# National Informatics Centre West Bengal :: Newsletter

UTTARAN



"To succeed in your mission, you must have singleminded devotion to your goal!" - A.P.J. Abdul Kalam



# SIO's Column



India, being a welfare state, has taken upon itself the responsibilities of extending various benefits of Social Security and Social Assistance to its citizens. A large volume of citizen-centric data is being generated through various social security and DBT schemes by different government ministries/departments.

Since such data are normally not generated under any standardized format, the creation and management of authentic, reliable and unique data has not only become a challenging job but also entails huge resources. The two most critical issues in generating & maintaining such data are duplicity and interoperability of data among different beneficiaries and DBT schemes of the government. Access to authentic & unique data leads to breakthroughs not only in a scientific study but also in economic and social well being.

National Data Sharing & Accessibility Policy (NDSAP) has envisaged maximizing the use of data, avoiding duplication, maximized integration, ownership information, better decision making, equitable access among bona fide users. Dept of S&T, as a nodal agency, has developed data.gov.in through NIC where high-value data should be uploaded by each ministry quarterly and that can be accessed through departmental API and bolstered by through a supplementary portalvisualize.data.gov.in.

However, state-specific unique and authentic beneficiary and DBT data is the need of the hour. Duplicity and associated efforts could be avoided to a large extent through authentication of individual or organization using personally identifiable information (PII), say Aadhar Authentication services (AAS) with the help of Central Identities Data Repository (CIDR).

However, usage of AAS from several applications for the same set of citizens or businesses in a province is nothing but wastage of computing, network and probably storage. The entire data set thus created can be further bolstered through data deduplication to eliminate duplicate copies of repeating data. A related technique is single-instance (data) storage, which replaces multiple copies of content at the whole-file level with a single shared copy.

Hence, making one single authentication for every individual (or business) for all purposes or services is a necessity today.

Such authentication mechanism may have one set of credentials, two or three-step verifications to enable users authenticate data through a single application to access multiple applications (for various services) and websites of different ministries/departments and this will save resources – ICT, financial & human – to a large extent.

Dr. Saibal Sarkar, Deputy Director General & State Informatics Officer, NIC West Bengal

Message from the Principal Secretary, Finance Department, GoWB



I am glad to know that NIC, West Bengal State Centre has started publishing a quarterly Newsletter 'Uttaran' from January this year to highlight ICT initiatives in the Government periphery in West Bengal, especially where NIC is a technology partner.

Since more than last two decades, NIC has been playing an instrumental role in executing key IT projects in Department of Finance. I appreciate NIC for the consistent, dedicated and incomparable rendered towards services design, development & successful implementation of i-Budget for Budget Branch, e-Nathikaran for Directorate of Registration & Stamp Revenue, eAbgari for Directorate of Excise, IMPACT for Directorate of Commercial Taxes, e-Pension for Directorate of Pension, PF&GI, eBevco for WBSBCL. Some of the projects have received many national accolades. Apart from these, Jai Bangla, Laxmir Bhandar, KCC Issuance Monitoring System, WBSERF portal and such other projects developed by NIC have been able to achieve targeted success.

I congratulate NIC team and hope that NIC will continue to make stellar contribution to cater to ICT needs at all levels of governance.

Dr. Manoj Pant, IAS Principal Secretary, Finance Department Government of West Bengal

### UTTARAN

# In News

### Meeting on State DBT Portal Development

NIC Team led by Dr Saibal Sarkar, DDG & SIO, made a presentation on development of State DBT Portal to Dr Manoj Pant, Principal Secretary, Finance Department, GoWB and his team.

The DDG & SIO has explored the possibility of developing a uniform platform for all DBT schemes available in the state for



authentication of beneficiaries by involving key DBT-enablers like UIDAI, Banks with stable network infrastructure support for better transparency and inclusion, arresting leakage, greater accountability and increased efficiency.

Face Recognition Based Attendance System

NIC WBSC in collaboration with the Centre of

# In Focus

**OSCAR** https://castcertificatewb.gov.in OSCAR project was envisaged by the Department of Backward Classes Welfare, GoWB and NIC WB years back and this was one of few citizen-centric applications to be rolled out throughout the state.

### **Recent events**

In the year 2020, the Department of BCW with NIC WB steered the project through the 'Duare Sarkar' event. Duare Sarkar event (Dec'20-Jan'21) realized with 64.5 lakhs applications and 26 lakhs certificates. The application has successfully withstood the peak hour load of processing two Lakhs applications in one day. As of date 1.76 crore certificates have been issued including legacy data with 2.31 crores of applications.

