Topic: Setting up EV infrastructure in India

Group:
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Batch: A2

Exp No.: 2

Title: Writing a Project Proposal

Objective: To understand what a project proposal contents and prepare a Project Proposal for the request for proposal written as a part of experiment no. 1.

Expected Outcome of Experiment:

Course Outcome	After successful completion of the experiment a student will be
CO 4	Evaluate and assess the projects and to estimate the project cost using cost benefit evaluation techniques

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:

Understand the project phases. The various stakeholders and their roles in the project. A student would be aware of the purpose of each section in the Request for Proposal.

New Concepts to be learned:
- o Importance of various sections in Project Proposal.
- o Selection methodologies and comparison of various project proposals.
- o Preparing a project proposal for submission to the the sponsor

After receiving the Request for Proposal, a Solution Providing Organization (SPO) will respond.

Project Phase	Activities initiated/ conducted by	
	Sponsor	Solution Providing Organization (SPO)
A. Conception	Prepare Request For Proposal and share with multiple SPO Feasibility Analysis Compare various proposals and accept a proposal , award project to one SPO	Feasibility study **Prepare Project Proposal**

A Solution Providing Organization (SPO) is any organization, which could be other than the sponsor (typically the organization investing money to get the problem specified in the RFP). Before SPO decides to prepare a solution; it performs Feasibility Analysis.

The feasibility Analysis is carried out to check Financial, Schedule, Technical, Market, Regulation & standards, Organizational, and Operations. This will be used to validate the assumptions, constraints, decisions, approaches & business cases.

The feasibility analysis may be carried out by the sponsor or SPO to make a decision about continuing the project implementation activity.

Once the feasibility analysis process is carried out and if both the sponsor and the SPO are convinced that the project activity could be carried out, SPO responds to the RFP with project proposals. The sponsors will be receiving multiple proposals and will finalise one and may award the project.

The Project Proposals are to be received in a typical format. This will help the sponsor to compare various proposals. A typical project proposal will contain:

1) Cover sheet:

Project Name:	Setting up EV infrastructure in India
Ref. Job No.:	17110-07-08-17
Contractor:	RKSNH Solutions pvt. ltd.
Address of Contractor:	Peninsula park, XYZ road, Bengaluru
Board members:	1. Ritesh Jadav 2. Kritarth Jain 3. Sneha Kothi 4. Nayan Mandliya 5. Hussein Motiwala

2) Executive Summary:

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 prerequisite 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. This document offers a systematic approach that guides implementing authorities and stakeholders on planning, authorization, and execution of EV charging infrastructure. It presents an overview of the technological and regulatory frameworks and governance structures needed to facilitate EV charging, along with a step-by-step approach to build out the implementation roadmap. While the document focuses on the present needs of charging infrastructure development, it also touches upon considerations for future planning. The document provides a step-by-step approach to build out the EV charging infrastructure roadmap, moving from an assessment of EV charging requirements to location planning and arranging electricity supply to models of on-ground implementation. The significant benefits of the proposed system are:

1. The proposed system will provide adequate information to the government to build up the EV infrastructure in India with all the details related to the EV available in one place.
2. Day by day, the demand for EVs is increasing in the world and so in India as well, so the proposed system will be a good and powerful source of income for the government of India.
3. For getting an accurate estimation of how much money is required for the development and maintenance, the proposed system will have a secured section for getting all the information in real time.
4. The market capitalization of EVs is increasing exponentially, as is the amount of manpower, so building EV infrastructure in India will also help in reducing the number of un-salaried people, which the proposed system will also make provisions for.
5. The proposed system will be in custimisable form, so if any new things have to be added, they can be added easily without any work which has to be started from scratch.
6. The proposed system will make provision for contacting a subcontractor or any other outsourcing party so that when some information related to something is needed, it can be easily retrieved.

3) Statement of Work:

A) Background Statement of Need:

As India picks up pace in the domestic e-mobility sector, the importance of an accessible network of Electric Vehicle Charging Infrastructure (EVCI) in enabling a robust environment for electric vehicles (EVs) is now being recognised more than ever. If EVs across all segments (2-wheelers, 3-wheelers, and 4-wheelers) are spoken of as the new revolution in mobility, the charging infrastructure can be called the backbone that is driving that transformative change. India has been actively trying to promote the use of

