IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

APPLICATION OF PROJECT MANAGEMENT TECHNIQUES

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Abstract: Objective of the project is to establish a collaborative framework where input from different functional departments of Municipal Corporation and other stakeholders such as transport, water, fire, police, etc. will be assimilated and analyzed on a single platform; consequently, resulting in aggregated city level information can be converted to actionable intelligence, which would be propagated to relevant stakeholders and citizens.

Key words: City Surveillance, ATCS, PERT

1. INTRODUCTION

One of the primary objectives of the project is to enhance the safety and security, improve efficiency of municipal services and promote a better quality of life for citizens. In order to achieve these objectives, a robust ICT infrastructure that supports digital applications and ensures seamless steady state operations, city management, surveillance, emergency response mechanisms and real time tracking of services and vital city metrics throughout the city and in government departments.

2. SCOPE

Project includes the following components:

- Integrated Command and Control Center (ICCC)
- Implementation of On Field Equipment/ Smart Solutions
- City Surveillance, PAS, Dynamic Message Signs(DMS)
- Intelligent Traffic Management System (includes ATCS,RLVD,OSDS) with E-challan

All deliverables is shown in Fig 1.

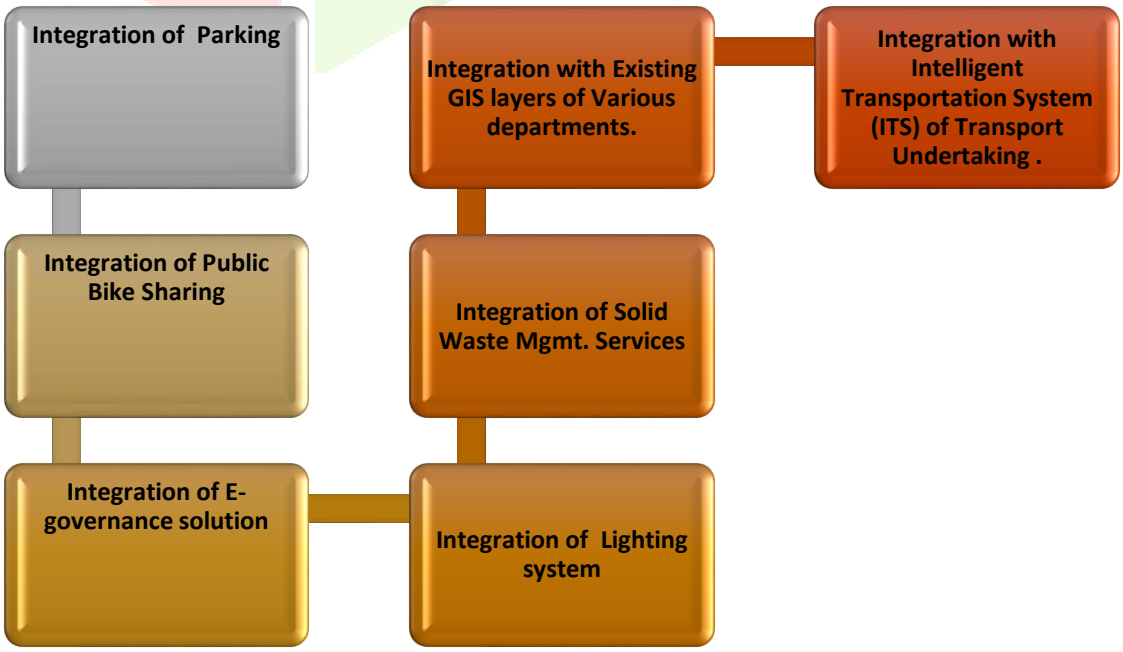

Fig 1: Deliverables of the project

Total scope of the project in integrated form is shown in Fig 2.