### Reinvention

Post the first Duare Sarkar event to increase



Excellence in AI, NIC Hqrs has developed "Face Recognition based Attendance System (FRBAS)", an AI-enabled platform for capturing attendance in a contactless & noninvasive manner. It has been rolled out at various Training Centres of Utkarsh Bangla, a flagship programme of the Technical Education, Training & Skill Development Department, GoWB. The solution consists of a Mobile Application & an integrated Web Application.

## Integrated Portal for EoDB

The prototype of the State's Single Window System (SWS) of clearance for Ease of Doing Business (EoDB), which is being developed by NIC for the Labour Department, was demonstrated in presence of Dr H.K. Dwivedi, IAS, Chief Secretary (CS) to the GoWB.

A total 97 services from 14 departments were involved in this project and were integrated by the Push and Pull mechanism of API services between the State Portal with the Department and/or Directorate Portals.

SoP, RTPS-timelines (Right to Public Service Act) and workflow for each service shall be made available in the portal along with action

the throughput of the system following reinvention plan has been adopted.

Stage-1: New architecture has been

introduced with a separate API server and

load balancer with PHP Laravel technology

Stage-2: Primary services have been

• SDO level Legacy certificate entry with

• SDO level certificate editing with OTP.

application from KhadyaSathi server has

Stage-5(ongoing): Aadhaar vault and

Digilocker integration will be introduced

A brief Overview of eBhuchitra, Banglarbhumi and Services

'eBhuchitra', a tri-language application of

the Land & Land Reforms Department,

GoWB is operational in the entire State. NIC

has been associated with L&LR Projects for

At present 'eBhuchitra' handles 15 crores of

landowners and plot data, taken together,

and 44 crores of transactional data have

'Banglarbhumi', another web application for

public use operates with 9 Crores of

more than three decades now.

been accumulated so far.

verification

https://banglarbhumi.gov.in/

Aadhaar

Stage-3: Two major services introduced:

stack and Postgres.

OTP.

been introduced.

Aniruddha Pal, Scientist-F

Stage-4:

soon.

anipalenic.in

Land Records

launched by the end of 2021.

driven SMS, e-Mail alerts, time-line driven MIS report etc.

News & Events

### e-Challan Implementation in the State

eChallan, a national level flagship application of e-Transport MMP, has recently been implemented for the Transport Department and Traffic Police of West Bengal.

The application consists of multiple data entry options viz. smart card, QR code reader, data entry and SMS through hand held devices and CCTV/ RLVD/ Speed Guns and also in-built automatic calculation of penalties.

Integrated with Vahan & Sarathi, the application covers all major functionalities of the Enforcement System including an option for Geo-tagging of eChallan spot.

End-to-End implementation was made through the Android app and Web Portal from On-Spot eChallan generation to online payment through GRIPS.

Provision has been made for the settlement of court cases by integrating the application with e-Court and Virtual Court eChallan. Scrolls have already been generated in 5 PS of WB Traffic Police, 2 Traffic Guards of Kolkata Traffic Police and 13 RTOs in the State.

## State Project

- e-Taal reports on 'Banglarbhumi':
- annual growth of around 150% of users
- 1,25,80,42,047 hits from 01–Jan 2021 to 31–Dec-2021

### accumulated transactional data.

There are at present more than 176 modules (functionalities) and 65 Web services exposed for internal & external communication.

### Social Impact

'Banglarbhumi' web portal which is integrated with 'eBhuchitra' for data sharing, enables citizens to view live land records & its map information 24X7 basis. Also, 'Banglarbhumi' provides various e-services to citizens notably e-delivery of digitally signed ROR (Khatian), PI (Plot Index) and PLM (Plot map).

All land offices are e-connected with coterminus Registration Offices where server to server data exchange is established.

Contactless mutation has been achieved through this process. SMS and email notification are available in all stages of the update of records. mServices are also in place using the 'Jomir Tothya' mobile App developed by NIC.

### **Technical Impact**

Both SOAP and RESTFul services (Partner API) are exposed to different offices like eDistrict, Krishok Bondhu, UDMA, MSME, EoDB, Mobile apps of L&LR (Jomir Tothya), State apps.

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https://www.nic.in

nttps://wb.nic.in

### UTTARAN

# Spotlight

# National e-Transport Projects Insights in West Bengal

e-Transport, Vahan & Sarathi, are conceptualized to capture the functionalities as mandated by Central Motor Vehicle Act, 1988 as well as State Motor Vehicle Rules with customization in the core product to suit the requirements of all States and UTs of India.

