

Computer Science Technology

VANIER

C É G E P / C O L L E G E

420-436-VA

System Development

Deliverable 1-4

Logi IV

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Client Info:

Company Name: Texas Gears

Contact Name: Scott Gohrt and Sean Gohrt

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Executive Overview

Our project is focused on developing a **Project/inventory management System** for Texas Gear and Euro Gear. These companies operate in the mechanical engineering industry, specializing in the design and manufacturing of driveline components, including gears, shafts, and related equipment, primarily serving heavy industries such as mining, oil and gas, and power generation. ***The goal of this project is to create a web application solution that helps Texas Gear manage inventory efficiently and process monitoring. Our team will meet virtually with the client on a weekly basis.***

To ensure that this project gets properly done we will meet Tuesday from 12:00 to 2:00 in System Development class and Monday mornings from 8:30 to 11:30 in person. We may also host additional meetings based on the need and availability of the team members. When we need to meet virtually, we will be using discord to its ease of use and its screen sharing feature. We will share all documents via google docs and our code will be stored on GitHub.

We also split up the tasks based on strengths such as back-end, front-end and database. We also have a project plan made using Microsoft Project which will allow for a set and clear plan which will allow for efficient development. Some aspects are subject to change since projects such as this one tend to be quite dynamic.

Client

Texas Gear & Euro Gear

Texas Gear and its sister company, Euro Gear, operate in the mechanical engineering industry, serving heavy industries such as mining, oil and gas, and power generation. They specialize in designing driveline components like gears, shafts, and other equipment that transmit motion and power.

While Texas Gear focuses on consultations, process improvements, and industrial designs, Euro Gear handles the manufacturing of gears and power transmission equipment.

Client Overview

The primary business problem to address is inventory management and process monitoring. Texas Gear requires a software solution to track inventory, streamline operations, and monitor the lifecycle of their projects. Their key contacts, Sean Gohrt and Scott Gohrt, exhibit high levels of computer literacy, including programming skills, making them the ideal point of contact for requirements analysis and feedback. Our team will also meet virtually with the client on a weekly basis to ensure good communication with the client.

Client Leadership

- **Scott Gohrt:** Technical Point of Contact (Mechanical Engineers, Operations)
- **Sean Gohrt:** Technical Point of Contact (Mechanical Engineers, Operations)
- **Greg Eloise:** CEO and CFO
- **Sarah Gohrt:** Marketing Lead

Team Details

Team Meetings:

Our team will meet on a weekly basis every Tuesday from 12:00 to 2:00 during the theory class of System Development since both sections are together. We have also made the decision to meet Monday mornings from 8:30 to 11:30, since two of us are already in section 2 lab, and the other two will be able to come since they have no other class at that time. We will also have supplementary meetings on days which work best for us all since our schedules can vary from week to week.

Repositories:

For the project code, we will use GitHub which will easily allow us to easily share and work on the most recent up to date version of code.

The following link leads to our GitHub: [GitHub](#)

In addition to using GitHub for our project code, we will be using google docs to store our project documentation such as our deliverable documents. Google docs was chosen due to its versatile features such as its auto save feature which keeps the document up to date and consistent. As well as its ease of use. The link for the google drive is:

<https://drive.google.com/drive/folders/1IKmMJHQ8GsyfiEsLtdMCoJcwRINih5Fj?usp=sharing>

Communication Strategy:

We will be communicating through various ways such as Discord and SMS messaging when not physical with each other. SMS messages will be used for more urgent announcements since everyone would get the messages, even when they are not on an internet zone. We will also make a discord server which can be used for less dire announcements. Our discord server would have separate text channels which would help team organization. For example, we would have a text channel called “brain-storm” which would only be used for project ideas. Whenever we would need to discuss out of class time, we would also use discord voice channels due to its ease of use and screen sharing ability. The following link leads to the discord:

<https://discord.gg/qdcdxH8paM>

Team Policies:

Policy Number	Policy Description
1	Always communicate with respect and professionalism
2	Ensure all tasks are completed by agreed deadlines.
3	Actively participate in team meetings and discussions.
4	Share progress updates regularly to keep the team informed.
5	Support fellow team members in overcoming challenges.

6	Ensure inclusivity by making sure everyone feels welcomed
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All team members approved these policies,

These policies may change in the future

Areas Of Responsibility:

To ensure maximum efficiency of the project, each team member will oversee the implementation genre which they are most skilled/comfortable at, the following responsibilities is shows below:

Implementation Task	Name
Back-end Development	Tarek Abou Chahin and Matthew Macri
Front-end Development	Matthew Veroutis
Database	Kais Rafie

Note that although team members oversee a certain programming domain does not mean that they will only do that domain, if another domain needs help, other team members from other domains will help them.

Team Leader:

The team leader will change for every deliverable and will go as follows:

Deliverable	Team Leader
1. Project plan	Matthew Veroutis

2. Requirements gathering and analysis	Matthew Macri
3. UML Diagrams	Matthew Macri
4. Prototype User Interface	Kais Rafie
5. DB Design	Kais Rafie
6. Implementation and client Comments	Tarek Abou Chahin

Client Contact:

Since this project gives us real world experiences, our team believes that it would be most beneficial to keep the client contact consistent. Constantly changing primary client contact can be detrimental in various ways such as instilling doubt and worry in the client. Since Matthew Macri was the one who found the client and has a relationship with them, he will remain the primary client contact throughout the whole project. This will ensure a strong relationship and trust will be built with the client. However, this does not mean that he will be the only one interacting with the client since other team members may be present at the meeting.

Reports:

The team leader will oversee making sure that the reports are of the utmost quality. Thus, the person responsible for each deliverable report is listed above under the "Team Leader" Section.

Contact Information:

The email address and phone number associated with each team member is shown below:

Name:	Phone Number	Email Address:
Matthew Veroutis	514-688-2776	veroutism@gmail.com
Tarek Abou Chahin	514-909-1131	abushaheen.tarek@gmail.com
Matthew Marci	514-714-1021	matthewmacri11@gmail.com
Kais Rafie	438-525-5611	kaisrafie9@gmail.com

