VIGEYE VANI

CENTRAL VIGILANCE COMMISSION

CENTRAL VIGILANCE COMMISSION

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Corruption free India for a developed Nation

सतर्कता जागरूकता सप्ताह 2022

Vigilance Awareness Week 2022

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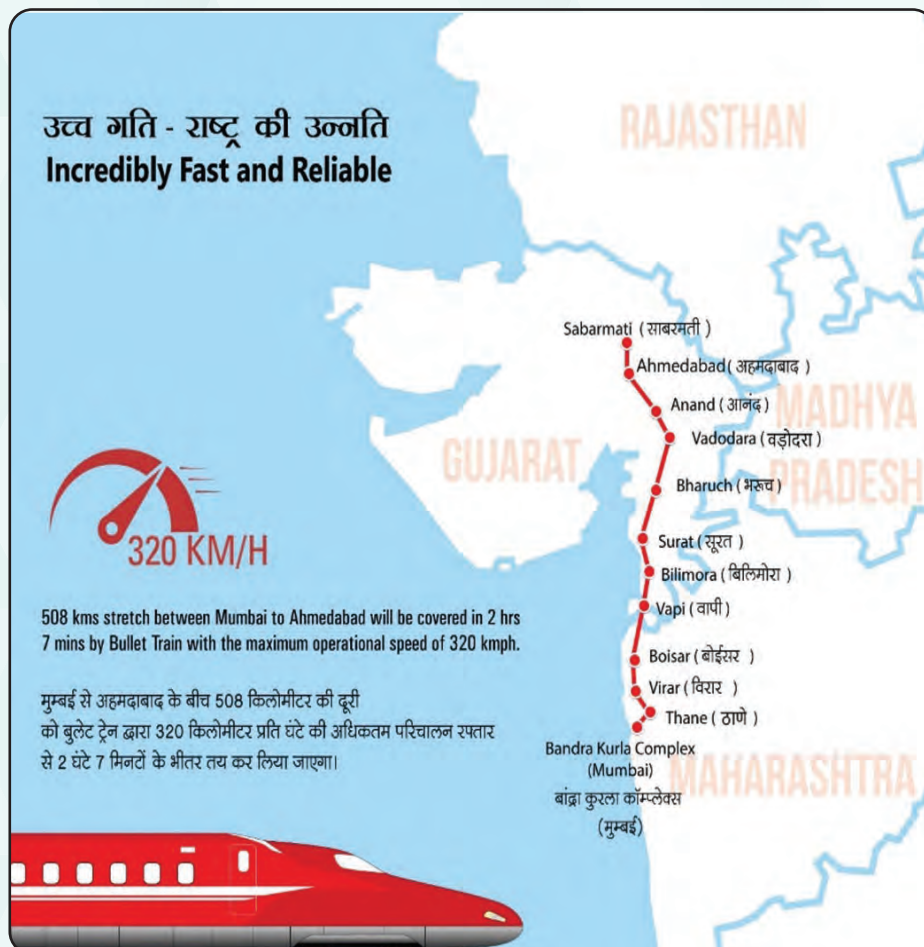CVO, DFCCIL

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MONITORING OF MUMBAI-AHMEDABAD HIGH SPEED RAIL PROJECT (BULLET TRAIN PROJECT) USING PMIS

Anjum Pervez & Nishant Singhal, NHSRCL

GENERAL

Public Procurement is essentially based on pillars of Transparency, Information accessibility, effective competition,efficiency, accountability and control. Public procurement covers both pre and post contract procedures. Over the years, various public organisations have evolved towards the desired principles of public procurement. Much of it has been achieved with the help of available technological tools. The current article further focusses upon the level and experience of transparency, efficiency and control achieved in the mega public transport project i.e. Mumbai-Ahmedabad High Speed Rail, post contract award execution process using state of the art flexible, integrated and business process workflow based project management information system (PMIS).The web based centralized PMIS maintains single source of a nearly paperless real time information shared in a transparent manner with all stakeholders, covering

उच्च गति - राष्ट्र की उन्नति
Incredibly Fast and Reliable

320 KM/H

508 kms stretch between Mumbai to Ahmedabad will be covered in 2 hrs 7 mins by Bullet Train with the maximum operational speed of 320 kmph.

