COMP3850 Project Deliverable Certificate

Name of Deliverable	*Deliverable 1*
Date Submitted	*07 / 03 / 2024*
Project Group Number	*Team 25*
Rubric stream being followed for this deliverable (highlight one) *Note: the feasibility study has the same rubric for all streams.*	*SOFTWARE Rubric* *GAMES Rubric* *CYBERSECURITY Rubric* *DATA SCIENCE Rubric*

We, the undersigned members of the above Project Group, collectively and individually certify that the above Project Deliverable, as submitted, is entirely our own work, other than where explicitly indicated in the deliverable documentation.

INITIALS	SURNAME	GIVEN NAME	STUDENT NUMBER	SIGNATURE *(IN-PERSON OR DIGITAL)*
YL	*Lee*	*Yasmin*	*46366377*	*YLee*
FG	*Gelwyn*	*Faith*	*46421114*	*FGelwyn*
DL	*Lee*	*Donghyun*	*45773602*	*Lee*
BB	*Bostami*	*MD N S Baizid*	*46128980*	*baizid*
IW	*Weston*	*Isabel*	*46570616*	*IWeston*
SR	*Rasmussen*	*Sebastian Haulrik*	*47223421*	*Sebastian R*

NB: Please write all details clearly (if handwritten).

Performed by *(Student Names)*	Duration *(hrs)*	Complexity *(L, M, H)*	Name of task	Checked by *(Initials)*
All Group Members	2	L	Induction	BB,DL,YL, SR, IW, FG
All Group Members	0.5	L	Team meeting 1	BB,DL,YL, SR, IW, FG
Faith, Yasmin, Sebastian, Ben	1	M	Meeting with Sponsor	DL,YL,SR, IW, FG
All Group Members	2	L	Team training	BB,DL,YL, SR, IW, FG
All Group Members	1	M	Deliverable 1 study	BB,DL,YL, SR, IW, FG
All Group Members	1	L	Team meeting 2	BB,DL,YL, SR, IW, FG
Baizid, Yasmin	1	M	Creating tasks in Jira	BB, IW, SR
Baizid, Yasmin, Ben, Sebastian	1	L	Team meeting 3	BB,DL,SR, IW
Ben	4.5	M	Feasibility Report	DL, IW, YL, SR,BB
Ben	2	M	Team Manual	DL, IW, YL, SR,BB
Yasmin	1	L	Setting up Communication channels and meetings	IW, SR,BB
Yasmin	2	L	Checking over Work done in Feasibility Report and Team Manual	IW, SR,BB, FG
Baz	4.5	M	Feasibility Report, Setting up Jira	IW, YL, SR, FG
Baz	1	M	Team Manual	IW, YL, SR, FG
Sebastian	1	M	Feasibility Report	IW, YL,BB, FG
Sebastian	4.5	M	Team Manual	IW, YL,BB, FG
Isabel	2	M	Feasibility report: problem, recommendations, edits, formatting	IW, YL, SR,BB, FG
Isabel	4	M	Team manual: all sections except values, formatting	BB,IW, YL, SR, FG
Faith	3	M	Feasibility Report	YL, SR, IW
Faith	0.5	L	Developed Logo	YL, SR, IW
Yasmin Lee Total	12.5			
Faith Gelwyn Total	11			
Donghyun Lee (Ben) Total	15			
MD N S Baizid Bostami Total	14			
Isabel Weston Total	12.5			
Sebastian Haulrik Rasmussen Total	14			
Team Total	79			

Infobyte

Team 25

Feasibility Study

Slack app with RapidAnalysis API

Version 1.0 07.03.2024

Contents

1 Introduction

The client for this project is RapidAnalysis. This report assesses the integration of their large language model (LLM) API with Slack, identifying opportunities to enhance user experience and address existing challenges in the Slack platform. The RapidAnalysis API presents a valuable opportunity to increase Slack's functionalities, particularly in mitigating issues such as information overload and limited accessibility.

