Karnataka State

Architecting digital solutions and delivering key ICT services to the Government

Edited by **REUBAN K**

NIC Karnataka State Centre has been instrumental in designing, developing and implementing e-Governance solutions, which resulted in digital transformation in the State at all levels and has helped in achieving transparency and efficiency in the delivery of the citizen centric services. NIC has set up the Centre of Excellence in Blockchain Technology in Bengaluru with a vision to build niche applications using Blockchain in close coordination with the Government.

P.V. Bhat
Dy. Director General & SIO
bhat.pv@nic.in

B.P. Srinivasan
Sr. Technical Director
b.p.srinivasan@nic.in

Karnataka, popularly known as 'One State, Many worlds' is situated in the Southwestern region of the Country. It is the eighth largest state of India and formed on 1st November 1956, the state was earlier known as the State of Mysore, and was renamed Karnataka in 1973. It was ruled by many kings belonging to Maurya, Shatavahana, Kadamba, Chalukya and the world famous Vijayanagara dynasties. Being a home to sculptured temples, hill ranges, beaches and other beautiful attractions, Karnataka is known for its heritage destinations, miraculous hill stations and magnificent waterfalls. It is also known for sandalwood and Mysore Silk. The State is also known for famous writers who have won Eight Jnanpith awards for their exemplary work in literature. The State capital Bengaluru is the most sought after destination for the IT Sector and Karnataka Government has reached out to the world to invite investment in the State. Karnataka Government is very keen on providing paperless, faceless, contactless and cashless services to the citizens. NIC is a partner in achieving its goals of spearheading ICT initiatives in the State. This has enabled the State to achieve transparent, effective and efficient citizen centric service delivery and brought governance to the doorstep of the citizens.

NIC Karnataka has been playing a key role in the e-Governance initiatives of the Government and is consulted on all major citizen centric projects in the State including the 30 District Offices. NIC Karnataka is instrumental in providing state-of-the-art Data Centre support for the Government and has also designed, developed and implemented e-Governance applications since its inception in Bangalore in 1987.

ICT Initiatives in the State

Centre of Excellence in Blockchain Technology

A state-of-the-art laboratory has been established to facilitate the Government Departments to perform PoCs, test the applications and move on to production. The centre has explored some blockchain platforms and has established blockchain networks using Hyperledger Fabric and Hyperledger Sawtooth. Blockchain network with nodes in different data centres of NIC has been established to provide a platform for NIC to develop and deploy blockchain enabled applications.

Centre is developing and deploying the applications such as Certificate Chain, Drug Logistics, Remote Voting, etc.

Certificate Chain

The marks-sheet of SSLC and PUC students of Karnataka have been stored in Blockchain. The

> NIC Karnataka State has been the technology partner with the Government of Karnataka in all the citizen centric applications. The State achieved laurels in many e-initiatives, thanks to NIC for technical support. e-Hospital, FRUITS, DBT, e-Office, e-Waybill, GST Prime, Panchatantra, e-Swathu, e-Aasthi, Blockchain applications are some of the important web and software applications with which the citizens, business community and Government at large are benefitted.
>
> The team at NIC Karnataka has vast domain knowledge in all key areas of Government and the technical competency to offer solutions.
>
> I am very happy to note that Informatics April 2021 is showcasing the e-initiatives of NIC in Karnataka State.
>
> I wish the team NIC Karnataka the very best in all their future endeavours and look forward to their continued support for the State in e-Governance initiatives.

P. RAVIKUMAR, IAS
Chief Secretary
Government of Karnataka

KSEEB portal provides facilities for the process of verification. The same system can be implemented for any university marks-sheet. This provides a tamper proof secure system and enables electronic verification by other accepting agencies such as Scholarship, Professional College admission system systems.

Marks-sheet of students who passed the examinations in the academic year 2019-20 is stored in the blockchain.

Drug Logistics Chain - Aushada

The main objective of Aushada software is to

▲ **Hon'ble Chief Minister of Karnataka, Shri B. S. Yediyurappa inaugurating the eGazette Portal**

automate the supply chain management of drugs procured from Karnataka State Medical Supplies Corporation Limited and supplied free of cost to the patients across Karnataka. At critical stages in the workflow, the data is stored in Blockchain. This includes the POs, the batch ID details, quantity, expiry details, inward and outward details at warehouse and hospitals. The quality test report received from test labs would be updated in blockchain

This will facilitate easy recall of non standard drugs. The patient will be able to check the expiry, quality, manufacture details etc. from the blockchain.

