# Rationale

## Introduction

This rationale breaks down each precise decision and justification for each action made throughout this project. This includes resources, time scales, risks, and the justification for decisions made which determine the feasibility and effectiveness of the project

## Resources

### Noah Tharu

The senior software engineer, Noah Tharu was allocated a series of crucial and essential modules, such as the testing and fixing for module 2: user interface and 3, as well as the entirety of module 6. Noah Tharu was dedicated to these, low risk tasks due to his 'writing and testing code' skills, as well as 'testing and maintaining systems' and 'correcting software defects'. This makes Noah an ideal option for low-risk tasks. Despite Noah's lead in the technical department, he is restricted to working 3 days per week, due to overlapping of other projects. As a result, I took initiative to avoid allocating the skilful employee the development of major modules, as it would cause significant delays in the project.

### Malk Taman

The junior software engineer, Malk Taman was introduced to the development and deployment of module 3, as well as the responsibility for managing and producing module 4, due to his "specialisms in Python, PHP and JavaScript" as well as "researching, designing and developing new software programs". This demonstrates Malk's skills to handle these modules effectively. Furthermore, Malk was also allocated the creation of the test plan, integration testing for modules 3 and 4 (the ones he was working on), as well as user training, due to his ability to 'explain complicated processes in non-technical language'.

### Paola Nováková

The Database Engineer, Paola Nováková was allocated module 1: back-end database, due to her 'specialisms' in precise languages, and 'development of both back-end data systems and front-end accessibility features. This also opens up the role of deploying module 2, user interface, as Paola can make use of her core skills to improve accessibility for users and improve end-user experience. Paola was also involved in in module 5, data analytics, as she has "significant experience of developing logical data model designs". The in-depth core skills she holds makes her a valuable tool to the development of these crucial modules, which contribute to the requirements.

### Anatasia Rusu

The network engineer, Anatasia was only allocated one task, upgrade infrastructure. Due to her lack of skills in other areas that require specific and precise experience, she was not allocated any specific modules. However, this allows for specific focus on one task that benefits the infrastructure of the project. Anatasia has 'comprehensive knowledge of network protocols', and 'specialisms in planning, implementing and monitoring computer networks.

### Maya Saha

The cloud architect Maya Saha was allocated the role of deploying and configuring the cloud server, due to her ability to 'evaluate cloud applications, hardware and software', as well as 'developing and organising cloud systems'.

### EPOS Terminals Choice

I chose to opt for Option 1: the PC based terminals. Despite the difference in price, it would prove beneficial in the long term, as they are more efficient

## Time Scales/Costs

### Contingency Time

Additional contingency time may be required in the scenario that the senior software developer is unable to supervise or assist in supporting junior software developers or other staff, which may cause delays to specific project tasks.

The project is scheduled to be completed in **98 working days (20 weeks)**, unfortunately exceeding the 7-week deadline. This restricts contingency time for unforeseen delays or additional testing. The project has an unrealistic deadline of only 7 weeks.

**Timing of Tasks**: Critical tasks, such as the deployment and configuration of cloud server and backend database development, are scheduled early to establish a solid foundation for dependent tasks like the user interface and testing. This sequencing minimizes delays in later stages. All latter stages of the project, such as testing and training occur after the latest module is completed, following appropriate logic.

## Risks and Mitigation

**Resource Risks**

To mitigate the risk of resource unavailability, such as staff absences, I have ensured overlapping skill sets among team members. For example:

- If Terrence is unavailable, Weronika can assist with UI testing due to her software expertise
- Due to the new employees (Malk Taman and Anastasia Rusu), the need to supervise them may be required
- Absences could occur during the project, which could impact the estimated completion date, as staff could require days off
- Skills restricted from different sectors could prove difficult when working on these tasks, making it harder to adapt

**Technical Risks**

The inclusion of technical support for the software license reduces risks during deployment. Additionally, buffer times have been added to high-risk tasks like testing and deployment to account for potential delays.

## Justification of Decisions

**Cost-Effectiveness**

The solution is projected to generate an additional **£65,353.75 in revenue over three years**. After deducting maintenance and initial costs, this results in a profit of **-£65,427.46**, demonstrating clear lack of profitability. Due to the senior software developer being limited to days of work, this has delayed the project significantly

**Task Dependencies**

Dependencies are carefully considered:

- **Module 1 (backend database)** is prioritized to support data-dependent modules like **module 2** and **module 4 (data analysis)**.
- Testing tasks are dependent on the completion of development but are scheduled concurrently where possible to save time.

## Profitability

Overall, due to the lack of profit, this project is not feasible, nor profitable. Therefore, it is an unrealistic project that cannot be completed in 7 weeks.