1.1 Problem Identification

RapidAnalysis has developed an LLM (large language model) API (Application Programming Interface) and they are currently exploring ways to integrate their software with various work processes. RapidAnalysis has identified Slack, a messaging application for businesses, as an opportunity to apply its API. Slack already has an open API for developers to utilise and integrate their software and release it on their Slack Marketplace.

Problems that have been identified in Slack include:

- Information overload: Individual users may struggle to follow conversations and extract meaning, especially when messages are verbose, not fluent, or not relevant to them. This could increase the time users spend on tasks and decrease productivity.
- Poor visibility: Fast-moving threads easily hide or "bury" past messages, making it difficult for users to notice important details and dates.
- Character limit: Messages are limited to 12,000 characters, forcing users to manually split long content and send multiple messages. When needing to send long messages over multiple parts, some of the messages may get lost or misinterpreted.
- Unreachable text: Text cannot be extracted from media content, e.g. screenshots and photos of important documents, which may slow the progress of users.
- Limited accessibility: Accessibility features, such as alt text for images, must be manually added and may not be required by team leaders, disadvantaging users who have accessibility needs.

1.2 Opportunities

The project offers several opportunities for users to improve efficiency within Slack:

- Automatically summarising lengthy messages: With this capability, Slack users may quickly grasp lengthy discussions without having to go through every communication. It would be especially helpful in channels that receive a lot of messages.
- Retrieving details from previous conversations: This would make it simple for users to review past discussions. It would be especially helpful in cases when crucial information or choices were made earlier in the channel.
- Including alt text and media captions/summaries for accessibility: This would increase the content's usability for people who are blind or visually impaired. Additionally, it would help when users are unable to load images.

- Image combining: With the help of this function, users would be able to combine several images into one. In scenarios where users wish to share several related photographs without overcrowding the chat, it would be especially helpful.
- Data analysis and insight provision: By analyzing the data collected through the project, we can understand users' behaviour patterns and preferences, providing valuable insights to them. This enables users to make better-informed decisions.
- Continuous feedback and improvement: Through the project, we can collect feedback from users and continuously improve the system based on it. This allows us to promptly address users' demands and provide better services.

There are also opportunities for the client:

- Better user experience and higher engagement: By adding these features, the business may be able to enhance Slack's user experience.
- Market potential: Since these functionalities take care of typical issues that Slack users have, there may be a market for them.
- Monetisation: There are several possible revenue streams. The business could monetise the RapidAnalysis API key or the Slack app in the Slack marketplace.
- Establishing an open-source community on GitHub: To increase the app's functionality and even allow it to communicate with more API endpoints, the organisation might establish an open-source community on GitHub. This would enhance the software and create a community around it.
- User education and support provision: Can provide educational materials on new features or updates and offer support for users' inquiries to help them maximise their utilisation of the project

1.3 Mandates

The client wants to incorporate capabilities into Slack. There are no specific mandates for this app to be implemented, but the client has stated that they have requirements for the project to go ahead. The application must be developed using RapidAnalysis API and the Slack API. For security reasons, the API keys for either must not be visible in the code.

1.4 Assumptions

In completing the client's desired Slack application with RapidAnalysis integration, it is assumed that our team will have access to various resources with sufficient reliability and performance. Access to both the RapidAnalysis API and Slack API is assumed alongside the required documentation to make requests as desired. In addition, access to hosting services such as Amazon Web Services (AWS) will be provided by the client where required, as well as a Jira project for project management and a GitHub repository for a version control code base. The RapidAnalysis API will allow for information to be exchanged with sufficient data sizes such that long chat histories can be analysed by the AI utilities provided.

2 Current Situation

The client's current projects are available at https://rapidanalysis.github.io/ including:

- RapidAnalysis API for AI Smart Utilities, including functionality for database utilities, image-related methods, and text-related methods including image-to-text recognition, text summary, and PDF-to-text
- Chat with LLM, Summarise Text from a cell, Reword Text from a cell, Compare Text from two Cells
- Proposed add-ons for Google Sheets and Slack, yet to be developed

The client's work process involves:

- Check-ins every Friday
- Code reviews, done by the lead developer before check-in
- one point of contact with the product manager, which changes every sprint

The state of Slack:

- Large user base
- Lacks AI capabilities that are being commonly used already by users to speed up work efficiency in other areas like summarising and generating text
- Event API allows an application to subscribe to certain events and receive a payload describing the event on trigger
- Web API allows an application to communicate with the Slack app through HTTP methods

3 Benefits

Numerous benefits, both tangible and intangible, would be realised by solving the problems identified.

