

Industrial, Manufacturing, & Systems Engineering  
College of Engineering

Systems Engineering Project Practicum  
Summary



<b>Project Title:</b>	Planning Monitoring System
<b>Team members:</b>	1. Ana Canizales 2. Luis Ochoa 3. Natalie Valenzuela 4. Omar Candelaria 5. Ajay Naidu 6. Andrea Noriega
<b>Semester, year:</b>	Fall 2017
<b>Type of project:</b>	Individual project at students work ( ) Team project assigned by instructor ( x ) Project proposed by team ( )

Insert Individual / team PICTURE HERE



List members in the picture from left to right

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## INTRODUCTION

The System Engineering Project Practicum provides the opportunity to apply System Engineering concepts in developing a real system and create documents that formally describe the system. Students review documents and validate them with clients and customers through formal presentations. Teams are self-managed and assign roles to control planning, quality, requirements, design, and implementation.

### **System Overview**

The main purpose of the project is to create a planning and monitoring system that will enable teams to become self-managed teams. By using this approach the teams are expected to work in a more efficient and reliable manner. The system will aid the teams to identify obstacles, internal and external issues, such as; meeting deadlines, workload distribution, risks and problems that can affect the project. At the same time it will enhance the communication between management and the team by providing a better data to understand the status of the project. The system will also provide a project status with reliable data to the customer.

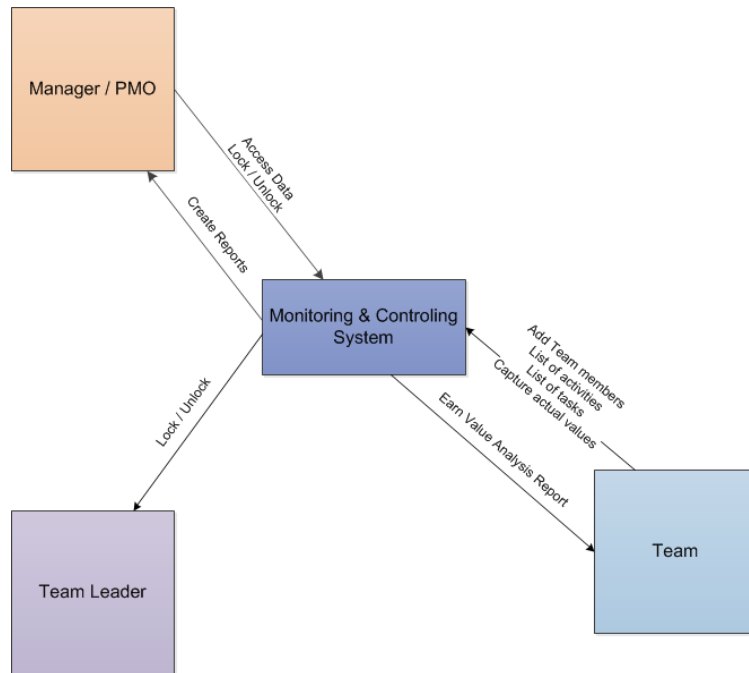
The current problem is that there is not a very well established framework created for the teams so they can be able to provide reliable data to create reports. Current system is not robust enough to be able to achieve a team to be. This is an issue, because it is very easy to get lost working as a team and head to different directions

This project will address the problem by facilitating the process of monitoring and reviewing the team's performance. Data will be logged by team members and it can be reviewed by Team Leader and Project Manager for reviewing team's effort during a certain period of time or project.

### **System Description**

The Planning Monitoring System will allow users to monitor the progress and performance of team projects by automating an existing MS Excel file in which effort time and task activities are recorded. The system will let users track performance of team or individual team members by automatically showing graphical representations of recorded data and letting the user analyze it.

### External entities with system components:



### Use case diagrams, list actors and services:

List of Actors:

