# IoT Frontend Manager Project Proposal

**Prepared for:**

Michael McGlynn, Adroit Environmental IoT

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# Terms of Reference.

*Adroit* is a New Zealand company which does IoT-based (Internet of Things) environmental monitoring in New Zealand. This means that they capture data around New Zealand using their IoT sensors. They have various sensors that they use as they are involved in various types of environmental monitoring in New Zealand.

Adroit captures the data, maintains the sensors and sends their clients the data through a frontend application (Separate to the frontend manager which this R&D project will be dedicated to developing).

*Adroit* works across various sectors in New Zealand such as **environmental management**, **water catchment**, **worksite** and **agriculture/aquaculture monitoring**. They cover an extensive range of clients such as the Department of Conversation, Fonterra, Mercury Energy, Auckland Council and many more. They were established in 2014 in Auckland and currently have an office in central Auckland. Spark is invested in Adroit and owns a significant percentage of the company's shares at 47% of ownership.

Adroit's expertise position in the realm of Environmental IoT Monitoring devices results from strategic collaboration with technology partners. Some Notable technology partners include Spark IoT, Amazon Web Services (AWS), and global equipment specialists like Libelium, S::CAN, In-Situ, and Hills Laboratories. Qrious, a prominent data verification and analysis entity, adds an essential layer of credibility to the data-driven insights that our client, Adroit provides.

**The Problem**

The issue that Adroit has is that they currently do not have a front-end application for the delivery team to use. They currently must view an email sent every 6 hours from AWS to see which devices are offline. Since Adroit has over 400 devices this can be troublesome and tedious and means that at least one person must read the e-mail or else they will not know which devices are offline. This is the problem that we aim to solve by delivering a front-end web application for them.

This project aims to solve this problem by creating a front-end web application that contains a dashboard for the delivery team to monitor their sensors across New Zealand. From this application, the delivery team at Adroit should be able to see the status of the sensors i.e., if the status is offline/online, battery status, and identifying any faults. The sensors' status and information about the sensors will be displayed on a front-end web application. Encompassing factors like air quality, water levels, soil health, and more. By having this application, we believe the delivery team can efficiently monitor the status of sensors, interpret data trends, and swiftly respond to any anomalies.

# Project Charter.

**Project Title**: IoT Adroit

**Project Start Date:** 17 July 2023 **Projected Finish Date:** 21 June 2024

**Budget Information:** $73,326.30

**Project Manager:** Otis Wales, psg3398@autuni.ac.nz

**Project Objectives:** Project *Adroit's* data through RESTful API onto a responsive frontend web application dashboard for them to monitor the devices conveniently and reliably.

**Main Project Success Criteria:** The goal of this is to provide a comprehensive tool for the delivery team at Adroit to stay updated and quickly react to any changes with their sensors. They will be able to monitor sensors in real time.

**Approach:** We will create a full-stack web app with features such as:

- View sensor status (offline/online).
- Monitor battery status using a traffic light system (Green for good battery, orange for battery decay, and red for needing replacement).
- User Authentication.

| Role | Name | Organization/ Position | Contact Information |
|---|---|---|---|
| **Full Stack** | **Otis Wales** | **Team Leader** | **psg3398@autuni.ac.nz** |
| **Full Stack** | **Miguel Emmara** | **Team Member** | **ryf2144@autuni.ac.nz** |
| **Full Stack / UX** | **Glenn Neil** | **Team Member** | **pxw9116@autuni.ac.nz** |
| **Full Stack** | **Munish Kumar** | **Team Member** | **kby0857@autuni.ac.nz** |
| | | | |

**Roles and Responsibilities**

**Sign-off:** (Signatures of all above stakeholders. Can sign by their names in the table above.)

Miguel Emmara**:**  Otis Wales**:**  Munish Kumar 

Glenn Neil: 

# Rationale for the Project.

**Key Issues**

- Adroit lacks an in-house dashboard
- Adroit's reliance on e-mail notifications
    - Currently, Adroit relies on email notifications every six hours to check on the status of offline devices. This method is not only inefficient but also burdens the delivery team with constant checks, diverting them from other vital tasks.
- No anomaly detection
    - In IoT devices occasionally the sensor reading is wrong, currently if this happens Adroit isn't getting notified.
    - If Adroit collects incorrect information clients of Adroit will be dissatisfied.

**Rationale**

- Speeds up the reaction time of the delivery team.
    - Adroit's delivery team will be able to see the status of the sensors in real-time and be able to see which are offline and which are online.
        - Seeing this will allow them to respond to offline sensors quicker.
        - Early detection of sensor issues will minimize downtime and prevent potential data loss, elevating the reliability of Adroit's services.
        - This will improve client/business relationships (B2B) and help build trust in the Adroit brand.

- A user-friendly dashboard for Adroit to use.
    - On completion of this project Adroit will have a user-friendly dashboard to use to monitor and look at their sensor information.
    - With improved data presentation and visualization tools, the dashboard will facilitate deeper insights into environmental trends and support data-driven strategies.

# Project Objective.

**Aim: Project *Adroit's* data through RESTful API onto a responsive frontend web application dashboard for them to monitor the devices in a convenient and reliable manner.**

**The Adroit team should be able to easily see which devices are offline so that they can quickly respond to the issue by sending out a contractor to fix the device.**

The goal of this is to provide a comprehensive tool for the delivery team at Adroit to stay updated and quickly react to any changes with their sensors. They will be able to monitor sensors in real-time.

**Features**:

- View sensor status (offline/online).
- Monitor battery status using a traffic light system (Green for good battery, orange for battery decay and red for needing replacement)
- User Authentication.

