सत्यमेव जयते

न्यूनतम सरकार – अधिकतम शासन

Minimum Government - Maximum Governance

प्रशासनिक सुधार की ई-पत्रिका

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e-Governance Initiatives

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SAMAVESHAN (Single Window 'Welfare Schemes and Beneficiary Management System'), Government of Uttar Pradesh

BRIEF DESCRIPTION OF PROJECT

Samaveshan means inclusiveness with no single eligible beneficiary left behind to avail of the benefits of the government schemes. Samaveshan primarily is a web-based application as a solution for welfare schemes and beneficiary management. This system will provide data management for beneficiaries along with the various central and state government-sponsored schemes. It will ask user to fill the basic data and will provide them opportunity to avail all the government-sponsored schemes in which they are eligible. The exhaustive beneficiary list which shall be generated by the application will enable the concerned departments to fasten the implementation or benefit the citizens in accordance with the vision of the Government. It also helps to get purity of data by identifying the ghost and duplicate beneficiaries in different departments by integrating all the departments through this software.

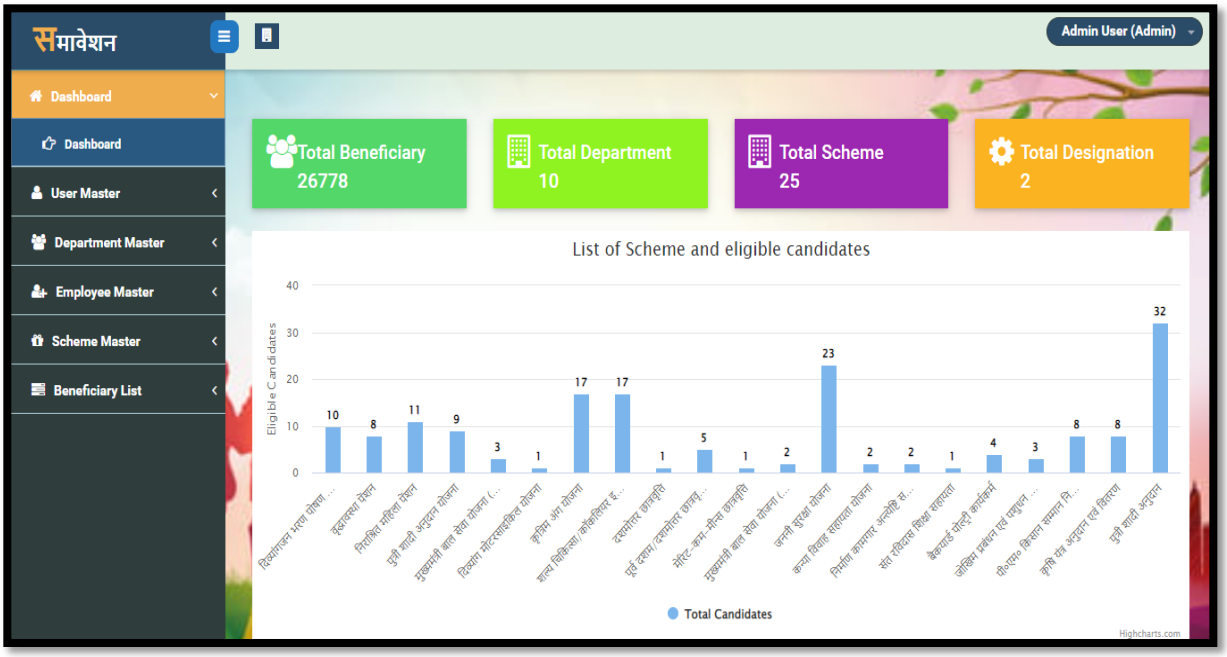

Illustration: SAMAVESHAN portal dashboard

PROJECT BENEFITS

One stop portal for all the different schemes to beneficiaries to all the residents of district Maharajganj, especially the lower strata and marginalised section of the society, SCs, STs, disabled, women and minorities. The portal provides a dashboard for all the officials hence effective monitoring by different officials in minimum time. Significant time and cost reduction to avail the benefits of different government schemes.

PROJECT IMPACT

Improved productivity, quality, resource management, turnaround time and increased transparency by replacing the old manual process with this system. Minimum time and effort spent over filing, maintaining records of beneficiary data and easy search option for particular beneficiaries. High level of improvement in productivity with maximum saving of time and reducing manpower effort with transparency. Reduction in unit cost by giving more economical solution to the marginalized sections of the society.

SITUATION BEFORE THE INITIATIVE

1. Lack of awareness: People are not aware about the schemes and hence they fail to get the benefits. Also it would be hard to find the beneficiaries for district administration.

2. Lack of Interdepartmental Coordination: People have to go from department to department and it makes the process tiring and burdensome.

3. Lack of Effective Monitoring: It was hard to monitor and track because of the multiple stakeholders involved.

4. Data Management: Lack of organized data and no option of pulling beneficiaries data in bulk.

5. Data Purity: Multiple data without integration leads to ghost and duplicate beneficiaries. Every department has its own database, but no combined data is available at the district level which can check the eligibility and purity of data.

SITUATION AFTER THE INITIATIVE

Single point access in terms of availing various government schemes. Existing beneficiaries will not have to register again in different departments and will be able to view if they are eligible for the new schemes. Transparency in the process has increased and the platform is user-friendly. Monitoring and

accountability of the officers has resulted in a faster process. Transactions and beneficiaries have increased by more than 200%. High-level analytics for authorities/stakeholders to analyze maximum information in minimum time. Easy way to keep a regular track on the eligibility of particular beneficiaries and auto cancellation in case of non-eligibility. The manual process make the beneficiary to depend on the government or dealing clerk but after the project, the human interface has been removed and gives access to anyone to avail of the benefits. Only a manual feedback mechanism was available which was very limited and restricted to a few in numbers. The project has given feedback options after every application without coming to the government office.

PROJECT STRATEGY

(I) Baseline Study and Stakeholder Consultation

1. Co-ordination: The very first step we take is to coordinate with all the departments head/office heads.

2. Meetings: During the whole development process, we had several convergence meetings with various departments.

3. Demonstration: In all the meetings, a demonstration is given to continuously improve the system.

4. Regular feedback : Regular feedback has been taken from all the departments to improve the projects. Conducted 'Village Level Chaupal' at every village to get feedback from all the stakeholders.

(II) IDENTIFICATION OF PROBLEMS

Taking all departments on a single platform. Creating criteria according to schemes in a single system. Setting eligibility of a beneficiary for multiple schemes. Resistance to adopting a new system by departmental personnel, as the old system makes them powerful to choose. Hence they are unwilling to switch the system. Access to technology and Digital Literacy in the interior area of the district was a challenge.

(III) ROLL OUT/IMPLEMENTATION MODEL

We adopted phase wise roll out plan firstly we onboarded 5 departments and 2 schemes of each department, then onboarded real-time beneficiaries data and find at least 10 beneficiaries in each scheme. Then we tested all data and cross check the data, after that we trained the users, stakeholders, nodal officers etc. Set up technical support team, dedicated helpline number and SPOC. We also

conducted seminars and training sessions, in each gram panchayat and at block level. After training and real-time testing, we have onboarded 12 departments with 28 different schemes of state and central government.

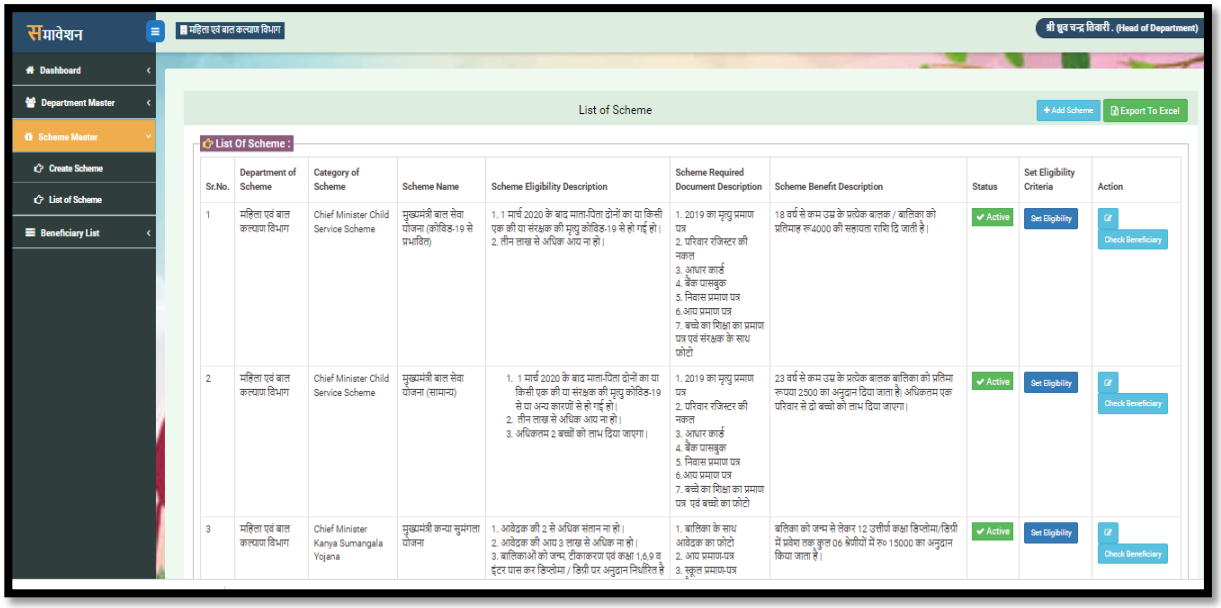

Illustration : List of schemes of particular department in SAMAVESHAN portal

(IV) CAPACITY BUILDING AND AWARENESS AND COMMUNICATION APPROACH

Awareness through social media, print media, hoarding/banners, information shared on different levels, camps organized in blocks and villages by panchayat sahayaks. Face-to-face awareness by Gram Pradhans, Panchayat Secretaries, Asha Bahus etc. A special initiative under 'MAHARAJGANJ PAHAL' has been undertaken to aware the masses at the gram panchayat level. Training of all the Panchayat Sahayaks who is Gram Panchayat level functionary was undertaken. Panchayat Sahayaks also organized camps at Panchayat Bhawans. Panchayat Sahayak is the backbone of this project at grassroot level.

CASE STUDY: Village – Fulmanaha (District: Maharajganj, Uttar Pradesh)

Under 'Maharajganj Pahal' initiative, 62 off 73 cases were successfully disposed off, in just a single day of Gram Chaupal with convergence obtained using SAMAVESHAN portal.

Illustrations : 'MAHARAJGANJ PAHAL' covering more than 100 Gram Panchayats with data collected of more than 1 lakh beneficiaries for onboarding on Samaveshan portal

(V) FEEDBACK MECHANISM

Users can give feedback to SPOC and by mailing to technical support. Dedicated helpdesk is always available to take feedback and to do regular improvements or changes according to users in terms of making this system more user-friendly, easy to use, for better results and productivity with enhanced performance. Regular capacity building is done by the support team for users. We get regular feedback of Panchayat Sahayaks about running and execution of this software project.

IMPROVEMENTS IN AVAILABILITY OF E-SERVICES

Before the roll-out of the "SAMAVESHAN" platform, citizens in the district had to browse through websites of different ministries and departments to access information on various welfare schemes run by them. Also old-age elderly, physically challenged, women and children had difficulty in applying under various schemes for their welfare. Multiplicity of schemes made it difficult for the citizens to take benefit of more number of welfare schemes.

Thus the significant improvement in availability of e-services in the district includes :

1. Single platform for all welfare schemes.
2. Single window to apply under different welfare schemes.
3. Option of availing benefit under different schemes of different departments at the same time, avoiding multiple visits to different offices.

This resulted in a noticeable reduction in time and cost as :

1. By visiting a single platform, information about welfare schemes of all departments is available.

2. Now the beneficiary does not have to pay multiple visits to different offices to avail benefits under different schemes.

3. Simple interface of the “SAMAVESHAN” portal makes it accessible and easy to use.

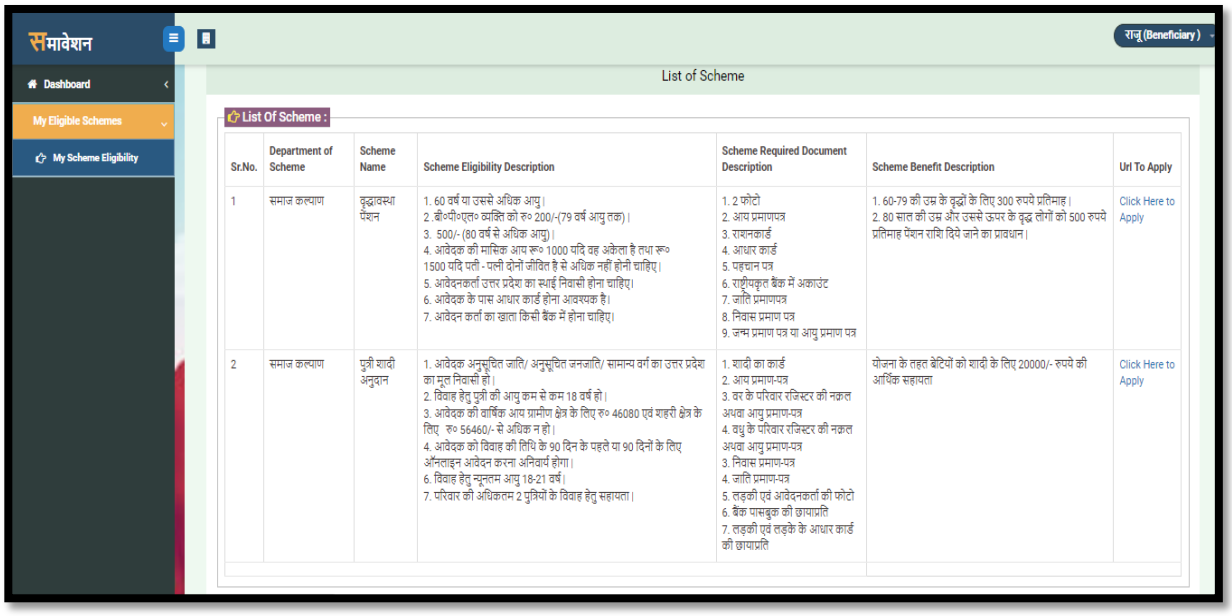

Illustration: Listing of schemes for which beneficiary is eligible based on user input data

IMPACT ASSESSMENT POST PROJECT IMPLEMENTATION

1. 28 schemes of 12 different departments in a single portal reduces time and cost significantly.

2. Increase in the number of beneficiaries taking benefit under different welfare schemes from 10000 to 80000 per month.

3. Identification of 1.15 lakh ghost beneficiaries under various schemes. It leads to Rs. 6.8 crore savings of the public exchequer.

4. The average reduction in time by availing benefits from different schemes by 800%. The average time goes down from 72 hours to 30 minutes.

5. Number of transactions has increased from 10,000 to 80,000 in a month.

CASE STUDY: **Block – Bridgemanganj (District : Maharajganj, Uttar Pradesh)**

Of 33,000 total applications received on SAMAVESHAN portal, saturation with 12 schemes is 868, saturation with 10 schemes is 1233 and saturation with 4 schemes is 10898. Data Analytics on the portal revealed 436 common beneficiaries out of 8000 beneficiaries of PM-KISAN Yojana, 2560

beneficiaries of MGNREGA scheme, 1135 beneficiaries of Ayushman Bharat Yojana and 887 labours availing benefits under schemes operated by labour department.

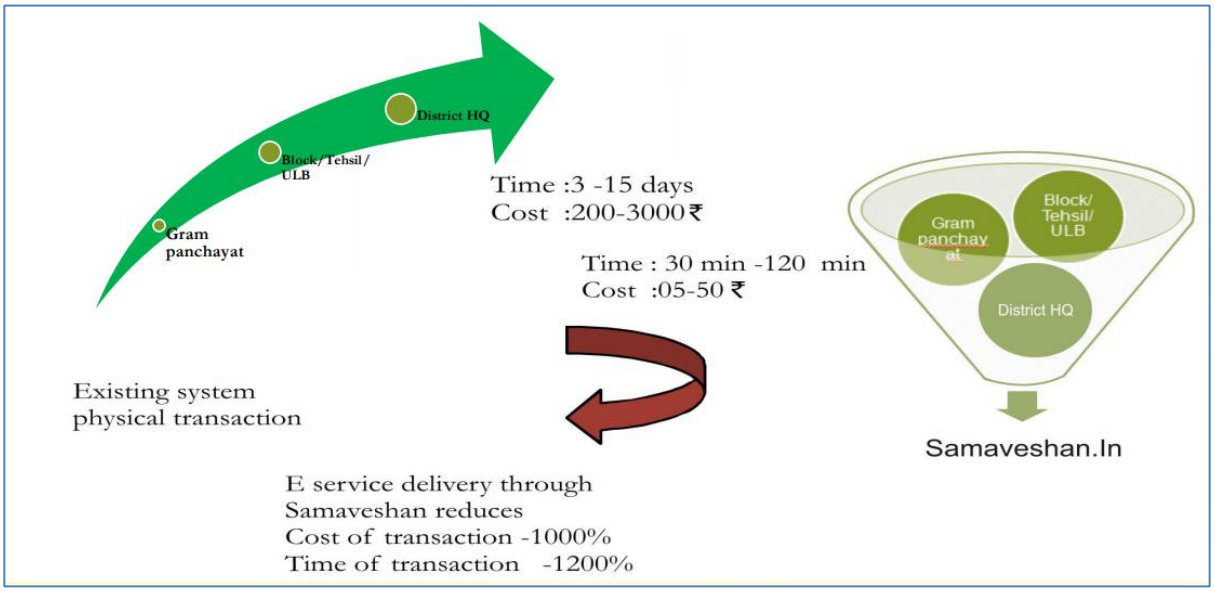

Illustration : Impact assessment on delivery of public services using SAMAVESHAN portal

IMPROVEMENTS IN PUBLIC GRIEVANCES REDRESSAL

1. After the initiative district has topped amongst all the 75 districts of Uttar Pradesh in IGRS rankings. Hence, it reflects an effective grievance redressal mechanism.
2. After the initiative, number of total feedback has been increased to 500 to 7000 because of easy access of this portal.
3. After the initiative, percentage of positive feedback has increased from 5% to 95%.
4. This initiative lead to an effective feedback mechanism among officials and of different departments through the portal. For example, old age beneficiary of old age pensioner whose age is 70 years resident of far flung area of district raised issue of dis-continuation of pension. He need not visit headquarter. Just registering her grievance on SAMAVESHAN portal is enough to solve her problem in 30 minutes. Citizen satisfaction level has increased significantly.

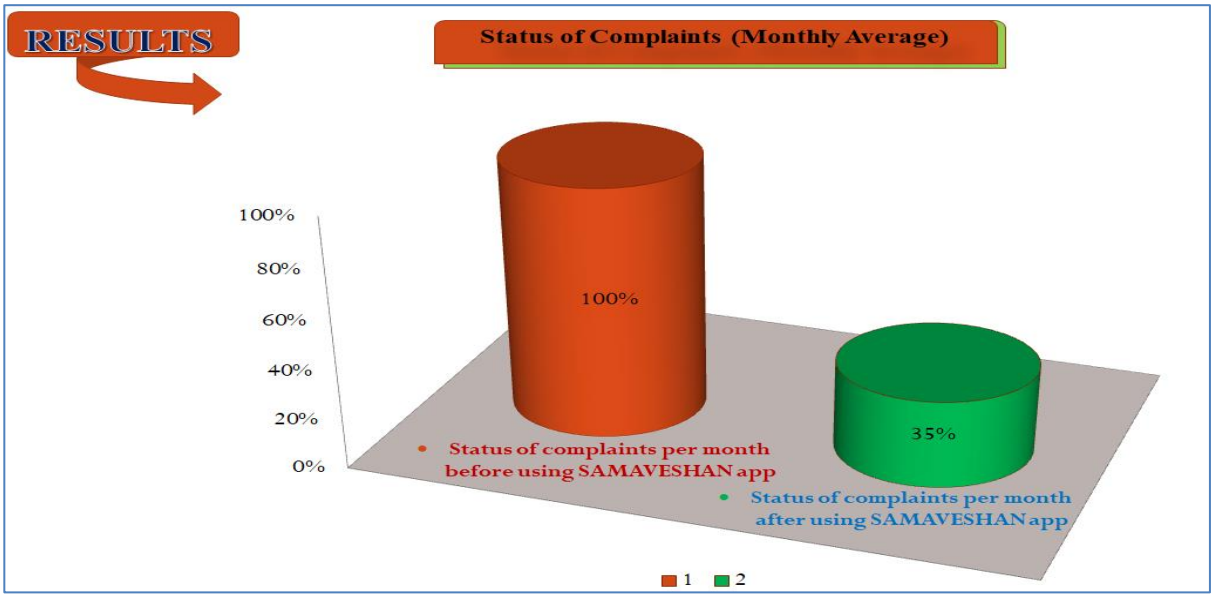

Illustration : Pre and post status of complaints (monthly average) using SAMAVESHAN app

AN INNOVATIVE WAY TO IMPROVE CITIZEN-CENTRIC DELIVERY

"SAMAVESHAN" portal is a major initiative toward a citizen-centric delivery system as it provides a single platform for all the citizens in the district to avail benefits under various government-led welfare schemes. For example, if a woman who delivers her baby in an institutional setup, whose income is less than Rs.42000 per annum from rural background can avail the benefit of various schemes by just accessing the "SAMAVESHAN" portal. She can avail the benefit of PM JANANI SURAKSHA YOJANA, KANYA SUMANGLA YOJANA, PM-KISAN YOJANA, SCHOLARSHIP SCHEMES, Pension and much more by just providing her basic details on the portal.

Dr. APJ Abdul Kalam, former President of India, has visualized e-Governance in the Indian context to mean: **"A transparent, smart e-Governance with seamless access, secure and authentic flow of information crossing the interdepartmental barrier and providing a fair and unbiased service to the citizen." Thus SAMAVESHAN portal is the step in the right direction to realise his grand vision of an inclusive and developed Bharat in this Amrit Kaal.**

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GAASH, District Srinagar, Jammu and Kashmir

1. Making Education more effective while being enjoyable through gamification of conceptual content.
2. Comprehensive understanding of learning outcomes for all stakeholders in education – schools, parents and students.
3. Empowering students with cutting-edge edu-technology to help them reach their full potential.

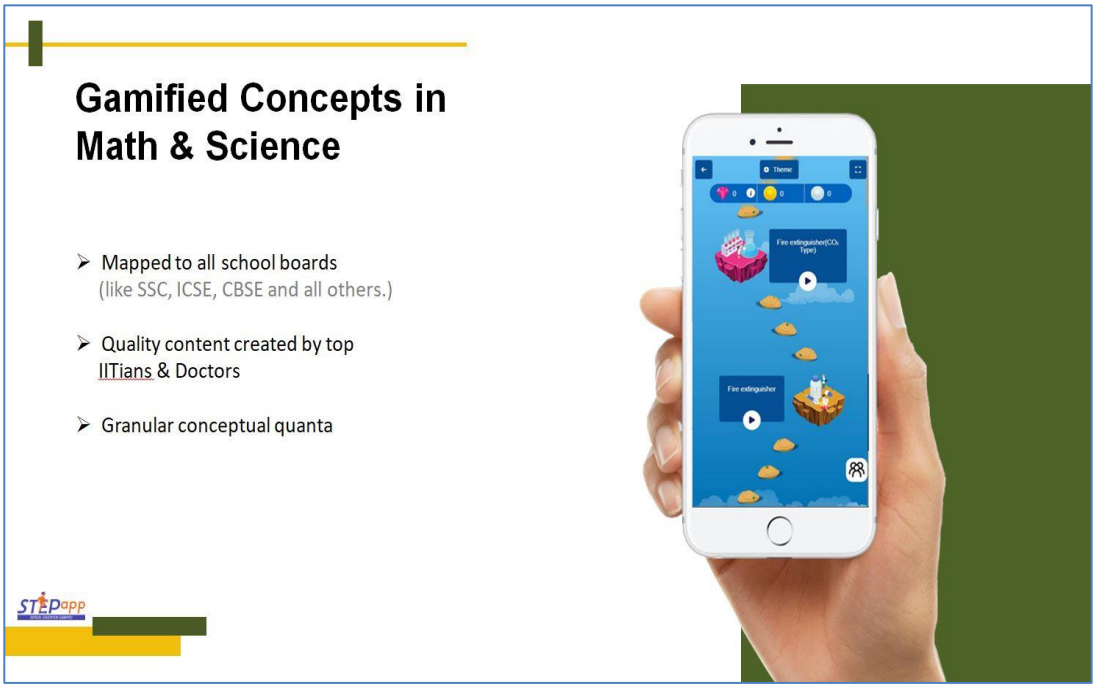
BRIEF DETAILS OF THE PROJECT:

Project GAASH is an e-Learning initiative with special emphasis on gamified learning in the age group 12-18. With the introduction of the project in some schools, students as well as teachers showed enhanced interest in the project and overall academic performance. Students are able to understand basic concepts in Science and Mathematics very easily in comparison to normal class room transactions.

National Achievement Survey of previous years showed poor performance in various subjects at elementary level. On an average in all subjects, 31% students have secured 75% and above while NAS of Class 8th shows that mere 10% students have secured 75% and above.

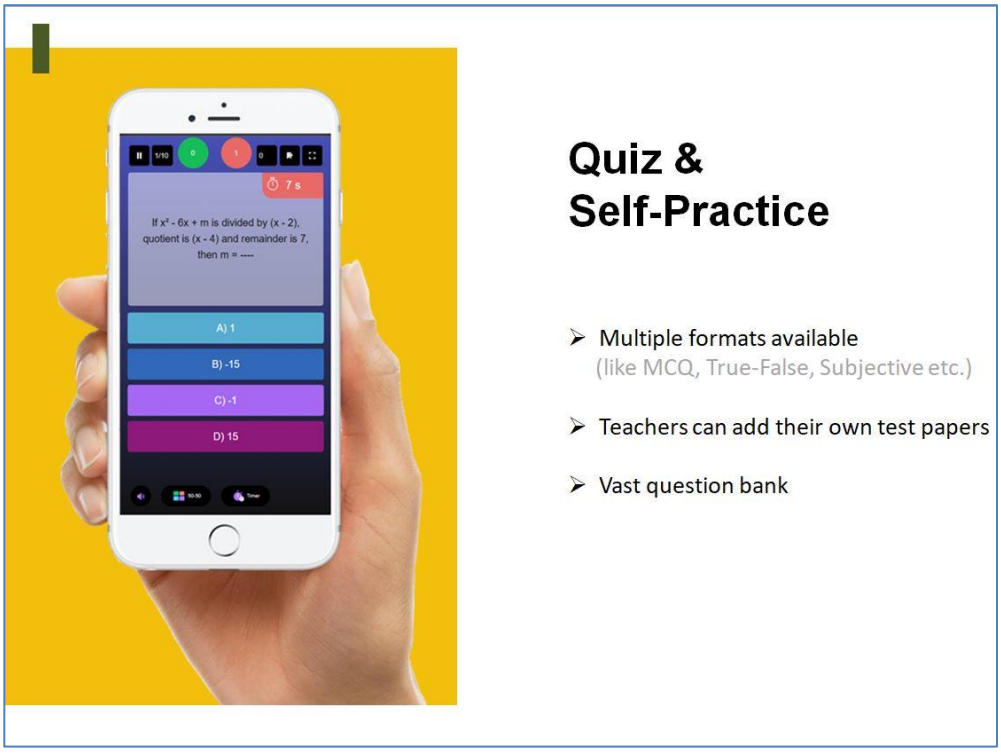
Closure of schools due to COVID and other reasons, the education sector was worst hit. This severely impacted the overall performance of students. Over the last 2 years during pandemic e-learning was the only solution to reach out to children and to keep them connected with the studies. The experience gained over the years and in order to mitigate the loss due to reasons above, it was found that:

- Digital Educational Solutions directly target the psychology of the students which help students to understand and grab the information from a different perspective.
- The digital solutions make them understand the concepts by giving them challenging tasks, puzzles, and educational games.
- The audio-Visual form of education is being liked by most of the students.
- This newness in the universe of learning makes them excited and eager to learn.
- It allows parent-student-teacher communication.



Keeping in view the above a new gamified e-learning project GAASH was introduced in High & Higher Secondary schools of district Srinagar. The project was initially introduced in Higher Secondary Schools of the District and subsequently rolled out to elementary and High Schools.

A district level team comprising of District Officers conducted a series of online sessions to understand the concept and use of the software, who introduced the App/Software to Zonal Level teams. Zonal level teams subsequently trained school level functionaries. Who in turn implemented the project at school level.



Feedback regarding implementation and outcome of the project was collected at various levels from the field functionaries by Zonal Level teams and analyzed at District Level for necessary tweaks or changes and to assess the efficacy of the implemented project.

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CHIKITSA SETU, Government of Uttar Pradesh

Chikitsa Setu is a mobile app developed for imparting information and training to doctors, paramedical staff and other "Corona Warriors" to safeguard them from Corona virus and COVID-19. This mobile app consists of numerous training videos made by medical experts of King George Medical University (KGMU), Lucknow. The app is made by Mr. Prashant Sharma, IAS, in collaboration with National Institute of Smart Government (NISG), Hyderabad. Chikitsa Setu mobile app has been launched in four States and downloaded more than 1.50 lakh times from Google Play Store! It has also been appreciated by Ministry of Health and Family Welfare, Government of India.

FEATURES

- First of its kind training app in India
- For training of doctors, nurses, paramedical staff, safaikarmis and other Corona Warriors
- Training through short videos (duration less than 5 minutes, keeping in mind low attention span of people)
- Training topics selected after extensive field survey of doctors and other field personnel
- Videos made by medical experts of KGMU, Lucknow
- Videos in accordance with ICMR guidelines
- Easy to understand, simple language
- Bilingual (English Hindi)
- Multi-platform (Android, iOS)
- Can be easily dubbed in regional languages
- Convenient - training material always available at your fingertips
- With frequent updates, regular and up-to-date training given
- Immense reach - training in rural areas, far-fletched regions
- Webinar can be conducted with government officials, field experts
- Latest ICMR guidelines available
- COVID Helpline numbers available

- Easily replicable and scalable
- Includes videos for vaccination protocol, cold chain management etc.

ACHIEVEMENTS

- Over 1.50 lakh downloads from Google Play Store
- Launched in U.P. and Uttarakhand by Chief Ministers
- Launched in Chattisgarh, Jharkhand by Health Departments
- Launching soon in other States, including Tamil Nadu, Punjab, Andhra Pradesh, Bihar, Gujarat etc.
- Appreciated by the MoHFW, Government of India which issued a letter to all States for considering the use of the app
- MoHFW, Government of India created a page about the App on its official site

(www.nhp.gov.in/chikitsa-setu-mobile-application_pg) and also Tweeted about it

- Endorsed by the Indian Medical Association.
- Appreciation letters from Chief Minister of Uttarakhand, Health Minister of U.P. and others

FUTURE ROAD MAP

- Chikitsa Setu can be expanded to the whole country
- Chikitsa Setu to be one-stop solution for all training purposes, such as:
    - Routine immunization (Polio, DPT etc)
    - Ante-natal, post-natal, neo-natal check-up by ASHA workers
    - Nutritional and educational training for Aanganwadi workers
    - Special, localised epidemics like Japanese Encephalitis
    - Future pandemics like Nipah virus
    - Emergency responders in natural/man-made disasters
    - First responders in ambulances
    - Useful first-aid for citizens
    - Permanent repository of training & SOP information

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news

shortstories

Chief minister Yogi Adityanath launched Chikitsa App developed by Prashant Sharma, an IAS officer, on Tuesday.

CM LAUNCHES 'CHIKITSA SETU' MOBILE APP

LUCKNOW: Chief minister Yogi Adityanath launched 'Chikitsa Setu' mobile application on Tuesday. The app will provide information and training to first line of defence in fight against Covid-19. He said this first of its kind app is developed by Prashant Sharma, an IAS officer. Minister for medical education, Suresh Khanna said that 'Chikitsa Setu' will help in providing quality training material to people involved in the field of medicine. Medical education department officials said that the app will be useful to all corona warriors, especially people like doctors, paramedical staff, nurses, cleaning personnel and others dealing with Covid-19 patients directly.

To download “Chikitsa Setu” mobile app on your Android of iOS device (phone / tablet), please go to the Android Play Store or Apple App Store and search for: Chikitsa Setu

Alternatively, please click on the following link:
https://play.google.com/store/apps/details?id=com.abhitech.chikitsasetu

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Online Permit for Desilting of Water Bodies, Union Territory of Puducherry

In the Union Territory of Puducherry, various water bodies like ponds and tanks are maintained by the respective local bodies and the Public Works Department. The local bodies and the Public Works Department incur a huge expenditure every year in the maintenance of these ponds and tanks by desilt them through works contract through open tenders.

In order to reduce the financial burden of maintaining the water bodies, the Government of Puducherry, in July 2019, amended the Puducherry Minor Minerals (Concession) Rules, to allow general public to desilt the ponds and tanks at their own cost. Owing to this amendment, the general public are allowed to desilt the ponds and tanks and utilise the silt taken from these water bodies for their bonafide agricultural and domestic use. The Government also fixed a very nominal Royalty amount of of Rs.150/- per truck load for the public to pay towards the desilted mineral. The entire process of desilting by the general public in the respective water bodies is monitored by the Local body or PWD concerned.

Initially, the persons who require silt and willing to desilt from the nearby pond or tank, applies physically to the respective Deputy Collector's office, and the application is processed and permits were issued to the applicants on payment of the due royalty amount. In this system, the following were the problems faced by the applicants :

- There has been an inordinate delay in the processing of applications submitted by various applicants.
- It took weeks for the applicant to get a permit.
- The applicants were required to make mulitiple visits to the Office for applying, getting challan for payment of royalty, submission of the paid challan again to the office, and finally for obtaining the permit.
- Further, the various applications received were not processed in order i.e. first-come-first-serve principle was not followed.

In order to overcome the delays caused by the above process and to completely break the hassles faced by the general public in obtaining the permits as and when required, an online application was developed by the National Informatics Centre, Puducherry under Open Source platform. The said online application was integrated in the Single windows services portal (LicenseSoft) of the Union Territory of Puducherry, and the same has been hosted in the Puducherry State Data Centre. The online initiative was launched during September 2020.

The Main Objectives of this Online Initiative Are:

- To enable the citizen to apply for permit any time.
- To minimise time taken to accept and process applications for issue of permits.
- To minimize the number of visits required to be made by the citizen.
- To ensure transparency.
- To be an effective tool in monitoring and improving the delivery of services.
- To facilitate ease of doing business.

Features and Process Flow of the Online System

Simple Online application

- The online application is simple half page form, where very basic and bare minimum details are obtained.
- On submission of the required details, an online acknowledgement is generated to the user.

Online Payment of royalty

- On successful application, an online challan is generated detailing the amount of royalty to be paid by the applicant.
- The user is redirected to the e-payment facility.

Online generation of payment receipt and Permit

- On successful e-payment, the payment receipt is generated and the applicant is enabled to print the permit.

Online revalidation of permits

- The applicant, owing to various unforeseen reasons like non-availability of transport vehicles, earth-movers, sudden rainfall, waterlogging etc., would not be able to complete the desilting process or lift the permitted quantity of silt within the stipulated time.

Automatic approval – No departmental intervention

- The entire process from applying, payment and issue of permit has been automated and in nowhere departmental official's intervention to clear or approve the application even online is not required, thereby the departmental intervention has been completely done away with.

Citizen-centric

- Since the objective of the amendment of the Puducherry Minor Minerals (Concession) Rules is to allow the general public to desilt the water bodies and to generate revenue to the Government exchequer, the process involved should be public or citizen-centric.

- The online application ensures that the entire procedure is citizen-centric and maintains the spirit of the amended Rules.

Integration of various line departments for monitoring

- Though the permit issuing department is the Department of Revenue and Disaster Management, Puducherry, the enforcement and monitoring of the desilting and the transport of silt is done by the officials of the Revenue department, Local bodies concerned and the Public Works Department, as the case may be.

- All the line departments have been integrated with the online portal for monitoring of applications, issue of permits and desilting works undertaken by the permit holders.

Web controls and MIS reports

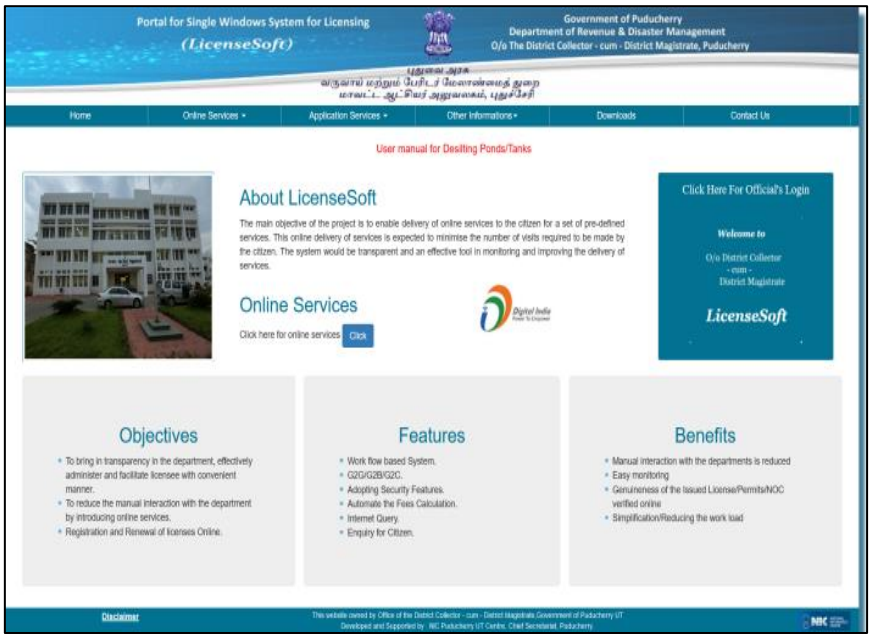
- The online portal comprises of various Ponds / Tanks Masters to include / exclude a certain water body for desilting, quantity of permissible silt available in a water body etc.

- Further, the details of loads desilted by the permit holders and from the water bodies concerned are also maintained in these masters.

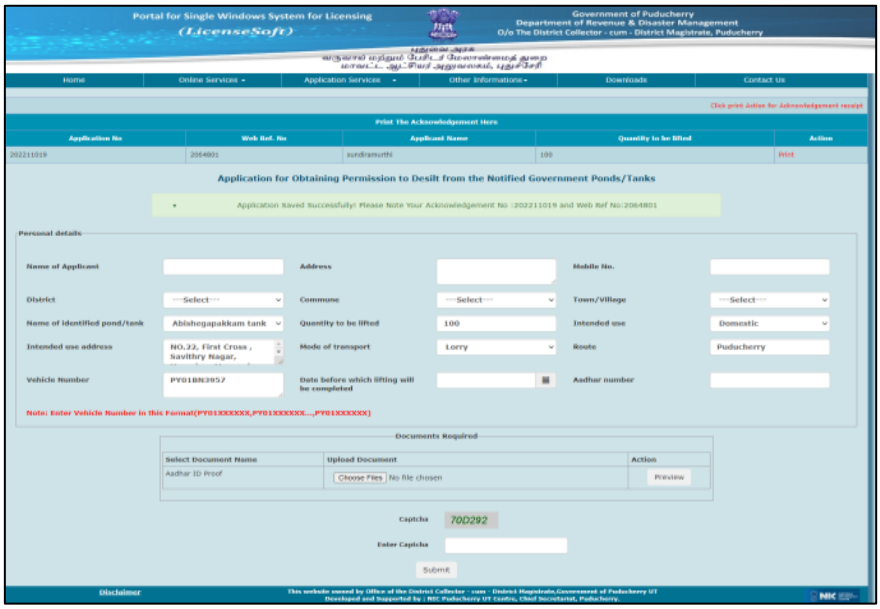
- Various MIS reports like Permit holder-wise report, Pond/tank-wise report, Revenue collection report etc. could be generated from the portal for easier monitoring.
- MIS access has also been enabled to all line departments for effective monitoring

Process flow screenshots

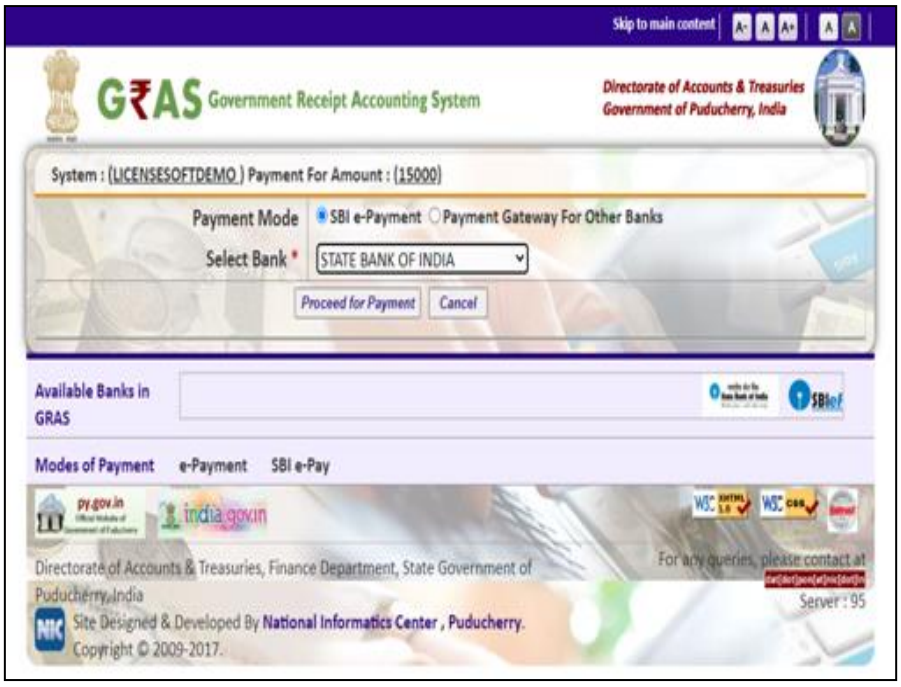
- User visits online portal



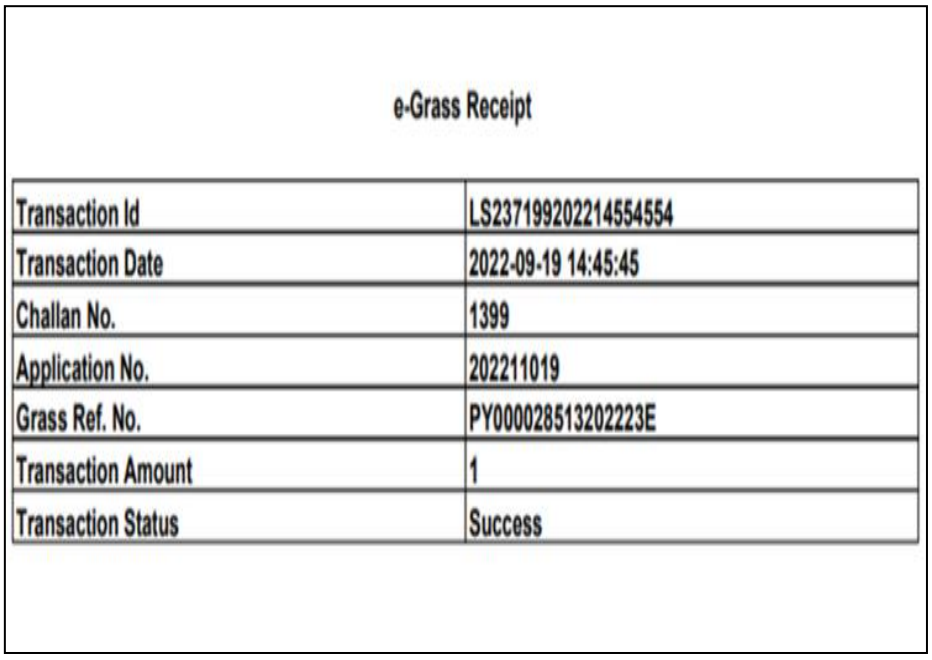
- Selects the service and fills in form



- Generates challan and makes online payment



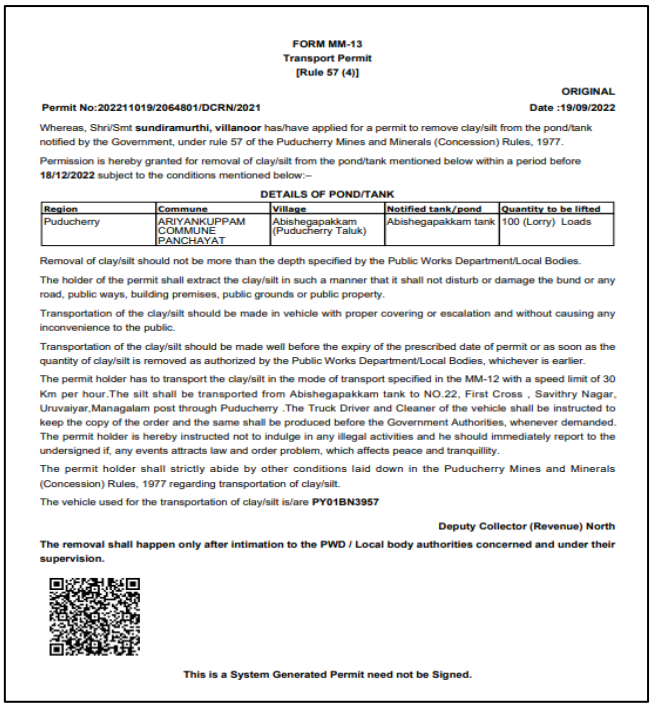
- Generates receipt



e-Grass Receipt

Transaction Id	LS237199202214554554
Transaction Date	2022-09-19 14:45:45
Challan No.	1399
Application No.	202211019
Grass Ref. No.	PY000028513202223E
Transaction Amount	1
Transaction Status	Success

- Prints permit



FORM MM-13
Transport Permit
[Rule 57 (4)]

ORIGINAL

Permit No:202211019/2064801/DCRN/2021 **Date :19/09/2022**

Whereas, Shri/Smt **sundiramurthi, villanoor** has/have applied for a permit to remove clay/silt from the pond/tank notified by the Government, under rule 57 of the Puducherry Mines and Minerals (Concession) Rules, 1977.

Permission is hereby granted for removal of clay/silt from the pond/tank mentioned below within a period before **18/12/2022** subject to the conditions mentioned below:–

DETAILS OF POND/TANK

Region	Commune	Village	Notified tank/pond	Quantity to be lifted
Puducherry	ARIYANKUPPAM COMMUNE PANCHAYAT	Abishegapakkam (Puducherry Taluk)	Abishegapakkam tank	100 (Lorry) Loads

Removal of clay/silt should not be more than the depth specified by the Public Works Department/Local Bodies.

The holder of the permit shall extract the clay/silt in such a manner that it shall not disturb or damage the bund or any road, public ways, building premises, public grounds or public property.

Transportation of the clay/silt should be made in vehicle with proper covering or escalation and without causing any inconvenience to the public.

Transportation of the clay/silt should be made well before the expiry of the prescribed date of permit or as soon as the quantity of clay/silt is removed as authorized by the Public Works Department/Local Bodies, whichever is earlier.

The permit holder has to transport the clay/silt in the mode of transport specified in the MM-12 with a speed limit of 30 Km per hour.The silt shall be transported from Abishegapakkam tank to NO.22, First Cross , Savithry Nagar, Uruvaiyar,Managalam post through Puducherry .The Truck Driver and Cleaner of the vehicle shall be instructed to keep the copy of the order and the same shall be produced before the Government Authorities, whenever demanded. The permit holder is hereby instructed not to indulge in any illegal activities and he should immediately report to the undersigned if, any events attracts law and order problem, which affects peace and tranquillity.

The permit holder shall strictly abide by other conditions laid down in the Puducherry Mines and Minerals (Concession) Rules, 1977 regarding transportation of clay/silt.

The vehicle used for the transportation of clay/silt is/are **PY01BN3957**

Deputy Collector (Revenue) North

The removal shall happen only after intimation to the PWD / Local body authorities concerned and under their supervision.

This is a System Generated Permit need not be Signed.

- Desilting at designated location

Impact of the system

- The online portal being Citizen-centric, enables the citizen to apply and obtain permit anytime from anywhere.
- The service delivery time was cut down from more than couple of weeks to few minutes.

- The departmental approval is no where needed in the entire process.
- The time and man-hour cost incurred by the citizen is completely nullified
- A huge Government expenditure incurred in desilting the water bodies for maintaining them, has been saved.
- Apart from saving from the maintenance expenditure incurred by the Government, additional revenue is also being realised for the Government exchequer through Royalty amount collected from the public.
- The online system has completely removed the role of contractors / middlemen in supply of desilted soil to bonafide customers.
- Owing to active participation of general public in the desilting process, the storage capacity of water bodies has considerably increased.
- Owing to the increase in storage capacity of the water bodies, the Ground water level has also increased considerably.

Desilting in pictures


KANDAN


JCB
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HORN
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Digital Health Record Interoperability Standard and Toolkits for Health Data Exchange

BACKGROUND

Healthcare information and the medical history of a person are crucial for a better understanding of health conditions and the severity of those conditions. This information enables healthcare providers in diagnosing underline conditions and make smarter treatments and medication choices. The medical records in anonymized and/or deduplicated form are also essential for medical research, community health monitoring, and use in statistical and analytical purposes for research and policy formation. The availability of longitudinal health records of a patient from all sources such as a laboratory or another hospital or doctor significantly eases the treating/consulting physician's ability to effectively treat the patient.

The paper-based health record systems spread across different touch-points such as laboratories, hospitals, doctors, pharmacies, etc. have a well-known problem of non-availability of records at points of care. Paper-based records are time taking to refer to, have different content and formats, and pose problems in their storage, retrieval, and analysis. They also pose challenges in clinical research and policy making. While digitization in healthcare is an ongoing activity, it has gathered speed and purpose in recent times. Earlier, healthcare providers would struggle to get or maintain the patient’s past and continuously generated health records to provide continuity of care. The unavailability of relevant health information causes a delay in diagnosis, may increase the cost of care delivery with repeating tests, and also introduces a delay in health policy decision-making. Ultimately, inadequacy and unavailability of relevant health information affect personal and public health.

Digitalization of health information is a significant step forward but does not fully resolve the issue of the availability of relevant and near-real-time information across the border of hospitals and clinics. Even where healthcare records are exchanged, the lack of a common syntactic and semantic standard causes increased costs in data transformation, data loss, and data reinterpretation. Also, lack of interoperability causes fragmentation of health information across patients, doctors, diagnostic labs, hospitals, pharmacies, and other touch points in a care journey. This information silo leads to several issues in care delivery, care planning, and even community health. The lack of training and software

for the adoption and implementation of standards poses a major hurdle and challenge in nationwide adoption.

OBJECTIVE

The National Health Policy (NHP) 2017 envisions 'Health and well-being for all ages'. The Ministry of Health and Family Welfare (MoH&FW), Government of India recognized the need for creating a framework for the evolution of a National Digital Health Eco-system (NDHE) to support the 'Continuum of care for an individual launched the Ayushman Bharat Digital Mission (ABDM). The MoH&FW defined the policy and regulatory frameworks through National Digital Health Blueprint (NDHB) and assigned the implementation to the National Health Authority (NHA). The ABDM aims to build a digital health infrastructure and ecosystem that provides consent-based accessible and available health records to the citizens and healthcare providers. Health Data Exchange is one of the important building blocks in ABDM to achieve this goal and the Digital Health Record Interoperability Standard is the key component of this building block.

This Digital Health Record Interoperability Standard project aims to develop a standardized, minimal, flexible, and adaptable health record data artifacts/data model to achieve interoperability between healthcare systems in the National Digital Health Eco-system (NDHE). The project aims to design the essential and minimum health record artifacts required for continuity of care, create the schema or data model for those records in a standardized format, provide an implementation guide for ease of implementation, provide free-of-charge implementation support to all the implementers (public as well as private), and promote adoption and usage of the standardized records through training and contact events. This project also involves the development and availability of software toolkits for the quick and easy integration of standards in healthcare applications. The National Resource Centre for EHR Standards (NRCeS) is entrusted with the task of creating, maintaining, and promoting the relevant Digital Health Standards.

ABOUT NRCeS

For moving towards an Integrated Digital Healthcare System, the MoH&FW released Electronic Health Record (EHR) standards for India (EHRSI) in December 2016 subsequent to the earlier notified standards set in 2013.

The MoH&FW established the National Resource Centre for EHR Standards (NRCeS) at the Centre for Development of Advanced Computing (C-DAC), Pune as a Centre of Excellence to accelerate

and promote the adoption of EHR standards in India. The NRCeS project is monitored by the eHealth Division of MoH&FW.

C-DAC is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) for carrying out R&D in IT, Electronics, and associated areas. Health Informatics is one of the thrust areas of C-DAC where it has executed various mission mode projects in the area of digital health standardization, telemedicine, hospital information management solutions, medical electronics, oncology informatics, etc.