1. **PMO**
2. **Team Leader**
3. **Team Member**

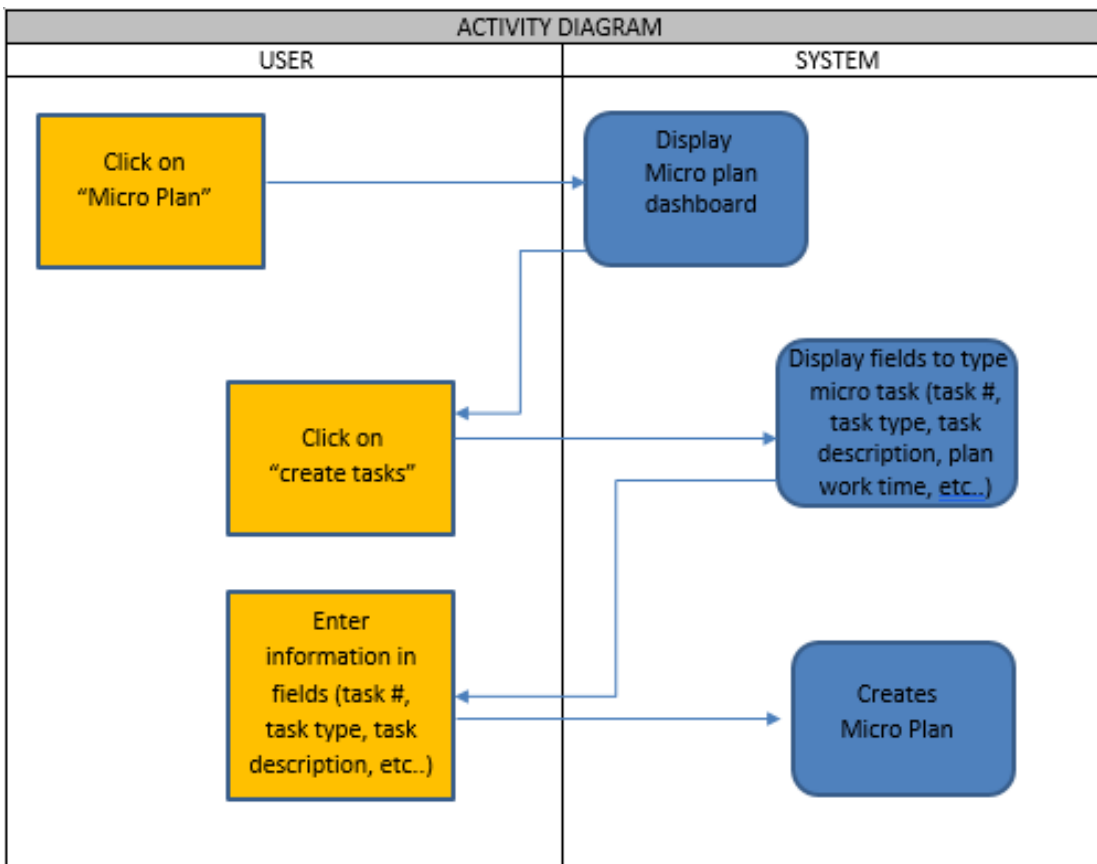
Main services:

1. **Secure Login/Log out**
2. **Create a team**
3. **Create a new Project**
4. **Create a new user/account**
5. **Create a list of tasks**
6. **Update a task**
7. **Create a problem**
8. **Update a problem**
9. **Create a Risk**
0. **Update a Risk**
1. **Write Earn value Analysis**
2. **Write Plan vs Actual time graph analysis**
3. **Create Macro Plan**
4. **Update Macro plan**

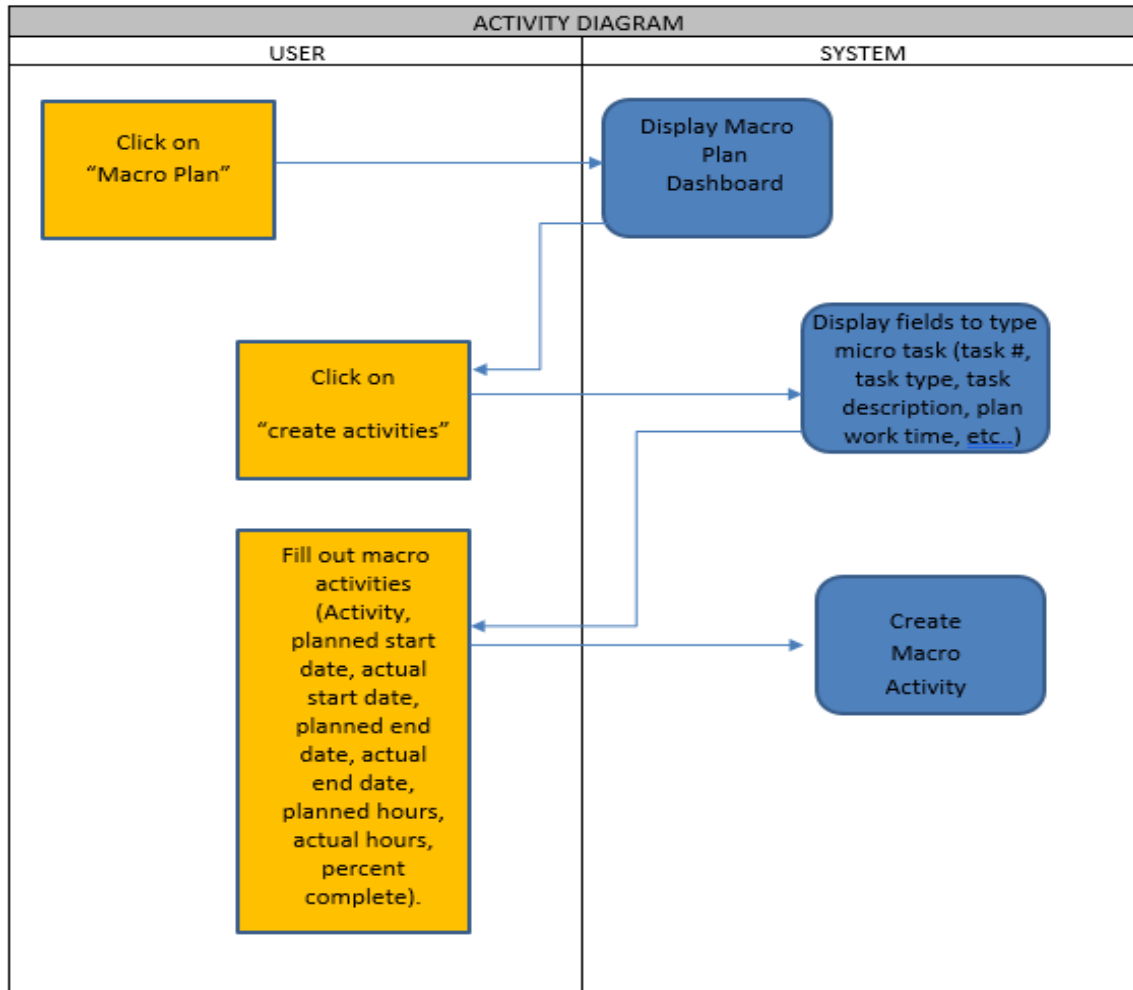
5. View Micro Plan
6. Write control chart for micro plan analysis (for manager and team)
7. Write control chart for macro plan analysis (for customer)
8. Create a report
9. Update Edit the report

