K. J. Somaiya College of Engineering, Mumbai-77
(Autonomous College Affiliated to University of Mumbai)

Topic: Setting up EV infrastructure in India

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Exp No.: 1

Title: Writing Request for Proposal

Objective: To write Request for Proposal

Expected Outcome of Experiment:

Course Outcome	After successful completion of this experiment a student will
CO 5	Understand the selection of the most appropriate people for the project

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Books/ Journals/ Websites referred:

1. *Bob Hughes, Mike cotterell, Rajib Mall"Software Project Management", fifth Edition, Tata McGraw Hill, Special Indian Edition*
2. *Royce, "Software Project Management", Pearson Education, 1999.*
3. *Project Management Institute: "A Guide to the Project Management Body of Knowledge (PMBOK Guide)" 5th Edition Project Management Institute.*

4. *John Nicholas, Herman Steyn, "Project Management for Business Engineering and Technology" 4th Edition.*

Pre Lab/ Prior Concepts:

- **What is a Project?**
  A project is a series of tasks that need to be completed to reach a specific outcome. A project can also be defined as a set of inputs and outputs required to achieve a particular goal.
- **What is Project Management?**
  Project management is the practice of applying knowledge, skills, tools, and techniques to complete a project according to specific requirements. It comes down to identifying the problem, creating a plan to solve the problem, and then executing on that plan until the problem has been solved.
- **Need for Project Management?**
  Project Management allows us to
  - Deliver project results on time and within budget
  - Provide a process for estimating project resources, time, costs etc
  - Communicate project status, modifications, issues etc
  - Documentation of entire project
  - Design a plan and schedule for project
  - Resolve project roadblocks
  - Improve collaboration and communication across and within teams
- **Project Phases:**
  - **Project Initiation:** In this phase, the project is defined at a broad level. Here, the team researches whether the project is feasible or not.
  - **Project Planning:** This step includes defining project scope, work schedule, goals, gantt chart, risk management plan.
  - **Project Execution:** This step includes assign resources and responsibilities to different teams, team meetings, modifying project plans as required, etc.
  - **Project Performance:** This step includes keeping track of schedule and budget, effort and cost tracking, project performance etc.
  - **Project Closure:** This phase represents the completion of project.
- **Project stakeholders:**
  A stakeholder is anyone with an interest or investment in your project. A stakeholder can be an internal or external stakeholder. Internal stakeholders are people or groups within

the business, such as team members, managers, executives, and so on. External stakeholders are people or groups outside the business. This includes customers, users, suppliers, and investors.

- **Key general Management Skills:**
  - **Leadership:** A manager will likely be responsible for overseeing the work of others and motivating a team toward a common goal. You might also be responsible for leading meetings, assigning workloads and supporting collaboration across teams and departments.
  - **Planning:** Planning skills help when setting goals and determining the most efficient path to meet objectives.
  - **Strategy:** A strategic manager is someone who can spot inefficiencies and quickly identify solutions to challenges. They can also recognize the steps each team member should take to overcome obstacles and complete projects.
  - **Communication:** To effectively lead people and projects, a project manager must be able to understand the needs and goals of the business and convey this information to others through simple and straightforward instruction.
  - **Organization:** A project manager will have to balance many tasks at the same time. Often, this means overseeing multiple project timelines, deadlines and calendar events such as meetings, conferences and presentations. Staying organized will improve the workflow and ensure that the project teams are able to complete tasks as efficiently as possible.

New Concepts to be learned:

- 4 Phases of Software Project
- Triple Constraints of a Project
- Process of Initiation of a Project
- Need for General Template of Request for Proposal

Every project is part of an attempt to solve a problem. The first step in solving a problem is recognition and acceptance that it exists. After that, the person or group facing the problem—the customer and users—seek out someone who can help. The steps taken after that—soliciting people to do the work, evaluating their proposals, and reaching an agreement are all part of the procurement management process. If the customer organization has an internal group capable of solving the problem, it turns the problem over to them. If not, it looks for an outsider to handle the problem, possibly by sending out to contractors a formal request for help called a request for proposal or RFP . Each contractor examines the customer ' s problem, objectives, and

requirements as stated in the RFP and determines the technical and economic feasibility of undertaking the project. If the contractor decides to respond to the request, it presents the customer a proposed solution (system concept) in a formal proposal or letter of interest . The customer then examines the proposal—or in the case where several contractors responded, all the proposals—and makes a choice. The result is a formal agreement between the chosen contractor and the customer. But most ideas or potential systems never get past Phase

Various Activities Carried out are **Initial Investigation** which focuses on the elements of the problem, including:

- The environment.
- The needs, symptoms, problem definition, and objectives.
- Preliminary alternative solutions and where possible the estimated costs, benefits, strengths, and weaknesses of each.
- Affected individuals and organizations.