electric vehicles (EVs) since 2015, with the Centre and many state governments coming out with policies to spur the adoption of EVs. The efforts seem to be bearing fruits, as EV sales are on a rise in the country. It makes sense for a country of India's size, with 80% dependence on oil imports and facing air pollution issues in many cities, to try to move to EVs. However, widely available charging infrastructure is a prerequisite for a successful transition towards EVs, and India seems to be stumbling there currently. The adoption of EVs saw a significant rise in the country between FY20 and FY22, with EV sales rising 155% year-on-year to 4,29,217 units in FY22, as per Federation of Automobile Dealers Associations' (FADA) data. However, the number of operational public charging stations in the country stood at 1,640 as of February 2022, a rise of only 77%, or 713 charging stations, from June 2020, as per the Ministry of Power's data. It is important to have a widespread network of EV charging stations to gain consumers' confidence and spur the adoption of EVs. Customers, who have been using petrol/diesel vehicles for years, will always compare the ease of finding a petrol/diesel pump with the ease of finding a public charging station while making a decision to move to EVs. The execution of plans for setting up charging stations is not happening at the scale or the speed the government intends. This, he says, is driven by two major reasons — lack of clear timelines and putting small and big players in one bucket.

B) Technical Approach & Distinguishing Features:

The proposed system will provide a one-stop solution for all the EV-related activities in the country. When it comes to any user, one needs everything in an easy and simplified manner. The proposed system's user interface will be developed in such a way that it looks simple and also user-centric. When it comes to the construction of anything or any activity to be carried out in a physical manner, the environment will be kept into consideration so that the people affected by the activity are as few as possible. To provide an overview of how the work will be carried out, we will first start with the data gathering part of the existing EV infrastructure in India, which will help in finding the loopholes in the existing system. After the data gathering part is over, a parallel activity of construction of EV charging stations and system development will be started. The construction of EV charging stations will mainly be carried out by the subcontractor appointed, and system development will be done by our side. For the system development part, we will be making an app as well as a website that will provide different features mentioned in the scope defined in the request for proposal. As defined above, the construction of the app and website will be user-centric, so it will be very much easier for any user to use it. The entire system as a whole will be having following modules:

1) The system will be user friendly and be able to handle heavy traffic and several

thousand requests simultaneously with minimum latency. The developed system along with its instructions should be available in different regional Indian languages. The system will 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. The system will provide the functionality of renting private and semi-public charging stations with pricing incentives based on the units of charging done.

2) The system will provide a catalogue of EV launched by tied-up companies and redirect users to the booking pages of the EV if they are interested. The system will 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. 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. The EV charging stations once installed will be connected to the electricity grid with pricing taken care of with the tied-up service providers per unit of consumption.

3) 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. This module is entirely security centric. The system will be covered with at least 2 layers of security so that users will feel safe to provide any data.

4) The proposed system will also be using other government official platforms for authenticating and authorising valid users. This entire communication originating from our system to any government platform will also be secured so that there is no leakage while communication.

5) EV charging stations have to be installed in different locations, so by considering the different electricity providers in India, tie ups will be made to set up charging stations with ease. This module will be done by our good reach to all the organisations providing the electricity.

6) The system will 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 will be internally calculated based on the charges of the electricity provider. Considering the population of India and the increasing demand for EV's, the backend of the system will be sustainable and resistant to any amount of traffic coming to the system. The system's downtime will 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 will be maintained well so that scenarios like the crash never happen.

7) The system will provide functionality of raising a query related to booking, installation, etc to the user. 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. The data obtained from the customers feedback will be analysed and according to the analysis construction of new EV charging stations can be carried out.

C) Project Plan & Schedule:

Project plan:
1) Performing market research to gain in depth knowledge of every bit of EV's and its infrastructure.
2) Constructing functional design of the overall system.
3) Preparing the detailed design document of the entire system with the specifications of each and every module in detail. This phase will give us the output in the form of UML and wireframes of the entire system.
4) The backend as well as the database mapping will be designed for each and every module related to both software and hardware parts.
5) The execution part will be started with data gathering of the existing system and will be followed by analysis. This will help us in finding new locations for the construction of EV charging stations. This part will also require communication with subcontractors.
6) After the above part is over, the platform for buying and selling EVs will be created so that users can get EVs at their doorstep with just a few clicks.
7) At charging stations, each and every activity monitoring system will be carried out after the above modules are done, which will help in analysing the importance of a particular EV charging station.
8) All the above activities will be done in parallel with the testing, so at every stage we will be testing whether the scope is satisfied with quality or not.
9) Any revision to be made after testing will be carried out, and a final project report will also be made in parallel.
10) The quality assessment process will be started after the above activity. Any feature not meeting the defined quality will be revised accordingly.
11) A final project report with a detailed overview of all the modules will be provided, which will mark the end of the project.

12) At regular intervals, maintenance of the system will be carried out, this phase will start only after the project is in the operations phase.