**Fault Identification:**

- Algorithms will analyse sensor data to identify any anomalies or faults.
- Devices displaying unusual readings (e.g., pH levels beyond acceptable thresholds) will be flagged.
- The dashboard will have a dedicated section/category for devices deemed faulty, facilitating quick identification and action.

This will be the minimum viable product which we aim to deliver, if time allows, we will also be focusing on adding additional features.

**Additional features:**

- Heat Maps
- Statistics

**Fault Identification:**

- Algorithms will analyse sensor data to identify any anomalies or faults.
- Devices displaying unusual readings (e.g., pH levels beyond acceptable thresholds) will be flagged.
- The dashboard will have a dedicated section/category for devices deemed faulty, facilitating quick identification and action.

# Project Scope.

- Functional Requirements
  - **Responsive design** – To ensure that the dashboard is compatible across mobile and various desktop displays.
  - **Offline Device table**
    - Display IoT devices which are in an offline state
  - **Traffic light system (colour) for battery health of devices.**
    - This will display next to each sensor so that the user can see what the battery's health.
  - **User Authentication**
    - Implementation of a username/password system
  - **Display all IoT sensors/devices on the dashboard**

- Non-Functional Requirements
  - Comments only on complex code, not on every piece of code
  - Documentation of pipeline, and our codebase
  - Unit tests before merging to master branch.
  - Secure system so that only authenticated users can access the application.
  - Security – Encryption through HTTPS
  - Maintainability
    - For Adroit to extend the code base it should be easy to do so, this means programming must be done in a way which isn't confusing and is easy for them to extend.

# Risks and Issues Management.

Adroit maintains the sensitive data of their clients therefore, we must secure the data and visualize the in-table format. There are some steps which we can take to identify the risk and produce a solution.

Scope Risks:

- **Risk: Michael (a key team member) becomes unavailable due to illness or other reasons.**
    - Likelihood: Medium
    - Impact: High (Potential delays, loss of expertise)
    - Mitigation: Regularly updating team documentation to ensure anyone can pick up where he left off.
    - Responsible Party: Project Manager
- **Risk: Unclear Requirements - Ambiguous or unspecified requirements can lead to misinterpretations and undesired outcomes.**
    - Mitigation: Work closely with stakeholders to define clear, detailed, and unambiguous requirements. Use techniques such as requirement elicitation sessions, user story mapping, or prototyping.

- **Risk: Scope Creep - Additional features or changes are added to the project without proper adjustments to time, budget, or resources.**
    - Mitigation: Establish a robust change management process. Any changes to the original scope should be formally reviewed, approved, and communicated.

# Risk Register.

**Risk Register for Adroit IoT Frontend Manager**

**Prepared by: Otis Wales** **Date: 18/08/2023**

| No. | Risk/Impa | Name | Description | Category | Root Cause | Triggers | Potential Responses/Mitigiation | Risk Owner | Probability | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Medium | Client sick | Michael (a key client) becomes unavailable due to illness or other reasons. | Scope Risk | | | Regularly updating team documentation to ensure anyone can pick up where he left off. | Team Leader | Medium to low | Active |
| 2 | | Scope Creep | Scope Creep - Additional features or changes are added to the project without proper adjustments to time, budget, or resources. | Scope Risk | | Client asking for alot of different items | Establish a robust change management process. Any changes to the original scope should be formally reviewed, approved, and communicated. | Munish | High | Active |
| 3 | | Unclear Requirements | Unclear Requirements - Ambiguous or unspecified requirements can lead to misinterpretations and undesired outcomes. | Scope Risk | | Gold Plating, Vague Requirements | Commuicate with client deeply and ask more questions | Munish | Medium | Active |
| 4 | Medium | Sick team member | Team member gets sick | | Stress and Burnout | Stress/Burnoou t, Personal Health issues | Need to make sure that everyone in the team is skilled to do the task that the other member was doing | Miguel | Low | Active |
| 5 | Critical | Client withdraws | Client decides they don't want to work with us anymore | Client Risk | Economic Downturn, commuication problems | Client starts lacking commuication | Not much can be done about this, but the chance of this happening is low as our client communicates with us | Team Leader | Low | Active |
| 6 | High | AWS Bankrupt | Amazon goes bankrupt or suddenly AWS disapears | Technical Risk | Economic Downturn. | | Adroit would need to migrate to another platform. It would mean that we would need to use another platform to pull data from | Team Leader | Extremely low, near impossible | Active |
| 7 | High | Team conflict | | Team Risk | Personal disagreements, work stress | | Find a way to resolve the conflict,to prevent conflict we need to have a good team culture and respect each other and not micro manage | Team Leader | Low | Active |
| 8 | Low | Integration Failures | Different IoT devices might use different protocols or data formats. Integrating them onto one dashboard might pose challenges. | Technical Risk | | Software Updates, Vendor Changes | We will need to look more into the data and see how different the formats will be and what is in common | Glenn | Medium to low | Active |

# Skills Analysis.

IT-Specific Skills (BCIS Degree):

- Web Development with TypeScript: Proficiency in TypeScript and the ability to develop dynamic web applications using the chosen framework.
- Cloud Services and AWS: Understanding of Amazon Web Services (AWS) components, especially those related to IoT Core, Lambda, S3, DynamoDB, RDS, API Gateway, and Cognito.
- Front-End Development: Ability to design responsive and user-friendly front-end interfaces for web applications.

Personal, Professional, and Technical Capabilities:

- Team Collaboration and Communication: Effective communication and collaboration skills are essential to ensure seamless teamwork and project coordination.
- Problem-Solving and Troubleshooting: A strong problem-solving mindset to address technical challenges and unforeseen issues during development.
- User Experience (UX) Design: Knowledge of UX principles to create intuitive and user-friendly interfaces.
- Project Management: Understanding project management concepts to ensure timely execution and meeting of milestones.
- Version Control (Git): Proficiency in using version control tools for collaborative development.
- Security Awareness: Understanding of security best practices to ensure data protection and user privacy.
- Time Management: Effective time management to balance project work and upskilling efforts.