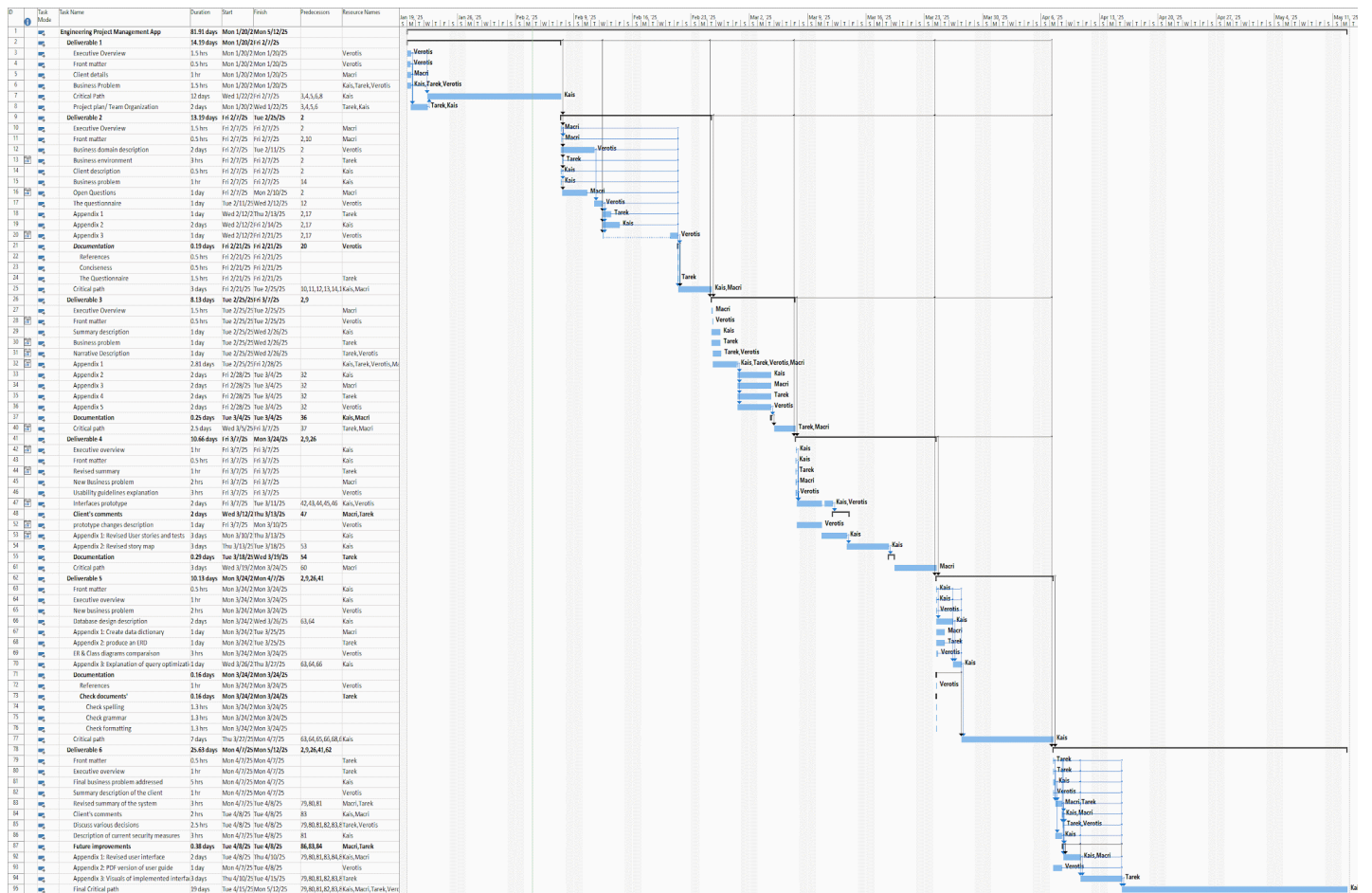
Project Plan

Our project plan has been made based on the information and criteria given by the teacher that were included in the project instructions. Certain tasks in the project description are unclear, so our team regularly reaches out to teachers for further details to ensure the project's integrity, the team equality, and the project's success. All deadlines were made based on the course outline schedule. All deadlines are subject to change in case of course outline changes.

The project's tasks were assigned based on skill, efficiency, and preference, every member has their own strong suit in the development phase, ensuring every area of the project gets done effectively. The general tasks are assigned based on the team member's tasks' weights and their responsibilities and may be collaborated on. Finally, for equality, recurring tasks for different deliverables will be assigned to different members each time, making work less repetitive and ensuring all team member's get to work on all parts of the project.

Furthermore, as previously mentioned, task details will clarify over time and give us a concrete idea of what competencies/ implementation they require, meaning that all responsibilities are subject to deadline and assignee changes in case the member has faced any emergencies, difficulties, or if the role requires different competencies.

Finally, to ensure all changes are correctly done, and sudden confusion does not appear between deliverables, the project plan will be revised before starting every deliverable, we will be able to overlook and possibly better redistribute the tasks based on the new information we find, once tasks are confirmed, there will likely be no change in responsibility, but collaborations are always possible.



Deliverable 2

Executive Overview

Our project focuses on developing a Project and Inventory Management System for Texas Gears, aimed at optimizing project tracking, inventory management, and team communication.

This system will be crucial for businesses in the mechanical engineering industry, such as Texas Gears, which designs and manufactures driveline components for industries like mining, oil and gas, and power generation.

The challenges posed by their current manual project management and inventory systems, including inefficiencies with MS Project, paper-based processes, and blackboards, underscore the need for a streamlined, automated solution.

For Deliverable 2, we have extensively gathered requirements through stakeholder interviews, client feedback, and in-depth analyses of the business domain/environment.

The user stories provided by the client, including process automation needs, project tracking through Gantt charts and Kanban boards, and better real-time communication mechanisms, form the foundation for the system's design.

Our team has identified specific business challenges that our solution will resolve, including data inconsistency stemming from manual record-keeping, delayed project tracking, and suboptimal communication, especially for remote team members.

With stakeholders ranging from team members (e.g., Matthew M, Kais, Tarek) to administrators (e.g., Matthew V), the user stories highlight essential features, such as efficient inventory tracking, supplier delays, project progress visualizations, and user management features like password reset capabilities and two-factor authentication.

To define and meet these requirements, our team has structured the project plan for continuous collaboration with the client, ensuring on-time deliverables and active client engagement through weekly and in-person meetings. Documentation in Google Docs, code storage on GitHub, and Discord for virtual meetings will facilitate smooth communication and updates throughout the development process.

This deliverable will mark a significant step toward implementing an automated, integrated project and inventory system tailored to meet the high demands of Texas Gears.

Through the requirements gathering and analysis process, we ensure that the developed system addresses the root business problems while offering an adaptable, user-friendly solution for the client's evolving needs.

User Stories

1. As a team member, I want to track ongoing projects using a Kanban board.
 - 1.1. Given I am a team member, when I track ongoing projects, they should be shown on the Kanban board
2. As a team member, I want to track ongoing projects using Gantt charts so that I can monitor progress and meet deadlines efficiently.
 - 2.1. Given I am a team member, when I track ongoing projects, they should be shown on the Gantt chart.
3. As a team member, I want to scan a QR code to instantly open a project details (the name of the product, where the project will go to, deadline of the project, the client this project is for, project description) page so that I can quickly access relevant information without manually searching for it.
 - 3.1. Given I am a team member, when I scan the QR code, it should open the project's details about that QR code.
4. As a team member, I want to assign a unique serial number that will follow this format (U-1234567 (U-7 digits)) to each project so that I can track its status and location from start to finish.
 - 4.1. Given I am a team member, once I add the serial numbers to each project, it should track the status and location from start to finish.
5. As a team member, I want to track suppliers and their delivery timelines so that I can ensure timely procurement of necessary components.
 - 5.1. Given I am a team member, I want to track suppliers and their delivery timelines.

6. As a team member, I want to upload and store photos/videos for each project so that I can document progress and maintain quality records.
 - 6.1. Given I am a team member. And we take pictures/videos for every project. It will be stored on our local server.
7. As a team member, I want to receive automated reminders to my email and in my calendar when a supplier is near completion of their work so that I can prepare for the next phase in the project workflow.
 - 7.1. Given I am a team member, once the project is near completion, I want to receive automated reminders to my email and my calendar.
8. As a team member, I want to generate PDFs containing QR codes for each project so that I can easily print and distribute project tracking documents on the product boxes.
 - 8.1. Given I am a team member, I want to print out all QR codes so I can stick them on the equipment.
9. As a team member, I want to implement automated backups every 30 minutes and enforce
 - 9.1. Given I am a team member, I want my server to back up every 30 minutes.
10. As a team member, I want to implement 2FA for system access so that we can ensure data security and system reliability.
 - 10.1. Given I am a team member, to access my system 2FA is necessary.
11. As an admin, I want to create user accounts, so that only authorized personnel get user accounts.

Note: User account will contain: First name, Last name, user id, password

- 11.1. Given I am an admin, When I create a new user account , Then only authorized personnel should have access
- 12. As an admin, I want to change team members' accounts password so that they are not permanently locked out if they forgot their password.
 - 12.1. Given I am an admin, And a team member forgot their password, When I reset their password, Then they should be able to log in with a new password
- 13. As a team member, I want to reset my password so that I can prevent unauthorized access if my password gets compromised.
 - 13.1. Given I am a team member, And my password is compromised, When I request a password reset, Then I should be able to set a new password
- 14. As a team member, I want to update the status of the projects so that I can always see the most up to date status of the project
 - 14.1. Given I am a team member, And a project exists in the system, When I update the project status, Then the system should reflect the most up-to-date status
- 15. As a team member, I want to add new projects to the system so that I can track the project in the system.
 - 15.1. Given I am a team member, When I create a new project, Then the project should be added to the system for tracking
- 16. As a team member, I want to add a description to each project so that I can easily know the details of the project

- 16.1. Given I am a team member, And a project exists in the system, When I add a description to the project, Then team members should see the details of the project
- 17. As a team member, I want to update the description of each project so that I can easily have the most up to date details of the project
 - 17.1. Given I am a team member, And a project exists in the system, When I add a description to the project, Then team members should see the details of the project
- 18. As a team member, I want warnings for projects that are getting close to the deadline so that I can ensure that they get done on time.

Note: Warning would be through Email.