Deliverables:

1) Project proposal
2) Design document (UML diagrams, frontend design, backend design, database design, api mappings)
3) Analysis document providing details of existing EV infrastructure in India
4) An application providing all the features mentioned in the scope of the project
5) Subcontractor information register
6) Testing report
7) Quality assessment report
8) Final project report with detailed information of all the modules.
9) User's manual
10) Developer's manual

Schedule:

Requirements gathering	1, October 2022 - 30, November 2022
Feasibility analysis	1, December 2022 - 31, December 2022
Architecture design (UML diagrams)	1, January 2023 - 31, March 2023
System Design	1, April 2023 - 15, May 2023
Prototype Development	16, May 2023 - 31, May 2023
System Development	1, June 2023 - 30, September 2023
Government approvals for building charging stations	1, October 2023 - 15, October 2023
System Testing	16, October 2023 - 15, November, 2023
Quality assessment	16, November 2023 - 15, December 2023
Closing (handover all the details with a users manual)	16, December 2023 - 31, December 2023

Subcontractors:

1) EV charging stations will be constructed by external company, ABC makers
2) Hardware required at the charging station will be made available by XYZ Tools.

4) Budget & Price:

Activity	Labor	Material Cost	Total (inclusive tax)
Project Coordination	12,00,000	2,00,000	15,00,000
Project Design	8,00,000	1,00,000	10,00,000
Software requirements	50,00,000	10,00,000	75,00,000
EV charging station installation	80,00,000	2,50,00,000	3,50,00,000
Mobile App Development	30,00,000	8,00,000	45,00,000
Testing	15,00,000	7,80,000	30,00,000
Data Centers and server maintenance	60,00,000	3,75,00,000	4,75,00,000
Total	**2,53,00,000**	**6,53,80,000**	**10 crores**

5) Project Organization & Management Plan:

Mumbai-based IT startup, RKSNH Solutions pvt. ltd that is working towards creating complete Ev infrastructure in india. Founded in June 2012 by a group of KJSCE Mumbai graduates, the company has grown from strength to strength over the last decade on its journey to revolutionise many systems. Our company relies on the power and reach of Machine learning algorithms, complex deep learning predictions and data visualization to analyze a vast pool of data, which is used to give valuable insights during development of a system. The company also uses predictive

analytics and other data mining technologies to detect leaks etc.

The project engineer, Mr Ritesh Jadhav and Mr Kritarth Jain, will be responsible for specification definition and ensuring the system meets technical requirements. They will supervise preparation of design requirements and drawings, and ensure fulfilment of system technical requirements at the site. They have done lots of projects related to development of various types of systems . The product manager and team manager, Mr Nayan Mandliya and Mr Hussein Motiwala respectively, will be responsible for managing materials procurement and assembly and related work at the data centers and electoral offices, and coordinate assembly operations and give approval for assemblies prior to shipment to the data centers and electoral offices. Ms Sneha Kothi will be responsible for delivering the final product and handle the logistics and transportation of the project.

Within 1 month of contract signing the project manager will prepare a preliminary project master plan for the Government of India to review. Thereafter will prepare progress reports for presentation at monthly meetings with the Government of India Officials . The meetings will review expenditures to date, progress on work, and milestones and deliverables attained.

6) Qualifications & Key Personnels:

A) Company & Prior Projects:
We, RKSNH Solutions pvt. ltd. are among the youngest companies in India to successfully achieve funding of 1 million USD within the first 6 months. We have already crossed the 10k client mark, in a short span. In Fact our very first client is still an existing client which speaks for the quality of our work .So, RKSNH Solutions pvt. ltd has a diverse and experienced employee base who work to the best possible by considering all the budget, time and requirement constraints. We are also one of the best companies to provide almost all services related to electric vehicles.

B) Resumes of Project Manager & Project Engineers:

Name :-Mr Ritesh Jadhav (Resume)

Name :- Mr Kritarth Jain (Resume)

Name :- Ms Sneha Kothi (Resume)