The NRCeS is a single point of contact for assistance in developing, implementing, and using EHR standards in India. It provides the knowledge base for EHR Standards and associated resources and facilitates acceptance of and adherence to EHR standards. It offers free-of-charge tools, know-how, training, implementation support, and hand-holding to medical professionals, medical institutions, and technology companies/providers in the adoption of all notified EHR standards for India. The NRCeS is also involved in the healthcare IT standardization processes at the national and international levels to promote the vision of MoH&FW.

Figure 1 National Resource Centre for EHR Standards (NRCeS) https://www.nrces.in

Digital Health Record Interoperability Standard

While the EHRSI was notified as a comprehensive set of standards for digital health systems such as Electronic Health Record (EHR) and its variants, the NDHB adopts a very pragmatic *minimum-minimum approach* to standardization. The approach calls for using the most necessary parts of most necessary standards that would require minimum viable implementation for healthcare systems to exchange and interpret health data for the continuity of care of an individual.

The following standards are identified in NDHB for supporting continuity of care under the ABDM. The Digital Health Record Interoperability Standard is developed upon these proven and globally implemented standards:

1. Fast Healthcare Interoperability Resource (FHIR), a syntactic data messaging standard developed by HL7 International. FHIR is an open specification standard for healthcare data exchange. The specification defines a set of data structures and their compositions usable across the healthcare processes.
2. SNOMED CT - a medical vocabulary standard developed by the International Health Terminology Standards Development Organisation (IHTSDO). SNOMED CT is primary terminology usable in providing semantic interoperability of medical terms and their various defined meanings.
3. International Classification of Diseases (ICD) - medical classification code standard usable in systematic recording and statistics on disease in primary, secondary, and tertiary care, as well as on causes recorded in death certificates. The standard is developed and maintained by the World Health Organization (WHO) and is used across the world.
4. Logical Observation Identifiers Names and Codes (LOINC) - a common language (set of identifiers, names, and codes) for identifying health measurements, observations, and documents in laboratory records. The standard is developed and maintained by Regenstrief Institute.
5. Apart from the international standards, the Common Drug Codes for India (CDCI), a standard for capturing and coding drug information has been developed by the NRCeS. CDCI provides unique codes for generic (clinical drug), supplier, and branded medicine. It covers medicines referred in various national programs including the National List of Essential Medicines (NLEM) 2015, Pradhan Mantri Jan-Aushadhi Yojana, Affordable Medicines and Reliable Implants for Treatment (AMRIT) programme, Medicines referred in Telemedicine Practice

Guidelines, HIV Drug list referred by National AIDS Control Organisation, COVID-19 drug list referred in CLINICAL MANAGEMENT PROTOCOL: COVID-19 by MoH&FW, and COVID-19 Vaccine Products

6. Few other standards for common formats for documents and images such as PDF/A, JPEG, etc.

These standards are used as part of ABDM Health Data Exchange and provide a common, minimal, standardized, and structured way of capturing and exchanging health record artifacts. The Digital Health Record Interoperability Standard defines 32 different clinical structures extended from the international standards required for continuity of care and the data model, syntactic objects and formats, and semantic bindings developed for their implementation across all healthcare systems. The project facilitates the exchange of the following healthcare records:

- Diagnostic Report
- Outpatient Consult Note
- Wellness Record
- Health Record Document
- Discharge Summary
- Prescription Record
- Immunization Record

The implementation guide along with the object schemas, value-sets, and examples are hosted for reference, download, and validation at FHIR Implementation Guide for ABDM on the NRCeS website, while the referred FHIR specification is available at http://hl7.org/fhir/R4/

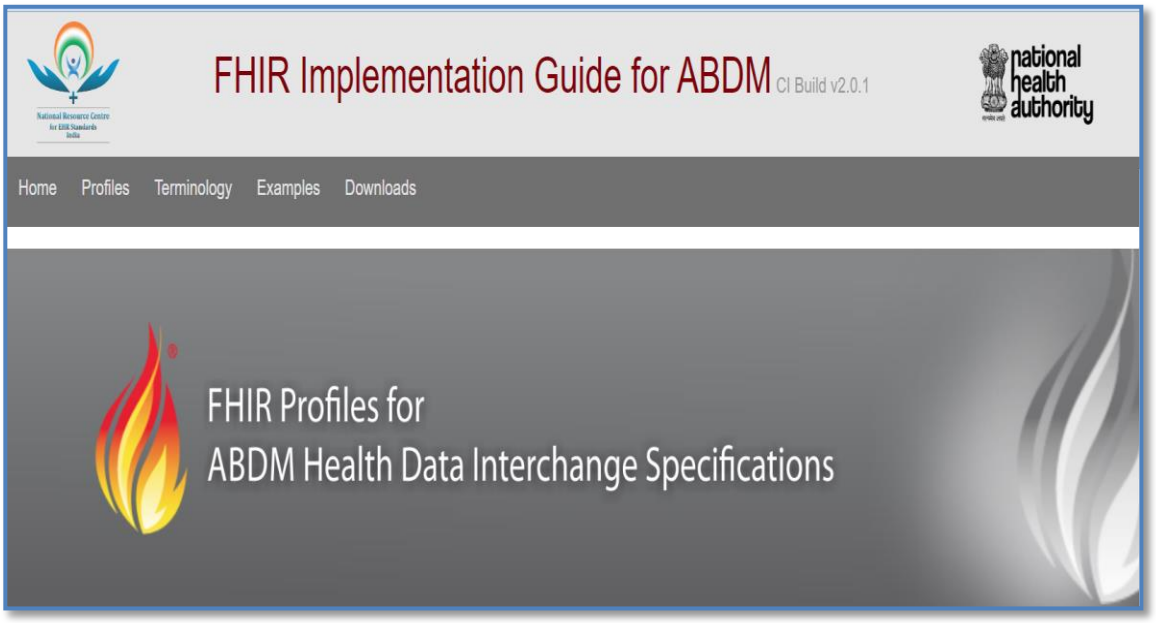

Figure 2 FHIR Implementation Guide for ABDM

The Digital Health Record Interoperability Standard uses NDHB and EHRSI-2016 compliant standards to exchange data across the institutional boundaries covering the syntactic, semantic, format, attachment, and package. The transport, encryption, and consent aspects are handled by ABDM APIs. A few key features of this standard include:

- Any Healthcare System under ABDM can exchange fully structured and standardized health record documents using the Digital Health Record Interoperability Standard.
- The use of clinical terminologies/vocabulary such as SNOMED CT, LOINC, and ICD coding as well as country-specific value sets provide semantic interoperability.
- It adopts an internet-based data exchange approach and supports schema and data definitions in XML and JSON formats that can be directly used in restful APIs used for data exchange.
- The use of FHIR provides extensibility by design and allows the use case specific customization as required for a national standard.
- The health records and resources combine both computer-processable and human-understandable data and the metadata to aid in searches and cataloging.
- The use of commonly defined and enforced standards allows healthcare system developers to build their systems independently of each other yet still be assured of interoperability across the eco-system.
- The healthcare system developers are free to choose their internal working, design, technologies, innovation, etc. while all external exchange of data using the standard ensures interoperability across the eco-system.
- With interoperable health records, the applications can quickly process health information and present it to doctors for arriving at better care decisions.
- The readily available standardized health records enable medical researchers to focus their research without having to waste time cleaning and homogenizing the health data.
- Policymakers can get reports based on queries over standardized health records in real-time for trends in any specific disease or treatment.
- The Implementation Guide is published using the Standard IG Publishing tool which is a FOSS tool provided by HL7 International which allows all FHIR-compliant systems globally to use the same specification.

Meta-analysis, development, community review, deployment, capacity building, and implementation support, are the steps used in the development which makes it a robust standard that is not only an information model complete and clinically correct for use but has community support as well.

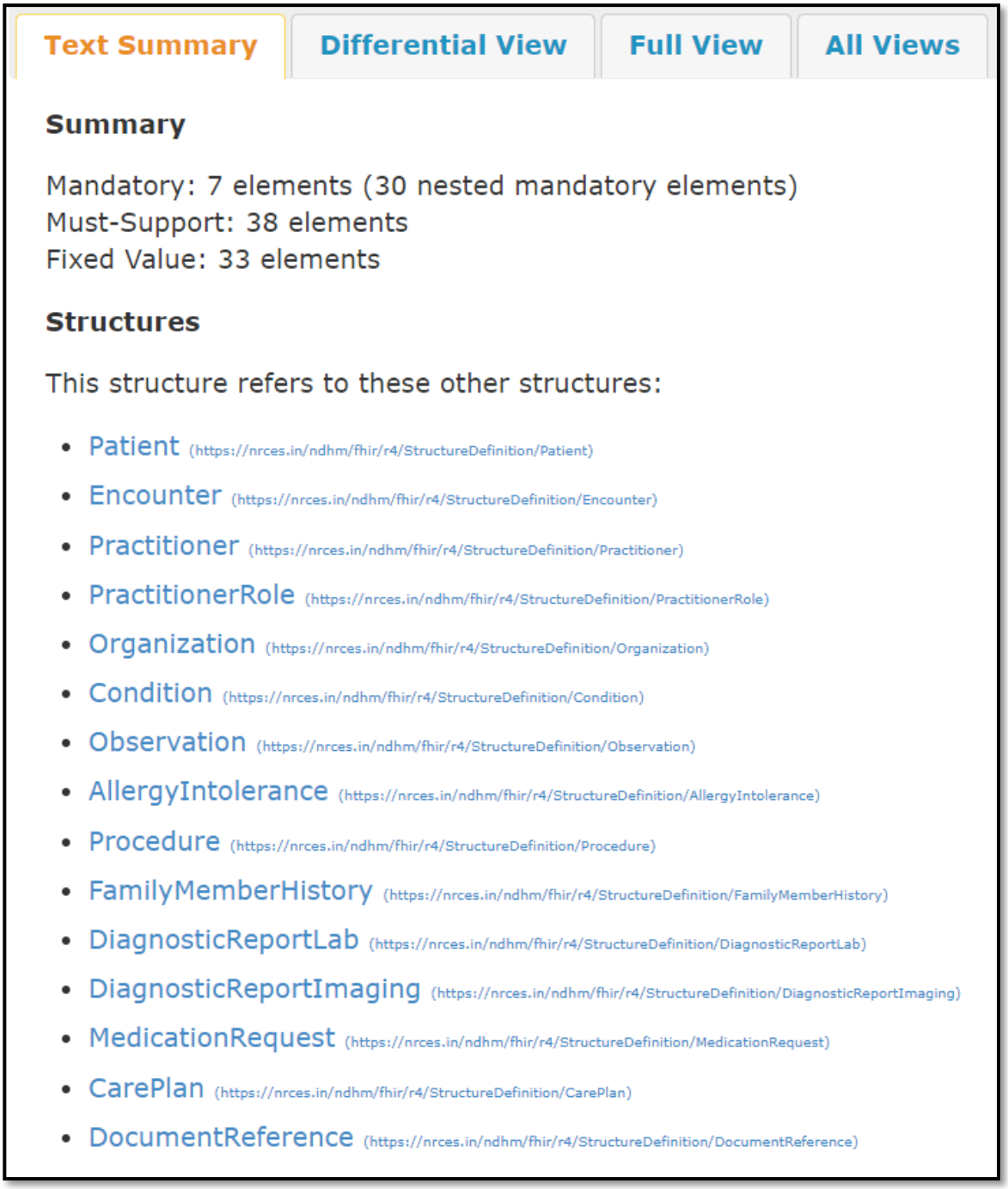

Figure 3 Text Description of Discharge Summary Schema

Software Toolkits for Health Data Exchange Implementation

While the standard is delivered as specification and requirement documents, its implementation is also a challenge in different healthcare IT applications. The project provides software toolkits such as SNOMED CT Toolkit, LOINC Toolkit, FHIR converters, validators, etc. as Free and Open-Source Software (FOSS) to all implementers along with technical support. The FOSS toolkits for the standard enable healthcare software manufacturers and hospitals in quick and easy integration and compliance with interoperability standards.

The FOSS software toolkits have changed the cost dynamics in favor of all implementors equally and they can concentrate on innovation rather than the complexity and intricacies of the standard implementation. They also remove the subjectivity of different interpretations of the standard specifications and provide a common benchmark for compliance tests.

Standard and toolkit have a few value-add activities, like

- Digitization of physical and digital records in the standard format.
- Enabling transformation of the healthcare service delivery process through digitization.
- Preparing basis for future data analytics, managing Sustainable Development Goals for health indicators.

The use of standards and toolkit is expected to reduce the need for paper records for most of the continuity of care, however, it is not precluded and anyone can take the paper record for their purposes. Data conversion, transformation, and processing in digital formats for sharing health records, research, and developing/producing different forms and formats for reporting and consolidation become easy with digital systems. The FOSS C-DAC's Toolkit for SNOMED CT (CSNOtk), FOSS FOSS C-DAC's Toolkit for LOINC (CLNtk), and FOSS ABDM FHIR R4 Usage Samples are developed using JAVA technology

Figure 4 FOSS Toolkit for SNOMED CT, LOINC, and ABDM FHIR Usage Samples

Interoperability and Integration Aspects

The different clinical artifacts that are getting exchanged in the ABDM follow the Digital Health Record Interoperability Standard for ABDM. The Standard also supports other interoperability requirements including Common Drug Codes for India (CDCI), PCI Guidelines for ePrescription, WHO Vaccine Record Guidelines, and Medical Imaging format (DICOM), etc. The standard also caters to the requirements of supporting historical data (scanned documents in JPG and PDF-A2 formats) along with structured and standardized data.

The documentation for referring to the standards, their usage, and examples can be found here: https://www.nrces.in/ndhm/fhir/r4/index.html

The overall depiction of the use of Digital Health Record Interoperability Standard and FOSS SDKs and Toolkit for seamless data exchange in the ABDM ecosystem is shown in Figure 5. While the new systems can directly adopt the standard structures, clinical vocabulary, and coding systems, the legacy systems can use the FOSS toolkits and SDKs for data mapping/conversion to the required standardized form. The standard follows a minimalistic principle for mandating the data which makes it easier for any system to onboard to the standard. The standard additionally allows as much as possible data capture which makes it suitable to be adopted for any larger or more complex data capture use cases as well. The data converted into the standard form is exchanged over the ADBM

network through its Health Information Exchange by referring to the various other building blocks such as ABHA, Healthcare Provider Registry, and Healthcare Facility Registry with proper patient consent through the Consent Manager. The receiving systems (referred to as Health Information Users (HIU)) can be PHR applications, Health Lockers, standardized healthcare solutions, or legacy systems. The legacy systems can further process the data to render/store them in the required format without affecting the old implementation.

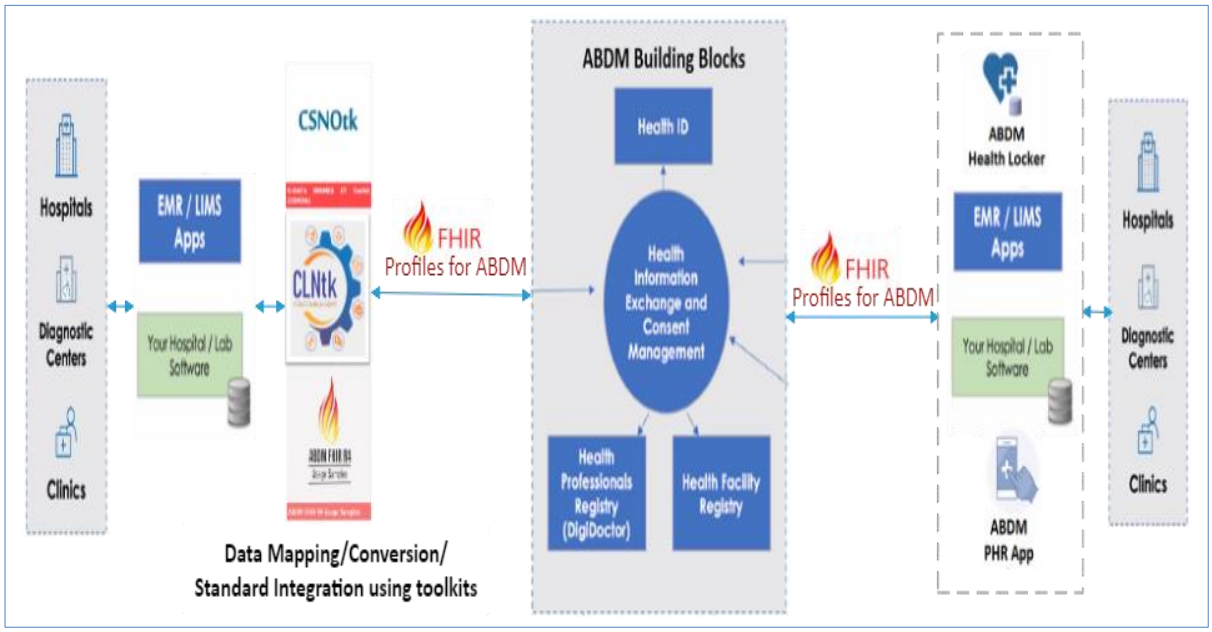

Figure 5 Overall Depiction of Use of Interoperability Standard and Toolkits in ABDM

The adoption of the standard has brought syntactic and semantic interoperability between healthcare systems. The standard is designed for an interoperability layer that allows existing and new systems to easily transform healthcare data to the common standard and exchange it with others through the ABDM Health Data Exchange. This has greatly enhanced the ability of a patient to locate and peruse their healthcare records digitally at different healthcare data providers and share them with a healthcare provider based on consent. The increase in the trust of the record coming from another known and authenticated source enables the treating physician to decide on the necessity of further tests and has the potential to bring down the cost of care. The ability of health researchers and policymakers to access anonymized data of multiple patients meeting their particular study group requirement from multiple sources in a common standard format is expected to boost clinical research and policy-making like never possible before.

Capacity Building and Awareness & Communication Approach

For the adoption of the Digital Health Record Interoperability Standards, multiple efforts were taken by the NRCeS and ABDM teams including workshops for hospitals and institutes/organizations, training for individual implementation teams, leading national-level hackathon tracks for hands-on experience, webinar sessions, and presenting at various events at the national level.

NRCeS Users' Meet - Summer 2018 | Pune

NRCeS Users' Meet - Summer 2019 | Pune

NRCeS Users' Meet - Winter 2019 | Bangalore

Around 13000+ healthcare software manufacturers and healthcare professionals have been sensitized through more than 30 workshops, 132 training, 59 Talks and Events, and 20 webinars (conducted during the COVID-19 pandemic) to disseminate awareness by National and International experts and promote EHR adoption.

The project team has supported 700+ implementations and answered 2200+ queries through email and other forums. 880+ organizations are connected with the project and are actively involved in the adoption of standards to date.

Figure 6 Webinar Series Covering Topics on Standards, Integration, and Adoption

The training programs, workshops, guidelines, etc. released as part of the project have made it possible for a larger number of healthcare software manufacturers to adopt and implement the standard in a short period and integrate their software with NDHE.

Quantitative statistics of Extent of use (As of December 2022)

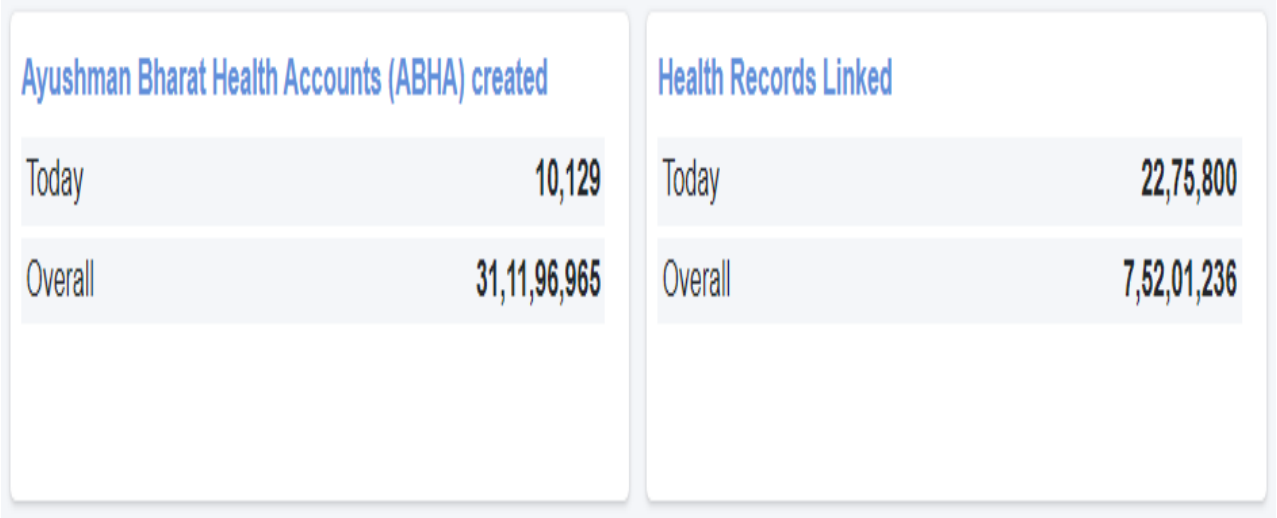

Figure 7 Total ABHA created and Health Records linked under ABDM

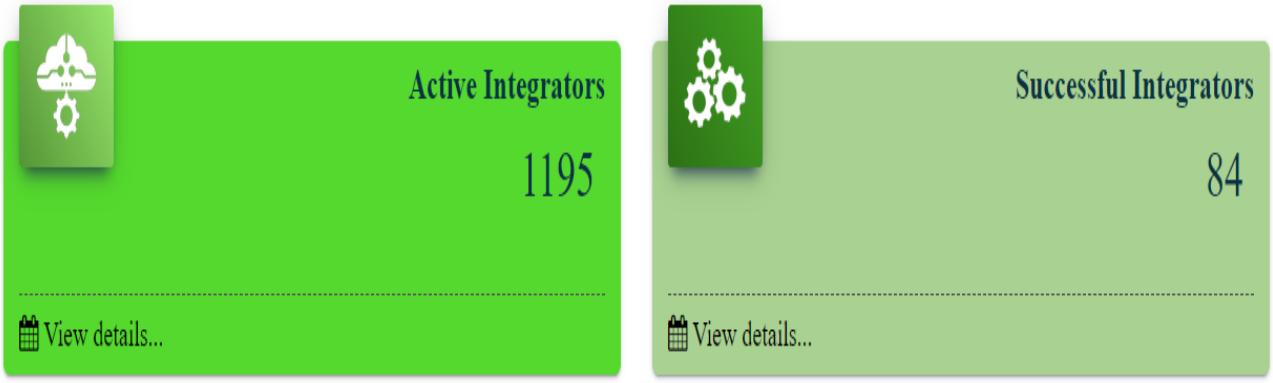

Figure 8. Healthcare Software Integrators on ABDM

Figure 9. Statistics of NRCeS Activities

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Deep Learning and Artificial Intelligence Based Real- Time Virtual Mouse Using Computer Vision to Avoid COVID-19 Spread, Government of Tamil Nadu

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Introduction:

Mouse and Keyboard are one of the best innovations in the domain of HCI (Human- Computer Interaction). In present situation the devices like Mouse and Keyboard are dependent on various devices like wire to connect, adapter and power resources in case of wireless devices to operate in Computer System. In the developed Artificial Intelligence based Mouse the computer system can be controlled using the Hand Gestures without using any physical devices. We use the Built-in camera or the Webcam to capture our hand gestures and based on the hand gesture the particular computer function will be performed in the computer system. The developed Artificial Intelligence based Virtual Mouse can be integrated along with the virtual keyboard in the computer system to implement the keyboard functions in the computer system. Thus, the developed system can be used to control the computer system using our hand gestures without using any physical devices thereby considerably reducing the spread of communicable diseases like COVID-19, etc. The major services impacted by the developed system are Computer Devices using services, Educational services, Medical Services.

Technology Used:

The developed system uses Computer Vision, OpenCV library to detect the hand gestures captured by the Web camera and then the gestures are given as an input to the Architecture consisting of Mediapipe framework and some python automation libraries to perform the particular mouse function in the computer system.

The major technologies used to develop the system are,

1. Mediapipe Framework
2. OpenCV library (Computer Vision)
3. Python Automation libraries
4. Python Programming Language

I. Mediapipe Framework:

MediaPipe framework is a cross platform development opensource framework by Google. The MediaPipe framework is used in our developed system to recognize our Hand Gestures and the recognition takes place through Computer Vision (OpenCV Library). Then based on the detected hand gestures the particular corresponding Mouse function is performed in the computer system using the python automation libraries.

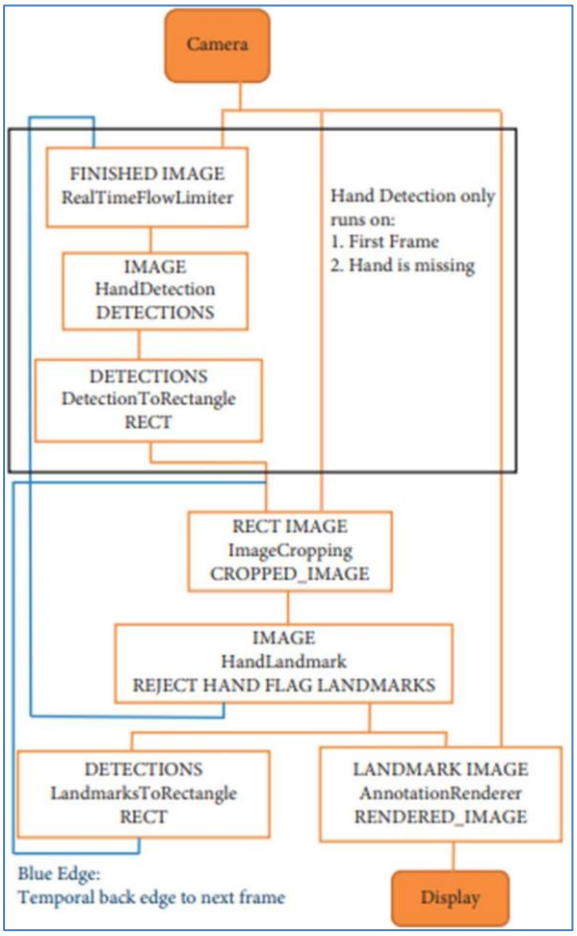


Fig.1 Mediapipe Hand Detection

II. OpenCV Library:

OpenCV is a library for performing Image and Video Processing and it is used for real time object detection. This library is used for Computer Vision based Applications which is usedfor real time object detection and processing.

Situation before the Initiative:

i. There were no any effective possible ways to control the computer system virtually without using the physical devices; hence there was a major alert for the spread of communicable diseases due to the use of physical devices.

ii. Since all the people were using the physical devices in public gathering places, educational institutions, government sectors where they use computer devices and medical sectors, there was a possibility of spread of diseases.

iii. Before the Initiative, the computer system was controlled using conventional physical devices and they didn't result in any type of automation or faster results.

iv. There were some previous works held out for hand gesture recognition based virtual mouse by wearing a glove in the hand and also for gesture recognition colour tips were used. But the disadvantage is that they were not more accurate and they also make use of some physical devices.

v. In places where people interact more with the computer system make use of the physical devices to control the system and there were not any alternative for controlling the PC without using these physical devices.

vi. In places where there is less space where we can't use physical devices, we cannot operate the computer systems.

Situation after the Initiative:

i. The developed Research Project has benefitted Citizens in a way where they can use this system to control the PC without using Physical Mouse and can control virtually.

ii. The impacts created by the developed system are areas like Computer Devices using Services, Educational Services and Medical Services. In all these areas the developed system can be used effectively to control PC and devices virtually by using the AIBased Virtual Mouse.

iii. In Computer Device services the developed system can be used to control the

computer devices virtually by using the Virtual Mouse without using Physical Mouse.

iv. In Educational Services, the developed system can be used to control the computer systems used in the Educational Institutions virtually by using the Virtual Mouse.

v. In Healthcare services, the developed system can be used to control the devices and devices connected to medical apparatus virtually using the virtual mouse system.

vi. The developed system can be used in Railway stations to check the status of the train in the devices available there without touching those devices and can be controlled virtually, also they can be used in Airport, Bus Station and in Public Gathering places where the developed system can be used to control the devices to reduce the spread of diseases.

vii. The developed system produces an effective solution to control the PC/System virtually using Virtual Mouse without using any other external devices; the developed system can be worked in the system using a computer web camera only to recognizethe hand gestures.

viii. Various Testing of the Virtual Mouse are held in various illumination conditions, also tested with various distances from web camera for hand gesture recognition. For each mouse action to be performed the developed system was tested for 100 times, out of which the system achieved about 99% of accuracy overall and it is comparatively high when compared to previous systems.

ix. The overall impact achieved by this developed system is that the virtual mouse system can be used by citizens to control the System/PC virtually by using Virtual Mouse. In various fields the developed system can be used to minimize the use of physical mouse device so that the system can be used to reduce the spread of CommunicableDevices.

x. ICT has been used in this project as an Intelligent Human Computer Interaction to control the System/PC Virtually using the Virtual Mouse. The Virtual Mouse makes use of Deep Learning and Artificial Intelligence to recognize the hand gestures and perform the particular Mouse Function in PC.

xi. The developed system can be used in places where there is less space where we can't keep the physical devices, but in the developed system we can control the PC virtually using a web camera.

Implementation of the Developed System:

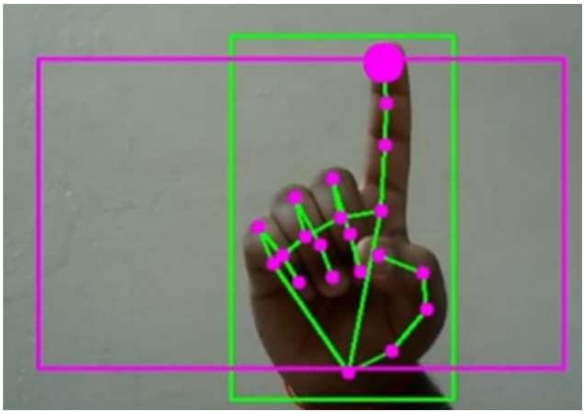


Fig.2 Detecting the Hand Gestures

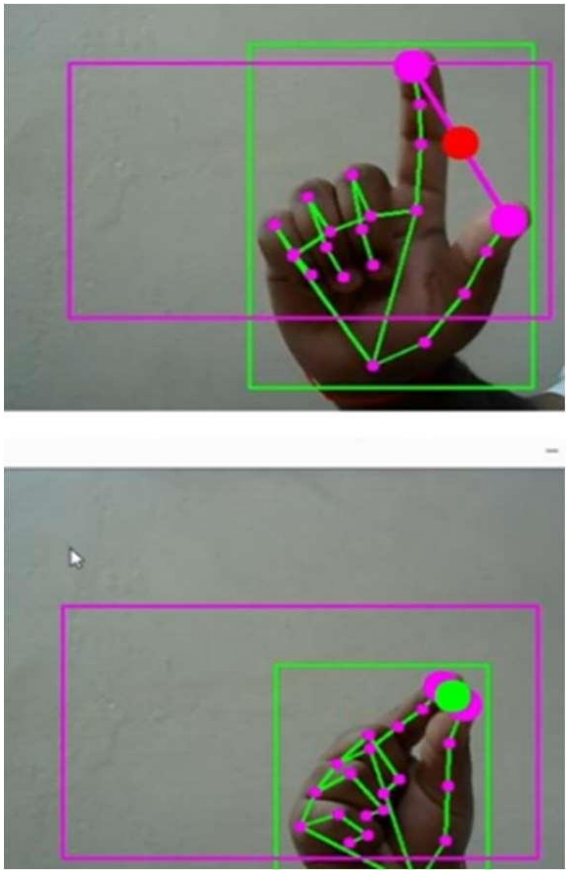


Fig.3 Gesture to perform left click

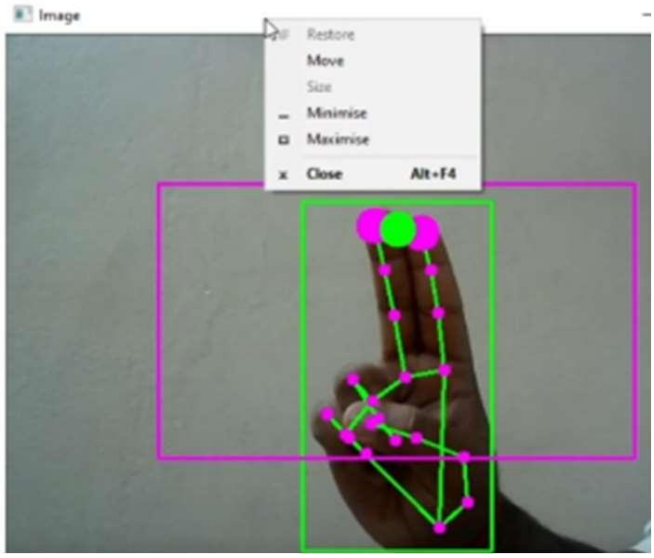
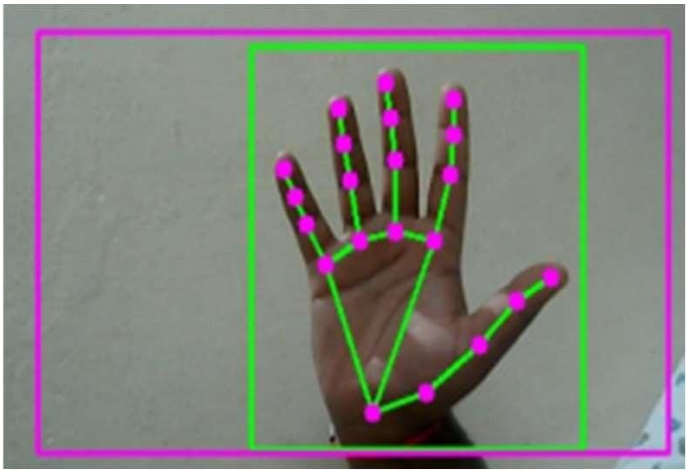


Fig.4 Gesture to perform right click



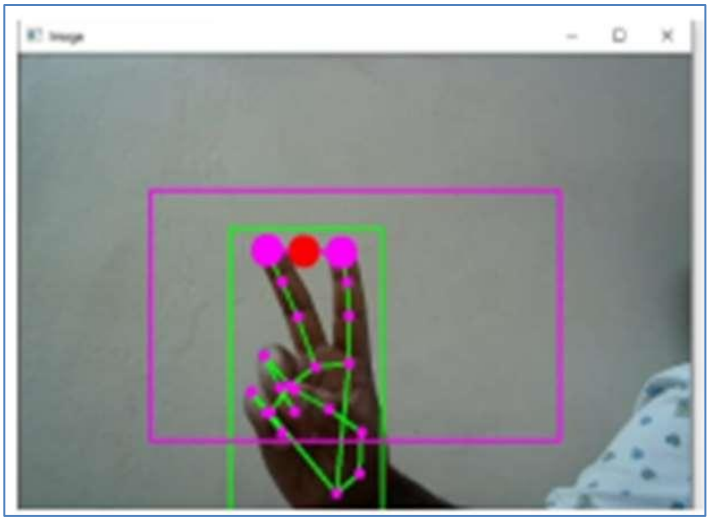


Fig.5 Gesture to perform no action

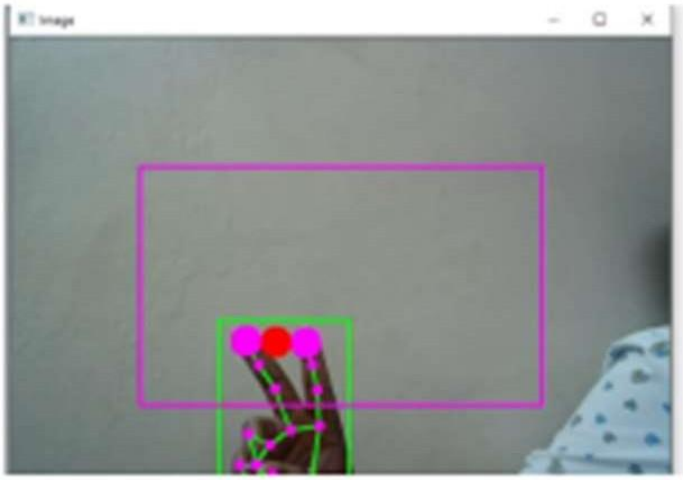


Fig.6 Gesture to perform Scroll Down

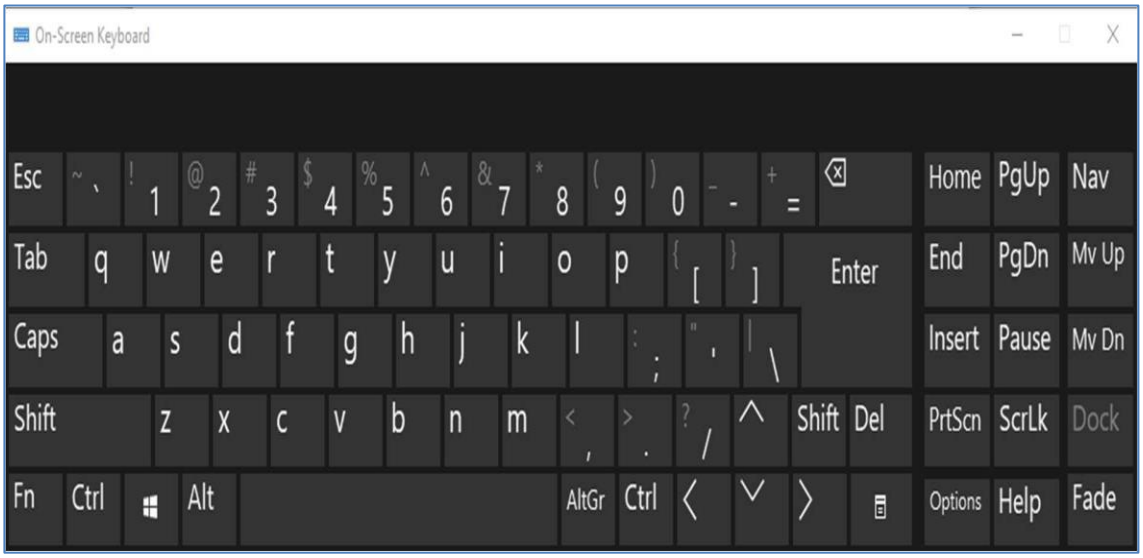


Fig.7 The developed AI mouse can be integrated with Virtual keyboard to perform keyboard functions in PC

Impact of the Developed Project:

The Developed Research Project has been implemented in the following Services.

1. Computer Device using Services
2. Educational services
3. Medical services

Computer Device using Services:

In Computer Device using Services Existing usage of mouse includes controlling the PC using physical mouse, but the developed mouse can be used to control the PC virtually and people can use this system to control the PC without using the physical mouse thereby decreasing the chance for spread of diseases.

Educational services:

In Educational Services, The developed system can be used in educational field to control the devices and computer systems virtually without touching the physical devices and it can be used to reduce the spread of diseases.

Medical services:

In Medical Services, The developed system can be used in educational field to control the devices and computer systems virtually without touching the physical devices and it can be used to reduce the spread of diseases.

Further Impacts of the Developed Project:

In Railway Stations:

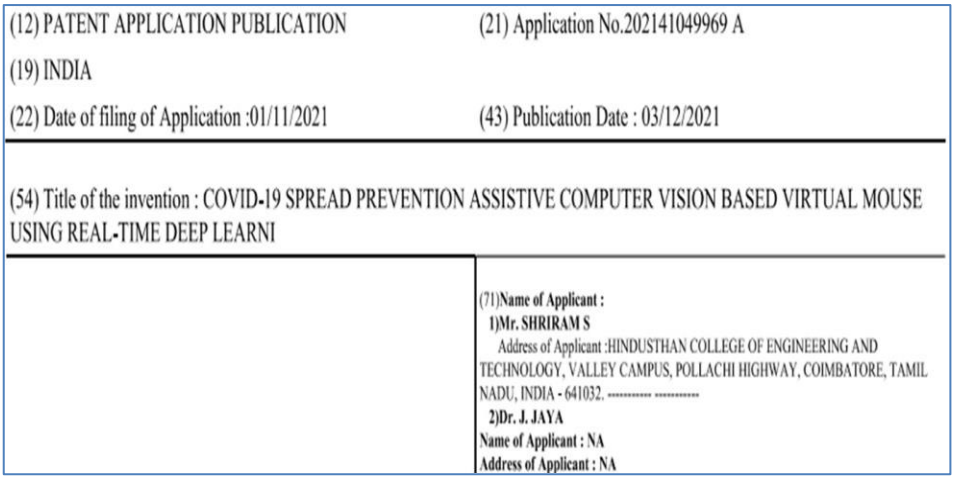
In Railway Stations, there will be a public system to check the PNR status of the Train, in that PC our developed system can be used to control the computer system virtually without interacting with the physical devices, thereby reduces the spread of communicable diseases and automating & easing out the Human Computer Interaction.

In ATMs:

In ATMs, all the general public people will be interacting with the same ATM machine to withdrawal and deposit cash; hence there will be possibility of disease spread, in these situations our developed system can be used in ATMs to control the ATM machines virtually without interacting and touching the ATM machine for cash withdrawal and deposit. This leads to ease of access to the computer systems.

Worldwide Recognitions of the Developed Project:

1. A patent has been published on 03/12/2021 for the developed Research Project under Intellectual Property Rights, India.



(12) PATENT APPLICATION PUBLICATION (21) Application No.202141049969 A

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(54) Title of the invention : COVID-19 SPREAD PREVENTION ASSISTIVE COMPUTER VISION BASED VIRTUAL MOUSE USING REAL-TIME DEEP LEARNI

(71)Name of Applicant :
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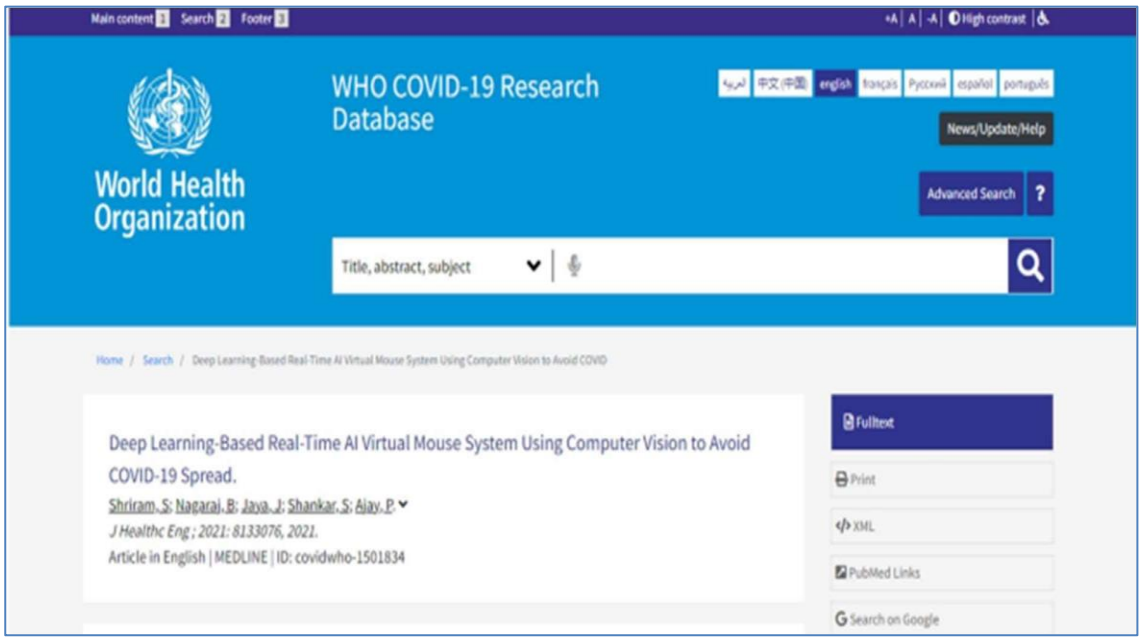
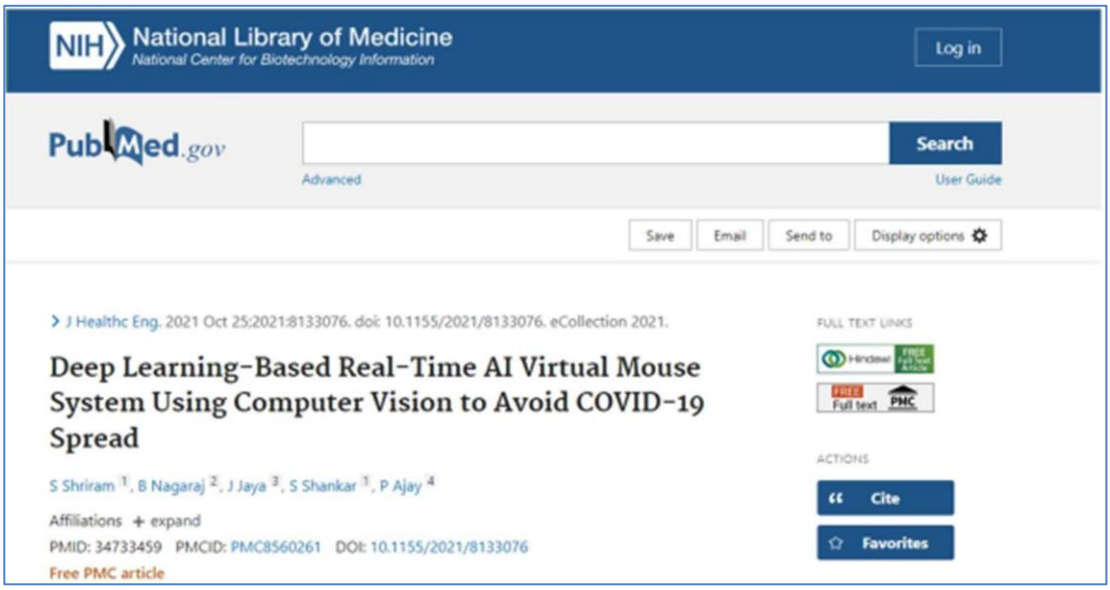
Address of Applicant :HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY, VALLEY CAMPUS, POLLACHI HIGHWAY, COIMBATORE, TAMIL NADU, INDIA - 641032. ---------- ----------
2)Dr. J. JAYA
Name of Applicant : NA
Address of Applicant : NA

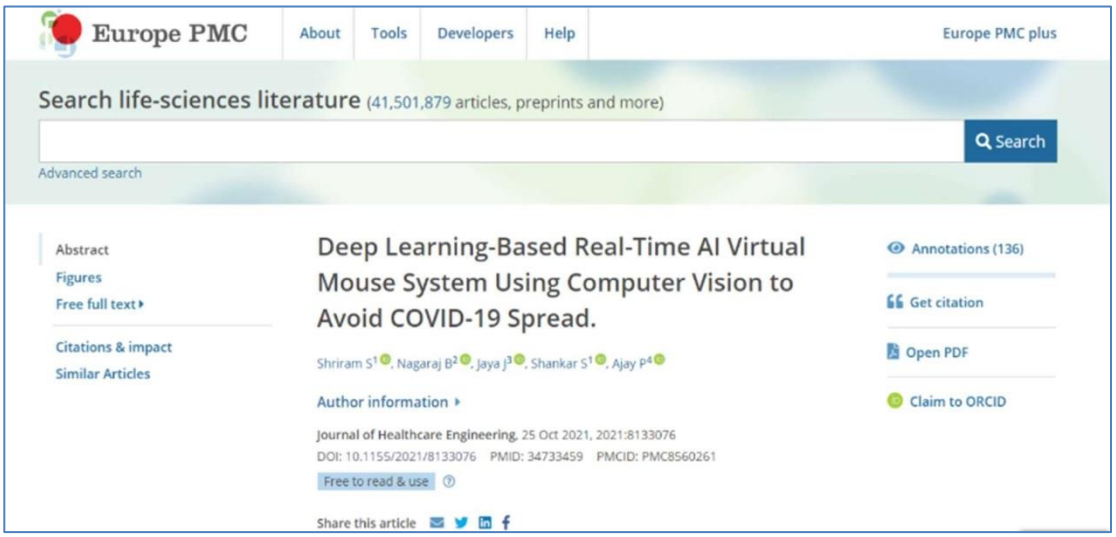
2. The Research Project on "Deep Learning and Artificial Intelligence Based Real-Time Virtual Mouse Using Computer Vision to Avoid COVID-19 Spread" has been published as a Research Article in Journal of Healthcare Engineering, Hindawi Publications.

3. The published Research Article has been listed under World Health Organization WHO's Global Literature on Corona Virus Disease official website.



4. The published Research Article has been listed under National Library of MedicineUSA Government Official Website.





5. The published Research Article has been listed under Europe PubMed Central.

Experimental Results and Evaluation:

The developed Artificial Intelligence based Virtual Mouse system is based on Advanced Computer vision based Human Computer Interaction. Since there is a limitation in the dataset to verify the developed model, the developed model is tested out manually by 4 persons with manual labelling under different distances from the camera and different

lighting conditions. After testing the developed system, it worked good under various conditions and an accuracy of 99% has been achieved from the developed system. When it is compared to the traditional approaches the developed Artificial Intelligence based Virtual Mouse performed well with greater accuracy.

Conclusion:

The major objective of controlling the computer system without using the physical devices can be achieved by this developed system and from the results of performance of the system; we can conclude that the developed system is performing out very well with greater accuracy by using our hand gestures when compared to existing systems which using physical devices.

The developed system is very useful in various places to control the PC without interacting with physical devices but controlling them virtually by our hand gestures, for example in places like Educational Institutions, Medical Hospitals and in Public gathering places where this developed system will be more useful in controlling the computer system virtually and ease of access in operating the PC.

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BPCL HSSE Portal- Strengthening HSSE Management through Digitalization, Bharat Petroleum Pvt. Ltd.

Introduction

Bharat Petroleum Corporation Ltd. (BPCL) is one of the leading Maharatna PSU and leader in the petroleum sector. BPCL operates across the nation through nine strategic business units (SBUs) and a pipeline network that spans 2596 kilometers. Refinery, Retail, Lubricants, Liquefied Petroleum Gas, Industrial & Commercial, Aviation, Gas, Renewable Energy and New Businesses are the business units.

BPCL has a diverse range of products ranging from Auto Fuels, Petrochemicals, Solvents and Aircraft Fuel. These products are directly available for customer use across Petrol Stations, Kerosene Agencies, LPG Distributers, Lube Shoppes and indirectly to Industries and several International & Domestic Airlines. BPCL markets its products through robust distribution network of storage depots, terminals, LPG bottling plants, Lube blending plants, cross-country pipelines, aviation stations etc. The products and services touches the lives of millions in some way or the other.

BPCL has the highest concern and commitment for protecting the Health, Safety, Security & Environment (HSSE) of all employees, contractors, customers and the communities and for the conservation of the Environment. At BPCL Health, Safety, Security & Environment (HSSE) aspects are an integral part of our business planning and operation processes.

Abstract of the Initiative:

Being in the age of information, data mining, machine learning and predictive, complete analytics, BPCL has leveraged these available technologies to manage the HSSE data through a unified portal catering data from 240+ locations. As the predictive analysis, preparing trends, analyzing the information is helping us to predict and prevent employee incident rates, identifying the chances of equipment failures, Identifying the people, places and processes at most risk, Quantifying the corrective and preventive actions, Categorize and quantifying the relative impact of specific risk factors etc. which provides the organisation a statistical level of confidence and aiming for effective HSSE Governance.

Situation before the Initiative

Bharat Petroleum Corporation Limited is Operating at 240+ locations and 9 SBUs across India. As the BPCL operates in petroleum sector, which has inherent risks pertaining to Health, Safety Security and Environment. Our operating locations have been re-accredited with ISO 9001:2015, ISO 14001: 2015, and ISO 45001:2018 standards for Quality, Environment & Occupational Health, and Safety Management Systems.

HSSE management and data repository was manually managed such as Legal register, Licenses, certification, compliance requirements, which is time consuming job. As an organization, completion and tracking of essential HSSE tasks across the country on timely basis has been important and critical activity.

Before the launch of HSSE portal, all the modules like Incident Reporting, Sustainability Data Reporting, Audit data, Training module and Hazard assessment module etc. had separate portals and were working in standalone manner. Some of HSSE data was captured through email communications and manual tracking of the pending tasks were conducted through periodic review meetings.

Need for HSSE Data Management

By considering drawbacks and complexity of data handling and to make batter-informed business decisions, optimize business operations and track business performance data management was necessary. Such need included:,

- Processing and analysing of data from such large No of Operating Locations (240+) spanned across India.
- Keeping record of Lakhs of documents, drawings and various sheets. Handling huge number of licenses, drawings, certifications and reports pertaining to Locations.
- Timely submission of corporate level data/ replies to Internal / External stakeholders such as top management, Ministries, Statutory bodies, etc.
- Use of simple and sophisticated platform for sharing the Best Practices and Learnings from Incidents.