3.1 Tangible Benefits

With the introduction of the RapidAnalysis LLM capabilities in a Slack app, users will have a more diverse choice of AI options and price points within the Slack app marketplace.

Users will benefit from time savings:

- Organisations can make immediate judgments by analysing chat logs in real-time to provide necessary information for decision-making.
- Using AI technology to automate and optimize business processes can reduce employees' workload and enhance productivity.

Cost savings also result from time savings. Staff hours decrease due to freed-up manpower and enhanced throughput. Moreover, a variety of AI options available to customers can lead to cost reduction and increased revenue.

3.2 Intangible Benefits

In addition, the following intangible benefits can be realised:

- More efficient/improved communication processes result in better understanding across the team
- The adoption of new technologies offers opportunities to enhance employees' productivity and improve the work environment. This can boost morale among employees and foster a more positive working atmosphere.
- Through new approaches, organisations can gain new means of control over work processes and data management. This can enhance operational efficiency and decision-making processes within the organisation, while also offering better direction towards achieving organisational goals.

4 Alternative Solutions

4.1 Alternative 1

Using RapidAnalysis API, create a Slack app that summarises the chat logs. The bot will be given the message channels as the context of the question the user asks it.

4.1.1 Advantages

- Strategic:
  - Targeting a portion of Slack's large user base.
  - Increasing user engagement within Slack by providing valuable tools and features.
- Economic:
  - Monetising an app and API key.
  - Adding premium features and a paid subscription.
- Technical:
  - Integrate with Slack API, a well-documented and great platform.
  - Leverages existing RapidAnalysis LLM capabilities.
- Operational:
  - Requires minimal maintenance once the app is fully developed.
  - Scales well with increased users because of cloud-based deployment.
- Planning:
  - The roadmap for development is clear and based on existing APIs.
  - It has a short development time frame compared to other solutions.

4.1.2 Disadvantages

- Strategic:
  - Competition from existing or future Slack apps where it has similar functionalities.
  - The app requires proper marketing and user adoption to develop further.
- Economic:
  - The app has development costs associated with building and maintenance.
  - The app's success depends on the paying user base or securing API key sales.
  - Additional costs may be necessary to promote marketing efforts and encourage user adoption.
- Technical:
  - The API has performance limitations and in future, it may have more limitations while processing large amounts of chat data.
  - Security considerations are crucial when handling sensitive information within Slack conversations.
- Operational:
  - Needs user support to be built for troubleshooting and inquiries.
  - The app requires monitoring for bugs and security issues.
- Planning:
  - Requires good definition and design of the scope to prevent feature bloat.
  - Scope expansion due to excessive feature additions can increase the complexity of the project.
  - The app needs data privacy compliance considerations to process user data on Slack.

4.2 Alternative 2

Creating a Slack app, which can be integrated into the text-based environment to allow for reducing message lengths to be sent, by summarising its contents.

4.2.1 Advantages

- Strategic:
  - Resolves consumer frustration with Slack's character limitations.
- Economic:
  - Offers ease of use and could increase user involvement.
- Technical:
  - Achievable with the limitations of the current API.
- Operational:

  - Increases Slack communication effectiveness.
- Planning:
  - Compared to AI summarization, implementation is quite simple.

4.2.2 Disadvantages

- Strategic:
  - Not as effective as a conversation-summarising app.
  - Not addressing the core issues of message overload and lack of summarization functionality within Slack could result in unresolved challenges.
- Economic:
  - There is not as much revenue potential as a brand-new app.
- Technical:
  - The precision of the translation could differ.
- Operational:
  - Further bot management is necessary.
- Planning:
  - Not as creative as a conversation summary.