Name :- Mr Nayan Mandliya (Resume)
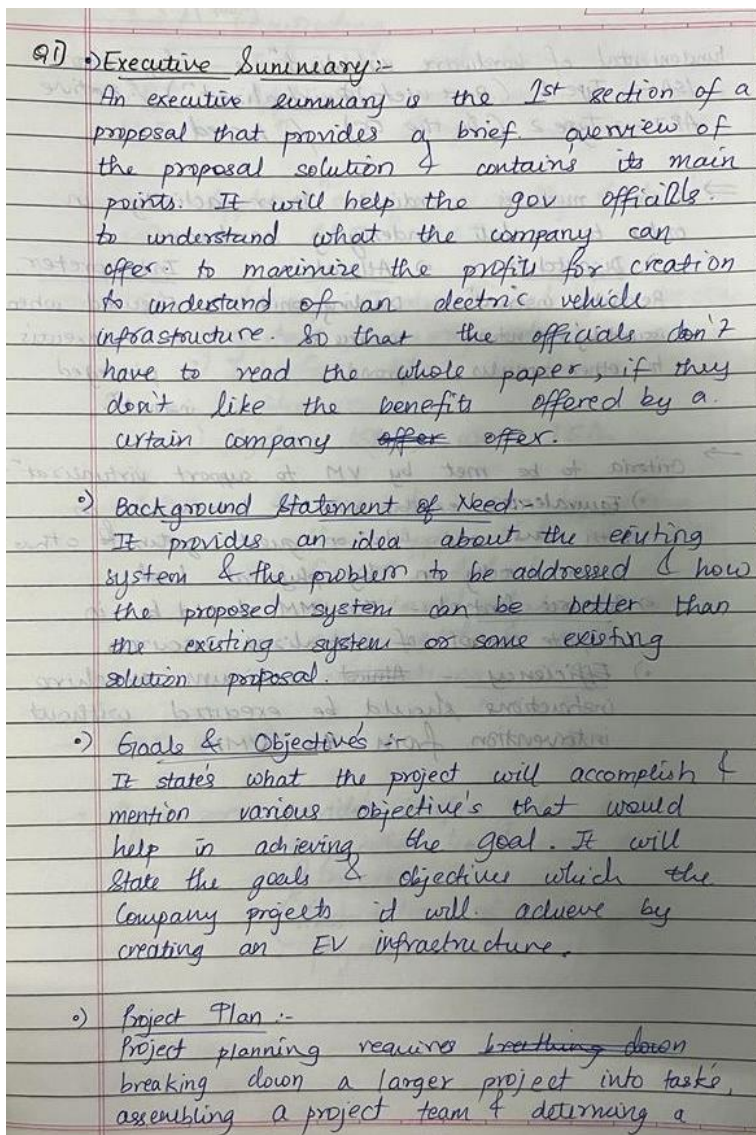
Name :- Mr Hussein Motiwala (Resume)

7) Attachments:

- Signed statement of confidentiality
- Government of India(GOI) supplied confidential information
- Technical data and analysis to support the proposed system with some proof of prior work quality
- Letters of commitment for work contracted to third parties

Post Lab Activities (with reference to your Project):

1. Justify the importance of each section in a Project Proposal.

Q1) ◦ Executive Summary:-
An executive summary is the 1st section of a proposal that provides a brief overview of the proposal solution & contains its main points. It will help the gov officials to understand what the company can offer to maximize the profits for creation to understand of an electric vehicle infrastructure. So that the officials don't have to read the whole paper, if they don't like the benefits offered by a certain company offer offer.

◦ Background Statement of Need:-
It provides an idea about the existing system & the problem to be addressed & how the proposed system can be better than the existing system or some existing solution proposal.

◦ Goals & Objectives:-
It states what the project will accomplish & mention various objectives that would help in achieving the goal. It will state the goals & objectives which the company projects it will achieve by creating an EV infrastructure.

◦ Project Plan:-
Project planning requires breaking down breaking down a larger project into tasks, assembling a project team & determining a

Schedule over which the work is to be completed. The project plan will contain the details of the members from the co-orporation which will take part in the system.

:) Budget :-

A project budget is the total sum of money allocated for the particular purpose of the project for a specific period of time. The goal is to control the cost of the project & prevent overflow.

2. How are various Project Proposals compared? Explain the process of selection or rejection of any proposal.

Q2] 1) Upon recieving proposals from multiple contractor the customer evaluates & compares them selecting the best proposals reaching an agreement with the Contractor & comitting funds are all part of project selection process.

2) In general selection of projects is based on
→ project price.
→ ROI
→ Project plan & management.
→ Qualifications & reputation of contractor.
→ Likely hood of success.

3) The preferred contractor's is recommended to management & if approved, awarded the contract.

4) If several contractors recieve close marks on same aspects of their proposals are unspecified then parties must negotiate & settle upon final terms.

3. What are the different types of Contracts? Explain the merits & limitations of each type of contract, from Sponsor's as well as Solution Providing Organizations.

Q3) Most of the contract relationships are broadly cat categorized as :-

→ Fixed price Contract.
→ Cost Reimbursable
→ Time & material contrast.

> Fixed Price contract

In this category, the contract involves a fixed price for a defined product or service or result to be supplied.

Types:-

→ Fixed price Incentive Fee :- The price ceiling is set, and the seller needs perform & fullfilled the contrast requirements within that pice.

→ Fixed price with economic Price Adjustment:- It is suitable when the contracts are executed in different countries & payments are made in a different

•) Cost Reimbursable Contracts:- This type of contracts involve cost reimbursement for the cost incurred during completion of the constractual job. It is along with a pre-defined for representing seller project.

This includes:-

→ Cost Plus Fixed Fee
→ Cost Plus Incintive Fee
→ Cost Plus Award Fee.

•) Time & Management contracts:- Hybrid type contrast combining the feature of 1 as well as cost reimbursable