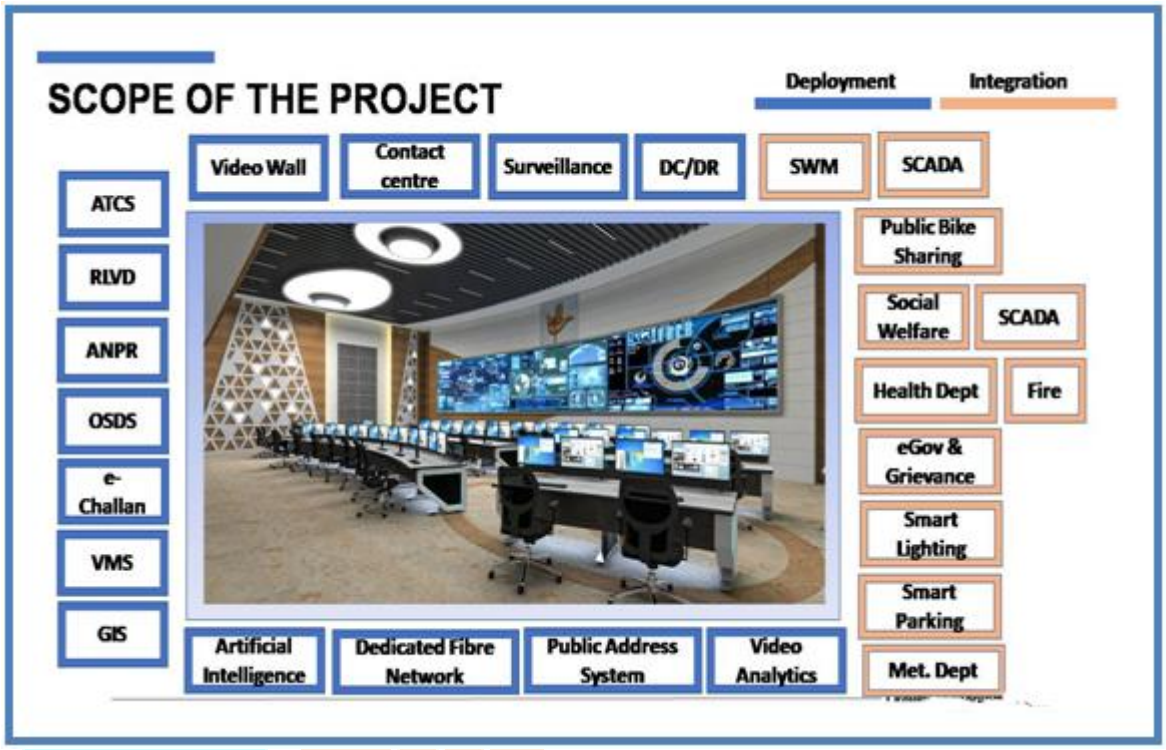

Fig 2: Scope of the project.

- Establishment of Integrated Command and control center (ICCC)
- Data center (DC), City operation Room, Contact center, Cloud based disaster recovery (DR)
- Optic Fiber Cable Network.
- Adaptive Traffic Control System (ATCS).
- City Surveillance system for various locations.
- PTZ Camera, Box camera and 360-degree panoramic camera with Video analytics and Video Management System.
- Intelligent Traffic management system (ITMS).
- Automatic Number Plate Recognition (ANPR), Red Light Violation Detection (RLVD), Over Speed Detection System (OSDS), E- challan Devices.
- Public Addressing System.
- Dynamic message Sign board.
- Geographic Information System Implementation.
- Integration with ICT system.
- Parking, Public bike sharing, ITS, SWM, IPT, utility management, Meteorological dept., E-Governance solution etc.
- Chat box based application for seamless coverage and integration with social media and all the verticals of Govt. dept.
- The Project includes civil construction of ICCC complex including building, SCADA system (Supervisory Control and Data acquisition) of utility services and police Command centre PCC.

3. CHALLENGES:

A. Technical challenges:

1. The foremost challenge that was faced , lack of adequate inhouse expertise and this was the first time that a turnkey project of this scale and complexity was undertaken wherein, apart from civil construction, multiple technology domains were also deployed.
2. The delivery schedules were very tight and closely monitored by the customer.
3. The Covid 19 also impacted the supply chain for some crucial technology components of the project that were to be imported like, IT HW (Servers, Workstations etc).
4. Dedicated Fiber deployment[1] across length and breadth of city.
5. Delay in excavation and road cutting permissions for laying of Fiber from other government institutions like Railways, Forest department etc
6. In some cases the site feasibility was not there for which we had to alter our solution (due to presence of other utilities like Sewage, water, electricity etc)
7. Effective mitigation plan to ensure the the schedules are not affected due to Covid-19.
8. Ensuring fields team availability amid lockdown.
9. Indulging in virtual way of working to ensure safe and precise deliverables.
10. Ad-hoc data centre/ Data centre[2] build detailed engagement/ contractual modelling with all OEMs (15 nos) and multiple contractors for on field work.

B. Managerial Challenges:

1. Nature was tough this time with COVID-19 in full swing and many challenges were on the way to meet the deadlines like:
   I.To meet the delivery of Milestones.
   II.To reach out the OEMs/ Vendor for procurement of components to deliver the IT Solution project.
   III.Ensure the Team availability amid lockdown
   IV.Managing the prevailing virtual way of working to ensure safe and precise deliverables.

2. Cross Functional Team[3] consisting of Personnel from different domains under leadership of Experienced PMP's[4] was formed. To maintain Harmony & getting Output in stipulated frame of time while meeting the customer expectation was a challenge.
3. Project management team[5] very effectively Handled Multiple Contractors for on field work and convinced them to multiply the resources to get the things back on track within project schedule as many activities at one point of time got delayed due to pandemic.
4. Overcoming the supply chain[6] challenges , by constantly indulging with suppliers and using management interventions wherever required.

