Team T327: IT Capstone (Phase 1) ReportA blue background with white letters

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| Project ID | Title | P393 | AI LLM Bot for Retirement Questions |
| --- | --- |
| Industry Partner | The Epic Retirement Institute |
| Industry Supervisor | Bec Wilson |
| Tutorial ID | Tutor | S12 | Dr Saminda Sundeepa Balasuriya |
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# Introduction The AI LLM Bot for Retirement support project, developed by Team T327 in collaboration with The Epic Retirement Institute, aims to deliver a scalable, conversational solution to support Australians navigating retirement. In response to a growing demand for accessible and trustworthy information, identified by industry partner Bec Wilson, the team has designed TERAH (The Epic Retirement AI Helper), a generative AI chatbot grounded in official government sources. TERAH offers a private, user-friendly channel for individuals to ask retirement-related questions, without receiving financial advice. Through a combination of critical solution evaluation, user-centred design, and agile development, the team produced a high-fidelity prototype underpinned by a modular, LLM-agnostic architecture, positioning the project for successful deployment and long-term impact in a regulated sector.

# Definition

Our project focuses on developing an AI-driven chatbot called TERAH (The Epic Retirement AI Helper), designed to support Australians navigating the complexities of retirement. The tool is intended to deliver clear, factual, and relevant retirement information, without offering personal financial advice. This chatbot represents a direct response to a gap identified by our industry partner, Bec Wilson, a retirement expert and author who has become increasingly overwhelmed by the volume of retirement-related inquiries she receives. TERAH is designed to scale her expertise, providing a private, accessible, and user-friendly channel where individuals can explore retirement-related queries without fear of judgement or misunderstanding.

Set within the broader retirement and financial literacy sector, TERAH operates in a semi-regulated information environment. The project is grounded in the real-world challenges that Australians face when preparing for or already experiencing retirement. It draws from Bec’s decades of engagement with retirement education through books, seminars, and digital communities. Our development was informed by a range of qualitative inputs, including user stories and feedback sessions, which helped us understand how to simplify complex information, meet user expectations, and deliver trustworthy support.

The primary motivation behind the project is to reduce the burden on Bec while expanding her reach through a scalable, intelligent system. Our core aim is to deliver factual retirement information efficiently while maintaining ethical and legal boundaries, specifically avoiding anything resembling personalised financial advice. We want users to feel empowered and informed as they make decisions related to retirement, without overstepping compliance thresholds.

Stakeholders for this project include our industry partner Bec Wilson, who brings deep expertise and content authority, the QUT Capstone Team T327 who are responsible for the design and implementation of TERAH and finally the end users themselves, which include older Australians actively preparing for retirement and individuals who have already retired but continue to seek clarity on issues such as superannuation, pension entitlements, or aged care. Additional stakeholders also include policy and compliance advisors concerned with responsible information dissemination, and potential future collaborators such as government agencies or non-profit organisations supporting retirement education.

The solution is ultimately intended to serve Australians seeking practical, accurate information in a safe and conversational format. The primary users are people aged 50 and above who are starting to plan for retirement, as well as those who have already retired. Secondary users may include professionals in healthcare, finance, or legal support who engage with retirees and could benefit from directing clients to a reliable self-help tool. The broader impact of TERAH extends to the competitive landscape as well, where traditional static FAQ-based resources may quickly become outdated or obsolete in comparison to a conversational AI system.

One of the most pressing concerns for our team is the legal and compliance risk associated with using generative AI. Because TERAH is powered by the ChatGPT API, there remains a risk that it could produce responses that verge on or unintentionally constitute financial advice. Given the legal implications of such outcomes, this is a central issue that will require a clear and carefully managed strategy. As the chatbot interacts with users on sensitive topics such as financial planning, the potential for misinformation must be mitigated through the implementation of rigorous safeguards including disclaimers, prompt engineering, and strict model boundaries. Accountability for AI-generated outputs is also a concern that will be further addressed in upcoming meetings with Bec Wilson. Establishing responsibility, ensuring clarity around disclaimers, and protecting against liability are priorities for the next stage of development.

To safeguard user privacy, TERAH does not store any personal information. User sessions are ephemeral, and inputs such as name or location are used only transiently to improve contextual relevance. This approach ensures compliance with data handling standards and addresses user concerns about privacy. Although Bec has expressed interest in potentially expanding TERAH into a full-scale GPT-style platform with more persistent capabilities in future phases, our current implementation remains privacy-conscious and secure.

We have secured written approval through Bec Wilson to use web scraping techniques for extracting information from government sources like the ATO and Centrelink. These datasets are reviewed and curated to ensure factual accuracy. The decision to use scraped, static, and approved content for grounding the chatbot’s knowledge base reflects our commitment to responsible data use and legal compliance.

