested new registrations be completed at dealerships without the intervention of DTOs.

Hon'ble Chief Minister thanked NIC for enabling technical innovations which have brought about a paradigm shift in service delivery to citizens.

- Kavita Barkakoty, Assam

Launch of 'Neo Cradle Web Portal' -A Repository of Information on Neo Cradle Care in Kerala

mt. Veena George, Hon'ble Minister of Health, Women & Child Development, Government of Kerala inaugurated Neo Cradle - A Comprehensive New Born Care Management System - (https://neocradle. kerala.gov.in) web portal at Nila Auditorium, Institute of Maternal Child and Health, Kozhikode on 5th January 2022 at 11.00 AM through Video Conference in presence of the Chief Guest, Shri P. A. Mohammed Riyas, Hon'ble Minister of PWD & Tourism, Shri Mohan Krishnan P. V., DDG and State Informatics Officer, NIC Kerala and officials from the Department & District Administration. DDG & SIO Kerala gave a felicitation address and explained the role of NIC in eGovernance.

Neo Cradle jointly initiated by District Administration and National Health Mission (NHM), Kozhikode and developed by the National Informatics Centre, Kozhikode. It covers all of the aspects of maternal and neonatal care in the entire Kozhikode District. It is the first of its kind project in the state. The main objective of this project is to reduce incidents of neonatal complications and mortality, standardise neonatal transportation and capacity building of the neonatal intensive care unit (NICU) staff. All the delivery points in the district are part of this project for a coordinated communication system and network.

- Asha Varma, Susy M., Kerala



Dignitaries during the inaugural function of Neo Cradle Care in Kerala

Hon'ble Chief Minister of West Bengal launches the Integrated Portal for Ease of Doing Business in the State

n Integrated Portal for Ease of Doing Business (EoDB) under the Department of Micro, Small, Medium Enterprises and Textiles, Government of West Bengal - designed and developed by NIC, West Bengal - was inaugurated at the Nabanna Sabhaghar (State Secretariat) by the Chief Minister Smt. Mamata Banerjee in the august presence of highlevel Business Houses, Members of CII, Dignitaries from Bengal Chamber of Commerce and Industries, Press and Media Houses. Chief Secretary, Dr. H. K. Dwivedi, IAS highlighted the usefulness of the EoDB portal for the potential entrepreneurs in the State.

The portal (https://wbmsme.gov.in/sid) provides comprehensive information on the approvals, compliances and clearances from various line departments that are mandatory for setting up enterprises in the state.



Applicants can access all the 101 (One hundred and One) eServices of the various Line Departments online from the portal itself. Applicants can also get a fair idea from the portal about the approvals required through a simple set of the questionnaire under "Know Your Approvals". The portal has other important information like the mandated time under which a service is to be delivered, departmental reforms that were implemented for delivering services under EoDB and grievance redressal systems.

- Motiur Rahman, West Bengal

Commissioner (MAHUD), Manipur launches 3 Online Municipal Services for 27 Urban Local Bodies of Manipur under AMRUT

hree online services of the 27 Urban Local Bodies (ULBS) of Manipur configured by NIC Manipur on the ServicePlus Framework of NIC was launched on 18th January 2022 by Commissioner, Municipal Administration Housing and Urban Development (MAHUD) Department, Government of Manipur in the presence of Shri Laishram Shyamjit Singh, SIO Manipur, Shri Robert Kshetrimayum, IAS, Director, MAHUD Department, Government of Manipur and Smt. Yumnam Narmada Devi, Chief Town Planner / State Mission Director (AMRUT), Town Planning Department, Government of Manipur. Senior officials from the Ministry of Housing and Urban Affairs and officers from NIC Delhi also attended the function through Video Conference.

The three services are 1. Issuance of Birth Certificate, 2. Issuance of Death Certificate and 3. Booking and Payment of Desludging Tanks were inaugurated out of the five services identified by the Town Planning Department, Manipur for online implementation.



Speaking on the occasion through video conferencing, Shri Vishnu Chandra, DDG & HOG, Housing and Urban Affairs, NIC Delhi lauded the Government of Manipur for launching the online service of ULBs and enabling the people to avail these services online. Further Commissioner, MAHUD, Government of Manipur and SIO, NIC Manipur highlighted the importance of online (end-toend) services. The services are integrated with online payment, SMS and email notification features and will greatly benefit the citizens as they will no longer need to physically come to the municipal offices. The remaining services will be launching soon.