4.3 Alternative 3

A translation bot for Slack that can translate messages into different languages before you send or translate a message in any channel.

4.3.1 Advantages

- Strategic:
  - Facilitating smooth communication among multinational teams contributes to enhancing overall business performance.
- Economic:
  - Expanding the international user base can lead to increased revenue opportunities.
- Technical:
  - Utilising existing translation technology allows for relatively straightforward technical implementation.
- Operational:
  - Enhance team collaboration through real-time translation across various languages.
- Planning:
  - Allows for international hires to be integrated into the workplace with greater ease, allowing for their ideas to be conveyed more effectively to others.

4.3.2 Disadvantages

- Strategic:
  - Relying solely on translation features may not sufficiently differentiate the Slack user experience.
  - The risk of compromising the brand arises when the translation bot fails to meet the anticipated performance standards.
- Economic:
  - There is not as much revenue potential as a brand-new app since a simple bot might not be as monetisable as an app.
  - Might cost more for RapidAnalysis to develop the functionality of language translation than using its current functionality.
- Technical:
  - Lack of functionality from current RapidAnalysis LLM to be able to implement an app like this.
- Operational:
  - The need for ongoing supervision to maintain translation accuracy can be resource-intensive.
  - The risk of compromising the brand arises when the translation bot relies on external translation services, which can raise concerns about data privacy and security.
- Planning:
  - In order to process the user's message, the Slack app design must comply with data privacy acts.

4.4 No Action

Another alternative for the client is to not create any new solution to Slack's limitations.

4.4.1 Advantages

- Strategic:
  - Avoids the risk of entering a competitive market with existing or future Slack apps having similar functionalities.
- Economic:
  - No development costs and resource allocations associated with creating a new solution.
- Technical:
  - No need to deal with potential technical issues such as API performance limitations and security considerations.
- Operational:

  - No need for additional resources for user support, bug monitoring, and security issues.

- Planning:
  - No need to define and design the scope for a new feature, and no need to consider data privacy compliance for processing user data on Slack.

4.4.2 Disadvantages

- Strategic:
  - Missed opportunity to attract a fraction of Slack's sizable user base and boost engagement by offering useful LLM tools and services.
- Economic:
  - Misses on possible revenue via an API key and monetisable app.
- Technical:
  - Ignores the chance to interact with the thoroughly described Slack API and use the current RapidAnalysis LLM capabilities.
- Operational:
  - Breaks out on the chance to improve Slack users' experiences and give them useful tools.
- Planning:
  - Ignores the chance to establish a precise development roadmap based on current APIs.

5 Recommended Solution

InfoByte has proposed several viable alternatives to solve the identified problems that significantly slow the efficiency of teams using Slack.

Alternative 1 would be highly valuable to users and therefore monetisable, however, this solution is ambitious, potentially leading to feature bloat unless the scope is clearly defined. Alternative 2 would be simpler to implement, as it only improves specific aspects of the Slack user experience, but fails to fully address the core problem faced by users in retrieving relevant information in fast-moving Slack conversations. Alternative 3 outlines a translation bot that would improve communication across cultures within a company but might not have a demand for it in the market and also would be outside of the scope of the current technology. By taking no action, initial costs for development and resources are not required, but an opportunity is missed to extend and monetise RapidAnalysis capabilities for Slack's large user base who face serious user experience problems.

We recommend pursuing Alternative 1 because of its potential to address the most pressing problems identified. Alternative 1 holds greater value for users compared to other alternatives, which results in more opportunity for monetisation compared to the cost of inaction. We believe that we can effectively plan in a way that will lead to success for this project.

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Team 25

Team Manual

Slack app with RapidAnalysis API

Version 1.0 07.03.2024

Contents

1 Team Structure and Organisation

The client has suggested a rotating leadership system with the following three team roles. Note that the listed responsibilities apply only to that sprint, enabling the flexibility of agile development.