- **Monitoring** Data pertaining **to HSSE processes** like (Drills, Safety committee meetings, Risk Assessments etc.)
- **Managing** Audit reports and tracking its compliances (ESA, ISA, SSA etc.)
- **Reporting, tracking** the Incident information of all the locations.
- **Consolidation** and **disclosure** of Pan India HSSE data for publishing HSSE Tracker, Annual Report, Sustainability Report etc.
- **Sharing** the Best Practices and Learnings from Incidents across India leveraging single platform.
- **Handing-over / Taking-over** for Transferable Manpower w.r.t. securing, assessing and tracking the status of HSSE documents.

Overall collection of HSSE Data, its collation, analyzing the data and tracking the actionable was a tedious, time consuming and resource intensive task. At times, a slight error in reporting from a location level would lead to under or over reporting at enterprise/corporation level data such as Sustainability Reporting and Statutory disclosure pertaining HSSE aspects.

Challenges Faced In Integration with Previous System and Processes

BPCL has only a module built in for reporting incidents online in old portal and the same was captured under Incident Reporting Information System as specified in the BPCL's guiding documents i.e. Corporate Safety Management System (CSMS) Technical Standards. The new HSSE portal has about 70+ modules covering Health, Safety, Security & Environment (Sustainability) data, thus the data migration was easy as it is built newly and data is fed for the first time.

The challenges faced by the Human Resources of the organization in adopting to the newly developed portal was properly mitigated with specific workshops and knowledge sharing sessions. There was total 5 numbers of workshops conducted to enhance awareness on HSSE Portal for 249 participants (456 training manhours) across the organization.

However, care was taken to build the HSSE portal for ease of use with User interface technology and dedicated customer Support through Raise Support module.

Strategy Adopted

A multi-disciplinary team was formed from each business units for functional inputs and business requirements. Based on detailed deliberations, scope of work finalized and tender floated for development of portal. The strategy adopted was not to purchase readymade software available in market for individual modules, but to develop an integrated software which covers all aspects of Health, Safety, Security, Environment & Sustainability applicable to Indian Petroleum Sector industry. The provision for test server is made to ensure business continuity during the development/modifications in the HSSE Portal.

Overview of HSSE Portal - Single Point HSSE Data Management

BPCL (Bharat Petroleum Corporate Limited) HSSE portal is designed to collect, manage and simplify data from all locations across the country. It is also designed for effective reporting and tracking of highlighted data given by each business unit (Refineries, Retail, LPG, Pipeline, Lubricants, Aviation etc.). For sharing best practices and learnings, dedicated modules have been added.

The HSSE portal contains all modules for each business unit. The major modules include:

- Dashboard containing newsletter, masters, content management, safety quizzes, safety leadership board.
- Performance management which includes training management, corrective and preventive action, legal and statutory compliance, HSSE suggestions, awards, safety sustainability perception survey, safety events/campaigns/celebrations and emergency drills.
- Incident management which includes near miss reporting, incident reporting, investigation system and incident analysis.
- Industrial safety management which includes behavior-based safety, lifesaving rule violations, walk around management, senior level inspection, HSSE meeting, strategic safety objectives, Hazard Management (HIRA/JSA/PHA) and Equipment Management.
- Process Safety
- Fleet safety

- Contractor rating
- Environment management includes modules like Aspect-Impact, Carbon Emission & Sequestration, Hazardous & Non-Hazardous Waste Management including E-waste, Sustainability Data Reporting and Environment Cell.
- Security Management includes modules like IB Audit, Security Audit, Security Agency, Security Score Card, Police Verification Certificate and TVRA (Threat Vulnerabilities & Risk Assessment).

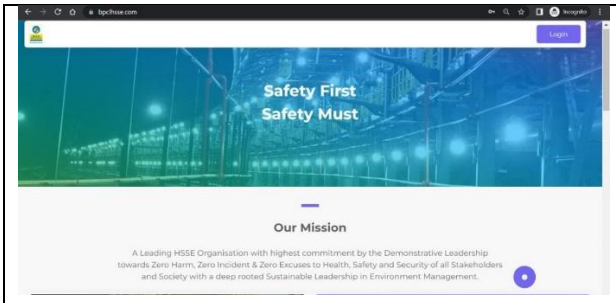
The HSSE portal is intended to be a single point of reference for all HSSE role holders to inputs, read data and view reports. The portal has features of tracking the closure of tasks through Corrective and Preventive Action module, where data flows from all actionable modules.

The Salient Features of HSSE Portal are as Follows:

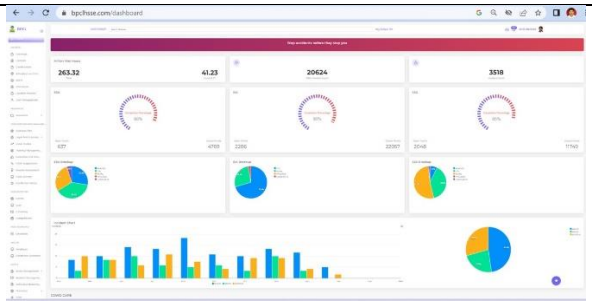
1) **Cloud Platform:** Platform developed is scalable and fault-tolerant platform on the cloud for critical HSSE needs.
2) **HSSE Data Digitization:** Available HSSE data on portal is accessible by single source to every user of the organization in the form of charts, graphs and sheets etc.
3) **Role-based Access:** Based on position of users, which varies from Region to location role changes. Every user has its own access on portal for data entry and modification which changes according to its position on structure.
4) **No more data on email / physical copies:** Data from various aspect across every business unit has become easy and effective to Management.
5) **System Generated Reports/ Forms:** Reporting / Data Submission to Ministries, Statutory Bodies and Top Management on monthly basis.
6) **Auto Reminders/ Escalation:** The portal generates auto reminders email on due tasks and send it to concern data owner. The escalation matrix is in place for the expired licences and due actionable.

The HSSE portal is intended for:→

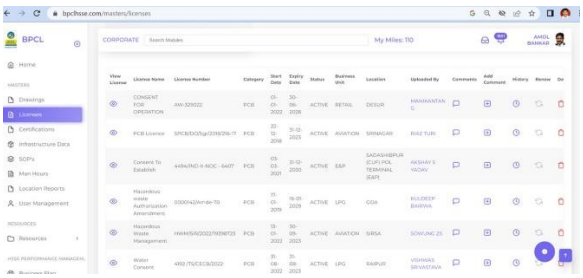
- Providing a single Point Repository of HSSE Data Management (for all India HSSE role holders spanning across 240+ operating locations from all Business Units covering Refineries & Marketing.
- Analysing HSSE data and generates notifications /alerts based on defined HSSE Performance Metrics.
- Tracking the closure of tasks through Corrective and Preventive Action (CAPA), which flows from all actionable modules.
- Providing a live dashboard connectivity to social media.



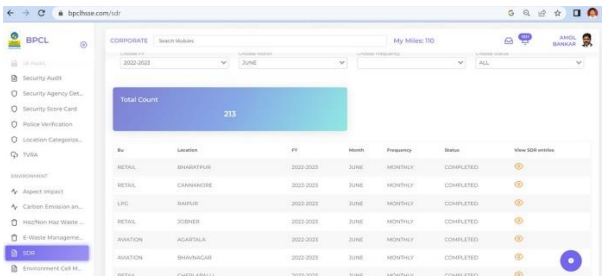
Login page of HSSE Portal



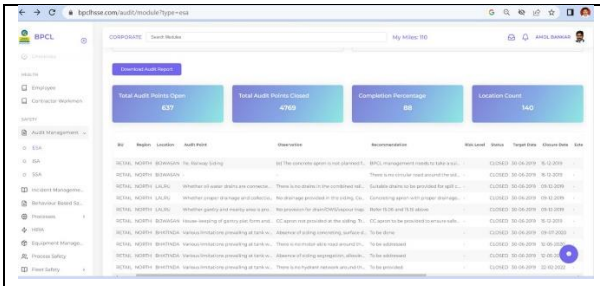
View of Portal Dashboard



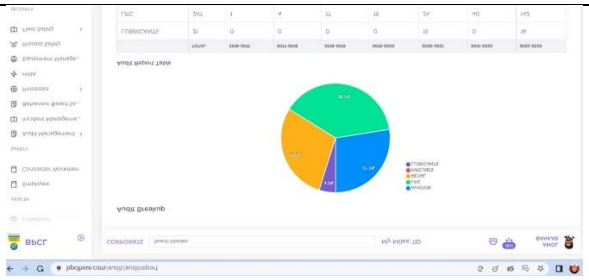
License module for tracking & escalation



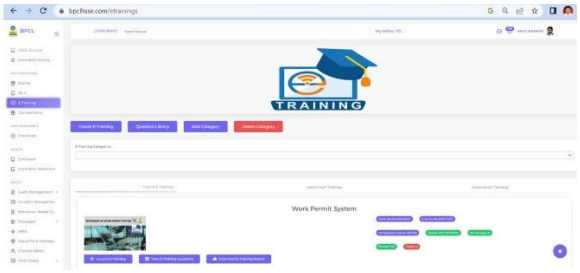
Sustainability Development Reporting (SDR) Module



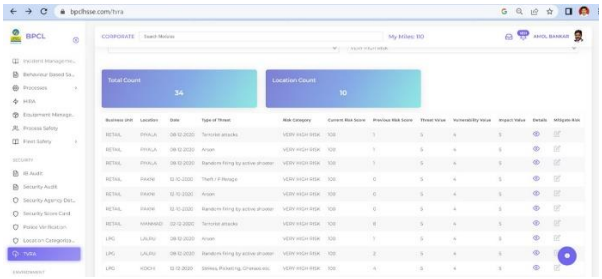
Audit Management Module (Internal, External & Self)



Audit Management Module (Internal, External & Self)



View of Training Module



Threat, Vulnerability & Risk Assessment (TVRA)

Usage of Emerging Technologies

HSSE portal has inbuilt logic for analyzing the current data and subsequently upgrading for utilizing emerging technologies like data analytics, AI, ML & block chain once sufficient HSSE data is fed in HSSE portal on which analytics can be performed and certain inferences can be derived.

- Platform is deployed completely on the Amazon India Cloud, to ensure stability, reliability and scalability. Infrastructure is fault tolerant and redundant, ensuring that even if a single server fails, there are back up servers to automatically replace failures, thus ensuring 24/7 availability of the portal.
- UI is built to be responsive to any device the officer may be using (Mobile, Tablet, Desktop). UI changes itself to make full use of the device screen. UI is built on latest Front-End framework (VueJS) to Reduce load times and response time from servers.

- Custom-built analytics engine is being used to improve efficiency of reports and visualizations.
- Deployments are automated to Test environments before being rolled onto live environments. Deployments are staged among multiple servers such that there is never any down time during patches or upgrades. (No need for planned down-times).
- Documents and videos are stored on Amazon simple storage service to ensure instant access without compromising data privacy norms.
- Portal supports for geotagging of assets especially geotagging of trees planted across BPCL locations along with details of species (botanical name), age and carbon sequestration capacity.
- We have also scheduled integration of additional relevant HSSE data from Central Command and Control center which is using AI, ML for Video analytics & Algorithms / block chain for Data analytics.

Impact of HSSE Portal

Geographical Perspective

The portal gathers, collates and provides report in the form of graphs and excel sheets of HSSE & Sustainability data from all India locations (240+) across all Business Units geographically covering Refineries & Marketing Business Units:→

Business Units	Number of operating locations
Refineries	03
Retail	82
LPG	52
Lubricants	04
Aviation	62
Pipelines	09
Gas	31
E&P	155

The locations of all BU's are spanned across nation and mapped in HSSE portal as:

- HQ level
- Region level (North, South, East & West)
- State level
- Territory level and
- Location level

Demographical Perspective

The portal caters to HSSE & Sustainability data digitally from pan India Operating locations across all Business Units demographically covering all hierarchical levels (Total 2479+ users in Portal) vis-à-vis to access 70+ modules pertaining to HSSE, based on their roles and responsibilities.

Data Privacy and Security Mechanism

For management of data on HSSE Portal, BPCL follows the instructions and guidelines issued by CERT-In office. The Indian Computer Emergency Response Team (CERT-In) is an office within the Ministry of Electronics and Information Technology (MeitY) of the Government of India. It is the nodal agency to deal with cyber security threats like hacking and phishing. Annual Audits is carried out at least once every year through CERT-In empanelled auditors. M/s Xiarch Solutions Private Limited (Empanelled Auditor) with Indian Computer Emergency Response Team (CERT-In) as an Information Security Auditing Organization since 2012.

Bharat Petroleum Corporation Limited (BPCL) has engaged M/s Xiarch Solutions Private Limited to conduct various cyber security assessments including Vulnerability Assessment and Penetration Testing of their IT assets.

Measures for Prevention of Malware Attacks

HSSE portal contains some of confidential data and operations are critical and sensitive. To protect those sensitive operations and confidential data BPCL took following steps.

- Block/restrict connectivity to the malicious domains/IPs shared by CERT-In from time to time.
- Keep up-to-date patches and fixes on the operating system and application software
- Restrict execution of powershell/WSCRIPT in enterprise environment.
- Disable macros in Microsoft Office products.
- Control outbound DNS access.
- Deploy web and email filters on the network. Configure these devices to scan for known bad
- domains, sources, and addresses; block these before receiving and downloading messages. Scan all emails, attachments, and downloads both on the host and at the mail gateway with a reputable antivirus solution.
- Enhance the Microsoft Office security by disabling ActiveX controls, Macros, Enabling protect View, File Protection Settings.
- Apply software Restriction policies appropriately. Disable running executables from unconventional paths.
- Maintain up-to-date antivirus signatures and engines.
- Restrict users' ability (permissions) to install and run unwanted software applications.
- Enforce a strong password policy and implement regular password changes.

Some of the Best Practices Pertaining to Data Privacy and Security Ensured for HSSE Portal are:

1) Data being managed in HSSE Portal comprises of (documents – Licenses / Certificates /RC, Images, Videos such as schematics, plans, blueprints etc.) are encrypted on Cloud Storage. Access is only provided to the relevant stakeholder with the verified IP address.
2) Passwords and sensitive data are encrypted on the database. Data is encrypted so that even unauthorized access to the system will show data which is not readable. Database access is blocked by IP address, and Access Keys.
3) Access to any data point or KPI on the system, is tightly controlled via User Roles and Organization Hierarchy.

Daily extensive Web Application scan for vulnerabilities and malware run by third-party vendor (M/s. Indusface). Ensures that the application is up to date and protected against the latest high-risk Vulnerabilities, Malware and Critical Common Vulnerabilities and Exposures.

Integration of HSSE Portal with other application

HSSE portal is capable to interact with other application through Application Programming Interface (APIs) and already integrated with number of other applications as below:

- System integrates with CDC via Access controlled APIs (Application Programming Interface) to deliver daily KPI (Key Performance Indicators) stats from the HSSE Portal.
- Retail BU Conformity and Efficacy Indices data for Retail Audit Portal are pulled from HSSE Portal via API monthly.
- Advanced Realtime incident management module data streamed to Analytics Dept via API.
- LPG BU Conformity and Efficacy Indices data are pulled from HSSE Portal via API on monthly basis.
- Internal Safety Audit Modules ensure that the appropriate Auditors are assigned automatically according to Audit Plans, considering resource availability.
- Migrated Sustainability Reporting module/questionnaire from old portal to new module as SDR in HSSE Portal.

Planned advancement of HSSE Portal

HSSE portal is expected to throw following outputs to further strengthen our HSSE system:

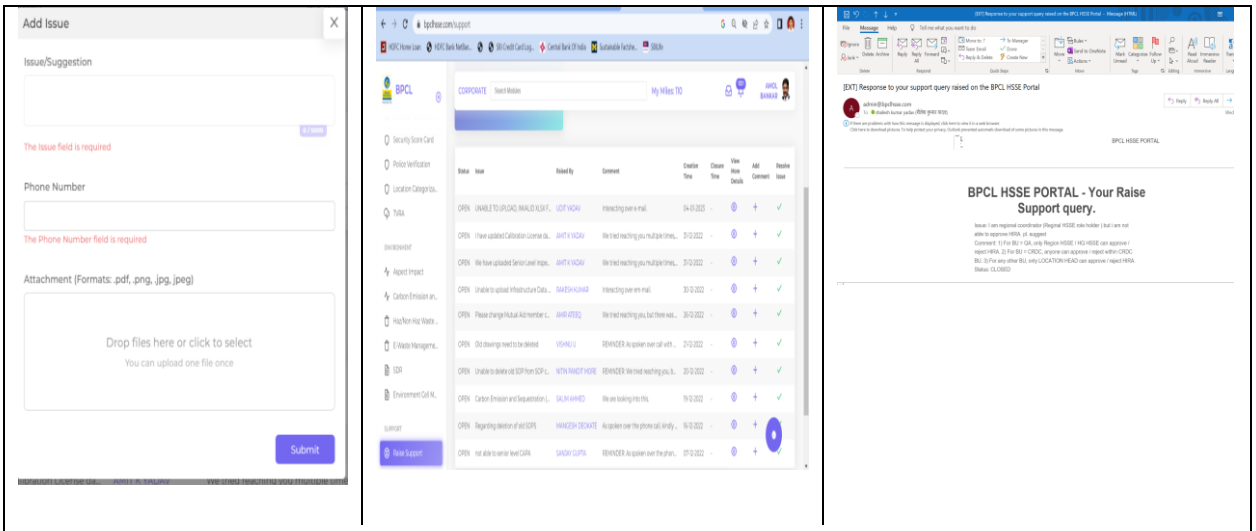
- Utilizing Incident reporting data to identify root causes of incidents. The Machine Learning algorithm will use Causality to identify causes of incidents, injuries, fatalities and property loss, taking into account various factors across the HSSE portal and external BPCL portals. The goal here is to identify pain points and root causes which are not directly visible to stakeholders across BPCL.
- Contributing factors of open audit points towards higher probability of certain incidents.
- Likelihood of a human error induced incidents based on working hours, manpower, competency, training imparted, type of operation and other factors of Location/Plant.
- Readiness to handle emergency based on frequency of L1/L2/L3 drills, closure of actionable (CAPA), inventory of equipment and trained live fire-fighting manpower.

- Build Neural networks to identify probabilities of future incidents occurring based on past historical data.
- Utilize Machine Learning to identify non-compliance of High-risk Audit points.
- Build similarity vectors for all HSSE officers to recommend training based on user's Job Role, Level, Business Unit and Location.
- Use of blockchain technology for tracking of audit trail and incident reporting.

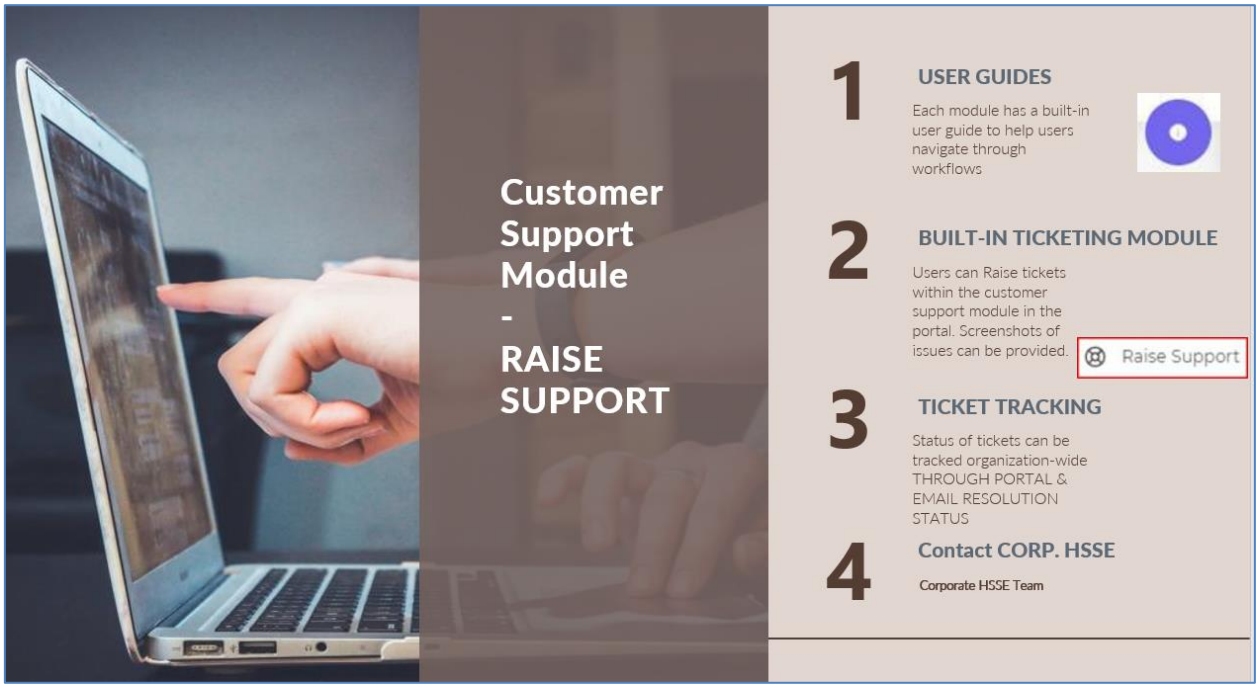
Feedback & Resolution Mechanism

Mechanism to receive feedback and complaints are captured through Raise Support module. Timely and satisfactory responses provided.

Participative approach was adopted for engaging all employees at the stage of development and periodic modifications of HSSE Portal. The current version of HSSE Portal is V001 with 159 number of modifications since inception of the HSSE Portal with due consultations and feedback received from all stakeholders.



Feedback & Resolution – through Raise Support Module



Conclusion:

Creating a Safety Data Repository is a herculean task, which BPCL has accomplished. Now, with the applied advanced analytics and predictive models BPCL could able to identify risk factors, evaluate effectiveness of safety programs/processes, Predict which employees / contract workmen / areas are most at risk for accident or injury.

Mission to advance HSSE Governance is in pipeline to drive through HSSE data analytic maturity. Analyzing the data through portal is not a one-time analysis which will end today but HSSE portal is an end-to-end application to all BPCIan's through which large HSSE data is managed and predicting hazards. Guiding management to take decisions, implement strategy to plug the HSSE issues, which ultimately is leading to safer daily operations and a sustainable organizational growth.

Awards and Accolades

BPCL has received number of national and international awards & accolades for its HSSE and Sustainability performance. Some of the awards are listed below:

- National Health Safety Security and Environment (HSSE) Award 2022- Oil & Gas Sector from Fire & Safety Forum and United Nations Global Compact Network India.
- Water Sustainability Award 2021-22 from TERI, TWA and UNDP.

- National Award for Environmental Best Practices received by Corporate HSSE and CRDC from CII.
- "Sustainably Growing Corporate of the Year" from Federation of Indian Petroleum Industries (FIPI).
- ET- Ascent National Excellence Award for Environmental Sustainability (Green Initiative)
- Golden Peacock Award 2022 on Environment Management and Climate from Institute of Directors.
- Global Platinum Award 2022 on Sustainability from Energy and Environment Foundation (EEF).

BPCL has also benchmarked its sustainability initiatives on global platforms and the results of some of benchmarks are as below:

- **DJSI Platform** - We were ranked 8th best out of top 30 global Oil and Gas Sector companies. Our score is the highest amongst Indian Oil and Gas companies from last three consecutive years.
- **CDP Platform** - We have maintained our rating at Management Level and stood best in Indian Oil & gas sector.

National Health Safety Security and Environment (HSSE) Award 2022

Water Sustainability Award 2021 from TERI, TWA and UNDP.

National Award for Environmental Best Practices received by Corporate HSSE and CRDC from CII.

Sustainably Growing Corporate of the Year-2021" from Federation of Indian Petroleum Industries (FIPI).

Global Platinum Award 2022 on Sustainability from The Energy and Environment Foundation.

Golden Peacock Award 2022 on Environment Management and Climate from Institute of Directors

ET- Ascent National Excellence Award 2022 for Environmental Sustainability (Green Initiative)

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सचेत - Integrated Alert System, National Disaster Management Authority

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1. Objective of the Project: (Please provide the brief summary of the project being nominated for the National Award for e-Governance along with salient features highlighting the work undertaken in e-Governance (in 500 words approx.)

Integrated Alert System known as समेकित चेतावनी तंत्र (सचेत) is state-of-the-art geo-intelligent platform that enables disaster management authorities to establish a robust mechanism for targeted All-hazard, All-media public alerting to citizens in near real time and automated manner in Indian vernacular languages. The system is based on Common Alerting Protocol (CAP), an ITU-T (International Telecommunications Union - Telecommunications Sector) recommendation 1303.X, which is a de facto standard for the exchange of emergency alert information over all kinds of networks. The integrated alert system involves multi-stakeholders to bridge communication gaps; employs multi-technology including telecom, broadcasting, mobile, internet, and satellite for enabling effective communication; targets multi-hazards, and supports multilingualism by disseminating alerts and advisories in Indian vernacular languages. The main objective of the project is to leverage ICTs (Information and Communications Technologies) to improve the efficiency of disaster risk management activities, streamline and standardize the workflow for dissemination of disaster-related information in the country, thereby reducing the time to access the relevant information by the public and acting as a bridge between multiple concerned disaster management authorities and departments. It aims to provide entrusted, intelligible, understandable, people-focused, and relevant information to the end-users before, during, or after any disaster or emergency situations, and assist in decision-making and connecting communities with the government. This endeavor will help the government reach its goals of sustainability, reducing disaster risk and losses in lives, livelihoods, and health as outlined in the UN's Sendai Framework guidelines for disaster risk reduction. This initiative will help in making India disaster-resilient by implementing a national level e-Disaster management framework in order to realize the honorable Prime Minister's vision for disaster risk reduction, which is enriched in the PM's 10-point agenda.

Brief Details of the Project:

Centre for Development of Telematics (C-DOT), Telecom Technology Centre of Govt. of India, has implemented PAN India Integrated Alert System known as सचेत (समेकित चेतावनी तंत्र) for National Disaster Management Authority (NDMA), a state-of-the-art solution to disseminate location-based emergency alerts to vulnerable population over multiple medias (SMS, Cell Broadcast, Radio, Television, social media, Coastal Sirens, Mobile App, RSS Feed etc.) in Indian vernacular languages. This indigenously designed and developed national level alerting system supports the country's vision of self-reliant India "Atmanirbhar Bharat". The Sendai Framework for Disaster Risk Reduction, Paris Climate Change Agreements, and 2030 Agenda for Sustainable Development all emphasise the importance of improving access to and availability of such efficient warning systems. The Integrated Alert System has implemented ITU-T recommendation, Common Alerting Protocol (CAP) which is a de facto standard for emergency alert information exchange. The system provides an integrated platform for all major alert generating agencies across India and for any kind of disaster, like India Meteorological Department (IMD) for Meteorological Warnings, Central Water Commission (CWC) for Flood Warnings, Indian National Centre for Ocean Information Services (INCOIS) for Tsunami and Oceanic Warnings, Defense Geo-Informatics Research Establishment (DGRE) for Avalanche Warnings, and Forest Survey of India (FSI) for Forest Fire Warnings. Disaster Management Authorities of 36 States and UTs are the controlling agencies which disseminate geo-targeted warnings to the end-citizens. The alert reaches to public in such ways that grab attention and help them to take prompt action. This system equips the authorities to disseminate and communicate timely, accurate and actionable warnings and associated information on likelihood and impact of disaster to common public. It aims to strengthen Disaster Risk Mitigation capacity at all levels to enable mainstreaming of risk mitigation measures.

Situation before the Initiative (Bottlenecks, Challenges, constraints etc. with specific details as to what triggered the Organization to conceptualize this project)

As per United Nations office for Disaster Risk Reduction, India is the third country with highest human and economic loss owing to natural disaster over the last 20 years (2000-2019). Climate change, environmental degradation, expanding populations, industrialization, urbanization, growth in high-risk areas, can be related to increased susceptibility to disaster risks. From a disaster

management perspective, over the years India has built advanced mechanism to predict and forecast different severe weather events and disaster situations like tropical cyclones, heat and cold wave, flood, Tsunamis etc. The proliferation of mobile communication infrastructure coupled with existing radio/TV broadcasting infrastructure ensure reachability of information in every corner of the country. Even with all these advancements, there exists some constraints and bottlenecks in the existing mechanism in communicating the warnings to the end-citizens who are actually present in the vulnerable area of impending disaster in a near real time basis, resulting in lack of actionable information and preventing them to take necessary steps to protect from impact of disaster. The existing massive ICT infrastructure is not being utilized to its full potential. Some other challenges include addressing odd hours, warnings in vernacular languages, no standardization mechanism, and dissemination over multiple media to ensure last mile reachability. As there are manual interventions required at different steps to send warnings, precious time is also lost in the process. Thus, the project aims to bridge these gaps by bringing all stakeholders under a single umbrella and establishing a nation-wide framework for effective communication and warning dissemination in the country.

Situation after the Initiative (Specific improvement details in terms of benefits, processes, services, transactions & user feedback, etc vis-a-vis situation before)

Authentic impact-based disaster alerting from government authorities along with specific instructions to follow during impending disaster situation will be provided to the targeted vulnerable population in timely manner. This will enable citizens to act to mitigate disaster impact and save precious life and property. The citizens do not need to subscribe for receiving the emergency alert information. The system will identify the subscribers in the target area and disseminate alerts. The system is also able to target the seasonal population of tourists currently present in the affected area. The alert reaches the people over different media in such ways that grab attention and help them to take prompt action, for example mobile apps produce distinctive tone upon receiving red alerts, alert message comes as On-Screen Display (OSD) in TV. The most important aspect of mitigating disaster is through Community resilience which helps in building sustained ability of a community to use available resources to respond to, withstand, and recover from adverse situations. This solution provides a platform to co-ordinate and connect for community resilience during and after disaster in a location-based manner. The Integrated Alert System enables sending disaster risk information, including risk maps, to decision makers, the general public and communities at risk of exposure to disaster in an appropriate format over multiple media in vernacular languages. It provides unified platform for all agencies to better coordinate disaster management activities. The solution integrates all the alert

generating agencies, all possible dissemination media through which alert information can reach the vulnerable section of the society at the right time with minimum latency. It provides standardized mechanism based on Common Alerting Protocol (CAP) for alerting and is also capable of catering existing non-CAP compliant legacy infrastructure to integrate with the system by implementing Interworking Systems (IWS) without having much impact on CAPEX.

Process Flow before GPR

Different agencies earlier generated alerts mainly through newspaper, radio, TV and in a limited way through internet and SMS only to the first responders, the contacts of whom are configured in the system or to those who have subscribed for or installed certain Mobile Application. The warning system mechanism did not have geo-fencing intelligence, due to which, warning messages were delivered to a wider audience for which the information becomes irrelevant thereby, reducing the effectiveness of the alert messages. Over the years India has built advanced forecasting mechanism of disaster events and created robust institutional mechanism through different agencies including NDMA, SDMA, NDRF, SDRF for mitigating the damage and destruction caused by disasters. However, the existing warning mechanism has some limitations in alert dissemination capabilities for the disaster alerts to reach the citizens present in the targeted disaster impact area so that people can take necessary action to protect themselves from impact of disaster. At the same time, the constraints like addressing odd hours, person-driven manual process, non-availability of warnings in vernacular languages, unavailability of dissemination over multiple media, and enabling coordination among different authorities needs to be addressed.

Process Flow After GPR

The system brings all agencies related to disaster management, including alert generating, authorizing, and disseminating agencies to a unified platform to enable better coordination and effective communication. The system accomplishes integration of all major forecasting agencies of India, IMD HQ and 29 centres, CWC, INCOIS, FSI and DGRE; all 36 State Disaster Management Authorities; and Telecom operators, Radio, TV, Coastal Sirens, Mobile App, RSS Feed, GAGAN & NavIC messaging services as Alert Dissemination Medias to ensure coordinated and automated delivery of alerts to the last mile. The alerts generated by forecasting agencies are sent to alert authorizing agencies like SDMAs. Based on warning criticality, severity, lead time of the disaster, and socio-demography of the target area, best communication channels are selected for public dissemination by the authorizing agencies like, for reaching out to the fishermen in the high sea or

where terrestrial communication is not available or is disrupted, satellite based communication shall be used.

Information / Data Flow Before GPR

For any disaster situations different forecasting agencies like IMD, CWC etc. publish bulletins which can be consumed or interpreted by authorities and sophisticated users. The information is generally communicated through manual channels in a limited manner via media like Newspaper, Television etc. by Email, Fax, Mobile calls to the respective authorities. Subscription based Information through internet and SMS only to the pre-configured contacts of first responders are also made available. The general public present in the vulnerable area are not receiving timely warning for impending disaster though they are the one who need the information most. Also, provision for automated targeted warning in multiple languages is not widely available.

Information / Data Flow after GPR

The disaster information from alert forecasting or generating agencies is fed into the platform that is received by the disaster management authorities toi act upon. The information is then passed onto the public through developed interfaces for each technology medium in an automated manner in near real time. Also, provision for high priority group SMS notifications to first responders and disaster managers is provided so that timely action can be taken.

Specifics on removal of non-value add activities (include number of activities as well) during GPR

- Manually submitting requests to Telecom Service Providers for disseminating SMS over email/phone.
- Manual approval blocks for disseminating alerts to the public.
- Manual provisioning of Priority Call Routing (PCR) for disaster managers and first responders by National Disaster Management Authority (NDMA) and 36 State Disaster Management Authorities (SDMA).

Specifics on new value add activities (include number of activities as well) during GPR

- Diffusion of geo-targeted alerts among vulnerable public.
- Automated dissemination of alert avoiding manual intervention.
- Provision for message dissemination in vernacular languages.

- Use of multiple technologies including telecom, mobile, internet, satellite, and broadcasting for last mile reachability.
- Integration of all stakeholders under a single umbrella.
- Providing impact area analysis to assist disaster managers in decision making.
- Automated dissemination feedback with analysis to authorities for analysis purpose and monitoring Quality of Service.

Specific on change in rules, regulations, and policies

Comprehensive Standard Operating Procedure (SOP) has been framed for operationalization of Integrated Alert System with all stakeholders namely Forecasting Agencies, all 36 SDMAs, and dissemination agencies like TSPs, Radio, TV etc. Department of Telecommunications (DoT) has instructed Telecom Service Providers (TSPs) to implement automatic geo-targeted SMS dissemination mechanism through Integrated Alert System, centralized Priority Call Routing (PCR) and also issued instruction to enable Cell Broadcast in TSP's network for disaster early warning dissemination. Telecom Regulatory Authority of India (TRAI) has published a consultation paper on "Tariff issues related to SMS and Cell Broadcast alerts disseminated through Common Alerting Protocol (CAP) platform during disasters/non-disasters." and in the process of issuing recommendation in the subject matter. DoT has also issued Office Memorandum (OM) to Mobile Handset Manufactures through Ministry of Electronics and Information Technology (Meity) to resolve handset compatibility issues for receiving location-based disaster alerts through Cell Broadcasting (CB). Regarding necessary policies and directions for alert broadcast over Radio and TV, the matter is taken up with the Ministry of Information and Broadcasting.

Strategy/Methodology Adopted:

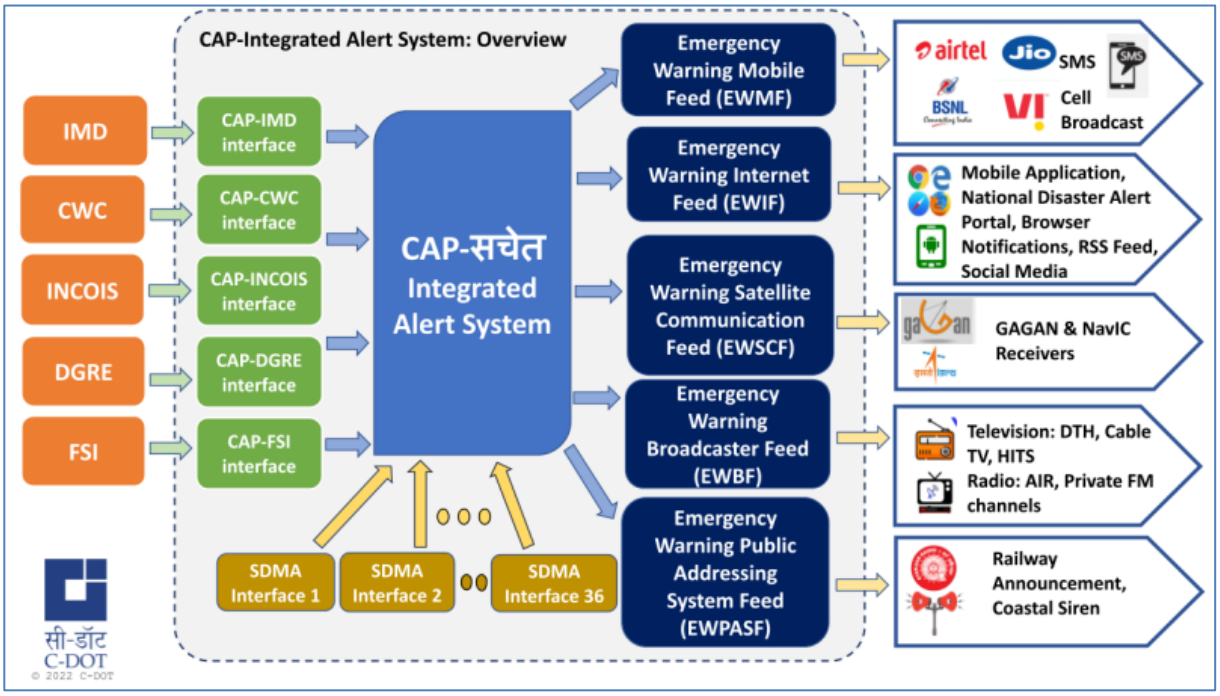
Details of Baseline Study Done

Over the past decade more than 1.5 billion people have been affected by disasters that have cost at least US$ 1.3 trillion and the threat of disasters is increasing due to climate change and other anthropogenic factors. This poses a critical threat in achieving the Sustainable Development Goals (SDGs) set by the United Nations (UN). India has suffered nearly 80 billion USD in economic losses in 20 years. Internationally developed nations are adopting Common Alerting Protocol (CAP) standard for building early warning systems. United States started implementing CAP based disaster early warning systems followed by Canada, Australia and a few European countries like Germany,

Netherlands and over the years successfully implemented the same. Based on study of existing alerting mechanisms in the country and best practices across nations, in India, within a short span of time, the nationwide implementation of CAP compliant Integrated Alert System is being achieved for automated, multi hazard, multi-media based early warning dissemination in a coordinated way. The entire system is designed tailor-made for serving requirements of the country as per Indian scenario with provision for integrating legacy infrastructure without having much cost implications.

Problems Identified

It takes citizen effort to gather important information at the time of disasters. No mechanism existed before Integrated Alert System for automated diffusion of geo-targeted disaster alerts and specific instructions to the vulnerable population in their vernacular languages from authenticated government authorities in pan India scale. Also, the potential of massive ICT infrastructure should be used for providing effective communication through multiple channels for ensuring last mile reachability.



Roll Out/Implementation Model

The system uses multi-modal approach for effective communication and public alerting which is based on following principles: Multi-Hazard, Multi-Stakeholder, Multi-Phased, Multi-Technology, and Multi-Lingual. The multi-modal system provides provision for alerting of all hazards in vernacular languages; enables multi-stakeholder approach to ensure better coordination among authorities; make use of different ICTs and networks, including telecom, mobile, satellite,

broadcasting, and internet, that contribute to enhance capacity and reduce vulnerability of people; and can be used in all stages of disaster management: mitigation, preparedness, response and relief, recovery for sending emergency information. The system was initially deployed in Tamil Nadu as pilot, and subsequently implemented at PAN India. The system currently incorporates 36 State/UTs, IMD HQ and its 29 regional centres, CWC, INCOIS, DGRE, and FSI, along with all telecom service providers, ISRO and AAI for GAGAN and NavIC satellite communication, TV distribution platform operators, Radio broadcasters, Indian railways, coastal siren in states, and internet based technologies. Service of platform has been used in holy Shri Amarnath ji Yatra; cyclones like Asani, Nisarga, Amphan, Tauktae, Gulab, and Yaas; Assam, Bihar, and Tamil Nadu Floods; and for events like Lightning, etc.

Capacity Building and Awareness & Communication Approach

The users of CAP Integrated alert system are provided with regular trainings to understand the features and functionalities of the platform. Training on Security awareness for all the users of the platform is provided to prevent any false alert generation and also to prevent access of the portal by any unauthorized person. Awareness among stakeholders is created with Periodic mock drills and on-site training. Also, 24x7 dedicated support is provided. Multiple communication channels are used for disseminating information to public. Hosts of communication media i.e., SMS & CB through TSPs, Radio, TV, Coastal Sirens, Mobile App, RSS Feed, browser notifications, GAGAN & NavIC messaging services has been integrated with the system for dissemination targeted disaster alerts.

Automated, Assisted and/or Physical Assessment or Feedback Mechanism

The project provides automated feedback to the authorities regarding the dissemination status and statistics of alerts that reach the public through different media. The assessment is carried out based on received reports and provided to the officials in the form of graphical representations and reports in different formats for their analysis purpose and monitoring the Quality of Service (QoS) parameters. For e.g., for SMS delivery, automated statistics regarding the total number of subscribers to which SMS delivered is taken up from Telecom Service Providers in an automated manner. Also, periodic mock-drills are organised by dissemination of SMS in smaller area, and live feedback is collected on the spot.

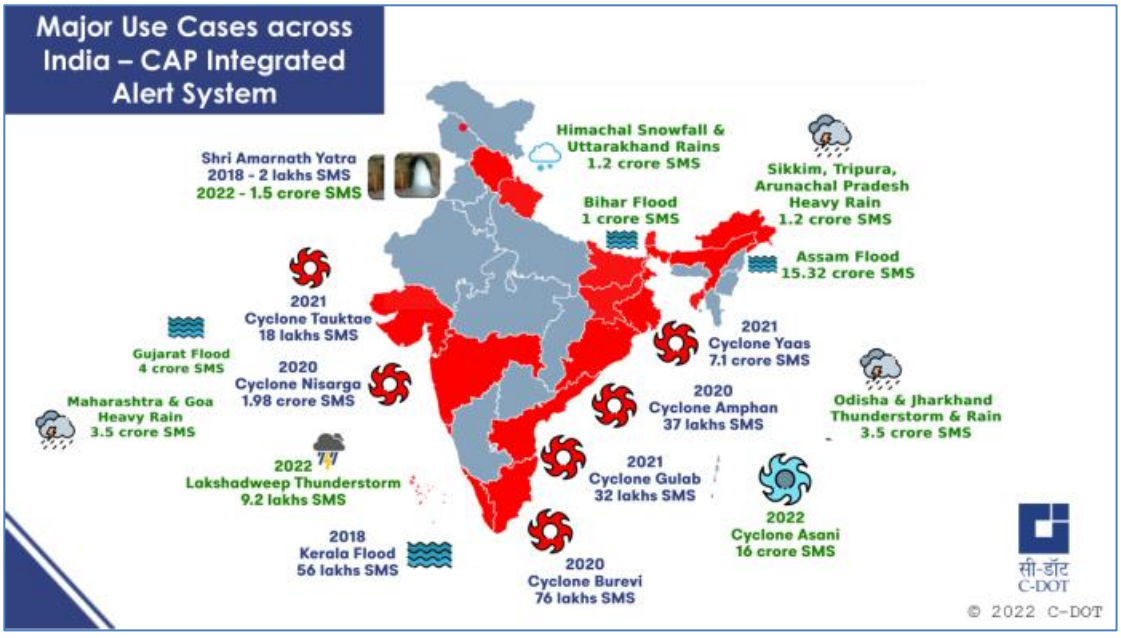
Technology Platform Used:

Description along with list of Open Source and Proprietary Technologies

The platform makes use of web and mobile app technologies. It contains geo-intelligent platform, advanced modules of CAP protocol (ITU-T X.1303 standard) stack including CAP Generator, Validator, Aggregator and Dispatcher, Inter-working systems, multi-lingual engine, different API interfaces for multiple technologies, Ticket Management, Customer Relationship Management System and advanced monitoring tools. The platform is developed using open source web development tools, Database Management System on top of which proprietary modules have been developed by C-DOT.

Interoperability and Integration Aspects

The platform is based on microservice architecture with a collection of many loosely coupled services. Each of these services is responsible for discrete tasks and communicates with other services through simple APIs to solve a larger complex business problem. This platform accomplishes integration of all major forecasting agencies of India, IMD HQ and 29 centres, CWC, INCOIS, FSI and DGRE; all 36 State Disaster Management Authorities; and Telecom operators, Radio broadcasters, Television operators, Coastal Sirens, Mobile App, RSS Feed, GAGAN & NavIC messaging services as Alert Dissemination Medias to ensure coordinated and automated delivery of alerts in a cohesive manner.



Consent Management, Data Privacy and Cyber Security Aspects

Robust measures have been taken to ensure high availability and security of the system like multi-factor authentication, end-to-end encryption, data integrity, Identification and Authorization

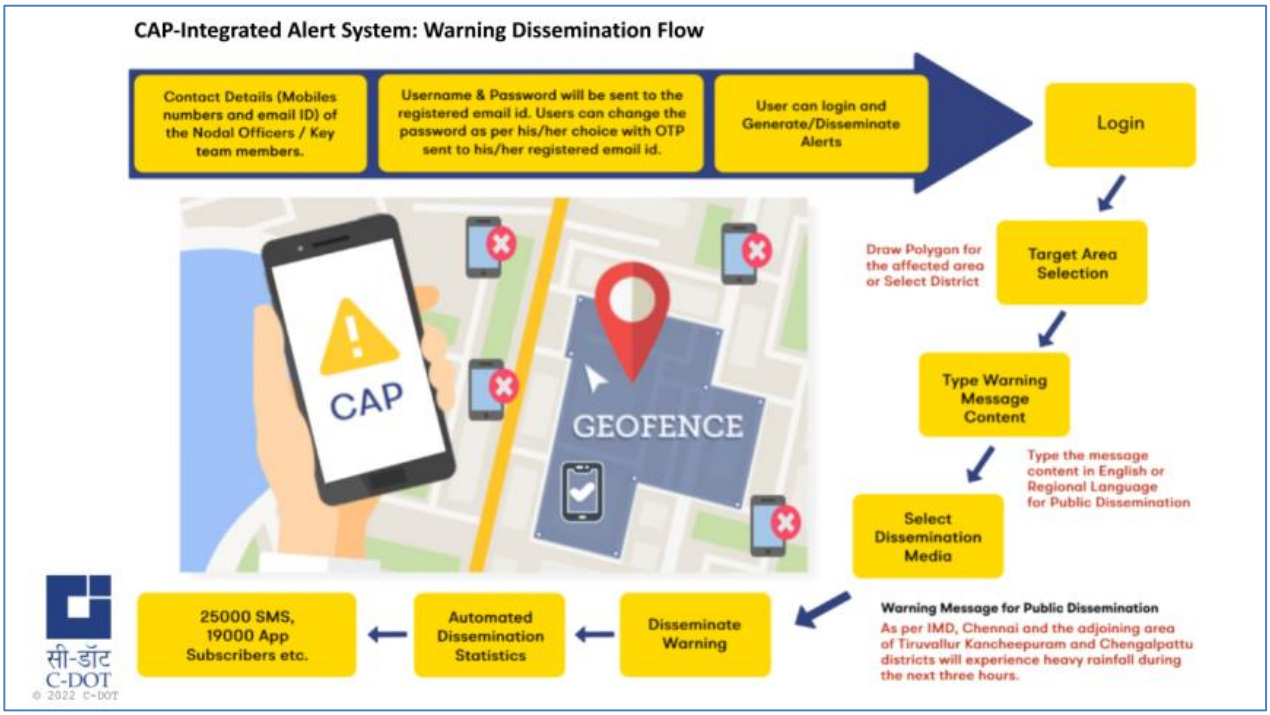
Management and Access through only Trusted devices etc. Application is hosted on secured cloud infrastructure and is critical in nature; it has different kinds of interfaces from Alert Generating Agencies, Alert Dissemination Agencies, and Alert Authorizing Agencies. Security audit is performed before hosting to ensure best practices of application guidelines. Security audit requires security audit clearance certificate from CERT-IN empaneled agency which includes reviewing application, vulnerability scans, and penetration testing audits, website security certificates and operating system access controls, and analyzing physical access to the systems.

Any Issue with the Technology Used

Different disaster situations require different approaches for dissemination of early warnings. For example, Tsunami, lightening provides only 30 minutes of time window between detection and occurrence whereas cyclone can be predicted before few days. Target area and population also differs based on disaster situations. Different technologies have their own advantages and disadvantages. For example though SMS dissemination is a robust and effective early warning dissemination media but it inherits some delay for very large number of subscribers. Whereas Cell Broadcast is an extremely fast mechanism for targeted warning delivery there exists some compatibility issues for a certain percentage of existing mobile handsets. To overcome such issues and become a truly effective solution Integrated Alert System make use of different technologies for targeting the public including SMS, Cell Broadcast, Satellite communication, Internet based notifications. In case where terrestrial communication is not available or is disrupted, satellite communication shall be used instead of SMS e.g., in case of sending warning to fisherman in deep sea. Thus, the platform overcomes such limitations by providing multiple communication channels to ensure last mile reachability.

(v) Parameters used in Service level Agreements (SLAs) and brief details (Give details about presence of SLA, whether documented, whether referred etc. #)

An SLA of 99.5% is maintained for this disaster critical application. The overall SLA of the total system is governed by the floor value of the SLAs maintained by Cloud Service Provider, Dissemination Agencies and CAP Integrated Alert System. Round the clock operation support has been ensured through Network Operation Centre (NOC).The SLA has been documented in the Memorandum of understanding (MoU). The system also operates a trouble ticketing system, recording all the incidents reported by users/ support team. The support team provides solutions to users with a ticket number and regular updates at agreed intervals of the progress in incident handling and rectification process wherever applicable.


CAP-Integrated Alert System: Warning Dissemination Flow
Contact Details (Mobiles numbers and email ID) of the Nodal Officers / Key team members.
Username & Password will be sent to the registered email id. Users can change the password as per his/her choice with OTP sent to his/her registered email id.
User can login and Generate/Disseminate Alerts
Login
Draw Polygon for the affected area or Select District
Target Area Selection
Type Warning Message Content
Type the message content in English or Regional Language for Public Dissemination
Select Dissemination Media
Warning Message for Public Dissemination
As per IMD, Chennai and the adjoining area of Tiruvallur Kancheepuram and Chengalpattu districts will experience heavy rainfall during the next three hours.
Disseminate Warning
Automated Dissemination Statistics
25000 SMS, 19000 App Subscribers etc.
CAP
GEOFENCE
सी-डॉट
C-DOT
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e-Panchayat Mission Mode Project (eGram Swaraj & Audit Online), Ministry of Panchayati Raj

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Objective of the Project:

Ministry of Panchayati Raj has been leveraging digital technology towards its vision to enhance the end-to-end experience of public services provided, by both Government and non-government, online. In addition to this, MoPR also endeavors to enhance transparency and accountability by providing a holistic view of the developmental activities carried out by the Panchayats. Therefore, it was imperative to have in place a robust monitoring and evaluation system capturing the entire gamut of Panchayat activity right from the stage of planning to monitor the various stages of work, recording the expenditure incurred for the works, audit of Panchayat accounts to provide complete details of the asset created. MoPR's e-Panchayat Mission Mode Project (MMP), under the ambit of Digital India, is aimed at automating the internal workflow processes of all the 2.78 lakh Rural Local Bodies including Traditional Local Bodies across the country. The main objectives of e-Panchayat MMP are to use Information and Communication Technology for: • Automation of internal workflow processes of Panchayats and Traditional Local Bodies. • Improving service delivery to rural citizens. • Enhancing transparency, accountability, and credibility of Panchayats & Traditional Local Bodies. • Improving governance of local self-government. Under the e-Panchayat MMP, a suite of Core Common Applications called the Panchayat Enterprise Suite (PES) Applications (11 Applications) was developed addressing the various aspects of Panchayat functioning viz. planning, accounting, monitoring, asset management etc. These applications were developed independently of each other and as it was observed that the applications were functioning in Silos. In order to address this, MoPR conceptualized and developed eGramSwaraj – a Work Based Accounting Application for Panchayati Raj, amalgamating the PES Applications with inter-linkages to the various modules / activities of Panchayat functioning. The eGramSwaraj application provides for a Work Based Accounting i.e. End to end tracking system capturing entire gamut of activities right from the Panchayat/Local Body planning to monitoring to accounting to online payments, which tantamount to e-Financial Management System (e-FMS). Strengthening the e-FMS system are three significant attributes viz. (i) Spatial Planning for decision support system, (ii) Mobile App for Geo-tagging assets and (iii) Public Financial Management System (PFMS) for the purpose of real time payments. The main crux of e-

FMS is the integration between the accounting module of eGS and PFMS, called eGS-PFMS Interface (eGSPI) to provide Panchayats with one of its kind of a platform for making online payments. Moreover, eGS has also been integrated with the State treasuries and PFMS so as to automatically obtain the information of the funds received by the Local Bodies Further enhancing the accountability at grassroots level MoPR has developed an application, called Audit Online, for the purpose of carrying out online audit of Panchayat accounts. This was in line with the critical institutional reform laid down by the XV Finance Commission in its operational guidelines dated 14th July 2021. Moreover, AuditOnline is linked with the accounting module of eGS to allow the Auditors to have access to all the financial information of the Panchayats viz. receipt & payment vouchers, annual receipt and payment statements, monthly reconciliation statements etc.

