Capstone Project Planning

**Smart Sensor Technology For UAE Law Enforcement**

***OUR IDEA IS ABOUT "SENSOR" SHOULD BE BROUGHT FROM POLICE STATION AND SHOULD BE PLACED ON THE CAR AND IT IS CONNECTED TO A MOBILE APPLICATION. THE MOBILE APPLICATION ARE ACCESSED BY THE POLICE MAN SO WHEN ACCIDENT HAPPEN THE POLICE WILL GET NOTIFICATION ABOUT THE ACCIDENT AND THE EXACT LOCATION OF IT.***

# Abstract

The new project entails undertaking a safety audit of the vehicles and making sure the police force issuing the modern tech to minimize vehicle breakdowns and diverting limited resources form one place to another. The sensors and application based on android platform would be linked and the sensors would be installed atop the vehicles so that the movement , the ordeals faced and breakdowns etc. can be monitored on a real time basis. this would also be instrumental in managing costs and diverting the resources to other needy situations. In the project structure the cost management and time management aspects are considered with a specific emphasis on the preparation of the proper work breakdown structure. Part of the project is also aimed at listening o the requirements of the clients and other important stakeholders included in the project.

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# Introduction

Law Enforcement agencies in the UAE have bene finding it difficult to match the modern technology adopted by criminals and thus there is a need to increase application of sophisticated technology by the police personnel to keep track with advancement in technology and stay ahead. In recent time many police vehicles are known to have broke down in difficult terrains and it takes generally a few hours to track them and bring them back. If radio messages fail then the task takes more than few hours. This reduces the capacity of the police force to guard the streets and follow criminals and undertake patrolling duties. This project would help the police force use sensor developed especially for them and they just have to mount it anywhere on the vehicle. The sensor would remain connected to a Android mobile app and if the vehicle meets an accident or breaks down or it is in pursuit of criminals then the same can be tracked so that reinforcements can be arranged for them to tackle the situation as it deems fit (Barkley, 2004).

# Client Requirements and Constraints

Before a project is undertaken and project managers take charge it is imperative for him and his team to understand the exact requirement of the project and how the same would be achieved. Understanding the needs of the client solves most of the issues that could potentially crop up in the future. The project team must gather the necessary information by undertaking a meeting with the project sponsors representatives and take necessary notes which can help.

As the police force usually would be required to operate in all kinds of weather conditions the client requirement would be to develop sensors which can work in extreme environments and which can also work for a long period of time before being replaced. Materials needed to be use must be of best quality so that chances of damage is very limited (Clements & Gido, 2006).

# Stakeholder Perspectives

Stakeholders can be defined as those who has some kind of interest in the project and who must remain involved in every stage of the projects planning and project implementation so that they remain committed. Its imperative for the project team to keep the stakeholders interest paramount all the time.

The perspective of the stakeholders are very important to be considered and understood. There are a no of stakeholders in this project namely:

1. project Manager
2. Project team members
3. Other employees
4. Top executives of the company
5. Contractors
6. Vendors
7. Creditors and suppliers etc.

The different stakeholders have different stakes and different information needs in the case of a new project. For example the project manager is concerned about how well the project implementation is proceeding to determine if the pace of project progress is as per schedules and if all the components of the work breakdown structure is going on and progressing simultaneously as planned. This would enable him to ensure no component is too much ahead and other too much behind the schedule.

The client or the project sponsor is one of the key stakeholders in the project as the they are the direct user of a product or service, often both internal and external to the company executing the project. They would often get involved to know if the project progress is satisfactory or not.

The project team members or the employees of the project organization are a lot or the group who are involved in the execution of the project under the project manager's leadership and their performance is key for finishing the project in time and under the designated cost agreed with the project sponsor. Their involvement is key to project being a successful one.

Top Executives of the company responsible for the project team and the companies top management who are responsible for the execution and these people are always in the thick of the things as they are the ones who are responsible for the organization's strategy implementation in the long term. Suppliers and contractors are a key stakeholder in the project because they have a key role to play in the execution of the strategy developed by the project manager and would need to be involved actively for makings sure project is completed in time.

While the project team needs information regarding time, cost etc., the vendors and suppliers etc. must be sensitized about the requirement of quality supplies and how the project team would meet their financing requirement under the implementation stage of the project (Clements J. P., 2006).

# Project scope statement

The current project is about creating smart sensors and an Application which can be used by law enforcement agencies like the Police department to track their vehicle movement and take follow up actions to minimize accidents and lost vehicles etc. this would potentially be beneficial in saving resources for the department as the personnel movement would always be monitored by the central monitoring stations and also using these sensors police vehicles can be engaged from one place to another without too much delays (Clifford F. Gary, 2008).