For the year 2019-2020 about 800 drug details along with Purchase Orders and the movement details of these from supplier to 26 District Drug Warehouses and 2,783 Health institutions all across Karnataka State is stored in the blockchain.

GST e-Invoice

GST e-invoice system, the game changer in the GST system, was launched on 1st October, 2020 on PAN-India basis, for the businesses who have an aggregate turnover of more than Rs. 500 Crores in the financial year. 'e-invoicing' essentially involves reporting details of specified GST documents to a Government-notified portal and obtaining a Invoice Reference Number (IRN). GST e-invoice System is a path-breaking initiative that is going to revolutionize the way businesses interact with each other. It also helps the recipient to get an Input Tax Credit for the purchases. From day one, this system is running smoothly and in the first two months of introduction itself, more than 1,089 Lakh e-invoices are generated on the NIC portal by 33,000 tax payers.

GST Prime

NIC-GST Analytics System

GST Prime system is an analytical system from NIC for the GST officers in the country. It pulls the data from the GST Common Portal, E-Way Bill system and other external systems and analyses the data and provides the information to the officers for further action. This system has helped the GST departments in improving tax compliance and collection and fraud detections. GST Prime has been implemented

in the states of Karnataka, Chhattisgarh, Jharkhand, Himachal Pradesh, Maharashtra, Chandigarh, West Bengal, Kerala and Haryana. And the implementation is under progress in the states of Assam, Delhi, Bihar and Madhya Pradesh.

DBT

Direct Benefit Transfer

Government of Karnataka provides benefits citizens through several schemes and programmes of Govt. of India & Govt. of Karnataka - Subsidies to farmers, scholarships to students, social security pensions, and micro-credit to poor women etc to name a few. The new initiative is to provide a common platform for all Government departments to integrate their beneficiary management system with DBT platform. This will enable them to do Direct Benefit Transfer to the beneficiary's bank account through the Aadhaar Enabled Payment System. The DBT platform provides services to the various departments to perform validation of Aadhar number with UIDAI, check for availability of Bank Accounts seeded with Aadhar and through NPCI service and resolve issues with respect to payment. For payment, DBT is integrated with Khajane-II and the State Bank of India.

89 Schemes from 14 departments are on-boarded on the DBT platform. A total amount of Rs 10,160 Cr. has been transferred to 3.65 Cr. Beneficiaries through the DBT portal till date. About Rs. 684 Cr. have been paid to 24.9 lakh beneficiaries under various Covid-19 relief schemes.
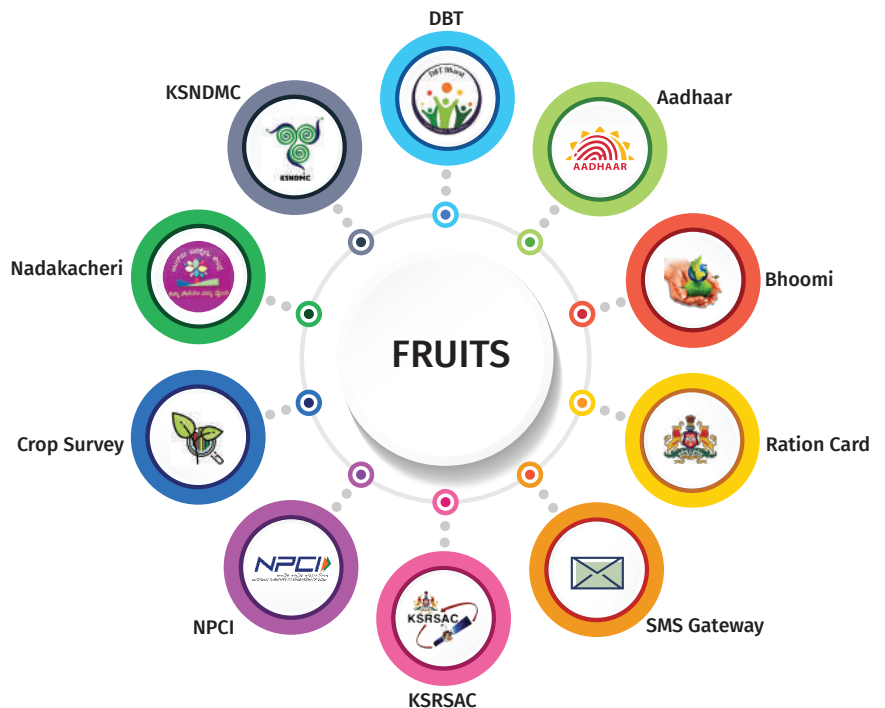
Panchatantra

Panchatantra is a comprehensive system for automation of activities of all the 6009 Gram Panchayats of Karnataka. Double entry accounting system the core of the project, helps Panchayats to capture all the financial transactions like receipts, payments, demands, etc. and thereby allowing Panchayats to generate various financial statements like Income & Expenditure statements, Balance Sheets, etc It also has citizen interface for online services of the gram panchayats.