To approve the concept for further study, the customer must be convinced that:

- The need is real and funding is available to support it.
- The idea has sufficient priority in relation to opportunities presented by other ideas.
- The idea has particular value in terms of, for example, applying new technology, enhancing reputation, increasing market share, or raising profits.
- The idea is consistent with the goals and resources of the organization.

Preparing **Request for Proposal** The **RFP**—request for proposal (or request for bid , request for quotation , invitation to bid , or similar term) 5 is notification that a customer is interested in hiring a contractor. The dual purpose of the RFP is to outline the user ’ s idea (problem, need, etc.) and to solicit suggestions (proposals) for solutions—usually with the intent of awarding a contract for the best one. RFPs are sent to contractors on the user ’ s bidders list .

The likelihood of winning and undertaking a project depends on a number of factors:

- Have competitors gotten a head start?
- Does the contractor have sufficient money, facilities, and resources to invest in the project?
- Will performance on the project be good for (or damaging to) the contractor ’ s reputation?
- Other factors similar to the criteria employed by the customer in the initial investigation.

Building EV infrastructure in India

Section 1:
Introduction:

The Government of India is the national administrative authority of the Republic of India, a federal democracy located in South Asia, consisting of 28 union states and eight union territories. Under the Constitution, there are three primary branches of government: the legislative (Parliament), the executive (government and Council of Ministers) and the judiciary (Supreme Court). Electrification of vehicles is regarded as an important intervention to decarbonise the economy in the fight against climate change. India, a signatory of the Paris Agreement on climate change, is pushing hard to promote Electric Vehicle (EV) adoption in the country. As vehicles start running with electric drivetrains fuelled by lithium-ion batteries which require recharging, EV is now a new entrant to India's electricity consumer-basket. The non-EV categories have been there for a long time, and their energy consumption and demand patterns are fairly well understood and have already been accounted for to a certain extent in the tariff framework. The availability of charging infrastructure is a major requirement to increase EV adoption. It is the backbone of electric mobility and has been the most difficult issue to address. Charging infrastructure closely binds mobility to the electricity sector and has the potential to bring about major transformations in electricity distribution. The transition to electric mobility is a promising global strategy for decarbonizing the transport sector. India is among a handful of countries that support the global EV30@30 campaign, which targets to have at least 30% new vehicle sales be electric by 2030. An accessible and robust network of electric vehicle (EV) charging infrastructure is an essential pre-requisite to achieving this ambitious transition. The Government of India has instituted various enabling policies to promote the development of the charging infrastructure network. However, given the novel characteristics of this new infrastructure type, there is a need to customize it to the unique Indian transport ecosystem and build capacity among stakeholders to support its on-ground expansion. A contextual approach is needed to ensure the efficient and timely implementation of EV charging infrastructure, such that it meets local requirements and is optimally integrated within the electricity supply and transportation networks. As the world is moving towards electric vehicles, India also has to shift its gears to catch up with the environment. Creating a one-stop shop for all EV-related inquiries would be very helpful for India to reach the top countries in the world.

Section 2:
Statement of Work:

The system must provide services for finding, installing, maintaining EV charging stations on a mobile application with the following operable capabilities:

1. The system should be user friendly and be able to handle heavy traffic and several thousand requests simultaneously with minimum latency.
2. The developed system along with its instructions should be available in different regional Indian languages.
3. The system should provide navigation and availability status of nearby charging stations compatible with the user's EV along with the facility to book charging slots on the application itself with cost comparisons with other charging stations.
4. The system should provide the functionality of renting private and semi-public charging stations with pricing incentives based on the units of charging done.
5. The system should provide a catalogue of EV launched by tied-up companies and redirect users to the booking pages of the EV if they are interested.
6. The system should be able to carry out geospatial analysis based on the number of requests and demand for EV charging stations and their feasibility of installation to find potential regions for semi-public and public charging stations.
7. For building EV infrastructure we would need the system to be able to accept and analyze requests for installation of public, semi-public or private charging stations and install the charging stations appropriately with all precautions once the request is approved conditioned to various necessary permissions.
8. The EV charging stations once installed need to be connected to the electricity grid with pricing taken care of with the tied-up service providers per unit of consumption.
9. The user data should be encrypted and the system should be secure and resistant to various types of attacks. The data should be backed up and multiple servers must be used to handle the enormous volumes of requests.
10. EV charging stations have to be installed in different locations, so by considering the different electricity providers in India, tie ups should be made to set up charging stations with ease.
11. For the construction of EV charging stations, a considerable amount of land is required, so all legal formalities have to be carried out so that the construction of stations doesn't encounter any difficulties due to legal difficulties. Construction of EV charging stations will be carried out by a subcontractor of this project, and details of it are provided in the section given below.
12. The system should also contain a facility where users having their own EV charging infrastructure can make it open for public use, so pricing for this type of scenario should be carried out by the system. Also, for public EV charging stations, pricing should be internally calculated based on the charges of the electricity provider.
13. Considering the population of India and the increasing demand for EV's, the backend of the system should be sustainable and resistant to any amount of traffic coming to the

system. The system's downtime should be kept to a minimum so that users can access nearby EV charging stations at all times. After the project is in the operations phase, the server has to be maintained well so that scenarios like the crash never happen.