[insert activity diagram of the two main services]

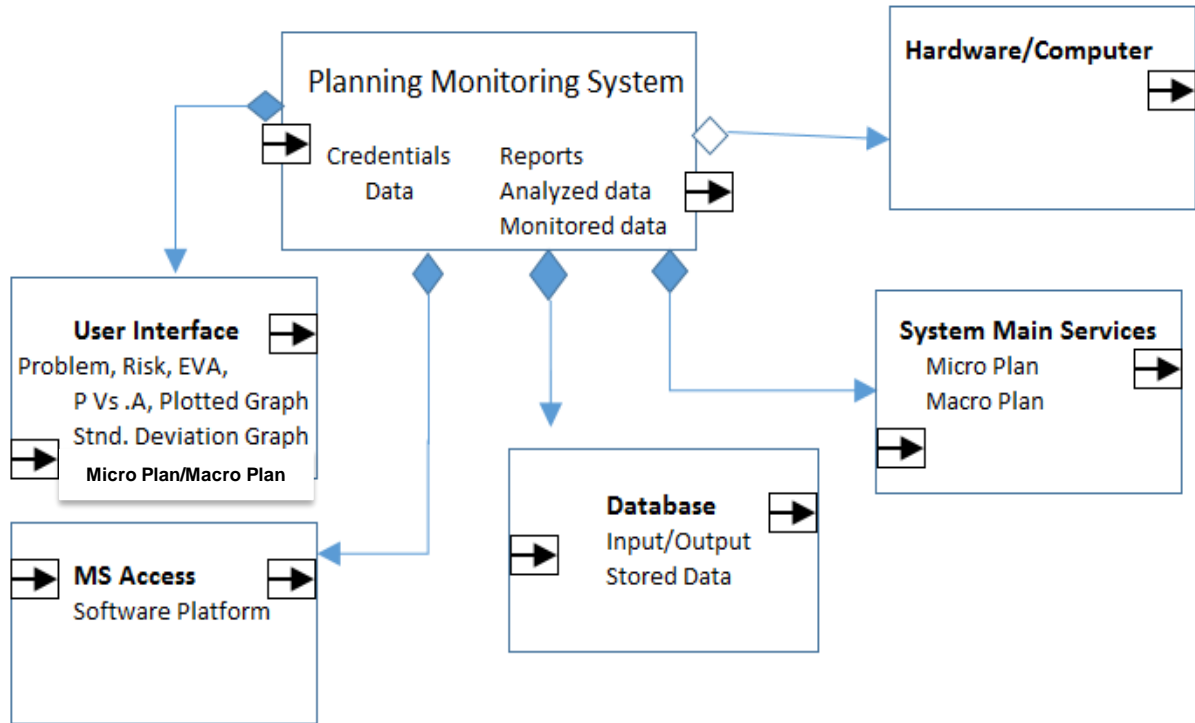
### Adding a Micro Task



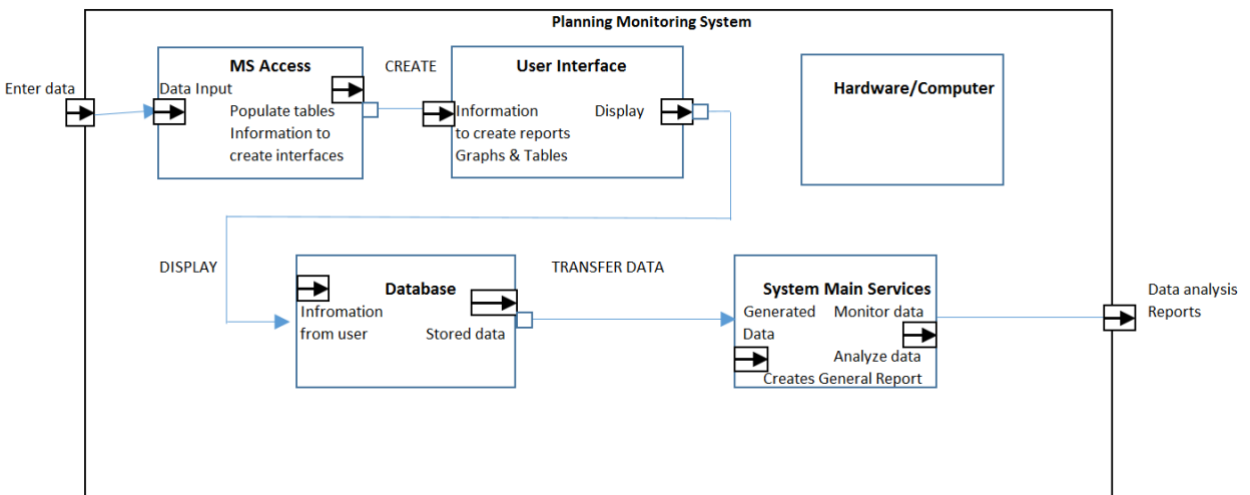
### Add Macro Activity



## Block Diagram



## Internal Block Diagram



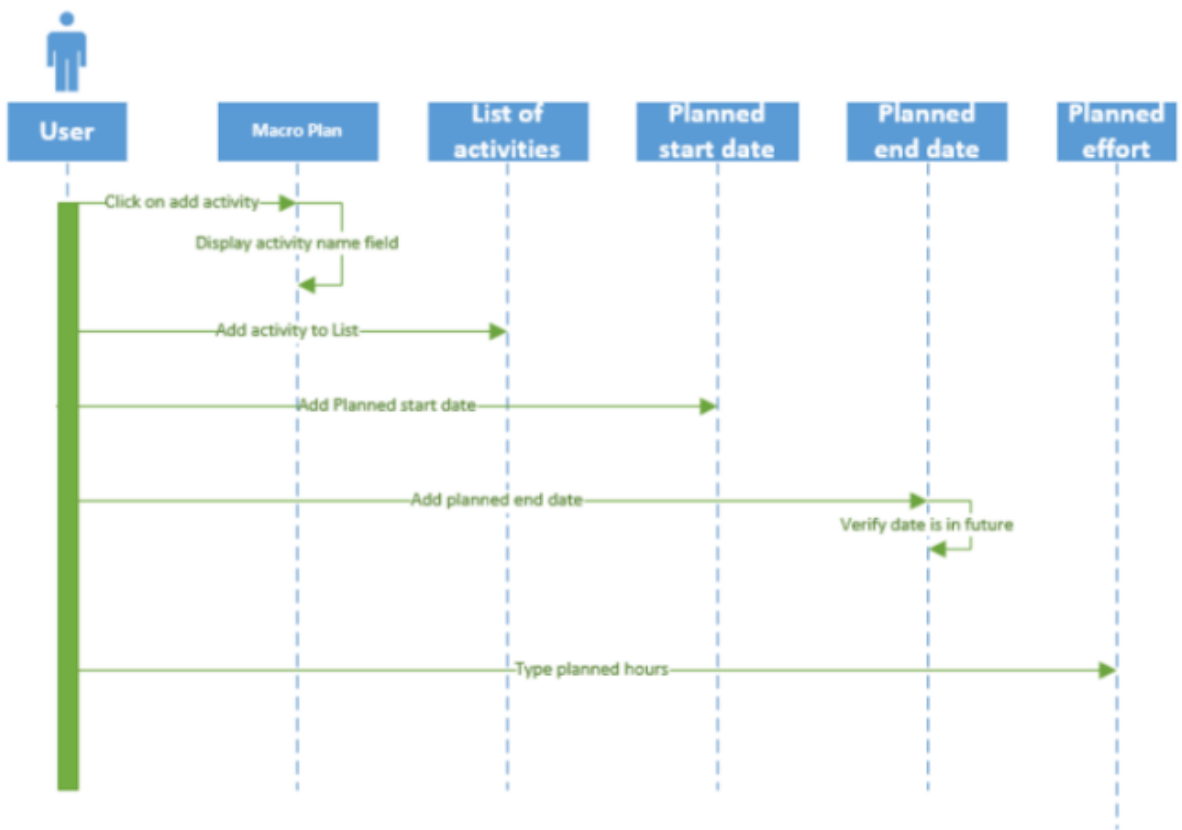


Fig1: Sequence diagram – Add Activity to Macro table

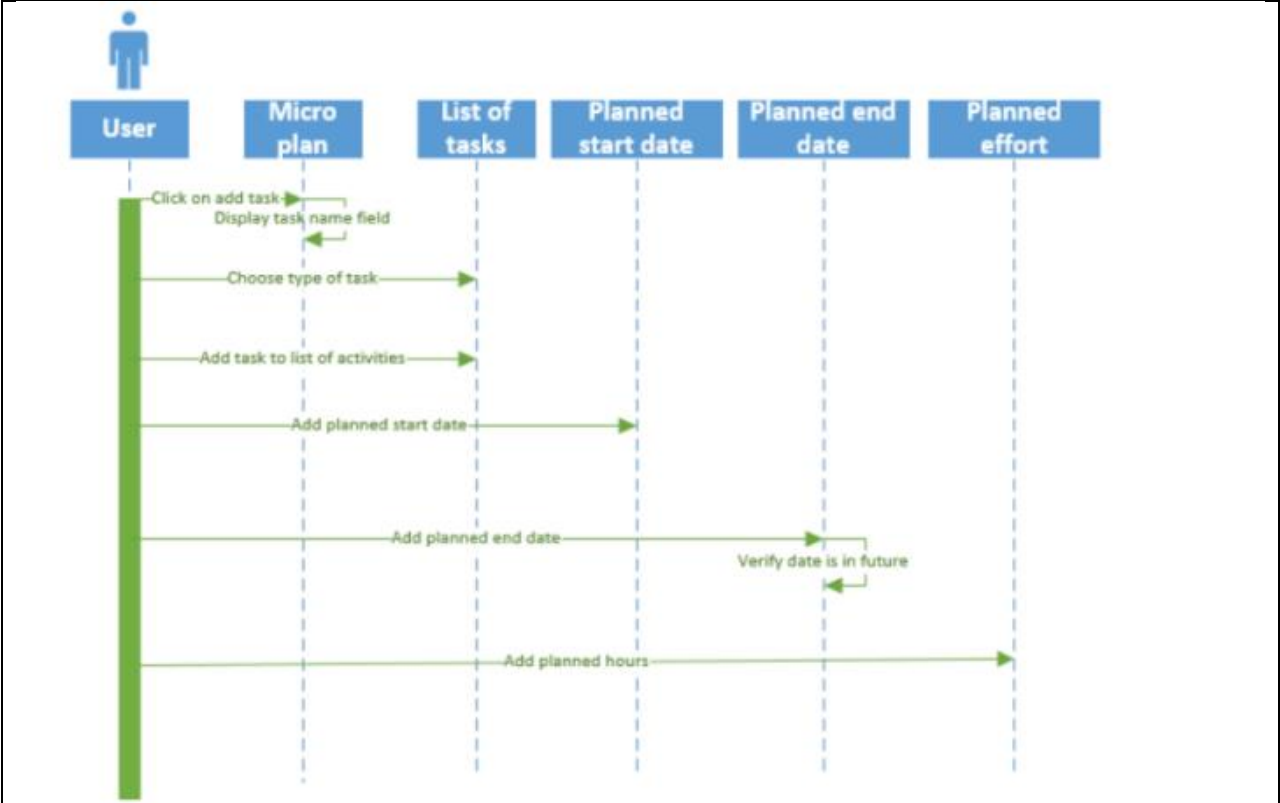


Fig2 : Sequence diagram – Add task to Micro table



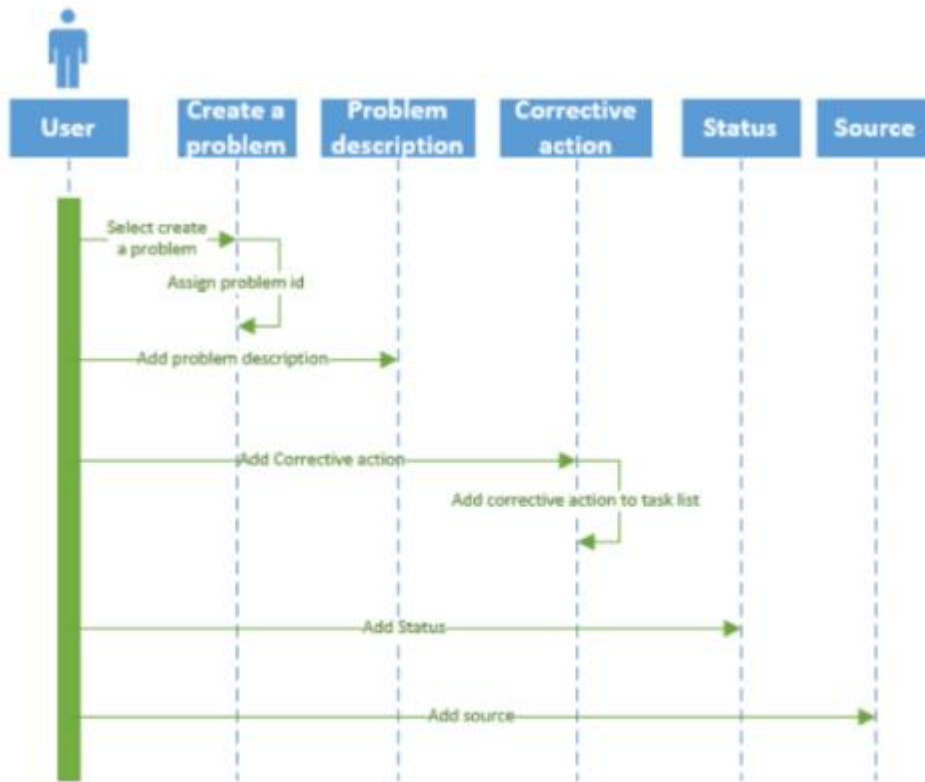


Fig3 : Sequence diagram- Add a problem to the problem list

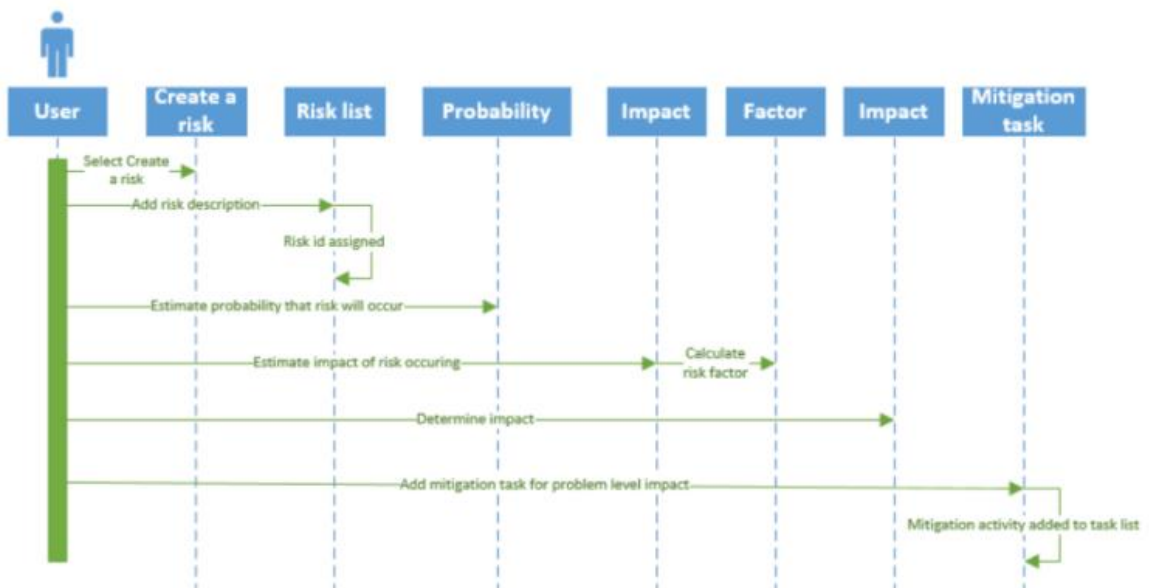


Fig4 : Sequence diagram- Add a risk description to the risk list

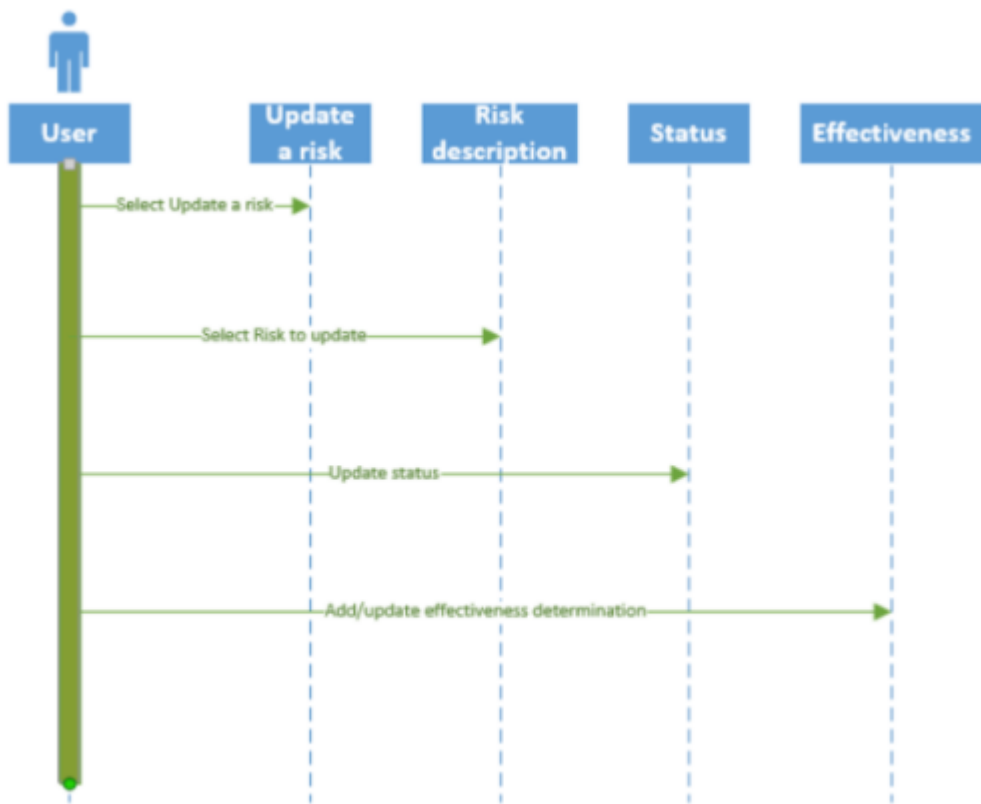


Fig5: Sequence diagram- update a risk description

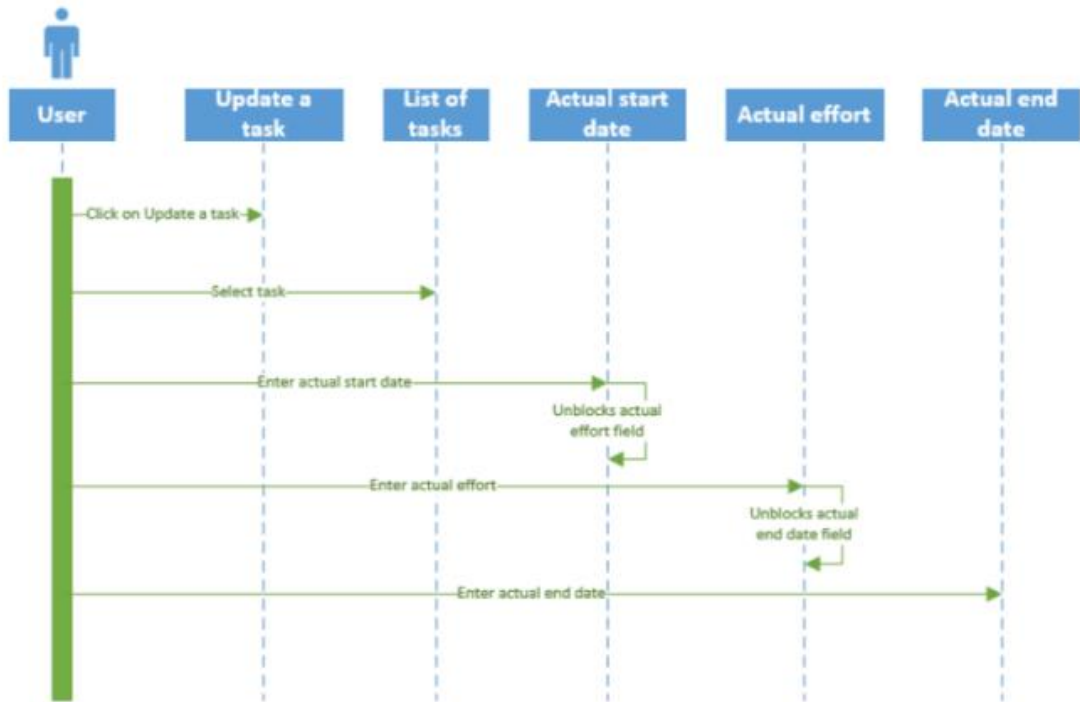


Fig 6: Sequence Diagram - update a task in Micro table

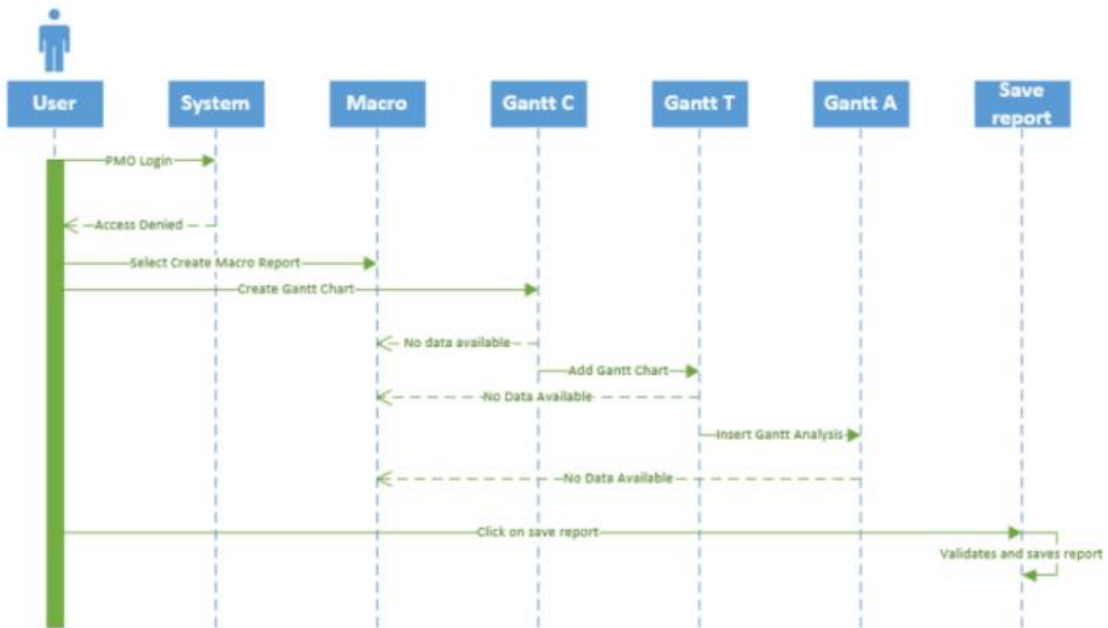