VAHAN: Application to computerize vehicle registration, taxation, enforcement, permit, fitness and all other vehicle-related activities. Vahan allows access to all details related to vehicles and provides various online services to citizens. Some online services in West Bengal are Issue of duplicate Registration Certificate (RC), Change of address in RC, Transfer of ownership, Hypothecation addition and termination, Issue of No Objection Certificate (NOC), Motor Vehicle (MV) tax, add and modify nominee.

# **TechSpace**

Microservices, also known as the microservice architecture, are an architectural and organizational approach to software development where a large application is broken down into smaller independent parts, with each part having own realm of responsibility and communicating over welldefined APIs. Microservices structures an application as a collection of services that are.

- Highly maintainable and testable
- Loosely coupled
- Independently deployable
- Organized around business capabilities
- Owned by a small team

In contrast a Monolithic application has all the functionalities of a project that exists in a single codebase. Despite the application may have various layers like presentation, service and persistence the code base is deployed as single jar/war file interacting with a single database.

Microservice Architecture provides a perfect solution for a situation where an organization needs to rapidly develop a solution for a complex enterprise-level application having multiple functional areas which need to have multiple clients (Mobile, desktop) and needs to expose API for consumption by third parties. Defining an architecture consisting of loosely coupled set of Services makes the application to easily understandable and manageable. It also allows a set of developers to concentrate on a specific functional area independent of the others .

Microservice ecosystem and development tools.

Programming language: Java (Spring Boot), Golang (GoMicro, Go Kit), Python (Flask), NodeJS, .Net etc.

Containerization: Containers achieve operating system virtualization by "containing" only what's required by an application for autonomous operation. They include

automates the workflow of the Transport department in West Bengal. It consists of a complete computerized database of driving licenses, conductors' licenses, driving school licenses and fees. **New Initiatives** Faceless / Contactless Learner License using Artificial Intelligence (AI) and other citizen-friendly services including online

SARATHI:

License.

Learner Licenses / Driving License started at all the RTOs of West Bengal using AADHAAR authentication within a very short time considering the pandemic situation.

Application facilitates

Driving

issuance of various licenses like Learner

International Driving Permit, Conductor

License and Driving School Establishment

License, Fee Payment to the citizens and

Permanent

the

License.

# https://parivahan.gov.in/

Statistics: I	February 2022, West Bengal	
VAHAN	Transactions: 3,49,350 Vehicles Registered: 69,814	
SARATHI	Transactions: 5,59,924 Driving License issued: 45,260 Faceless Learner License: 8,396	

One can give Learner License (LL) Test from any location and the issued license can be downloaded from the citizen portal. Complete workflow from application to issuance of the learner license is online without any visit to the RTO Office. The Application Vahan and Sarathi are running in all RTOs of West Bengal.

Gautam Sengupta, Scientist-F gautam.sengupta@nic.in

## **Microservices**



executables, code, libraries, and files, then packaging it as a single unit of execution. Some of the most widely used containerization technologies are Docker and Kubernetes, Docker is used for creating the container for application/service, and Kubernetes is used for application/service-container deployment, scaling & descaling of containers & container load balancing.

API Testing & Management: Postman, Apache JMeter

Messaging Tools: Apache Kafka ,RabbitMQ. Monitoring: Prometheus and Log Stash The main advantages of Microservices are:

- Enables the rapid, frequent and reliable delivery of large, complex applications.
- Independently deployable and allow for teams can work autonomously.
- Independently scalable, faster and generally more cost effective.
- Reduced downtime through fault isolationthe fault can be isolated to that single service and cascading of failure can be prevented.

### Microservice Architecture

• The smaller codebase enables teams to more easily understand the code, making it simpler to maintain.

Similarly, developers using Microservice Architecture face a few challenges vis-à-vis Monolithic application development. For example:

- Communication among services can be very complex
- Debugging becomes more challenging
- Integration testing is more difficult to do.

In summary, Microservices provide an alternative architectural paradigm that composes complex systems from small, granular services. By breaking the problem down into more small independent pieces, microservice architecture simplifies software development & maintenance and allows better scalability and ultimately leads to more robust and sustainable solutions.

Presented by: Dr Dibakar Ray, Scientist-F dibakarenic.in

# District at a Glance

nomenclature 24-Parganas https://s24pgs.gov.in/ The has been in vogue since 15 July 1757 when Mir Jafar whom the East India Company had just established as Nawab of Bengal ceded to the Company the rights of 24 mahals.

South 24 Parganas is, indeed, a complex district, stretching from the metropolitan Kolkata to the remote riverine villages upto the mouth of Bay of Bengal. The Sundarbans, the largest mangrove forests on earth, are spread over thirteen of the twenty-nine development blocks in the district. 84% of the population lives in rural areas, where development is taken care of by the panchayat bodies. The remaining 16% population is looked after by the Kolkata Municipal Corporation and seven municipalities.