Our team’s decisions and direction are grounded in thorough investigation. Early in the project, we produced a Potential Solutions Report ([*Research on Potential solutions*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Acceptance%20Criteria.pdf-,Research%20on%20Potential%20solutions%20%2D%20combined.pdf,-Download%20Research%20on)) comparing multiple technical architectures, including Retrieval-Augmented Generation (RAG), API-based LLMs, rule-based bots, and locally hosted models. After extensive evaluation using criteria such as feasibility, cost, time-to-deploy, and sustainability, we chose the ChatGPT API model due to its balance between conversational power and implementation simplicity. We also developed a detailed set of User Stories ([User stories](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Sprint%20Plans.pdf-,User%20Stories%20%26%20Acceptance%20Criteria.pdf,-Download%20User%20Stories)) to better understand our target users' needs and align our design accordingly.

The design and development phases were supported by an iterative prototyping process, from low-fidelity wireframes through to a high-fidelity ([*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full)) demonstration. Each stage was informed by user feedback and sprint-based planning, as outlined in our Sprint Plans ([*Sprint plan*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Project%20Plan.pdf-,Sprint%20Plans.pdf,-Download%20Sprint%20Plans)). Design challenges, such as how best to present the AI in a way that maintains trust and clarity, were addressed through critical team discussions and responsive refinements. These efforts showcase our team’s reasoning, adaptability, and analytical thinking as we shaped a solution that is both technically sound and aligned with user expectations.

In conclusion, TERAH represents a timely and innovative approach to retirement support. It is a product of careful planning, ethical consideration, and thoughtful user-centred design. By responding to a clear industry demand and applying critical thinking throughout the project lifecycle, our team has laid the foundation for a practical tool with the potential to transform how Australians access retirement guidance.

# Project Planning

The successful progression of the AI Retirement Bot project throughout Semester 1 has been underpinned by a deliberate and adaptive planning methodology. Far from a static blueprint, our project plan has evolved iteratively, designed to navigate complexity, integrate stakeholder feedback, and translate abstract objectives into concrete, achievable deliverables. This section details our strategic planning process, outlining our approach, the evolution of our goals, and the robust framework established for Phase 2 development.

## The Evolution of Our Planning: From Abstract to Realistic Goals

At the outset of the project, a key challenge was to bridge the gap between our industry partner's broad vision for an AI-powered retirement helper and the practical realities of its implementation. Our initial planning approach in Week 5 involved a comprehensive exploration of various technological pathways, including Retrieval Augmented Generation (RAG), external LLM APIs (like ChatGPT), rule-based systems, and local model implementations *(*[*Research on Potential solutions*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Acceptance%20Criteria.pdf-,Research%20on%20Potential%20solutions%20%2D%20combined.pdf,-Download%20Research%20on)*)*. The intent was to present a spectrum of options to our industry partner, Bec Wilson, allowing her to understand the trade-offs inherent in each.

However, as we delved deeper into the research and engaged in initial discussions, it became apparent that our role extended beyond merely presenting choices. To ensure the project's viability and set a clear, actionable tempo, our planning evolved to actively guide Bec towards a realistic and implementable goal. This shift was critical; instead of merely outlining all possibilities, we focused on synthesizing the findings to recommend the most suitable solution, thereby transforming an abstract concept into a tangible, achievable objective for Phase 2. This proactive approach to solution selection not only set a clear technical direction but also established a pragmatic tempo for subsequent development, aligning expectations with demonstrable progress.

## Phase 1: Foundational Planning and Iterative Design (Semester 1)

Our Semester 1 planning, structured as the "Design Phase" ([*project plan overview*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Phase%201)%20Report-,Project%20Plan.pdf,-Download%20Project%20Plan)), was meticulously designed to establish a solid foundation for the entire project. Key activities included:

### 1. Scope Definition and User Stories

The initial weeks (Weeks 5-7) were dedicated to refining the project scope and meticulously crafting user stories. This involved confirming the core features and functionalities that the AI Retirement Bot would offer ([Initial Project Definition & Scoping](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Phase%201)%20Report-,Initial%20Project%20Definition%20%26%20Scoping.pdf,-Download%20Initial%20Project)). The development of detailed user stories, each accompanied by specific acceptance criteria, was paramount ([User stories](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Sprint%20Plans.pdf-,User%20Stories%20%26%20Acceptance%20Criteria.pdf,-Download%20User%20Stories)). This ensured that every subsequent design and development effort remained directly aligned with the explicit needs of our target users: Australians aged 47 to 70 seeking reliable guidance on retirement and midlife financial planning. This user-centric foundation was essential for shaping a tool that would genuinely address their informational requirements.

### 2. Iterative Design and Prototyping

Following scope definition, our planning progressed into an iterative design process, moving systematically through different fidelity levels (Week 7 project development). This approach allowed for continuous refinement based on user and stakeholder feedback.

* Low-Fidelity Wireframing (Weeks 10-12): We commenced with low-fidelity wireframes to rapidly explore general layouts and fundamental user flows ([*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full)). This stage focused on quick testing and refinement of initial design ideas, enabling us to identify usability issues early.
* Medium-Fidelity Development (Weeks 11-13): Building on low-fidelity feedback, we evolved to medium-fidelity wireframes, introducing visual hierarchy and interaction logic ([*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full)). This refined representation allowed for a closer approximation of the intended design language, incorporating client inputs such as a one-page interface, clear disclaimers, and brand alignment.
* High-Fidelity Development (Weeks 11-13): The design phase culminated in a high-fidelity prototype *(*[*High Fidelity Code*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Full%20development.pdf-,High%20Fidelity%20Code.pdf,-Download%20High%20Fidelity)*)*. This functional demonstration aimed to simulate the user experience and demonstrate AI integration, reflecting the fully developed UI/UX and incorporating Google's Gemini AI for a live demo. Gemini was chosen as a temporary stand-in for ChatGPT during Phase 1, as it was freely available and effective for demonstrating feasibility without incurring costs. A key planning decision was to build a modular architecture, separating AI logic from UI code, to ensure future flexibility.

