

# Decisions

This document will outline the reasons certain tools have been chosen by the company for this project, as well as comparisons between those tools and alternatives that have been considered.

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## Choice of Team Communication Platform

1. Discord
  - 1.1. Advantages
    - 1.1.1. Most members of the team have prior experience with using Discord.
    - 1.1.2. Discord offers multiple channels for text conversations and audio channels.
    - 1.1.3. Discord allows the pinning of posts and comments for quick access.
    - 1.1.4. Discord supports addressing specific users and the whole channel.
  - 1.2. Disadvantages
    - 1.2.1. A minority of the team is unfamiliar with it.

- 1.2.2. Some team members' accounts have been lost so new accounts will have to be made.
  - 1.2.3. Designed for gaming, this can be disruptive to our workflow due to members getting messages and notifications for unrelated topics.
- 2. Facebook Messenger
  - 2.1. Advantages
    - 2.1.1. Everyone has an account
    - 2.1.2. A group chat is already set up
  - 2.2. Disadvantages
    - 2.2.1. Limited in capability, all messages are required to be in the same channel disallowing the organization of data.
    - 2.2.2. Distracting, Facebook is not a platform designed for work but for distraction.
    - 2.2.3. One of our members was not receiving notifications from the chat resulting in misunderstandings.
- 3. Slack
  - 3.1. Advantages
    - 3.1.1. It seems to have the same, if not more functionality, than discord.
    - 3.1.2. It is designed for business use.
  - 3.2. Disadvantages
    - 3.2.1. All members are unfamiliar with the platform.
    - 3.2.2. Every member would need to install the platform on their devices.
    - 3.2.3. Every member would need to make a new account.

#### Notes:

While we did decide on discord from our deliberations and a group vote, this may be overturned in the future due to interest in the Slack platform, if this occurs all discord chats will be archived, and changes will be updated in this and all relevant files.

## Writing Documentation

- 1. Google Docs
  - 1.1. Advantages
    - 1.1.1. Simple to use.
    - 1.1.2. Has revision histories of documents, allowing past versions to be restored relatively easily.
    - 1.1.3. Allows comments to be made on files.
    - 1.1.4. Changes are automatically saved regularly on offsite storage, reducing the risk of loss of progress.
    - 1.1.5. Every member of the team has extensive prior experience and familiarity with the platform.
    - 1.1.6. Documents can be shared with other members of the team, allowing concurrent modification.
  - 1.2. Disadvantages
    - 1.2.1. Requires a Google account.
    - 1.2.2. Technically limited space.

2. Microsoft Word
  - 2.1. Advantages
    - 2.1.1. A student license lasting the entirety of the time spent by members as students at Kent can be obtained for free from the Kent website.
    - 2.1.2. Being a relatively ubiquitous program, Word documents can be edited on most machines.
  - 2.2. Disadvantages
    - 2.2.1. Formatting in Word is known to be unreliable, with the same document appearing differently on different machines.
3. LaTeX
  - 3.1. Advantages
    - 3.1.1. Tex files can be easily converted in bulk into PDF, the file format required for submission.
    - 3.1.2. Formatting in LaTeX can be easily standardised as several lines to be included at the beginning of every document.
    - 3.1.3. Tex files count as plaintext files for the purposes of git merge, meaning that merge conflicts can be resolved relatively painlessly.
  - 3.2. Disadvantages
    - 3.2.1. One member is heavily against usage of LaTeX.
    - 3.2.2. LaTeX is not particularly beginner-friendly.
    - 3.2.3. A version of pdflatex needs to be installed on the machine to convert LaTeX files into PDF format, which may limit the number of machines which can be used to write documents.

Notes:

Google Docs was originally chosen without any alternatives considered for writing documents because no comparable alternatives were offered, the advantages were overwhelming, and everyone was in favour of using it from the get-go.

However, after the migration to GitLab from Google Drive on 20190214, the need for a standardized document-writing program was reconsidered. Members were not keen on writing documents on Google Docs, as that would require an up-to-date copy of all documents on a platform separate from GitLab. It was eventually decided that members may use any tool they wish for writing documentation, so long as it could be uploaded onto GitLab in docx format, due to past documents already being in that format. This decision may be revisited by the company if the opportunity to do so arises, due to the advantages that other file types offer.

## Storing Documentation

1. Google Drive
  - 1.1. Advantages
    - 1.1.1. Google Docs requires a google drive to function.
    - 1.1.2. Allows the sharing of non-text files which an SVN might not.
    - 1.1.3. Has file histories, allowing past versions to be restored relatively easily.
    - 1.1.4. Allows easy sharing of files to those outside of the team for review.
      - 1.1.4.1. E.g. Sharing with the client.
  - 1.2. Disadvantages

- 1.2.1. Inability to sync to local storage.
  - 1.2.1.1. This function was discontinued by Google approximately in the year 2018.

## 2. GitLab

### 2.1. Advantages

- 2.1.1. Platform has already been set up for the group.
- 2.1.2. Documents can easily be archived by simply pushing the revised version of the document to the master branch with a relevant comment.
- 2.1.3. Files don't require version/dates in names.

### 2.2. Disadvantages

- 2.2.1. No one has used it yet or is familiar with the toolset.
- 2.2.2. Unable to edit .docx files in the web interface.