- M. Budhimala Devi, Manipur

Hon'ble Minister of Women and Child Welfare, Telangana, Smt. Sathyavathi Rathod, launches Arogya Lakshmi Digital Platform

mt. Satyavathi Rathod, the Hon'ble Minister of ST Welfare, Women & Child Welfare and Smt. D. Divya, IAS, Special Secretary to Government & Commissioner, Telangana WDCW Department in the presence of Shri K. Rajasekhar, DDG & SIO, Telangana State Unit launched the Arogya Lakshmi Digital Platform and Mobile application on 3rd January 2022.

The Application and Mobile App has been designed and developed by



Hon'ble Minister Smt. Satyavathi Rathod, Smt. D. Divya, I.A.S, Special Secretary, and Shri K. Rajasekar, DDG & SIO during the Arogya Lakshmi Digital Platform launch event.

NIC Telangana. The event was attended by Shri S. Krishana, STD, NIC TSU and other officers along with staff from the WDCW Department. Smt. Satyavathi Rathod and Smt. D. Divya appreciated the contributions made by NIC.

- Beena C., Telangana

Government of Punjab envisages Mera Ghar Mere Naam (MGMN) Portal

he Revenue Department, Punjab has released an Information, Education and Communication (IEC) booklet for conceptualisation, development and implementation of MGMN scheme in the state by development of a state-wide portal.

The portal will cover all the aspects of MGMN implementation covering the role of different stakeholders such as the Revenue Department, PLRS, Survey of India and NIC. The role of NIC Punjab has been given a prominent place along with the blueprint of the software solution and technical support of NIC Punjab on GIS.

MGMN is an ambitious scheme of the Government of Punjab to accord property rights to lawful owners / occupants in Lal Dora. NIC Punjab has been entrusted as Technology Partner to develop a workflow based software application / portal as per Punjab Abadi Deh (Record of Rights) Rules, 2021, to facilitate management and monitoring of property ownership to the



dwellers living in the houses within Lal Dora in villages. It will enable them to use their property as a financial asset for taking loans and other financial benefits and will provide the right to make properties marketable and saleable. Using the web portal, the owner may search the property and download the property card as well. The software will be developed in phases, initially for creating a record of rights, integrating with survey unit maps. Later a provision will be made for a property mortgage, sale deeds and updating mutations. The integration with GIS Portal and DigiLocker has been envisaged in later stages.

- Parminder Kaur, Punjab

Hon'ble Urban Development Minister, Himachal Pradesh launches HP RERA Portal

hri Suresh Bhardwaj, Hon'ble Minister of Urban Development, Himachal Pradesh launched the web portal of Himachal Pradesh Real Estate Authority at Shimla on 7 January 2022. Dr. Shrikant Baldi, Chairperson, HP RERA, Shri BC Badalia, Member (Administration), Smt. Niraj Kumari Chandla, Joint Secretary Housing, Shri Ajay Singh Chahal, SIO and DDG NIC HP, Shri Mangal Singh, Scientist-C and other officers were present on the occasion.

Dr. Shrikant Baldi, gave a comprehensive presentation during the launch ceremony about various features of this comprehensive, revamped citizen centric and user-friendly web portal. The primary objective of HP RERA is to bring transparency and generate trust and confidence of real estate buyers with quality homes / flats, timely delivery, quick resolution of complaints and pre-facilitation for timely approvals to run the project and filing online griev-



ances / concerns. The portal has facilities for agents, builders, developers, citizens, and owners. The objective is to provide all services in online mode, accept payments through payment gateway and provide alerts through SMS and Email so that there is no need to physically visit HP RERA office. Citizens can search real estate projects, promoters and agents based on multiple parameters and file grievances through this portal. All orders of HP RERA are made available online.

- Ajay Singh Chahal, Himachal Pradesh

Hon'ble Chief Justice, Himachal Pradesh High Court, inaugurates Virtual Court for Shimla District

ohammad Rafiq, Hon'ble Chief Justice of Himachal Pradesh High Court inaugurated the Virtual Court for Shimla district on 30 December 2021 in an august ceremony in District Courts Complex, Shimla. Mrs. Justice Sabina, Mr. Justice Tarlok Singh Chauhan, Mr. Justice Vivek Singh Thakur, Mr. Justice Ajay Mohan Goel, Mr. Justice Sandeep Sharma, Mr. Justice CB Barowalia, Ms. Justice Jyotsna Rewal Dua, Mr. Justice Satyen Vaidya and other eminent Judges of Himachal Pradesh High Court were present on this occasion.