Fig 7: Sequence Diagram- Create customer Macro plan

## PROJECT OUTCOMES

Provide a brief description for the impact of this system in the organization.

This system will make it easier to the organization to manage teams, also, teams can be self-managed by using the system. Reviewing performance and tracking progress of tasks, activities, risks, problems, will have a positive impact in the way the organization tracks a team's effort.

Provide your impression on how the reviews impact the quality of the system under development

	Conceptual Phase	One/Two Reviews	Stakeholder Requirements phase	Stakeholder requirements review	System Requirements Phase	System Requirements Review	SEH Plan Phase	SEH Plan Review	Prototype Phase	Prototype Review	Design Phase	Design Review	Implementation Phase	Implementation Review	Unit Testing Phase	Integration Testing Phase	System Testing Phase	Total Lifecycle
Time (hr)	37.5	11.25	39	2.23	39	9.81	38	11.98	32	10.25	35	3.25	98	5.33	5	50	8	367.25
Time (\$)	49.20c	3.10c	8.20c	0.40c	8.20c	3.60c	4.80c	3.30c	6.70c	2.80c	4.50c	0.90c	24.80c	1.80c	1.40c	2.70c	2.80c	100.00c
# Defects Injected	42		11		34		19		2		8		9					110
# Defects Injected	37.80c		15.70c		20.40c		8.90c		1.80c		7.10c		4.80c					100.00c
Injection Rate (defects/hr)	1.1		0.4		1.1		0.3		0.1		0.2		0.1					100.00c
# Defects Removed		42		11		34		19		2		8		9				140
# Defects Removed		36.00c		7.90c		24.30c		7.80c		1.40c		8.70c		3.60c				100.00c
Removal Rate (defects/hr)		3.7		4.9		3.6		0.8		0.2		2.8		0.9				100.00c
Defect Removal Coverage (DRC)		1.1		1.5		1.1		0.2		0.1		0.7		0.3				100.00c
Time (\$)	100.00c		100.00c		100.00c		100.00c		100.00c		100.00c		100.00c		100.00c	-29.40c	-27.30c	100.00c