Brief Details of the Project:

Under the Central Finance Commission, huge amount of grants is being devolved to the Panchayati Raj Institutions (PRIs) for developmental work. Under the current Finance Commission (FC), i.e., XV FC, grants to the tune of Rs. 2.36 lakh crores have been earmarked to the Panchayats including Traditional Local Bodies. It is therefore imperative to keep track of the fund flows and monitor the public expenditure incurred under the XV FC. eGramSwaraj, developed by MoPR encompasses various modules pertaining to Panchayat functioning such as planning, accounting, monitoring, asset management etc. The accounting module provides the Panchayats with a digitized account books wherein all the information related to receipts and payments are captured. eGramSwaraj is primarily based on the concept of Work Based Accounting i.e., for every planned activity of a corresponding Panchayat Development Plan; the physical progress as well as the financial progress can be tracked thereby ensuring a sound financial management system as well as improving the credibility of Panchayat and its functioning. Consequently, for every activity / work carried out, the payments are processed through a two-level authentication via eGSPI i.e., DSC based payments that are initiated by the Maker (in this case Panchayat Secretary / equivalent) and approved by the Checker (in this case Panchayat Sarpanch / equivalent). MoPR also developed AuditOnline, an application for carrying out online audits of Panchayat accounts including that of Traditional Local Bodies. It is imperative to note that the procedures involved in the AuditOnline application are actually the audit processes that are followed in the States based on their corresponding Audit rules and Acts – which forms the most unique feature of this application. AuditOnline is further inter-linked with the accounting module of

eGS whereby which the auditor can have access to all the relevant data / information pertaining to the expenditures carried out by the Panchayats.

Situation before the Initiative

Under the e-Panchayat MMP, Panchayat Enterprise Suite (PES) Applications was developed addressing the various aspects of Panchayat functioning viz. planning, accounting, monitoring, asset management etc. It was observed that these applications were functioning independent of each other and as such there was no interlinking between the applications. This meant that the similar information had to be re-entered in each of the applications wherein it was being captured; this led to duplication of data entry and also there was no linking of Panchayat profiles during creation of Panchayat Development Plan. Also, after the Panchayat Plans were developed in the Planning portal (PlanPlus); it required to manually initiate data porting of the plans to the plan monitoring portal (ActionSoft). Summarizing there was no Work Based Accounting i.e., Tracking every expenditure incurred for each of the activities proposed under Panchayat Development Plans. Also, the expenditures incurred by the Panchayats were done through cash or cheques or through Print Payment Advice. The data entry pertaining to these expenditures was then manually done in the accounting portal (PRIASoft); and whatever entries were being done was normally taken at the face value, even when there were gaps. This led to skewed accounts. Under the Central Finance Commission, huge amount of funds is being provided to the Local Bodies; it was therefore imperative to have in place a robust mechanism to enable to track the fund flow and monitor the public expenditure. This also called for a real time payment and tracking mechanism. Moreover, the account books of the Panchayats / Traditional Local bodies were not being timely audited and as such there is a huge gap between the current year and the year for which audits are being done. The availability of updated account books, cashbooks, receipt, and payment registers also posed certain hindrance towards governance.

Situation after the Initiative

With eGramSwaraj, the concept of Work Based Accounting was introduced that allowed for an end-to-end tracking system capturing the entire gamut of activity right from planning to monitoring to accounting to online payments. This has enhanced transparency by a great extent. The information pertaining to a particular work can be accessed by the respective Panchayat citizen through various reports that are available in the public domain. With the Online Payment Interface introduced on account of eGramSwaraj – PFMS Interface (eGSPI); payments to the vendors / service providers are

real time and the error on account of erroneous entries have also reduced drastically as a result of this interface as the system does not allow to proceed with the payments, unless and until there is a sufficient balance in the corresponding accounts of Panchayats. With online audit of Panchayat accounts being carried out through AuditOnline, it has ensured further improvement in efficiency, transparency, and accountability in Audit Process. Since the application is also linked to the accounting module of eGramSwaraj, it has become easier for the auditors to access the financial books of the Panchayats. Moreover, due to the audit process being undertaken online, it has also ensured timely completion of audits as well as timely submission, approval, and issue of Audit Reports. With these interventions, complete public disclosure of all the developmental activities of the Panchayats along with the corresponding progress and payments done to the vendors/service providers has been ensured.

Extent of Process re-engineered

Process Flow before GPR

Under the e-Panchayat Mission Mode Project; the erstwhile suite of applications individually catered to the aspects of Panchayat functioning viz. planning, budgeting, monitoring, accounting, asset management including Panchayat profile management etc. Moreover, the user had to separately login into each of the application and it was also observed that there was duplicate information being entered manually into different applications. Thus, the need was felt to integrate all these applications into a single unified application based on the principle of Work Based Accounting. Moreover, expenditure incurred by the Panchayats was done manually by creating Payment vouchers; also, this was not done on a real time basis. As such the accounts of Panchayats were never up-to-date and were erroneous. It was therefore imperative to have in place a system to track the fund flow and monitor the public expenditure on a real time basis. The audit of Panchayats accounts, earlier, were done manually by the Auditors which was time consuming and had to depend on submission of the relevant documents by the Panchayats.

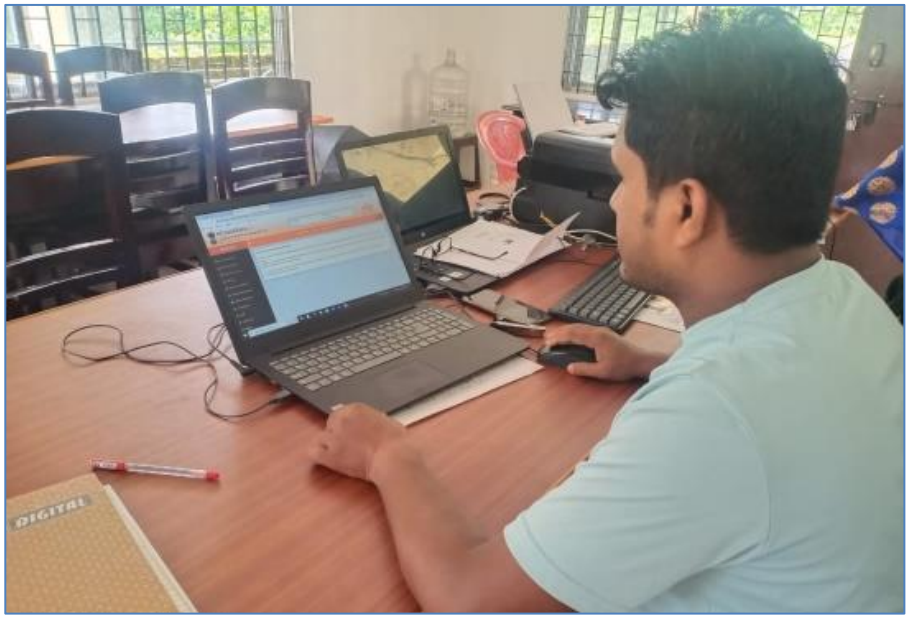
Process Flow after GPR

In order to ensure the requisites mentioned in 4.1; re-engineering process was carried out converting all these applications into a Single Sign-On application and, more importantly, all the various modules were interlinked with each other so as to ensure uniformity of information and no duplication across the different modules of eGramSwaraj. Moreover, re-engineering was also carried

out to implement the Online Payment Interface linking it with the accounting module of eGramSwaraj to enable online payments to the vendors / service providers. The system was also re-engineered to ensure mandatory geo-tagging of an asset created, in order to make the payment to the service provider / vendor. In order to ensure seamless process, the accounting module was also interlinked with the AuditOnline application so as to provide the auditors with all the relevant documents for auditing. The Auditor can, now, access various accounting reports at his own convenience.

Information / Data Flow before GPR

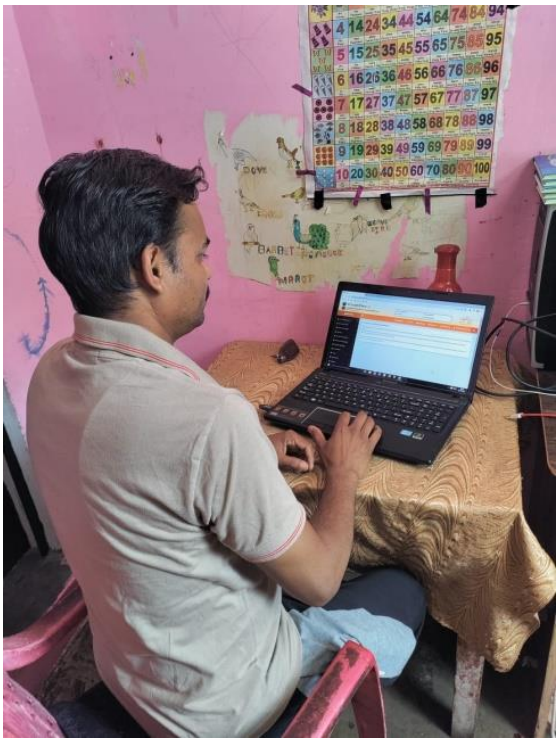
• Certain information viz. plans had to be manually pushed from Planning stage to reporting stage between two different applications. • There was no linkage between the plans, activities and the corresponding expenditure incurred. • Post-facto entries were carried out in the accounting module i.e., transactions were done and then records were entered in the system later. This created difference between the Panchayat accounts and the system-generated cash book. • There was no linkage between the accounting module and the AuditOnline application.



Information / Data Flow after GPR

• Post re-engineering, all the various modules have been interlinked with each other, thereby maintaining uniformity of information / data across the modules. • Single-Sign On Application; principle of Work Based Accounting being followed. • Integration of all the applications under a single umbrella – eGramSwaraj. • Real time payments through an Online Payment Interface, called

eGramSwaraj – PFMS Interface (eGSPI), for expenditures incurred under the Central Finance Commission grants. This interface can also be extended to other Central and State schemes (the State of UP has also onboarded their State schemes on eGSPI). • Auditors are able to access the accounting documents of Panchayats to carry out online audit.



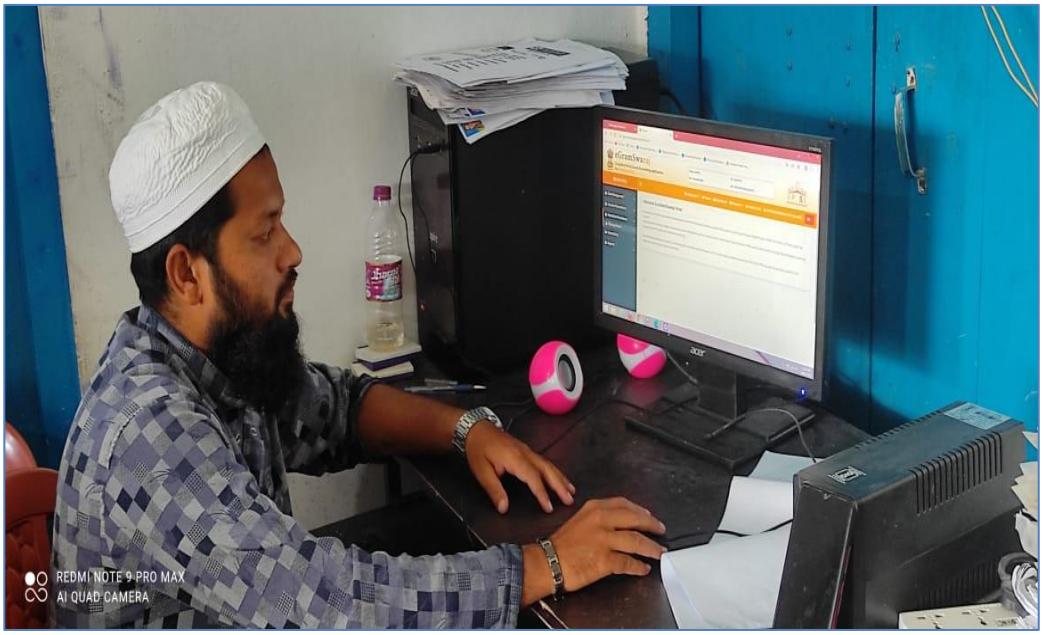
Specifics on removal of non-value add activities during GPR

• Certain redundant data-input fields were removed while redesigning the system to improve the User Interface. • Duplicate data fields were removed from different modules. • Opening Balance form has been removed from Planning as the same is being captured in accounting module. • Certain forms that were not being used at all were done away with which did not provide any value to the system

Specifics on new value add activities during GPR

• Capping of funds under Tied and Untied components under XVFC Grants Scheme as per guidelines. • Provision for inter-sector utilization of funds when the saturation is met for the desired sector. • Own Source Revenue is accounted while making Panchayat Development Plans. • Provision of users for newly appointed officials at Block and District level (in place of actual checker's or elected representatives) • Provision for facilitating the delegation of activities from Higher Tier to Lower tiers and vice-versa and thereby the transfer of funds for implementation purpose. • Reverse treasury integration with accounting module of eGramSwaraj to capture the actual receipt of funds

received by Panchayats. • Integration with Government eMarketplace (GeM) has been completed to give a seamless procurement and accounting experience to Panchayats. Further, this will ensure more transparency by keeping a check on arbitrary award of contracts will also ensure price standardization of goods • An analytical dashboard with holistic view of panchayat profile, planning, reporting, and accounting has been made available on eGramSwaraj. • Action Taken Report (ATR) Module has been developed and incorporated into AuditOnline so as to get further information pertaining to audit observations raised by the Auditors.



Specific on change in rules, regulations, and policies

• Mandatory filling up of Panchayat Profile after the first login, post which other modules viz. planning, reporting etc shall be activated. • Scheduling of Gram Sabhas and submission of facilitator feedback in the is mandatory before proceeding to planning module in eGramSwaraj. • Two-way authentication while registering of DSCs and vendor details. • Approval of Maker & Checker profiles, DSCs by higher tier Admin-user as per the process flow. • Inclusion of CSS & Own Source data in planning is mandatory. • Ensuring synchronization between details of Panchayat registered agency and Bank account details in eGS, PFMS and Treasury interfaces for allowing auto receipt of grants under XV Finance Commission. • LGD synchronization in eGS and PFMS portal to ensure uniformity in “No. of Panchayats” in both the portals. • Mandatory geo-tagging of assets before making payments to the vendors (applicable in case of Online schemes). • Mandatory closure of Yearbook of previous year before initiating audit of the corresponding Panchayat.

Strategy/Methodology Adopted :(i) Details of baseline study done

Two feedback-workshops were held with all the States / UTs seeking their viewpoints and opinions regarding development of a Single-Sign On application. During these workshops, their opinion on redundant forms / forms to be removed were also solicited. Based on the feedback received, changes were accordingly carried out. Since, eGramSwaraj amalgamated the erstwhile PES Applications; impact analysis was also carried out to ascertain that there would not be any loss of information / data across the different modules. Impact analysis was also carried out between accounting module and PFMS to ensure that the fund-flow / payments does not get hampered. Latest and standard set of "Open Source" technologies utilized for the development of the project. In order to ensure that AuditOnline catered to audit of Panchayats across States in accordance with their respective Audit Rules / Acts; information pertaining to the fact-sheets, actual audit process-flow, audit-team details were sought from the State DLFAs which were incorporated / configured in the application. This ensured that there was no deviation from the existing State Audit Rules and Acts. Further, the categories and sub-categories of Audit observations were also streamlined in discussion with the States so as to avoid duplicity of similar observations. In this regard, discussion with State DLFAs and O/o CAG was done.

Problems Identified

• Migration of old live data of different individual applications and merging them to a single database of eGramSwaraj. • Rigorous testing of migrated data was required to ensure correctness, and no loss of data. • Handling all the tiers of RLBs and customizing application to meet requirements of each State. • Upgrading of previous PES applications to newly available technologies and then merging them to develop a new unified application i.e., eGramSwaraj. • Streamlining the flow of applications and input forms to improve user interface • Removing redundant data fields that were being captured in old applications.

Roll Out/Implementation Model

• State-wise onboarding on eGramSwaraj and subsequently eGramSwaraj – PFMS Interface (eGSPI). • Mandatory mapping of PRIs in PFMS database with Local Government Directory (LGD) Codes. • Registration of PRIs on PFMS portal with valid IFSC code and bank accounts in Nationalized banks. • Enrolling & approving Digital Signature Certificates (DSCs) of Maker (Panchayat Secretary) and Checker (Sarpanch). • Testing of Reverse-integration with State treasuries to ensure success of receipt

of funds / grants. • Deployment and testing of Audit configurations to ensure correct audit procedure is followed. • Testing of Action Taken Report (ATR) module carried out with State DLFAs, before deployment.

Capacity Building and Awareness & Communication Approach

• Several trainings and regional workshops were conducted briefing the States/UTs on eGramSwaraj, eGramSwaraj – PFMS Interface (eGSPI), AuditOnline and handholding sessions for effectively operating the application and to give a know how about new modules introduced. • Conducting regular VCs to resolve the queries and training to the users as well. • Regular and frequent interactions of the eGSPI Steering Committee under the chairmanship of Additional Secretary, MoPR to oversee the implementation of programs and also to address any critical issues.

Automated, Assisted and/or Physical Assessment or Feedback Mechanism

• Both automated and physical assessment is carried out during training programs. • MCQs and mock tests are conducted for each participant. • The records are updated in Training Management portal. • The feedback form is available in Training Management Portal and inputs of participants are considered for improving the entire training process.

Technology Platform used:

(i) Description along with list of Open Source and Proprietary Technologies

1. Tomcat/Spring/Hibernate/jQuery. 2. PostgreSQL RDBS, 3. JAVA

(ii) Interoperability and Integration Aspects (Integrated System, Use of APIs, Micro services etc.)

- eGramSwaraj is integrated with other MIS to provide a holistic information overall. eGramSwaraj is integrated with Public Financial Management System so as to provide an interface for real time payments.
- eGramSwaraj is also integrated with Government eMarketplace(GeM) to give a seamless procurement and accounting experience to Panchayats.
- eGramSwaraj is integrated with various other Ministries' MIS for the purpose of obtaining beneficiary level information; which would help the Panchayats in creating Panchayat development plans.
- AuditOnline is integrated with the accounting module of eGramSwaraj so as to provide the auditors access to the several accounting reports.

- AuditOnline is also integrated with the Kerala State specific Audit application -Audit Information Management System (AIMS).

(iii) Consent Management, Data Privacy and Cyber Security Aspects

Data privacy is maintained. Mobile Numbers are not displayed in public. Aadhar ID is not captured in eGramSwaraj portal. The newly proposed functionality is developed as per Cyber Security /Security Auditing Guidelines.

(v) Parameters used in Service level Agreements (SLAs) and brief details (Give details about presence of SLA, whether documented, whether referred etc. #)

Any issue reported by the user or caused due to the functionality of the application needs to be closed within the days, as per the defined SLA, from the date of the reporting and same has to be communicated with the user. Any new change request is intercepted with the approval of competent authority. The SLA followed along with the types of issues are as under: • High: 1 – 2 days (Action Plan, Fund allocation, FTO rejection, Vendor registration etc.) • Medium: 3 – 4 days (data porting issue, branch mapping, Panchayat profiles, resource envelope etc.) • Low: 4 – 5 days (Missing GPs, dashboard, Vendor approvals etc.)

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PM Street Vendors Atma Nirbhar Nidhi (PM SVANidhi), Ministry of Housing and Urban Affairs

Objective of the Project:

Scheme objectives: a. Opening the doors of formal credit channels to this class of borrowers b. Promoting adoption of digital transaction by Street Vendors to create a transaction history which in turn would help them in accessing credit in the future c. Creation of a Socio-economic safety net for Street Vendors and their family members To achieve these – • Scheme provides collateral free credit facility of upto ₹50,000 to street vendors vending in urban areas to assist in restarting their businesses that were adversely affected by COVID-19 pandemic. • To encourage inclusivity, Scheme covers vendors from surrounding development/ peri-urban/rural areas, vending in the geographical limits of Urban Local Bodies (ULBs). • To enhance adoption of digital transactions, Scheme mandates Lending Institutions to digitally on-board and train vendors on digital payment platforms at the time of disbursement. It also encourages digital transactions by offering a cashback of upto Rs.1,200 per year on conduct of specified number of transactions. • To incentivize street vendors to repay loans on time, an interest subsidy of 7% is provided. • For creation of a socio-economic safety net for vendors and their families, 'SVANidhi se Samriddhi' component was launched from January 4, 2021 to link beneficiaries with 8 select central government welfare schemes. The program provides a first-of its -kind, unique platform for convergence of 5 Ministries (MoF, MoH&FW, MoL&E, MoW&CD and MoCAFPD) at National, State and City level. Nudge to implementation of the Street Vendors Act, 2014: ¬ By making notification of Rules/ Scheme under the SV Act, as an eligibility condition, 12 States/UTs had notified them since roll out of PM SVANidhi. ¬ More than half of 10,000 vending zones have been notified after launch of PM SVANidhi Scheme. ¬ Scheme contributed significantly towards creating a conducive business environment thereby enhancing repayment capacity of vendors. ¬ The life of a street vendor is very challenging. To provide a sense of identity and recognition to PM SVANidhi beneficiaries, a Parichay Board is being provided to all beneficiaries. Salient features highlighting work undertaken in e-Governance: • Beneficiary can apply on PM SVANidhi portal through CSCs and ULBs. The user-friendly end-to-end digital platform works in paperless manner from loan application receiving to loan approval by banks. • The status of the loan processing is updated by SMS to the beneficiaries at every stage. • Only a single visit is required to

avail PM SVANidhi loan. • Simple two-page Application Form for Loan and Letter of Recommendation.

Interactive real-time dashboard provides a panoramic view to State/ULB, Lending Institution performance. Data can be drilled down to State/ULB/loan-wise. • Customizable report generation functionality for stakeholders for effective review and monitoring. • Digital on-boarding & training of street vendors in the vending zones (door-step delivery). • A comprehensive database is being made for street vendors and their family members through rigorous socio-economic profiling, which can be utilized for providing access to several other welfare schemes. • A first of its kind initiative was taken to Partner with Swiggy and Zomato to offer a platform for street food vendors to expand their customer base.

Brief Details of the Project:

A multi-layer process has been developed which interacts with various stakeholders. Udyamimitra portal which offered credit facilities to the MSMEs has been leveraged for end-to-end loan processing. Key technical aspects of the project are as below: • API integration has been done to cater to multi-stakeholder environment for seamless implementation. For example, integration with UIDAI for validation of Aadhaar details, with Credit Bureaus for credit score of beneficiaries, integration with Banks for online loan processing and approval, integration with Digital Payment Aggregators (DPAs) for digital onboarding, with NPCI for identification of eligible beneficiaries for cashback and

with PAiSA Portal for leveraging NACH platform for disbursement of interest subsidy and cashback. • eKYC verified application process: Street vendors can apply online for a loan in their preferred bank. eKYC process addresses the challenge of delay in application and also elimination of duplicate application in the system. eKYC can be completed either via Biometric authentication or mobile phone linked to the Aadhaar Number. • To ease the process of filing of the Credit Guarantee claims by the Lending Institutions, an online process of data exchange with Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) has been developed. • OTP-based authentication during the loan application process and socio-economic profiling • Leveraging PFMS for DBT to beneficiaries • Automatic scheme eligibility based on details fed during the socio-economic survey due to a robust 'Rules Engine' developed. • Use of AI-based tool to enhance the low-resolution beneficiary photo to high-resolution image for printing on Parichay Boards • Use of cloud based storage for storing of authentic images of the beneficiary during Socio-economic profiling.

Situation before the Initiative

• Prior to PM SVANidhi initiative, specific credit instruments were not available for Street Vendors. Few banks/MFI engaged with street vendors to offer loans. Also, Street Vendors, abstained from approaching Banks as the loan process was cumbersome, opaque and time-consuming. • Local money lenders used to offer loans at exorbitant rates, used unfair means for loan recovery, resulting in them getting stuck in a vicious cycle of debt. • The banks have been hesitant in lending to street vendors due to absence of credit history, informal nature of street vending, apprehension about loan

repayment, legal status of street vending in the city, high cost of servicing this class of borrowers etc. • Covid-19 pandemic adversely affected the Street Vendors, who are one of the most vulnerable sections of the urban economy. Majority of street vendors, who are often migrants, had consumed their savings to tide over the pandemic in taking care of the sustenance needs of their families, forcing them to return to native place. Following were some of key challenges: • No access to credit facilities: Given the informal nature of their economic activity, banks are often unwilling to lend to street vendors resulting in them being forced to borrow from informal sector at exorbitant interest rates.

• Poor digital inclusion and financial literacy: Financial literacy and adoption of digital platforms for carrying out financial transaction is very low. • Absence of credit worthiness: Due to limited or nil transactions by street vendors through the formal system, street vendors can't develop a transaction profile required for improving their credit worthiness. • Lack of awareness about other scheme benefits: Most street vendors are not aware of, and do not avail the benefits of several Government schemes. • Dignity and security: Street Vendors were not provided due credit for the essential services that they provide at our doorsteps.

Situation after the Initiative

In view of the above challenges, there was an urgent need to support the street vendors by providing easy access to affordable credit to restart their businesses. Key reforms under the scheme: a) Provision for Street Vendor left out from Street Vendor Survey: A demand-based recognition system was introduced through 'Letter of Recommendation' from the ULBs b) Building of Credit History: Issue of UPI ID/ QR Code free of cost to street vendors, by the lending institutions/DPAs, training on digital transactions, monthly cashback and interest subsidy on timely repayment is helping build a favorable Credit History to ensure sustainable integration with the formal sources of credit. c) Socio-economic upliftment of street vendor families through 'SVANidhi se Samriddhi': Under this initiative, socio-economic profiling of PMSVANidhi beneficiaries and their families is conducted, to link them to various social welfare Schemes. d) SVAD (Swadisht Vyanjan Ki Adhunik Dukaan): A first of its kind initiative was taken to Partner with Swiggy and Zomato to offer a platform for street food vendors to expand their customer base. Menus are digitized and FSSAI registration and training is provided to the vendors e) Issue of Parichay Board: To reduce the undue harassment and provide identify the Parichay Boards have been issued. f) Confidence to lenders: To overcome the apprehensions of the lenders on the loan repayment by the street vendors, structured credit guarantee

cover has been operationalized for the lenders g) Scheme provided required impetus to the implementation of the Street Vendors Act, 2014 h) Recognition of Street Vendors as MSMEs making them eligible for Priority Sector Lending since August 2021. i) Effective business plan: Enhanced loan upto INR 50,000 helps sustain and expand their business effectively.

Extent of Process re-engineered

Process Flow Before GPR

• Prior to PM SVANidhi, there was no specific micro loan for urban poor, only mid-size loans were available from financial institutions, which led to Street Vendors being subjected to higher level of scrutiny. • In case, street vendors applied for loans, they were unaware of the stage of applications and were required to undertake multiple visits to banks to know the status. • Under the Self Employment Programme (SEP) component of NULM the loan application sourcing and processing was complex. Loan applications are mobilized, sponsored and sourced by the ULBs • Prospective beneficiaries are required to submit application of intent to ULBs • A taskforce is constituted at ULB level for scrutinizing the loan applications • Prospective beneficiaries shortlisted by the ULB taskforce are called at ULB office for interview • The applications recommended by the ULB taskforce are forwarded to the Lending Institutions (LIs) for further processing • Applications received directly by the LIs are also referred to the ULBs • LIs send a periodic report to the ULBs on the status of applications received • Loan Application Form (LAF) developed at State level in consultation with SLBC • No centralized portal for showcasing the status of the application • Database of street vendors maintained at State/UT level

Process Flow After GPR

• On the PM SVANidhi Portal, the street vendor in possession of a Certificate of Vending (CoV) or Letter of Recommendation (LoR) applies for credit facility using the simple one-page online Loan Application Form (LAF). • E-KYC is conducted by validating the Aadhaar details with UIDAI Portal. There is also a provision to authenticate by use of a biometric device. • The application moves to the preferred Lending Institution (if selected) or to the Lending Institution where the vendor has saving bank account • Details regarding the loans applications received, sanctioned and disbursed is reflected on the PM SVANidhi Portal and Dashboard • The street vendor is communicated the status via SMS at each stage. • The street vendor not in possession of CoV or LoR is first required to apply for LoR using the simple one-page online application form for LoR • The application for LoR moves

to the concerned ULB • Details regarding the LoR applications received, approved and rejected is reflected on the PM SVANidhi Dashboard

Information / Data Flow Before GPR

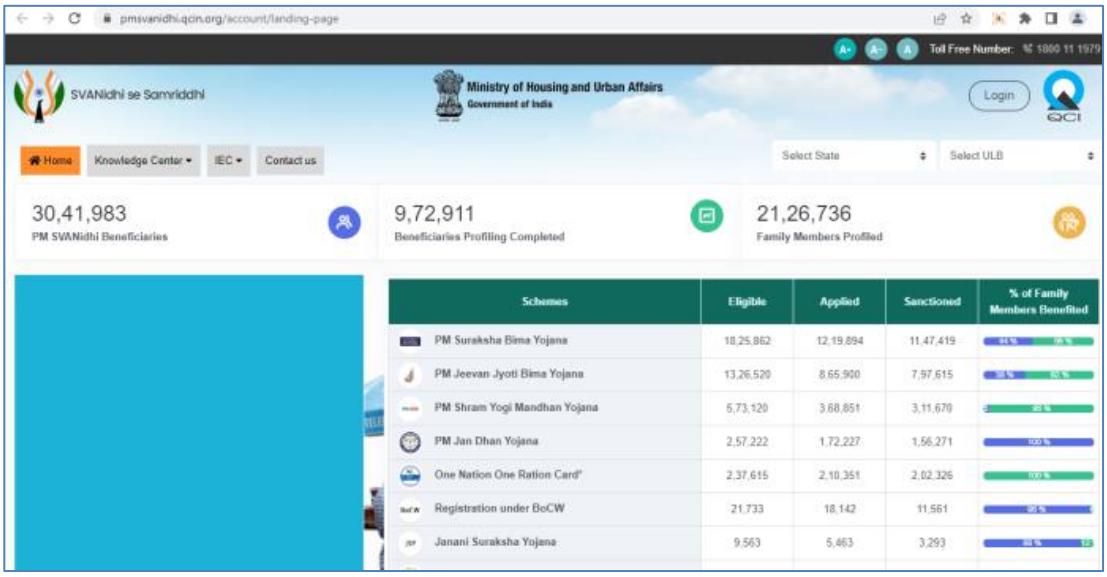
• Initially, the applications were sourced by the ULBs, the applicants were reluctant to approach the authorities as the processes were not standardized. • Under the Self Employment Programme (SEP) component of NULM, loan applications are mobilized, sponsored and sourced by the ULBs. • Prospective beneficiaries are required to submit application of intent to ULBs • A taskforce is constituted at ULB level for scrutinizing the loan applications • Prospective beneficiaries shortlisted by the ULB taskforce are called at ULB office for interview • The applications recommended by the ULB taskforce are forwarded to the Lending Institutions (LIs) for further processing • Applications received directly by the LIs are also referred to the ULBs. • Banks conduct their own e-KYC and Credit Bureau Checks. • LIs send a periodic report to the ULBs on the status of applications received • Loan Application Form (LAF) developed at State level in consultation with SLBC • No centralized portal for showcasing the status of the application • Database of street vendors maintained in a disaggregated manner at the State/UT / ULB level • After the repayment of the earlier loan, the borrower would be required to apply again for a new loan.

Information / Data Flow after GPR

• On the PM SVANidhi Portal, the street vendor in possession of a Certificate of Vending (CoV) or Letter of Recommendation (LoR) applies for credit facility using the simple one-page online Loan Application Form (LAF) • E-KYC is conducted by validating the Aadhaar details with UIDAI Portal • The application moves to the preferred Lending Institution (if selected) or to the Lending Institution where the vendor maintains a saving bank account. • The Credit Bureau Checks are integrated in the Portal itself wherein the same is conducted and Credit Score is attached with the LAF before moving it to the Lending Institution. • Details regarding the loan applications received, sanctioned and disbursed is reflected on the PM SVANidhi Portal and Dashboard • The street vendor not in possession of Certificate of Vending (CoV) or LoR is first required to apply for LoR using the simple online application form. • The application for LoR moves to the concerned ULB • Details regarding the LoR applications received, approved and rejected is reflected on the PM SVANidhi Dashboard • After the repayment of the earlier loan, the application is auto generated for the subsequent loan reducing the hassle for the borrowers.

Specifics on removal of non-value added activities (include number of activities as well) during GPR

• Dependency on the survey for identification of street vendors has been removed. • Need for prospective beneficiaries to submit application of intent to ULBs • Role of taskforce at ULB level for scrutinizing the loan applications • Need for interview for the shortlisted applicants by the ULB taskforce. • Forwarding of applications recommended by the ULB taskforce to the Lending Institutions (LIs) for further processing • Need for applications received directly by the LIs to be referred to ULBs. • Need for Banks to conduct their own e-KYC and Credit Bureau Checks. • Need for a periodic report to be sent by LIs to ULBs, as all the data is available in the Centralised Scheme dashboard. • Need to apply afresh for a subsequent loan.



Specifics on new value added activities (include number of activities as well) during GPR

• Leverage of Udyamimitra portal (UMP) of SIDBI for application sourcing and processing, ensured that time was saved as more than 1 lakh bank branches were onboarded on UMP. • A simple Loan Application Form (LAF) • e-KYC through UIDAI • Seamless movement of the application to the preferred Lending Institution (if selected) or to the Lending Institution where the vendor maintains a saving bank account. • Credit Bureau Checks are integrated in the Portal itself and Credit Score is attached with the LAF. • Development of an integrated dashboard with details of loan applications received, sanctioned, disbursed, LoR applications received and processed. • The street vendor not in possession of Certificate of Vending (CoV) or LoR is first required to apply for LoR using the simple online application form. • From ULB-led survey based identification to demand based identification

of street vendors via Letter of Recommendation (LoR) • After repayment of earlier loan, the application is auto generated for subsequent loan, reducing hassle for borrowers. • Call centre for providing assistance, generating awareness and obtaining feedback. • Automated scheme eligibility evaluation of beneficiaries and their families.

Specific on change in rules, regulations, and policies

• Scheme provided required impetus to the implementation of the Street Vendors Act, 2014 • States/UTs issued notifications of the Rules and Scheme under the Act to be eligible for participation under the PM SVANidhi Scheme • From ULB-led survey based identification to demand based identification of street vendors via Letter of Recommendation (LoR). Inclusion of many documents for proving their claim of being a street vendor. The list of vendors, prepared by certain States/ UTs, for providing one-time assistance during the period of lockdown; OR (ii) A system generated request sent to ULBs/ TVCs for issue of LoR based on the recommendation of the Lender after verifying the credentials of the applicant; OR (iii) The membership details with the vendors associations; OR (iv) The documents in possession of the vendor buttressing his claim of vending; OR (v) Report of local enquiry conducted by ULB/ TVC involving Self-Help Groups (SHGs), Community Based Organizations (CBOs) • Street vendors community had low self-esteem,now there contribution to the urban economy is being recognized. Wide range of documents such as CoV, LoR, Parichay Boards are being issued for their recognition.

Strategy/Methodology Adopted:

Problems identified

• Unavailability of central database of street vendors • Supply / Survey driven process of Street Vendor identification • Lack of support from local administrative bodies as they perceived them as encroachers in urban areas. • Need for prospective beneficiaries to submit application of intent to ULBs • Role of taskforce at ULB level for scrutinizing the loan applications • Need for interview for the shortlisted applicants by the ULB taskforce. • Forwarding of applications recommended by the ULB taskforce to the Lending Institutions (LIs) for further processing • Need for applications received directly by the LIs to be referred to ULBs. • Need for Banks to conduct their own e-KYC and Credit Bureau Checks. • Need for a periodic report to be sent by LIs to ULBs, as all the data is available in the Centralised Scheme dashboard. • Need to apply afresh for a subsequent loan.

Roll Out/Implementation Model

• For the process to be end-to-end digital, there was a requirement for all the Lending Institutions to be onboarded on a centralized portal, which was ensured by adopting the UdyamiMitra Portal (UMP) operated by the Scheme implementation Partner, SIDBI. This ensured that time was saved as UMP had already onboarded more than 1 lakh bank branches. This was also done to ensure convergence with SIDBI schemes. • Credit score was attached with the application form to expedite the evaluation by Lenders • The Local Government Directory (LGD) being maintained by the Ministry of Panchayati Raj (MoPR) was picked up for identification of all the ULBs. Wherever, the ULBs were not updated on the LGD, or Hill Area Councils, Industrial Development Areas were to be covered by the Scheme, temporary LGD codes were created to streamline the process of application. • API integration of PM SVANidhi Portal with UIDAI for validation of Aadhaar details, Banks, Digital Payment Aggregators (DPAs), NPCI, PAiSA Portal, Credit Bureaus for seamless implementation. • Under socio-economic profiling component, 253 cities are currently undertaking socio economic profiling for street vendor and their families. The scheme is proposed to be extended to all the ULBs across India.

Capacity Building and Awareness & Communication Approach

• Information regarding the scheme achievements is disseminated by the Ministry with States/UTs • Informative TVCs/videos/Testimonials highlighting the scheme benefits and journey of street vendors is showcased to create awareness with larger group. • Training session for officials of the

ULBs, LIs and Line Departments by MoHUA. • Digital payment aggregators have been engaged for digitally onboarding and training the beneficiary street vendors. • E-commerce platform like Swiggy and Zomato were roped in for capacity building of the Street Food Vendors • Training of SIDBI field officials.

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MINE MITRA, Government of Uttar Pradesh

Objective of the Project:

MINE MITRA is an innovative & ambitious initiative by the Directorate of Geology & Mining and Govt. of UP, inspired with the vision of our Prime Minister Shri Narendra Modi of Digital India. It came into existence after detailed discussions and brainstorming sessions with Director, DGM and other key stakeholders to achieve below mentioned objectives. • Implement ease of doing business & transactions in the mining sector. • Encourage all stakeholders to adapt to the digital era and increase efficiency in functioning. • Create a standardized legal regime, applicable uniformly to every Lessee & Transporter operating in the state. • Ensure transparency by onboarding all key stakeholders. • Generate greater revenue for the government through better mineral management • Enable price control and parity in the market by breaking nexus and monopolies by providing equal opportunity to upcoming entrepreneurs. • Create a user-friendly and responsive platform for e-services for the Common Man, Farmer, Lessee, Stockist and Transporter. • Facilitate legal mining. MINE MITRA has integrated all the mining processes into an end-to-end mineral management solution to facilitate ease of doing business in the state of Uttar Pradesh for better governance, thus promoting transparency & efficiency, cost cutting, generating higher revenue for the government, by re-engineering the current tedious processes and replace it with digital transformation in each one marking a step forward to a cleaner and greener mining ecosystem. This application has helped effectively at the administrative level to the DM's as well since it is integrated with NIVESH MITRA, VAHAN, MoRTH & CM dashboard DARPAN. MINE MITRA has been successfully deployed in the state of Uttar Pradesh, creating a standardized legal regime applicable uniformly to all concessionaires operating across the state. In fact, MINE MITRA processed 59,566 applications online, 2 crore EMM11 have been issued by Leaseholders, 1800 sellers have been registered on E-commerce platform, registered 8500 transporters' vehicles and disbursed 27,144 e-notices and has boosted economy by generating a revenue of 32 Cr for the government till date. Also, incorporating all notified services of the department in eDistrict portal to provide all online citizen services via 1.74 L CSCs (Common Service Center) in Uttar Pradesh. MINE MITRA is a true example of efficiency steered by re-engineering for digital transformation since it's a sustainable model with latest technologies, replicability and security features enabled.

1. Brief Details of the Project:

MINE MITRA is a unified & responsive platform to provide- a. All citizen-centric e-services: For common man, farmers, stockist, lessee, transporters & key stakeholders. The applications are scrutinized digitally of LICENSE, PERMISSIONS, PERMIT & LEASE issued by the department namely Krishi Bhumi, Niji Bhumi, Stock License, Mineral Retailer Registration, Building/Development Project, Mining Plan, Vehicle Registration & Deed Execution thereafter accepts, rejects, or marks them to the respective authority. b. Ease of doing business: Services like Stock License, Ordinary Earth, Krishi Bhoomi are integrated with Nivesh Mitra and UP Mineral Mart facilitates the public for purchase of minerals from the comfort of their homes and getting it delivered at any desired location. It's a hassle-free online platform bringing together supplier & consumer both under same roof. Lessee is not dependent for generation of the transit slip, since it's issued electronically so the lessee can generate eTP at any time and from anywhere. All administration work from District Survey Report (DSR) to DEED is done online. Other services like ordinary earth, deed execution, online LOI, stock license, krishi bhoomi, building/ development projects are linked with CM Dashboard (DARPAN). The leaseholders have been facilitated to pay the payment of their lease installments through online mode. c. Integrated Mining Surveillance System: AI/Iot based smart enforcement system installed at major mining routes to track suspicious vehicles & raise an alarm to the mining department with real time data monitoring with Decision Support System @Command Center to issue e-notices and curb illegal mining practices.. It's designed intelligently combining multiple cutting-edge technologies comprising of Unmanned CheckGates, Handheld Reader with m-Check App installed, RFID Enabled device MINETAG, ANPR, Varifocal & PTZ Cameras, Geofencing & Geo-Tagging, ISP, IR Illuminator, Solar Panels. Weighbridges are installed and leases are equipped with PTZ cameras for live monitoring of mining activities.

3. Situation before the Initiative (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project)

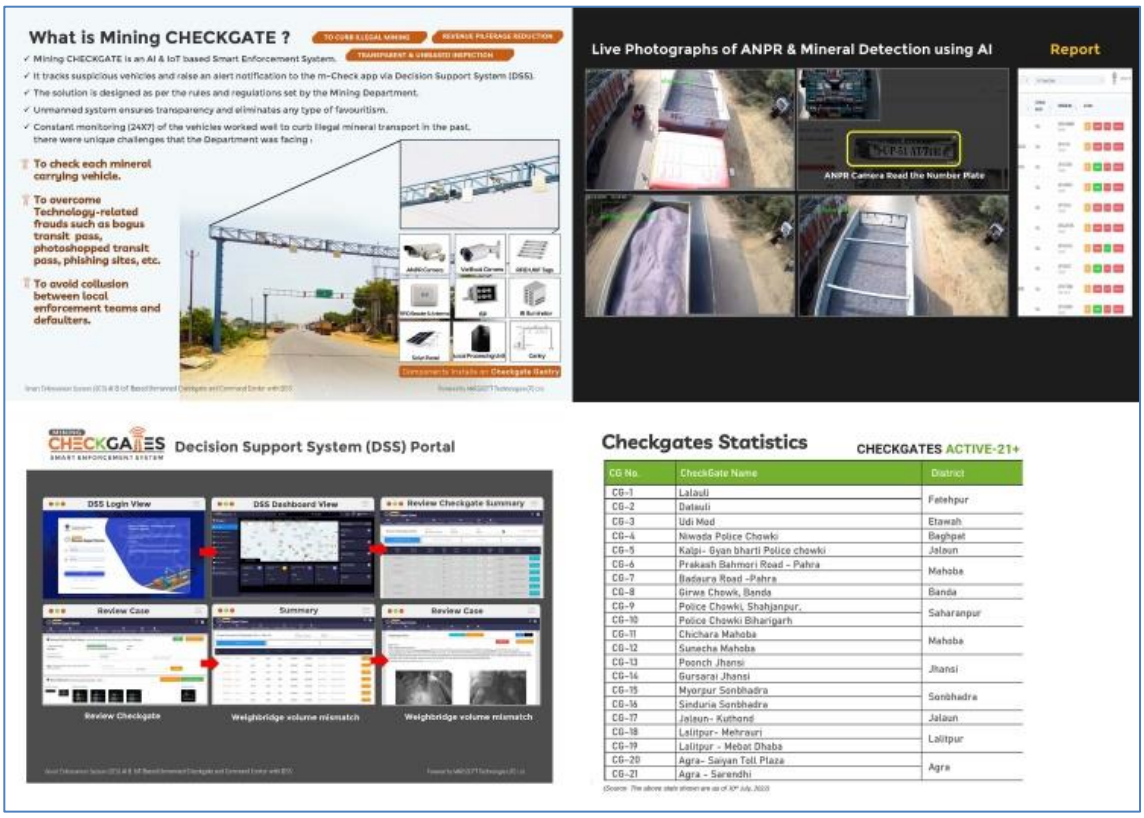
The crucial Bottlenecks/Challenges which triggered the department to adapt the new technologies are: • Applications for citizen services were processed physically at district mining offices. • Time dissipation due to a lot of paperwork and manual processing of applications • Payments were manual, leading to long queues and delay in operations • Frequent stoppages & jams due to physical paper verification • The verification of the transit pass required human intervention • Problem in efficiently monitoring transit passes viz EMM11,Form-C,ISTP as they were issued manually. • District MO's

were unable to verify the validity of transit pass • Malpractices in mineral transportation especially the prevalence of fake & tampered transit pass resulting in loss of government royalty • Lessees were overusing mining limits and underpaying royalty • Public services like Stock License, Mining Plan, Brick Kiln, LOI to Deed execution was manual • Unscientific & illegal mining, overloading & pilferage • Inspections were manual & random and subject to allegation of bias. • The lease and installment of Brick Kiln was done manually • Industrialists associated with development projects had to get approvals from district administration which was time consuming. • Physical inspection of mineral rates was done through random teams • Price volatility due to covert interest groups distorting free play of market prices • No standardized legal regime uniformly applicable to every lessee & transporters operating in the state • Lack of data accuracy on Lease areas & quantum of excavated & dispatched minerals transported at multiple sites owned. • Opaque user interface & Red Tape • Scattered information database & unorganized sector • All systems were running stand-alone. • High degree of resistance to technology adaption • Department had multiple roles to play viz. supplying minerals to public, work as an enforcement agency, procurement and earning revenue also.

Situation after the Initiative (Specific improvement details in terms of benefits, processes, services, transactions & user feedback, etc vis-a-vis situation before)

The perceptible improvements in the processes/systems are mentioned as follows: • First come first services discontinued by digitizing of the services. • Ease of doing business increased due to the online, user friendly, faster, paperless, responsive and transparent process on a single platform for all citizen centric services for all key stakeholders like farmers, concessionaires & transporters for all permissions, permits & licenses. • Application process time reduced and became accurate. The average time of any process has been reduced from 15 days to 15 minutes. • Functioning of Department was streamlined • Revenue of the government increased multifold • The system provides safe payment gateway for all transactions • Put an end to arbitrariness due to Adhoc & personality driven inspection regime • Direct interface between seller and buyer established through e-commerce platform eliminating the need of third party vendor. As of now 1800 suppliers & 31,200 transporters are on boarded on the portal. • Real time data received from Mini Command Centre helped monitoring and decision making and Prevented illegal mining/ transportation by issuing e-notices generated through Decision Support System (DSS)/ mCHECK App and penalty has been recovered from the default transporters. As of now a revenue of 33 crore has been generated against 27,144 e-notices. • Increased transparency, competitiveness and fair play by furnishing all the information on the website. • The concessionaires are given access to relevant data & information to create a

standardized legal regime applicable uniformly. • Encouraged all stakeholders to adapt to the digital era and increase efficiency in functioning. • Weakened nexus and monopolies by providing equal opportunity to upcoming entrepreneurs. • No. of channels increased for service accessibility like Mobile-based App & Web-based portals. • The average time to close issues reported online is now 10 minutes. • Fully automatic & decentralized system which will continue in the department as a legacy irrespective of the person holding office.



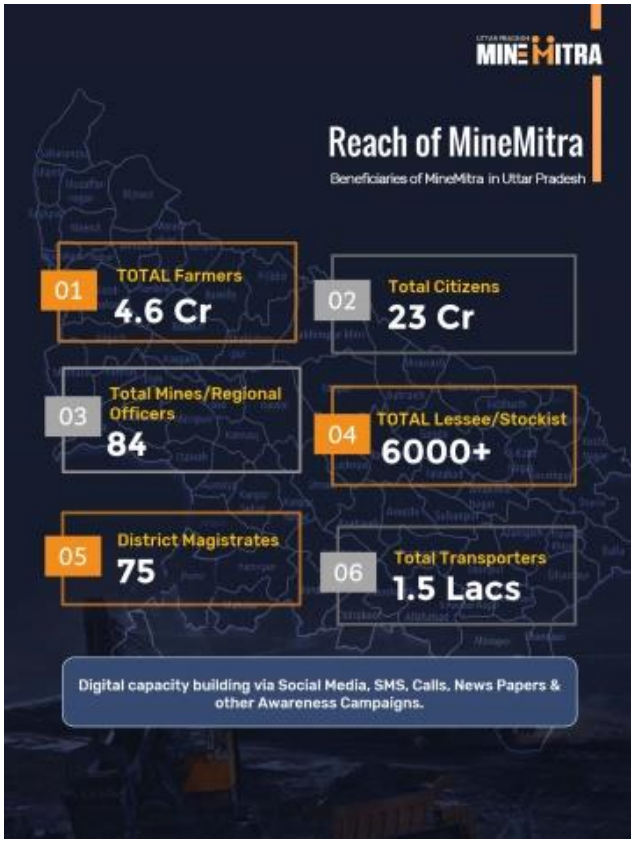
Extent of Process re-engineered Process Flow before GPR

• Transit pass viz as eMM11, eFormC, ISTP were issued and verified manually. • All systems were running as stand-alone components • Public services like Stock License, Mining Plan, Brick Kiln Payment, LOI to Deed execution were processed manually • Manual inspections on illegal mining & transportation were random and subject to allegations of bias. • All applications for citizen services were processed manually approval from District Administration were time consuming.

Process Flow After GPR (include percentage of processes re-engineered)

•Online scrutiny was done and applications were disbursed for all mining services •A mobile app for all stakeholders to receive immediate update on the application status. •Online platform for payments

through all modes •MIS for mapping entire lifecycle of a lease from LOI to Deed. •Dashboard for generating real-time reports of mineral transported and royalty paid. •Installation of Weighbridges equipped with cameras & PTZ cameras at all lease areas for live monitoring of mining activities. •All mineral carrying vehicles registered with DGM & RFID MINETAG to enable unique vehicle identification •A dedicated web-based portal for issuing online transit passes of eMM-11, eFormC, ISTP making it faster & simpler. •RFID Handheld Reader equipped with m-CHECK app provided to every district MO for on spot verification of mineral carrying vehicles. •Geo-fencing of all active lease boundaries. •AI/IoT based Unmanned CHECKGATES installed to track suspicious vehicles and send real-time notifications to nearest MO & mining department via DSS. •DM/MO tracks all mining activities from Mini Command Centre based on video feeds, real-time data captured from AI/IoT devices. •Online facility for depositing penalty directly into UP Rajkosh portal against e-notices issued •Online e-Commerce portal for sale & purchase of minerals •API integration with VAHAN, Nivesh Mitra, Bhulekh & Darpan



Information / Data Flow before GPR

• Lack of real time data of illegal mining • The department entirely dependent on the data provided by the District Mines Officer. • Enforcement data was manual • All interfaces were manual • Pendency reviews were highly tedious & time consuming • No system of collecting data of Citizen delivery services. • Manual process for payment of Lease installment • Scattered Lease information data.

Information / Data Flow after GPR

•Online facilitation for retailer registration for sale of minerals upto 100 cub-mtr •Small business promoted to run without red tape •Self-registration facility for farmer for extraction & non-commercial use of ordinary earth eliminates the visit at district offices •Online issuance of stock license for storing more than 100 cub-mtrs of mineral. •District Mines Officer can keep a vigil on the pending applications •All master entries related to leaseholders, license holders, transporters, working organizations with details are available at one click •All entries are authenticated by role with department finance & nodal officer digital signature •All electronic transit pass generated are authenticate with OTP with full of date-wise history •All generated e-challan history for each transaction is available at both UP Rajkosh & web portal •Verified all types of electronic transit pass detail entry via QR code scanner, Mobile App •The dashboard is used for full description of each master entry of holders, electronic transit pass and payment transactions •Vehicles are checked by weighbridge to know the actual weight of quantity loaded before the generation of electronic transit pass •The vehicle is registered with MINETAG and verified at CHECKGATES by an RFID scanner •The continues efforts in promoting and improvisation of the application can be vetted.

Specifics on removal of non-value added activities during GPR

• File movement, long tedious and time consuming processes for permission of permit. • Long ques for availing the mining services. • Data report generation through excel sheets. • Manual process for issuance of transit pass. • Manual checking of transit passes • Physical file movement of files to District Administration • EMM11 issued manually • Manual checking of vehicles • Payment of challan physically • Data compilation was manual.