Acquiring Skills and Addressing Knowledge Gaps:

- TypeScript and Front-End Framework: Allocate time for individual upskilling using online resources, tutorials, and documentation specific to TypeScript and the chosen front-end framework (e.g., React, Angular, Vue).
- AWS Services: Explore AWS documentation, online courses, and tutorials related to IoT Core, Lambda, S3, DynamoDB, RDS, API Gateway, and Cognito.
- IoT Integration: Engage in hands-on labs, tutorials, and examples related to IoT device integration with AWS services.
- Cognito Integration: Study Amazon Cognito documentation and learn about user authentication and management.
- Security Best Practices: Study security guidelines and best practices for securing applications and data on AWS.
- Version Control (Git): Familiarize yourselves with Git and GitHub through tutorials and practical exercises.
- UX Design Principles: Study UX design principles through online resources and practical exercises.

# Project Feasibility.

Infrastructure:

Adroit has a strong basis for this project thanks to its current Internet of Things infrastructure and connections with major global technology companies like Spark IoT and AWS.

Instruments and Technologies:

The following IT-specific abilities from a BCIS degree will be utilised by the project:

- Knowledge of TypeScript and front-end frameworks like React or Angular is required for web development using TypeScript.
- The use of AWS's IoT Core, Lambda, S3, DynamoDB, RDS, API Gateway, and Cognito services as well as other cloud services for backend support.
- Front-end development entails creating user-friendly and responsive user interfaces for web applications.

Roles and abilities:

The project will need:

- Frontend developers who are skilled in TypeScript, their preferred frontend framework, and UI/UX design.
- Project managers: To supervise the project, oversee milestones, and guarantee prompt execution.
- Engineers in quality assurance: To carry out extensive testing and find any flaws.

Off-the-shelf vs. Custom Development:

**Customised Development:**

The specific specifications and integration demand of Adroit are met by a customised solution.

**Off-the-Shelf Options:**

Even if they are inexpensive, these might not be customised and may not offer smooth integration. Microservices vs. Monolithic Architecture

**Monolithic:**

Simplifies deployment and development, ideal for Adroit's present operational requirements and size.

**Microservices:**

Offer modularity and scalability but complicate deployment.

Scalability Feasibility:

The front-end application needs to be scalable because there are over 400 devices and a wide variety of clients. As Adroit's activities grow, it ought to be able to accommodate more users and devices.

# Team Roles And Responsibilities

Team Roles and Responsibilities

- **Team Leader** – Otis Wales
  - Communicating on behalf of the team with the client and our mentor.
  - Organising client, mentor, and team meeting.
  - Frontend Developer.
- **UX/UI Design** – Glenn Neil
  - Creating the protypes of the frontend application.
  - Brainstorming of what the feature going to look like.
- **Full Stack** - Munish Kumar
  - Munish will be responsible for handling front-end and back-end. Quality Assurance.
- **Full Stack** (Front-end and Backend) – Miguel Emmara
  - Miguel will be responsible for handling front-end and back-end. Quality Assurance.

# Upskilling.

Various types of upskilling will be needed for this project. This can be broken up into three main areas. **Front-end, backend and design.** Different members will do different upskilling as we all have different areas of skill and different areas that members will be focused on in the project.

- AWS Upskilling
    - This is not the most important but will help with learning how AWS works so that we can utilise the data.
    - AWS has free training online.
- Design
    - This is important as without a clear UI and UX there will be confusion for the end-user of the project.
    - Design upskilling can be done through reading books on UI and UX design and purchasing of Udemy courses or reading case studies online.
- Frontend
    - We can do upskilling on the frontend technology that we are using, upskilling can also be done on CSS though this isn't as important. For the framework we are doing we can upskill it by reading the documentation of the framework &
    - Upskilling can also be done by reading the documentation.

Upskilling will be needed on this project in terms of understanding how the AWS works. For this we can upskill for free online it is crucial to upskill this as we are using the AWS for the backend

https://explore.skillbuilder.aws/learn/public/learning_plan/view/84/developer-learning-plan?la=sec&sec=lp

UI/UX will be part of the upskilling, we will need to learn about how to make the 'perfect design' as if the client has a bad experience with the interface, it may make it bad for them.

We can upskill through LinkedIn learning as it is free, and they have various content which will be applicable for us to use. We will be allocating 3 hours a week to upskilling.

Expected Work Behaviour and Practices

- All team members are expected to communicate openly, share ideas, and actively participate in discussions.
- Regular updates on individual tasks and overall project.
- Challenges and issues should be addressed within the team.

# Project Management Methodology.

A dedication to quality and client satisfaction sits at the core of the Adroit initiative. We use the Agile technique as a foundation for direction as we work toward these objectives. Our project's dynamic nature perfectly aligns with the agile ideals of adaptability, iterative development, and client participation.

Agile gives us the ability to change the software development process into a never-ending cycle of improvement. By segmenting the project into reasonable iterations, we make sure that each stage is painstakingly created, tested, and improved. This iterative method makes it easier to receive frequent client feedback, allowing us to quickly adjust in response to shifting needs and ensuring that a solution develops in line with client expectations.

**Pros:**

- **Iterative Design and Evaluation**:
  Our ability to create the Adroit project incrementally and continuously solicit client feedback is made possible by Agila's iterative framework. The environment created by this dynamic method encourages the software to develop gradually under the guidance of insightful client feedback. The final output will precisely match the client's concept thanks to this tried-and-true technique.