This continuous feedback-driven iteration process, particularly from our industry partner ([*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full)), was critical in shaping design decisions, such as the introduction of the chatbot persona "Terah." This responsive planning ensured dynamic alignment with user experience principles and overarching business objectives.

## Strategic Solution Evaluation and Selection

A cornerstone of our Semester 1 planning involved a systematic and exhaustive evaluation of potential LLM solutions ([*Selection of Potential Solution*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=solutions%20%2D%20combined.pdf-,Selection%20of%20Potential%20Solutions.pdf,-Download%20Selection%20of)). This "Potential Solutions Evaluation" report critically assessed four distinct approaches to delivering intelligent conversational behaviour: Retrieval Augmented Generation (RAG), LLM API, Rule-Based (Non-LLM) Systems, and Local Model Implementation.

Each solution was rigorously evaluated against six predefined criteria: Effectiveness, Feasibility, Cost, Timeframe, Risks and Limitations, and Sustainability ([*Selection of Potential Solution*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=solutions%20%2D%20combined.pdf-,Selection%20of%20Potential%20Solutions.pdf,-Download%20Selection%20of)). This comprehensive, data-driven comparison, detailed in the "Comparisons of Solutions" table ([*Selection of Potential Solution*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=solutions%20%2D%20combined.pdf-,Selection%20of%20Potential%20Solutions.pdf,-Download%20Selection%20of)), led to the strategic recommendation and adoption of the ChatGPT API as the most appropriate solution for the retirement information chatbot. This decision, driven by its high score (43 out of 60) and its balance of effectiveness, strong feasibility, and rapid development timeframe, definitively solidified our technical direction. This process exemplified how our plans were dynamically adjusted based on detailed technical analysis and client requirements, demonstrating a strong capacity for critical thinking in solution selection and setting a realistic, yet ambitious, technical goal for Phase 2.

## Phase 2: Refined Plans for Successful Project Completion (Semester 2)

Building upon the robust foundation established in Semester 1, our plans for the successful completion of the AI Retirement Bot in Semester 2 are clearly outlined as the "Development Phase" *(*[*Sprint plan*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Project%20Plan.pdf-,Sprint%20Plans.pdf,-Download%20Sprint%20Plans)). This phase will meticulously translate our refined designs and chosen solution into a fully functional and production-ready application.

Our approach will continue to be Agile, progressing through distinct sprints with clear milestones and deliverables:

* Development Setup (Week 1): Establish a comprehensive coding environment, manage user stories, and set up robust source control and CI/CD pipelines.
* Basic Chatbot Features (Weeks 2-5): Build fundamental chatbot functionalities including chat with context awareness, source attribution, and mandatory disclaimers, resulting in the "first working chatbot prototype".
* Feature Expansion (Weeks 6-9): Integrate the selected ChatGPT API for live LLM responses and implement the complete UI/UX, aiming for "full feature implementation".
* Internal Testing and User Feedback (Week 10): Conduct thorough internal testing to identify and rectify major bugs and refine performance.
* User Acceptance Testing (Week 11): Engage target users to validate usability, clarity, and effectiveness.
* Final Integration and Polishing (Weeks 11-12): Comprehensive integration of all components and a final round of polishing, leading to the "final product version".
* Final Presentation and Project Handover (Week 13): Prepare and deliver the final presentation and formally hand over the project.

## Ensuring Quality and Compliance in Phase 2 Outputs

The quality and compliance of our final outputs are paramount, especially given the sensitive nature of financial information. Our planning explicitly integrates measures to ensure the AI Retirement Bot adheres to the highest standards. This includes planning for:

* General Information Delivery: Providing precise, broad information derived solely from reliable, openly accessible Australian government sources.
* User-Friendly Language: Ensuring responses adopt an inviting, conversational tone, simplifying complex financial terminology.
* Source Referencing: Explicitly attributing all sourced content using structured templates for transparency and compliance.
* Redirection for Further Support: Strictly designing the bot not to provide personal financial advice, redirecting users to licensed professionals when necessary.
* Compliance Measures: Implementing strict protocols for using approved sources, mandatory disclaimers, preventing personalized advice, and ethical data handling.
* Quality Assurance: Planning for continuous validation, rigorous internal testing, User Acceptance Testing (UAT), and regular stakeholder engagement to integrate feedback and verify compliance.

## Project Status and Evidence of Feasibility

Based on the comprehensive planning and the tangible outputs achieved in Semester 1, the AI Retirement Bot project is currently on track with its defined objectives. The successful development of a high-fidelity prototype, incorporating simulated AI functionality, serves as compelling evidence of our team's capability to deliver a functional and visually complete application. This prototype's modular architecture, designed to separate AI logic from UI code, unequivocally validates our plan for a seamless transition to the OpenAI API in the production version.