Specifics on new value added activities during GPR

•Stoppage of usage of Photoshoped & fake transit pass by transporters •Various Government Orders have been issued to prevent illegal transportation of minerals •Tools introduced to check the authenticity of all information •RFID Handheld reader equipped with mCHECK is provided to all district mine officers. •Online generation of eNotices through Decision Support System. •Application can be monitored at any time through dashboard. •Online advance payment facilitation through web portal for leaseholders •Data received through mini command center helps in real time monitoring and quick decision making. •Check gate equipped with variety of sensors and devices can be used by other government department as a part of their smart enforcement system. •Anomalies found in transportation such as smudged or invalid number plates share with other enforcement agencies to create unified revenue command network. •Data received through Check gate is customizable for other govt. dept. such as GST, Transport, Forest etc. •API intervention helped to streamline inter departmental Co-ordination. •E-verification of inter states transit pass helped to streamline interstate mineral transportation and enhance the royalty regime of the state Governed. •API intervention with interstate application like Vahan, Nivesh Mitra and CM portal DARPAN enhanced G2G regimes facilitated each of doing business.

Specific on change in rules, regulations, and policies

All updated GOs & policies copy are attached in relevant document section (Part-1, Sl. No 11) as follows: • Various amendment of different rules, sub-rules & provisions of the concerned rule in succeeded years. • To regulate environmental friendly, sustainable mine development and for providing necessary equipment and personnel for creation of technical infrastructure to control illegal mining/ transportation for effective environmental protection and pollution control. • To prevent Illegal Mining, Transportation & Storage of minerals constituted the UP Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2018. • For MINE MITRA Portal – Online services & applications • For Online Minerals sales via UP Mineral MART.

Strategy/Methodology Adopted:

(i) Details of baseline study done

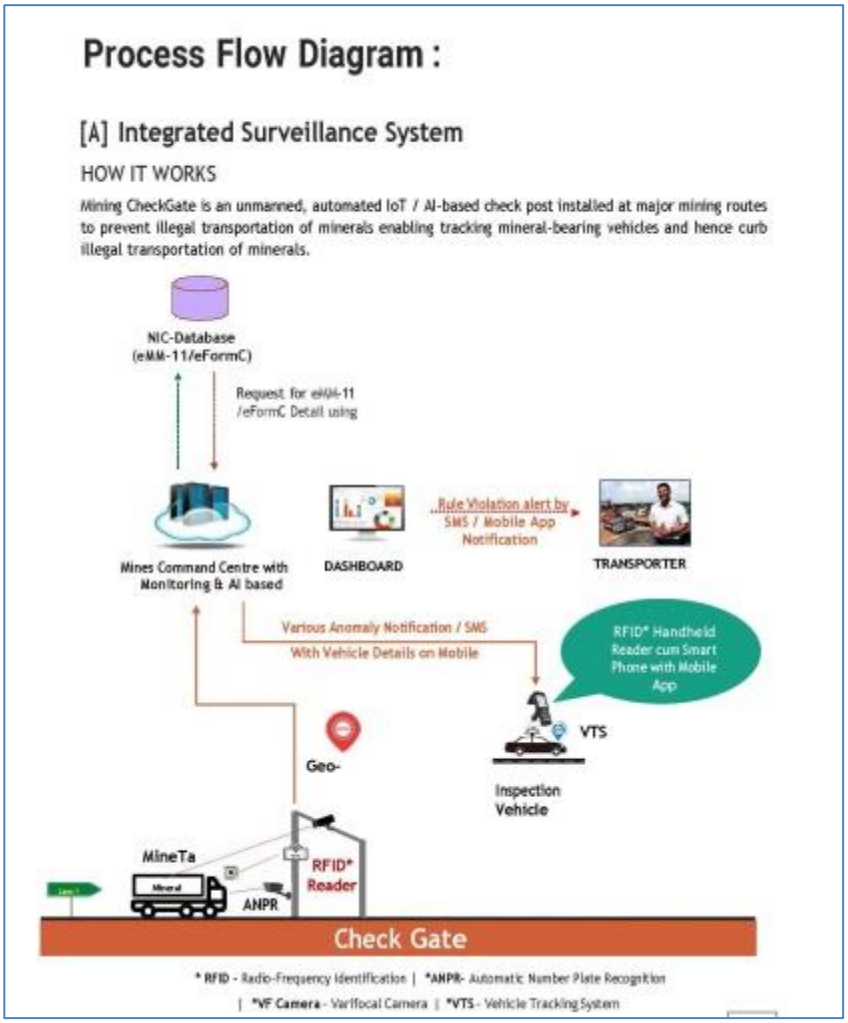
. • Research and Analysis • Design & preparation of User Interface • Mock-Up/Prototype Application Modules • Approval & feedback from the department • Development of Application • Implementation followed by testing in each district. • Spreading Awareness of the initiative • A detailed discussion and brainstorming sessions were conducted with all the key stakeholders involved who helped us to identify the grey areas in mining sector which needed to be eradicated.

(ii) Problems identified

• Unorganized sector with scattered information • Arbitrary Mining Practices • Lack of Willingness in people to change & adapt to new technology • Non Availability of internet services in remote locations • Inter departmental permissions • AP integration with other states • MINETag installation.

(iii) Roll out/implementation model

MINE MITRA is an integrated solution with a decentralized architecture and independent sub-modules structured in strict adherence to the Software Development Life Cycle (SDLC) framework. The project management process relied heavily on the AGILE Methodology of constant collaboration with all key stakeholders and continuous improvement in all stages of Planning, Analysis, Design, Implementation, Testing and Maintenance. The focus was on breaking silos and simplicity as well as continuously incorporating the changing requirements that demanded concurrent development and testing.



(iv) Capacity Building and Awareness & Communication Approach

Despite the daunting odds, a detailed SWOT analysis was conducted, thereafter- • Lot of Workshops and Hands-on Trainings were organized for MO's/MI's on use of Decision Support System and generation of e-Notices, mCHECK App, MINE MITRA Mobile App, Hand-held Reader & UP Mineral MART portal, in order to achieve better implementation. • On-Site Camps for MINETag Installation were organized in the lease areas. • Remote trainings were organised for lessees, stockist & transporters on zoom platform to increase user acceptance • Trainings were conducted on eTP verification module for government agencies • e-Learning modules were uploaded on YouTube for better understanding (https://www.youtube.com/channel/UCsmrV16i1iXY5kV3kiZMEWA) • User manuals & brochures were distribute for all officials & key stakeholders • Whats app, SMS & social media campaigns were done • Dedicated IVRS for 24hrs for grievance redressal

खनन पर होगी कैमरे की नजर

खनन निदेशक का मुआयना, रेट बोर्ड लगाने के आदेश

• ओवरलोड वाहन चिह्नले पर जवाबदेही

• पैमाइश के लिए दो अधिकारी नामित

'यूपी माइन मित्र' पोर्टल को सीएसआई नेशनल अवॉर्ड

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

A helpdesk support with Toll-free number has been established at Unified Revenue Command Center (URCC) and district level mini command center (MCC) to address the beneficiaries/stakeholders grievances. The total number of queries received till date is 2,230. • Online ticket generation facility is enabled. • Feedback form system operates through the portal. • Online grievances redressal system. • Follow-up calls.

CM Yogi clicks on 'Mine Mitra' portal for more transparency

E-Seva Portal To Be Single-Window System For Mining Dept

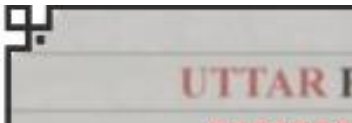
अवैध खनन पर अंकुश लगाने को चेक पोस्टों पर लगेंगे आईपी कैमरे

• जिलों में खोली जिली कलाउड सेन्टर की व्यवस्थाः रोहन जैदब

माइनमित्रा पोर्टल से खनन संबंधी कार्यों में आएगी पारदर्शिता : सीएम

सीएम ने किया माइनमित्रा पोर्टल और मोबाइल एप का शुभारंभ

बेहतर खनिज प्रबंधन प्रणाली विकसित करने के लिए यू पी माइन मित्रा को मिला सीएसआई नेशनल अवॉर्ड



UTTAR PRADESH

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UP bags 5 awards for e-governance

Times News Network

Lucknow: In recognition of reforms in the field of e-governance and digitization, Uttar Pradesh has bagged five CSI SIG eGovernance Awards 2021 at the national level.

Besides two awards for the higher education department's Digital Library Project and online no-objection certificate (NOC) and affiliation system for new colleges and courses, the state has won awards for UP Darpan Dashboard, Mine Mitra and Sewa Mitra.

The award will be presented at a function at Motilal Nehru National Institute of Technology, Prayagraj, on January 23.

UP Darpan Dashboard for chief minister Yogi Adityanath has been selected for the award of excellence. It is a portal to facilitate quick and efficient redressal of citizen complaints. It is being widely used by people and has provided relief to thousands of complainants.

The Digital Library Project was launched during Covid-19 in pursuit of promoting digital education.

IIT-BHU for entre

Binay Singh | TNN

Varanasi: An alumnus of IIT-BHU, Jay Chaudhry, the CEO and founder of a cloud-based information security firm, has donated $1 million to the IIT-BHU Foundation. The donation will fund IIT-BHU's entrepreneurship

Smart Enforcement System (SES) is a major Component of MineMitra

According to IIT-BHU spokesperson, with the donation, a software innovation center will be established to provide a platform for

Ahead of dates, 2 d officers tr

Neha Lalchandani

Times News Network - Friday, 7th January 2022

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Meghalaya Enterprise Architecture, Government of Meghalaya

Objective of the Project:

To have a Digitally enabled governance in the entire State of Meghalaya, which can be achieved by: • Making departments and government agencies interoperate with ease through common systems • Achieving Paperless Governance by introducing a system to process all files and decisions digitally • Providing integrated services to citizens and businesses irrespective of department. • Effective data management by creating single source of truth. • Creating cross-Governmental services through interoperability, service discovery, and invocation • Minimizing paper-based delivery of services in all G2C, C2G, G2B, B2G, and G2G interactions by adopting digital service delivery • Building scalable and configurable platform to add new schemes/services in minimum time possible

Brief Details of the Project :

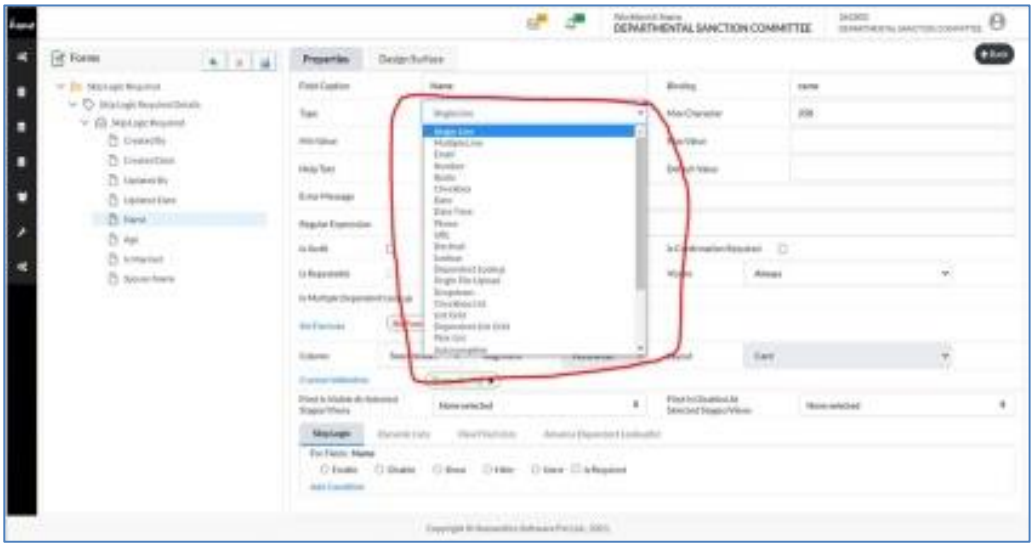
Meghalaya is the first state-wide implementation of India Enterprise Architecture (a notified standard framework by MeitY, to implement integrated Government services). Planning Department, Government of Meghalaya initiated the project to assess and draft a blueprint for implementation of citizen centric integrated digital services. In this context, the project assessed services, the service delivery mechanisms, and the associated digital systems of the key departments. The project outlined a detailed plan comprising of service catalogues of 1200+ services of the departments, modernization plan of 50+ digital systems and implementation of several new digital systems to enable delivery of integrated digital services. Through a structured framework and digital technologies, MeghEA aims to resolve a classical problem of governance–collaboration among its units. Government of Meghalaya through this initiative, is also implementing re-usable digital technology components (commonly called architecture building blocks) that would enable the digital platforms to deliver end-end services to its citizens. It was decided to build a system called e-Proposal system for digitally processing of all sanctions in the state for all the Departments across the State of Meghalaya. The eProposal System (ePS) is basically for replacing the paper files specially for the processing of the Proposals from sanctions till disbursement of funds, making the entire flow automated and making the Government System much more efficient.

Situation before the Initiative

• Fragmented systems and manual reporting. • Manual processing of sanction/administrative approval, applications for availing different schemes by citizens and other files. • Paper based file management – high stationery and printing cost. • Lack of traceability of approval status. • Lack of efficient monitoring of scheme wise expenditures and beneficiaries. • Repetitive processes in the files and approvals. • Prolonged time for approvals and service delivery.

Situation after the Initiative

• 10X Faster and seamless sanctions and disbursement of funds • Paperless approach: Eliminates 100% physical files in terms of proposal for sanction and disbursement and reduction in estimated 75% of all physical files in Government Departments. • 120+ person years reduced through Digital System driven efficient tracking of proposals system, SMS and email notification • 130+ person days reduced through Dashboard based efficient monitoring of expenditures and sanctions • Progress towards zero touch points in Government services through simplification, standardization and automation of services • Quicker disbursement of the benefits to the citizens • Digital workflow implementation

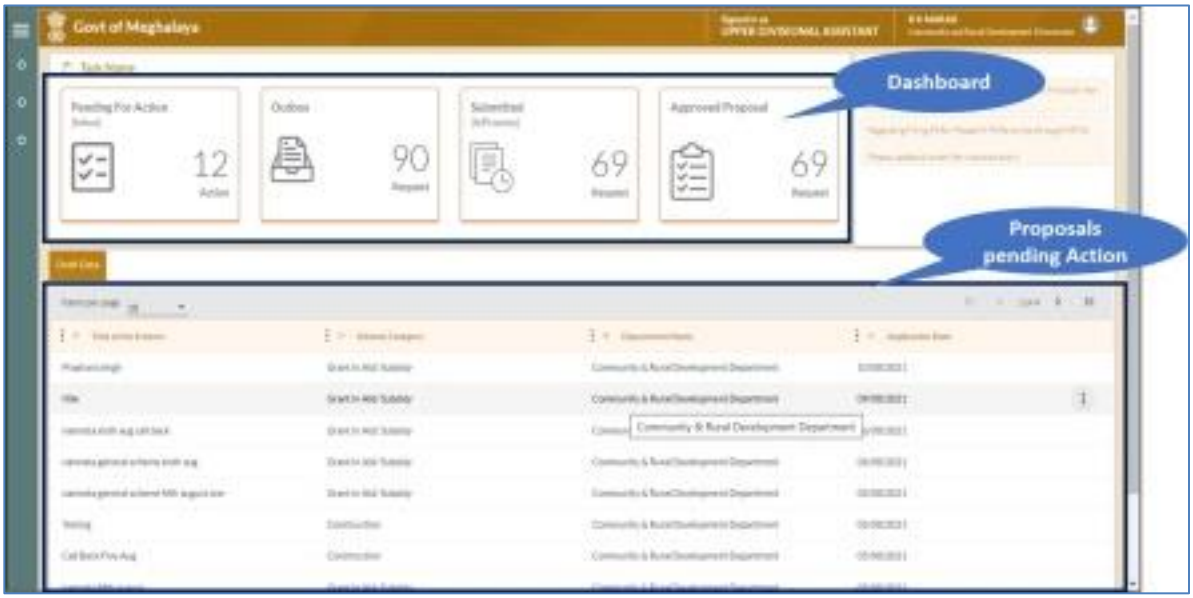


Extent of Process re-engineered

Process Flow before GPR

Before the launch of the system, all the proposals in the state were in paper form along with bulky DPRs and other supporting documents. The proposals were initiated at directorate level and travels to

finance for approval through administrative department and planning department. At every department/ directorate, there were 6 to 7 stakeholders including dealing assistant, finance account officer, assistant director, director, planning officer, under secretary, secretary, commissioner secretary, minister etc. The file use to move up and down multiple times during the process in each department. Covering all these scenarios, the file use to move average 50 desks before getting sanctioned and on average it took 50 days for sanction to be issued. Further, after sanction, department need to request for cash flow from finance before generating bill and sending proposal to treasury for disbursement. The sanction orders, departmental committee meeting and empowered committee meeting minutes were all manually prepared and signed. Thus, needed verification of the decisions before setting signed and issued.



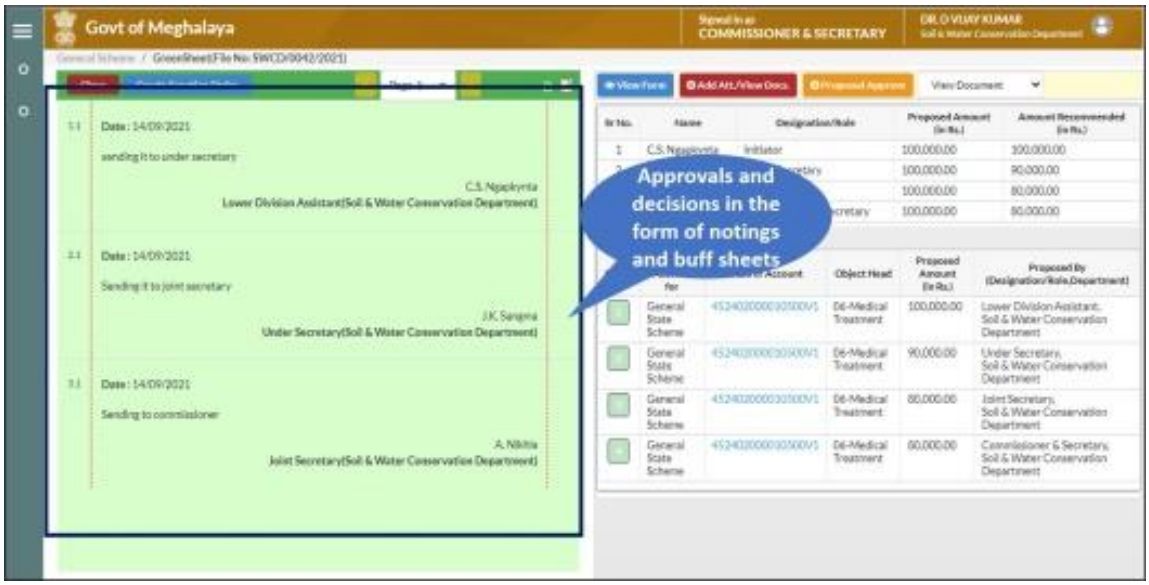
Process Flow After GPR

With the introduction of e-Proposal System, all the proposals including construction projects, state schemes, center schemes, purchase of vehicle etc. are made on system in pre defined format and sent for review of senior officials for approval. The file now goes only one path that is up in the line for approval as there is no need for puting up the file. All the notings are displayed along with the proposal which eliminates the need to find correspondences required to be referred. Some of the authorities are removed from flow to make it more efficient which includes dealing assistant in reviewing departments and review from so many authorities has been removed. In the reformed process, the proposal file usually passes to average 6 to 8 officers for final approval. All the templates including minutes of meeting, financial sanction orders, Re-appropriation statement, administrative

approvals etc. are incorporated into system and are automatically generated with the decisions already captured in the system. The system also provides option to finance to release cash flow along with sanction thus eliminating need for sending file again for approval. The sanction amount and cashflows are communicated to treasury in real time to avoid human error

Information / Data Flow Before GPR

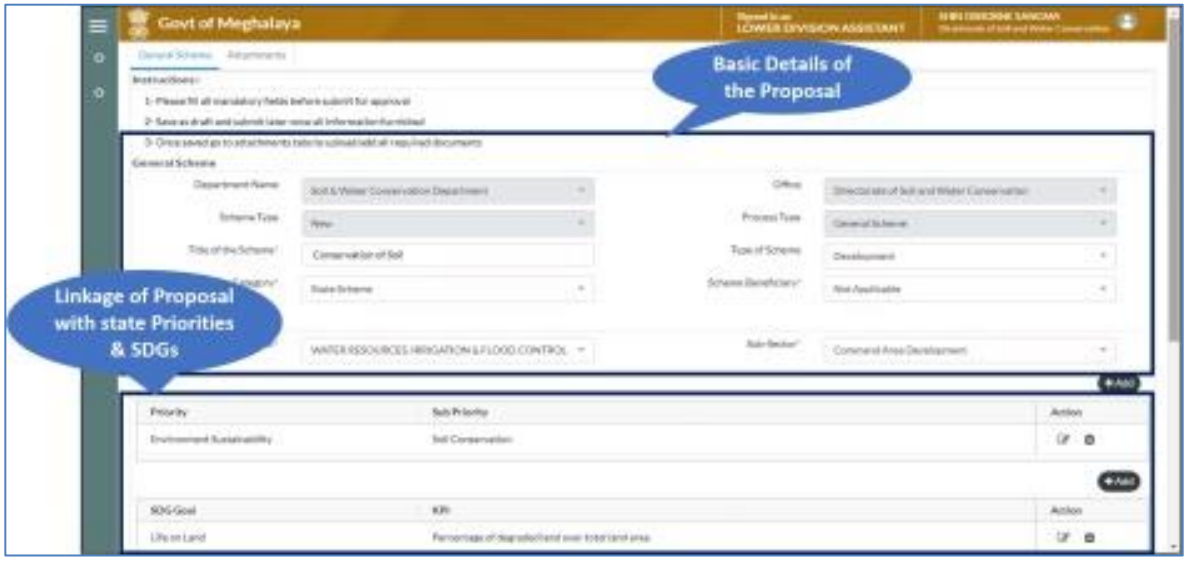
As there was no system before GPR of the sanctioning process, all the proposal files were in manual mode. The files needed to be carried from one desk to other by the peons for approval. This had dependency on availability of the official who need to act upon the file. Once approved, the sanction orders were prepared manually leading to human errors in some instances. Manually generated sanction orders were sent to treasury and verified manually at treasury level along with LOA before disbursement of funds.



Information / Data Flow After GPR

With the introduction of e-Proposal system, the proposal data which includes scheme name, purpose of scheme, linkages to SDGs, head of account with budget provision, expenditure till date and proposed amount along with the remarks/ noting from the official is sent in digital form from one official to the next. All the attachments are also uploaded and sent in digital form. This removes the dependency of official to be available on his desk as he can just login from anywhere anytime and act upon the file. The departmental level and empowered committee meetings are also scheduled from system and the decisions are captured by committee in real time. The templates for minutes of meeting at various levels has been designed. As soon as the decisions are captured, system generates

the minutes of meeting in pre-defined format and eliminates any chances of human errors. Similarly, as soon as the proposals are approved at level of finance, system based alerts are generated to the HOD of the initiating department communicating the decision. This also removes the need to track file. The different types of sanction templates are created in system and are auto generated by system on approval. The approved amount and cashflow amounts are communicated to other finance systems in real-time through API to ensure seem-less data flow.



Specifics on removal of non-value add activities during GPR

• Removal of dealing assistance where files were sent for putting up. • Removal of levels of approval at each department level thus shortening the process and making process more effective. • Removal of all paper based proposal file including DPRs, sanctions from funding agencies etc. • Removal of physical activities such as tracking and carrying of file from one desk to other. • Removal of daak registers for proposals in e-Proposal system.

Specifics on new value add activities

• Template based generation of minutes of meetings. • Template based generation of sanction orders and administrative approval letters. • System based re-appropriations and advance from contingency fund including real-time affecting the same in budget on approval. • Facility to track file with click of a button. • Integrated dashboard • System based critical alerts to officials and HODs in form of SMS and email. • Periodic alerts to officials for pendency reports.

Specifics on change in rules, regulations, and policies

• Regulatory changes to include acceptance of system based sanctions. • Notification of changes in forms for including SDGs and removal of necessary fields. • Notification for changes in Standing Instruction regarding approval of proposals etc. • Changes in DFP rules.

5. Strategy/Methodology Adopted:

(i) Details of baseline study done.

Enterprise Architecture was adopted for the beaseline study. A holistic vision was crafted considering state's strategy of growth pillars. A blueprint was drafted for 700+ services, to realize 236 indicators, under 16 SDGs A Solution Architecture was drafted for finance and planning department to move forward for implementation FRS was detailed and SI vendor's platform was selected as per architecture principles, and subsequently system was implemented as per architecture drafted in the blueprint

(ii) Problems identified

• Fragmented systems and manual reporting. • Manual processing of sanction/administrative approval, applications for availing different schemes by citizens and other files. • Paper based file management – high stationery and printing cost. • Lack of traceability of approval status. • Lack of efficient monitoring of scheme wise expenditures and beneficiaries. • Repetitive processes in the files and approvals. • Prolonged time for approvals and service delivery

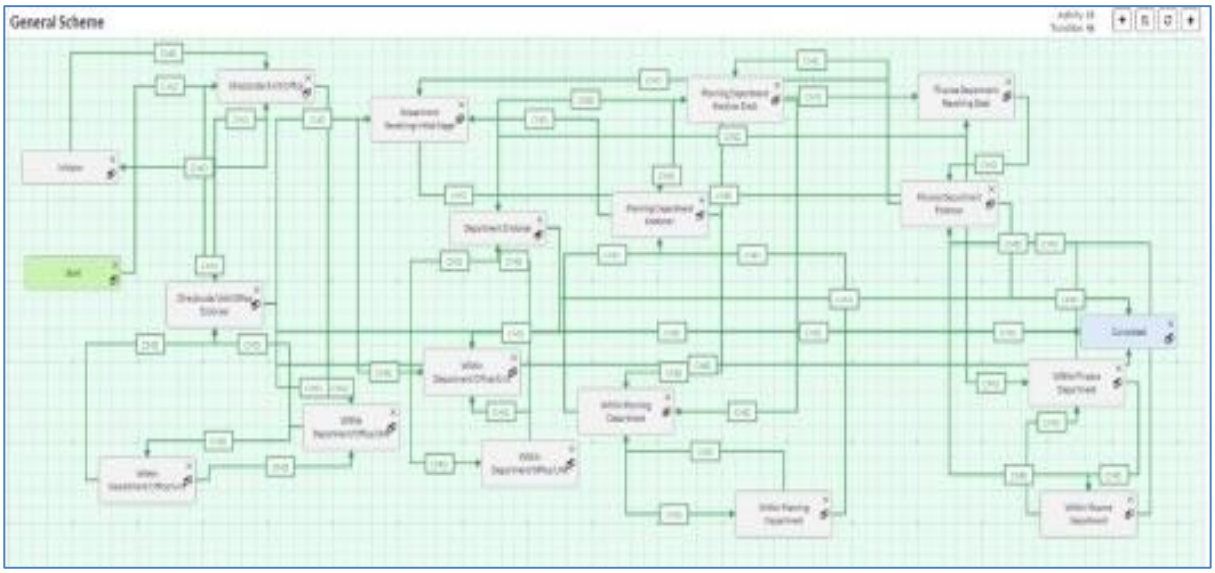
(iii) Roll out/implementation model

• Vision for the state derived by defining 6 strategic pillars of growth i.e. Human Development, Primary Sector, Infrastructure Development, Environment Sector, Entrepreneurship and Governance and linking them with SDGs, target indicators where the state was lacking and the departments contributing towards the indicators. • Detailed Pillar wise architecture was derived. Activities performed were study of existing services, applications and data. The gaps were identified and target state for each of the architecture domains was defined bridging the identified gaps in the process. • Blueprint for the state was curated containing the implementation roadmap, governance committee including templates for architecture review at every stage and budgetary requirements. • Solution architecture for the finance department was prepared for implementation. • RFP was prepared and floated for selecting the implementation partner for finance. • PMU was setup for overall monitoring

the progress of implementation, preparation for functional requirements and ensuring architecture compliance at every stage. • Proposal Forms designed by adopting agile methodology incorporating inputs from stakeholders. • Onboarding of departments along with training taking one department at a time. • Rollout of the system with mandate.

(iv) Capacity Building and Awareness & Communication Approach

• Adoption of train the trainer approach. • Creation of dedicated training team. • Identification of Master trainers from each department and directorate. • Training of identified individuals in batches of 20. • Training of department officials via master trainers in batches. • Refresher training to the interested individuals in batches. • On-job hands on support by the training team for ensuring adoption of system.



(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

For the feedback, there in dedicated helpline email address created within Planning Department with dedicated resources checking the feedback and passing on to the project team for improvements wherever required. They are also assisting the users with hands-on training incase required. The team is also visiting users in there office for assisting on case to case basis.

6. Technology Platform used:

(i) Description along with list of Open Source and Proprietary Technologies

The system is developed on HUNO platform which is a java based platform developed by a private vendor. The platform is a low code no code platform with inbuild form designed. Further, there is an

inbuilt workflow engine for designing the workflow of an application for processing. The system is deployed on Amazon Cloud and follows the principle of Cloud First. Further, the operating system is Open Source based Linux

(ii) Interoperability and Integration Aspects (Integrated System, Use of APIs, Micro services etc.)

The system is designed with no code low code platform which has capabilities of Designing Micro Services. The system is interoperable and can exchange data with any platform of system through json based API calls. There are also more than 50 APIs inbuilt in the platform for easy integration with commonly used platforms such as eSign, DigiLocker etc. The system is already integrated with other finance systems in the state through state API gateway including BEAMS (Budget Estimation Allocation Management System), iOBS, e-Billing and TreasuryNet for fetching Budget data, expenditures and communicating sanctions and cashflows for disbursements. The system is also enabled with e-Parichay for seamless process of login using Gov id by the officials of the state.

(iii) Consent Management, Data Privacy and Cyber Security Aspects

As the system is G2G and used for sanctions and cashflows issuance to departments, consent is not yet incorporated. The system is security audited and SSL is implemented for data encryption during transit. The system is also integrated with e-Parichay for easy login by the departments through their official email address without need of additional passwords. Biometric devices has also been integrated for authenticating the user providing decision on the file.

(iv) Any issue with the technology used

The project development started in April 2021 and was ready to rolled out in record time of less than 6 months. Since then the departments, directorates and other agencies are using the system without any issues. The interface of the system is very user friendly. We have not identified any issues in the technology used till date.


ePS
Proposal System

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Kutumba – An Entitlement Management System, Government of Karnataka

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Objective of the Project:

Kutumba project was announced in 2018-19 with the goal of providing different family oriented facilities to citizens under various programmes or subsidies automatically without submission of application. The key objectives of the project are: 1. Implement principle of "Ask Only Once" from residents; remove the requirement of submission of proof of documents by citizen. 2. Bring in Entitlement Management System in Karnataka - Suo-moto inclusion of eligible residents for welfare benefits without resident having to apply. 3. To enable departments to weed out ineligible beneficiaries and help Govt to prevent leakage of revenue. 4. Enable Evidence based Planning – Provide data to Govt in its planning, budgeting and implementation activities 5. To support Government in disaster management activities. "Kutumba" is a centralized data repository of families in Karnataka consisting of the individual and family attributes. The Public Distribution System (PDS) data has been used as base and other department databases have been integrated with it. As on date, more than 30 IT systems of the Government are electronically integrated with Kutumba. Kutumba system has been designed to ensure that data is always up to date and in sync with the source system. This has been achieved through the process of reverse integration. Kutumba system is also an Entitlement Management System which ensures responsive and dynamic inclusion and exclusion. The changes in a resident's socio-economic attributes are captured in Kutumba digitally. This enables auto eligibility determination for inclusion into schemes and programmes and also to weed out deceased and ineligible beneficiaries from cornering benefits. Kutumba is a digital and an integrated information system which enables flow and management of information between development sectors like health, education, social security etc. It enables Government to identify the needy and deliver targeted benefits and services. It empowers Government to bring in Smart Governance by adopting a data driven approach through evidence based planning and monitoring of the programmes.

Brief Details of the Project:

Centre for e-Governance under Department of Personnel and Administrative Reforms (e-governance) of Government of Karnataka (GoK) led the ideation of the framework for Kutumba. Kutumba was designed as a unified database system (centralised data repository) with the creation of a unique Family ID so as to enable Government of Karnataka to usher in an inclusive and proactive welfare service delivery to the intended beneficiaries. Kutumba was conceptualised with the following objectives: a. Implement the principle of "Ask only Once" - to reduce siloed and parallel data collection across schemes and departments i.e. if data is collected by one department, another department should not seek the same data from the citizen. The cost of data collection by the department should be reduced and so should the inconvenience to the citizens. b. Adopt data driven approach for Evidence based Planning by creating a database for better planning, outreach, and policy design: 'What if' scenarios can be created by changing the criteria for enrollment, thereby for any schemes, the impact on exchequer can be analysed by understanding the monetary outflow. The data can also help in analysing and understanding, outreach and impact of the schemes. c. Suo-Moto delivery of welfare benefits to eligible systems through Entitlement Management system: Enable Government to identify eligible citizens based on inclusion and exclusion parameters of schemes and automatically disburse to eligible citizens without them having to apply. This reduces the burden on citizens. d. Empower Government to reduce the errors of inclusion and exclusion – identify deprived families using exclusion and inclusion criteria of Social and Economic Caste Census. Data on deprived families enables Government to prioritise citizens from deprived families for delivery of benefits.

Situation before the Initiative

An analysis of the systems/applications running in various departments of GoK highlighted the lack of availability of reliable, authenticated, single source of truth about a resident and her/his family. It was also observed that the departments were operating in siloes and there was no exchange of data between the IT systems, as IT systems were developed to meet the specific requirements of the department and information sharing to other departments was not a key requirement. These two constraints resulted in citizens having to submit proof of eligibility each time s/he applied for a scheme. It also led to the requirement of verification of eligibility by the Government officials through a manual process which is time consuming. All these issues resulted into cumbersome procedures, requiring multiple follow ups by citizens, inordinate delays in delivery of schemes

leading to high access cost for citizens. Government recognised the importance of having a reliable, authenticated database and interoperability/data sharing between the IT systems and conceptualised Kutumba – a family database. Government realised that the twin questions of "Why should a citizen submit her details each time she applies for a benefit/service and Why should a citizen apply for a benefit when Government can identify the eligible citizens using the data available with it" will also be addressed by Kutumba. Kutumba was therefore designed as a dynamic, self-updating database with a central data repository having the capability to suo-moto identify eligible citizens for welfare benefits of GoK.

Situation after the Initiative

Development and implementation of Kutumba has resulted in positive impacts in various aspects of delivery of welfare benefits. The key areas are as below: 1. Scheme formulation: Kutumba is providing primary data for scheme formulation and has enabled objective decision making with respect to eligibility criteria finalization and assessment of financial implication of the schemes. 2. Scheme Implementation: Kutumba has enabled a data driven approach for scheme implementation – (i) the need for submission of proof of eligibility has been removed or made minimal; (ii) data driven eligibility assessment has removed the need for field verification; (iii) rule based decision making has reduced the subjective selection of beneficiaries and (iv) enabled suo-moto delivery of welfare benefits. Suvidha (https://suvidha.karnataka.gov.in) runs on Kutumba database and determines eligibility of the citizen at the time of application. CM's Raitha Vidyanidhi Scheme – a scholarship scheme for children of farmers was delivered suo-moto and 7.4 lakh children were paid scholarship without having to apply. 3. 30+ IT systems in Karnataka are integrated with Kutumba and fetch data related to citizens and auto fill the forms. Platforms like Seva Sindhu, Nadakacheri, Suvidha which deliver services to citizens have adopted the Ask Only Once Principle and have reduced the burden of citizen having to submit documentary proofs. 4. Departments are empowered to weed out ineligible/deceased beneficiaries of their recurring schemes. Kutumba has enabled Public Distribution System to remove ineligible Priority Household (PHH) Card holders using data on exclusion criteria of income, land holding, vehicle ownership, Government Job holders, Income Tax, Professional Tax and GSTIN holders. 2.78 lakh ineligible PHH card holders have been removed. Kutumba broadcasts data of deceased beneficiaries using the data shared by e-Janma, birth and death registry of GoK. Directorate of Social Security Pensions has removed 1.6 lakhs of its beneficiaries using this data.

Extent of Process re-engineered

Process Flow before GPR

Steps in “AS IS” process 1. Notification calling for application. 2. Online submission of application by the citizen. Following details submitted a) Demographic details – proof of document – Aadhaar (eKYC/Demo authentication) upload document. b) Income and caste details –Certificate number/document upload c) Type of Ration Card for BPL – Ration Card Number/document upload d) Other details like land, type of farmer – certificate issued by Revenue department e) Specially Abled status – document upload f) Bank account details – copy of pass book/Aadhaar based DBT 3. Processing and verification - Semi automated a) Documents received electronically – verified online manually by the officials. b) Uploaded documents – manual verification. c) De-duplication- semi-automated – If Aadhaar/Ration card available then automatically, if not manually using Name, date of birth, gender, spouse and address fields. d) Manually reject the ineligible applications. 4. Approval – manual a) Based on eligibility determined in verification process. 5. Payment – semi-automated a) Applicant bank account is manually checked for name

4.2 Process Flow After GPR

Steps in “To Be” process Method I: Suo-moto delivery of schemes 1. Notification calling for application – removed. 2. Data for eligibility conditions of the scheme - automated a) Generated from Kutumba database using the eligibility conditions. Includes demographic parameters and Aadhaar vault reference number. b) Name match score provided to automate approval process. 3. Processing and Verification - Automated a) Only eligible applications processed b) Automatically de-duplicated for individual and family. c) No requirement of manual verification 4. Approval – semi-automated a) Records above threshold for name match score – recommended for approval. b) Records below threshold recommended for verification and approval/rejection. 5. Payment –automated a) ID validation and bank account linking check done using service of NPCI b) Payment to Aadhaar linked bank account. Percentage of processes re-engineered – 100% Method II: Online application 1. Notification calling for application – online 2. Data for eligibility conditions of the scheme – automated a) Applicant inputs Aadhaar/Ration Card number. b) Native application calls Kutumba and fetches data. 3. Steps 3 to 5 i.e. (3) Processing and Verification, (4) Approval and (5) Payment follow the same process as in Suo-Moto process. Percentage of processes re-engineered - 80%

Information / Data Flow Before GPR

Before GPR, the IT systems collected information from citizens as below: 1. One to one integration with different departments a) Seek IDs from applicant and fetch electronically from source systems. Ex: Aadhaar, Caste and Income Certificate Number, Ration Card etc. b) Seek beneficiary details for scheme specific data – Ex: Survey number or Farmer ID for land related data. 2. Manual upload of documents a) Upload documents where electronic integration is not available – Death certificates for claiming Widow Pensions b) Self-declaration as proof of not availing the benefit earlier. c) Proof of ID and Proof of Address if scheme is not notified to capture Aadhaar or requires Ration Card – Ex: Welfare schemes of Backward Classes Welfare Department.

Information / Data Flow After GPR

After GPR, the IT systems collect information from as below 1. Aadhaar/Ration Number from Citizen as input parameter 2. Call Kutumba with either of input parameter and fetch information required for the scheme. 3. For records not in Kutumba, call Kutumba with relevant ID and Kutumba fetches from source system, carries out name match and provides data to IT system. 4. De-duplication using the beneficiary data to exclude the citizens who have already availed benefit.

Specifics on removal of non-value add activities during GPR

1. Suo-moto delivery process a) Notification for applications b) Requirement of citizens applying for schemes c) Follow up by citizens to avail benefit removed. d) Time and access cost borne by citizens removed. e) Requirement of verification and processing by taluka and district level officers removed – enables centralised and approval and payment. 2. Online application process a) Requirement of citizen filling in her details in online forms achieved through auto-filling data fetched from Kutumba. b) Requirement of citizen uploading proof of eligibility removed. c) Requirement of manual verification of uploaded documents/entered data by Govt officials removed. d) Field verification for checking eligibility of beneficiaries availing recurring schemes removed. e) Verification of bank account details for correctness. f) Need for manual capture of data (demographic, personal and benefits availed data) during surveys. g) Need for IT systems to integrate with multiple IT applications.

4.6 Specifics on new value add activities during GPR

1. Near real time update of data by Kutumba using reverse integration process. 2. Broadcasting changes in key data fields like death to user departments. 3. Enabling departments to update the

recurring beneficiary data periodically by calling Kutumba. 4. Proactive identification of eligible citizens for welfare schemes 5. Data standardization across IT systems to enable seamless data sharing. 6. Data Governance activities.

Specific on change in rules, regulations, and policies

1. Govt orders issued for mandatorily capturing Kutumba ID in IT systems of departments delivering benefits/subsidies/rebate. 2. Considering family as in Kutumba for schemes delivering benefits like scholarships to children of farmers, weavers, taxi drivers etc. 3. A three tier Data Governing structure established to oversee all data related activities. 4. Defining the minimal definition of family and the verification and approval process for new families directly enrolling in Kutumba. 5. Adoption of Meta Data and Data Standards for data quality and Standardisation. 6. Adoption of Privacy by Design Concept in Kutumba. 7. Constitution of a Technical Committee to advise and monitor on Data privacy and data security aspects of Kutumba. 8. Enabling rights of data principal in Kutumba as envisaged in Personal Data Protection Bill.

Strategy/Methodology Adopted:

(i) Details of baseline study done

Government decided to move away from the system of seeking applications and documents from the citizen towards a data driven system. This change required a comprehensive database of citizens, with family concept built in it. As no such database was available, it was decided to develop a family database for Karnataka. Two approaches (i) A manual survey of households similar to that of SECC and (ii) Interconnecting existing databases were considered. Baseline studies were carried out, in addition to visits to other states having Family database, to determine the approach and process to be adopted for development of Kutumba. 1. Visit to Rajasthan, Madhya Pradesh and Andhra Pradesh to understand the processes adopted by those states for creating the family database. 2. Field survey of 10 villages across 5 districts using SECC data as base to determine the feasibility of adopting survey as a methodology for creating a family data base. 3. Proof of Concepts of various Master Data Management Tools to assess the feasibility of adopting tool based approach for connecting databases. 4. A pilot study by interconnecting PDS database with caste and income, pension and housing for one taluka (Srirangapatna taluka of Mandya district) was carried out followed by field verification of the connected data of one village.

(ii) Problems identified

Government identified several problems in achieving the objectives of welfare state. The development of family database was considered to address the key issues like 1. Inefficiency in Govt. benefits distribution or delivery. 2. Eligibility determination or targeting the beneficiaries - family income is a very weak parameter to measure and use. 3. Errors of exclusion and errors of inclusion. 4. High access costs for poor beneficiaries 5. Corruption in delivering benefits. The methodology to be adopted for development of family database was assessed through baseline studies. The Survey Based approach was found to be time consuming and reliability and authenticity of data given by citizens cannot be validated. Further ensuring all households are covered by the surveyor cannot be determined. Off the shelf MDM tools were found to be limited in functionality necessary for connecting databases and processing the same. Therefore the approach of interconnecting databases by developing an in house tool was adopted as the strategy.

(iii) Roll out/implementation model

1. Identification and finalisation of personal attributes/data fields. 2. Identification of data sources and finalisation of data owners for each attribute/data fields. 3. Interconnecting the databases with Kutumba through reverse integration for near real time update of data. 4. Gradual implementation from one village to one Taluka and then one district and later rolled out to entire state. 5. Establishing a three tier Data Governance structure with Steering Committee at the apex monitoring the activities of Kutumba. 6. Gradual on-boarding of departments through Government Orders to integrate with Kutumba – both forward and reverse. 7. Development of IT applications by Kutumba for those departments which did not have its own IT applications. 8. Development of Kutumba applications and APIs to enable data exchange. 9. The data available in Kutumba shared with other Govt departments relevant to it by adopting a rule based, seamless data sharing protocol. This has enabled an objective and data driven approach for selection of beneficiaries.

(iv) Capacity Building and Awareness & Communication Approach

1. Kutumba adopted a personalized, one to one approach to create awareness and build capacity in the departments which were identified to integrate with Kutumba. Requisite documents in terms of API documents, process notes were prepared by Kutumba team in consultation with concerned departments. The requirements of the department and their concerns were considered and clarified. Demonstration of the process flow with the new process were carried out and suggestions to improve

were given. Further, Kutumba team carried out training of the field officials on the modified process flow and clarify the doubts. E-Governance consultants at district level were trained on Kutumba system and were made to extend field support to the user department officials. 2. Regular meetings with officials handling IT systems to create awareness on data quality and data standardization and methods to improve the same. 3. Presentation on Kutumba to Secretaries and Heads of Departments to create awareness on Kutumba and its benefits. 4. Issue of Government Orders, circulars on the processes to be adopted for seeding Kutumba ID. 5. Setting of Project Management Unit for Kutumba consisting of Process Consultants and Technical Consultants who were assigned to departments to extend all necessary support

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

1. Automated Mode: Kutumba is integrated with Integrated Public grievance Redressal System to enable citizens to raise any grievances related to their data in Kutumba. 2. Assisted Mode: Helpdesk has been set up in Kutumba to extend support to field officials. Issues can be reported through email or telephonically. Tickets on the issues are raised in Issue Tracking System and monitored for closure. 3. Physical Assessment or Feedback Mechanisms: Regular follow up meetings are held with integrated departments to consider their issues and address them on priority. Further departments write through letters/emails and provide their feedback. Audit logs are verified or monitored to assess the state of integrations and identify issues, if any.

Technology Platform used:

(i) Description along with list of Open Source and Proprietary Technologies

1. Open Source platforms a) Performance Measurement Tool: jMeter b) API Verification Tool: Postman, SOAP UI c) Issue Tracker System: Bugzilla d) Source Repository: GIT Hub 2. Proprietary technologies: a) Web servers: Microsoft Internet Information Services (IIS) b) Operating System: Windows Server 2012 c) Database Server: Microsoft SQL server 2019 d) Database Tools: SQL Server Management Studio e) Reporting Platform: Power BI

(ii) Interoperability and Integration Aspects (Integrated System, Use of APIs, Micro services etc.)

1. API based integration a) REST APIs – for forward and reverse integration used in exchanging data. b) XML/JSON data formats to exchange data fields. c) Standard AES encryptions to secure API data payloads. d) Hash based check sum exchanges - to ensure data integrity. 2. DB Link based integration

a) Change Data Concept implementing through sand boxed database tables. 3. Offline data exchange or synchronisation using CSV a) Data exchange through Secure File Transfer Protocol Service.

(iii) Consent Management, Data Privacy and Cyber Security Aspects

Consent Management: Kutumba is notified under Section 4 4 b (ii) of the Aadhaar Act. It is integrated with various systems like AUA, eSign, Digilocker and consent of the citizen is taken electronically while capturing the data. Data Privacy: Privacy by design as a concept has been adopted in Kutumba. The principles implemented during design and development focused on the principles of purpose specification, data minimization, collection limitation and retention policy to ensure privacy as a default mechanism. It has also ensured that the design and architecture is aligned to the rights of Data Principal as envisaged in the Personal Data Protection Bill and IT Act 2000. Further, Data anonymization as a concept has been implemented and it is also adopted the hashing method for seeding Aadhaar and data authentication. Cyber Security Aspects: Kutumba databases are in Militarized Zone of State Data Centre and are monitored under Database Activity Management Solution and also Security Operations Centre of Government of Karnataka. Necessary IP whitelistings and restrictions have been implemented. Resources of Kutumba are periodically trained on cyber security aspects. Development desktops are hardened with restrictions and security policies.

(iv) Any issue with the technology used

None at this stage

(v) Parameters used in Service level Agreements (SLAs) and brief details (Give details about presence of SLA, whether documented, whether referred etc. #)

None at this stage

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Beneficiary Identification and Management System (BIMS), Government of Andhra Pradesh

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Objective of the Project:

Government of Andhra Pradesh (GoAP) with an objective to promote and preserve the wellbeing of its citizens has operationalized plethora of welfare centric schemes. Under various welfare schemes, social benefits are being extended to meet diverse needs of the citizens in a more efficient and effective manner. To accomplish the vision of universal and non-discriminatory delivery of all government schemes and services to citizens of all strata, the Gram Sachivalayams and Ward Sachivalayams Department (GSWSD) - Andhra Pradesh has implemented a comprehensive, configurable, and scalable robust technology platform called Beneficiary Identification and Management System (BIMS), which re-defined and re-engineered the whole concept of beneficiary inclusion. Information technology, used in BIMS, provides unprecedented opportunity to realize this vision by progressing towards proactive e-Governance i.e. a "push" model, whereby government proactively and seamlessly delivers just-in-time welfare schemes in the most efficient and corruption free manner to the citizens based on their individual needs, preferences, circumstance, and location. The BIMS is a culmination of trusted sources of data elements (demographic information and documents) which is required for the purpose of scheme delivery. BIMS serves as a trusted source of data points for all citizen centric information. This is being used by the government for following purposes : 1. Enable Data Driven Decision making – The government is able to design schemes in a scientific manner based on the data elements available, in BIMS, about the citizens and the schemes. 2. Identification of Inclusion and Exclusion Errors – The government can proactively identify all the eligible beneficiaries of the schemes with the help of BIMS. BIMS gives an overview of all the benefits availed by a citizen in various schemes across different departments in erstwhile years. BIMS allows the departments to analyze living standards of citizens from service-related databases including Vehicle ownership, Electricity consumption, Land ownership etc. for deciding eligibility. 3. Rapid operationalization of schemes and evidence-based policy making - Administrators can get a complete view of any welfare scheme that has been launched and correspondingly find out the percentage of citizens availing the same. Administrators can accurately find the gap areas that have not been covered with respect to different filters like geographical region, gender, and other

demographic parameters. This analysis ensures proper grievance redressal and better targeting of beneficiaries for future purposes of policy making w.r.t various schemes. 4. Improving Citizen Experience - Based on the data points collected in the BIMS, application forms are being pre-filled for a better scheme delivery experience for the citizen. The benefits can be availed anytime and anywhere, and further the fact that citizens can apply for the aforesaid schemes at any time of the year and avail benefits as per the disbursement schedule. The ultimate vision is to ensure a free, fair, and transparent scheme delivery system across the state.

Brief Details of the Project :

The BIMS is a culmination of trusted sources of data elements (demographic information and documents) which is required for the purpose of beneficiary identification, scheme designing, and correspondingly the delivery of the schemes to the citizens. The information captured in the BIMS is managed via information system. The basic architecture for these information systems includes (i) data & information (data intake, data exchange, data protection) (ii) software applications to support both front-end and back-end functions; (iii) database management and interoperability and (iv) ICT infrastructure. Data points are the core input and output of the Beneficiary Identification and Management System. The main “inputs” to this system include various types of data points and information needed to determine potential eligibility for social programs, which typically includes identifying socio-economic information such as Cast, Gender etc., information on housing and assets such as landholdings and other types of information depending on the usage. The main “outputs” of the BIMS are the eligible and ineligible lists, aggregated analytics ready data and information about the scheme & the beneficiaries, and data elements to scientifically design schemes etc. In the BIMS, a minimalistic approach has been adopted wherein only minimal information is stored centrally within GSWSD and remaining information is stored within department(s) systems outside the GSWSD platform. There are two kinds of registries or databases in the BIMS viz. (i) Central Registries (only essential fields which cannot be obtained from elsewhere for scheme delivery) (ii) Department Databases (data elements for which the department is a trusted source of information). The platform has revolutionized scheme delivery by enabling departments to collaborate for available information and resources. Citizens are required to provide their documents/identification number only once, the schemes are delivered proactively without a need to apply, and social benefits are directly disbursed to bank account.

Situation before the Initiative

BIMS became an integral part for a unified scheme delivery framework as implementing the same helped the government overcome certain challenges that were being faced in the governance of schemes. Some of the challenges faced before the implementation of BIMS are highlighted below : 1. Decision making: There was a lack of data driven approach in designing Schemes and identifying eligible beneficiaries in the schemes. Both scheme designing and beneficiary identification was highly manual and discretionary. 2. Lack of Integrated system: In the previous scheme delivery framework verification and approvals of applications were manually processed. Physical documents were collected and processed by the concerned department's stakeholders manually. 3. Leakages: Inclusion error was one of the major issues for the government leading to financial losses and incomplete targeting of the beneficiaries. 4. No Unified Truth or Trusted source of information: The previous scheme delivery framework did not involve a seamless data exchange between departments. Data pertaining to citizens were residing in silos which was a challenge for the government in the scheme implementation process. 5. Transparency – The system lacked transparency as scheme processing, approval and verification was done manually with no digitized information available about the key aspects related to the scheme. 6. Red Tapism – As data elements resided with various departments, it became difficult for a citizen to collect eligibility requirements in a timely manner. This led to red tapism in the scheme delivery system.