- **Capacity for Change**
  We are equipped to navigate the inherent risks in software development thanks to the agile approach. Agile offers the adaptability required to quickly adjust to new priorities, ensuring continuous progress in an environment where specifications can change.

**Cons:**

- **Scope Creep Possibility**
  The risk of scope creep exists because of Agila's emphasis on customer collaboration and changing requirements. In order to keep the project on track, it is crucial that we carefully monitor the scope of each iteration.
- **Client Availability Dependence**
  Consistent customer involvement is key to the success of agile. The project's momentum could be affected by fluctuating client availability. To lessen this possible difficulty, efficient communication techniques will be used.

# Estimate Project Costs.

We have estimated this project to cost $73,326.30. This accounts for factors such as:

| Name | Price | Hours | Subtotal |
|---|---|---|---|
| Mentor Cost | $142/hr | 24 | $3,408 |
| Team labour | $50/hr | 1200 | $60,000 |
| Software | $114 | 0 | $114 |
| Travelling Cost | $12 | 20 | $240 |
| | | **Subtotal:** | $63,762 |
| | | **GST rate 15%** | $9,564.30 |
| | | **Total:** | $73,326.30 |

## Adroit Front-end Manager Project Cost Estimate

**Prepared by: Glenn Neil** **Date:** **8/08/2023**

| | # Units/Hrs. | Cost/Unit/Hr. | Subtotals | WBS Level 1 Totals | % of Total |
|---|---|---|---|---|---|
| WBS Items | | | | | |
| **1. Project Management** | | | | | |
| 1.1 Project mentor | 24 | $142 | $3,408 | | |
| 1.2 Project team members | 1200 | $50 | $60,000 | | |
| 1.3 Project Leader/Manager | | | $63,408 | 63408 | |
| | | | | | |
| **3. Software** | | | | | **TRUE** |
| 3.1 Iot Core | | **57.6** | | | |
| 3.2 Lambda | | $14 | | | |
| 3.3 S3 Bucket | | $20 | | | |
| 3.4 Dynamo DB and API Gateaway | | | | | |
| 3.5 Cognito | | 22 | | | |
| | | 114 | $114 | 114 | |
| **5. Support** | | | | | **0%** |
| 5.2 Travel cost/Uber | 12 | $20 | $240 | 240 | |
| **6. Tax rate 15%** | | | $9,564 | **$9,564** | **13%** |
| **Total project cost estimate** | | | | **$73,326** | |

* See software development estimate

# Project Schedule.

We meet every week on Tuesdays from 9am-2pm. We also meet offsite and work through Discord on Sunday evenings at 6pm. This is the time in which we have our team meetings to discuss progress and what has been happening with the project.

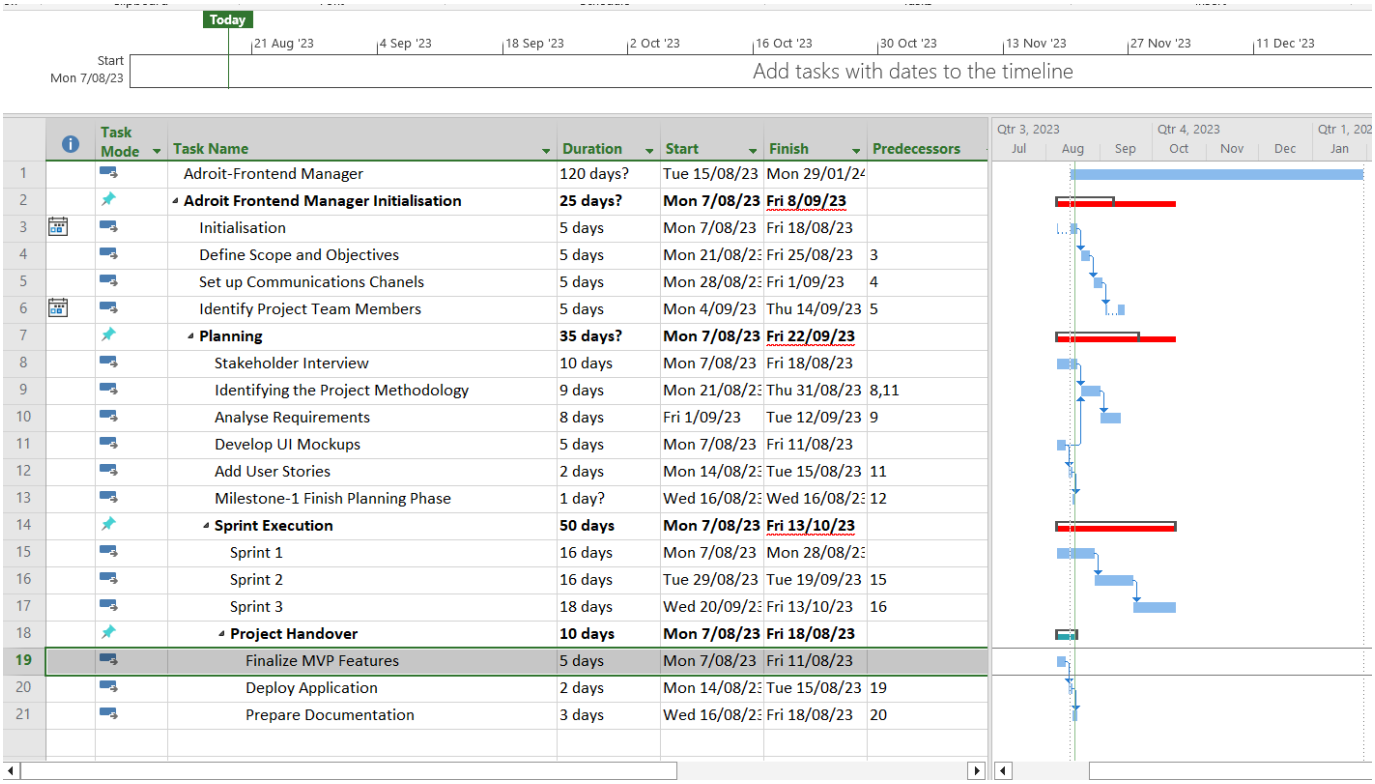
We also meet our R&D mentor, Akbar Ghobakhlou, weekly to discuss what has been happening with the project.