Furthermore, the detailed "Potential Solutions Evaluation" report *(*[*Selection of Potential Solution*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=solutions%20%2D%20combined.pdf-,Selection%20of%20Potential%20Solutions.pdf,-Download%20Selection%20of)*)* and comprehensive sprint plans collectively provide a robust foundation for Phase 2. This evidence underscores the realism and feasibility of our future plans, demonstrating that the project is well-managed and positioned for successful delivery of a high-quality, compliant, and user-friendly AI Retirement Bot.

# Project Outputs

The tangible outputs produced throughout this project serve as critical evidence of our progress, validating the feasibility of our plans and demonstrating a direct alignment with the project's evolving aims. Underpinned by a deliberate and adaptive methodology, these artifacts are not merely deliverables but the concrete results of our iterative research, design, and strategic decision-making. This section provides a detailed analysis of the outputs produced in Semester 1, exploring their composition, the process of their creation, and their value in establishing a robust foundation for the project.

**Tangible Outputs Produced (Semester 1)**

The primary artifacts from the "Design Phase" provide convincing, multi-faceted evidence that our Phase 2 plans are feasible, realistic, and meaningful. They are the product of a structured agile process that combined collaborative brainstorming, specialised individual contributions, and continuous stakeholder feedback.

1. The High-Fidelity Prototype: The principal artifact from this semester is a functional high-fidelity prototype that serves as a tangible demonstration of our technical and design capabilities. Its creation was a multi-stage, iterative process:
   * Evolution: The process began with low-fidelity wireframes in Figma, allowing for rapid exploration of fundamental layouts and user flows. Following feedback from our industry partner, who favoured a single-page interface and clear disclaimers, we progressed to medium-fidelity designs. This stage was critical for incorporating client input, such as adopting the brand's colour scheme and introducing the chatbot persona "Terah" to humanise the interaction. ([*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full))
   * Implementation: The final high-fidelity prototype was developed as a React application. This functional demonstration simulates the complete user experience and integrates Google's Gemini AI. Gemini was strategically chosen as an effective, freely available stand-in to prove the concept of a live AI interaction without incurring API costs during the design phase. *(*[*High Fidelity Code*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Full%20development.pdf-,High%20Fidelity%20Code.pdf,-Download%20High%20Fidelity)*,* [*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full)*)*
   * Feasibility Evidence: The successful implementation of a live, third-party LLM serves as direct evidence of our technical capacity to deliver a functional AI-powered application. More importantly, the prototype was intentionally engineered with a modular architecture *(*[*High Fidelity Code*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Full%20development.pdf-,High%20Fidelity%20Code.pdf,-Download%20High%20Fidelity)*,* [*Wireframe Full development*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Potential%20Solutions.pdf-,Wireframe%20Full%20development.pdf,-Download%20Wireframe%20Full)*)*, strategically separating the front-end UI code from the back-end AI logic. This deliberate design choice, a key outcome of our planning, unequivocally validates the feasibility of our planned seamless transition to the OpenAI API in Phase 2, demonstrating technical foresight and mitigating significant future integration risks.
2. Foundational Strategic Documentation: Accompanying the prototype, our suite of foundational documents provides the critical rationale that underpins our technical and strategic direction. These documents were created through collaborative research, analysis, and synthesis.
   * Selection of Potential Solution Report: This report provides rigorous, data-driven evidence for our selection of the ChatGPT API ([*Selection of Potential Solution*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=solutions%20%2D%20combined.pdf-,Selection%20of%20Potential%20Solutions.pdf,-Download%20Selection%20of)). It details a systematic assessment of four distinct solutions (RAG, LLM API, Rule-Based, and Local Model) against six predefined criteria: Effectiveness, Feasibility, Cost, Timeframe, Risks and Limitations, and Sustainability. The detailed comparison table and analysis within this document demonstrate a deep level of critical thinking and reasoning. It proves that our chosen technical path is the result of a comprehensive, evidence-based process, making our Phase 2 plans both realistic and strategically justified.
   * User Stories and Scope Definition Documents: These artifacts are tangible evidence of our disciplined, user-centric approach. We meticulously crafted detailed user stories for Australians aged 47 to 70, each equipped with specific acceptance criteria ([User Stories](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Sprint%20Plans.pdf-,User%20Stories%20%26%20Acceptance%20Criteria.pdf,-Download%20User%20Stories)). This process ensures that every subsequent design and development effort remains directly aligned with explicit user needs and provides a clear definition of "done." This guarantees that the project's outputs will be meaningful and valuable to their intended users and our industry partner.
   * Project Plan and Sprint Overviews: These planning documents serve as the operational blueprint for the project ([Project Plan](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Phase%201)%20Report-,Project%20Plan.pdf,-Download%20Project%20Plan), [*Sprint plan*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Project%20Plan.pdf-,Sprint%20Plans.pdf,-Download%20Sprint%20Plans)). They demonstrate a well-managed, structured, and realistic approach to execution by breaking down complex objectives into achievable milestones and sprints. They provide clear evidence of our ability to manage scope, distribute work effectively, and navigate the project lifecycle, instilling confidence in our capacity to successfully deliver on our future plans.