## Administrative Setup

The present district of South 24 Parganas came into existence on 1st March, 1986 with five subdivisions viz. Alipore (Sadar), Baruipur, Canning, Diamond Harbour and Kakdwip, 29 blocks and 7 Municipalities.

# **Editorial Board**

Patron: Dr Saibal Sarkar, DDG & SIO Convener: Kaushik Kumar Lahiri, Scientist-F Editor: Soumendra Choudhury, Scientist-E Assistant Editor: Rupa Kar, Scientist-E Sub-Editor: Snehlata Yadav, Scientist-B

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ICT has been adopted holistically for the district administration where e-Office, a product of NIC, has been introduced which aims to achieve more effective and transparent inter and Intra-Government processes. At present 914 users with 25729 active files from the offices of the District Magistrate, SDOs and BDOs are using the product. National and State Level Projects

The District has implemented many key national e-governance projects like e-Office, e-procurement, GeM (Government emarketplace), e-Court and ICJS (Interoperable Criminal Justice System), iRAD (Integrated Road Accident Database), Vahan, Sarathi, BAS (Biometric Attendance System), email services, NDAL (National Database for Armed License) & ALIS (Armed License Information System), Confonet (Consumer Forum Computerization Network), PMAY-G Portal, National Citizenship Portal, Video Conferencing Services.

Key state-level projects like 'Duare Sarkar', 'Duare Tran', 'Laxmir Bhandar', 'Jai Bangla', 'Kanyashree', 'Rupashree', OSCAR (Online Caste Certificate Issuance), 'Bhumi and Bhuchitra' (Land Management System), CoRD (Computerization of recorded deed) and e-Nathikaran, PPDS and PPMS (Polling Party Management and Deployment System) etc. have been implemented at the district level. NIC District Centre

Various district level ICT initiatives like District web site, internet connectivity through NICNET and VoIP services to all departments/sections of Collectorate, Court Case Monitoring Portal, RTI Case Monitoring Portal for Land Acquisition department, Recruitment Portal for Social Welfare Section, Website of Zilla Parishad, Web based Video Conferencing system are also implemented at District level.

Ganga Sagar Mela 2022

ICT initiatives by NIC South 24 Parganas

Several ICT support were provided by NIC South 24 Parganas to the District Administration when the following initiatives were taken during the recent Ganga Sagar Mela 2022, one of India's biggest fairs held in Sagardwip which has a national-level importance. COVID Watch Portal: The Portal was developed for tracking the movement of COVID positive pilgrims in the Mela. The pilgrims are



NIC-WB appreciates the significant contribution of Ms. Mouli Laha, STA-B and DIO (In-Charge) Paschim Bardhaman, for her successful contribution to the development and implementation of web and critical mobile app "BITARAN: Voter card distribution

monitoring system". She has also been working towards the development of Al-enabled Cataract Detection System using Convolutional Neural Network from ocular images.



South 24 Parganas

I am glad to know that NIC, West Bengal has started publishing a quarterly newsletter "Uttaran" to highlight the ICT activities going on in the state of West Bengal and will publish the district profile of South 24 Parganas in its forthcoming issue.

South 24 Parganas, being a very large district, is a major stakeholder of the entire ICT activities and NIC, South 24 Parganas District Unit is playing a pivotal role in this endeavour by providing eGovernance services & support to the district administration entailing eGovernance solutions, ICT Infrastructure, Video Conferencing and consultancy to the critical and citizencentric services for the people covering a huge geographical terrain in a very transparent manner.

I congratulate and wish success to the entire NIC team in their new initiatives including the NIC District Unit, South 24 Parganas for their contribution & unstinted support.

Dr. P. Ulaganathan, IAS District Magistrate & District Collector South 24 Parganas District

being tracked from the stage of medical screening till they reach home after being recovered.

e-Nirikhan: Real-time tracking of pilgrims are being done with 1050 CCTV cameras and 20 Drones for real-time monitoring from Mela Control Room to maintain Covid-19 protocol.

PTMS: Pilgrim Traffic Management System is being implemented for marking navigation channels of the vessels at zero visibility and GPS tracking of all the vessels and Buses and real time analysis of pilgrim flow at different points for better COVID management.

SagarSanchar: 131 Nos of Manpack sets were used by key officials for communication covering a 50 KM radius for better crowd management.

Virtual platforms: Virtual platforms like 'eSnan', 'eDarshan', 'ePuja', were promoted with an online booking system for virtual darshan using social media and availing 'Prasad' and 'Gangajal' at the doorstep of devotees.

Sumay Guin, Scientist-D and District Informatics Officer sumay.guinenic.in