4. STEPS TAKEN TO OVERCOME CHALLENGES

A. Philosophy of the project execution :

1. Early engagement with all identified OEMs/ Vendors/different external stake holders and ensuring deliverables as per the technical compliances - includes the entire life cycle of Evaluation /POCs/ BOQ finalisation/ Commercial negotiations/ final order-Delivery/ acceptance and payments).
2. Adoption of agile methodology[7] for timely executions/ simultaneous run of multi domain activities.
3. **S**pecific **M**easurable **A**ttainable **R**elevant **T**ime based approach.
4. Engaging the global best practices for project management especially past experiences of deploying Smart Cities in India.
5. Zero Tolerance on quality[8].
6. Involvement of each department to finalise their KPI / SoP & Use cases
7. Regular meetings to apprise all the stakeholders[9][10] and seeking interventions at the appropriate stages

By following above mentioned steps, Customer expectation was not only met but also additional valued added features were added.

B. Time Management:

Date of Award of the Project work	15th June' 2020
Date of Start of the project	15th June' 2020
Stipulated time to complete the project (in months)	18.5 Month
Project Completion date as per the original contract	31st Dec' 2021
Actual date of completion of the project	14th June 2022 .
Actual time taken to complete the project (in months)	24 Months
Time over run (in months)	5.5 Months
Any specific reasons for the delay..	Delay in approval from administration due to COVID-19 Pandemic and for which DD extension for 6 month given by Customer.
Amended date of completion, contractually agreed, if any.	14th June 2022

C. People Management :

Total No. of professionals directly involved in the project	15
Total No. of Contractors and their professionals involved.	Contractors/Vendors>15 Nos Manpower associated with Field activities>100 Nos
No. of professionals with special / hi tech skills	10
Challenges faced in People Management, if any	a) Vendor Management in field Jobs as task were related to one another. b) Vendor Management in the COVID-19 Pandemic scenario c) Arrangement of manpower for labour intensive jobs in COVID-19 Pandemic
Special accomplishments in people management, if any	Team was assigned elements of project based on their skills and assigned full responsibility from RFP Formulation till Go-Live. Involvement level was kept high of the team throughout the project as they were dealing with vendors and with Management.

D. Use of Project Management tools & Techniques:

List of PM Tools used for Time Management	Gantt Chart, PERT Chart is used for scheduling of activities and closely monitoring them as per stipulated timelines. In PERT Activities time was closely monitored by considering Optimistic time, Pessimistic time, most likely time and review of the Project from time to time.
PM Tools used for Cost Management	i. Work breakdown structure for project is created where each task and which was clearly assigned to an executive to control the cost without compromising the quality and other parameter. ii. Earned Value Management technique was used to do cost estimate, Cost Budgeting, Cost Control and monitoring.
PM Techniques used for People Management.	i. Collaborative approach was used for problem solving related to people was adopted. ii. Hand holding of Vendors during COVID-19 Pandemic in supply chain management. iii. Cross functional team was formed from various technical domain to complete the project requirement.
Details of any other PM Tools, methods, techniques applied.	i. Adoption of agile methodology for timely executions/ simultaneous run of multi domain activities. ii. **S**pecific **M**easurable **A**ttainable **R**elevant **T**ime based approach
Special accomplishments in people management, if any	i. Creation of cross functional teams from different Locations. ii. Ensuring availability of manpower during lockdowns for vendors / sub contractors and partners by coordinating with the concerned authorities for Covid passes. iii. Maintaining Positive Cash flow throughout the project for all vendors so that they are motivated.

5. BENEFITS:

Benefits to the Community from the project:

a. Enhanced safety and security for the ordinary citizens of the city..
b. The state of the art technology and AI tools are helping the local police to reduce the crime rate and in much shorter time.
c. Technology interventions are helping the local police to deploy more personnel for policing duties.
d. ATCS is helping to reduce the Carbon foot print by reduction of fuel consumption at junction points.
e. DMS is a crucial tool to communicate critical information like, breakdowns / road closures; weather etc to the motorists so that they can evaluates alternate routes.
f. All entry & exit points of the city are being constantly monitored by a highly efficient Video surveillance system backed by ANPR and AI tools like facial recognition technology for tracing the Vehicles and people of Interest.

Benefits to the Country from the project:

a. City has been able to establish itself as one of the most technically savvy and citizen centric cities of the country.
b. It is thriving to achieve a "low carbon footprint" and these initiatives will make City as one of the most liveable cities of the country and also in world.
c. The current project is being viewed as a showcase for other city administrations. and many city administrators visited.

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