**Planned Outputs and Their Attributes (Semester 2)**

Our plans for the “Development Phase” in semester 2 ([*Sprint plan*](https://canvas.qut.edu.au/groups/148413/pages/t327-capstone-phase-1-report#:~:text=Project%20Plan.pdf-,Sprint%20Plans.pdf,-Download%20Sprint%20Plans)) are structured to produce a series of increasingly sophisticated outputs, culminating in a production ready application.

* First working Chatbot Prototype (Weeks 1-5): The first major deliverable will be a working prototype that establishes the core chatbot functionality. Its essential attributes will be context awareness, source attribution, and the integration of mandatory disclaimers. This output for validating our foundational back-end architecture and integration with the Chatgpt API before layering on the full UI/UX
* Full Feature Implementation (Weeks 6-9): This output will see the integration of the complete UI/UX with the functional back-end. The key attributes will be a polished, intuitive, and accessible user interface that reflects the high-fidelity designs, combined with the full conversational power of the selected LLM. This artifact represents the transition from a functional core to a feature-complete application.
* Production-Ready Application and Final Report (Weeks 11-12): The final tangible output will be a rigorously tested, secure, and polished application ready for handover. Its most important attributes will be reliability, compliance, and user-friendliness, verified through comprehensive internal testing and User Acceptance Testing (UAT). It will be accompanied by a final project report detailing the development process, technical architecture, and user guides

**Value and Relation to Project Aims**

Collectively, the outputs from Semester 1 hold immense value by confirming the project's viability and charting a clear course for its successful completion. They have effectively de-risked Phase 2 by proving technical feasibility, validating our strategic direction through rigorous analysis, and establishing a clear, actionable roadmap. For our industry partner, this provides strong assurance that the final product will be a high-quality, compliant, and impactful tool that meets the business's needs.

Furthermore, these outputs demonstrate how the project has successfully and responsibly adapted to an expanded scope. While the initial aim was to "research and develop the specifications for an LLM," our rapid progress, evidenced by the high-fidelity prototype, enabled us to realistically elevate this goal to delivering a fully functional LLM implementation. Our prototype, with its future-focused architecture, and our extensive documentation, which solidifies our technical choices, collectively validate our ability to meet and exceed this more ambitious aim. The tangible progression from abstract research to a demonstrable, interactive artifact indicates a deep understanding of the problem space and a mature capacity for critical thinking that translates strategic plans into impactful, real-world solutions.

# Team Operation

The successful progression of our AI Retirement Bot project throughout Phase 1 has been significantly shaped by our team's adaptable operational framework. This framework prioritizes clear communication, leverages specialized individual strengths, and employs an agile approach to project management. This section details the evolution of our team's internal processes, from workload distribution and project management methodology to our communication strategies and our approach to managing the industry partner relationship, concluding with our refined forward strategy for Phase 2.

### **Dynamic Role Specialization and Collaboration**

Initially, our approach to workload management involved an equitable division of tasks by volume. However, this quickly evolved into a more dynamic model, with roles specializing based on individual strengths, development goals, and the project's evolving requirements. This strategic shift optimized efficiency and leveraged each team member's unique expertise:

* Jonathan, leveraging his experience with Large Language Model (LLM) APIs, led the development of our prototype's LLM connection.
* Charlie, with a natural aptitude for detail and organization, meticulously manages client meeting minutes.
* My own professional background in client-facing roles positioned me to lead our meetings with our industry partner, Bec Wilson.

This targeted assignment of tasks to the most adept team member significantly accelerated progress, fostering individual ownership and accountability. Beyond these defined roles, our weekly meetings served as a critical forum for collaborative brainstorming, where we collectively discussed project progression, brainstormed potential implementations, and identified solutions. An example of this synergy was Charlie's idea to personify the AI bot with a name, "Terah," which I then visually represented. This collaborative effort to add a human touch deeply impressed our client, demonstrating the direct impact of our collective creativity.

A notable change within our team occurred when Harry left the team on the 14th of May due to his current employment serving as an acceptable replacement to the Capstone unit. This adjustment required a slight re-distribution of responsibilities, which our established adaptable operational model, particularly the existing areas of strength and a clear understanding of task ownership, allowed us to manage seamlessly with minimal disruption to project timelines.

### **Agile Project Management and Communication Methods**

To effectively manage the project's complexities and evolving scope, our team adopted an Agile project management methodology, primarily drawing on Scrum principles. This framework proved invaluable for its flexibility, enabling rapid development of deliverables and fostering continuous improvement. Our operational rhythm is defined by:

* Weekly Monday planning sessions: Dedicated to outlining objectives, assigning tasks, and anticipating roadblocks.
* Fortnightly Wednesday night meetings: Focused on reviewing and refining project performance documentation and preparing for presentations.
* Discord: Serving as our central hub for asynchronous communication, facilitating immediate updates, quick sharing of challenges, and collaborative solution formulation.

These regular check-ins ensure clear communication, smooth collaboration, and swift issue resolution. This structured approach to communication has been paramount in maintaining momentum and adapting to project needs as they change, enabling us to act quickly and effectively.