 - 18.1. Given I am a team member, And a project deadline is approaching, When the deadline is near, Then I should get a warning
- 19. As a team member, I want Input validations for the total solution so that attempts to put in wrong data into the system does not crash it
 - 19.1. Given I am a team member, When I enter incorrect or invalid data, Then the system should validate my input, And prevent crashes or inconsistencies
- 20. As an admin, I want to enforce password complexity rules so that user accounts remain secure.
 - 20.1. Given I am an admin, When I create a new user account with a password, Then the system should enforce password complexity rules, And accept the password if it meets the requirements, And reject it if it does not

- 21. As a team member, I want to delete video/photos in a project, so that I can change it in case I upload something wrong.
 - 21.1. Given I have uploaded a video/photo to a project
 - When I choose to delete the video/photo
 - Then the video/photo should no longer exist in the database
- 22. As a team member, I want a responsive web app, so that I can use it on any device.
 - 22.1. Given I open the web app on any device
 - When the screen size changes
 - Then the layout should adjust according to the device
- 23. As a team member, I want a friendly user interface, so that I can use the web app easily.
 - 23.1. Given I am a team member using the web app
 - When I access different pages
 - Then the interface should be readable and easy to use
- 24. As a team member, I want confirmation/rejection messages about real-time feedback for my actions, so that I know something is happening while using the app.
 - 24.1. Given I perform an action in the app
 - When the action is successful or fails
 - Then I should see a confirmation or rejection message
- 25. As a team member, I want to modify any textual part of the project, so that I can correct human input mistakes and keep information accurate.
 - 25.1. Given there is a textual field in the project
 - When I choose to edit the field and save changes

Then the modified text should be updated in the project

26. As a team member, I want tooltips on buttons and labels, so that I understand their functionality.

26.1. Given a button or label in the web app

When I hover over it for 3 seconds

Then a tooltip should appear explaining its functionality

27. As an admin, I want to see the history of modifications, so that I know who changed what.

27.1. Given I am an admin

When I open the modification history section

Then I should see a list of changes with timestamps and the user who made them in addition to the modification context

28. As an admin, I want a pop-up confirmation dialog on modifications, so that misclicks are prevented.

28.1. Given I attempt to modify project data

When I proceed with the modification

Then I should be prompted a confirmation dialog that assures any modification and it could cancel or proceed.

29. As a team member, I want to be able to filter projects by Kanban status/priority to find correct projects at crucial times

29.1. Given I am logged in as a team member

When I filter projects by Kanban status and priority

Then I should see only projects that match the selected status and priority

- 30. As a team member, I want to set buffer times for supplier deliveries so that I can account for potential delays in my planning.
 - 30.1. Given I am managing supplier deliveries
 - When I set a buffer time for a supplier's delivery
 - Then the buffer time should be saved and considered in my planning
- 31. As a team member, I want to mark a project as completed, and it remains in my history so that I can track finished projects for reference.
 - 31.1. Given I am working on a project
 - When I mark the project as completed
 - Then the project should be saved in my history as completed
- 32. As a team member, I want to sort projects by deadline so that I can prioritize my tasks according to the nearest due date.
 - 32.1. Given I have a list of projects
 - When I sort the projects by deadline
 - Then the projects should be displayed in order of their due dates
- 33. As a team member, I want to update the estimated delivery date of a supplier so that the system can keep track of changes in supplier's end dates.
 - 33.1. Given I am managing a supplier's delivery date
 - When I update the supplier's estimated delivery date
 - Then the new date should be saved in the system
- 34. As a team member, I want to see the status of all projects (in prospect, on hold, in progress, or completed) so that I can get a quick overview.
 - 34.1. Given I am logged in as a team member
 - When I view the list of projects

Then I should see the status (in prospect, on hold, in progress, or completed) for each project

35. As an admin, I want to archive outdated completed projects so that the system remains uncluttered while keeping past records accessible.

35.1. Given I am logged in as an admin

When I archive completed projects that are outdated

Then the projects should be archived but remain accessible for reference

36. As an admin, I want to deactivate user accounts instead of permanently deleting them so that I can restore access if needed.

36.1. Given I am logged in as an admin

When I deactivate a user account

Then the account should be deactivated and can be restored if needed

Business Domain:

Texas Gears operates within the mechanical engineering industry, focusing on the design and manufacturing of driveline components such as gears and shafts. This sector is integral to heavy industries, including mining, oil and gas, and power generation. Mechanical engineering encompasses a wide range of activities, from designing process control systems and constructing piping systems to manufacturing and installing customized equipment. In the context of heavy industries, companies like Texas Gears provide essential components that ensure the efficient transmission of motion and power in machinery and equipment. The industry is characterized by the production of large and heavy products, requiring substantial capital investment and complex manufacturing processes. As global demand for energy and raw materials continues to grow, the mechanical engineering sector remains pivotal in supporting the infrastructure and operational needs of these heavy industries.

Environment:

Operating in the mechanical engineering sector, Texas Gears faces a dynamic business environment influenced by technological advancements, market demand fluctuations, and regulatory changes. The company must navigate challenges such as inconsistent inventory tracking, warehouse inefficiencies, and inaccurate data management, which are common in the industry. Implementing centralized, cloud-based inventory management solutions can address these issues by providing real-time data backup and automated updates. Additionally, the industry is experiencing a shift towards sustainable practices, with an emphasis on reducing carbon footprints and enhancing energy efficiency. This transition necessitates that companies like Texas Gears stay abreast of emerging technologies and adapt to evolving environmental regulations. Furthermore, the global nature of heavy industries means that geopolitical events and trade policies can significantly impact supply chains and market access, requiring businesses to remain agile and responsive to external changes.

Narrative Description:

Our web application has 2 roles, the User (team member) and the Admin, these two roles encapsulate the different privileges accorded to the user ensuring that the proper actions are made by the correct user.

Authentication:

Any user accessing the web application must input a valid user ID and password that is verified throughout the database, if the user is found they are authenticated and successfully log in otherwise they are alerted that their input was invalid. Admins will log in through a different portal by clicking on a 'Log in as Admin' button, where they go through with the same log in procedure.

Project Search:

All users are allowed to search for projects with various project identification factors, such as project dates, client names, possibly a custom tag (categorization of projects made by user), and the project id (serial number). All projects will mandatorily have a project id that has the following structure: U-1234567 (U-7 digits), which is the primary method of identification

Project Management:

All users will be able to create and modify project information, a project would contain:

- A project description which is a text explaining the project and noting down anything of use to the team members
- Photos and videos of the project
- A client's date of delivery
- The supplier of choice to accomplish the job
- The supplier's expected time of completion
- An optional slack time (buffer) in days
- A possible custom tag which would act as a category

Users can modify or add onto all this information however only an admin can delete these elements or remove the whole project

Gantt charts and Kanban Boards:

A project generates a Gantt chart according to the dates inputted by the user (supplier and client due dates + slack time), these Gantt charts are crucial for the team members to better manage tasks and is the client's preferred visual tracking system. The Kanban board is an interface that will sort projects based on their statuses, however with us following the MVP (Minimum Viable Product) development strategy, this feature may be implemented further down the road as it is not crucial, furthermore users can manually filter projects based on their statuses which accomplishes the same outcome with a few extra steps

User Management:

When an admin logs in, they have options to manage users by adding users to the system and their appropriate information, furthermore, they have the additional options to deactivate or remove users, deactivating users means the user temporarily does not have access for an indefinite period, this ensures that the user is not removed from the database, while removing a user permanently deletes the user from the system.

The Questionnaire:

What information should the user account contain (ex. employee id, firstName lastName)?

Client Answer: The user account should contain a custom user id, custom password, first name and last name.

Would there need to be descriptions that belong to every project, and if so would they need to be updated with time?

Client Answer: Yes, there should be descriptions and they should be able to be edited at any time with admin privileges.

What would be the minimum password complicity and would?

Client Answer: There should be minimum complexity for passwords like a minimum of 8 Characters and a capital letter.

How long would it take for passwords to expire and need changing?

Client Answer: Passwords would not expire so the system would not force you to change your password.

What information would you require to sign into the system?

Client Answer: To sign in to the system they would use the user id and password set by them.

Does an archive feature for projects interest you to declutter your searches, if so would archived projects stay in the database and not display in searches?

Client Answer: There is no need to be able to archived projects, but to make searches easier you can filter by statuses, separate ongoing and completed, and have the ability to add custom tags to projects.

Following up on archived projects, what are the possible statuses for a project, and would completed jobs automatically be archive?

Client Answer: The following statuses are Prospecting (in preparation without being in progress, before starting the project), In progress (after prospect when job starts being done), Hold (on pause), Completed.

Is deactivating users necessary? If so, would the user be completely erased or only deactivated (without access) and remain in your system?

Client Answer: Admins would be able to deactivate and reactivate users.

Should the user have an option for buffer time when inputting project, supplier, and client due dates? (Ex. Supplier takes 1 week, add buffer of 1 week for 2 weeks total)

Client Answer: Yes, they would want the ability to add a Slack Time/Buffer.