Virtual Courts at https://vcourts.gov.in is a leap in eCommittee's attempts to facilitate judicial services to general public. The system brings the court at home allowing the public to access case details, pay fine and close the cases all from the comfort of home. The service is accessible through all types of



devices with a stable internet connection.

- Ajay Singh Chahal, Himachal Pradesh

Indonesia looks at Global Examples for Election Digitalisation

hri Johnny G. Plate, Minister of Information and Technology, Govt. of Indonesia, said the 2024 General Election (Election) will be a momentous opportunity to produce Indonesia's future leaders with a commitment to digitising Indonesia. According to the Minister, digitalisation in elections is very possible because many countries have started implementing e-voting.

Through free, fair and secure online voting, as well as through an e-vote system or internet voting. Estonia has been doing it since 2005 and it has a digital electoral system at the city, state and EU level which is used by 46.7% of the population. So it's not new, including the KPU. It has been prepared for a long time.

Citing data from the International Institute for Democracy and Electoral Assistance, the Minister stated that the stages of electronic voting or e-Voting have been used in 34 countries in the world, carried out in various forms and levels. The implementation of e-Voting involves election management bodies or electoral management boards at the national and sub-national scales, such as the election of members of the regional legislature.

The important thing to pay attention to is not only the digital process. However, it is more about the community's readiness to maintain the level of trust in every stage of the election, including during data verification and re-verification.



Source- https://opengovasia.com/

With You and With Me launches National Resilience Database in Australia



ech startup WithYouWithMe (WYWM) has launched a digital initiative that seeks to reinvent the way the federal government responds to a crisis by giving them ready access to needed digital skills.

The National Resilience Database (NRDB) will allow Australian citizens with digital skills to register to volunteer their skills to government agencies during disasters and be paid for their contribution.

The database has been designed as a new way for agencies to access skilled talent capable of stepping into short-term roles as required, according to WYWM CTO Scarlett McDermott.

"When disaster strikes, one of the biggest challenges governments face is being able to mobilise quickly and deploy the digital skills required to effectively respond. We've seen this challenge firsthand from working closely with government agencies during the pandemic," she said. "The NRDB is going to provide government agencies with a real-world solution — turnkey access to skilled digital talent, which is something that hasn't existed before. While we can't stop disasters from occurring, we can help make sure that our country is armed with the right resources to allow us to respond in the best way possible."

Australian citizens interested in offering their skills can register for the NRDB and receive free training in areas including data analytics, cybersecurity, digital project management, robotic process automation, and software development.

National Awards to NIC at the 24th National Conference on eGovernence, Hyderabad, Telangana

The conference is a platform for constructive exchange of ideas on latest technologies for promoting eGovernance

1 Shri D.C. Misra, DDG, NIC, moderated the breakout session on 'Seamless end-to-end Service Delivery without human interference through technological interventions' at the 24th National Conference on eGovernance organised by DARPG, MeitY & Telangana State Government at Hyderabad.

2 Shri R.S. Mani, DDG, NIC and Member of Technical Advisory Group of Election Commission of India (ECI), along with Prof. Rajat Moona, Dr. G. Siva Kumar and Dr. H. Krishnamurty, has been bestowed with 'National Award' under the Special Category for Providing Seamless IT Support to Election Commission of India by the Hon'ble Minister of Law and Justice Shri Kiren Rijiju at the 24th National Conference on eGovernance, Hyderabad, Telengana

3 Shri I.P.S. Sethi, DDG, NIC briefed about DigiDhan Dashboard designed and developed by NIC that enables accurate reporting, monitoring, and analysis of various modes of digital payments and transactions across the country during the Plenary Session VI - India Techade: Digital Economy (Digital Payments - Building Citizens Confidence) at the 24th National Conference on eGovernance. The DigiDhan Dashboard also helps in tracking the growth of digital payment transactions in the country and will provide inputs for effective planning of digital payment promotional activities.