14. There are a lot of things that have to be outsourced, like raw materials for EV charging stations and EVs themselves, some new technologies that should be integrated into EVs, and other stuff. Every record related to this should also be taken care of by the system for an easy tally of all the funds sanctioned.
15. EV is composed primarily of two components: hardware and software. Hardware is something that is a major component of an EV and the reliability and resistivity of it towards failure should be high. The system should also keep track of all the information related to the hardware used in making EV and also, if that hardware is outsourced from somewhere, a record of that should also be provided in the system.
16. The system should provide functionality of raising a query related to booking, installation, etc to the user
17. The system should provide a functionality of scheduling preventive maintenance tasks and track the fail/pass of various types of inspections.
18. The system should provide functionality of estimating daily electricity requirements for each charging station based on the past data.
19. For installing public EV charging stations, all legal permission should be taken from the government.
20. The system should provide the analytics (density of user at each EV charging station, number of hours charging point is occupied, number of hours charging point is not in use, etc) for each EV charging station.

Exclusion:

The only part that is being excluded is the development of a web application for the above mentioned system, as it would be unfeasible to book an EV charging station by using a laptop each and every time.

Scheduled delivery date:

The above system should be live on or before the 15th of February, 2023. The complete user guide and documentation should also be provided at the same time to ensure smooth running of the system from the very start.

Subcontractor:

The contractor can appoint any number of sub-contractors but with prior consent from the organization. For building EV charging stations we will be providing the subcontractor.

Cost & Contract:

The cost for developing the app and providing seamless connectivity between the central system and individual users is estimated to about ₹100 million.

Approximate cost the sponsor is ready to spend for getting the solution. Various types of contracts, fixed price, Cost-plus contracts, Time and materials contracts.
Cost for installation of public EV charging station: 50 Lakhs
Cost of developing EV station finder app :8 lakhs - 4 crores

Section 3:
Proposal Table of Content:

1. **Executive Summary.**
2. **Problem Statement.**
3. **Project Description**
   - **3.1. Goal**
   - **3.2. Objectives**
   - **3.3. Project Activities**
   - **3.4. Project Results**
   - **3.5. Timeline**
   - **3.6. Monitoring and Evaluation**
   - **3.7. Risk Management and Assumptions**
   - **3.8. Sustainability**
   - **3.9. Project Management**
4. **Budget**
   - **4.1. Budget Narrative**
   - **4.2. Detailed Budget**

5. **Organization Profile**
6. **Annexure**

Section 4:

Proposal Submittal & Deadlines

Submittal:
The organization that has been given the contract will submit the Proposal within two (2) weeks from the RFP release date.
The completed Proposal document should be submitted to the requesting organization with proper formatting and using industrial practices.

Deadline:
The last date for the submission of the proposal to the requesting organization is no later than 20th September 2022 by EOD.

Section 5:

Selection Date: 30th September 2022
Selection and award date: 3 October 2022

Selection criteria:

Completed proposals received by the deadline will be evaluated by the following criteria:

1. Technical ability:
   (a) Ability of system to meet performance requirements within limitations of existing facility, standards, and codes.
   (b) User friendliness of the system with respect to operation, reliability, and maintenance.
   (c) Use of state-of-the-art technology to ensure system remains current into the next decade.
   (d) System support services during contract period and available afterward.
2. Contractor's bid price.
3. Contractor experience and qualifications.

4. Project management and project plan.
5. During the process of evaluation of the technical proposal, the contractor might be required to make a presentation on its Proposal covering Experience/Technical Proposal including Understanding about the project, Implementation Methodology, time Scheduling etc. In case presentation is required, the date and time of the presentation / interactions will be intimated individually to the contractor's organization.

Selection 6:

Technical Information:

The SOP's are free to use any tech stack for construction of technical stuff but tech stack should be capable enough to handle huge amount of concurrent users. For constructing EV charging stations all the things required has to be reliable and sustainable.

Confidentiality:

The system acknowledges that all the material and information which has and will come into its possession or knowledge will be held in strictest confidence and should make sure that the information is only given to appropriate employees who require it and not to any third party.