How often do automatic backups happen?

Client Answer: Automatic backups happen once a week.

How robust is your server and what type of server is it?

Client Answer: it has 2tb of storage and can be expanded, the Server running on hypervisor fully virtualized and everything is Gigabit branded.

The automated reminders should be sent using what platform?

Client Answer: They should be sent by email, and possibly on the outlook calendar.

When scanning the QR code, what will it contain?

Client Answer: It will take you to the project description page and ask for user authentication.

What is the format of the Serial Numbers?

Client Answer: The format is U-1234567 which is 7 digits.

What softwares are you guys currently using to keep track of everything?

Client Answer: We are currently using MS Project, Paper and blackboard, Teams.

Business Problem:

The company faces some issues that concern their daily work that disrupts the company's workflow, data accuracy, and time management. These issues are caused by the current operational processes of project management and communication procedure, with manual information sharing and documenting the projects, and communicating sudden changes to projects.

Data tracking: Manual updates in MS Project, paper, and blackboards cause outdated, inconsistent, and error-prone data. Information is easily lost or overwritten, making real-time tracking impossible.

Project tracking: Without automation, tracking is slow and scattered. MS Project needs constant manual input, and paper methods limit visibility, causing misalignment and missed deadlines.

Communication: Updates are delayed and inconsistent. Teams rely on manual sharing, leading to miscommunication, especially for remote team members, disrupting workflow and efficiency.

Impact of the problem on the business:

A number of persistent problems are causing major interruptions to the company's productivity, data accuracy, and time management. When team members provide conflicting information for a project, it can cause confusion and mistakes in the final product. Due to ineffective tracking and execution caused by the manual techniques used in project management, project deadline delays are frequent. Delays in communication also make the issue worse, especially when team members are not working in the same place. It is challenging to notify others of abrupt changes due to these communication breakdowns, which results in misalignment and further delays. When taken as a whole, these problems make it more difficult for the business to run efficiently, which affects output and the caliber of work that clients receive.

Benefit of the solution on the business:

The solution has a number of important advantages that enhance business operations. Team members can concentrate on more important areas of their work by automating certain processes, which save a significant amount of time that would otherwise be spent on manual chores. By streamlining the workflow and eliminating bottlenecks, this improved efficiency guarantees more seamless project execution. By reducing human error and guaranteeing real-time data updates, the system also increases information accuracy, making it more dependable and available to all team members. In the end, these enhancements result in better decision-making, quicker project completion, and a more effective workplace.

Client's IT capabilities assessment:

Note: the rating shows a numerical assessment and can be inaccurate, team members are rated out of 10, where 10 is a person who is majoring in Computer Science, and 1 is a person who can barely open a software.

- The CEO/President is capable of handling simple, day-to-day tasks but has limited knowledge in IT skills. Rated 6/10, he can manage basic operations using softwares but needs assistance with complex issues.
- The CFO is a capable person when dealing with daily tasks but with slightly less IT capability than the president of the company. Rated 5/10, her skills are enough for routine work but require support with technical issues.
- Scott (One of the engineers) is skilled in solving technical issues and comfortable working on more challenging tasks. Rated 8/10, he is capable of troubleshooting problems.
- Sean (One of the engineers) is Head of IT, he is the most capable out of all the team members when using computers and other devices. He is responsible for managing the company's servers and other used devices. Rated 9/10, he is the person to call when team members are facing issues with their devices.
- Sara is proficient in using Microsoft Office 365 efficiently. Rated 7/10, she uses efficient methods when using the software's features, though not deeply involved in more advanced IT features.

Deliverable 3

Texas Gear & Euro Gear

Texas Gear and its sister company, Euro Gear, operate in the mechanical engineering industry, serving heavy industries such as mining, oil and gas, and power generation. They specialize in designing driveline components like gears, shafts, and other equipment that transmit motion and power.

Client Overview

The primary business problem to address is inventory management and process monitoring. Texas Gear requires a software solution to track inventory, streamline operations, and monitor the lifecycle of their projects. Their key contacts, Sean Gohrt and Scott Gohrt, exhibit high levels of computer literacy, including programming skills, making them the ideal point of contact for requirements analysis and feedback. Our team will also meet virtually with the client on a weekly basis to ensure good communication with the client.

Client Leadership

- Scott Gohrt: Technical Point of Contact (Mechanical Engineer, Operations)
- Sean Gohrt: Technical Point of Contact (Mechanical Engineer, Operations)
- Greg Eloise: CEO and CFO
- Sarah Gohrt: Marketing Lead

Business Problem

Texas Gear faces operational inefficiencies due to its reliance on manual project tracking and inventory management systems. These inefficiencies create delays, errors, and miscommunication, especially for teams working remotely or across multiple departments.

Key Issues:

1. Data Tracking - Information is spread across MS Project, paper records, and blackboards, leading to inconsistencies and outdated records.
2. Project Tracking - Lack of automation results in scattered tracking methods, making it difficult to monitor deadlines and project progress.
3. Communication Gaps - Teams rely on manual updates, leading to misalignment and inefficiencies.

Impact on the Business

- Delays in project execution due to poor coordination and tracking.
- Loss of critical information due to manual record-keeping.
- Reduced efficiency in team communication and workflow management.

Narrative Description of the Present System

The current system is a combination of digital and manual tracking methods, which creates inefficiencies in inventory and project tracking. Below is a narrative of how the business currently operates:

1. Project Initialization:
 - A new project is assigned to a team member by the Project Manager.
 - Project details are recorded manually in MS Project, on a whiteboard, or in a paper file.
 - The team begins work based on available resources.
2. Inventory and Supplier Management:
 - Team members manually check inventory to ensure all required parts are available.
 - If parts are missing, the responsible employee contacts suppliers manually.
 - Supplier details, expected delivery dates, and pricing are not consistently stored in one place, leading to delays and inconsistencies.
3. Project Execution and Tracking:
 - Team members update project progress on paper or MS Project, but there is no centralized tracking system.
 - Remote employees lack real-time updates, causing misalignment.

- Updates are sometimes communicated verbally or over email, leading to miscommunication.
- 4. Completion and Reporting:
 - Once a project is completed, it is manually marked as done.
 - The project remains in the system without archival, cluttering project records.
 - No automated reports are generated to analyze project efficiency or inventory use.

Challenges of the Current System

- High risk of human error in data entry and record-keeping.
- Limited project visibility for all team members.
- Delays in procurement and tracking supplier performance.
- No automated alerts or notifications for key milestones or inventory shortages.