Every fortnight we have a meeting with our client Michael at the Adroit office to discuss the project and to get feedback.

| ***Event*** | ***Frequency*** | ***Day/Time*** | ***Location/Platform*** |
|---|---|---|---|
| Team Meeting | Weekly | Tuesday, 9am - 2pm | Onsite |
| Teem Meeting | Weekly | Sundays, 6 PM | Discord |
| Meeting With Mentor (Akbar) | Weekly | TBD (Flexible) | TBD |
| Meeting With Client (Michael) | Fortnightly | TBD (Scheduled with client) | Adroit Office |

For the first semester of the project (**Part 1**) we will be focused on research and planning of the project. This will involve interviewing the key stakeholders (Michael of Adroit & John) to find out the requirements and the problems that the Adroit team are faced with. We will try to address these problems through planning and breakdown the requirements into a feasible plan. This is what we entice to do on the first stage of the project.

For **Part 2** of the project the focus will be placed on development, testing and deployment of the application. In this stage of the project, we will be doing sprints in a fortnightly manner. In these sprints the focus will be on delivering multiple user-stories and testing the code. After each sprint we will be getting feedback from our client, Michael, in which he will review the code and give feedback.
Testing will take place in this stage of the project; this will involve unit testing and *TDD* (Test driven development) This stage will also involve deployment of the application.




| | Task Mode | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| 1 | | Adroit-Frontend Manager | 120 days? | Tue 15/08/23 | Mon 29/01/24 | |
| 2 | | **Adroit Frontend Manager Initialisation** | **25 days?** | **Mon 7/08/23** | **Fri 8/09/23** | |
| 3 | | Initialisation | 5 days | Mon 7/08/23 | Fri 18/08/23 | |
| 4 | | Define Scope and Objectives | 5 days | Mon 21/08/23 | Fri 25/08/23 | 3 |
| 5 | | Set up Communications Chanels | 5 days | Mon 28/08/23 | Fri 1/09/23 | 4 |
| 6 | | Identify Project Team Members | 5 days | Mon 4/09/23 | Thu 14/09/23 | 5 |
| 7 | | **Planning** | **35 days?** | **Mon 7/08/23** | **Fri 22/09/23** | |
| 8 | | Stakeholder Interview | 10 days | Mon 7/08/23 | Fri 18/08/23 | |
| 9 | | Identifying the Project Methodology | 9 days | Mon 21/08/23 | Thu 31/08/23 | 8,11 |
| 10 | | Analyse Requirements | 8 days | Fri 1/09/23 | Tue 12/09/23 | 9 |
| 11 | | Develop UI Mockups | 5 days | Mon 7/08/23 | Fri 11/08/23 | |
| 12 | | Add User Stories | 2 days | Mon 14/08/23 | Tue 15/08/23 | 11 |
| 13 | | Milestone-1 Finish Planning Phase | 1 day? | Wed 16/08/23 | Wed 16/08/23 | 12 |
| 14 | | **Sprint Execution** | **50 days** | **Mon 7/08/23** | **Fri 13/10/23** | |
| 15 | | Sprint 1 | 16 days | Mon 7/08/23 | Mon 28/08/23 | |
| 16 | | Sprint 2 | 16 days | Tue 29/08/23 | Tue 19/09/23 | 15 |
| 17 | | Sprint 3 | 18 days | Wed 20/09/23 | Fri 13/10/23 | 16 |
| 18 | | **Project Handover** | **10 days** | **Mon 7/08/23** | **Fri 18/08/23** | |
| 19 | | Finalize MVP Features | 5 days | Mon 7/08/23 | Fri 11/08/23 | |
| 20 | | Deploy Application | 2 days | Mon 14/08/23 | Tue 15/08/23 | 19 |
| 21 | | Prepare Documentation | 3 days | Wed 16/08/23 | Fri 18/08/23 | 20 |