मुम्बई से अहमदाबाद के बीच 508 किलोमीटर की दूरी को बुलेट ट्रेन द्वारा 320 किलोमीटर प्रति घंटे की अधिकतम परिचालन रफ्तार से 2 घंटे 7 मिनटों के भीतर तय कर लिया जाएगा।

Sabarmati (साबरमती)
Ahmedabad(अहमदाबाद)
Anand (आनंद)
Vadodara (वड़ोदरा)
Bharuch (भरूच)
Surat (सूरत)
Bilimora (बिलिमोरा)
Vapi (वापी)
Boisar (बोईसर)
Virar (विरार)
Thane (ठाणे)
Bandra Kurla Complex (Mumbai)
बांद्रा कुरला कॉम्प्लेक्स (मुम्बई)

RAJASTHAN
GUJARAT
MADHYA PRADESH
MAHARASHTRA

drawings/document/progress/quality/safety/contract management i.e. cost/schedule monitoring & control. Contractor's submissions and tracking of approval status has been simplified through the designed process and retrieval facility in PMIS, on few clicks. System effectively tracks the delay and fixes the accountability. Workflows has been designed according to the need of stakeholders and contract conditions.

BACKGROUND

National High-Speed Rail Corporation Limited (NHSRCL) was incorporated on 12th February 2016 with an objective to finance, construct, maintain and manage the High Speed Rail Corridor in India. The foundation stone was laid on 14th September'2017 at Sabarmati by Hon'ble Prime Ministers of India and Japan. NHSRCL is modelled as SPV with equity participation by Central Government through Ministry of Railways and two state Governments viz, Government of Gujrat and Government of Maharashtra. Mumbai-Ahmedabad High Speed Rail (MAHSR) is 508 KM length mega rail transportation construction project stretching from Sabarmati in Gujrat to Bandra-kurla complex in Mumbai. The train will run at a maximum speed of 320 KMPH. The project involves design and structural complexities covering civil, track, electrical, signalling, rolling stock and other engineering streams due to huge number of identified activities and inherent interdependencies. In order to monitor the contract packages, a need was felt to develop web based system which can provide real time information shared in a transparent manner with all stakeholders, covering drawings/document/progress/quality/safety/contract management.
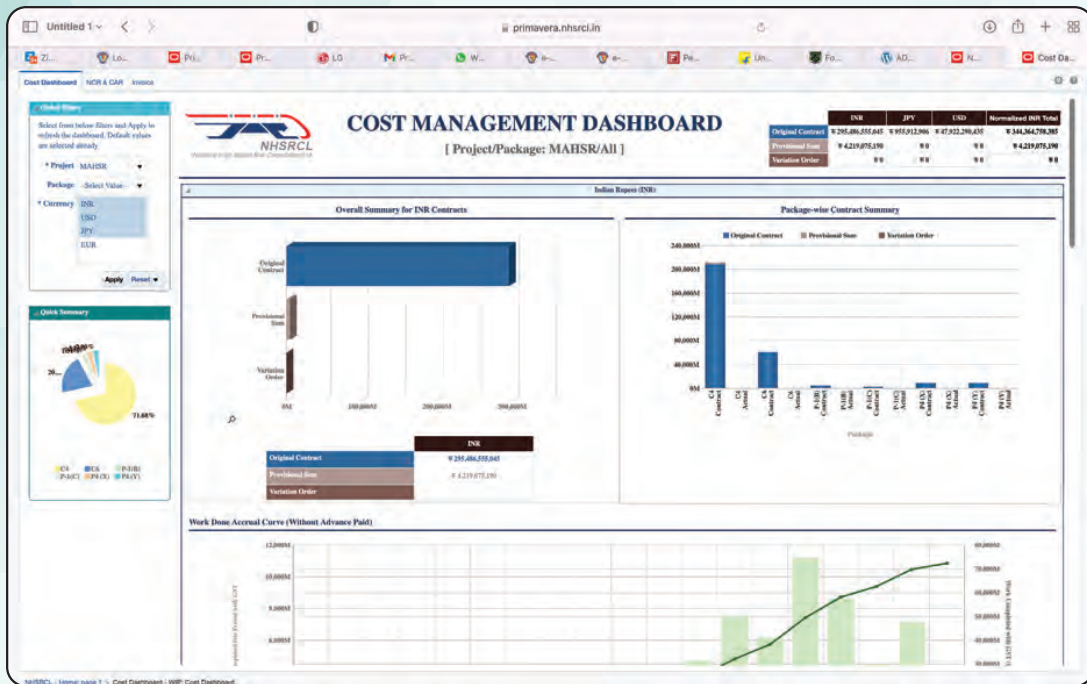
OBJECTIVES