ANIC Dadra and Nagar Haveli and Daman and Diu Centre received the National Award (Silver) for the successful implementation of the Integrated COVID Management System (ICMS) under the category "Usage of ICT in the Management of COVID-19" during the 24th National Conference on eGovernance in Hyderabad. NIC DNHDD Centre was chosen among 431 entries as the ICMS application enabled the UT Administration to control public access within the region using ePass, monitor the movement of industrial workers' and track the entry of COVID-19 suspects into the union territory.



Accolades

5 eShramik Seva project developed by NIC for the Labour Department, Chhattisgarh has been conferred with the National Award (Gold) under the category 'Universalising Access including eServices.' The main objective of the eShramik Seva project is to support labourers and establishments and protect their economic, physical, and social interests through various acts. It contributes towards industrial development by building harmony between workers and management.

6 NIC Bandipora received the National Award for eGovernance at the 24th National Conference on eGovernance held in Hyderabad, Telangana. The award has been conferred for developing the innovative digital product "Panchayat Development Index". It captures the movement in development at the grass-root level and analyses the overall impact of central schemes.

7 eMARG application developed by NIC Madhya Pradesh received the National eGovernance Award conferred by DARPG in Hyderabad, Telangana. eMarg is an enterpriselevel eGovernance solution to track the maintenance of rural roads constructed under the Pradhan Mantri Gram Sadak Yojana (PMGSY). Additional State Information Officer Madhya Pradesh, briefed about eMARG to Hon'ble Union Minister of State (IC), Ministry of Science & Technology, Dr Jitendra Singh at the 24th National conference on eGovernance on visiting eMARG booth.

8 NIC Srinagar District, J&K has been conferred with the National Award (Gold) by the Hon'ble Union Minister of State (IC), Ministry of Science & Technology, Dr Jitendra Singh, under the category of 'COVID-19 Management with the Use of Technology' during the 24th National Conference on eGovernance in Hyderabad, Telangana. The various innovative IT measures taken by NIC Srinagar, such as Contact Tracing, Geo-fencing and Quarantine Management, helped the Jammu and Kashmir Administration in the containment of COVID-19.

9 Hon'ble Union Minister of State (IC), Dr. Jitendra Singh and Hon'ble IT Minister, Telangana, Shri K.T. Rama Rao felicitated "Virtual Courts' with the National Award for eGovernance 2020-2021 (Gold), under the "Excellence in Process re-engineering for Digital Transformation' category at the 24th National Conference on eGovernance. The application aims at eliminating the physical presence of litigants or lawyers in the courtroom and allows for the adjudication of cases on a virtual platform.











National Award to NIC for the Best Electoral Practices 2021-22

NIC Puducherry Union Territory Unit received an award under 'Special Category' for their technical contributions to General Elections 2021 at the National Awards for the Best Electrol Practices 2021-22, which were held in New Delhi on the occasion of the 12th National Voters Day. The Chief Secretary, Puducherry and Chief Electoral Officer, Puducherry bestowed this Award on the NIC Puducherry Centre and appreciated the NIC efforts.



NIC wins big At Conference on Good Practices in CCTNS / ICJS

During the National Conference on Good Practices in CCTNS / ICJS conducted by the Ministry of Home Affairs on 16-17 Dec 2021, NIC won the award for Empowering the Police with IT Solutions under the "Project Implementation - Significant Contribution" category for its ICJS platform.

Shri Shashikant Sharma, Senior Technical Director (HOD-ICJS) received the award and certificates formally on behalf of the ICJS team from Shri Sanjay Mathur, IPS Joint Director, NCRB).

NIC officers who received the awards for their significant contributions are Shri Chandrashekhar S.P., Scientist-F (eForensics, Karnataka), Shri Kartik Krishna, Scientist-C (ePrisons, NIC-HQ), Shri Munishwar B., Scientist-C (ICJS, NIC-HQ) and Shri Ranjan Kumar, Scientist-C (eProsecution, NIC-HQ).

ICJS platform is a comprehensive system which provides interconnection and data exchange services among the pillars of the criminal justice system. ePrisons, eProsecution and eForensics are three in-house products developed by the ICJS team of NIC and eCourts by NIC Pune Centre, which are core systems of ICJS and cater to the respective domains independently.

ICJS platform is also extended to other domains like CBI, NIA, RPF, Vahan & Sarathi, and IVFRT for data exchange and services.