1. The project manager (PM):
    - ensures smooth communication and collaboration within the team and with the client
    - meets with the client and lead developer early in the sprint
    - defines and schedules tasks using Jira
    - makes final revisions to the deliverable and submits it in a professional format, e.g. LaTeX
    - tracks the abilities and accomplishments of team members, providing necessary development or support to foster the overall success of the team
2. The lead developer (LD):
    - maintains and improves code quality through code reviews and the creation of coding guidelines
    - defines functional requirements, consulting the client, other team members, and research where necessary
    - reports to PM to create a realistic sprint schedule
    - clarifies tasks to developers
    - works closely with developers, e.g. through paired programming
    - approves Git changes
3. The developers:
    - report to the LD for all technical matters
    - flag any issues and points of confusion to the LD (if technical) and/or PM (if non-technical)
    - add themselves to specific tasks on Jira, according to their abilities
    - enhance their skills through continuous learning and new technologies
    - conduct code testing and debugging to minimise bugs and ensure product stability
    - share knowledge with each other and collaborate to achieve project goals

The team has agreed on the schedule in Table 1.

Deliverable	Week	LD	PM
D1: feasibility	1 2 3	Isabel	Yasmin
D2: plan, scope	4 5 6	Faith	Isabel
	7 8	Baz	Faith
D3: updates, prototype	– –	Ben	Baz
D4: updates, manual	9 10 11	Sebastian	Ben
D5-6: report, presentation	12 13	Yasmin	Sebastian

Table 1: The leadership schedule is designed around the deliverables. The LD for any given sprint will be the PM for the next sprint. This system supports a smooth transition into the PM role, since the LD works closely with the PM.

2 Team Values and ACS Code of Professional Conduct

Through the project, our team values and our methods and approaches emphasise how each individual and the team as a whole will follow the Australian Computing Society's Code of Professional Conduct regarding its aspects of Honesty, Trustworthiness, and Respect for both the profession and others.

Focusing on our team's dedication to honesty to allow for healthy interactions between each acting member of the project. Our team's interactions with the client, in particular the project manager who will act as a single point of contact, will be honest, open, and truthful regarding all parts of the project. Some examples of these include being transparent about the progress by allowing the client to oversee the project through Jira, the project management software being used, alongside the codebase, and having weekly meetings to confirm the client's requests are being met. Furthermore, each team member will be committed to ensuring every one of their responsibilities throughout the project's rotating roles, and notifying either the project manager or the PACE Unit Convenor if required.

Upholding human dignity, and ensuring the public welfare are critical principles for our team, dedicating ourselves to developing systems, and representing ourselves in a trustworthy manner. Each team member will hold themselves accountable, as well as the team as a whole, in all submissions, taking responsibility for their resulting successes and failures. This includes completing all assigned tasks for both the deliverables and project tasks as assigned by the project manager and lead developer, being accountable for the written documents and code submissions, and welcoming constructive criticism. Our team's determination in the proactive development of our skills and abilities is another team value we will uphold throughout the completion of this project, improving our programming practices, professionalism, and abilities to be trustworthy in performing our assigned roles and responsibilities. Each team member has listed their abilities along with aspects in which they have potential and desire to learn. In doing so, they can undertake work assigned to them where they have the necessary skills and are competent in order to strive for a quality product.

Aligning with the principle of respecting others outlined by the ACS required to be upheld by all its members as an ICT professional, our team will be supportive and respectful in all aspects of interactions. During any stage of the project requiring a problem resolution, each member will have an equal opportunity to provide suggestions and are encouraged to present their ideas. All suggestions and ideas will be treated equally, with the team requiring each team member to be included and in agreement on the outcome. Our team will strive to build a healthy workspace with encouragement towards the development of each other's skills. To achieve this, tasks submitted by team members will receive respectful and supportive feedback, including that of written components of the deliverables and during code reviews.

In addition to respect for others, our team values align with that of the ACS's code regarding respect for the profession, in supporting the industry and its public view. Our team seeks to develop additional tools for communication through this project, enhancing the quality of communications for teams using Slack. We aim to allow for faster and more effective understanding of conversations and events conducted within this text-based environment, improving the quality of life regarding professional communication specifically that which occurs within Slack. Furthermore, the creation of a supportive learning environment will allow for our team members to grow collectively and individually in enhancing our professional decision-making, and how they will affect the public and those around them. This will ensure that each member supports the ongoing development of an open and inclusive industry, in which others are encouraged and supported in advancing their knowledge and competence.