*Gantt Chart*

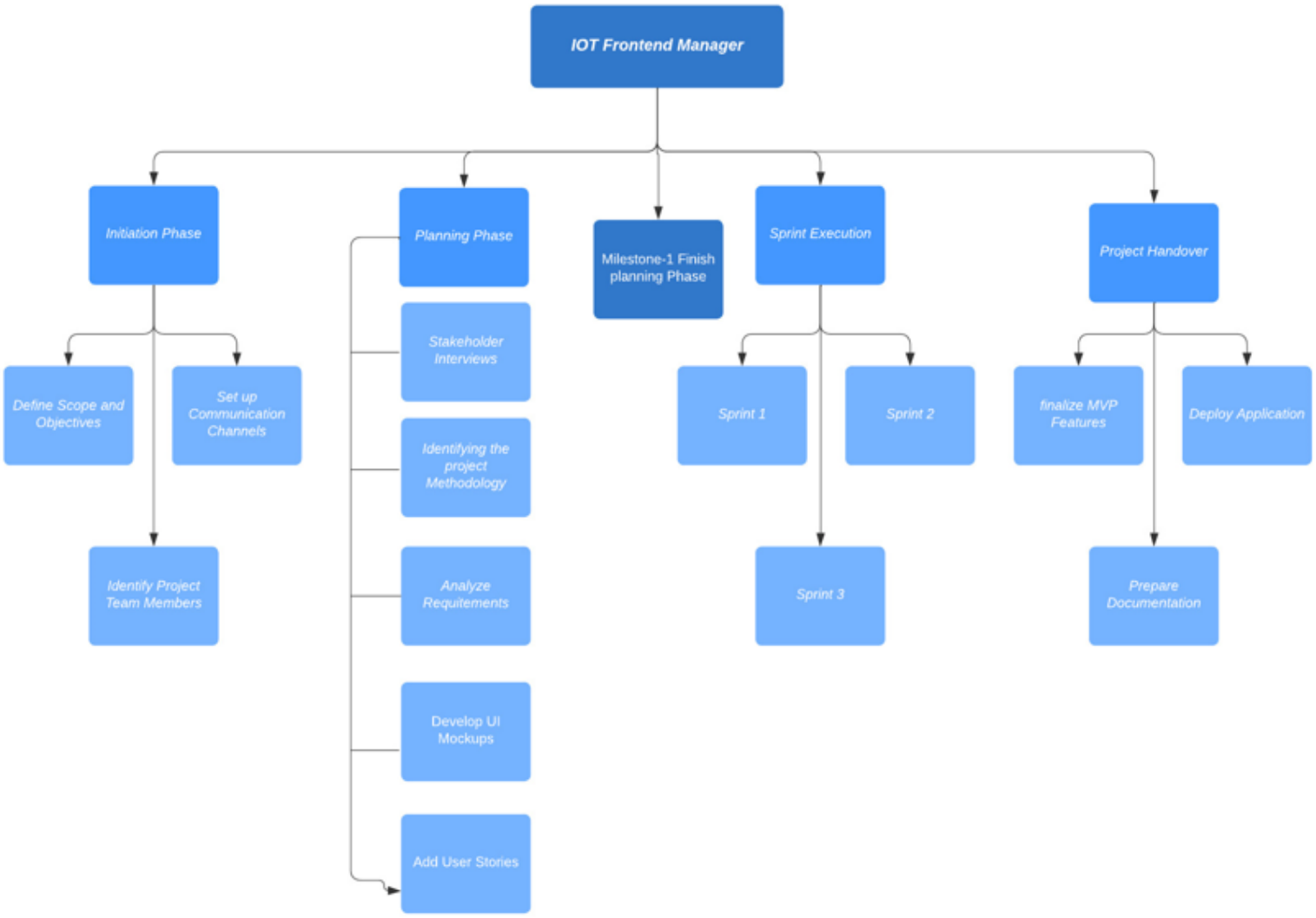
# Milestone.

Since we are still in the planning stage of the project the current Milestone that we have identified is the MVP (Minimum viable product).

**Deliverables**

- Documentation
- MVP
- Testing of application.

- Comments in code base. (Only on complex functions




*Work Breakdown Structure*

# IoT Frontend Manager Team Agreement.

**Goal:** To excel as a team to develop IoT Frontend Manager software, while producing high-quality documentation to attain excellent marks and to improve our technical/collaborative skills in the process.

**Rules & Expectations:**

- The product leader shall have the final say on suggested ideas.
- We will communicate via:
  - Discord
  - WhatsApp
  - Email
  - Microsoft Teams

- Primary information communications within the team will be via Discord, and via WhatsApp if communications are imminent.
- Communicate respectfully with one another.
- Attend meetings.
  - Contact team members if you are unable to attend the meeting.
  - Cover for sick team members.

- Any new change must be communicated with the team before proceeding.
- Must reply with an acknowledgement/response to any email/Discord sent to you from the team within 24 hours.
- The Product leader is the main contact for communication with the client. He must immediately communicate important emails and messages with the team.
- Aim to complete assigned tasks within the time limit assigned.
- Everyone should have equal and fair opportunity to participate in the teams' decisions.

**Procedures:**

- The team will adhere to all agreed policy documents posted to Trello or Microsoft Project.
- The development team will do their best to adhere to the guidelines and conventions specified on Trello or Microsoft Project.

**Meeting Guidelines:**

- Meetings will occur at minimum weekly.
- Meetings with mentor will occur fortnightly or weekly as required.
- Meetings with a client will occur fortnightly or weekly as required.
- Meetings must start on time.
- Any apologies must be communicated to the team at least 5 hours BEFORE the meeting takes place.