### **Project Evolution and Client Relationship Management**

Our consistent meetings and rapid progression reflect significant project momentum. The initial deliverable for Phase 1 was scoped as an AI bot specification. However, driven by our industry partner's ambitious vision and our team's capabilities, we pushed beyond research and wireframes. We successfully developed a fully functioning, styled React app with a live LLM connection, significantly exceeding original parameters. This achievement demonstrates our team's robust capabilities and commitment to delivering well-developed work on time.

Working with an industry partner like Bec Wilson, who provided a powerful high-level vision but lacked a clear technical pathway for implementation, presented both opportunities and challenges. Our role evolved to guide her through technical feasibility and strategic implementation, translating abstract ideas into concrete steps. While Bec's ambition has opened doors to exciting work opportunities, it has also necessitated a continuous effort to manage scope and remind both our partner and ourselves of the constraints of a two-semester Capstone project. This dynamic has required consistent clarification of boundaries and deliverables to ensure our efforts remain focused and achievable within the academic framework.

A critical aspect of managing this relationship involves clear discussions about the chatbot's limitations, particularly the explicit boundary that it will not provide financial advice. It is imperative to have ongoing, serious conversations with Bec to establish clear boundaries regarding the chatbot's capabilities and to clarify accountability. This ensures that all parties understand the project's scope and responsibilities, confirming that our team, as students, will not be held accountable for any unintended financial advice the chatbot might theoretically offer in a real-world scenario.

Regarding the risks associated with using the ChatGPT API as the core engine, we recognize that we do not have ultimate control over every response it generates. To manage this, our Phase 2 plan includes implementing robust content filtering mechanisms and strict adherence to approved, reliable information sources (e.g., Australian government data). We will also develop an evaluation framework for the chatbot's responses, employing specific criteria such as accuracy, relevance to Australian retirement information, adherence to disclaimers, and user-friendliness, to systematically assess and refine the bot's performance.

### **Reflection and Forward Strategy**

Our operational framework has been highly effective, yet continuous improvement is a core tenet of our approach. For Phase 2, we have identified a need for greater structure in both our client and tutor meetings. While discussions are productive, implementing more clearly defined agendas and presentation plans will enhance communication clarity and maximize feedback effectiveness. This ongoing reflection is part of navigating the unique challenges and opportunities of this project. While we strive for excellence in our deliverables, it is important for our final reports to the client to maintain an honest assessment of the project's capabilities and limitations, focusing on the development journey and achievements rather than presenting it as a fully commercial product.

In summary, our team's strength is rooted in our clearly defined, yet adaptable, roles, strong collaborative spirit, and constant drive for improvement. We have demonstrated our capability to exceed expectations in Phase 1, and we are well-prepared to deliver a successful and high-quality Phase 2.

# Individual perspective: Charles (n11285991)

## My main contributions to Project Progress and Team Operation have been…

Throughout Phase 1 of our project, I have contributed significantly across both team operations and content creation. My role as an informal team organiser was especially important. I scheduled meetings with the team and our industry partner, managed our collaborative workspace, created and maintained our Discord server as the central communication hub, and coordinated sprint and task deadlines in collaboration with our project manager. This work ensured that the team functioned smoothly and remained focused on deliverables.

My contributions were not limited to organisation. Initially responsible for a quarter of the project workload, I took on a third following the departure of a team member, Harry. This shift required me to step up and produce a substantial portion of the project content. While my role wasn’t as narrowly defined as some of my peers, I became involved in nearly every part of the project. I frequently undertook informal quality assurance testing and content reviews to help maintain cohesion and consistency, a responsibility that was well supported by the positive and collaborative team culture we fostered.

Some of my more specific contributions included writing a quarter of the user stories and acceptance criteria, conducting independent research into a non-LLM chatbot solution that was later evaluated in our Potential Solutions Report, helping shape our sprint timelines, and acting as the liaison between the team and our industry partner. This wide involvement allowed me to better understand each facet of the project while ensuring our communication and workflow remained consistent and productive.

## My main contributions to our Phase 2 goals will be…

Looking ahead to Phase 2, I anticipate continuing these roles and building upon them. I expect to maintain my position as team organiser and generalist, but with a shift toward technical implementation and code development. My responsibilities will likely grow to include managing our GitHub environment, reviewing code for clarity and efficiency, and helping implement the ChatGPT API to achieve smooth conversational interactions. Another key focus for me will be determining how we define and manage responsibility for the chatbot’s outputs, particularly in regard to legal and ethical concerns. This will involve deeper conversations with Bec Wilson and support from QUT to ensure that any risks posed by generative AI are clearly accounted for through disclaimers, agreements, and system guardrails. I’ll also continue working on our regular sprint deliverables, ensuring that reports and documentation reflect both our technical progress and our human-centred design thinking.