# Work Breakdown structure (WBS)

A work-breakdown structure (WBS) in project management and systems engineering, is a deliverable-oriented breakdown of a project into smaller components. A work breakdown structure is a key project deliverable that organizes the team's work into manageable sections.

The Work breakdown structure often helps the project managers in structuring the works in a better and coordinated manner so that different teams are allotted different works and as a result of which simultaneous works can be undertaken on different sections of the project to minimize overall project completion times and also the same would help the project manager finish the whole project without delays and within the allotted budget (Cooper, Grey, Raymond, & walker, 2005).

The work breakdown structure also allows the project managers to see if there is any delay in any particular portion of the project and which potentially can delay the project and increase the cost overruns and hence is very important for better understanding of the project implantation stages.

The work breakdown structure of the Project is done and presented as follows:

**Sensor and Application Project**

Initiation

monitoring

Closing

Executing

Planning

Final Documents

Schedule Mgmt

Define

control

scope

Recommendation

Risk Mitigation

Structure

Client Req

Project charter

Results

Closure

Review Results

Project objectives

WBS

Time Mgmt

Risk Mgmt

# Time Management

Time management in the project management system refers to using the necessary tools and techniques to complete a project within the allotted and agreed time frame so that the project sponsor starts using the end product as early as possible. Even through there are several methods to do the same, the most sued method is that of Critical path method. The critical path method lets the managers know which activity critical for the completion of the project in the stipulated time and which are not and how the costs can be used to finish the project in the given budget and timeframe (Edmondson & Nembhard, 2009).

The activities involved in the sensor and application development project are identified as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones of the Project**  | **Related Deliverables** | **Activity**  | **Durations in days**  | **Predecessor**  |
| Initiation of the Project  | Documenting the Project charter | A | 10 | - |
| Project plan phase  | All necessary Requirements understood and documented  | B | 12 | A |
| Project Analysis/Design Phase  | Number Crunching , making Budgets  | C | 15 | A |
| Project implementation Phase  | Implement and control the Project construction  | D | 30 | B,C |
| Closing of the Project phase  | Checking of the closures and completion of the deliverables  | E | 15 | D |

The Network diagram for the project and the critical path is shown as follows:

**B**

 10,22

E

D

A

 0,10 25,55 55,70

C

 10,25

As can be seen the project is expected to be finished in an approximate 70 days duration nd there are one critical paths for the same. The path A-C-D-E is the designated critical path for the project.

# Cost Management

Cost management refers to the making of the budget for the project and how the project team adheres to the budget and finishes the project within the stipulated budget . if the time frame is exceeded then the budget or the cost is also expected to increase (Heerkens, 2006) .

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Milestones of the Project  | Related Deliverables | Activity  | Durations in days  | Predecessor  | Cost ($) |
| Initiation of the Project  | Documenting the Project charter | A | 10 | - | 2,500 |
| Project plan phase  | All necessary Requirements understood and documented  | B | 12 | A | 30,000 |
| Project Analysis/Design Phase  | Number Crunching , making Budgets  | C | 15 | A | 22,500 |
| Project implementation Phase  | Implement and control the Project construction  | D | 30 | B,C | 70,000 |
| Closing of the Project phase  | Checking of the closures and completion of the deliverables  | E | 15 | D | 10,000 |
|  |  |  |  |  | 135,000 |

As can be seen the total estimated budget for the project is $135,000.

# Risk Management Plan

The risk management plan ( identification and dissemination of information) is one of the most important parts of this project. As no project can be completed without encountering any risk the same applies to the current project as well. Some of the risk has to be borne by the project team while some other risk can be transferred to third parties. Most risk are of financial and human resource related (Cooper, Grey, Raymond, & walker, 2005).

The following Risk are identified by the project manager and his team and the same needs effective management for reducing its potential negative impact on the project:

1. Exceeding the budget is one of the primary risks in this project as suppliers lack experience
2. The is a fairly moderate risk that suppliers would fail to deliver raw materials in tie mans they are mostly importing materials confirming to the standards.
3. Thirdly , this being a very unique project would need a through understanding of the external environment and testing the final product might be very time consuming.
4. Availability of skilled personnel is another issue which would be most likely to be encountered (Jack R & Samuel J., 2006).

# Discussion/Conclusion

As can be seen from the above estimation the project is expected to be completed in a duration of 70 days and the normal costs for completion of the project is expected to be $135,000. This is within the budgets which has bene sanctioned by the project sponsor and hence there is no immediate concern regarding the cost aspects. However the project manager would be required to find the adequate no of skilled personnel for taking up the skill needing jobs and failing which the project would be delayed and cost overruns would be there. The other concern before the project manager is to ensure the suppliers keep supplying the needed quality materials in time and at the agreed prices failing which both cost overruns and delays would push the budget far too higher.

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