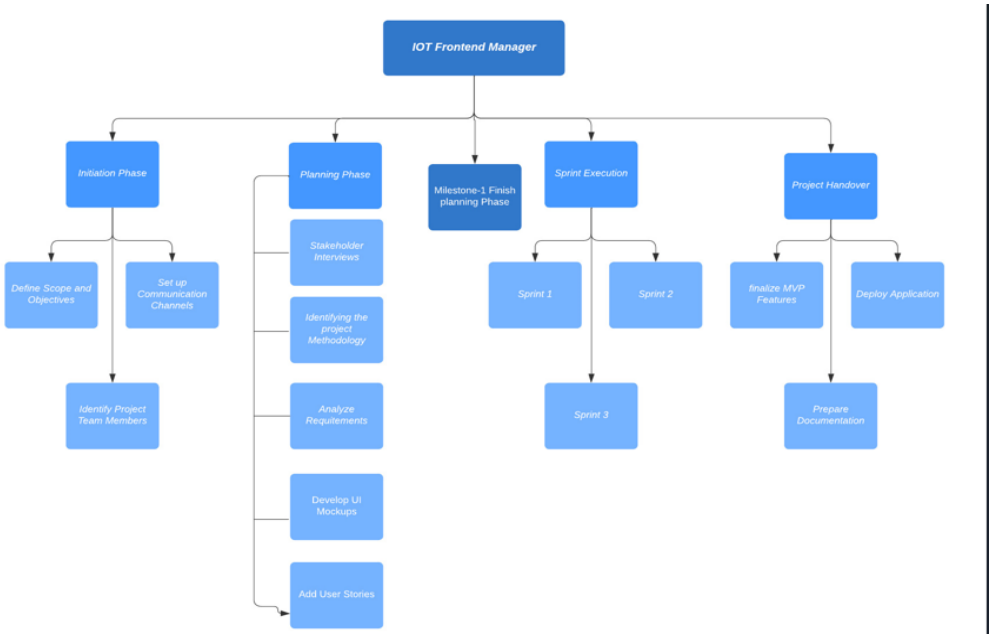
**Conflict Resolutions:**

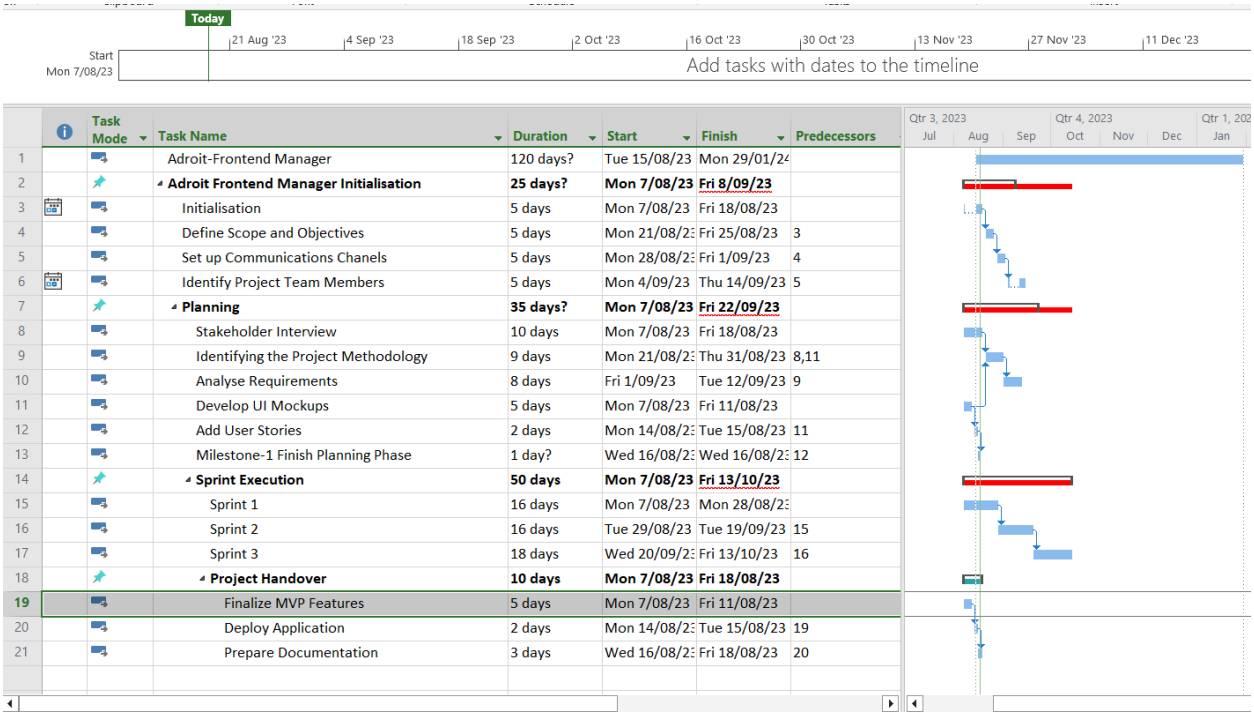
- Coin Flip
- Team Vote

**Rule breaking Resolutions:**

- Must shout the team pizza/chocolate.
- Apologise to the team.

# Appendix.

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| 6 | | Identify Project Team Members | 5 days | Mon 4/09/23 | Thu 14/09/23 | 5 |
| 7 | | **Planning** | **35 days?** | **Mon 7/08/23** | **Fri 22/09/23** | |
| 8 | | Stakeholder Interview | 10 days | Mon 7/08/23 | Fri 18/08/23 | |
| 9 | | Identifying the Project Methodology | 9 days | Mon 21/08/23 | Thu 31/08/23 | 8,11 |
| 10 | | Analyse Requirements | 8 days | Fri 1/09/23 | Tue 12/09/23 | 9 |
| 11 | | Develop UI Mockups | 5 days | Mon 7/08/23 | Fri 11/08/23 | |
| 12 | | Add User Stories | 2 days | Mon 14/08/23 | Tue 15/08/23 | 11 |
| 13 | | Milestone-1 Finish Planning Phase | 1 day? | Wed 16/08/23 | Wed 16/08/23 | 12 |
| 14 | | **Sprint Execution** | **50 days** | **Mon 7/08/23** | **Fri 13/10/23** | |
| 15 | | Sprint 1 | 16 days | Mon 7/08/23 | Mon 28/08/23 | |
| 16 | | Sprint 2 | 16 days | Tue 29/08/23 | Tue 19/09/23 | 15 |
| 17 | | Sprint 3 | 18 days | Wed 20/09/23 | Fri 13/10/23 | 16 |
| 18 | | **Project Handover** | **10 days** | **Mon 7/08/23** | **Fri 18/08/23** | |
| 19 | | Finalize MVP Features | 5 days | Mon 7/08/23 | Fri 11/08/23 | |
| 20 | | Deploy Application | 2 days | Mon 14/08/23 | Tue 15/08/23 | 19 |
| 21 | | Prepare Documentation | 3 days | Wed 16/08/23 | Fri 18/08/23 | 20 |