Situation after the Initiative

The Scheme delivery framework and the construct have been transformed in the state by using the services provided via BIMS. Some of the major upgradations achieved thereby are as follows: 1. Data Driven Decisions – Based on the information available in the BIMS, the government is able to design schemes in a scientific manner leading to better targeting of the beneficiaries. 2. Cashless, paperless, and faceless access to public benefits – The application forms are pre-filled with all the relevant information available in the BIMS which improves productivity and the citizens' experience in availing the schemes and services provided by the state. 3. Identification of Inclusion and Exclusion Errors - BIMS gives the government an overview of all the benefits availed by a citizen in various schemes across different departments in erstwhile years. BIMS allows the departments to analyze living standards of citizens from service-related databases including Vehicle ownership, Electricity consumption, Land ownership etc. for deciding eligibility 4. Rapid operationalization of schemes - Administrators can accurately predict the gap areas in the scheme framework and are able to design

schemes to overcome the gaps. 5. Improving Citizen Experience via public grievance redressal - The nodal departments are able to address grievances related to the schemes in a committed timeline because of the required information available about the citizen in the BIMS. 6. Higher awareness about the schemes – The citizens can check their eligibility for any scheme in an assisted mode by using the eligibility calculator, which helps them to be more aware about the scheme calendar for the year and the eligibility criteria for the schemes. 7. Automatic enrolment of beneficiaries for the services – By using the data points and the information available in the BIMS the citizens can be automatically and proactively enrolled in the schemes and the benefits thereby can be disbursed directly to their bank accounts.

Extent of Process re-engineered

Process Flow before GPR

Steps that were followed to avail the welfare scheme before the Beneficiary Identification and Management system (BIMS) was developed 1. Citizens had to visit the Mandal/District level offices and submit the physical copies of their document to apply for the respective schemes. 2. The hard copies of documents were segregated and sent to respective departments for further approval. 3. The application and the physical documents were not digitized for future use. 4. Manual field verification used to happen by Mandal/district level officers which was time consuming and inefficient. It was quite difficult to check the duplication of records and fake applications in the system. No information was provided about when the benefits would be accrued to the citizens bank accounts. 5. Clerical mistakes and wrong entries were a common thing during this process. There were transaction errors, payment related issues and grievance redressal was time taking. Beneficiary details were manually sent to the banks for processing and disbursal of payments. 6. It was herculean task for the departments to find the total beneficiaries count and estimating the correct requirements of the budget.

Process Flow After GPR

100% of the scheme implementation process has been reengineered using BIMS as follows 1. The eligibility of the citizen is checked by the Eligibility Calculator against the citizens household details and other important parameters and data points captured in the BIMS. 2. If the citizen is eligible, they can apply for the scheme through the BIMS itself across the state via any secretariat. 3. The basic details of the beneficiary are pre-filled with the information & data points captured in the BIMS,

which removes the need to visit various departments. 4. The BIMS system through an eligibility calculator rechecks the eligibility of all the applicants, to identify ineligible beneficiaries, against their household details and the other important parameters and data points captured. 5. Based on the ineligible beneficiary list generated, an ineligible citizen can raise a grievance in BIMS if he is not satisfied with the reason of his/her ineligibility. 6. After field verification, if the citizen is found eligible, respective databases are updated by sending a trigger to the BIMS. 7. Aadhar based payment is then done to the beneficiary account by the beneficiary lists generated through BIMS.

Information / Data Flow before GPR

Steps involved in the data and information flow before the BIMS was developed 1. There was no centralized processing of applications for schemes until this system was setup. The citizen used to submit physical documents to apply for a particular scheme. 2. The physical documents along with the application form were manually processed for approvals and verifications. 3. Information and data points were either shared in physical hard copies or through emails. 4. Beneficiary details were manually sent to the banks for processing and disbursal of payments.

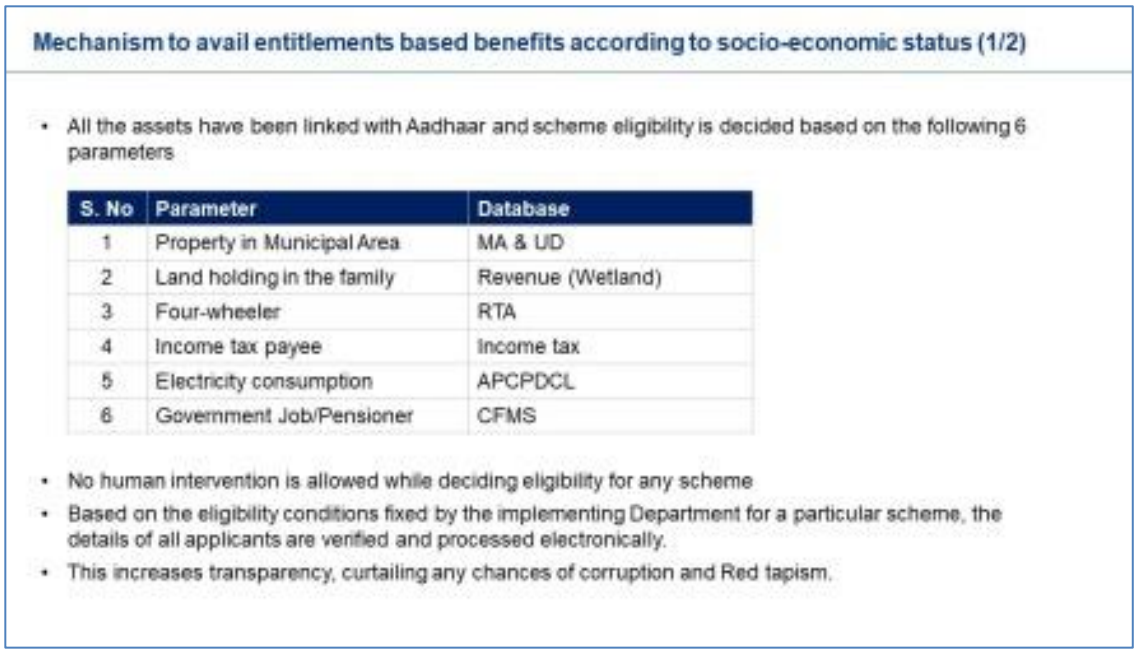
Information / Data Flow After GPR

Steps in the current data and information flow 1. The entire process from application to approvals to disbursement has been digitized with the launch of the BIMS. The data resides in the BIMS and can be accessed by relevant stakeholders through a secured and dedicated access to the portal. 2. The BIMS has also digitized the information needed to avail any welfare schemes in the state. 3. In the current system the eligibility of the citizen in a welfare scheme is determined by the eligibility calculator. The eligibility calculator uses the data points available for the citizens to determine eligibility for a particular scheme. 4. The approving authorities can verify and approve the digitized application through a digital signature. 5. Once the application is approved it is either send to the CFMS or Collectors for payment disbursal. 6. BIMS has been integrated with the Aadhaar ecosystem and uses Aadhaar based payment system to disburse benefits directly to the beneficiary’s bank accounts

Specifics on removal of non-value add activities during GPR

Five specific non-value activities have been removed for the scheme delivery process 1. Scheme Application- The citizens had to apply for all the schemes manually at specific locations. 2. Citizens had to submit physical documents and manual application forms multiple times. 3. Manual validation

– Scheme processing was done manually in the previous process 4. Bank Account: the citizens had to submit bank account details for every scheme. This led to verification of beneficiary's accounts for every scheme and also lead to leakages due to ghost beneficiaries. 5. Physical movement of the documents were undertaken in the approval hierarchy.



Mechanism to avail entitlements based benefits according to socio-economic status (1/2)

- All the assets have been linked with Aadhaar and scheme eligibility is decided based on the following 6 parameters

S. No	Parameter	Database
1	Property in Municipal Area	MA & UD
2	Land holding in the family	Revenue (Wetland)
3	Four-wheeler	RTA
4	Income tax payee	Income tax
5	Electricity consumption	APCPDCL
6	Government Job/Pensioner	CFMS

- No human intervention is allowed while deciding eligibility for any scheme
- Based on the eligibility conditions fixed by the implementing Department for a particular scheme, the details of all applicants are verified and processed electronically.
- This increases transparency, curtailing any chances of corruption and Red tapism.

Specifics on new value add activities during GPR

Eight specific value-added activities have been included in the delivery process 1. Proactive Service delivery: based on the data in the BIMS the citizen can be automatically enrolled for schemes and benefits are disbursed directly to their bank accounts (DBT) 2. Prefill of application: the application form is prefilled with the data and information available in the system reducing time and improving efficiency. 3. Workflow digitization: The BIMS has digitized the entire scheme processing workflow hence approvals are being provided using digital signatures 4. Any time anywhere registration: the citizens can visit any secretariat and can apply for any service or scheme through an assisted mode. 5. Grievance redressal mechanism: a robust grievance redressal mechanism has been developed to help all eligible citizens. 6. Eligibility Calculator: the citizens can check their eligibility for any scheme at any point of time and raise grievances to rectify incorrect information's 7. Aadhaar based Payments: the BIMS uses Aadhaar based payments which helps in removing ghost beneficiaries and removes cumbersome verification of accounts for every scheme. 8. The concerned authorities are able to approve the beneficiaries through the use of their digital signature, hence physical movement of document in the approving hierarchy has been reengineered.

Specific on change in rules, regulations, and policies

The new integrated scheme delivery application powered by the BIMS helps the citizens to (i) avail benefits anywhere and anytime: the citizens can apply for the schemes in the assisted manner from any secretariat in the state. (ii) proactive delivery of benefits: based on the information in the BIMS the citizen is automatically and proactively enrolled in the welfare scheme (iii) Bi annual disbursal of payments: the robust grievance module powered by the BIMS helps the ineligible beneficiaries avail the benefits of a welfare scheme twice a year by raising grievances to modify and rectify data errors in the departmental systems.

Mechanism to avail entitlements-based benefits according to socio-economic status (2/2)

For example, if an applicant applies for a Rice card, the conditions fixed by the Civil Supplies Department are given below:

S. No	Parameter	Department/Database	Eligibility Criteria prescribed by Civil Supplies Dept.
1	Property in Municipal Area	MA & UD	Family in municipal areas who owns less than 1000 sq ft of built-up area.
2	Land holding in the family	Revenue (Wetland)	Less than 3.00 acres of wet (or) 10.00 acres of dry (or) 10.00 acres of both wet and dry land together
3	Four-wheeler	RTA	Family should not own a four-wheeler
4	Income tax payee	Income tax	No family member should be an income tax payee
5	Electricity consumption	APCPDCL	Monthly electricity consumption of a family dwelling unit (own/rent) should be less than 300 units per month
6	Government Job/Pensioner	CFMS	No family member should be Government employee or Pensioner

5. Strategy/Methodology Adopted:

(i) Details of baseline study done

Our research started 3-6 months before the platform was envisaged. We have studied the processes and back-end systems of 25+ different schemes in the state. We were able to experience the delivery process firsthand which helped us understand the opportunities for improvement. We have also conducted focus group discussions with citizens and various government officials involved in the planning cum delivery of the welfare schemes in the state to understand the challenges faced thereby. The focus group had participants which were consumers for different kind of schemes delivered by the government. Some beneficiaries from various parts of the state were also interviewed to understand the citizens perspective on the scheme delivery system. We have also consulted Principal

Secretaries and officers from 10+ departments, and all district collectors to understand the tools and infrastructure that may be needed to make the welfare scheme delivery process more efficient.

(ii) Problems identified

Four important learning from the above validation activity were 1. We understood the roadblocks in public service and social benefits delivery process, and challenges in the erstwhile scheme delivery system. 2. Pain areas w.r.t teams and manpower involved with planning and delivering welfare scheme benefits delivery were identified. 3. Citizen's perception and expectation from the government wrt to the public services and scheme benefits was found to be less satisfactory. 4. Challenges faced by the citizens while consuming services and benefits like time-consuming process, red-taoism, corruption, lack of one stop centre, lack of proper grievance redressal system etc. 5. Administrative problems in handling applications in different formats and manual processing. Our core solution did not change however we were able to customize the services being offered by the BIMS platform in alignment with our understanding from the validation exercise.

(iii) Roll out/implementation model

Pilot phase was conducted in one district to test the stability of the system. Based on the inputs received from the field, changes had been taken up. USP of this system is real time synchronization of data from various departments to validate the beneficiaries' eligibility. All stakeholders involved in the workflow including departments and field staff have been provided access to the portal through a secured mechanism. Since this system is automated to verify the beneficiaries, payments are being processed in a day after validation. Aadhar based payments reduced the number of complaints considerably. For example, in YSR Cheyutha scheme, we take the beneficiary Aadhar number and pre-fill the details in application. It is verified by authorities in an online format, at various levels, and eligible lists are sent to banks for Aadhar based payments directly into the beneficiaries' bank accounts. Money is credited to the beneficiary on the same date of scheme launch, without any delay.

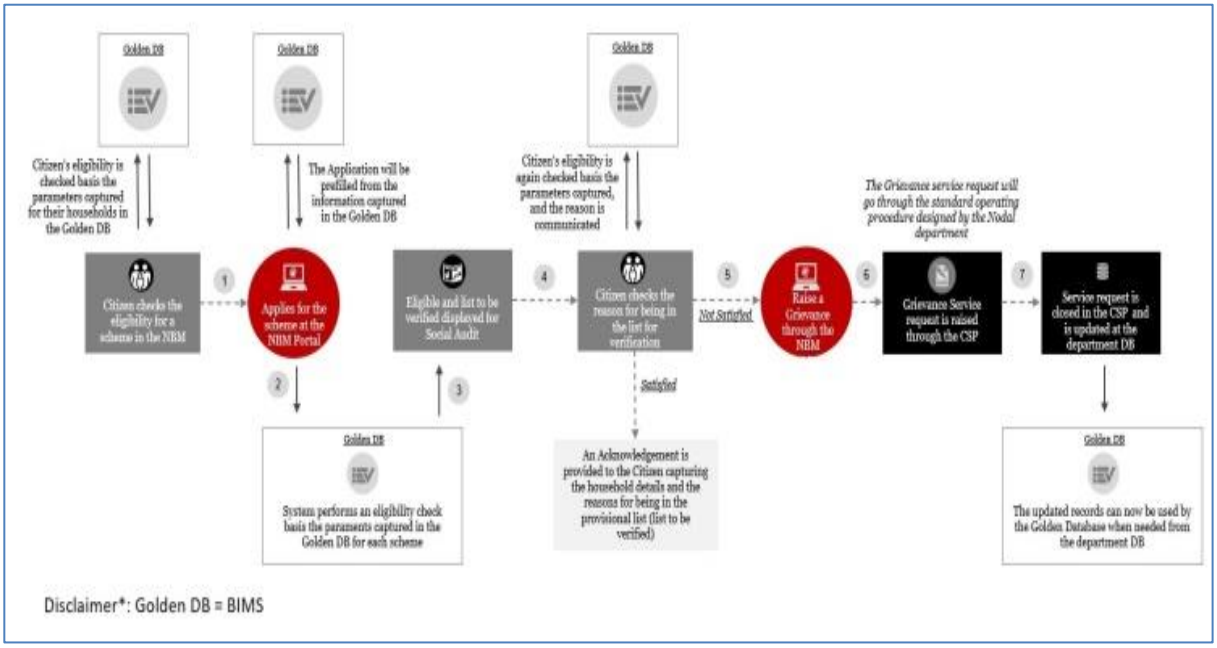
(iv) Capacity Building and Awareness & Communication Approach

BIMS launch was followed by an extensive training to functionaries working under GSWS department. The core functionaries, Master trainers, District Coordinators, Town coordinators, technical teams were provided hands-on trainings in a centralized location. Detailed training schedule were given to districts to train all the field functionaries through core functionaries. Regular Virtual meetings were conducted from Headquarters to communicate the regular updates on the process flow

and scheme specific information. User manuals and capacity building module were prepared and distributed to all the field functionaries. To maintain a two-way communication process, online groups and forums were created scheme wise and district wise. Scheme specific content was created on YouTube channels in both Telugu and English language. Officials who were involved in the delivery of schemes in the assisted mode were also trained on the working of the system and the benefits of BIMS.

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

All the schemes go through social audit process whereby the beneficiaries' lists are shared with the citizens through the secretariat system for their information. We are also developing a robust feedback mechanism system. Social Audit: Social Audit is a process where the details (name, reason for ineligibility etc.) of eligible and ineligible beneficiary are displayed at the 15004 Gram secretariat for a period of 7 days. The citizens can verify their details and raise grievances based on the displayed details. On completion of the social audit process all eligible beneficiaries are finalized and the details are sent for further processing. Analytics Screens: A digitized feedback mechanism is being developed to collected real time feed backs from the citizens. The citizens will be able to give feedback through multiple channels e.g.: web application, mobile application etc. the data collected through the feedbacks will be transformed into insights and information and would be available in the form of dashboards and reports for the citizens in the analytics screens.



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Banglar Shiksha Online 3.0, Government of West Bengal

Objective of the Project

School Education Dept., Govt. of West Bengal has developed a robust online system – BanglarShiksha 3.0 with the objective of bringing data of the public education sector into one digital platform which periodically assesses the overall performance of schools on pre-determined key performance indicators covering all aspects of school education. School level data is consistently tracked and used to determine areas of improvement. To further make the data school specific, a School Management System has been set up to enable authorities to manage day to day activities of the school efficiently which supports login facilities to the Head of the Institutions, teaching and non-teaching staff, students & guardians. Every school can easily create/update its own school website as per pre-defined templates. Every student's evaluation data (CCE) is processed in the online system along with class routine, class plan, class log, students' attendance, student-teacher chatting facility etc. using web as well as mobile application. BanglarShiksha3.0 currently consists of database of every school, its infrastructure, teaching & non-teaching staffs and details of every student. The Portal is operated by stakeholders of School Education eco system, like, Head of Institutions, officials at Circle, Block, District & State levels including Hon'ble Chief Minister, Hon'ble Education Minister, Chief Secretary, Principal Secretary & other senior officials of the Dept. who have their own dashboards which highlight important KPIs and progress monitoring reports of various activities with real time reports. Salient features: i. Single source of Student Unique ID - Data of every student is carried forward throughout student life cycle; irrespective of class, academic session & school (for transfer) ii. Requirement of human resources as well as physical infrastructure can easily be assessed with regard to RTE Act–2009 for every school on real time and thereby, necessary arrangement can be made accordingly iii. Periodical data sanitization measures are carried out, keeping multiple check points for data verification at various stakeholder levels establishing monitoring /helpline cell for data transaction and minimizing errors iv. Covid Management - Online classroom facility, activity task, e-learning materials, video tutorials in COVID pandemic situation was implemented through BanglarShiksha v. Toll Free number for facilitating various issues has made it convenient towards the users vi. Creation of website for every school as per predefined template vii. All types of incentives (Textbooks, exercise book, school diary, school uniform, school bag, school shoe etc.) towards

students are tracked through this application. Various other Departments of the Govt. are also parts of the supply chain management system viii. Online Survey of UDISE+ data is processed through this system ix. Various survey reports are captured from the school level x. Students' Dropout rate has become minimum in the country for proper student tracking xi. BanglarShiksha Online YouTube Channel has become effective for all stakeholders for multifarious reasons BanglarShiksha 3.0 is a comprehensive database of all 94K+ schools, 1.7+ Crore Students & 4+Lakh Teachers of the State and it also integrates the online Salary Management System, mParidarshan Mobile App for school inspection, eHRMS Mobile App for all school employees and their HRMS related data along with salary details & Mid-day Meal.

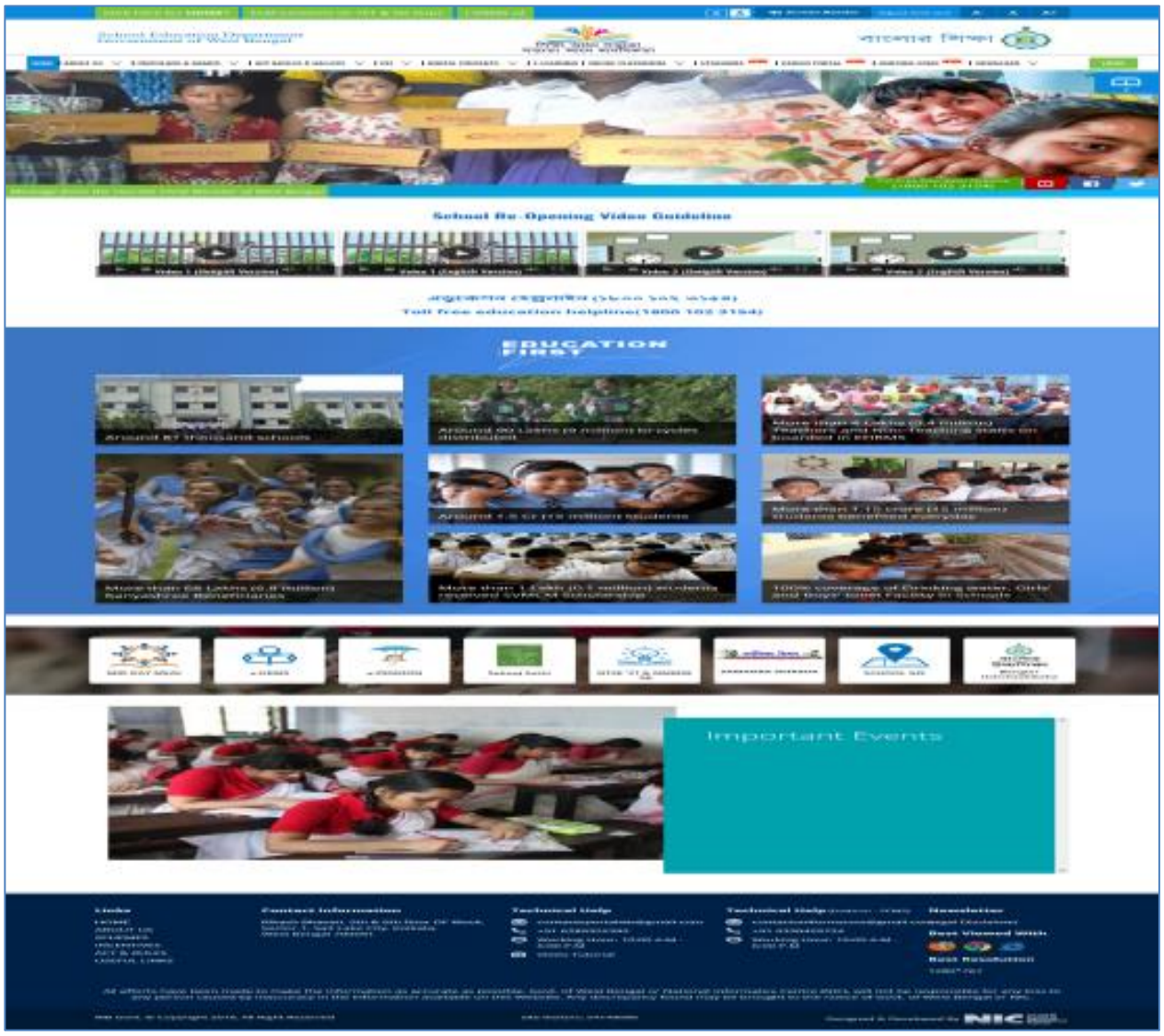
Brief Details of the Project :

BanglarShiksha3.0 is a comprehensive database of all Students & Teachers of the State which includes efficient tracking system for Students' Progress, electronic workflow for incentive distribution, electronic workflow based system for day to day activities at School, integrated process for preparing class routines, class logs, daily attendance etc., online capturing of entire U-DISE+ survey data, comprehensive workflow for data entry, verification & certification, database of 1.5+Crore Students' data, database of Teaching & Non-teaching Staff and also integratesIntegrated Salary Management System, mParidarshan Mobile App for school inspection, eHRMS Mobile App for all school employees and their HRMS related data along with salary details, Mid-day Meal Information System.

Situation before the Initiative

• There were multiple sources of school specific data. • A need was felt for having single source of verified data point which caters to Department's needs. • Lack of digitization of data meant erroneous manual entries which posed as a serious problem for report generation and impacted decision making. • Storage of large volume of data and data transaction between different stakeholders were not efficient. • Unavailability of complete database of all types of schools under the Govt. of West Bengal, unavailability of the online workflow of different incentives, unavailability of reports in due time for a better implementation of different schemes, lack of level wise assignment of responsibility for quick implementation of different activities were some of the challenges of the Dept. which triggered to conceptualize the project: Banglar Shiksha3.0. • Availability of complete live data set with regard to school, student & employee was a utopian concept as per the then situation which

would affect the administrative control and decision making at the State end causing a challenge for compliance of RTE Act-2009.



Situation after the Initiative

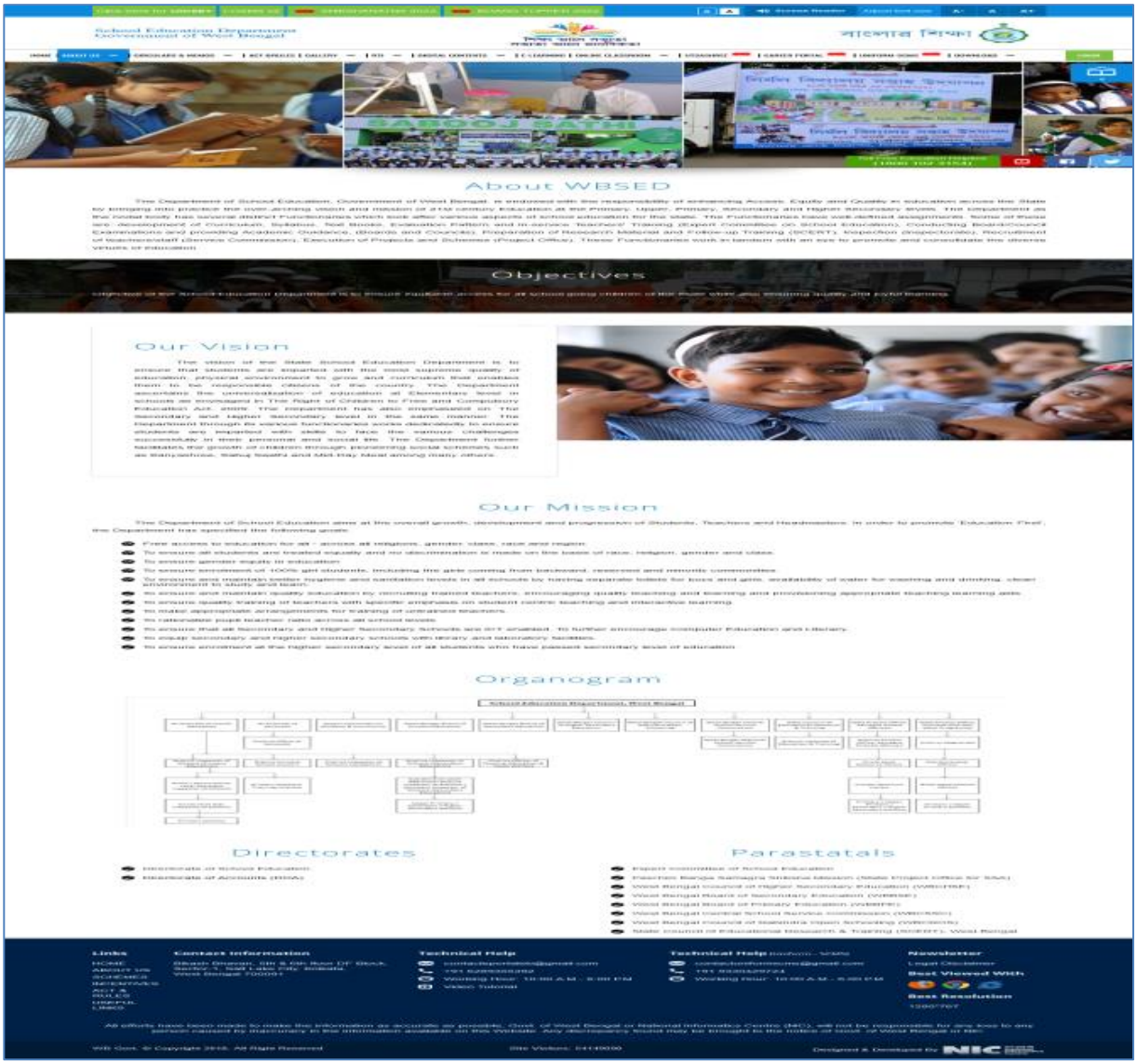
• Created a single repository of schools, teachers and students' specific data through BanglarShiksha 3.0. There are checkpoints created within the system for school, district and state level officials to verify data before it is considered for report generation. Additionally, Mission BanglarShiksha drive has been carried out successfully which is a 3-month long data sanitization process for verifying the database. • BanglarShiksha3.0 is deployed in cloud for dealing with large volume of data storage and acting as a database for historical data. So, any data is just a click away. • BanglarShiksha3.0provides

interface to all stakeholders embedded in school ecosystem. This helps in easy access, modification of data and seamless data transaction between state, district and school officials keeping the school ecosystem dynamic for live data. • Entire education monitoring and management system through BanglarShiksha3.0 ecosystem which allows seamless interaction between school dataset and allows tracking of live data at State level • Tracking of live data and swift transaction of data has enabled faster report generation, dynamic dashboards and quicker policy intervention • Single source of information on school, teachers and student's data • 1.7+ crore student data completely digitized and accounted for in BanglarShiksha system. • Monitoring for implementation of different schemes or distribution of incentives has become more convenient. • Implementation of DBT to the Bank account of every eligible student beneficiary for certain scheme • Online classroom facility for students in the COVID pandemic situation • School specific website creation has made the application unique • Students are now becoming technically sound for using the application as a part of their daily school related activities including class routine, class plan, class log, exam. Schedule, CCE evaluation, MCQ test, chatting with teachers for necessary support, etc. • Administrative control has become more easier for availability of complete data set at one click.

Extent of Process re-engineered

Process Flow before GPR

Students' data were preserved at every individual school manually and there was no online system for students' tracking of retention / promotion / drop out, etc. School authority had to submit monthly returns as per prescribed format to the higher authority and its manual compilation was a huge task. The State Authority had to depend upon the single source of UDISE data which was captured as on 30th September every year. No live data management system was in force. Distribution of incentives was also monitored manually. Schools and their Teachers' data was also maintained manually. Teachers' salary was also drawn manually and there was no human resource management system. Teachers had to apply manually for transfer which would take too much time to materialize for involvement of different level officials belonging to different establishments.



Process Flow After GPR (include percentage of processes re-engineered)

Single database tracking student progression throughout the life cycle of a student has been implemented through BanglarShiksha Portal. A unique student ID is generated and assigned to every student at the time of first admission which stays with him/her even after a student passes out of the school education system. This ensures that all students are unique in BanglarShiksha3.0 ecosystem. Periodical data sanitization measures, keeping multiple check points for data verification at various stakeholder level within the portal and establishing monitoring/helpline cell for data transaction and minimizing errors. Requirement of human resources as well as physical infrastructure of the schools can easily be assessed with regards to RTE Act – 2009 in respect of every school at any point of time and thereby, necessary arrangement can be made accordingly. The process has been re-engineered cent percent.

Information / Data Flow before GPR

Manual process was maintained for collecting and collating some specific data from every individual school. Compilation of data was done level wise subsequently which might be different than actual real-time data at school level. Any new requirement of data from the schools was also very time consuming. State authority had to depend upon the yearly data source of UDISE which was supposed to be collected as on 30th September every year for needful policy making. No proper online tracking system was in force at any level. Time specification wise decision making was hard due to lack of proper data.

Information / Data Flow After GPR

Students' data are captured by the school concerned in the online system of BanglarShiksha3.0 by their own login credentials and those data may also be updated at any subsequent point of time, if required so. Student's unique ID is generated and assigned to every student at the time of first admission which stays with him/her even after a student passes out of the school education system. No scope duplication of actual data at any school within the State makes the application to be error free. Some data are restricted for updating from the end of concerned higher level officials. Students or their parents / Employees can also verify their data. Functionality has been fixed for every stakeholder within the system. All data are available to the respective officials only of the Department and to the higher authorities of the State including Hon'ble Chief Minister. Important KPIs are also there for useful policy making. Provision for downloading important reports is also available at the login of respective stakeholders.

Specifics on removal of non-value add activities (include number of activities as well) during GPR

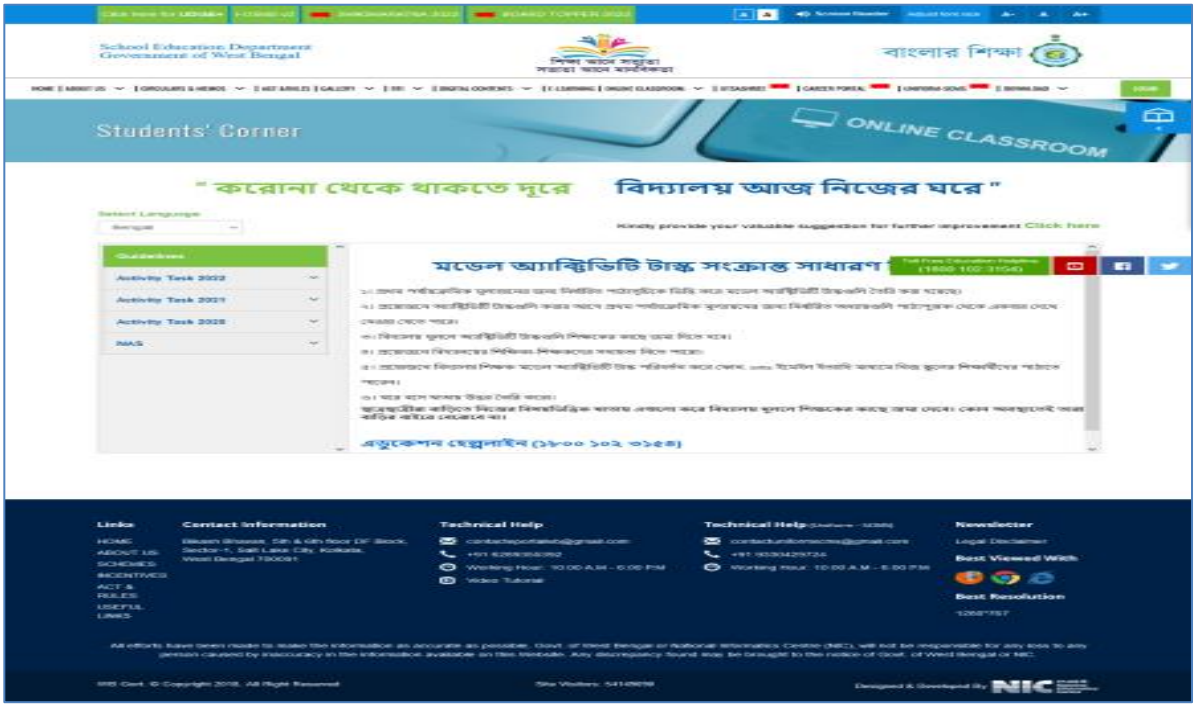
No manual method of data compilation is presently in force. Concerned stakeholder may get the required information at a single click. Now the lowest unit is the student in place of school. Time and cost efficiency has been enhanced in every respect. Some of the non-value added activities which have been removed are: i) Student image not uploading reason ii) School Location capturing using mobile app iii) Employee profile Add iv) Student upload progress monitoring report v) DCF (Data Capture Format) Distribution & Collection vi) Student Image not uploaded report (SI/DI/DSE)

Specifics on new value add activities (include number of activities as well) during GPR

A good number of new value added activities have been implemented in the respective logins. i) Tracking of all types of Incentives towards students ii) DBT to the bank account of eligible student beneficiaries iii) Tracking of every student's transferas well as promotion/detention iv) Admission of students and data entry v) Tracking of every student throughout student-life cycle vi) Inclusion of all management school under the same umbrella vii) Online transfer of employees viii) Online implementation of UDISE+

Specific on change in rules, regulations, and policies

Some changes have been made for implementation of the online process of data management with regard to students, teachers and schools. Students' transfer, employee transfer etc. are now fully managed through the online system. i) Transfer out rules changed for students upto class VIII as per no detention policy ii) Student promotion detention rules changed for CWSN students upto class VIII iii) Update student's current class from SI login (IX-X, XI-XII, PP-VIII for CWSN) iv) Change of medium and school management

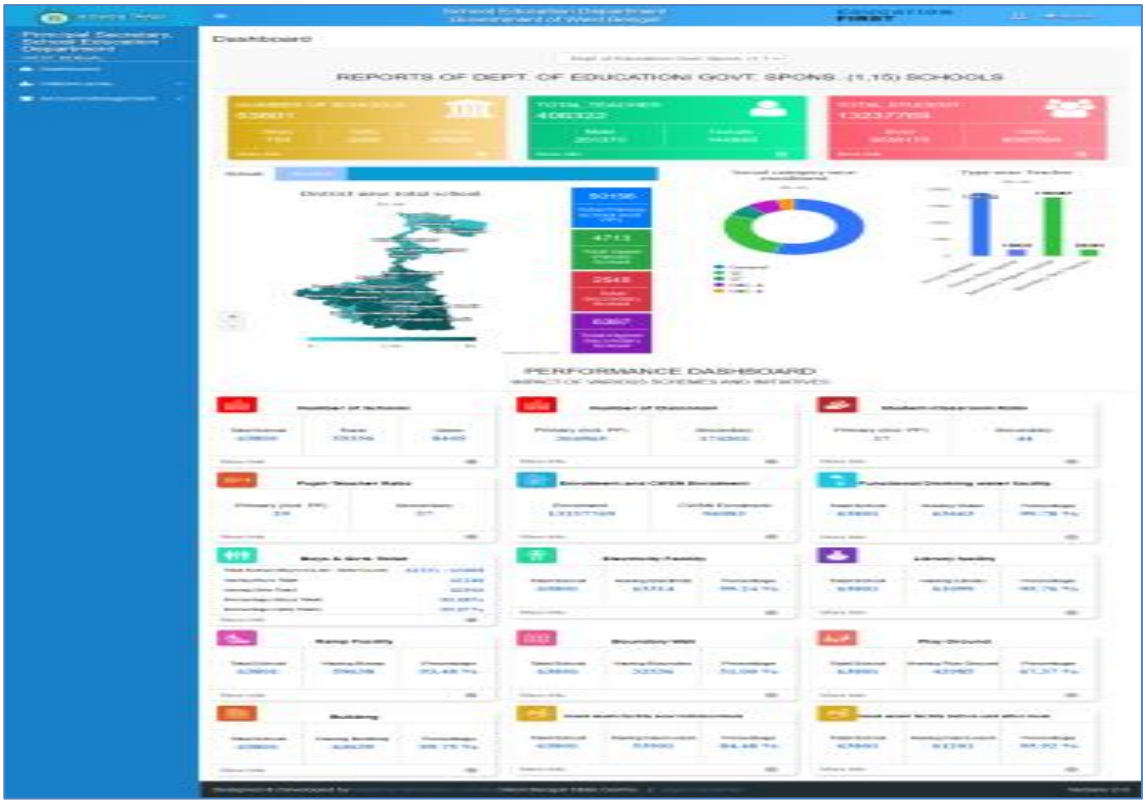


Strategy/Methodology Adopted:

(i) Details of baseline study done

a. Consultation with other State School Education Departments (Maharashtra, Uttar Pradesh, Rajasthan) to capture best practices in similar areas b. Engagement of NIC as main technical

agency/solution architect for implementation and development of the portal c. Consulting experts at State level for understanding expectations and needs d. Periodical Users Acceptance Testing (UAT) with school and district/circle level officers to understand user experience e. Regular monitoring at State level of every activities for proper implementation within specified time f. Extensive training of officials, level wise for rolling out implementation of portal g. User Manuals, video tutorials made to support users of the portal h. Helpline number set up to better support implementation process i. State Data Analysis and Management Center established to provide Monitoring and Evaluation of the portal and its activities



(ii) Problems identified

a. Conducting of Training of all stakeholders from state to school level to adapt with technology b. Ensuring all student data is captured in the system with minimum errors c. Creating the mechanism for streamlining helpline support to all concerned d. Establishing Monitoring cell for continuous development of portal e. Fostering digital adoption amongst everyone so that BanglarShiksha is used by all f. Finishing training and development of portal in time bound manner g. Ensuring deployment, development and data entry happen in time-bound manner

b.

(iii) Roll out/implementation model

i. Single source of Student Unique ID - Data of every student is carried forward throughout student life cycle; irrespective of class, academic session & school ii. Requirement of human resources as well as physical infrastructure can easily be assessed with regard to RTE Act–2009 for every school on real time and thereby, necessary arrangement can be made accordingly iii. Periodical data sanitization measures are carried out, keeping multiple check points for data verification at various stakeholder levels establishing monitoring /helpline cell for data transaction and minimizing errors iv. Covid Management -Online classroom facility, activity task, e-learning materials on different languages, video tutorials in COVID pandemic situation v. Toll Free number for facilitating various issues vi. Creation of website for every school as per predefined template & monitoring of daily activities including students' progress vii. Tracking of all types of incentives (Textbooks, exercise book, school diary, school uniform, school bag, school shoe etc.) towards students viii. Online Survey of UDISE+ data ix. Capturing of various survey reports from schools x. Tracking students' dropout rate xi. BanglarShiksha Online YouTube Channel xii. Integrated Online Human Resource & Salary Management System xiii. mParidarshan mobile app for school inspection xiv. MDM information system

(iv) Capacity Building and Awareness & Communication Approach

Help files / user's guidelines for all concerned stakeholders were prepared for all activities covered under BanglarShiksha and the same were shared with them. Face to face trainings were conducted amongst all stakeholders in order to make it convenient for them in day to day activities. Subsequently, orientation programme was also made for all Circle level Sub-Inspector of Schools for necessary supervision and monitoring. Specific phone numbers and emails are available for any kind of technical assistance. Toll Free Contact No. of the Dept. is also available for the assistance of the users. Manual for every subsequent modules in the portal are available at the login of all concerned stakeholders. Audio-visual training materials are also provided for the stakeholders through BanglarShiksha Online YouTube channel.

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

A State Data Analysis and Management Center (SDAMC) has been established to maintain the portal and solve if and when issues arise. SDAMC is also responsible to analyze the data and to get it error

free by all concerned. This center also provides necessary inputs to Department for further innovation and enhancements in the portal. There is also a provision for online suggestion by any individual for further course of action and making the portal more useful to all concerned.

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FINRMS, Government of Uttar Pradesh

Objective of the Project

FINRMS was created to streamline the Finance Dept of UP, to make it more efficient, data-driven, responsive and quick. Finance Dept is the lung of the government, breathing air into various departments, by sanctioning, allocating and releasing funds and also by monitoring expenses and cash flow. Each department sends request to Finance Dept for fund allotment and releases. For processing of every such request, Finance Dept requires a lot of data points such as budgetary allocation, previous sanction, running expenditure, money surrendered etc. These data points are gathered manually by humans (officials and clerks) from various sources, who then analyze it and make recommendations. This results in the age-old problems of delay, lag, inefficiency and human errors. FINRMS was designed to solve thse problems. FINRMS stands for Financial Releases Management System. FINRMS is a unique innovation, the first of its kind in the country. It is a data-driven system which analyzes the real-time situation of finances of the State, along with the spending pattern in various schemes of different departments of the government, thereby helping in decision making regarding financial allotment and releases from the Treasury to various Departments for expenditure. FINRMS is a web-based software tool which is linked, through APIs, with a host of software and databases of the state government that hold crucial real-time information about budget, its allocation to various governmental schemes and expenditure across Uttar Pradesh's all 75 districts and the State Treasury's all 82 units. Each department of the government has been given a separate login ID and password to access this system. Whenever a government department requires release or allocation of funds for any scheme, it logs in to the system and generates a request. The system, while receiving this request for funds, automatically, in real time, checks various parameters regarding the scheme, including its budgetary allocation (including supplementary budget), any reappropriations, identification of entity authorized to release the demanded funds, instalment number, funds previously sanctioned and how much is actually spent from the previous allotment, amount left unspent etc. The system also checks the cash-flow situation of the State, and automatically generates notesheet for the approval of Finance Department. Although the decision to allot or release funds could've also been automated, one final step of allocation/release has been purposefully left at the discretion of the competent authority. Upon receipt of request, Finance Department may either deny,

approve or approve with modifications the request for release of funds. Whichever the decision, it is immediately reflected in the system's database, thereby completing the transaction of request. FINRMS, thus, improves the process of financial releases management and fulfils the government's requirement of having a constantly updated, real-time situation of the State's finances. It also provides an avenue to showcase, at different levels of access control, various financial information about the State as a whole, a particular department or set thereof, a particular scheme or set thereof and even past patterns of expenditure, vis-à-vis time, space and scheme.

Brief Details of the Project:

The government, via its Finance Department, must have real-time information about the situation of finances of the State. Vital information about cash flow management, loans and advances, debt servicing etc is required at every stage. Moreover, to ensure all governmental schemes and promises are carried out to the letter, real-time data and information based on that data are necessary about various departments' quantum of expenditure, its pace and pattern. Much of this information and data was either unavailable or available but unusable. This prompted the innovation called FINRMS. FINRMS is a web-based software tool which uses data of UP Treasury database, collected in real time from its 82 nodes and all 75 districts of UP, to provide an accurate and holistic picture of the State's finances as well as financial allowances of various Departments, according to Finance Dept's rules and procedures. This almost eliminates the need of human intervention in decision making regarding allotment and releases of funds to Departments. Thus, the process of financial releases has been made transparent and efficient. Based on their budgetary allocation and past spending patterns, Departments can themselves know whether the asked amount will be released to them or not. It also has a Dashboard with visual informatics (graphs, bar diagrams, pie-charts etc.) used for monitoring by senior officials and CM Office.

Situation before the Initiative (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project)

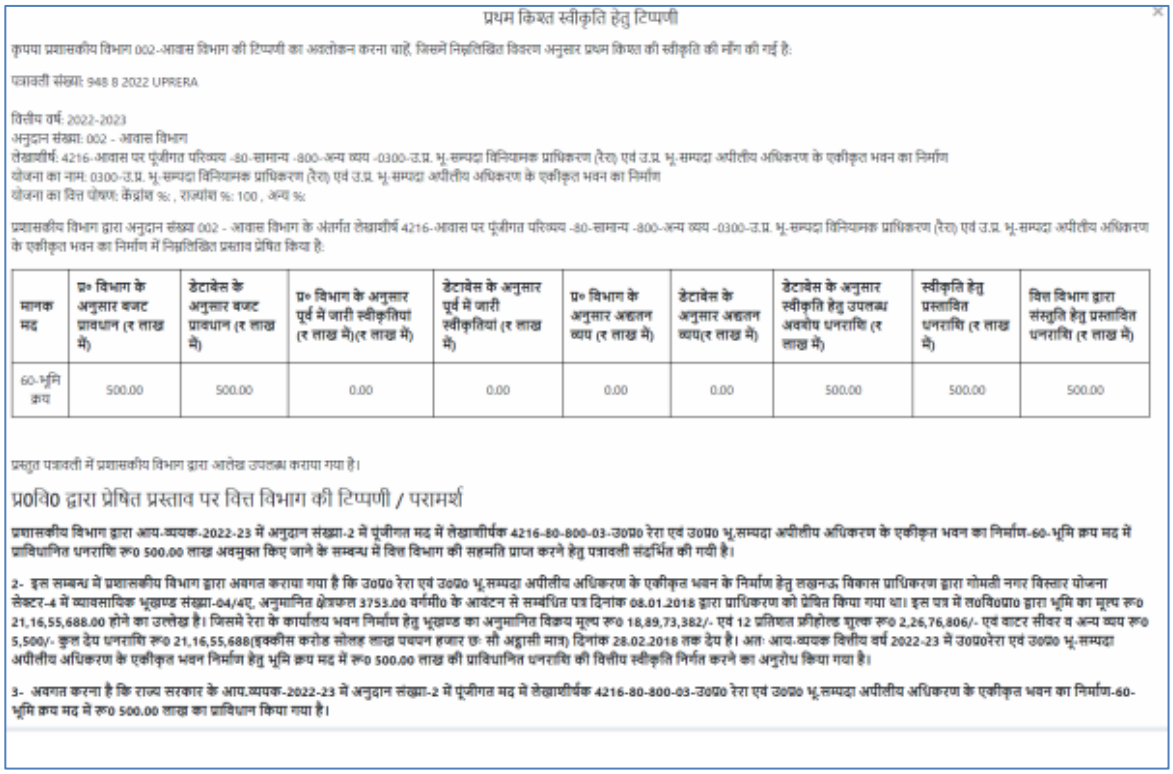
For each request of sanction and allocation of funds from departments, Finance Dept. had to collect various data manually, such as budget head, budgetary provision, previously sanctioned amount, amount released, money spent etc. This data was collected from different sources like Budget Document, Budget Allotment System, Koshvani, departmental files, Finance Dept. files, Treasury database, Government Orders etc. Most of these sources were offline. A few which were online were not interconnected. Information was collected by Finance Officials manually, which took a lot of

time, wasted a lot of effort and was prone to immense human error. Data was often suspicious, its veracity unproven. Data was almost always old and dated; never real-time. No integration with e-Office. Data being in silos caused a lot of issues. Senior officials of Finance Dept., other Departments and even the CM office had no mechanism of monitoring or even trusting data. High level decisions were taken mostly on gut feeling and loosely on data. There was no way to track the pace of expenditure by departments as a whole, let alone in individual schemes. There was no mechanism of grievance redressal for departments. This also caused bottlenecks in Finance Dept., causing a domino effect on other departments, thereby bringing down efficiency of the whole government. Collating data, bringing everything together and understanding it, converting it into actionable information was a huge challenge. Having parameters on data analysis was also absent. On the hardware side, the entire database had no Disaster Recovery (DR) system. This meant that, in case of a natural or man-made calamity, entire data of Finance Departments and all governmental financial transactions would've been lost forever!

Situation after the Initiative

All financial data of all schemes, all departments and the entire budget has been digitized and made available in real-time. Different existing and new softwares of the government, such as Budget Allotment System, Koshvani, Treasury Database, e-Office, e-Kuber, e-Pension etc. have been integrated with FINRMS using APIs. Departments have been provided login IDs and passwords, through which they submit their request for sanction of funds. The system automatically checks real-time available data such as budgetary provision, previous sanctions, allotments and expenditure in the particular scheme and generates a note for the note sheet of concerned file in e-Office. The HoD of Finance Dept. has access to this information generated from this data and takes a decision on sanction of funds. This decision is reflected instantaneously in all databases and intimation is provided to requesting department in real time. No more manual collation and checking of data. Moreover, data authenticity is guaranteed through the system. Since data is real-time, it is always up-to-date. Scheme-wise, Department-wise and Budget-Head wise data is also available, which makes monitoring a breeze. CM Office, Finance Dept. and Departmental HoDs can now monitor the financial progress of individual schemes, departments and even the State Govt. as a whole, through a dedicated Dashboard using visual analysis such as graphs, pie-charts etc! Moreover, a dedicated Disaster Recovery (DR) system has been established in NIC Data Center, Bhubaneshwar, which is in a different seismic zone, ensuring always-on availability over the cloud. Data is no longer in silos,

thereby making data analysis available at all times. The entire process has been made very quick, from 4-5 days earlier to a mere 4-5 hours, eliminating bottlenecks and increasing efficiency.