## Our Phase 2 goals are relevant and feasible for us to deliver because…

Our Phase 2 goals are not only ambitious but entirely achievable given the groundwork laid in Phase 1. The success of our high-fidelity prototype, which simulated AI functionality using Google Gemini, validated our design architecture and confirmed that our modular, LLM-agnostic structure is ready for integration with the ChatGPT API. The technical transition should be seamless due to the scalable and flexible foundations we’ve already built. Additionally, our choice to proceed with the ChatGPT API was backed by extensive research. Through comparative evaluation of multiple architectures, including RAG, rule-based bots, and locally hosted models, we collectively determined that the API model best fit our objectives. I was involved in this research and contributed to discussions that helped shape this direction, ensuring our technical path was justified, feasible, and aligned with the project’s goals.

The sprint plans we created as a team provide a clear and practical plan for Semester 2. With week-by-week milestones and defined responsibilities, these plans promote accountability and momentum. The structure will also allow us to effectively balance technical tasks, such as implementation and testing, with regulatory responsibilities like documentation, compliance, and stakeholder alignment. Our commitment to compliance further reinforces the feasibility of our Phase 2 goals. By grounding TERAH in approved government data sources and avoiding persistent data storage, we maintain user trust and meet sector-specific regulatory expectations. This proactive approach to governance and ethical risk has been a central part of our design process from the beginning. In terms of team capability, we have already proven ourselves through the successful delivery of key project elements in Phase 1. From defining the project scope to crafting and testing prototypes, our progress reflects not only technical proficiency but strong collaboration, organisation, and adaptability. This track record makes us confident in our ability to deliver a robust and well-governed solution in the next phase.

## My responses to challenges so far have been…

Reflecting on challenges, one of the most difficult moments came when Harry, a close friend and original team member, unexpectedly withdrew from the team. Given that I had invited each member into the group, I initially felt responsible for this disruption and concerned about how it might impact team morale and capacity. I addressed the situation honestly with the remaining members, who responded with empathy and understanding. While they were understandably disappointed, they recognised that the circumstances were beyond my control, and we quickly realigned responsibilities to keep the project on track.

Another challenge involved managing the expectations of our industry partner, Bec Wilson. Her enthusiasm for the project sometimes led her to propose ambitious new directions that extended beyond our current scope and capabilities. Balancing her vision with what was realistically achievable became a matter of open, respectful communication. I consistently used clear reasoning and time-based explanations to guide her understanding of our constraints, and although her lack of technical background occasionally created gaps in understanding, she remained receptive to our input. One notable example occurred after we presented our high-fidelity prototype. Despite its polished appearance, we had to clearly explain that the system was not yet complete and that substantial development remained. This situation reaffirmed the importance of expectation management and transparent communication.

# Individual perspective: Cole (n11277947)

## My main contributions to Project Progress and Team Operation have been…

My professional experience naturally led me to lead our weekly meetings with industry partner, Bec Wilson. In initial meetings, my technical questions revealed her "fuzzy” vision, prompting us to research multiple approaches. This effectively translated her high-level aspirations into actionable tasks, ensuring alignment.

Beyond client interactions, I actively contributed to brainstorming and technical progression. I helped shape the AI Retirement Bot's direction by researching and evaluating the local model approach for LLMs, including a feasibility document on its training and running. I also collaborated on the development of all wireframes, contributing to the visual design and flow of the prototype. Notably, I created a digital drawing for the AI's persona, "Terah," proposed by Charlie. This visual likeness, immediately integrated into wireframes, impressed our client and showcased our collective creative impact.

Operationally, I actively supported our team's communication and collaboration rhythm. This included consistent participation in Monday planning and fortnightly Wednesday night meetings to align tasks and polish documentation. Our use of Discord for quick communication facilitated rapid issue resolution and smooth information exchange, crucial to our success.

I also proactively managed project scope and external expectations. I was instrumental in guiding the team in managing the project's scope, ensuring our efforts remained aligned with the defined parameters of a Capstone project despite the expansion of Bec's vision. When Harry left the team on the 14th of May, due to his employment replacing the experience needed of the Capstone unit, our team's adaptability and my involvement in redistributing responsibilities ensured minimal disruption.

## My main contributions to our Phase 2 goals will be…

Building on Phase 1, my Phase 2 focus is on successful delivery while strategically managing user and partner interactions. I will continue to lead client meetings, refining their structure for clarity. This includes developing a written plan for our fortnightly presentations to both the tutor and the client. Critically, I will proactively engage with Bec, keeping her updated to realize her vision and boundaries, specifically stressing the bot will not provide financial advice, and clarifying accountability. This direct, ongoing engagement is vital for managing expectations and mitigating risks.

I will also contribute to the overall user experience and visual design, building on "Terah's" personification to ensure an intuitive and engaging interface. My efforts will support delivering the First Working Chatbot Prototype, Full Feature Implementation, and the Final Production-Ready Application, as outlined in our Semester 2 sprint plan. I will ensure the final output aligns with scope and quality expectations, preparing the project for its comprehensive final report and presentation. My commitment is to facilitate clear communication and ensure project remains on track.