**Risk Register for Adroit IoT Frontend Manager**

**Prepared by: Otis Wales** **Date: 18/08/2023**

| No. | Risk/Impa | Name | Description | Category | Root Cause | Triggers | Potential Responses/Mitigiation | Risk Owner | Probability | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Medium | Client sick | Michael (a key client) becomes unavailable due to illness or other reasons. | Scope Risk | | | Regularly updating team documentation to ensure anyone can pick up where he left off. | Team Leader | Medium to low | Active |
| 2 | | Scope Creep | Scope Creep - Additional features or changes are added to the project without proper adjustments to time, budget, or resources. | Scope Risk | | Client asking for alot of different items | Establish a robust change management process. Any changes to the original scope should be formally reviewed, approved, and communicated. | Munish | High | Active |
| 3 | | Unclear Requirements | Unclear Requirements - Ambiguous or unspecified requirements can lead to misinterpretations and undesired outcomes. | Scope Risk | | Gold Plating, Vague Requirements | Commuicate with client deeply and ask more questions | Munish | Medium | Active |
| 4 | Medium | Sick team member | Team member gets sick | | Stress and Burnout | Stress/Burnoou t, Personal Health issues | Need to make sure that everyone in the team is skilled to do the task that the other member was doing | Miguel | Low | Active |
| 5 | Critical | Client withdraws | Client decides they don't want to work with us anymore | Client Risk | Economic Downturn, commuication problems | Client starts lacking commuication | Not much can be done about this, but the chance of this happening is low as our client communicates with us | Team Leader | Low | Active |
| 6 | High | AWS Bankrupt | Amazon goes bankrupt or suddenly AWS disapears | Technical Risk | Economic Downturn. | | Adroit would need to migrate to another platform. It would mean that we would need to use another platform to pull data from | Team Leader | Extremely low, near impossible | Active |
| 7 | High | Team conflict | | Team Risk | Personal disagreements, work stress | | Find a way to resolve the conflict,to prevent conflict we need to have a good team culture and respect each other and not micro manage | Team Leader | Low | Active |
| 8 | Low | Integration Failures | Different IoT devices might use different protocols or data formats. Integrating them onto one dashboard might pose challenges. | Technical Risk | | Software Updates, Vendor Changes | We will need to look more into the data and see how different the formats will be and what is in common | Glenn | Medium to low | Active |

## Adroit Front-end Manager Project Cost Estimate

**Prepared by: Glenn Neil** **Date: 8/08/2023**

| | # Units/Hrs. | Cost/Unit/Hr. | Subtotals | WBS Level 1 Totals | % of Total |
|---|---|---|---|---|---|
| WBS Items | | | | | |
| **1. Project Management** | | | | | |
| 1.1 Project mentor | 24 | $142 | $3,408 | | |
| 1.2 Project team members | 1200 | $50 | $60,000 | | |
| 1.3 Project Leader/Manager | | | $63,408 | 63408 | |
| | | | | | |
| **3. Software** | | | | | **TRUE** |
| 3.1 Iot Core | | **57.6** | | | |
| 3.2 Lambda | | $14 | | | |
| 3.3 S3 Bucket | | $20 | | | |
| 3.4 Dynamo DB and API Gateaway | | | | | |
| 3.5 Cognito | | 22 | | | |
| | | 114 | $114 | 114 | |
| **5. Support** | | | | | **0%** |
| 5.2 Travel cost/Uber | 12 | $20 | $240 | 240 | |
| **6. Tax rate 15%** | | | $9,564 | **$9,564** | **13%** |
| **Total project cost estimate** | | | | **$73,326** | |

* See software development estimate

Project Schedule

| ***Event*** | ***Frequency*** | ***Day/Time*** | ***Location/Platform*** |
|---|---|---|---|
| Team Meeting | Weekly | Tuesday, 9am - 2pm | Onsite |
| Teem Meeting | Weekly | Sundays, 6 PM | Discord |
| Meeting With Mentor (Akbar) | Weekly | TBD (Flexible) | TBD |
| Meeting With Client (Michael) | Fortnightly | TBD (Scheduled with client) | Adroit Office |

Auckland University of Technology Bachelor of Computer & Information Sciences
Research & Development Project

**Disclaimer:**

**Clients should note the general basis upon which the Auckland University of Technology undertakes its student projects on behalf of external sponsors:**

*While all due care and diligence will be expected to be taken by the students, (acting in software development, research, or other IT professional capacities), and the Auckland University of Technology, and student efforts will be supervised by experienced AUT lecturers, it must be recognised that these projects are undertaken during student instruction. There is therefore no guarantee that students will succeed in their efforts.*

*This inherently means that the client assumes a degree of risk. This is part of an arrangement, which is intended to be of mutual benefit. On completion of the project, it is hoped that the client will receive a professionally documented and soundly constructed working software application, some part thereof, or other appropriate set of IT artefacts, while the students are exposed to live external environments and problems, in a realistic project and customer context.*

*In consequence of the above, the students, acting in their assigned professional capacities and the Auckland University of Technology, disclaim responsibility and offer no warranty in respect of the "technology solution" or services delivered, (e.g. a "software application" and its associated documentation), both in relation to their use and results from their use.*

# References

Adroit. (n.d.). About Adroit. https://adroit.nz/about-us/

Suresh, M. (2013). Project management methodologies: A comparative analysis. *International Journal of Business and Management, 8(10), 53-61*. https://doi.org/10.5539/ijbm.v8n10p53

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# Signatures.

Miguel Emmara: 

Otis Wales: 

Munish Kumar: 

Glenn Neil: 

18 August 2023