Centro Universitario de los Valles

Master of Software Engineering

Intelligent Traffic Management System

Change Request Analysis 2.0

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Project Context

The client requests 4 changes to the system:
- CR1 The client requests that the system records the places where transit police are imposing fines on car drivers to avoid punishments for DUI (driving under impairment). The system is expected to help alcoholics and drug users prevent jail time and provide massive profit due to the alcoholism and drug addiction of users.
- CR2 For marketing purposes, the client requests incorporating a recommendation system that pinpoints the marketed places when traveling nearby.
- CR3 The client requests that the user experience should be recorded first on the phone and later uploaded into the system database.
- CR4 Due to a government law, a report of usage by each should be generated monthly, including used days, hours, and travels.

Before delving into the details of our project, "Intelligent Traffic Management System," it is essential to understand the framework that shapes this endeavor. In this section, we present an analysis of the effort, time, costs, and human resources originally estimated for the project.

Before the Change Request

Effort: Originally, the project was estimated to require approximately 12 months of development with a full-time development team of 10 software engineers.
Time: The initial project schedule included 12 months for development and an additional 2 months for testing and deployment.
Costs: The initial project budget was estimated at $1 million, which included team salaries, infrastructure costs, and software licenses.
Human Resources: The development team consisted of 10 software engineers, 1 project manager, and 1 traffic expert.

Decision

The decision will depend on factors such as available resources: human resources, budget, time and effort, as well as the level of automation desired and the willingness of users to participate in the process. This CR have their pros and cons, and the final decision must take these aspects into account.

After the first Change Request

Effort: The addition of the new feature for recording DUI fine locations is estimated to require an additional effort of 2 months of development.
Time: Implementing this additional feature will extend the schedule by an additional 2 months, bringing the total project time to 16 months.
Costs: The additional cost of the Change Request is estimated at $200,000, which includes the additional team salaries and costs associated with adding this feature.
Human Resources: The development team will expand to 12 software engineers, and 1 data privacy specialist will be hired to ensure compliance with regulations.

CR1 Affected modules

Data Acquisition Module: It will need new functionalities to receive and manage the location data of DUI fines registered by users.
Real-Time Data Processing Module: It will need to include logic to process and analyze this new location data in real-time and possibly adjust traffic predictions.
Traffic Pattern Prediction Module: It might require adjustments to its prediction algorithms to account for the new location data registered by users.
User Interface Module: It will need to provide users with a way to manually register locations of DUI fines, so changes to the user interface are likely.
Security and Privacy Module: Since this Change Request involves the collection of location data by users, additional measures must be taken to ensure the privacy and security of this data.

After the second Change Request

Effort: The implementation of the recommendation system to highlight points of interest will require additional effort. Let's assume that this additional effort would be 2 months. It would be necessary to add 2 extra software engineers to the team, including a specialist in recommendation systems.
Time: Implementing the recommendation system will extend the project timeline by an additional 2 months, bringing the total project duration to 16 months.
Costs: After the Second Change Request: The estimated additional cost for the second Change Request is $200,000, which includes additional salaries and expenses associated with the implementation of the recommendation system.
Human Resources: The development team will expand to 12 software engineers, and a recommendation system specialist will be hired.

CR2 Affected modules

Data Acquisition Module: It may require the implementation of data collection about nearby locations for the recommendation function.
Real-Time Data Processing Module: To process and calculate recommendations based on the user's location.
User Interface Module: It will need to display and provide recommendations of nearby places to the user.
External Systems Integration Module: If external location data is used for recommendations, this module will need to integrate with these services.
New modules: Add a module of recommendation system to highlight points of interest

Percentages in which the CR2 would affect the project

CR2
Budget:20%
Time:14.28%
HR:2
Work effort:18%

After the third Change Request

Effort: Implementing user experience recording and loading into the database will require an additional effort of approximately 2 months of development with a team of 2 software engineers and 1 data storage specialist.
Time: The project schedule will be extended by an additional 2 months, bringing the total project duration to 16 months.
Costs: The estimated additional cost of the third Change Request is $70,000, which includes additional team salaries and expenses associated with user experience recording and loading.
Human Resources: The development team will expand to 12 software engineers, and 1 data storage specialist will join the team to ensure efficient management of user experience data.