Operational in all the Gram Panchayat since 2015-16 this system is benefitting over 400 Lakh of rural population and 6009 GPs in improving in their delivery of services and tax collection.

Worksoft

The Rural Development and Panchayat Raj department executes multiple development works under various schemes to improve the basic infrastructure in the rural areas. In this process, they

Farmer Registration & Unified Beneficiary Information System ▼

get multiple development works executed in the rural area so that the basic infrastructure is built for rural people.

The comprehensive Worksoft system facilitates the RDPR department in following the procedure laid down for execution of works and effective monitoring of implementation of the same under different schemes.

FRUITS
Farmer Registration & Unified Beneficiary Information System

FRUITS is an e-Governance application for managing farmers database and benefits provided to farmers/ institutions/ producing organisations, covering the schemes executed by Department of Agriculture and allied departments. All these departments deal with farmers when it comes to providing benefits from the government in the form of subsidy/ financial assistance. A well organised and scrutinised farmer database will avoid farmers from running from pillar to post for availing benefits and submission of same set of documents repeatedly. For departments, it helps in bringing transparency in selection of beneficiaries, avoiding chances of same beneficiary(ies) availing multiple benefits.

Farmers can request online for registration, modification of existing details etc. Electronic integration has been achieved with Aadhaar, BHOOMI (land Records System), Nada-Kacheri (Revenue departments certificates issue system), PDS and EPIC system. The system also facilitates updation of details of benefits passed on to farmers by stakeholder departments based on registration ID. Applications of stakeholder departments interact and exchange data using Web API.

6 Departments with 27 schemes are on-boarded with FRUITS (**http://www.fruits.karnataka.gov.in**). Payments to beneficiaries are being done using the DBT platform. An amount of Rs. 570 Crores has been disbursed to about 1 Crore beneficiaries till date under different schemes.

FAPS
Farmer Agriculture Produce Support System

FAPS application is a total work flow based system wherein farmer can register, provide produce to the procurement agencies and receive the payment for their produce directly to his bank account. The registration of farmers is done through the FRUITS system, which will validate his details along with land records and agricultural produces.

With the introduction of the above system, the registrations of farmers and procurement of produce is done with ease and the payment to the farmers is made within 15 days of the procurement, which otherwise used to take 3 to 4 months. This has benefitted a substantial number of farmers. During the last financial year, more than ten commodities were covered under MSP operations by six departments/agencies and more than 5.80 lakh farmers are benefitted from this system.

Samrakshane
https://www.samrakshane.karnataka.gov.in

Samrakshane (meaning protection) is an end to end, state-of-the-art e-Governance solution and farmer-friendly system for crop insurance enrolment, registering claims, compensation calculation and payment of compensation to farmers under the Crop Insurance Schemes, Pradhan Mantri Fasal Bima Yojana (PMFBY) and Modified Weather Based Crop Insurance Scheme (MWBCIS).

It has been operationalised in 2016 and successfully completed 14 seasons since inception. It has resulted in increase in Non-loanee farmer enrolments and reduction in Process cycle time for compensation payment by almost 10 months. The payments are made through SBI payment gateway.

Seva Sindhu
http://sevasindu.karnataka.gov.in

Seva Sindhu is a Service Plus based platform to deliver government services at the doorsteps of citizens. Seva Sindhu is integrated with various service delivery channels of the Government of Karnataka namely citizen service centres (Bangalore One, GramaOne, JanaSevaka, Karnataka One) , Atalji Jana Snehi Kendra and Bapuji Kendras. It aims to bring all departmental services under one platform. It is a step towards providing accessible, cost-effective, accountable and transparent government

▲ Shri Ravi Shankar Prasad, Hon'ble Union Minister inaugurating the CoE in Blockchain Technology digitally

services to citizens.

As of now, Seva Sindhu provides 760 online services of 64 departments.