During the initial conceptualization stages, importance of certain key drivers was visualized which were essential for effective monitoring and controlling of the whole project. Looking at the quite large number of packages and stakeholders, standardisation of processes was a basic and first requirement for smooth governance. Transparent real time reporting system enabled tracking &communication of various business processes, monitoring physical and financial progress and dashboard for summarised information of above with exception reports. On-boarding of stakeholders of all packages including Contractors, Engineer, Consultant and Employer teams of various MAHSR JICA packages was the final objective. NHSRCL is aware that continuing with the manual approach like in smaller projects, will expose them to a lot of risk and uncertainty which will lead to delays due to defective work, scheduling conflicts, delaying payments to suppliers, late reporting from site which will increase additional costs. It was therefore decided to implement a modular/flexible solution which will digitize the project, easy to use end-to-end secure project controls platform that boosts efficiency and transparency, limits risk, and improves decision-making across all functional departments.
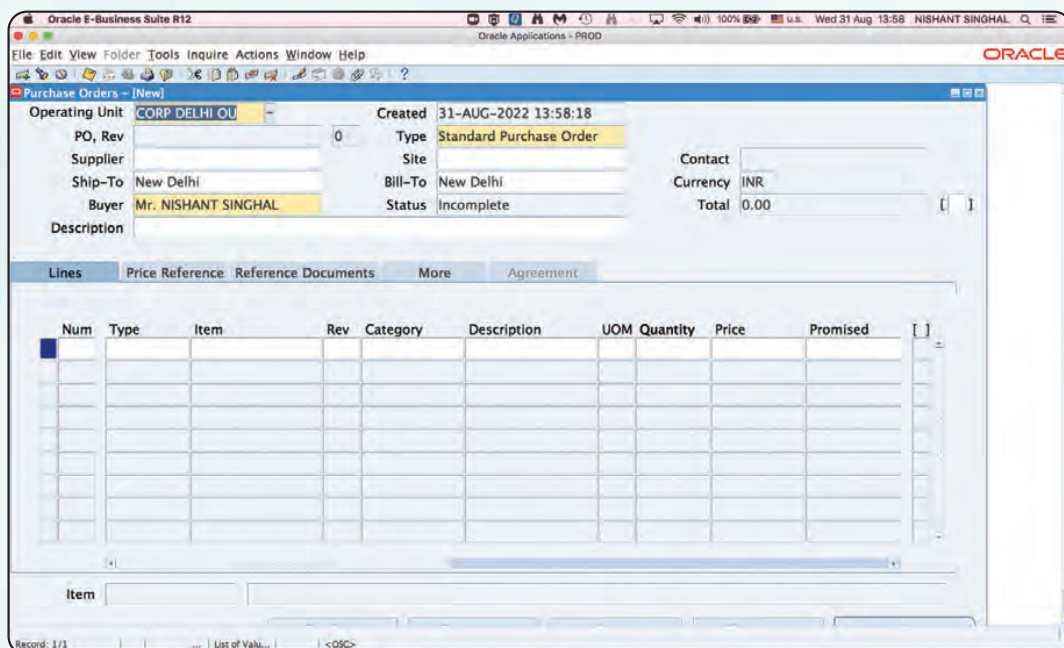
DEVELOPMENTS

A key challange for setting up the desired standard system was not having prior experience or know how of such end to end information system , which was recognized at planning stage of project. Moreover, the proposed system should largely satisfy large number of stakeholders, industry practices, compliance of contractual conditions etc. To solve the possible issues and gaps in connecting and developing various processes, it was launched in parts based on Built-Test-Use-Modifyi.e. Agile methodology.

To cover the entire gamut of areas and activities, various known strategic software utilities were identified.

Such diverse utilities include planning & scheduling, modular business processes designing, E-Business suite (EBS) modules of Contract/SCM (Supply Chain) and Financials. In order to achieve the single unified PMIS, all these areas were integrated as per requirement. To provide access to the PMIS during mobility, mobile apps was also brought in and made functional.


E-Business Suite SCM

Screenshot3: E-Business Suite SCM module

STAKE HOLDERS OF THE PROJECT

Key Solution Areas:

- Complete Project has been divided into packages, which is created and stored in a single, secure repository enabling visibility for all stakeholders. The solutions bind all packages together with a package level role based access control with an ability to quickly record, access, filter and retrieve the information securely. The information gets rolled up to overall Project level according to the requirement.

- The solution includes an auditable business process management module which allows Employer to track Contractor/Engineers submissions and holding periodic progress review based on PMIS data.

- The solution includes a robust paperless Document & Drawing management module covering high-level basis-of design documents, detailed specifications, as built drawings, operation and maintenance manuals or test results, all documentation utilizes tight permission controls to manage access across the packages. No email or paper approvals are allowed.