प्रथम किश्त स्वीकृति हेतु टिप्पणी

कृपया प्रशासकीय विभाग 002-आवास विभाग की टिप्पणी का अवलोकन करना चाहें, जिसमें निम्नलिखित विवरण अनुसार प्रथम किश्त की स्वीकृति की माँग की गई है:

पत्रावली संख्या: 948 8 2022 UPRERA

वित्तीय वर्ष: 2022-2023
अनुदान संख्या: 002 - आवास विभाग
लेखाशीर्ष: 4216-आवास पर पूंजीगत परिव्यय -80-सामान्य -800-अन्य व्यय -0300-उ.प्र. भू-सम्पदा विनियामक प्राधिकरण (रेरा) एवं उ.प्र. भू-सम्पदा अपीलीय अधिकरण के एकीकृत भवन का निर्माण
योजना का नाम: 0300-उ.प्र. भू-सम्पदा विनियामक प्राधिकरण (रेरा) एवं उ.प्र. भू-सम्पदा अपीलीय अधिकरण के एकीकृत भवन का निर्माण
योजना का वित्त पोषण: केंद्रांश %: , राज्यांश %: 100 , अन्य %:

प्रशासकीय विभाग द्वारा अनुदान संख्या 002 - आवास विभाग के अंतर्गत लेखाशीर्ष 4216-आवास पर पूंजीगत परिव्यय -80-सामान्य -800-अन्य व्यय -0300-उ.प्र. भू-सम्पदा विनियामक प्राधिकरण (रेरा) एवं उ.प्र. भू-सम्पदा अपीलीय अधिकरण के एकीकृत भवन का निर्माण में निम्नलिखित प्रस्ताव प्रेषित किया है:

मानक मद	प्र० विभाग के अनुसार बजट प्रावधान (₹ लाख में)	डेटाबेस के अनुसार बजट प्रावधान (₹ लाख में)	प्र० विभाग के अनुसार पूर्व में जारी स्वीकृतियां (₹ लाख में)(₹ लाख में)	डेटाबेस के अनुसार पूर्व में जारी स्वीकृतियां (₹ लाख में)	प्र० विभाग के अनुसार अद्यतन व्यय (₹ लाख में)	डेटाबेस के अनुसार अद्यतन व्यय(₹ लाख में)	डेटाबेस के अनुसार स्वीकृति हेतु उपलब्ध अवशेष धनराशि (₹ लाख में)	स्वीकृति हेतु प्रस्तावित धनराशि (₹ लाख में)	वित्त विभाग द्वारा संस्तुति हेतु प्रस्तावित धनराशि (₹ लाख में)
60-भूमि क्रय	500.00	500.00	0.00	0.00	0.00	0.00	500.00	500.00	500.00

प्रस्तुत पत्रावली में प्रशासकीय विभाग द्वारा आलेख उपलब्ध कराया गया है।

प्र0वि0 द्वारा प्रेषित प्रस्ताव पर वित्त विभाग की टिप्पणी / परामर्श

प्रशासकीय विभाग द्वारा आय-व्ययक-2022-23 में अनुदान संख्या-2 में पूंजीगत मद में लेखाशीर्षक 4216-80-800-03-उ0प्र0 रेरा एवं उ0प्र0 भू.सम्पदा अपीलीय अधिकरण के एकीकृत भवन का निर्माण-60-भूमि क्रय मद में प्राविधानित धनराशि रू0 500.00 लाख अवमुक्त किए जाने के सम्बन्ध में वित्त विभाग की सहमति प्राप्त करने हेतु पत्रावली संदर्भित की गयी है।

2- इस सम्बन्ध में प्रशासकीय विभाग द्वारा अवगत कराया गया है कि उ0प्र0 रेरा एवं उ0प्र0 भू.सम्पदा अपीलीय अधिकरण के एकीकृत भवन के निर्माण हेतु लखनऊ विकास प्राधिकरण द्वारा गोमती नगर विस्तार योजना सेक्टर-4 में व्यावसायिक भूखण्ड संख्या-04/4ए, अनुमानित क्षेत्रफल 3753.00 वर्गमी0 के आवंटन से सम्बंधित पत्र दिनांक 08.01.2018 द्वारा प्राधिकरण को प्रेषित किया गया था। इस पत्र में त0वि0प्र0 द्वारा भूमि का मूल्य रू0 21,16,55,688.00 होने का उल्लेख है। जिसमे रेरा के कार्यालय भवन निर्माण हेतु भूखण्ड का अनुमानित विक्रय मूल्य रू0 18,89,73,382/- एवं 12 प्रतिशत फ्रीहोल्ड शुल्क रू0 2,26,76,806/- एवं वाटर सीवर व अन्य व्यय रू0 5,500/- कुल देय धनराशि रू0 21,16,55,688(इक्कीस करोड़ सोलह लाख पचपन हजार छः सौ अट्ठासी मात्र) दिनांक 28.02.2018 तक देय है। अतः आय-व्ययक वित्तीय वर्ष 2022-23 में उ0प्र0रेरा एवं उ0प्र0 भू.सम्पदा अपीलीय अधिकरण के एकीकृत भवन निर्माण हेतु भूमि क्रय मद में रू0 500.00 लाख की प्राविधानित धनराशि की वित्तीय स्वीकृति निर्गत करने का अनुरोध किया गया है।

3- अवगत कराना है कि राज्य सरकार के आय.व्ययक-2022-23 में अनुदान संख्या-2 में पूंजीगत मद मे लेखाशीर्षक 4216-80-800-03-उ0प्र0 रेरा एवं उ0प्र0 भू.सम्पदा अपीलीय अधिकरण के एकीकृत भवन का निर्माण-60-भूमि क्रय मद में रू0 500.00 लाख का प्राविधान किया गया है।

Extent of Process re-engineered Process Flow Before GPR

Before FINRMS, financial releases for various departments were processed manually by Finance Department of Uttar Pradesh. Whenever required, a department would send its demand for funds under a particular scheme to Finance Dept, wherein it was scrutinised manually. This old system was prone to human errors as well as mal-intent. Also, there was no method of verifying whether funds are being spent on the intended or approved scheme or not. Moreover, there was no real-time information with Finance Dept about expenditure by other Depts while deciding release of funds, and it had to rely on their voluntary disclosure, which was against the theory of checks and balances. This was done on physical files. Requesting Dept. would send their request on file to Finance, where officials would manually fish out various data from offline and online sources. Some data was taken from the requesting dept. on blind faith, thereafter generating a note on the file for decision by HoD of Finance Dept.

Process Flow After GPR

In FINRMS, each department of the government has been given a separate login ID and password to access this system. Whenever a government department requires release or allocation of funds for any scheme, it logs in to the system and generates a request. The system, while receiving this request for funds, automatically, in real time, checks various parameters regarding the scheme, including its budgetary allocation (including supplementary budget), any reappropriations, identification of entity authorized to release the demanded funds, instalment number, funds previously sanctioned and how much is actually spent from the previous allotment, amount left unspent etc. The system also checks the cash-flow situation of the State, and automatically generates notesheet for the approval of Finance Department. Although the decision to allot or release funds could've also been automated, one final step of allocation/release has been purposefully left at the discretion of the competent authority. Upon receipt of request, Finance Department may either deny, approve or modify, thereby completing the request and reflecting it in the database instantaneously. A new Dashboard has been created which provides information in visual form (graph, bar diagram, pie-chart etc.) for monitoring by various senior officials, based on their access credentials.

Information / Data Flow Before GPR

Information was sent from a department, as a file, along with a few data points voluntarily disclosed. Upon receipt of file in Finance Dept., its officials then collected some other data points from different and disjoint sources such as Budget Document, old files, Govt. Orders, Treasury Database, Koshvani etc. and processed it according to their own understanding, thereby creating information in the form of a note on the file. This file was then sent to HoD of Finance Dept. for decision making. After decision was taken, this file was then returned, via the same channel downwards, to the requesting department.

Information / Data Flow After GPR

Requesting department logs into FINRMS' Budget Allotment System and generates a request for sanction of funds. The request while being generated, takes data from the common database and checks it for authenticity. Moreover, the system automatically fetches most of the data to the department's request. Once submitted, this request goes to FINRMS login of the concerned official of Finance Dept., who uses FINRMS to authenticate the request using instantaneous data and generates a note, forwarding it to HoD. The HoD of Finance Dept. can immediately see the recommendation of concerned official and the request. Using the Dashboard, he/she can also see the performance of the requesting department and concerned scheme, using this information to take a decision on the

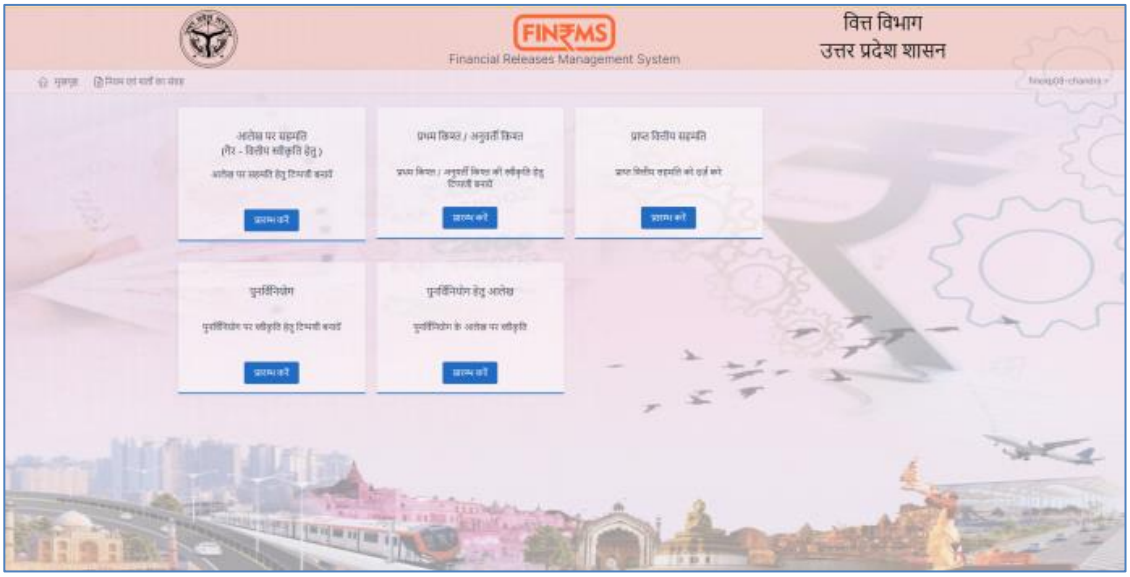
request. All data, generated by all parties, is saved in the database in real time and reflected to all parties (according to their clearance level).

Specifics on removal of non-value add activities during GPR

Unnecessary file movement has been eliminated. Reliance of suo-motu data given by requesting departments has been eliminated, terminating blind trust on unverified data. Officials of Finance Dept. no longer have to fetch data from multiple offline and online sources for evaluation of a departmental request for sanction of funds. Physical files are no longer present.

Specifics on new value add activities (include number of activities as well) during GPR

New dashboard created for visual presentation (graphs, pie-charts, bar diagrams etc.) of information based on real-time financial data, neatly categorized into schemes, budget heads, departments as well as the entire State. Multiple logins were created, for the Dashboard as well as FINRMS, for officials of different departments and of varying levels of hierarchy, to provide real-time data to all, according to their level of clearance. Common, integrated database created which reflected instantaneous data, thereby eliminating the mundane, tedious and error-prone manual task of data verification by officials. A dedicated, cloud-connected, always-on Disaster Recovery (DR) system established in NIC Data Center, Bhubaneshwar, a separate seismic zone. Note-drafting process has been automated using real-time data, for the benefit of officials of Finance Dept., to be used in decision making. Dedicated PMU was created for quick assistance and redressal of grievances.



Specific on change in rules, regulations, and policies

Separate Government Orders (G.O.) have been issued, mandating the use of FINRMS by all departments and directorates. The annual G.O. issued by Finance Department also specifies the tasks done only through FINRMS by all departments mandatorily. Capturing and utilisation of real-time data has been made the policy of the State, which is also being put in force for other services by Finance as well other departments. Processes mandating the use of FINRMS and its database have been established, without which Finance Dept will not entertain requests from departments for sanction of funds.

5. Strategy/Methodology Adopted :(i) Details of baseline study done

Existing system of sanctioning of funds was first understood after detailed, one-on-one interviews with officials from all Sections of Finance Department. Each Section's and each department's requirement was understood and captured. Thereafter, meetings were held with all Secretaries of all other Departments, to understand their requirements and take suggestions. Afterwards, brainstorming sessions were held with all officials of Finance Dept., of the rank of Section Officer and above, in order to formulate a rough flowchart of the entire process. Technical advice was taken from NIC for software and hardware requirements of the entire project. A dedicated Project Management Unit (PMU) was formed comprising of software developers, database administrators and technical support executives, which worked under the supervision of a Special Secretary rank officer of the Finance Department, in technical consultation with NIC. Thus, baseline study was done.

(ii) Problems identified

1. Digitation of budget document and all financial data. 2. Design a single template for all departments. 3. Re-design form as new request always suggested by departments. 4. Mapping of departments with sections. 5. Mapping of schemes with concerned departments. 6. Integration of different types of API. 7. Creation of dashboard for officials of different departments and varying hierarchies, for real-time monitoring. 8. Inter-operability of FINRMS with e-Office. 9. Creating a common database with high-availability and redundancy. 10. Establishing a Disaster Recovery (DR) system. 11. Change management of officials and clerical staff in the Secretariat. 12. On-boarding of political establishment. 13. Meticulous drafting of Government Order. 14. Providing technical support to all departments with short duration of grievance redressal. 15. Ensuring security and safety of sensitive, financial data.

(iii) Roll out/implementation model

Entire project of FINRMS was divided into phases, with the first phase going live on the start of the new financial year, i.e. April 01, 2021. Further, each phase was sub-divided into modules and given to different developers for quicker development. Daily meetings of software development team were held to ensure that everyone is on the same page. Weekly meetings were held with HoD of Finance Dept. and its other senior officials, for accurate capturing of requirements of the department. After development of each module, alpha and beta testing was done rapidly, using Section Officers of Finance Dept. This reiterative model of software development ensured lesser bugs and maximum acceptability of users.

(iv) Capacity Building and Awareness & Communication Approach

A dedicated Project Management Unit (PMU), staffed with skilled manpower, was tasked with the job of digital capacity building of all stakeholders, so as to enable them to take full benefit of the innovation that is FINRMS. Multiple and repeated sessions of training were held by the PMU where all stakeholders, including senior officers, were imparted training for FINRMS. A User Manual has also been created for easy use and troubleshooting. Group training was provided to departments and finance expenditure sections. Manuals including steps how to use FINRMS was circulated to departments. On job training (OJT) was provided to all users. Worked on suggested changes and feedbacks received by departments. Visited sections personally to avoid unnecessary situations. Provided support on various platforms like telephone, remote desktop to all users.

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

The end users of FINRMS are government employees of various departments, including Finance Department. Their feedback was regularly and continuously obtained at the beginning of the project, during development stage and even during training sessions of users. A dedicated Project Management Unit, comprising of skilled manpower, handles user complaints and feedback, which is discussed threadbare and changes are implemented, if required. This Jan Bhagidari has resulted in successful implementation and utilisation of FINRMS. Feedback of departmental heads as well as technical specialists from NIC was regularly obtained through meetings and incorporated in FINRMS, making it a continuously evolving organism.

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Raj KisanSathi Portal Ease of Doing Farming Platform, Government of Rajasthan

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Objective of the Project:

A Single Window Online Integrated Portal Raj KisanSaathi is launched to adopt the "Ease of Doing Farming" approach on the pattern of "Ease of doing Business", delivering all the services (G2G, G2B, G2C) of the departments like Agriculture, Horticulture, Rajasthan Agriculture Marketing Board (RSAMB), Rajasthan State Seeds Corporation etc. The scope of the work of this initiative ranges from DBT, licensing of agri-Inputs, Information and Agriculture Technology dissemination, decision support mechanism at farmers and office level, providing technological solutions and advisories, weather alerts, input management, post-harvest information, and e- Market place in the form of buyer-seller platform etc. 90 Modules have been made live which comprises of 29 G2C, 28 G2B, 33 G2G services. This versatile "End to End" ICT initiative was conceptualized to facilitate the huge farming community and various stakeholders of the state like agriculture Input and machinery manufacturers, dealers, Seed growers, Agri-Processors, etc. The basic idea is to transform the offline office procedures into end-to-end online processes with a view to ensure ease in all procedures of DBT, information, licensing, Quality Control of Agricultural inputs etc. and to eliminate/minimize human interference, unbiased decision-making, enhanced transparency, speed of disposal in departmental working in paperless mode with real-time information flow to all users/ stakeholders, proper monitoring of the implementation of schemes through dashboards viz-a viz creating a database useful in planning. Features of the RajKisanSaathi Portal: ⁾ One-time registration using Jan-Aadhaar ⁾ Complete details of Farmer are available online ⁾ Simplified application process ⁾ Paperless process from Application to Disbursement ⁾ Reduction in turnaround time of service delivery ⁾ Transparent & accountability is ensured ⁾ SMS to farmer at each stage of process from application to disbursement ⁾ MIS Reports & Dashboards for real time monitoring ⁾ Facility of digital signature is provided to sign all at administrative & financial documents (AS & FS) ⁾ Geo-Tagged & Time Stamped based Physical Verification

Brief Details of the Project:

Initiated in the year 2019-20, RajKisanSaathi Project is an integrated platform for facilitation of farmers to realize Ease of Doing Farming (EoDF) by delivering end to end services of various Departments like Agriculture, Horticulture, Agriculture marketing, Raj. State seed corporation etc. RajkisanSaathi Project is based on pillars of e-Governance Roadmap of Rajasthan & Modern Governance like Transparency, Citizen centric, Social Inclusion and Ease of Service Delivery and delivering various online services related to G2C, G2B & G2G segments.Platform simplifies on-boarding of farmers by one-time registration process using Jan-Aadhaar and fetch more details (Bank account details, address, farmer & caste category and photograph) from other applications like Aadhaar & Jan-Aadhaar. It assists farmers in all phases of harvesting i.e. from pre-harvest to post-harvest phases. So, the key components of the project are: ⁾ Farmer Databank (farmer identity, land, & crop information), ⁾ Agri Input Management System (seed, fertilizer, irrigation infrastructure, farm machinery), ⁾ Agri Output Management System (crop production, market/mandi and warehousing), ⁾ Agri Facilitation (Testing and Quality control of inputs, Agro-Processing, Inventory, and Dealer Information), ⁾ e-Market Place, Subsidy/Scheme Monitoring-DBTs. Features of the solution are: • Created centralized database for farmers and stakeholders. • Dynamic Hierarchy and Jurisdiction Mapping of department officials. • The solution is well versed integrated with multiple sources and platforms like edharti, Rajdhara, IFMS, Jan aadhar, Rajasthan Payment Platform (RPP), e-Sanchaar, RajSewaDwar, RajSampark, Raj eSign, RajSSO, Raj e-Vault etc. • Solution comprises of web portal and mobile app (90+ modules and 10+ mobile apps) • 10 Mobile apps are developed in both Offline & Online modesto deliver G2G services like various activities/services required for DBT to farmers, inspection of agricultural inputs, field inspection of seed production program, site verification of subsidy applications

Situation before the Initiative

Major bottlenecks/challenges are: • Non-existence of end-to-end online platform for farmers to avail services of various Departments like Agriculture, Horticulture, Agriculture marketing, Rajasthan State seed corporation, etc. • With respect to the DBT reimbursement to the farmers, most of the processes were in manual mode resulting in spurious transactions. Turnaround time for subsidy distribution was more than expected. • No unique identity of beneficiaries and non-availability of stakeholder’s database. • Limited monitoring and evaluation feature causes a lack of transparency. • Lack of effective management of schemes which reduces efficiency and effectiveness of programs.

No monitoring performance system for stakeholders and officials • Non-availability of Interactive dashboards and MIS Reporting system • Real-time Application tracking status was not available. • No Random allocation of Pre & Post PV officers for field verification. • Lack of checks and balances results in limitations in vigilance. • Absence of Mobile Applications for online physical verifications. • No common platform for information/eligibility criteria for different schemes/programs which creates a lack of awareness among users. • Absence of workflow-based system - delays in work execution. Multiple data entries result in duplication of work. • The online applications running are in standalone mode - improper record keeping. • Non-existence of standard E-Governance Architecture Framework/solution. • No Live information of various farm implements rental prices, dealer information etc. and no channel to connect buyers with sellers • Lack of transparency in quality control sample analysis

Situation after the Initiative

• Simplify Application process and procedure using Business Process Re-engineering for DBT schemes, Individual beneficiary schemes of Agriculture sector of GoI and State Government (Subsidy Schemes). • Paperless end-to-end IT enablement of all subsidies like Farm pond, Pipeline, Incentive to Girl, Barbed Wire Fencing, Sprinkler, Drip-Irrigation, Poly house, Shed net, etc.,and Online DBT to farmers. • Jan-Aadhaar (Unique Family ID) based single identity of farmers is used to avail any service and applicant details are fetched from Jan-Aadhaar database including Bank account details, address, farmer & caste category and photograph also. • Aadhaar based OTP mechanism ensures applicant authentication. • Land Records and Map are fetched from e-Dharti portal. • 10 Mobile apps are developed in both Offline & Online modes to deliver following services: ⁾ All physical verifications are Geo –tagged, time stamped selfie of Field staff with applicant through Mobile app. ⁾ Buyer-seller mobile apps developed for organic produce and Date Palm Saplings. ⁾ Barcoded, Geo-tagged sampling process via RajAgriQC mobile app for Online Sampling of Seed, Fertilizer and Pesticides Quality control resulting in increase in percentage of sub-standard samples. This has also been appreciated by GoI. • Automate Registration/Renewal of Processing plants which includes Document scrutiny, Preliminary SPP Allotment Action, Approval on Preliminary SPP Allotment and Disbursement. • End to end IT enablement of complete processes of Capital Investment subsidy for manufacturing unit and Agro services as well as for Freight subsidies for carrying out domestic and export trade and sanctioning other incentives and financial assistances. • Online application of Rajiv Gandhi KrashakSaathiYojana to provide financial assistance to

Agriculturists, Agricultural labourers who met with an accidents during their working hours on farm land of Agriculture Marketing. • License of Seed, Fertilizer and Pesticide dealers and manufacturers are completely online (New Registration/Amendment/Renewal) and digitally signed

Extent of Process re-engineered

Process Flow before GPR

There are multiple activities/processes w.r.t to the following segments: • DBT process: o Farmer manually fills the complex application form of more than 40 fields and also submits the hard copy of 10+ supporting documents like jamabandi, Trace-naksh,a etc. to the departments physically w.r.t to each subsidy. o All processes from document scrutiny till DBT disbursement was manual. o Approvals from the department officials is on physical file. o No real time tracking of application and absence of notification to farmers • License and manufacturer/dealers registration and renewal o Manufacturer/dealers manually fills the application form and also submit the hard copy of supporting documents like Trademark, QA/QC certificate, Cancel check, registration certificate. o All processes from document scrutiny till license/certificate generation was manual. o No real time tracking of application and absence of notification to manufacturers/dealers. o Absence of physical verification of firm/go down/factory. • Quality control of Pesticides, Seeds and fertilizers o Manufactures/farmers were manually submitting the request for quality inspection. o Quality inspectors visits the sites as per their convenience, no timeline mentioned. o Sample collection was manual and no sequencing was made earlier. o Allocation of laboratories for inspection was manual.

Process Flow after GPR

• DBT process: o Simplification of application forms using the Jan-Aadhaar database to access farmers details like Name, Address, cast, bank account number etc. o Integration with eDharti Platform to access online land details of the farmer o SMS to the farmer at each stage of subsidy distribution. o Application reaches to agriculture office in real-time. o Information on eligibility, and documents required are available at the time of application o Facility of revert back to citizen with clarifications if a deficiency in the application, thus providing a facility for re-consideration. o End-to-End paperless, transparent process o Online application status check option o Digitally signed AS and FS o Integration with IFMS/PFMS for seamlees DBT process • License and manufacturer registration and renewal: o Application forms simplified and accessible through Single Sign On (SSO-ID) o Geo-tagging of manufacturer/Dealer’s Godown/Shops thru mobile Apps o ESign and QR

code enabled Licenses/certificates o Service delivers online license of Seed, Insecticide, and Fertilizer suppliers. o Includes registration of pipeline manufacturers and also feature of Licensing-Insecticide Pest Control Amendment, Licensing-Insecticide Manufacturer Amendment, Licensing-Insecticide Sale Amendment, BIS amendment for pipeline manufacturers, etc.

Information / Data Flow Before GPR

o Applicant manually filled the form at eMitra/CHC center and scan & upload the supporting documents and received the acknowledgment slip. o Then applicant visited department with physical application form, supporting documents and receipt. o Document scrutiny was done manually and officer maintains the physical files for each applicant. If any gap was identified by officer then the applicant had to re-visit it with correct document along with justification. o There were no communication channel to notify applicant regarding their application status. o If application is approved then it moves to next level officer and there were no timelines decided for approval of application and no escalation matrix defined in the manual process. o Manual allocation of officer for physical inspection of the site. o All the entries/calculation related with Administrative Sanctions and Financial Sanctions were made in Excel format manually. AS and FS were physically signed by offices. o After FS generation applicant visited the Treasury department for updation of subsidy received in his bank account.

Information / Data Flow After GPR

o Simplification of application forms using Jan-Aadhaar database. o SMS to farmer at each stage of subsidy distribution. o Application reaches to agriculture office in real time. o Information on eligibility, documents required are available at the time of application o Timely access to agricultural & technological information. o Facility of revert back to citizen with clarifications if deficiency in application, thus providing facility for re-consideration. o A complete information system through which different advisory services can be provided to farmers like availability of market, prices of inputs, soil information and advisory for fertilizers, seed etc. through call-based information dissemination system. o Ease of accessibility of subsidy related services to farmers and its delivery through Direct Benefit Transfer.

Specifics on removal of non-value add activities during GPR

o Elimination of submission of hard copy by applicant leading to Paperless process. o No need to visit offices for application status or submission of reverted documents. o No physical files are

required for approvals. o No need to maintain excel sheets for entries/calculations of AS and FS. o Elimination of Physical copies of AS, FS , Certificates and Licenses.

Specifics on new value add activities during GPR

o Eliminates the requirement of Hardcopies of documents like Jamabandi, Trace-naksha, Small marginal certificates, bank account details, cast certificate, address proof, age etc. The solution is well versed and integrated with multiple sources and platforms like edharti, Rajdhara, IFMS, Jan aadhar, Rajasthan Payment Platform (RPP), e-Sanchaar, RajSewaDwar, RajSampark, Raj eSign, RajSSO, Raj e-V,ault etc.to deliver a flawless experience to the end user. o 10 Mobile apps are developed in both Offline & Online modes to deliver the G2G and G2C services like various activities/services required for DBT to farmers, inspection of agricultural inputs, field inspection of seed production program, site verification of subsidy applications for agro-processing, business and export promotion etc. o Farmers now able to apply by self (mobile/portal) or by CSC. Online application status checks facility and SMS alerts. o First-in- First-Out (FIFO) and computerized system eliminate discretion. o Digitally e-signed Administrative and Financial Sanctions. Auto-calculation of subsidies based on field verification parameters. o Dynamic Hierarchy and Jurisdiction Mapping of department officials. o Auto-flow of applications from one to another level officer. o Implemented escalation matrix o Integrated Business Intelligence dashboards for Government officials &

Specific on change in rules, regulations, and policies

• Change in guidelines for subsidy process of Agriculture and Horticulture department o No need to submit a hardcopy of the documents to the department required to avail subsidy. Application with associated documents shall be uploaded at the integrated portal only i.e. Rajkisan Saathi. o Induce timelines at each officer level to reduce delay o Implement auto approval to the next level after the expiry of pre-decided timelines o Usage of Mobile apps for all physical inspections o Bar coded sealed/tamper proof boxes for sample collection of seed, fertilizer, pesticides etc. o Digitally signed Inspection report like Form P, Form K, Form J

Strategy/Methodology Adopted:

(i) Details of baseline study done

o Kick-offs requirement gathering meeting with identified stakeholders including field functionaries o Co-ordinated with 10+ stakeholder departments to understand their complex processes. o Identified the Scope of work (SoW) o Identified and draft requirement document of “As-Is” process o

Interviewed with multiple officers in different hierarchy and perform gap analysis activity o Eliminate non-value added steps/activities from the "As-IS" process and architecture of the solution with an integrated platform. o Identified and draft requirement document of "To-Be" process which includes process mapping in the system after performing lean activity. o Develop Process flow and wireframes and get it approved from actual users o Confirms and take sign-off from stakeholders. o Prioritized the requirements.

(ii) Problems identified

• Non-existence of end-to-end online platform for farmers to avail services of various Departments like Agriculture, Horticulture, Agriculture marketing, Rajasthan State seed corporation, etc. • With respect to the DBT reimbursement to the farmers, most of the processes were in manual mode resulting in spurious transactions. Turnaround time for subsidy distribution was more than expected. • No unique identity of beneficiaries and non-availability of stakeholder's database. • Limited monitoring and evaluation feature causes a lack of transparency. • Lack of effective management of schemes which reduces efficiency and effectiveness of programs. No monitoring performance system for stakeholders and officials • Non-availability of Interactive dashboards and MIS Reporting system • Real-time Application tracking status was not available. • No Random allocation of Pre & Post PV officers for field verification. • Lack of checks and balances results in limitations in vigilance. • Absence of Mobile Applications for online physical verifications. • No common platform for information/eligibility criteria for different schemes/programs which creates a lack of awareness among users. • Absence of workflow-based system - delays in work execution. Multiple data entries result in duplication of work. • The online applications running are in standalone mode

(iii) Roll out/implementation model

• Created a centralized database for farmers and stakeholders. • Dynamic Hierarchy and Jurisdiction Mapping of department officials. • Solution integrated with multiple sources and platforms like e-dharti, Rajdhara, IFMS, Jan aadhar, Rajasthan Payment Platform (RPP), e-Sanchaar, RajSewaDwar, RajSampark, Raj eSign, RajSSO, Raj e-Vault, etc. • Solution comprises of web portal and mobile app (90+ modules and 10+ mobile apps) • 10 Mobile apps are developed in both Offline & Online modes to deliver G2G services like various activities/services required for DBT to farmers, an inspection of agricultural inputs, field inspection of the seed production program, site verification of subsidy applications for agro-processing, business and export promotion, etc. • It also facilitates the manufacturers and dealers to geotagged their institutions, manufacturing units, and go downs using

Manufacture Geo-Tagging mobile app. • Barcoded, Geo-tagged sampling process via RajAgriQC mobile app for Online Sampling of Seed, Fertilizer, and Pesticides Quality control. • Processes are inherent with Timelines and Escalation matrix. • Digitally e-signed Administrative and Financial Sanctions. Auto-calculation of subsidies based on field verification parameters. • Farmers are now able to apply by self (mobile/portal) or by CSC. Online application status checks facility

(iv) Capacity Building and Awareness & Communication Approach

• Capacity Building of users through training and video manuals. • Online training module for employees as recommended by Agriculture department for self or group of users. • Demonstration of all Modules to end users. • Video Conferencing Facility and In-house trainings

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

Implemented unified grievance redressal mechanism for all departmental stakeholders for delivering better user experience by raising Ticket/Service Request and subsequently gets resolved within specified timelines.

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Smart Eye, Government of Uttar Pradesh

Objective of the Project:

UP Board of Secondary Education is India's largest board with more than 50 lakh students appearing every year, conducted at 8000 examination centers spread over all 75 districts. Due to the magnitude and spread, UP Board examinations have consistently had problems of mass copying despite serious efforts of the Government. Malpractices included mass copying, diction, cheating, opening of question papers before time, changing answer sheet, proxy solvers and using electronic gadgets. The objective of the Smart Eye Project was to completely eliminate these malpractices. This pathbreaking innovation was initiated from 06.08.2019 based on extensive analysis of how to tackle each malpractice. It consists of technology aided "watching" and thus curbing each point of the examination and evaluation by (a) installing new CCTVs /upgrading existing CCTVs with voice recording, ensuring the CCTVs cover each class-room holistically linked to a display with the Principal and equipped with a router and high speed connection (b) aggregation of softwares running the CCTVs, (c) establishing control rooms in each district and State headquarter with all CCTVs connected in real time. This created a three tier CCTV enabled microscopic surveillance. In addition, portals were created to monitor in real time the attendance of students, invigilators and evaluators. This re-designing work flow of supervision & monitoring was game-changer. The issues of cheating were controlled with unprecedented efficiency and effectiveness and a decades old problem was solved successfully. This ground breaking quality improvement was managed without any separate budget allocation. In 2022, 3 lakh CCTV cameras covered each of the 1.37 lakhs examination halls and 8373 examination centers. Control centers were established at State HQ, 75 district HQs & 8373 examination centers. This three tier unprecedented monitoring arrangement ensured a cheating free examination. State Command and Control Centre A State Centre was established for live monitoring of every room of the examination process with composite big LED screens & phone, fax, & email communication. Surveillance through 3 lakh cameras and portals monitored by 90 trained personnel and 17 senior officers. Multiple hardware and software solutions were implemented to bring together the 12 platforms of CCTV cameras locally arranged in 75 districts. Supervision was daily from 7 am to 7pm and included opening of strong rooms storing question papers, the examination itself, packaging and dispatch of answer copies to collection centres and later the evaluation process. Any

mischievous activity noticed on any screen was immediately addressed by calls to the center-in-charge, Sector/Static magistrate, concerned District Control action ensured. A log was kept for every incident and rectification noted. Contact details of the State Centre were publicised with a toll free number. All distress calls were attended in real time. A Twitter handle @upboardexam2020 was also started District Command and Control Centers Similarly, a district level Control was established at each district headquarter under a designated administrative officer with Dedicated email ID and 2 helpline numbers. This too worked from 7am to 7pm and any observed suspicious activity was immediately tackled Examination Centre Control Room At each examination center a control room with an outside officer as observer had display from all cameras

Brief Details of the Project:

In 2020 board exams 7783 examination centers were equipped with 1.91 lakh CCTV cameras, 1.91 lakh voice recorders, 7876 routers for high speed internet coverning all 95000 examination halls. Each center had a monitoring control room with LED displaying live feed from the CCTV cameras. 12 software platforms from different vendors which were in the districts and also over 15 high end camera devices from different manufactures which were also deployed in the districts. At each district headquarter, there were six monitoring desks with a high speed internet connection and LED monitors. In addition, there were 2 desks with computers for monitoring emails and 2 desks of telephone operators for district feedback and for interaction with State Control Room. There were also CCTV cameras for monitoring by the State Control Room. In the State Control room there were six sub-controls each monitoring one of the six groups in which the 75 districts had been divided. Connection was maintained to the 95000 examination halls, 7783 examination centers and 75 district control rooms of the State. The State Centre was equipped with 1) High speed internet connection. 2) Routers, 3) LED monitors including 3 large monitors for bird eye views programmed for monitoring examination centers sequentially 4) 90 Computers, 5) CCTV with Camera and Voice recorders for internal monitoring. In addition there was an email and social media center and a call center with multiplie telephone lines with trained manpower for constant interaction with the examinees, general public and each of the 75 districts and 7784 centers. The implementation was done in record time of 6 months and 7 days. In 2022, Board exams this number increased to 3 lakh CCTVs in 1.37 lakhs examination rooms with similar arrangements. In addition, portals were created to monitor real time attendance of students, invigilators and evaluators.

Situation before the Initiative

The conduct of Board examinations in UP involving over half a crore of students has traditionally been affected by attempts at mass copying and involvement of organized crime. Majority of exam centers are in rural areas where strict monitoring was difficult. Flying squads, Sector magistrates and district officials were used in physical monitoring but the control and access was never 100%. CCTV cameras in class rooms linked to a display in the principal's office were present in some schools but external monitoring remained physical. The system of CCTV cameras in the class-rooms with display in a local control had been initiated to enable better monitoring of daily teaching, examinations and class interaction at school level by the Principal and in surprise evaluations. Thus malpractices of copying could not be eliminated and expenditure on re-examinations etc. was high. The State Government has made serious efforts to control malpractices but the sheer extant of the examination limited the efforts. There used to be a tradition of a number of private candidates appearing from other states and Boards. In 2017 there were 3.01 private candidates of which 1,19,123 were from other Boards– 42,327 from CBSE, 1427 from ICSE, 20,343 from Bihar, 4829 from Uttarakhand, 8506 from Rajasthan, 3551 from MP, 1988 from Maharashtra, 876 from Andhra Pradesh, 868 from Assam, 882 from Manipur, 107 from Kerala etc. A challenge was to enhance the monitoring in a visibly new and deterring manner without additional budget. The idea of CCTV monitoring of each center and examination hall – with all district platforms linked to a district control center and to a central State level Control Room was explored as this would be an innovative shock and with advance publicity would be a severe deterrent to those attempting to tamper with the processes.

Situation after the Initiative

The online monitoring in the Board examination 2020 through the State level control room with which was effectively directly “looking at” centers 12 hours a day was widely covered in the media and caught public fancy. It was an unprecedented success as a deterrent and reduced attempt at cheating drastically. The number of private candidates actually appearing for the examination dropped severely and the number of candidates from other states who actually appeared came down to negligible figures. In 2017 there were 3.01 lakh private candidates of which 1,19,123 were from other States or Boards. In 2020 there were only 80982 private candidates which were practically all from U.P. Board with negligible candidates from other States/Boards. There were zero incidents of mass copying, open diction, opening of question papers before time, changing answer sheets, proxy solvers and using electronic gadgets. In 2022 attempts at changing of copies were successfully foiled

and 759 students were caught cheating through CCTV cameras. The copying free examination was conducted in an entirely fair manner and was highly acclaimed by everyone.

Extent of Process re-engineered

Process Flow Before GPR

Process Flow of monitoring of examinations before GPR was by physical checking through flying squads, Sector magistrates and district officials with feedback through mobile telephones and faxes. There was school level localised CCTV camera monitoring of teaching in some schools which was used during examination for school level monitoring. There were no voice recorders and no live feed monitoring of the examination centers at the district or at the State level. There was no online monitoring of students, invigilators attendance.

Process Flow after GPR (include percentage of processes re-engineered)

In UP Board exam 2020 examination centers live CCTV video feed along with voice recording of each examination hall was getting monitored in real time at the district and State level by establishing a real time monitoring network using web cast and live feed technology to access 1.91 Lakhs cameras at 95 thousand examination halls at 7784 exam centers at 75 district control rooms and by the State level master control room established in Lucknow. The State level one point control room monitoring 95 thousand examination halls directly caught public imagination. There was also flow of information through the Call center with toll free lines established at the State and District control rooms and the use of Emails and Twitter handle for the first time. This system was in addition to the existing physical monitoring system of flying squads, Sector magistrates and district officials with feedback through mobile telephones and faxes.

Information / Data Flow before GPR

Data flow relating to monitoring of examination before GPR was through mobile telephones and faxes with e-mail support also available. CCTV feed from exam hall cameras at the exam center had Video storage by DVR/ NVR only at centers.

Information / Data Flow after GPR

CCTV Feed enhanced with Video/Audio feed from each exam hall and exam center was streamed online to the District control rooms and to the State master control room. Video and Audio storage by DVR/ NVR was also ensured. There was also flow of information through the Call center with toll

free lines established at the State and District control rooms and the use of Emails and Twitter handle for the first time. The existing mobile telephones, faxes etc. continued to be used.

Specifics on removal of non-value add activities during GPR

The records of absentees and students caught in cheating in examination are not maintained manually. ¬ Role of Postal system has been removed. ¬ Role of paper and pen has been brought to minimal level. ¬ External interferences has been removed as the entire system is now very fair and transparent. ¬ Many formats and forms have been made redundant.

Specifics on new value add activities during GPR

CCTV Feed enhanced with Video/Audio feed from each exam hall and exam center was streamed online to the District control rooms and to the State master control room. Video and Audio storage by DVR/ NVR was also ensured. There was also flow of information through the Call center with toll free lines established at the State and District control rooms and the use of Emails and Twitter handle for the first time. New portal and softwares were developed to monitor attendance of students, invigilators and evaluators.

Specific on change in rules, regulations, and policies

Provision created for selection of examination centers enabled for monitoring by CCTV cameras and web casting. All examination centers were connected to the District and State level control room. Online monitoring in real-time of the entire examination was a new process

Strategy/Methodology Adopted:

(i) Details of baseline study done

Base line study was done to address each malpractice and for merging multiple levels of CCTV video and audio online feed with live monitoring of each examination hall and examination center and immediate addressal of issues noticed to deter unfair practices.

(ii) Problems identified

Requirement of High End PCs and requirement of high speed Internet connectivity at remote areas. Aggregation of different softwares of various models of CCTVs to bring them on one webcasting portal. Resistance of vested interest to online supervision and monitoring.

(iii) Roll out/implementation model

Planning, Training of personnel and monitoring. CCTV Camera ~~ DVR/ NVR ~~ Authentication Permission ~~ Internet ~~ PCs ~~ Web Portal ~~ SSL Certificates ~~ Encrypted Data ~~ Online live streaming of exam halls. Development of online monitoring software and portals

(iv) Capacity Building and Awareness & Communication Approach

2456 personnel were trained with more intense training on monitoring and social media for 214 selected persons.

(v) Automated, Assisted and/or Physical Assessment or Feedback Mechanism

Feedback and assessment was through the call centers and social media from the examinees and general public. It was also through extensive newspaper and media coverage. The department conducted an ongoing and post exam survey of invigilators and officials.

सीसीटीवी का कनेक्शन काट करवा रहे थे परीक्षा

Big Boss is watching: 1.91 lakh cameras installed in UP to curb cheating in Board exams

School manager nabbed for advising students to cheat in UP Board exam

RAL VIDEO He is also heard asking students leave a ₹100 note in the answer sheet

7786 केंद्रों पर 10वीं-12वीं की परीक्षा

प्रयागराज | वरिष्ठ संवाददाता

18 फरवरी से प्रस्तावित यूपी बोर्ड की हाईस्कूल एवं इंटर परीक्षा प्रदेश में 7786 केंद्रों पर होगी। इनमें 451 राजकीय, 3401 सहायता प्राप्त माध्यमिक विद्यालय एवं 3934 वित्तविहीन स्कूल हैं। यूपी बोर्ड ने आपत्तियों के निस्तारण के बाद केंद्रों की अंतिम सूची तय समय में जारी कर दी है। 12 नवंबर को जारी प्रारंभिक सूची की तुलना में अंतिम सूची में सिर्फ 15 केंद्र घटे हैं।

12 नवंबर की लिस्ट में 7761 स्कूलों को केंद्र प्रस्तावित किया गया था। जिला विद्यालय निरीक्षकों ने ऑनलाइन आपत्तियां आमंत्रित करने के बाद डीएम की अध्यक्षता में गठित जिला स्तरीय समिति से निस्तारण के बाद अंतिम सूची

अंतिम लिस्ट में 180 वित्तविहीन स्कूल बनाए गए परीक्षा केंद्र

शनिवार को जारी अंतिम सूची में 180 अतिरिक्त वित्तविहीन स्कूलों को केंद्र बनाया गया है। 12 नवंबर की लिस्ट में 3754 वित्तविहीन स्कूल केंद्र प्रस्तावित थे जबकि अंतिम सूची में इनकी संख्या बढ़कर 3934 हो गई है। पिछले साल 4573 वित्तविहीन स्कूलों को केंद्र बनाया गया था। पिछले साल कुल 8354 स्कूल केंद्र बने थे। इस लिहाज से इस साल कुल 568 केंद्र कम हुए हैं।

जिसकी कमियां दूर करते हुए बोर्ड ने केंद्रों की अंतिम सूची जारी कर दी। सबसे अंत में नकल के लिए बदनाम गोंडा जिले के केंद्र अपलोड हो सके। तय समय में केंद्रों की सूची फाइनल करने के लिए यूपी बोर्ड के अफसर और

मुख्यालय में डटे रहे। जो केंद्र प्रस्तावित हैं उनमें तीन हजार से अधिक राजकीय और एडेड कॉलेजों में ब्राडबैंड और राउटर नहीं है। राजकीय स्कूलों में सरकार, सहायता प्राप्त व वित्तविहीन स्कूलों में प्रबंधन परीक्षा से पहले

2020 की छात्र संख्या

हाईस्कूल
बालक : 16,63,072
बालिका : 13,62,370
योग : 30,25,442

इंटरमीडिएट
बालक : 14,65,844
बालिका : 11,20,403
योग : 25,86,247

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START- Step towards Achieving Realtime Transparency (in Multipoint Energy Metered Connections), Government of Uttar Pradesh

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Objective of the Project

The project involves "Seamless Transition from the existing Single Point Supply Model to a Multi-Point Supply Model for the Distribution of Electricity for Multistoried & group housing societies". This transition helps DISCOM's to directly serve the end consumers of such establishments in a more efficient and transparent manner as compared to the earlier model, whereby the end consumer was being served through owner's association or builders who own the last mile electricity distribution network including breakers and transformers. Continuously following complaints received from single point housing societies: 1. Builders are charging fixed charges as per the area sq. ft. though their contracted load is quite less, thereby generating profit. 2. Builders are charging higher tariff than the tariff order. 3. Builders are fleecing consumers by charging heavy amount for prepaid electricity system and then for load enhancement. 4. Builders are providing prepaid electricity by taking advance from customers but have not paid electricity bills of utility. This led to disconnection of electricity supply, which suffer the residents. 5. Majority of the builders are not providing monthly electricity bill detailing utility and DG units consumed by the customers which is a violation of regulatory Guideline. Also, many builders have not installed suitable power management system while deploying prepaid electricity infrastructure for monitoring of Utility power failure (outage) time/DG running time with date & time stamp for verification with supplying substation under PVVNL for any discrepancy. 6. Further, builders disconnect Utility power Supply for collection of other charges like maintenance charges, etc. which contradicts the guidelines laid by the Hon'ble UPERC. In view of concerns raised by consumers and to protect their interest, it has been decided to provide independent connections to residents of multistorey, but there was a challenge to give these connections due to legacy common electricity infra. So, PVVNL introduced innovative method of dual source supply through single electrical distribution infra by using dual source dual register meters. These meters can record consumption of electricity in two different registers based on source of supply. Now these consumers are getting supply directly from PVVNL

and are billed by PVVNL for Grid power and builder supplying DG power to the consumers and are billing and collecting charges for DG power supply from the consumers. Use of Dual Register Dual Recharge Meter technology not only saves consumers and DISCOMs from financial burden of deployment of infra but also in savings towards maintenance of the electrical infra. So, this Innovative use of current day contemporary technologies made the transition smooth without disturbing the existing infra which contributed to government initiatives like Digital India, e-Governance, and customer empowerment. Salient Features: - 1. Bi-directional communication with Periodic or On Demand Readout 2. High Data Security using AES 128 Encryption 3. Tamper Detection, Alerts and Remote/automated cut-off/restore 4. Support for Prepaid / postpaid billing & Integration with existing MDM 5. Remote Load Management 6. Anytime anywhere access through web, apps for DISCOM & End Customer 7. Support for remote firmware and configuration update 8. Complete AMI functionality & seamless integration to smart grid 9. 24*7 NOC monitoring of devices

Brief Details of the Project :

The project involves “Seamless Transition from the existing Single Point Supply Model to a Multi Point Supply Model for the Distribution of Electricity for Multistoried & group housing societies”. This transition helps DISCOM’s to directly serve the end consumers of such establishments in a more efficient and transparent manner as compared to the earlier model Continuously following complaints received from single point housing societies like Builders are charging fixed charges as per the area sq. ft. though their contracted load is quite less/ charging higher tariff than the tariff order & heavy amount for prepaid electricity system /load enhancement, thereby generating profit. Builders are also taking advance/ not installed suitable power management system & disconnect Utility power Supply for collection of other charges like maintenance charges, etc. which led to dissatisfactions , suffering among consumers. For protecting consumers interest, it decided to provide independent connections to residents of multistorey, but there was a challenge to give these connections due to legacy common electricity infra. So, PVVNL introduced innovative method of dual source supply through single electrical distribution infra by using dual source dual register meters. These meters can record consumption of electricity in two different registers based on source of supply which not only saves consumers and DISCOMs from financial burden of deployment of infra but also in savings towards maintenance of the electrical infra which contributed to government initiatives like Digital India, e-Governance, and customer empowerment. Salient Features : - 1. Bi-directional communication with Periodic or On Demand Readout 2. High Data Security using AES 128 Encryption 3. Tamper

Detection, Alerts and Remote/automated cut-off/restore 4. Support for Prepaid / postpaid billing & Integration with existing MDM 5. Remote Load Management/Upgradation. 6. Anytime anywhere access through web & apps. 7. Complete AMI functionality & seamless integration to smart grid 8. 24*7 NOC monitoring of device.

Overview of Initiative:

Normally, multi-storied buildings are getting supply at single point at high voltage level. Bulk metering for such connections is done by DISCOMs. Further sub-metering for end-consumers is done by facility management service providers to the dwelling units in these multi-storied buildings. These end-consumers are not direct consumers of DISCOMs, hence their meters are normally procured by management of these multi-storied buildings, leading to the involvement of another intermediate entity between DISCOMs and end consumers. Roles, responsibilities and standard operating procedures of this intermediate entities are undefined. Many consumers want to deal directly with DISCOMs for various reasons like benefit related to slab based electricity tariff, transparency and better grievance redressal mechanism of DISCOMs. Keeping the above long-standing end consumers concerns and grievances, UP Electricity Regulatory Commission (UPERC) mandated direct electricity connection from DISCOMs to this category of end consumers . In order to honour the mandate from UPREC, PVVNL undertook this initiative to explore the possibilities of achieving the objective of providing their services directly to end consumer along with balancing the secondary power needs (DG Power Supply) for efficiently running such huge multi-storied infrastructures. The challenge was to achieve this transition in a way that did not lead to huge infrastructure changes and associated costs, that would directly or indirectly impact the societies or end consumers. PVVNL with its deep knowledge in the electrical distribution domain, worked aggressively and in a focussed manner with technology driven companies and with the synergy of the two, came up with the solution that helped achieve a seamless transition. As of today, more than five thousand end customers across various group housings have migrated to new model and are enjoying the benefits. This is a significant achievement and an enabler for the society at large and many more such transitions are in progress across PVVNL. The model can be replicated by other DISCOMs also. Salient Features : - 1. Bi-directional communication with Periodic or On Demand Readout 2. High Data Security using AES 128 Encryption 3. Tamper Detection, Alerts and Remote/automated cut-off/restore 4. Support for Prepaid / postpaid billing & Integration with existing MDM 5. Remote Load

Management/Upgradation. 6. Anytime anywhere access through web & apps. 7. Complete AMI functionality & seamless integration to smart grid 8. 24*7 NOC monitoring of devices

Specific Emerging Technologies and details on its adoption

PVVNL is leveraging contemporary Digital Transformation technologies like Internet of Things (IoT), Cloud Computing and Mobile Computing for achieving the aforesaid requirements. Using the "Asset Sharing Model" of IoT, PVVNL have introduced innovative methods of dual source supply through single electrical distribution infrastructure by using dual source dual register meters. These meters can record consumption of electricity in two different registers based on the source of supply IoT helps in cleanly bifurcating the data to be shared with DISCOM or the Management Agency in a very clean, reliable and transparent manner. Thus, the same assets in terms of Dual Source Dual Register meters and the distribution infrastructure are used for serving two service providers at the same time. The end consumers are getting electricity supply directly from DISCOMs and are billed by DISCOMs for Grid power. Using the same Dual Source Dual Register meters, builder is supplying DG power to the consumers and are billing and collecting charges for DG power supply from the consumers. IoT and Cloud Computing help capture near real time data and its persistence on the respective cloud servers. The collected data not only helps in accurate day to day billing, but over a period of time is being subject to advanced data analytics and machine learning techniques to derive useful insights that can help do lot of predictive modelling and help optimize the things for all the stake holders – DISCOMs, Estate Management Agencies / Builders and the end consumers. The empowerment gained by Mobile Applications (supported on Android and iOS) was phenomenal. Also the electricity connections are giving through web based transparent system named Jhatpat portal(based on ASP.net) where consumer can apply connections from any convenient place (no need to visit offices and wasting time) and after apply connections released in timely manner which is monitored by management through same channel of technology based portal which became milestone for PVVNL & consumers.

Use of Technologies in the project and the purpose of usages

1. Machine to Machine Communication : This has resulted in better consumer transparency. Consumer grievances have come down to almost Zero level as all the information related to meter

reading and boiling is transparently shared with the consumer. 2. Internet of things : Since industrial customers are high paying customers, shifting extra power available to industries have resulted into more revenue without impacting the quality of supply to multi-point customers. 3. AI and ML : This has resulted into finding faulty meters, in case electricity network is hooked directly with electrical load etc. 4. Mobile Application: This has resulted into zero outstanding to these customers. This has also resulted into great customer satisfaction, transparency in dealing and near zero customer complaints.

Implementation Methodology

Baseline study was conducted by a group constituted by Hon'ble UP Electricity Regulatory Commission, the group concluded that the conversion from single point to multipoint can be done without any change in existing electrical infrastructure by using dual source dual register meters and IoT devices for AMI implementation. Continuously complaints received from single point housing societies like Builders are charging fixed charges as per the area sq. ft. though their contracted load is quite less/ charging higher tariff than the tariff order & heavy amount for prepaid electricity system /load enhancement, thereby generating profit. Builders are also taking advance/ not installed suitable power management system & disconnect Utility power Supply for collection of other charges like maintenance charges, etc. which led to dissatisfactions, suffering among consumers. The

implementation was done in a very progressive and agile model. It was first taken up as a lab demonstration and looking at the encouraging results, the setup was taken up to a small pilot in 2 societies of Noida and Ghaziabad. The pilot was executed for a period of 2 months. It appeared to a delight for all the three stake holders i.e. DISCOM, Builders / Estate Management Agencies and the end consumers. Looking at the two stages of success, the implementation was taken up for more societies. The existing meters were replaced by Dual Source Dual Registry meters and using the intelligent field devices, data gets collected in real time and transferred to the cloud servers for further processing and integration with billing engines of the DISCOM for grid supply and MDM of service provider for DG supply. The said implementation has been working in a flawless manner for the last 15 months. Continued adoption of this technologically innovative and cost-effective solution is being done by PVVNL in the areas of Meerut, NOIDA and Ghaziabad, which are a hub for such group housing societies that are currently using the single point distribution model.