EASE
Electronic Answer Script Evaluation System

EASE is a system to carry out the computerized evaluation of the theory examination, conducted by the various universities, agencies. The system enables onscreen evaluation of theory examinations and is being used by Education Department for entrance tests conducted for recruitment of teachers and lecturers. It is hosted in cloud environment with distributed scanning stations and onscreen evaluation centres, accessed through internet/ intranet.

It is generic system and supports academic related activities covering parallel evaluations of the same answer scripts by different evaluators using secured encryption of data. It is being implemented for KPSC (Karnataka Public Service Commission), Govt. of Karnataka, for their regular recruitment purposes.

e-Gazette system
http://erajyapatra.karnataka.gov.in

The e-Gazette is web application with built in workflow for all the stake holders starting from submitter, uploader, approver and nodal officer. At each stage, the document is digitally signed and finally the Gazette is published on the portal. With launch of e-Gazette, the physical publication of Gazettes has been discontinued and very minimum copies of e-Gazettes are printed and kept for record purpose. Government printing press used to print an average of 39 crore pages of weekly gazette and 1.2 crore pages of extra ordinary gazettes each year. With e-Gazette, the number of pages per year is reduced to 10,000 pages.

Since it is a web application, all the Gazettes

▼ Dr. C N Ashwathnarayan, Hon'ble Deputy CM and Hon'ble Minister, Higher Education inaugurating the Online e-Affiliation Portal for Universities of Karnataka

Project Name	Brief Description	Implementation Status
Ahara	Online Ration Card Management and Food distribution System	More than 120 Lakh families are benefited
E-Hospital	Online Hospital Management System	Implemented in 146 hospitals out of which 140 are in cloud and 6 in major hospitals in Bengaluru.
E-Way Bill	Online generation of e-way bill for movement of goods by the business entities as per GST requirements	More than 550 e-way bills are generated every month by 12.5 Lakh tax payers
Aayushman Bharat-Arogya Karnataka	Karnataka launched Universal Health Scheme integrated with Pradhan Mantri Jan ArogyaYojana (PMJAY) started in March 2018. AB-ArK cards are generated based on the Aadhaar Card and Ration card which have a unique ID.	Total number of AB-Ark cards issued till today 1.4 crores Number of APL Beneficiaries: 25.27 Lakhs Number of BPL Beneficiaries: 1.16 Cr
Property Tax System for BBMP	Online property tax payment system for citizens of Bangalore	Total property Tax collection for 2020-2021 : 2363 crores (As on date)
Nadakacheri	Online workflow based system for process and deliver 45 different types of certificates by the revenue department	More than 1Cr certificates are generated on an average per year. Around 5 Cr certificates reprinted on an average per year
DSSP	Workflow based processing and distribution of social security schemes of the government for needy people	Total active beneficiaries 68 lakh and Total payments made per month – 600 Cr approx. Total new beneficiaries added every day – 800 on an average
E-courts	Workflow based system for court cases management	Implemented in all courts
State Scholarship Portal	Online Workflow based common platform to disburse scholarship through DBT to eligible students of Karnataka.	2019-2020 – Total students 33.6 lakhs with a total amount of Rs. 379.9 Cr
E-Office	Workflow based system for processing and management of files and letters in government departments	Implemented in 421 departments with user base of 22333 officers
e-Man	Workflow based system for asset management	Implemented at NIC, Rashtrapathi Bhawan., Health and Family Welfare Department
FIST	Financial & Stock Accounting (FIST) software for Supply Chain Management of Public Distribution System,	FIST is implemented in 300+ Whole Sale Points of KFCSC
KEA	Online Verification of Documents for Engg, Medical/Dental & Allied courses Admission for KEA (Karnataka Examination Authority.)	Implemented since 2012
e-Suraksha	Online and workflow based system for services of electrical inspectorate departments	Implemented 26 services
WCMS	Web Content Management System for Department of Collegiate Education (DCE) and Department of Technical Education (DTE)	Enabled websites for 430 Government First Grade Colleges and 85 Government Polytechnics
EMIS	Education Management Information System For Government First Grade, Grant-in-aid Colleges and Govt. Polytechnics.	Implemented in 430 colleges
RCCMS	Revenue Court Case Monitoring System is web enabled application integrated with Karnataka Land Records System providing complete process flow of revenue courts right from filing of case to disposal of case.	This application is being implemented by all the Revenue/ Magisterial Courts of Karnataka State.
PM-KISAN	Prime Minister "Kisan Samman Nidhi" Scheme to boost farmer's income by transferring Rs 6000/- per year through DBT.	Till date 54 Lakh farmers Benefitted.
e-Aasthi	Workflow based system for management of non-agricultural land records/properties of urban areas	Implemented in 203 urban bodies
e-Swathu	Workflow based system for management of non-agricultural land records/properties of rural areas	Implemented in 6009 Grama Panchayats since 2014
Sakala	Karnataka Guarantee of Services to Citizens	Implemented for 1019 services of 95 departments
Aushada	Online and workflow based drug supply chain management system	26 warehouses and 3000 hospitals are using Aushada software.
E-Procurement	End-to-end eProcurement & ePublishing implementation through Central Public Procurement Portal (GePNIC) of NIC.	Implemented in more than 25 Central Government Organizations and 8 PSUs and other central institutes.
e-Janma	Single window system for Registration of Births/ Deaths for Rural, Urban and Government hospitals, enabled with Digitally Signed Certificate	Implemented since 2016
Jeevan Pramaan	Generation of Digital Life Certificates for Pensioners	Implemented for DPDO, Army K & K Sub Area, GPO. On-boarding of KPTCL is under progress.