MAHSR Project organogram
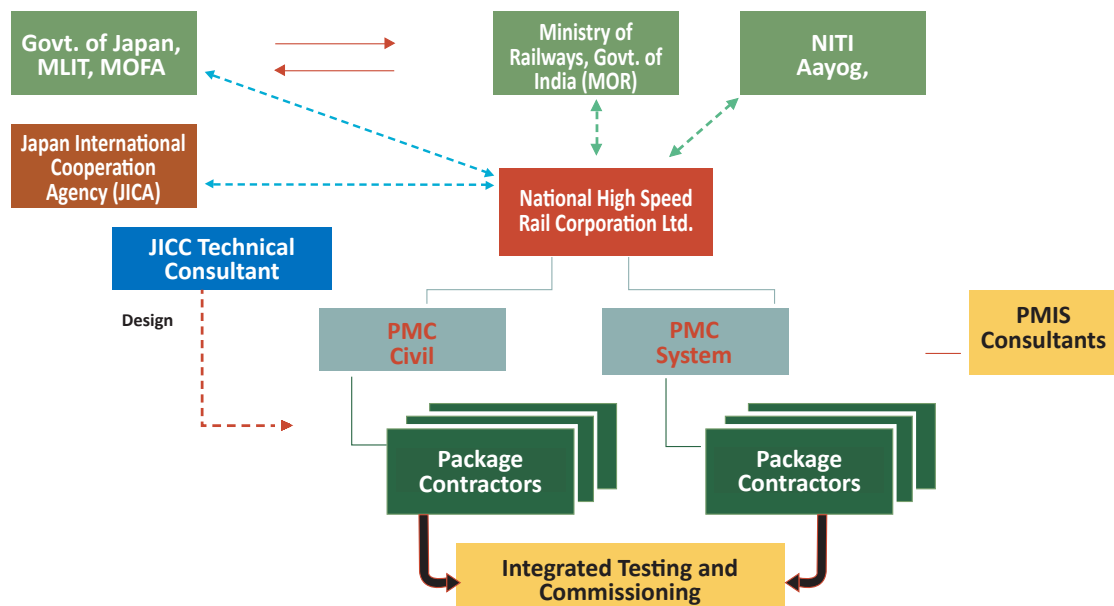
- The solutions provide facility for contractor Submittals and their revisions with a powerful automated workflow at the backend. Solution also tracks important documents such as bank guarantees and tracks its expiry.

- The key complex business processes built and implemented are Request for Inspection, Interim Payment Certificate (IPC), Material/Vendor/Lab approvals, Meeting minutes connected with user delegated Action items, Contract and related process i.e. Variation/EOT/Claims. NCR/CAR (Nonconformity report/Corrective action report) linked with IPC. Quality reports and safety incident reporting and mitigation are also part of the unified solution.

- The most complex piece of the entire system is P6/Unifier integrated Progress measurement system, wherein actual cyclic weekly progress is fed by Contractor and approved by Engineer in PMIS. System generates Package and project level physical S-curve based on the above. Various other BPs include General correspondence, Method statement, Daily/Weekly/Monthly progress submission, material specifications etc. According to the need of Stakeholders new processes are being developed and added.

CONCLUSION

The web based centralized PMIS maintains single source of a nearly paperless real time information shared in a transparent manner with all stakeholders, covering drawings/document/progress/quality/safety/ contract management i.e. cost/schedule monitoring & control. Contractor's submissions and tracking of approval status i.e. NONO(Approved)/NONOC (Approved with comments)/NOO (Not approved) has been simplified through the designed process and retrieval facility in PMIS, on few clicks. As of now Civil, track packages and PMC packages of Gujarat section has been awarded, thereby nearly 1500 users are currently using the 24x7 web based system which now already has received about 5 Lakhs no of documents. More than 2 lakhs no of scheduled activities, out of presently awarded packages, have been identified and included in above centralized system for weekly progress monitoring. All-important documents related to quality and quantity, like Request for Inspection (RFI), Checklists, measurement sheets etc are uploaded along with submission of IPC. No physical documents are required to be submitted. System effectively tracks the delay and fixes the accountability. Workflows has been designed according to the need of stakeholders and contract conditions. PMIS is the official channel of communication enforceable without dispute according to the contract conditions. The system is largely under Support and development mode of Addition/Modification/Deletion mode of already developed modules. Bugs identification, system upgrade, improvement in workflows, introduction of new checks and balances, system/data optimization tasks, integration with other processes and EBS modules, Introduction of detailed progress measurement system using P6 and Unifier progress measurement system are the key areas involved in this phase. The PMIS solution provides NHSRCL management to have an integrated view of their project & package performance.

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