Solution Architecture including consent management

PVVNL multipoint solution is based on state of the art M2M technology that comprises of a combination of sophisticated hardware, firmware, software and cloud based infrastructure. Cloud based M2M platform supports applications and possesses and has AI and ML engine. Hardware in the field installation are programmed with edge intelligence to solve most problems on ground. Problems that require greater processing power are referred to Cloud based M2m platform that has greater resources. Once Cloud based M2M platform finds some routine instructions being released to field devices after processing of data inputs from field devices, a firmware over the air (FOTA) with edge intelligence is sent to end devices and these routine actions are handled by field devices without waiting for instruction from cloud based M2m platform. As an example, if the allocated load to the multi-storeyed building is say 1 MVA and at any given point of time say in non-peak hour the load comes around 600 MVA, devices installed at Water lifting pumps gets started automatically to fill up the overhead tanks. Filling up overhead tanks during non-peak hour is as good as storage of electricity during non-peak hour. i. Intelligent Devices such as Smart Gateway and Data Coordination Bridges ii. MEITY approved cloud based Dual Head End System iii. Consumer Mobile Application iv. UI Dashboard v. Integration with PVVNL Billing Engine vi. Dual Source Dual Register Meters complying to IS 13779 https://pvvnlmp.myxenius.com/login.html Major Building Blocks 1. Dual Source Dual register meters- These meters record energy usage as per the source of supply in

different registers. 2. Bridge : This is a microcontroller based hardware device with RF modem, PCB antenna for long communication range and a regulated power supply which can work from 90 volt to 510 volt AC. This has following features : • Support for Firmware over the air (FOTA) update to accommodate multiple type of meters existing or new meters like smart meters. • Miniscule MDAS that helps organize important meter parameters like voltage, current, instant KWH, KVAH, instant load and power factor from different makes of meters and converting them into a common format for transmission to the gateway. • Transmits meter data on regular interval (programmable from back-end) to the cloud • Raises notification in case of deviation with respect to variation in programmed parameters like power factor going below a certain threshold, load exceeding beyond a certain threshold, phase imbalance, meter tamper event etc on a priority basis. 3. Gateway Gateway has the following important features: • Connects installations at different districts, zones and divisions to backend cloud. • On-board GPRS modem with dual SIM provision for high uptime • On-board GPS for capturing geographical (Lat/ Long) information. GPS co-ordinates help field team to reach at site through google map with approximate time to reach at customer site. This information is available at UPPCL NOC team and with the predictive time to reach, customers are informed about TAT. 4. M2M cloud based Platform : This platform has Dual HES and Dual MDM so that two different billing engines are managed. This platform also provides access controlled login to the alternative electricity supplier for his energy accounting, billing and customer management. It has support for standard SDK / API to interface with the existing MDMS, CRM and also provides NOC connectivity to monitor and manage field installed hardware and firmware. This platform also manages the complete field devices and it’s firmware . Application interface/ mobile app Customers can get near real time information by visiting the web-portal named https://pvvnlmp.myxenius.com/login.html and logging into site with the credential provided to them. The portal provides information to PVVNL officials as well as consumers. PVVNL has provided apps for i-phone and Android users. Consumers can opt for SMS services and for such cases, SMS messages provides users with their daily electricity consumption.

Situational Analysis and Service Impact:

Situation Before Initiative

Earlier Continuous complaints were being received from housing societies individual consumers that the respective maintenance agencies / RWA are charging exorbitantly and arbitrarily in violation of tariff order issued by the Hon'ble UPERC, leading to loss on the part of consumers. Considering the issues and concerns raised by consumers and to protect their interest, it has been decided to provide multi point connections, i.e., each flat need to have its independent connection from the utility. The following is a compilation of grievances that came up from various consumers who are residents of such group housing societies where there is single point distribution: 1. Builders are charging fixed charges as per the area sq. ft. though their contracted load is quite less, thereby generating profit. 2. Builders are charging higher tariff than the tariff order. 3. Builders are charging hefty amount for load enhancement. 4. Builders are fleecing consumers by charging heavy amount for prepaid electricity system. 5. Builders are providing prepaid electricity by taking advance from customers and paying

the electricity dues on post-paid basis. In various cases builders have collected electricity charges in advance but have not paid electricity bills. This led to disconnection of electricity supply to the multi-storied building. Since consumers have already paid the money for electricity consumed in advance to the builder or RWA, disconnection by utility leads to litigation by consumer. Though in these cases builders/ RWAs are at fault, still end consumer suffers due to default by builders/ RWAs. With no option left consumers had to take recourse through legal means leading to litigations. In such cases, neither utility is at fault nor end consumers of electricity, but utility suffers losses due to litigations pending in courts. 6. Majority of the builders are not providing monthly electricity bill detailing utility and DG units consumed by the customers which is a violation of CEA metering guideline/UP Supply Code Guideline. 7. In various societies, builders have not installed suitable power management system while deploying prepaid electricity infrastructure for monitoring of Utility power failure (outage) time/DG running time with date & time stamp for verification with supplying substation under PVVNL for any discrepancy. 8. Further, builders disconnect Utility power Supply for collection of other charges like maintenance charges, etc. which contradicts the guidelines laid by the Hon'ble UPERC. The guidelines suggest that electricity from Utility power should not be disconnected if consumer has paid for Utility power Charges.

Situation after Initiative

For protecting consumers interest and taking concern of their grievances , PVVNL decided to provide independent connections to residents of multistorey, but there was a challenge to give these connections due to legacy common electricity infra. So, PVVNL introduced innovative method of dual source supply through single electrical distribution infra by using dual source dual register meters. These meters can record consumption of electricity in two different registers based on source of supply which not only saves consumers and DISCOMs from financial burden of deployment of infra but also in savings towards maintenance of the electrical infra which contributed to government initiatives like Digital India, e-Governance, and customer empowerment. Major After Impacts of the Initiative : For Discom PVVNL:- • Improved realization & cash flow : Timely & accurate billing • Consumer satisfaction • Revenue upside: Prepaid • Remote disconnection : Revenue protection & liquidation of arrears • Online visibility of consumption of end consumer and the entire complex • Load Management • Energy Audit of entire society • Any time anywhere access (Cloud based) For Consumers:- • Smart App for Online monitoring o Optimize consumption o Transparency • Option to switch to Postpaid/Prepaid system • Ease to recharge Grid and DG separately • SMS / Mail notification • Individual consumer in a society can even avail Multipoint connection taking advantage

of this solution • All the earlier grievances of consumers related to builders monopoly / high tariff/no transparency sorted out without incorporating large efforts and money.

The solution implemented by PVVNL is mainly for Persona living in mult storied buildings across the country. As india is becoming surplus in electricity generation, hence there will be limited use of back up power, yet consumers of high rise buildings can not imagine their life in absence of power being highly dependent on lifeline services like lifts, escalators, fire and water pump and other life saving emergency services. Even during ban of use of Diesel gensets, permission to use DG sets for emergency services are granted. Hence dual supply source will continue to operate for such profile of consumers. Another way to avail backup power is to create double electrical infrastructure which will be waste of scarse natural resources. At the same time this will lead towards non affordability of homes for such homebyuers. In case of existing high rise buildings, if economic benefit of lower power tariff for domestic consumption envisaged by regulators has to be passed on to consumers, installation of a separate distribution system makes the whole proposition unviable for consumers. Hence the technological intervention by PVVNL is need of the hour. Looking into high rise development in top 100 cities of the country, this innovation will bring down cost of dwelling units making it affordable..I.e. supporting vision of federal and state governement. Residents of multistoried societies are benefited by this conversion from single point to multipoint, residents were

previously facing many issues as already described. Now they are getting directly supply through discom at the approved tariff, which in turn helping consumers in saving money. Now they are getting theirs bill and energy details on their mobile phones any time and anywhere.

शहर की दो सोसाइटियों में शिविर लगाकर फॉर्मलिटिज गए, लोगों की सहमति मिलने के बाद नीतट लगाए जाएंगे

सोसाइटी में मल्टीपल कनेक्शन मिलने शुरू

04 51 08

20,720 रुपये जमा कराने होंगे

मल्टीपल कनेक्शन के फायदे बताए

शिविर

- कनेक्शन को लेकर लोगों की भ्रांतियों को दूर किया गया
- रविवार को भी दो सोसाइटियों में लगाए जाएंगे शिविर

SUNDAY 11.07.2021

अमर उजाला

सेक्टियर पार्क सोसायटी में सौ लोगों ने मल्टी प्वाइंट कनेक्शन के लिए किया आवेदन

साहिबाबाद। हाईराइज सोसायटियों में उपभोक्ताओं को सिंगल प्वाइंट कनेक्शन से निजात दिलाने के लिए शनिवार को मोहननगर और इंदिरापुरम की कई सोसायटियों में कैंप लगाया गया। इस बीच मोहननगर की सेक्टियर पार्क सोसायटी में करीब सौ लोगों ने मल्टी प्वाइंट कनेक्शन के लिए आवेदन किया। वहीं दूसरी ओर इंदिरापुरम में आदिनाथ प्रोवाइल्ड प्राइवेट लिमिटेड, अरिहंत, अंतरिक्ष इंजीनियर्स कॉन्ट, एमकेएस इंफ्राटेक, एसबीपी बिल्डर्स, खोई बिल्डवेल में भी कैंप लगा। अब उपभोक्ता आरडब्ल्यूए और अन्य लोगों के साथ सलाह कर कनेक्शन के लिए आवेदन करेंगे। इंदिरापुरम में अधिशासी अभियंता एसके पांडेय ने बताया कि अहिंसाखंड की विभिन्न सोसायटियों में कैंप लगाया गया। अधिकांश लोग सिंगल प्वाइंट कनेक्शन में ही बने रहने की इच्छा जता रहे हैं। वहीं, मोहननगर की सेक्टियर पार्क सोसायटी में सौ लोगों ने मल्टी प्वाइंट कनेक्शन के लिए आवेदन किया। आगे की प्रक्रिया को पूरा करने के बाद जल्द ही उपभोक्ताओं को मल्टी प्वाइंट कनेक्शन मिल जाएंगे। ब्यूरो

airport

Power connection conversion begins in 270 Noida high-rises, says discom

High-rise residents can opt for separate power meters

Meerut: Pashimanchal Vidyut Vitaran Nigam Ltd (PVVNL) has offered separate household connections to residents of multi-storied flats and gated colonies, where RWAs used to charge a consolidated amount.

According to managing director, PVVNL, Ashutosh Niranjan, "The scheme has been launched to help consumers living in such facilities to avail of the benefits of slab-wise tariff when paying their electricity bill." However, at least 51% of the residents of a particular building or colony will have to apply for separate connections to avail the facility.

PVVNL has under its jurisdiction 14 districts of west UP, including Meerut, Bulandshahr, Saharanpur, Bijnor and Muzaffarnagar.

A few RWAs have opposed the move. President of one of the RWAs of Meerut Bypass-based building said, "The money we charge is inclusive of the salary of a permanent employee we keep for maintenance and immediate help to residents. Now, all sorts of people will have access to the flats in the name of meter readers. In addition, it will be difficult to keep a technician here on a regular basis." TNN

दैनिक जागरण नई दिल्ली, 21 सितंबर 2019

जागरण

मल्टी प्वाइंट कनेक्शन के लिए हर फ्लैट निवेशक से संपर्क करेगा बिजली निगम

पिछले दिनों बिल्डर और आरडब्ल्यूए से मांगी गई थी जानकारी, दो ने ही भरी हा

विविध गतिविधियां

सेक्टर-61 स्थित साकेत धाम सोसायटी में बैठक करते बिजली विभाग के अधिकारी ● सौजन्य से बिजली विभाग

मल्टी प्वाइंट कनेक्शन का सर्वे शुरू

जासं, नोएडा: शहर की विभिन्न सोसायटी में मल्टी प्वाइंट कनेक्शन देने की प्रक्रिया पर सोमवार को विद्युत निगम की ओर से सर्वे शुरू कराया गया। जिसमें बिजली विभाग के समस्त अधिशासी अभियंता और अधीक्षण अभियंताओं ने विभिन्न अपार्टमेंट का दौरा किया। राज्य विद्युत नियामक आयोग ने सोसायटी में मल्टी प्वाइंट कनेक्शन जारी करने की इजाजत दी थी। जिसके बाद पीवीवीएनएल नोएडा ने क्षेत्र की सभी सोसायटियों को नोटिस जारी कर, वहां मौजूदा बिजली की जानकारी मांगी थी। लेकिन अधिकतर सोसायटी के बिल्डर व एओए ने कंपनी को कोई भी जानकारी नहीं दी। जबकि सोसायटी में रहने वाले लोग मल्टी प्वाइंट कनेक्शन चाहते हैं। लोगों का आरोप है कि एओए व बिल्डर उन्हें एनपीसीएल की ओर से मिले नोटिस व उस पर हुई कार्रवाई की कोई जानकारी नहीं दे रहे। जिससे परेशान होकर लोगों ने जिलाधिकारी व राज्य विद्युत नियामक आयोग से शिकायत कर मल्टी प्वाइंट कनेक्शन के लिए जानकारी उपलब्ध कराने का आग्रह किया था। इसके बाद बिजली विभाग विभिन्न सेक्टरों में सर्वे करा रहा है।

NEWS F1RST TODAY

आवासीय काम्पलैक्सों में रहने वालों को मिलेगा बिजली कनेक्शन

मेरठ (संवाददाता)। समस्त बहुमंजिला ईमारतों/गेट बंद आवासीय कालोनियों में निवास करने वाले उपभोक्ताओं को विद्युत विभाग से सीधे अलग-अलग विद्युत कनेक्शन लेने की सुविधा पश्चिमांचल विद्युत वितरण निगम लि. द्वारा दी जा रही है। ऐसे समस्त बहुमंजिला ईमारतों गेट बंद आवासीय कालोनियों में निवास करने वाले उपभोक्ता, जो विद्युत विभाग से सीधे अलग-अलग विद्युत कनेक्शन लेना चाहते हैं, वे सामूहिक रूप से नजदीकी संबंधित विद्युत कार्यालय में आवेदन कर सकते हैं। उर्जीकृत बहुमंजिला भवनों/कालोनी में प्राप्त हो सकेगा जहां कम से कम 51 प्रतिशत अध्याशी, विद्युत विभाग से सीधे संयोजन प्राप्त करने पर सहमत हों। इसके लिए उपभोक्ता

इस हेतु उपभोक्ता/निवासी/ Resident Welfare Association (RWA) ऊर्जा निगम की वेबसाईट www.pvvnl.org पर उपलब्ध प्रारूप पर अपनी सहमति अपने निकटतम खण्ड कार्यालय में प्रदान कर सकते हैं।

पीवीवीएनएल एमडी आशुतोष निरंजन ने बहुमंजिला ईमारतों/गेट बंद आवासीय कालोनियों में निवास करने वाले उपभोक्ताओं से अपील की है कि वे सामूहिक रूप से नजदीकी संबंधित विद्युत खण्ड कार्यालय में संपर्क कर आवेदन कर सकते हैं। इस व्यवस्था से उपभोक्ताओं को स्लेब वाइज टैरिफ का लाभ मिलेगा एवं स्लेब अनुसार कनेक्शन प्राप्त होने पर उपभोक्ताओं के बिलों में कमी आयेगी।

■ कम से कम 51 प्रतिशत अध्याशियों को करना होगा आवेदन, बिल्डरों द्वारा अध्याशियों से मनमानी दरों पर वसूला जाता था बिल

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Borrowers Loan and Security Connect (BLSC), Ministry of Housing and Urban Affairs

Objective of the Project:

Housing & Urban Development Corporation Ltd (HUDCO), a Public Sector Company under the Ministry of Housing and Urban Affairs (MoHUA), has been a key partner with the Government in building the nation's assets. HUDCO plays a key role in Housing & Urban infrastructure development of the country for transforming people's lives. Broad areas of HUDCO include projects like: a) Smart Cities, b) Housing for All, c) Road and Transport, d) Jal-Jeevan Mission, e) Solid Waste Management etc. HUDCO is closely working with more than 20,000 borrowing agencies across the country, which includes: a) Housing Boards, b) Development Authorities, c) Water Supply and Sewerage Boards, d) Municipal Corporations, e) ULBs besides Private Agencies. Till now more than 19.70 million dwellings have been financed through HUDCO's financial assistance in terms of loans, subsidies, Pradhan Mantri Awas Yojna (PMAY) etc. Broad responsibility of HUDCO includes maintaining the financial and technological sophistication with its borrowers, either institutional or individual. HUDCO faced aggravated challenges while dealing / communicating with its borrowers, who are major stakeholders. Obvious reason is Cyber threats in the era of globalization of technology. The key objective of the project are: 1) Leveraging technology to bring about synergy and coordination among all stakeholders. 2) To ensure live project monitoring and delivery to beneficiaries at the end level. 3) Protection of sensitive data of HUDCO's sanctioned projects and beneficiaries. 4) Privacy and security of borrower's information. 5) Setup of Information Storage and Security Systems (ISSS) Information Storage and Security Systems (ISSS) included:- a) Shifting and integration of existing components b) Commissioning of new servers and storage c) Implementation of Borrower Loan and Security Connect (BLSC) d) IT security components e) Implementation of Enterprise Management System (EMS) f) Setup of Disaster Recovery Site g) Establishment of Network Operations Centre (NOC) and Security Operations Centre (SOC) Components of ISSS: a) Identification of process automation and Threat Management: Earlier legacy applications were running in Silos, there was no such data integration and validation of the systems, HUDCO's borrowers and Regional Offices frequently faced the network issues owing to low bandwidth and application performance. In view of rising demand for upgradation of sophisticated integrated Software Application, process automation

and to tackle the Information System and Cyber threats. b) Validation of process automation and Threat Management: To use integrated Software Application for smooth functioning, the process automation and latest high-end IT/Cyber Security Systems to mitigate the global cyber-attacks with upgraded technology and tools. c) Smart Workflow: HUDCO in consultation with Borrowing Agencies, Regional Offices, Project Management Consultant, Integrated Application Developer and Regulator conceptualized the initiatives. d) Monitoring Through Dashboard : Aim is to have a single dashboard for seamless data flow between HUDCO and its borrowers by monitoring the performance of all key IT Infrastructure.

Brief Details of the Project:

Earlier, challenges faced a) Legacy applications were running in silos and there was no integration and validation in the system, b) Old systems were slow to handle computation & processing of the applications, c) Frequent network drops in communication with borrowers and stakeholders, performance issues resulted in slower computation, delay in generation of Demand Notes and communication gaps amongst HUDCO offices, borrowing agencies, overall impacted the sanctions and release process, default positions, recovery, etc. d) Lack of concrete IT/Cyber Security systems - which led to security threats to the data & applications as well as lowers the trust with the customers e) Security breaches instances that happened frequently due to absence of strong monitoring systems and controls Technological enhancements: Considering the existing challenges, risks and other

compliance issues and rising demand for the upgradation of sophisticated integrated Software Application with the integration, automation and to combat and control the Cyber threats, HUDCO initiated a comprehensive Information Storage and Security System (ISSS) and specific application Borrower Loan & Security Connect (BLSC). HUDCO has gone ahead with ISSS and SD-WAN across the Pan India. Security layers also includes Web Gateway, Network Intrusion Prevention System, Next Generation Firewall, Hardware Security Module for Data Encryption, Security Information and Event Management (SIEM) System, User Entity and Network Behavior Analysis, Anti-DDOS, Anti-Advance Persistent Threat System, End Point Security Systems etc. Benefits experienced: a) the applications performances are enhanced, b) the security breaches are minimized, c) the workflow processes & the Management decisions are getting faster All stakeholders are easily connected to the enterprise network and the data are now digitized with the Document Management System and also integrated with other office automation products.

Overview of Initiative:

After the initiation of ISSS uninterruptable access of information of the borrowing agencies, customers & loanee are available to the authorized persons. Effective handling of cyber threats become possible with the help of 24/7 monitoring system & automated alerts on any cyber threat or malicious activity to the authorized officials within fraction of seconds. Auto escalation mechanism based on pre-defined SLAs at each level, so as to track any delay to resolve the issue is getting adopted. System downtime gets minimized because of ISSS. With secure SD-WAN technology,

borrowers and HUDCO offices get connected with a redundant secure network. All the necessary documents and files related to project financing get digitized and migrated to the Document Management System, e-Office solution for monitoring of its movements.

Specific Emerging Technologies and details on its adoption :

A vast change also brings vast problems. cyber-attacks might not make news, but is equivalent of upper-level stealing, causing dent in the corporation's image. Digital adoption in India has happened very fast and this led to the increased threats and make systems vulnerable to attacks. Here enemies not visible, but available at our digital gate. This will go worse in coming days because of Geo-political conflict with hostile countries Smart-Rack Systems: In HUDCO DC, all the equipment are installed in Intelligent Smart Racks with inbuilt power and cooling, Fire detection & suppression, Pest Control, etc SD-WAN: For secured and seamless, redundant inter-connectivity with ROs, HUDCO adopted the secured SD-WAN Servers and Storage: For better performance, High end Servers and Storage are implemented in the ISSS and data is migrated Security Information and Event Management (SIEM) is being used for the management of security of information and events. SIEM collects various logs/events data generated by the applications and security devices by hosting systems in a centralized system. The salient features of SIEM are: Integration with other controls: It can give commands to other enterprise security controls to prevent or stop attacks. Artificial intelligence (AI): AI SEIM improves its own through machine and deep learning Threat intelligence feeds: Can support threat intelligence feed control Extensive compliance reporting: It provides built-in reports for common compliance needs and provides the organization with the ability to customize or create new compliance reports. Forensics capabilities: IT can capture additional information about security events by recording the headers and contents of packets of interest. User & Entity Behavior Analysis (UEBA) Tool helps to detect the use of compromised credentials, lateral movement, and other malicious behaviors of users as well as systems. Using big data, UEBA provides risk-based behavior analytics delivering actionable intelligence for security teams with low false positives that leads to identify and arrest any compromised accounts before it poses any security threat to entire system. Anti-DDOS is helpful for behavioral analysis, traffic signatures, rate limiting, and other such techniques to identify malicious traffic. Deep Discovery Inspector (DDI) tool to mitigate the Cyber-attack executed by criminals or nation with the intent to steal data or surveil systems over an extended time. Deep Discovery Analyzer (DDAN) helps to analyze the unknown patterns and reputation analysis to detect the latest ransomware attacks, including WannaCry. The customized sandbox detects mass file modifications and encryption behaviors. Hardware Security Module (HSM)

based Encryption Tool to safeguard the enterprise data in premises/network. The tool helps to create, store, manage the encryption, decryption and authentication of the applications, identities and database.

Use of Technologies in the project and the purpose of usages:

Name of Technology

Security Information and Event Management (Artificial Intelligence), Data Analytics, Cloud Computing, Enterprise Resource Planning and e-Office Solution. Intelligent Smart-Rack Systems installed with inbuilt Intelligent PDU unit for power management, Intelligent Cooling, Fire detection & suppression, Rodent repellent, Automatic Door opening, Rack Mount UPS & Battery, Rack level Access Control with RFID Lock, Sever and KVM Management, Rodent Repellent Systems etc. User & Entity Behavior Analysis (UEBA): An Artificial Intelligent and Machine Learning (AI&ML) based tool helps to detect the use of compromised credentials, lateral movement, and other malicious behaviors.

Purpose of use

HUDCO leveraging the latest technologies to safeguard the stakeholder's information and easy access to it, to help in the growth of the organization at all levels. Security Information and Event Management (SIEM) is being used for the management of security of information and events. SIEM

collects various logs/events data generated by the applications and security devices by hosting systems in a centralized platform. The main salient features of SIEM are: Integration with other controls: It can give commands to other enterprise security controls to prevent or stop attacks in progress? Artificial intelligence (AI): AI SEIM system improves its own accuracy through machine learning and deep learning. Threat intelligence feeds: It can support threat intelligence feeds of the organization's choosing, or it allows mandating to use a particular feed. Extensive compliance reporting: It provides built-in reports for common compliance needs and provides the organization with the ability to customize or create new compliance reports. Forensics capabilities: IT can capture additional information about security events by recording the headers and contents of packets of interest.

Observed Impact

Since the technologies implemented in HUDCO, we have seen tremendous change in the business. Ease of doing business, Transparent working and quick deliverables are the key bi-products of the project implemented. The applications performances are enhanced, the security breaches are minimized, the workflow processes & the Management decisions are getting faster. All stakeholders are easily connected to the enterprise network and the data are now digitized with the Document Management System and also integrated with the e-Office solution.

Implementation Methodology

Understanding, Approach and Methodology: HUDCO requires a Highly Available Info and Management Center. The deployment of smart racks helps in the load anticipated in phased manner, therefore a Physical, scalable Infrastructure sought. In today’s scenario, wherein efficiency is the key to build Green DC, infrastructure with high efficiency components is imperative. The design needs to be based on issues like highest level of availability, adaptability to ever-changing requirements, accelerating the speed of deployment, and optimizing or protecting the capital investing and available space besides the operation expense for the same. Methodology for establishing ISSS: System Analysis, Site and Utility Evaluation, Master Planning – Statement of Requirements, Engineering, Energy-Efficient ISSS Planning, Single Point-of-failure Studies, Detailed Solution and Planning. Understanding of the Project: To cover all aspects of the Project including the DC Architecture, Security/ SOC Arch., Network Arch., Project Implementation approach, Support phase, SLA compliance & measurement, Training strategy & plan, Risk & Mitigation Strategy. Staffing Plan & Governance: Structure evaluation would cover the aspects - Staffing Plan & Governance Structure

including the details of the Project Team & Team of Experts, their deployment and coordination for execution of the activities of the Project. Commitment and support for effective execution of the Project.

Solution Architecture including consent management

ISSS has two major components like (a) Security Layer, (b) Data Privacy. The security process includes: (i) DDOS protection is to protect the cyber-attacks from internet; (ii) NexGen Firewall is to protect from unauthorized access who are outside the HUDCO topology; (iii) Anti-APT uses the 3-level detection scheme to perform initial detection, then custom sandbox simulation, and finally, event correlation to discover evasive attacker activities; (iv) SIEM provides a three-tiered architectural approach to enterprise scalability to meet the demands of large, heterogeneous networks. These three tiers in the complete Security Suite are the Integration Layer, Core Engine Layer and Module Layer; (v) UEBA (User Entity & network Behavior Analysis) prevents and detects threat before occur, increase security operation efficiency by significantly reducing false positive and improve overall risk posture through automated remediation. ISSS also utilizes latest high level servers and data storage for high performance computing and data analytics.

Situational Analysis and Service Impact

Situations before initiative are: a) Legacy applications were running in silos and there was no integration and validation in the system, b) Old systems were slow to handle computation & processing of the applications, c) Frequent network drops in communication with borrowers and stakeholders, performance issues resulted in slower computation, delay in generation of Demand Notes and communication gaps amongst HUDCO offices, borrowing agencies impacted the sanctions and release process, recovery etc. d) Lack of concrete IT/Cyber Security systems - which led to security threats to the data & applications e) Security breaches instances that happened frequently due to absence of monitoring systems and controls

Situations After initiative After digitization of project files and documents it is easy to monitor and analyze the data. Earlier there was no provision for PLIs and beneficiaries to track the application status for interest subsidy. Aadhaar validation and de-duplication was being done only after release of subsidy. Due to processing of applications in bunches, subsidy release was delayed which resulted in

more public grievances. To address these issues, HUDCO in consultation with all stakeholders develop the solution Borrower Loan Security Connect (HBSC).

After the implementation of BLSC, all process and data flow becomes faster. The information is more secured. The beneficiaries and stakeholders are able to access the desired information easily and The project monitoring is now becomes faster.

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e-Samwad, Government of Himachal Pradesh

Objective of the Project

e-Samwad mobile application is a technology platform to improve communication between parents and teachers, ensuring focus on each student's learning, across the state. This is an initiative by the Samagra Shiksha, HImachal Pradesh aiming to reach ~8,00,000 students across the state education department schools in the state. The app has been developed with the broader goal of improving community participation in education, and thus ensuring that students achieve the necessary learning outcomes. The application serves as a decentralised teacher app for the State and achieves the purpose of a quasi MIS in a hilly State like Himachal Pradesh, in absence of a MIS in the State. The platform is the first ever and one-of-a-kind solution, built to address the needs of parents and teachers at government schools at scale. Using this app, teachers can send messages about students' progress to the parents. Messages around absence of students from school, performance of students in school assessments, holiday notifications, SMC meetings and homework compliance by the students. The app is very simple to use by all the teachers. Built on open-source technology, the solution is systemic, replicable and sustainable for any state government; and dependence on a technology vendor is minimal. Given app's user centric approach, the app has now been extended as a student data management system. The app by the virtue by of its features enables teachers, school heads, officers and state department to track student enrolment, students' learning achievement and attendance on a real-time basis through dashboards. The app has emerged as a primary source to track students' performance across multiple domains. The app has demonstrated how a simple and modular application can be extended to become a data management system for a state, and can operate at scale Through this app, in future, the state also intends to develop a mechanism to increase interactions with parents with department of education like taking their feedback on the quality of education in their schools, and extend its functionalities for other data management for example teachers and schools.

Brief Details of the Project:

e-Samwad is a mobile app-based technology platform owned by Samagra Shiksha, Himachal Pradesh. The application aims to enable to establish a student tracking system with a special focus on enhancing communication between parents and teachers, ensuring focus on each student's learning,

across the state. This is an initiative focusing on students across all grades in government run schools in the with the broader goal of improving community participation in education, and thus ensuring that students achieve the necessary learning outcomes. The product was launched initially as a parent engagement platform but eventually has evolved to a student data and learning management system. The application currently enables the following features to be used by the teachers and school heads across the states: - 1) An offline mode enabled mobile app enabling teachers to send templatised SMS (es) to students' prents 2) Automated rule-based SMS nudges to parents, which fill the gap between teacher-parent communication 3) Student Registration and Attendance module enabling state to track enrolment any time and also enrolment trends across years 4) Student Assessment Data collection module enabling teachers to record student level performance and learning outcome data for the students 5) Multiple dashboards enabling data access to all the stakeholders and take decisions basis key insights 6) FLN Practice on oral reading fluency and Content sharing module enabling teachers to also drive focused tech enabled classroom practice and blended model of learning

Overview of Initiative

e-Samwad mobile application is a technology platform to improve communication between parents and teachers, ensuring focus on each student's learning, across the state. This is an initiative by the Samagra Shiksha, HImachal Pradesh aiming to reach ~8,00,000 students across the state education department schools in the state. The app has been developed with the broader goal of improving community participation in education, and thus ensuring that students achieve the necessary learning outcomes. The application serves as a decentralised teacher app for the State and achieves the purpose of a quasi MIS in a hilly State like Himachal Pradesh, in absence of a MIS in the State.

Specific Emerging Technologies and details on its adoption

There are 3 main features of the application which are unique and have adopted emerging technologies- 1) All the tech used is open source, thus easily configurable and customisable by any state, which is something being highly recommended by MeiTY and NEP (as part of NDEAR). The state would be happy to share the code for the platform . Any state if wants to replicate one/multiple/all features, they can do that 2) Linkage with other apps like DIKSHA and Google Read Along, is a need of hour to enable an ecosystem mode of learning. Through API integration E Samwad is now linked to these applications and can now enable a learning management system on the application itself. 3) Decentralised access to teachers - an accessible app, operatable in offline

mode, in context of state's situation, thus reducing any load on block/district level officers in data entry.

Beneficiaries of the Project:

The application is used by ~67,000 teachers and school heads across the state education department run schools in Himachal Pradesh. The end beneficiaries of the application are the ~8,00,000 students across Grades 1-12 in these schools, whose parents are regularly engaged by their teachers, whose data is now systemised and available to all stakeholders, to drive data backed interventions towards improving their learning outcomes. E Samwad has received the SKOCH order of merit award for good governance

Purpose of use

1) SMS(es) can be sent to parents directly by teachers/state, also auto alerts are sent to the students (eg. Absent for more than X days) 2) Student enrolment and attendance is tracked digitally from the app 3) All the school assessment data is collected from the app 4) Teachers have access to all grade/subject relevant learning/practice content from DIKSHA (national educational platform) to refer and share with students

Observed Impact

1) All the schools have registered all their students, with assessment data for all students available 2) ~91% parents have been reached via SMS alerts 3) The app has been referenced by multiple local and national print media outlets highlighting the app's reach and concept 4) An US based research publication, Brookings created a International Playbook for Family school Engagement, where e-Samwad was featured as a case study highlighting how the parent engagement contributes to uplifting education of children

Implementation Methodology

The e-Samwad application was conceptualised as an android application aiming to enable parent-teacher engagement using technology. The app was developed to supported to enable offline operation considering hard geography of the state. The version 1 of the application was piloted in Mandi district of the state. The pilot release contained the following features: - Student Registration SMS to parents by teachers In-person trainings at block levels were conducted by the district teams, who had been pre-trained on the app usage. WhatsApp was leveraged to support query resolution of

teachers. Data entry operators at state HQ level were trained to handle all the queries. Three-month pilot helped gauging the app performance and additional feature of Assessment Data collection module was launched, with scaling pilot to the state. Given limited technical knowledge of teachers, app user manuals in Hindi were shared will schools across the state. Then, student attendance feature was launched on app. Post COVID-19, when schools reopened in the state in 2021, the app was used a primary tool to enable blended learning in classroom, by giving access to the teachers to content uploaded on DIKSHA by state, to share respective practice content with the students.

Solution Architecture including consent management

1) Built to scale horizontally - Since it evolved with the existing use case, it is currently a mix and match of multiple technologies. The current design is heavily dependent on the fact that most of the requirements will be READ queries and not WRITE queries. 10k transactions/second is the maximum it will be able to handle. The Red box is the current bottleneck and needs to be distributed into multiple microservices with individual scalability. Since the services are based on features, the overall system would then be capable of managing scales upto 50k transactions per/second. Independently scalable small services. Databases that scale horizontally - Kafka pipeline for storing and processing events. Caching at all layers of a service. Deployment auto scalable based on Kafka queue - HPA (k8s). 2) RBAC and Registry - e-Samwad follows a Hierarchical access control - Both in terms of location and data access. Baking that in the system needed this to be part of the access control layer and how we register users. Per data point based roles - example if a Teacher is allowed to modify a specific student's data point in his class. This is also baked into the consent management system. An OTP based consent is taken from the owner everytime they want to change something other than their own data.

Situational Analysis and Service Impact

Situation before Initiative

1) Before, the teacher relied on verbal messages and student diaries and PTM/SMC meetings for any sort of communication with the parent. Parents were often not able to attend the PTM/SMC meetings and students would often not show their diaries. Thus, parents would often miss out on important information from the teacher about their child's learning ranging from not knowing about their child's results or not knowing when the schools open next 2) A teacher used to spend 25 minutes per child to fill various formats of student assessment results including CCE, Report card, etc

3) Given the state had no tech system before 2019, the only mode to track enrolment in the state was either through UDISE (which shows previous year data, not at-present) or cascaded communication from the schools. This either lead to incorrect information or delayed information. In both cases it meant increased administrative load for teachers. 4) The students didn't have access to curated learning content and teachers didn't have any technical tool to assess student learning levels in reference to the FLN learning outcomes.

Situation after Initiative

1) Now with the help of e-Samwad, there has been a transformation in how teachers communicate to parents - All parents get their child's report card on their mobile. They get regular alerts if the child has missed school or has not finished his/her homework. They get notifications about the next SMC/PTM meeting, upcoming vacations and examination schedule regularly. 2) With the help of e-Samwad, a teacher can now enter the data only once and reports can be auto generated, hence significantly saving teacher's time from mundane administrative tasks. This has also reduced the time consumed for digitizing of data from 3 months to just a click of the button, while also giving access to students' learning levels to all relevant stakeholders 3) With e-Samwad, now any official in the department can now access more than 15 fields pertaining to student data in real-time 4) e-Samwad app is integrated with state content repository on DIKSHA enabling teachers to share curated practice content with their students for all subjects. Also, currently a feature is being developed in integration with Google and DIKSHA enabling teachers to drive classroom ORF practice of students and gauge automatically the reading levels of the students.

Based on discussions with multiple school teachers and school heads the following points have been identified as key points for driving and incentivising teacher engagement on e-Samwad once it is launched for all the school teachers and heads: 1) Product should ensure complete doing away of offline data collection, to avoid duplication of teacher efforts 2) Mobile Apps are the most preferred option in terms of product platform 3) System feedback is absolute essential for the teachers - ability to get notifications on status of sent messages/updates 4) Localisation is a universal requirement 5) Accessibility to data is important : ability to download templatized PDF reports, lists, auto generated report cards necessary to ensure complete usability 6) Low tech savviness of the user group should be mitigated with neat and highly user centric product UI/UX design, audio or visual cues.

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Trinetra: Integrated Command and Control Center (i3C), Gujarat Police Department

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Objective of the Project:

Gujarat Police is using CCTV Cameras, Body Worn Cameras and Drone Cameras for photo based enforcement. A state wide network of 7,000+ CCTV cameras has been established for safety and integrated traffic management under the VISWAS (Video Integration and State Wide Advanced Security) Project. The edge location infrastructure is connected with District Level Command and Control Centers in 34- District Headquarters which are equipped with Data Center, Video Wall and e-Challan Center. These 34- District Level Command and Control Centers have been connected with Trinetra: Integrated Command and Control Centre (i3C). 10,000 Body Worn Cameras and 15 Drone Cameras have been installed in the state and the same are integrated with Trinetra. Trinetra is the nerve center for operations, exception handling, Disaster Management and decision support system (DSS) to respond to real-time events. Three eyes namely; cameras from poles, cameras worn on the uniform of Police Officers and cameras from the sky serve as 'third eye' of Police giving force multiplier effect. TRINETRA with extensive camera network spread across the state, video analytical tools and a team of trained engineers has increased the capabilities of police to keep surveillance over criminal activities, post incident investigation, traffic management and enforcement. Strategic Objectives: • Traffic Management & Enforcement • 4D: Deterrence, Detect, Delay & Denial of Crime • Situational Awareness through MIS & Video Feed Analysis • Monitoring of VVIP and Vital Installation Security • Supervisory & Advisory Role • Enhancing Stakeholder Collaboration • Institutionalizing data driven decision making • Centre of Excellence for Multi-Technology Fusion Impacts and achievements: • 6900+ cases where Video Footage/ Data has been utilized • 11000+ violation of notification detected • 16.3 lakhs+ e-Challan has been generated worth of ₹58 Cr.+ amount • 1186+ person get arrested • 8 Cr+ stolen property recovered • 755+ criminal cases solved • 3600+ cases like hit and run/accident, kidnapping/missing, post incident investigation, theft/robbery/chain snatching have been investigated by using CCTV camera of VISWAS project as on 22/07/2022. • CCTV cameras installed under VISWAS project and other effective measures has resulted in 11% increase in the detection rate of robbery/raid, an increase of approximately 13% in the detection rate of all theft cases and an approximately 3% increase in the arrest of accused of

riots/riots cases in the state in 2021 w.r.t 2018. • As a result of CCTV Camera based Traffic Management System installed under VISWAS project and other effective road safety measures, the number of road accidents in the state has decreased by approximately 19% in 2021 as compared to 2018. During this period, injuries due to road accidents decreased by approximately 21% and deaths by approximately 7%. • In addition, these CCTV cameras were used for effective traffic regulation and precise monitoring during religious events, festivals, processions, fairs and during visits of dignitaries. As of 22/07/2022, CCTV Cameras have been used effectively during more than 3200 such incidents in the state. • During Post Incident Investigation, Video Footage is presented as forensic evidence before the competent court.

Brief Details of the Project:

'Trinetra' is the 'Integrated Command and Control Centre' (i3C) for 7000+ CCTV Cameras, 10,000 Body Worn Cameras and 15 Drone Cameras in the State. The cameras from poles, cameras worn on the uniform of Police Officers and Drone Cameras from the Sky serve as 'third eye' of Police giving force multiplier effect. Trinetra with extensive camera network spread across the state, video analytical tools and a team of trained engineers has increased the capabilities of police to keep surveillance over criminal activities, post incident investigation, traffic management and enforcement. I. CCTV Infrastructure 7000+ different type of the Cameras like Fixed, PTZ, ANPR, RLVD & Dome has been installed at 1200+ locations across 41 cities of Gujarat. All the District Headquarters have their own Command and Control Center called Netram. All the field equipment are connected with respective Netrams and all 34 Netrams are connected with Trinetra by the fiber network. II. Body Worn Cameras: To bring Transparency, Accountability & Vigilance in overall police operations, 10,000 Body Worn Cameras are deployed in the Gujarat State. Out of which 1000 Body worn cameras has live streaming functionalities and directly connected with Trinetra, while remaining 9000 Body worn cameras without live stream are connected with respective Police Station. III. Drone Based Camera System: Gujarat Police is pioneer in addressing operational challenges by leveraging cutting edge technologies which help in improving safety and security of people. In order to access remote/risk prone locations, get Third Eye view from sky and limit risk of exposure of police officers, Gujarat Police has procured 15 Unmanned Arial Vehicle (UAV) Drone camera system.

Overview of Initiative

The State level Command and Control Centre (Trinetra) under VISWAS Project has been envisaged to be the brain for state operations, exception handling, and disaster management. The state level Command & Control Centre has been set up in Police Bhavan, Gandhinagar which has CCC infrastructure and other amenities such as Video Control Centre, Conference Hall, Data Analysis Centre spread across 3 Floors. TRINETRA Building has been set up in approx. 280 Square Meters of ground area with approx. 1050 Square Meters of total build up area. TRINETRA is used for: o Increasing the situational awareness by providing insights using data from district level command control centers (Netrams) across the State, o Enhancing collaboration across multiple departments within and outside urban local bodies and government bodies. o Institutionalizing data driven decision making for regular operations and during crisis across the state – right from operators to city/state administrators. o Engaging with on field support staff to address civic issues and citizen grievances. o Supervisory & Advisory for implementing proactive approach of Urban Mobility & Homeland Security o Centre of Excellence for Multi-Technology co-ordination like Body-worn cameras, Drone, Anti-Drones, Video Synopsis & Video Analytics, e-Challan, ITMS etc.

Specific Emerging Technologies and details on its adoption

Specifics of CCTV and ITMS System: • 2 MP Fixed and ANPR Cameras – 5403 Qty • 2 MP PTZ Cameras with 30X Optical Zoom- 1138 Qty • 8 MP RLVD Cameras -104 Qty • 2 MP Dome Cameras- 355 Qty • Centralized VMS System • 90% HSPR and 75% Non-HSPR ANPR Accuracy • Speed Detection and ANPR OCR Conversion upto 120 Km/hr • Various Video Analytics Specifics of Body Worn Camera System: • 9000 qty – Body worn Camera without Live Stream • 1000 qty – Body worn Camera with Live Stream • Multi-mic audio, live maps and streaming, security, video recall • 1500 – Docking Station • Commander Software • Full-shift battery • IP 67 - Rugged design • Low light capability • Multiple mounting options Specifics of Drone based Camera System: • Operational Range: 2 KM • Max Operating Altitude: 200 Mtr. • Thermal & Daylight Vision Payload • Semi-Rugged Laptop • Live Streaming Software • Endurance: 25 to 30 Minutes • UAV Category: Micro (1.96 KG) • No Permission No Take Off (NPNT) Compliant Specifics of the Application in Trinetra • Alert and Incident Management Applications • Management Information Systems • Video Analytics & Centralized Network Monitoring tools, etc.

Use of Technologies in the project and the purpose of usages

Name of Technology

CCTV Infrastructure integrated with video analytics, ITMS and ICMS system • People Counting • Unattended Object Detection • Vehicle Wrong way detection • Camera Tampering • Intrusion Detection • Crowd Formation • No Parking detection • Integrated Traffic Management System (ITMS) • Integrated Challan Management System (ICMS) Body Worn Camera System: Gujarat police is one of the most advanced police forces in India. Gujarat State Police believes in leveraging technology and providing officers with the latest equipment for modernization. Over the course of time, Gujarat State Police officers respond to situation after situation, and without a reliable body-worn camera (BWC) device, they can find themselves susceptible to a variety of issues such as false complaints and accusations. Body worn video device is capable of capturing evidence and sharing it with a digital evidence management solution (DEMS). Drone based Camera System: Gujarat Police is pioneer in addressing operational challenges by leveraging cutting edge technologies which help in improving safety and security of people. In order to access remote/risk prone locations, get Third Eye view from sky and limit risk of exposure of police officers, Gujarat Police has procured 15 Unmanned Arial Vehicle (UAV) Drone camera system.

Purpose of use

Purpose of CCTV Infrastructure: •To build non-intrusive and contactless enforcement system •To reduce police-citizen contact points to avoid allegation of corruption, misbehavior, and high handedness •To enhance a sense of safety and security for the citizens by 4D principles of Homeland Security: Deterrence, Detect, Delay and Denial of Crime. •To be pro-active in the alerting of threats in real time for immediate and decisive action. Purpose of Body Worn Cameras: 1.To help traffic enforcement and management 2.To maintain Law and Order in processions, fairs & festivals, VVIP Security, etc. 3.To use video footages as temper proof evidence in criminal cases in Court of Law 4.To help in multiple operations like anti-corruption operations, criminal case investigation for search, seizure, interrogation, witness examination, crime scene visits, etc. 5.To bring Transparency, Accountability & Vigilance in overall police operations. which reduce opportunity for corruption, allegations of police high handedness, assault on police officers and improve police and public behavior. Purpose of Drone Camera: •To help in Disaster management, Search & Rescue activities •To maintain Law and Order in processions, fairs & festivals, crowd gatherings •To help in

monitoring and patrolling activities of border and coastal areas •To reduce risk of exposure of Police in handling riots, violent events

Observed Impact

• 1186+ persons arrested • 8 Cr+ stolen property recovered • 755+ criminal cases solved • 3600+ cases like hit and run/accident, kidnapping/ missing, post incident investigation, theft/robbery/chain snatching have been investigated by using Trinetra as on 22/07/2022. • The use of Technologies has resulted in 11% increase in the detection rate of robbery/raid, an increase of approximately 13% in the detection rate of all theft cases and an approximately 3% increase in the arrest of accused of riots/riots cases in the state in 2021 w.r.t 2018. • As a result of CCTV Camera based Traffic Management System installed under VISWAS project and other effective road safety measures, the number of road accidents in the state has decreased by approximately 19% in 2021 as compared to 2018. During this period, injuries due to road accidents decreased by approximately 21% and deaths by approximately 7%. • During Post Incident Investigation, Video Footage is presented as forensic evidence before the competent court. • Having CCTV cameras in public places is helpful in creating deterrence against criminals and creating a sense of safety and security among the public. • People got aware about road safety and road usage behavior of people is also improved.

Beneficiaries of the Project:

Citizens: Sense of Safe & Secure environment, Reduction in crime, Improved traffic conditions, act as a deterrent to criminals, Better traffic management at the time of hosting of important events (Political rallies, National / International events, etc.), Improved citizen behavior in public places, Protection to public / private properties, Improved citizen handling by Police forces, Improved Business conditions due to secured environment. Police Department: Improved Traffic Management & Control (Efficient detection of traffic law violations), Deterring and detecting crime, Proactive Monitoring, Identify & apprehend offenders, Providing evidence for criminal and civil action in the courts, Efficient & effective Policing, Better crowd management & control during big rallies & events, Identification of miscreants during any aggressive demonstration /riot situations, etc. Policy makers: Centralized viewing & monitoring, Disaster management in case of any natural / manmade catastrophe, Proper planning & deployment of resources (Human, Road Infrastructure, etc.) Improved decision making, Better management of important events (Political rallies, National / International events, etc.), Better implementation of punitive measures.

(i) VISWAS Project has been awarded SKOCH GOLD Award 2019 for governance in the category of Public Safety & Security. (ii) VISWAS Project has been awarded Governance Now Award 2020 in the state category of Digital Transformation. (iii) VISWAS Project has been awarded Smart Cities India Awards 2021 in the category of Safe city. (iv) VISWAS Project has been awarded Runner-up award Project of the Year 2021 in the category of Contributing to the community.

Implementation Methodology

The agile project management methodology over traditional waterfall project management methodology Adopted in this project, as traditional approach has no flexibility to cope up with frequent changes. We have specifically used Kanaban boards in our TRINETRA project to reduce waste and increase transparency while quickly addressing stakeholder's ever-changing needs. In the TRINETRA Implementation we had followed the hybrid agile project management; This signifies the ability to move something forward in a quick way that allows easy changes of direction. So, in our project, the five attributes of agility that form the building blocks of our Agile process are: • Transparency • User acceptance • Adaptability • Sense of Ownership (Effective Leadership) • Continuous Improvement Further, we had used the tools like a kanban board, which is used to visualize all the work that's being done. A kanban board is structured into columns and lanes that deliverables pass through on their way to completion. Deliverables in the To Do column until the WIP limit allows for the next task to be worked on. That's really help us to maintaining our backlog, it helps teams to achieve our long-term goals by continually adding and removing items based on the team's long-term capacity and Continuous Improvement.

Solution Architecture including consent management

Trinetra is based on a 3-Tier Solution Architecture based on chain of command concept. The 1st Tier is supervisory control at State level performed at Trinetra, the 2nd Tier is administrative control performed at District level-Netram & 3rd Tier is action control at Police Station level; This 3-Tier Solution Architecture is further divided in 3 domains areas which are Governance, Functional & Technical as explained below: • Functional coverage refers to the Trinetra utilities and services such as Vigilance function, Advisory function, and Performance Management function. • Technological coverage refers to the technological capability, scalability, and security components such as Alert & Incident management based on video feeds operations of Drone, Body Worn Camera, Data Centre, etc. • Governance essentially refers to peoples side of the system with emphasis on the governance

and implementation of standard operating procedures (SOPs), training and documentation, policies in place to operate the Trinetra, Netram and police station operations effectively and efficiently.

Situation Analysis

Situation before Initiative

Collaboration challenges across the ecosystem • Multiple silos of various video-based surveillance and e-Governance Projects. • Inadequate use of the full capabilities of the technological infrastructure where initiatives are delivered in isolation & minimal evidence of continual improvement CCTV operations focused on reactive processes and manual interventions. • The most public safety CCTV operations remain focused on reactive processes. CCTV cameras now boast many advanced features, and the video footage they capture is usually recorded and archived – but is only subjected to analysis if warranted by reports of an incident, after the event. Limited ability to share data across functions or other organizations • The major challenge for today's public safety CCTV systems is that their ability to share data across functions or other organizations is very limited. • The ability to transfer video

evidence seamlessly between different public safety agencies is difficult because of legacy systems non-standard installations, interoperability, ownership etc.

Situation after Initiative

• We had Integrated various video-based projects like Drones, Body Worn Cameras, and Edge location cameras on a unified platform created at the State level Control Center- Trinetra. • We had deployed Integrated Traffic Management System (ITMS) with ANPR, RLVD, SVD cameras across the traffic junctions for Photo-based e-challan generation which leads to less face-to-face interaction between police & citizen encouraging remote law enforcement. This system results in more transparency and reduced corruption in Law enforcement. Hence this can boost digitization in law enforcement. • We have identified how CCTV video data can be integrated, stored, and analysed in combination with the various technological intervention like CCTV Camera with edge location infrastructure, Body Worn Cameras, Drone Cameras & Advance Analytics • We had designed a scalable data platform to support collaboration and information sharing, initially emphasizing high-impact use cases that will deliver the biggest benefits to public safety, and building support, buy-in and momentum both across the police department and among the public.

Feedback from beneficiaries

The primary goal of TRINETRA project is Safety & Security of Gujarat Citizens. We had designed a Performance Management System with Reward & Recognition Program. To motivate and inspire District Project Implementation Team (DPIT), Outsourced Engineers as they play a significant role in success of the Project. The objective of R&R: To recognize positive behaviors that support team goals, To provide multi-level recognition, & To improve the productivity & Quality of the work for Team We had defined two categories in which the performance of each district has been measured in each quarter: •Category-1: 'Sodh': Excellent Use of CCTV Infrastructure •Category-2: 'Marg Salamati': Road Safety Implementation •Category-1: 'Sodh', NETRAM team submit the details of solved cases (Hit & Run, Kidnapping/ Missing, Post incident Investigation, Theft/Robbery/Snatching with the use of CCTV Infrastructure in Quarter. District Netram team, which solved maximum number of cases will be declared as Winner (1st, 2nd & 3rd) •Category-2: 'Marg Salamati', Data will be downloaded from E-Challan Portal. •Total e-Challan generated count & Paid e-Challan count within Quarter •District NETRAM team, with highest percentile average scored will be declared as Winner (1st, 2nd & 3rd) So, far we had declared the results 4 times (1 year) the winners have been rewarded by DG & IG of Police for each quarter.

Surveillance, Security, Law & Order Management: The video feeds of the CCTV cameras have been used for various crime investigations, VVIP arrangements etc. Major outcomes are as below: • 6900+ cases detected where Video Footage/ Data has been utilized • 11000+ violation of notification detected • Crime detection rate of state improved from 80% to 89% during 2018-2021 • 1186+ person get arrested • 8 Cr+ stolen property recovered • 755+ criminal cases solved 2. Traffic Management & Enforcement: For a traffic enforcement, total 16,33,475 e-Challan issued worth Rs. 58,80,19,100 as on 26th July 2022, out of that approx. 48.80% e-challan amount is already recovered. E-challan Payment became more transparent and easier by using online Payment portal & Mobile app. As a result, road accident reduced by almost 19.12% from 2018 to 2021. 3. To minimize losses from accidents: The TRINETRA Project has utilized 8 nos. of different Video Analytics to minimize losses. Apart from these usage of features like ANPR, RLVD, SVD for improving road safety and security resulted in Reduction of 6.87% in Deaths i.e., 600+ person's life safeguarded & Reduction of 21.62% in Injuries i.e., 3700+ person's life safeguarded from 2018 to 2021 due to Road Accidents.

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सत्यमेव जयते

Department of Administrative Reforms & Public Grievances
Government of India
New Delhi