▲ Teams of NIC Karnataka and NIC Hqrs with DG-NIC during the inauguration of Centre for Excellence in Blockchain Technology

notified by government is available to general public. Also, unlike the weekly publication of the gazette in the printed version, the e-Gazette has the option to publish the gazette as and when required by the department, it is pertinent to mention here that, the e-Gazette has been very well received by all the Departments, and Government has made it mandatory for all the departments to publish the gazettes only on e-Gazette portal.

RTI online Portal

Right to information Online Portal is the digital enablement for the citizen to file online RTI application to get required information. It is a workflow based web portal which has the facility for a citizen to file an RTI application under the relevant sections of the RTI Act and also enables for filing the appeal against the Public Information officer.

As on now, 9 departments with about 600 Public Authorities, 8600 Public Information officers and 8600 First Appellate Authorities are on boarded on the portal. About 4500 RTI request and about 900 First appeals have been filed online. The process of onboarding the remaining departments are on.

The Right to information portal is also integrated with online payment gateway. It has alert systems built in to message the PIO about the pending applications in the login and RTI applicant about the current stage of his/ her application. The application has been well received by the public and the other stake holders.

EMS - Election Management System

Election Management System (EMS) is comprehensive system for State Election Commission (SEC), comprising of all the activities related with Election. The notification of the election by SEC, notification by the District administration, Appointment of Returning officers, Capturing Candidate profile, constituency mapping with reservation, scrutiny of the applications, rejection and withdrawal of candidature, poll day polling percentage and tabulation of results are the modules built-in to the system.

With the help of this software, SEC is able to monitor the election process more effectively at the micro level. During the current election, about 5730 Gram panchayats have been notified for election, 3 lakh plus candidates are in the fray and election are being held in 44,730 polling stations.

Online University Affiliation System

The system facilitates colleges to file online applications after availing user credentials from the respective universities, enables formation of local inspection committees, with provision to accept the inspection details vis-a-vis data entered by colleges. The system facilitates auto generation of marks for various parameters as designed by the Government and generation of reports to be sent to the syndicate for approval and enables various MIS reports.

The University affiliation system portal has been implemented for Department of Higher education, Govt of Karnataka covering 14 conventional universities in the State and 5000 affiliated colleges.

Accolades

- **Nada Kacheri** (e-KSHANA-Instant service delivery system, Revenue Department): Jury Award of Excellence in providing Citizen Centric Delivery, at the 23rd National Conference on e-Governance, held in Mumbai
- **FRUITS**: Third place in Data Quality Challenge 2018
- **Samrakshane**: National e-Governance award 2018, SKOCH Order of Merit 2017, Gems of Digital India Award 2018
- **e-AASTHI**: SKOCH Order of Merit 2017
- **e-SWATHU**: SKOCH Order of Merit 2017 and CSI-Nihilent Award 2014-2015

Way Forward

- The Centre of Excellence in Blockchain Technology is in the process of designing more applications of relevance to the citizens such as Certificate (Caste, Income, Birth, Death etc.) repository, Property details, Licenses etc. in near future
- Integrating the ongoing applications with IoT
- Enhancing the scope of Tax payers, eligible for eInvoice
- Rollout of GST Prime in remaining states
- Incorporating AI Tools to enrich the ongoing applications

▼ Receiving the Jury Award for e-KSHANA – Instant service delivery system at the 23rd National Conference on e-Governance, held in Mumbai