#### Notes:

Considering gaining a better understanding of how GitLab operates, we have migrated our documents from Google Drive to GitLab as of 20190214. The benefits of being able to update documents by pulling and pushing from the repository is extremely useful for all members, given most alterations at this stage are minimal or can be handled by individuals. We have been able to eradicate the archived filing system and version numbers/dates on files as GitLab facilitates revision histories. Such benefits outweighed the benefits of using Google Drive with Google Docs integrated. However, Google Drive has proved useful at the startup when devising templates and group documents, as we were able to concurrently work on documents.

## Source Version Control

### 1. GitLab

#### 1.1. Advantages

- 1.1.1. Platform and project have already been set up for the group.
- 1.1.2. Has built-in issue tracking, so bugs can be flagged and resolved sooner.

#### 1.2. Disadvantages

- 1.2.1. No one has used it yet or is familiar with the toolset.

This was discussed but decided quickly without much deliberation, with the mindset that most platforms implementing Git are near identical. Gitlab is to be reviewed at a later date to see if using it will change and benefit our current workflow.

## Scheduling

### 1. Google Calendar

#### 1.1. Advantages

- 1.1.1. We all have a Google account due to previous constraints.
- 1.1.2. We can easily share calendars.

#### 1.2. Disadvantages

- 1.2.1. Multiple imported calendars cannot be merged.
  - 1.2.1.1. This meant that each member's Kent timetable had to be imported and shared separately with the group.

### 2. Outlook Calendar

#### 2.1. Advantages

- 2.1.1. Multiple calendars can be shown concurrently.
- 2.1.2. We can easily share calendars.
- 2.1.3. We all have an outlook email due to our Kent email addresses.
- 2.2. Disadvantages
  - 2.2.1. Calendar shows duplicates of common lectures and seminars, clogging up the daily view.
  - 2.2.2. Found no way to merge calendars.

#### Notes:

These calendars are almost identical, with both advantages in that we have access to the platform already, we finally decided on Outlook due to convenience; in meetings where we're not making changes to our core documents and discussing plans, it was seen as convenient because we're normally logged in to our Kent email during meetings anyway.

Due to the limitations, we have decided to manually add differences in our timetables to the calendar. If an alternative is found which accepts URLs to ICS files and allows the merging of calendars, we may switch platforms at a later stage.

## Timeline

1. GanttLab
  - 1.1. Advantages
    - 1.1.1. Integrated with GitLab, which the team has already chosen as the Version Control tool that will be used.
  - 1.2. Disadvantages
    - 1.2.1. Setting up GanttLab proved difficult and could not be completed smoothly by the team.
2. Teamweek
  - 2.1. Advantages
    - 2.1.1. Tasks can be created and assigned to individuals relatively easily.
    - 2.1.2. Tasks can be synced with individuals' calendars.
  - 2.2. Disadvantages
    - 2.2.1. The entire team has no prior experience using Teamweek.
    - 2.2.2. Teamweek is a paid application, so we are limited to the free features.
    - 2.2.3. Dependencies between tasks cannot be modelled natively.
3. ClickUp
  - 3.1. Advantages
    - 3.1.1. Calendar integration worked well, so each member's calendar could be imported, and meetings could be scheduled easily.
    - 3.1.2. Ongoing tasks could also be represented, alongside completed tasks and tasks not started yet.
  - 3.2. Disadvantages
    - 3.2.1. ClickUp is a paid application, so we were limited to the free features.
      - 3.2.1.1. These features did not include the ability to create a GANTT chart.
4. Google Spreadsheets
  - 4.1. Advantages
    - 4.1.1. Members already have extensive experience with Google Spreadsheets.

- 4.1.2. Google Drive was already in use, so there would be minimal setup.
- 4.2. Disadvantages
  - 4.2.1. Google Spreadsheets was not designed to be used as a timeline planning tool, and thus lacks many functions the other tools provide.

Notes:

While ClickUp was initially the preferred option, it was found after setting it up that the free trial lacked critical timeline planning tools and was deemed unsuitable for our project. The next option tried was GanttLab, which members failed to set up due to poor documentation.

Teamweek was adopted in the end despite its lack of native support for task dependencies, though alternatives may be considered in the future if it does not prove functional for the tasks required.

## Integrated Development Environment

- 1. JetBrains IntelliJ
  - 1.1. Advantages
    - 1.1.1. Free license for students.
    - 1.1.2. Various plugins and libraries.
    - 1.1.3. Modern GUI.
    - 1.1.4. Simple integration with GitLab.
  - 1.2. Disadvantages
    - 1.2.1. Two members have no prior knowledge of using the IDE.
    - 1.2.2. The license requires to be updated annually.
    - 1.2.3. Many of the plugins and libraries may not be necessary.
- 2. Eclipse
  - 2.1. Advantages
    - 2.1.1. Free.
    - 2.1.2. Recommended online.
  - 2.2. Disadvantages
    - 2.2.1. Majority of the members are not keen on Eclipse.
- 3. Netbeans
  - 3.1. Advantages
    - 3.1.1. Free.
    - 3.1.2. Highly recommended online.
  - 3.2. Disadvantages
    - 3.2.1. No members have prior knowledge of the IDE.

Notes: We have decided on using JetBrains IntelliJ as our choice of IDE given two members are comfortable with the software and a free annual license will last the entirety of the project.

While we had deliberated allowing each member to choose their own IDE, we decided that troubleshooting technical issues would be simpler if all members use the same IDE.