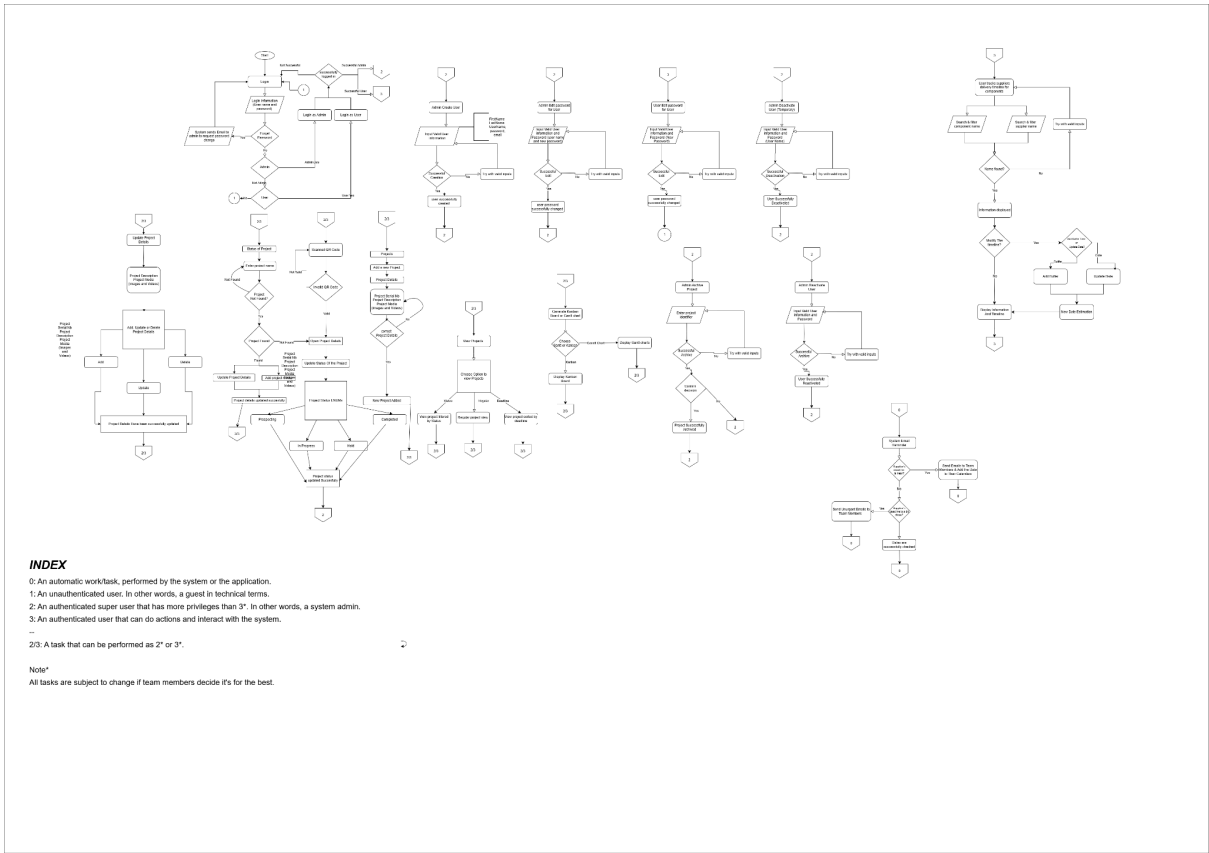
Planned Improvements in the New System

The proposed Project and Inventory Management System will address these inefficiencies by automating tracking, improving data consistency, and streamlining communication. The new system will:

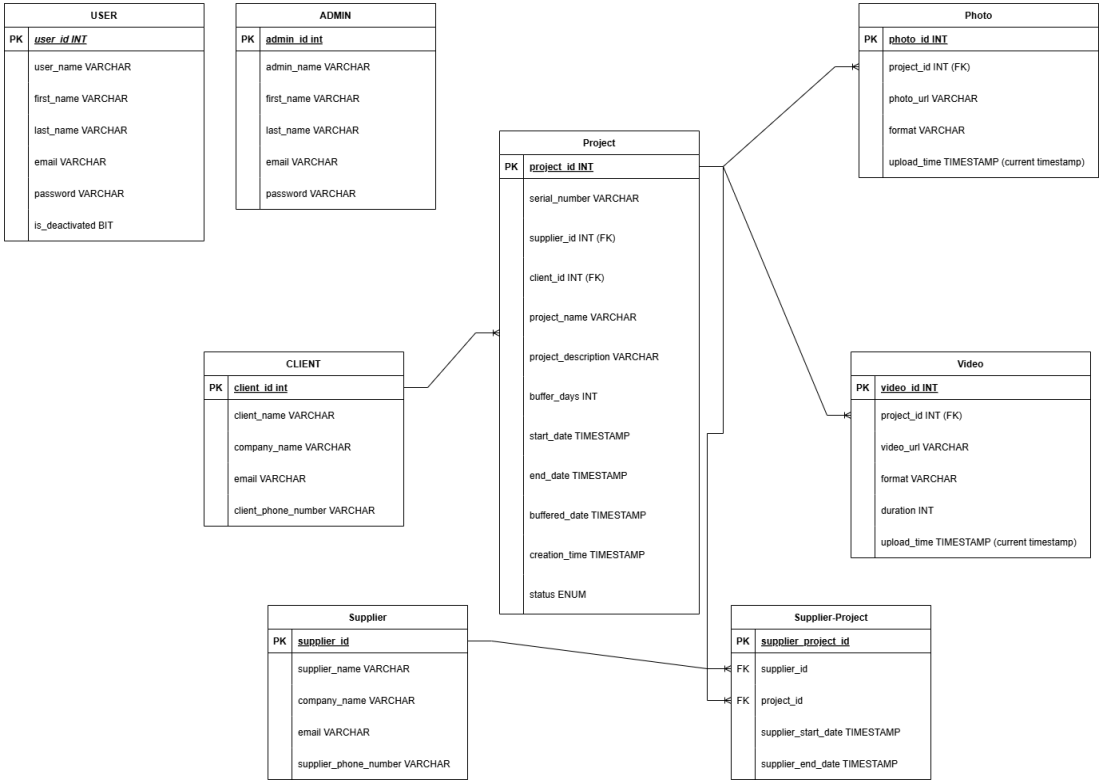
- Provide real-time project tracking through a web application.
- Integrate inventory management to track stock levels and order supplies automatically.
- Include automated notifications for project deadlines and supplier deliveries.
- Offer user roles and access control for better system security and data management.
- Generate reports and insights for better business decision-making.

Deliverable 3

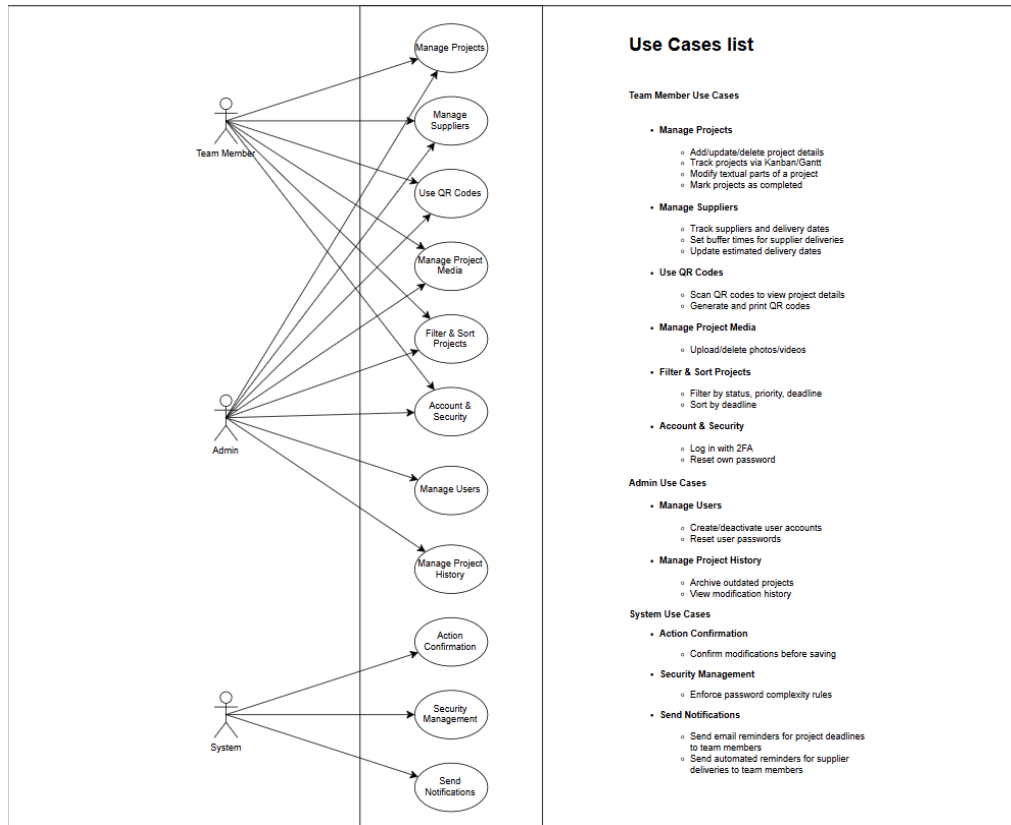
Flow Chart:



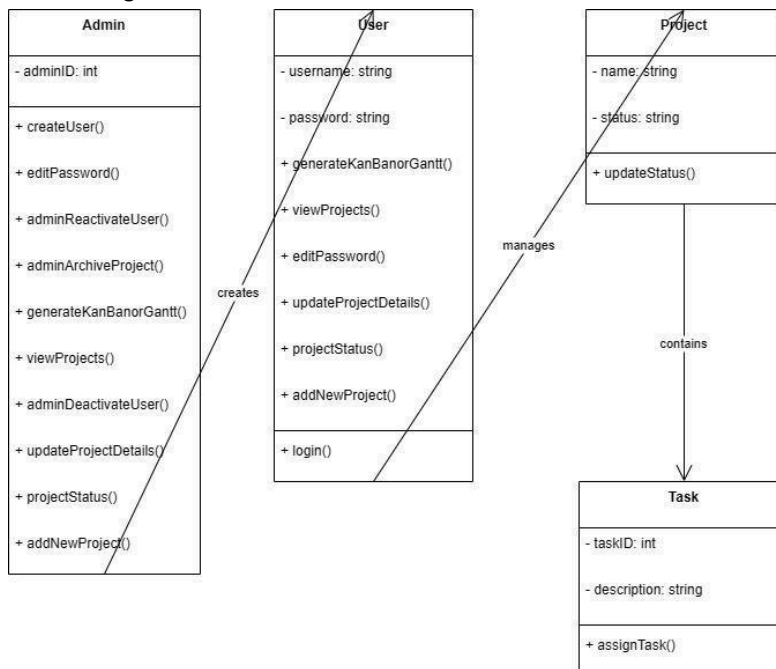
Entity Relationship Diagram:



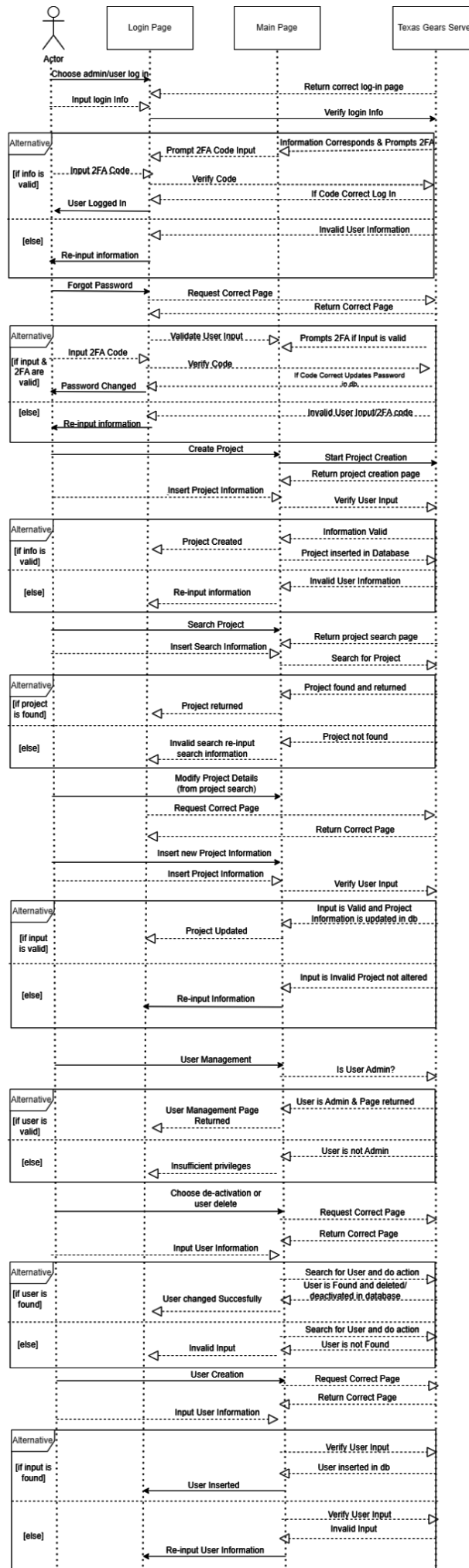
Use Case:



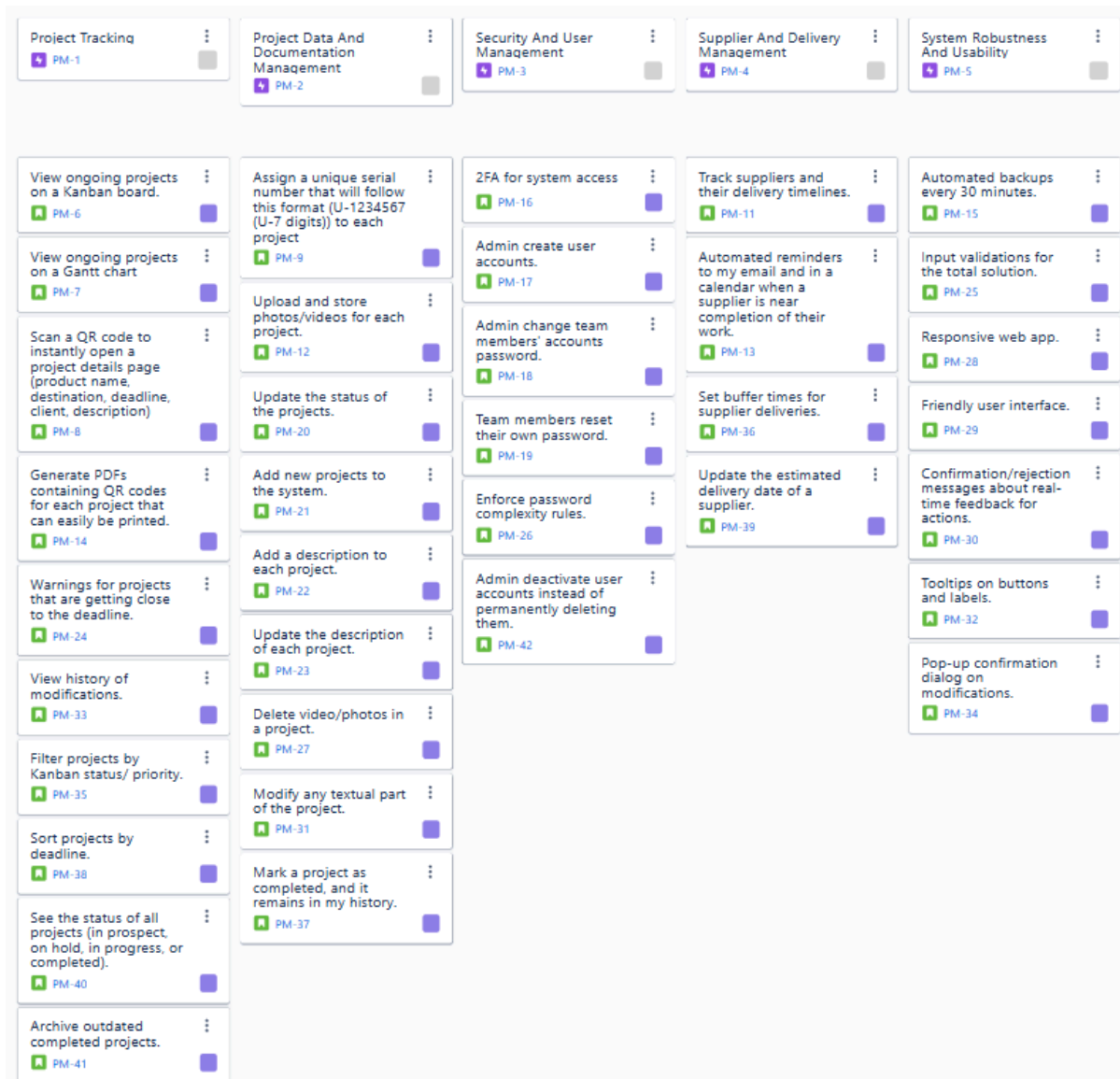
Class Diagram:



Sequence:



User Story Map:

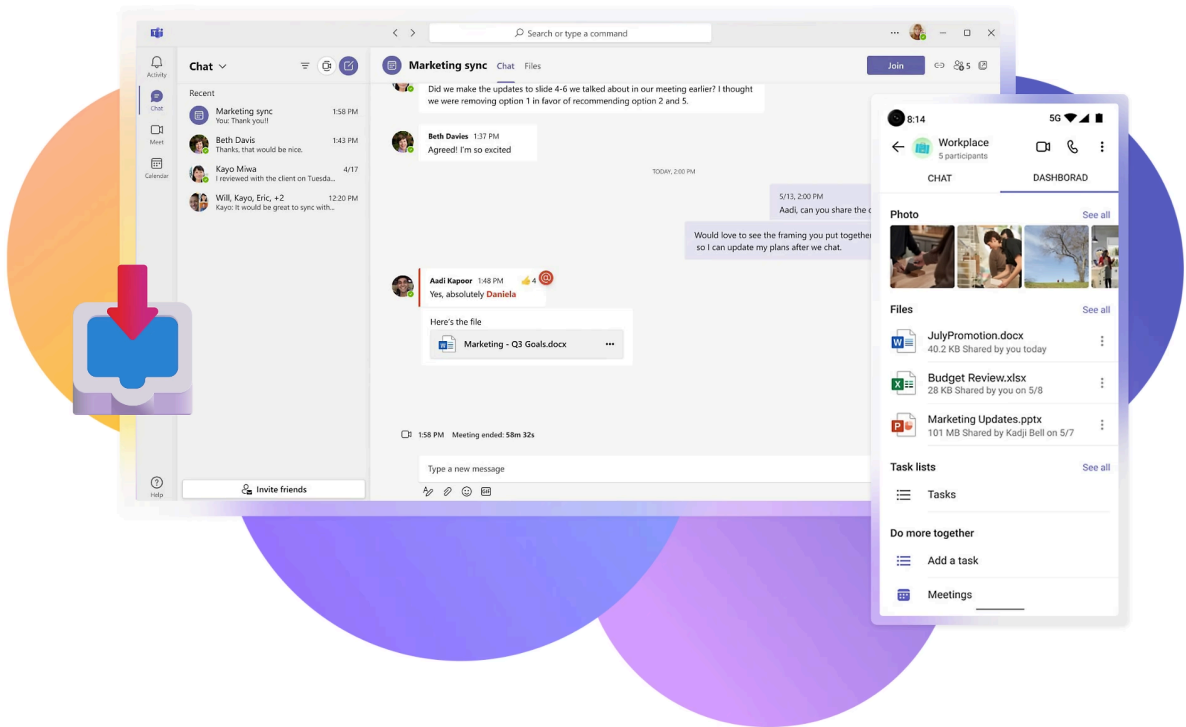


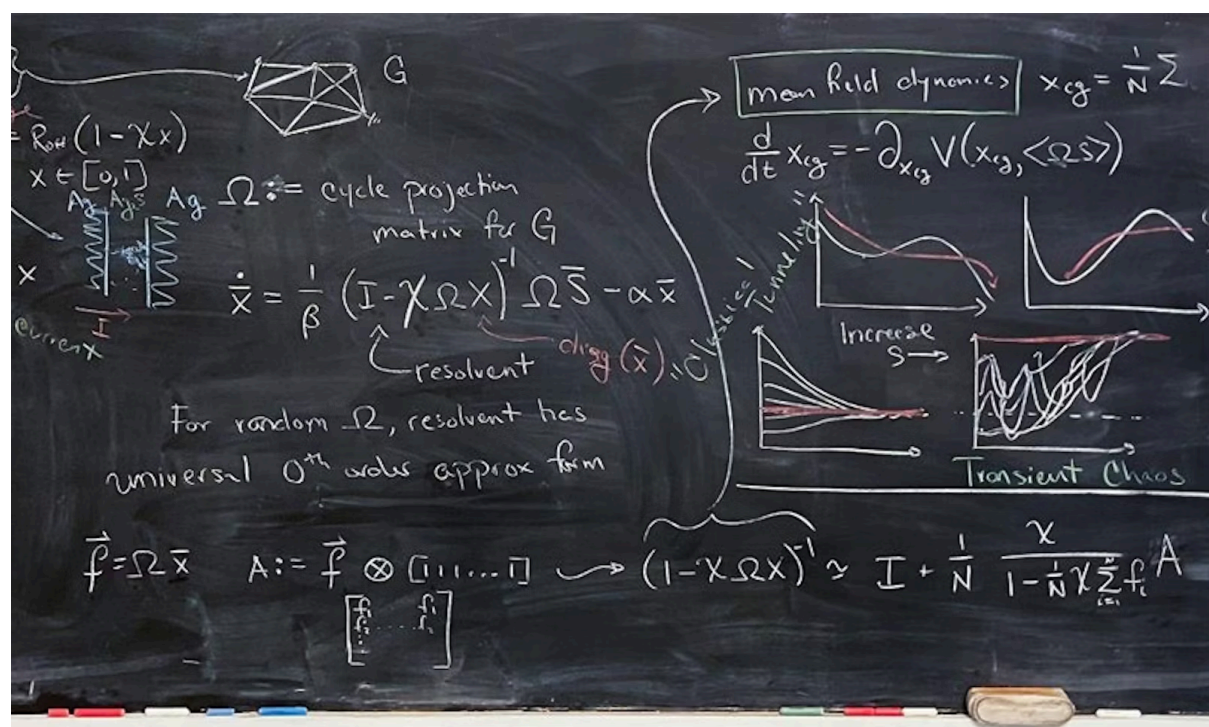
Link to Jira:

<https://veroutism.atlassian.net/jira/software/projects/PM/boards/2?atlOrigin=eyJpIjoiZTE1Njc3ODAzYmY3NGRiZThhMTU4ZjZmZTUwODU2MTkiLCJwIjoiaj9>

Client Forms:

	Risk Ranking	Target Slip	Work Slip	Cost Slip	S Slip	Task Name	Duration	Start	Finish	Target Date	Predecessors	Resource Name	
13	?	OK	+	+	+	Team Collaboration on Requirements	2 days	Fri 8/14/20	Mon 8/17/20	Mon 8/24/20 8		Traci Parsons	
14	✓	OK	+	+	+	Write Specifications for Purchase Order	1 day	Tue 8/18/20	Tue 8/18/20	Tue 8/25/20 13		Traci Parsons	
15	✓	OK	+	+	+	Sign Purchase Order	0 days	Tue 8/18/20	Tue 8/18/20	Tue 8/25/20 14		Traci Parsons	
16	?	OK	+	+	+	Development Sprints	50 days	Wed 8/26/20	Tue 11/3/20	Tue 11/3/20			
17	✓	OK	+	+	+	Sprint 1	6 days	Wed 8/26/20	Wed 9/2/20	Wed 9/2/20			
18	?	OK	+	+	+	Feature 1	3 days	Wed 8/26/20	Fri 8/28/20	Fri 8/28/20 15,8		Traci Parsons	
19	✓	OK	+	+	+	Feature 2	4 days	Wed 8/26/20	Mon 8/31/20	Mon 8/31/20 15		Traci Parsons	
20	✓	OK	+	+	+	Feature 9	6 days	Wed 8/26/20	Wed 9/2/20	Wed 9/2/20 15		Traci Parsons	
21	?	OK	+	+	+	Sprint 1 Complete	0 days	Wed 9/2/20	Wed 9/2/20	Wed 9/2/20 18,19,20			
22	✓	OK	+	+	+	Sprint 2	6 days	Thu 9/3/20	Thu 9/10/20	Thu 9/10/20 17			
23	?	OK	+	+	+	Feature 3	5 days	Thu 9/3/20	Wed 9/9/20	Wed 9/9/20		Developer[38]	
24	✓	OK	+	+	+	Feature 4	6 days	Thu 9/3/20	Thu 9/10/20	Thu 9/10/20		Developer[17]	
25	✓	OK	+	+	+	Feature 15	6 days	Thu 9/3/20	Thu 9/10/20	Thu 9/10/20		Michael Whalen	
26	✓	OK	+	+	+	Sprint 2 Complete	0 days	Thu 9/10/20	Thu 9/10/20	Thu 9/10/20 23,24,25			
27	?	OK	+	+	+	Sprint 3	9 days	Fri 9/11/20	Wed 9/23/20	Wed 9/23/20 22			
28	✓	OK	+	+	+	Feature 15 Continued	6 days	Fri 9/11/20	Fri 9/18/20	Fri 9/18/20		Michael Whalen	
29	✓	OK	+	+	+	Feature 5	7 days	Fri 9/11/20	Mon 9/21/20	Mon 9/21/20		Ken Loewer	
30	✓	OK	+	+	+	Feature 6	8 days	Fri 9/11/20	Tue 9/22/20	Tue 9/22/20		Ken Loewer	
31	?	OK	+	+	+	Feature 7	9 days	Fri 9/11/20	Wed 9/23/20	Wed 9/23/20		Ken Loewer	
32	✓	OK	+	+	+	Sprint 3 Complete	0 days	Wed 9/23/20	Wed 9/23/20	Wed 9/23/20 28,29,30,31			
33	?	OK	+	+	+	Sprint 4	7 days	Thu 9/24/20	Fri 10/2/20	Fri 10/2/20 27			
34	✓	OK	+	+	+	Feature 8	7 days	Thu 9/24/20	Fri 10/2/20	Fri 10/2/20		Developer[99]	
35	✓	OK	+	+	+	Feature 10	5 days	Thu 9/24/20	Wed 9/30/20	Wed 9/30/20		Developer[13]	
36	✓	OK	+	+	+	Sprint 4 Complete	0 days	Fri 10/2/20	Fri 10/2/20	Fri 10/2/20 34,35			
37	✓	OK	+	+	+	Backlog	5 days	Wed 10/28/20	Tue 11/3/20	Tue 11/3/20			





Deliverable 4

Usability guidelines:

- 1: Users must Login to the system with username and password to access all the functionalities that the system has to offer. To make the user experience better it will be a big and clear page that forces them to login, so they do not need to navigate to a bunch of pages to login. Since this system stores sensitive information about the company's projects it is crucial that only authorized people have access. So users will start on the login page, and after authorization they will be redirected to the home page which will allow them full functionality.
- 2: Users must navigate to the "Create Project" tab, must enter the project title, project serial number, project description, project start/end date, status, client details, supplier info, supplier date and client date. After all that is entered users can click on the "Create" button to be able to create the project. We have decided to make a tab since this feature will be executed by the user quite oftenly, and there will be labels over all the text boxes to ensure clarity and the best possible user experience.
- 3: Since project history is an important feature we also added a tab to allow for easy navigation. To see history for any given project the user will simply enter the project serial number, project title, project status, supplier name and or client name in the large textbox and a listview of all modifications will be shown for that given project. It is displayed in a large text box since it will allow the user to quickly and easily see the history. For history to be logged in the project history, users must do an action on the project page such as updating description .
- 4: To search for a project, the users must go to the "Search Project" tab, users must enter the serial number, project title, project status and click on the

“Search Project” button. Since it's a main feature we decided to make a tab for it so it will be very easy to navigate for the user, the search bar will also be on the top of the search page so the user can easily find it.