CR3 Affected modules

Data Acquisition Module: It may require the implementation of functionality to record user experience on the phone before uploading it to the database.
Real-Time Data Processing Module: It might need adjustments to process user experience data after it has been uploaded to the database.
User Interface Module: The user interface is likely to be adapted to allow the recording of user experience before uploading it.
Security and Privacy Module: Since it involves user experience data, it may require adjustments in privacy and security management.

Percentages in which the CR3 would affect the project

CR3
Budget:7%
Time:14.28%
HR:2
Work effort:11%

After the fourth Change Request

Effort: The monthly generation of usage reports, including days, hours, and trips used, will require an additional effort of approximately 1 month of development with a team of 2 software engineers to implement the monthly report generation.
Time: An additional 1 month for the implementation of report generation, bringing the project to a total of 15 months.
Costs: The estimated additional cost of the fourth Change Request is $50,000, which includes the salaries of two software engineers and the resources needed to develop the monthly report functionality.
Human Resources: 2 software engineers will be added to the development team to carry out this addition.

CR4 Affected modules

Data Acquisition Module: It may need to capture and store additional information about user system usage.
Real-Time Data Processing Module: Additional functionality may be required to process and analyze user usage data for report generation.
User Interface Module: It should allow users to view their own usage reports and may need new functionality to display this data.
Security and Privacy Module: Since it involves user usage data, it may require adjustments in privacy and security management.
Management Module: This module is likely to include functionalities for the generation and distribution of monthly reports.

Percentages in which the CR4 would affect the project

CR4
Budget:5%
Time:7.14%
HR:2
Work effort:8%

Table of acceptance percentages

Tolerance
Budget-32%
Time-20%
Hr-2
Work effort-20%

	Budget	Time	HR	W.E	Risk Exp	Law Mndatory	First Approval	Ranking	Final decision
CR1	20%	14.28%	3	20%	High	No	Rejected	4	Rejected
CR2	20%	14.28%	2	18%	Medium	No	Aprroved	3	Rejected
CR3	7%	14.28%	2	11%	Low	No	Approved	2	Approved
CR4	5%	7.14%	2	8%	None	Yes	Approved	1	Approved
	52%	50%	9	57%	Medium/ low	1			

Executive Summary

This report is presented to provide an overview of the analysis of the Change Requests (CRs) submitted to the Intelligent Traffic Management System project and to justify the decisions made regarding their acceptance or rejection. During this initial analysis phase, four CRs were evaluated in terms of effort, time, costs, and human resources. The results of this analysis are detailed below.

Change Request 1 (CR1):
Description: This CR proposed the incorporation of a manual user registration system for DUI fine locations.
Reason for Rejection: The analysis revealed that implementing this change would involve a significant increase in project costs and effort, as well as an extension in development time. These changes exceed the desired percentages for costs, time, and effort, which could compromise the project's feasibility.

Change Request 2 (CR2):
Description: The second CR requested the addition of a recommendation system for nearby places.
Reason for Rejection: Analysis demonstrated that implementing this feature would also result in a substantial increase in costs, effort, and an extension of development time. These increases do not meet the desired percentages and could jeopardize the timely project delivery.

Change Request 3 (CR3):
Description: CR3 required user experience to be recorded on mobile devices before being uploaded to the system's database.
Reason for Acceptance: CR3 was accepted as the increases in costs, effort, and time remained within desired limits. Additionally, the implementation of this feature provides substantial benefits to users.

Change Request 4 (CR4):
Description: This CR originated from a government law requiring the monthly generation of a usage report.
Reason for Acceptance: CR4 was accepted as a legal requirement. Despite this, the increases in costs, effort, and time are relatively low and manageable.

Final Summary:
CR1 and CR2 were rejected as they exceed the desired percentages in costs, time, and effort, which could negatively impact the project. On the other hand, CR3 and CR4 were accepted because they meet the established criteria, and CR4 is required to comply with government regulations. These decisions were made considering the project's interests and defined constraints.

Glossary

Effort: The amount of work required to complete a task or project.

Time: The period during which an activity or project is carried out.

Costs: The expenses associated with the execution of a project.

Human Resources: The personnel or team needed to carry out a project or task.