3 Project Management Approach and Tools

Throughout this project, we will be using various tools and software to make sure our work runs smoothly. It includes communication with the team and sponsor, documenting, creating a timeline, and implementing the product.

- Jira for kanban and timeline/Gantt chart
- GitHub for version control
- Google Docs for collaborating and making documents
- Discord for Communication
- VS Code to write and analyse code
- Slack to implement and work on our AI chatbot
- One or more programming languages to implement the project: Python, Node.js, Java, and/or Javascript

4 Communication Plan and Meeting Schedule

The team communicates through a Discord server with a voice channel and various message channels with specific purposes, e.g. document sharing, meeting minutes.

The PM is responsible for coordinating communication:

- Plan team meetings using when2meet, so that all team members can attend at least one weekly meeting
- Arrange one-on-one meetings with client once a week or as necessary
- Prepare and post a weekly progress report on iLearn, summarising completed tasks and upcoming plans to help the team to understand overall project progress and take necessary actions
- Encourage feedback and opinion exchange among team members on project processes and outcomes

5 Change Management and Conflict Resolution

This section outlines rules for the team, helping to prevent, mitigate and resolve dysfunctions in team trust, conflict management, commitment, accountability, and project results.

5.1 Understand the strengths, motivations and limitations of team members

Context: All team members face limitations of work and study commitments but have the motivation to follow the deliverable schedule and professionally develop throughout this project. Team members may need more support in certain weeks than others.

All team members use the "skills and abilities" channel to communicate their competencies, capabilities and limitations, if not already communicated during the weekly meeting. All team members have added themselves to the leadership schedule in 1 and will adjust their personal, work and study schedules accordingly where possible.

5.2 Define team approach and rules

The team follows a rotating leadership schedule for each sprint with a PM, LD, and four developers. Responsibilities for each role are clearly defined, including tasks assigned, schedules, and final submission. ACS Code of Principles involves integrity, reliability, and deference Accountability for completed tasks is prioritised along with communication and transparency. Professional growth and further education are encouraged. Understanding team members' strengths, motivations, and limitations is essential. Open communication about competencies, capabilities, and limitations is encouraged. Conflict resolution strategies include flagging ethical issues, using design thinking, and following the defined decision-making process. Decisions are made collaboratively, with input from all team members. The current PM cannot unilaterally reverse previous team decisions. Documentation and communication tools are utilised for accountability and tracking. Team members are expected to report any ethics issues, especially when working with data. The design thinking process is applied to address ethical considerations and develop innovative solutions.

5.3 Flag ethics issues

Ethical issues are critical to our project's success and impact. All team members must be aware and engaged in detecting any potential ethical concerns that may develop throughout our project. Here are the basic steps for flagging ethical issues:

- Awareness and vigilance:
  - Maintain a heightened awareness of ethical considerations across all project phases, encompassing data management, decision-making processes, and stakeholder engagement.
  - Proactively identify potential ethical dilemmas, including seemingly insignificant or ambiguous situations.
- Timely communication:
  - As soon as any member faces a situation that involves ethical dilemmas or worries, inform the team.
  - Share ethics issues with the PM or the assigned team leader, giving specific information and background to help them comprehend and solve the problem.
- Cooperative dialogue:
  - Participate in honest and courteous conversations within the team to examine the ethical aspects of the issue.
  - Seek different viewpoints and feedback from team members to achieve a thorough understanding of the ethical consequences involved.
- Solution and prevention:
  - Collaborate to devise suitable strategies for dealing with the ethics issue in a way that maintains professional norms and ethical values.
  - Apply prevention measures or changes to project plans as needed to ensure ethical soundness and adherence.
- Record and review:
  - Record the ethics issue, including the specifics of the situation, conversations, choices, and actions taken for resolution.
  - Review the resolution process to ensure that the ethics worry has been sufficiently resolved and prevented.