- 5: In the case that any team members wants to walk away from the system, we implemented the logout feature so all the information is kept secure from unauthorized access, and when the authorized users need to log back in they do not need to reopen the application. This makes it a lot easier for the user since the user can click logout and they will be redirected to the login screen and be forced to re enter username and password.
- 6: To not clutter pages with too many functionalities, we decided to not combine and to split up the functionalities onto different pages as much as possible, so for example instead of combining various user management features such as edit password and disable user onto one page, we separated them into various pages to ensure that the users do not get confused about the functionalities of each page. so pages only have one form each so it's clear what they do.
- 7: For each one of the areas where you have to enter information into text boxes we ensured that we made it as big and as clear as possible to ensure that users know where to enter any given information. Red stars will be added for mandatory fields. For example in the create user page, the labels and textboxes are front and center so the admin would know what information is needed. There are also confirmation messages which ensures that no mistakes are made especially since these are high value projects.
- 8: This system is only being used by employees inside the company and not the general public. So for the color scheme we decided to keep it simple with the two company colors which are grey and orange. This allows for a system which prioritizes simplicity which is important for internal use, since it is more important of how it functions versus how it looks. So you will notice that a majority of the elements on the UI are either grey or orange.

- 9: For a majority of the features that are only available to admin such as create, disable or enable users we did not include them with the main tabs, and we put them in a drop down menu to the right of the page. Since these features are less vital and only available to users with admin privileges, we would not want to add them as tabs since it would clutter the system with too many tabs. So this results in a sleeker system, but is also still easy to access since admin only have to click on the icon to navigate to these features.
- 10: Since recent projects are generally more important than older projects, we have made the decision to display them on the home page, so as soon as the user logs in they can navigate to the bottom of the home page and view the most recent projects, and they give details. They do not need to navigate to the search project page which would save them a lot of time when just wanting to see recent projects.

Link for first Mockup:

<https://www.figma.com/design/mqtEj1T8ArKNODCU7cwB8s/Sysdev-Mockup-1?node-id=0-1&t=uXmLLdVd9GsjT1Yu-1>

Feedback for first Mockup:

Kais Rafie

1. Implement an export as PDF button for archived projects.
2. Look into adding a gallery feature for project media.
3. Confirm the functionality for adding multiple suppliers in the project creation process.

Scott Gohrt

1. Request a notification system for project end dates to be sent via email.
2. Ensure the search functionality allows for partial job number searches.
3. Confirm the separation of client and supplier fields in the project search.

Sean Gohrt

1. Suggest adding a predictive search feature for job numbers.

2. Confirm the inclusion of client details in project management.
3. Request a system for modifying project end dates after creation.

Sarah Gohrt

1. Request a gallery feature for easy access to project images.
2. Provide feedback on the user-friendliness of the application.
3. Suggest keeping the marketing system separate from the project management system.

Link for second Mockup:

<https://www.figma.com/design/StXHDmVeRg2VyvuR2OYEtA/Sysdev-finalized?t=uXmLLdVd9GsjT1Yu-1>

Feedback for second Mockup:

- Discussion on exporting project information as a PDF, including project details and images.
- Scott Gohrt suggested that the first page of the PDF should serve as a project ticket, which includes a QR code and project information.
- require a password input when deleting a project; consensus leaned towards requiring a password for confirmation.
- A feature to add multiple suppliers to a project was introduced, allowing users to click a button to add additional supplier fields.
- Scott Gohrt expressed the need for the ability to caption pictures associated with projects, which will be considered in the design.

Process Used:

The interaction with the client took place virtually on google meet. To demonstrate the various mockups that we made, our team shared our screens and walked them through the mockup. We also recorded the comments they made which allowed us to make improvements in the mockup.

Initial Mock-up compared to Final Mock-up:

- new **confirmation screens** have been added and are now visible underneath or next to their corresponding actions.
- A **new confirmation screen** has been added below the Login Page. It requires a username to verify before sending an email to the admin. It is shown by clicking the forgot password on the login page.
- A new **“Status Overview” section** was added below the Home Page, displaying the Kanban and Gantt charts. It shows both charts with more details to them.
- Create Project Page now has a button to add several suppliers in case the project needs more than one.
- Delete Project Page has a new **confirmation screen added** directly under it. It confirms the delete action, as well as a password field to prevent any accidents.
- A **confirmation screen** was added directly below the Update Project page, confirming update action.
- Create user page has a confirmation screen with the username in it to ensure all information are correct.
- A **confirmation screen** was added directly below the Update Project page, confirming update action.
- Change password pages now have confirmation screens to confirm the password change.
- The project search now include search by client name and search by supplier name.
- an “Export as PDF” button is now visible in the project search to export all the project data as a PDF with the first page being the “Project Ticket”.
- On the top right of the web application, under the “person” icon, the word “Archive” now changed to “Project Archive” to understand more its functionality
- The “person” icon displays different options depending whether the user is an admin or not. Now these options include “Project Archive” for the normal user.

Updated User Stories and User Story Map:

New user Story:











































As a team member, I want to be able to reset my password from the login screen, so that I can regain access to my account.

Given I am on the login page

And I have forgotten my password

When I click on the "Forgot Password" button

Then an email should be sent to the admin requesting a password change

Project Tracking  PM-1	Project Data And Documentation Management  PM-2	Security And User Management  PM-3	Supplier And Delivery Management  PM-4	System Robustness And Usability  PM-5
View ongoing projects on a Kanban board.  PM-6	Assign a unique serial number that will follow this format (U-1234567 (U-7 digits)) to each project  PM-9	2FA for system access  PM-16	Track suppliers and their delivery timelines.  PM-11	Automated backups every 30 minutes.  PM-15
View ongoing projects on a Gantt chart  PM-7	Upload and store photos/videos for each project.  PM-12	Admin create user accounts.  PM-17	Automated reminders to my email and in a calendar when a supplier is near completion of their work.  PM-13	Input validations for the total solution.  PM-25
Scan a QR code to instantly open a project details page (product name, destination, deadline, client, description)  PM-8	Update the status of the projects.  PM-20	Admin change team members' accounts password.  PM-18	Set buffer times for supplier deliveries.  PM-36	Responsive web app.  PM-28
Generate PDFs containing QR codes for each project that can easily be printed.  PM-14	Add new projects to the system.  PM-21	Team members reset their own password.  PM-19	Update the estimated delivery date of a supplier.  PM-39	Friendly user interface.  PM-29
Warnings for projects that are getting close to the deadline.  PM-24	Add a description to each project.  PM-22	Enforce password complexity rules.  PM-26		Confirmation/rejection messages about real-time feedback for actions.  PM-30
View history of modifications.  PM-33	Update the description of each project.  PM-23	Admin deactivate user accounts instead of permanently deleting them.  PM-42		Tooltips on buttons and labels.  PM-32
Filter projects by Kanban status/ priority.  PM-35	Delete video/photos in a project.  PM-27	Reset Password from login screen  PM-45		Pop-up confirmation dialog on modifications.  PM-34
Sort projects by deadline.  PM-38	Modify any textual part of the project.  PM-31			
See the status of all projects (in prospect, on hold, in progress, or completed).  PM-40	Mark a project as completed, and it remains in my history.  PM-37			
Archive outdated completed projects.  PM-41				