Stop-Time	50		10		40		14		5		12		230		20	6	5	374
Defect Density		4.20		1.90		0.88		0.71		0.28		0.42		0.02	0.08	0.03	1.28	100.00c

[What soft skills have you (or need to) developed to work on teams]

Definitely, communication skills are needed to work on teams, System requirements need to be Specific, Measurable, Attainable, Realistic, Timely. Communicating the wrong requirements can lead to misunderstandings at earlier phases of the project.

## MASTERS OF SCIENCE IN SYSTEM ENGINEERING PROGRAM ASSESSMENT

[Provide a brief assessment of your master's program. You may consider the following guiding questions:

- Soft skills that I/we have developed in the program  
We have learned to be a self-managed team with the help of the documentation we used on a weekly basis, it helped the team to be tracking the effort put into a certain task and who was responsible to complete it.
- Methodologies and techniques that I/we have learned in the program  
Customer Validation is really needed to make sure we are building the right system, if we only use verification in a system, we can be building the system that meets specification but not really the customer requirements or needs.
- Opportunities that I/we have during the program  
There are company talks given for IMSE students where sometimes they are hiring, we would recommend to go those talks and apply. Even if it is for the interview experience or learning about how other companies work. We had the opportunity to go to some company talks and even interview with different companies such as Lockheed Martin and learning about NavAir which was one of our favorite talks. Also, there are a lot of opportunities for students who want to study abroad even for one semester or during summer courses.
- Skills/techniques that I/we will use in our professional life  
Understanding system requirements, Validation and verification, Systems Engineering Processes, were some of the concepts we will use and have used in our professional lives. We have developed presentation skills throughout the master's program and have worked on simple system projects and even hands on projects like building a quad copter according to certain specifications in a Design for Manufacturability class.
- Any other comment that you want to share with current and prospect students]

Understanding systems can be very complex, however, it everything comes into place once the basic system concepts are understood. We think the master's program gives us the preparation to understand complex systems and apply what we have learned in real life situations.