Supporting Technical Data:

1. Technical Data(Confidential Data)
2. Technical performance requirements for Building Ev infrastructure in India system are as follows:
   - Error Tracking
   - Encryption of data
   - Support maintenance and guidelines for use.

Work-out :

The students are needed to undertake ANY project with more than 20 activities.

1) Searching for nearest EV charging points along with availability status .
2) Reservation and pricing for charging slots at public charging stations
3) Renting private and semi-public EV charging stations.
4) Electric Vehicle bookings.
5) Geospatial Analysis and site selection for public and semi-public charging stations.
6) Mobile application Development and Deployment.
7) Installation of EV charging stations.
8) Connecting EV charging stations to electricity grids.
9) Charging station planning and pricing for private charging infrastructure.
10) Tie Ups with electricity provider.
11) Requests for construction of EV charging stations.
12) Pricing calculations for charging EV at public and semi-public charging stations.
13) Server procurement and Setup.
14) Charging stations logistics, delivery and tracking.
15) Hardware facility for diverse Electric vehicles.
16) Customer complaints resolution.
17) Maintenance of charging stations.
18) Calculation of daily energy requirements for EV charging stations.
19) Land Acquisition and permissions for installing charging stations.
20) Analysis for the removal of Redundant Ev charging stations.

Post Lab Activities (with reference to your Project):

1. What are the different phases through which Project Development passes?

Q=1) Ans) Following are the different phases through which project development passes:-

1) Initiation:- In this stage, entire project will be defined. Project goals will be sorted out. Scope, resources and the roles related to the project will be finalised clarifying what stakeholders expect out of the project and what exactly the project is aiming to achieve (and why) will give the project team clear direction. This is the crucial phase to the project's success. Without clarity around what needs to be achieved and why, the project runs the risk of not ~~corresponding~~ accomplishing the end goals and meeting the expectations of stakeholders.

2) Planning:- In the planning phase you'll determine the steps to actually achieve the project goals, the "how" of completing the project. You'll ~~establish~~ establish budgets, timelines, and milestones, and source materials and necessary documents. This step also involves calculating and predicting risk, putting change processes into place, and outlining communicating protocols. If the initiation phase is assembling your troops, the planning phase is ~~decided~~ deciding what to do with them.

3) Execute and complete tasks:- Executing a project means putting your plan into action and keeping the team on track. Generally this means tracking and measuring progress, managing quality, mitigating risk, managing the budget, and using data to inform your decisions.

4) Closing:- In the closing phase of ~~the~~ the project managing lifecycle, you'll conclude project activities, turn the finished product or service over to its new owners, and assess the things that went well and didn't go so well. It'll also be a time to celebrate your hard work.

2. Difference between Software Development & Software Project Management.

Q2) Ans)	Software development	Software project Management.
1)	It is a recurring cycle of planning, scheduling, testing, deploying and supporting new versions of corporate systems	1) It is a proper way of planning and leading software projects.
2)	It also includes activities after software is in operations phase such as testing and debugging.	2) Managing all the aspects to take the project to the conclusion.
3)	It is to ensure that application developed meet internal and external stakeholders needs in terms of stability, reliability, maintainance and compliance.	3) It is strongly influenced by changing requirements during the execution of project.
4)	Designing the software architecture.	4) Preparing plans to accomplish the work that needs to be done to meet the requirements.

3. Explain briefly the difference between a Project and Operations.

Q=3) Ans)	Projects	Operations
1)	A project is an endeavour that is temporary in nature, to produce a unique product.	1) operations are ongoing execution of activities which occur after product is made to produce same result or a repeatative service.
2)	It is temporary, as it does not exist after product is made. This is because phase before a product is made includes a project.	2) It is permanent or may as it only exists after product is made and cango on forever.
3)	It has more risk as it is done for first time. There is a risk of failure attached because specified thing has never been made before.	3) It has less risk as such products have already been made before and it is only process of creating them in greater numbers.
4)	Performance is primary focus of projects the project must be of optimal performance and meeting requirements specified by clients.	4) Efficiency is primary focus. the entire operation must be carried out in an efficient manner aids to reduce manufacturing time and optimizing processes for better revenue.

4. Justify the various sections of RFP.

1) Background :- This section helps us in giving an overview of what exactly are the requirements and what the company is all about.

2) Statement of work :- It benefits the work that has to be done by the contraction which includes various points to in details which are exclusions delivery date and cost.

3) Proposals :- This section explains the general map of the proposal and its formats attached as annexures.

4) Proposals submittal and deadlines :- This section provides details of the deadline to submit the contract along with address of company.

5) Selection date and criteria :- This section mentions the approval date among the varials tenders for the prospects. It also explains how the selection criterian would be applied in approval process.

6) Technical information :- This section mentions some confidentiality points and technical specifications for the project.