NIC Hisar grabs Haryana Good Governance Award 2021

The Carewell Application, developed and designed by NIC Hisar, has been conferred the "Best District Level Good Governance Award 2021" by the Hon'ble Chief Minister of Haryana, Shri Manoharlal Khattar. The award was received by Shri Mahendra Pal Kulshreshtha, Sr. Technical Director and DIO Hisar, alongside Shri Akhilesh Kumar, Technical Director and ADIO Hisar, and the NIC Hisar team. The Carewell Application is an Android-based mobile application by NIC Hisar that facilitates homebased care for the elderly / senior citizens and addresses their needs with the help of Haryana Government Departments and Saksham Yuvas (who in-turn get employment opportunities).



NIC wins big at Digital Technology Sabha Awards 2022

1 NIC Chattisgarh wins Digital Technology Sabha 2022 Award for their Innovative Assessment tools – NICIer and TelePractice – under Enterprise Applications category. The award was received by Dr. A.K. Hota, A.K. Somasekhar, Lalita Verma, alongside Sudhish M., Assistant Director, Education Department, Chhattisgarh.

NICler for MCQ assessment and TelePractice for oral assessment have changed the way formative assessment is done. They automatically capture lakhs of students' answers to different questions, which can be translated by data analytics for adaptive learning. Oral assessment is an essential part of any academic activity, including school education. Conducting oral practise in oneto-one mode is time-consuming. This project has provided a technical solution to conduct oral quizzes simultaneously for multiple students using the Telegram app as the front end and Python for backend processing.

Team Members

- Dr. A.K. Hota, Scientist-G
- A.K. Somasekhar, Scientist-F
- Lalita Verma, Scientist-B

2 The Web Portals for Jan Shikshan Sansthan Scheme (JSS) and SANKALP have been awarded Digital Technology Sabha Awards 2022 under the category of Enterprise Applications. Both the web portals were developed by NIC under the guidance of Shri I.P.S. Sethi, DDG & HoG, MSDE.

JSS is a non-formal adult education programme aimed at improving vocational skills and living standards of workers. The beneficiaries of this scheme are non-literates, jail inmates, unskilled and unemployed youth from SC / ST / OBC / Minority / Divyang / Women, especially from the underprivileged sections of rural India. It is implemented through NGOs and has a Darpan ID with annual recurring grant from the Government of India.

On the other hand, SANKALP aims to improve the people by providing short term skill training via strengthened institutions and by bringing better market connectivity and inclusion of marginalised sections of society.

Team Members

- Shri I.P.S. Sethi, DDG & HoG, MSDE
- Shri Sanjay Kumar Sinha, STD
- Smt. Neeta Chauhan, TD

3 NIC Chhattisgarh bags Digital Technology Sabha Award 2022 for Post-Matric scholarship project of Chhattisgarh Tribal Department under the Enterprise Application Category. The Postmatric scholarship portal of Chhattisgarh Tribal Department aids the categorised students of various graduate degree, post graduate degree, diploma and post graduate diploma courses in filing application for scholarship and involves all process up to transfer of scholarship in their bank accounts.

Shri Satyesh Kumar Sharma, Technical Director, NIC Chhattisgarh received the award briefed about the product in the presence of other award-winning team members including Shri Saurabh Dubey, Scientist-C, Smt. Jyoti Sharma, Scientist-B of NIC, Shri Saurabh Verma and Ms. Saziya Tabassum from development team.

Dr. A. K. Hota (DDG & SIO), who joined on the occasion, congratulated the whole team.

Team Members

- Shri Satyesh Sharma, Scientist-E
- Shri Saurabh Dubey, Scientist-C
- Smt Jyoti Sharma, Scientist-B
- Shri Saurabh Verma, Developer
- Ms. Saziya Tabassum, Developer



Certificate of Appreciation to NIC Rajasthan Officers on Republic Day 2022

During the celebration of Republic Day on 26th Jan 2022, Shri Deepak Bhatia, Technical Director and ADIO, NIC Kota awarded by Hon'ble Urban Development Minister, Shri Shanti Kumar Dhariwal for his contribution to Panchayat Samiti and Zila Parishad Elections in Kota District. In a co-event at Bikaner, Shri Sankalp Sharma, DIA, NIC Bikaner awarded by Hon'ble Minister of Education (Primary and Secondary), Art, Literature, Culture & Archeology, Government of Rajasthan, Dr. Bulaki Das Kalla, for his contribution to ICT activities in COVID-19, Elections and Vaccination work in the District of Bikaner, Rajasthan.