## Our Phase 2 goals are relevant and feasible for us to deliver because…

Our Phase 2 goals are highly relevant and feasible, underpinned by our robust Phase 1 foundation and demonstrated capabilities:

* **Validated Technical Approach:** Our high-fidelity prototype, integrating Google Gemini, proved our capacity for conversational AI. Its modular, LLM-agnostic architecture enables a streamlined transition to OpenAI's API in Phase 2.
* **Data-Driven Solution Selection:** My involvement in comprehensively evaluating LLM solutions, leading to the ChatGPT API selection, provides a strong, evidence-based technical direction, validating our chosen pathway.
* **Structured Roadmap:** Our detailed Semester 2 sprint plans, which I helped develop, offer a clear, week-by-week guide. This structure simplifies task management, ensures milestone achievement, and supports overall feasibility.
* **Demonstrated Team Adaptability:** Our ability to adapt to scope changes and team composition (e.g., a member's departure) instills high confidence in executing Phase 2 objectives.
* **Proactive Client Management:** Consistent engagement with our industry partner, including setting realistic expectations and clarifying boundaries, ensures deliverables remain relevant yet within Capstone constraints.

These factors collectively assure that our Phase 2 goals are relevant and entirely feasible.

## My responses to challenges so far have been…

A significant challenge was the unexpected expansion of project scope. Initially just planning an LLM specification, it evolved to require a functional implementation. My response involved proactively managing these expanding requirements with our industry partner. For instance, when Bec discussed global expansion, I helped steer the conversation back to our current scope to refine feasible requirements. This clarified questions, allowed us to present findings, and demonstrated my adaptability in transforming a hurdle into a clear path forward.

A further challenge involved navigating the ambitious nature of our industry partner, Bec Wilson. While inspiring, her vision necessitated careful discussions to keep the project focused within our two-semester Capstone scope. My approach in client meetings was to maintain transparency about feasibility, translating her aspirations into manageable tasks. This ensured alignment while prioritizing a high-quality academic project.

Throughout these challenges, my approach emphasized proactive communication, strategic planning, and collaborative problem-solving. I ensured discussions, especially with our industry partner, clarified expectations and defined boundaries, particularly regarding the chatbot's non-financial advice role. My involvement in weekly meetings and goal-setting consistently fostered an efficient, cohesive team, enabling us to effectively adapt and overcome obstacles.

# Individual perspective: Jonathan (n11240717)

## My main contributions to Project Progress and Team Operation have been…

My primary contribution to this project mirrored the role of a project manager. Each week, I focused on establishing clear objectives and deliverables for our team, ensuring consistent progress and alignment with our project goals. This involved actively guiding our work and translating strategic visions into actionable, well-defined tasks.

During Semester 1, particularly from Weeks 5, I assisted in defining the project's foundational goals, scope, and limitations for the AI Retirement Bot. This effort provided our team with a clear understanding of its core purpose and operational boundaries. My consistent efforts incorporated the refinement of our scope, deliverables, and sprint plans, alongside comprehensive preparation for engagements with our industry partner. Additionally, I contributed significantly to user story development, crafting a 1/4 of the detailed user stories and then finalising and organising all user stories for subsequent project phases. This dedicated focus on task management and prioritisation was crucial in establishing a robust framework for our requirements.

Regarding key technological decisions, I took the lead in researching Retrieval-Augmented Generation (RAG). I also played a pivotal role in the team's ultimate selection of the definitive solution from our evaluated options. My analytical insights directly informed the team's decision to adopt the ChatGPT API as our core technology, demonstrating my critical thinking and problem-solving capabilities in ensuring the chosen pathway was both effective and feasible.

Beyond strategic planning, I engaged directly in technical implementation. I was responsible for partially implementing the User Interface (UI) requirements for the prototype, as well as integrating the Google Gemini 2.0 Flash model to simulate the bot's intelligent behaviour. This was a vital step in overcoming a significant functional impediment, clearly evidencing my capacity to execute the technical plans I had helped develop.

Pertaining to team operations, I actively fostered clear communication protocols, efficient sprint planning, and a proactive approach to problem-solving. My consistent participation in weekly meetings, where I contributed to planning and monitored project advancement, underscores my commitment to cultivating a high-performing team environment.

## My main contributions to our Phase 2 goals will be…

Building on my contributions and technical work from Phase 1, my role in Phase 2 will involve working collaboratively to successfully implement and refine the AI Retirement Bot, specifically using the chosen ChatGPT API. Building on my earlier work connecting the prototype to Google Gemini, I will contribute to the integration of the ChatGPT API for smooth conversational functionality. I will also collaborate on developing fundamental chatbot features, ensuring context awareness, accurate source attribution, and mandatory disclaimers, making sure these developments meet requirements for factual accuracy and compliance. I will continue to facilitate comprehensive UI/UX implementation, making the application functional, intuitive, and user-friendly. Furthermore, I will actively participate in internal testing and final integration and polishing to deliver a stable, high-quality product. My plans involve summarising progress and preparing the final report, showing commitment to project management and quality assurance. These planned contributions reflect my ongoing involvement in guiding the project, ensuring technical requirements are met, and advancing the solution toward a production-ready application.

## Our Phase 2 goals are relevant and feasible for us to deliver because…

Our Phase 2 goals are highly relevant and achievable, thanks to our structured planning and strong Semester 1 achievements.

* Validated Technical Approach: Our high-fidelity prototype, which incorporated simulated AI functionality via Google Gemini, unequivocally demonstrated our capability in conversational AI integration. The modular, LLM-agnostic architecture we implemented facilitates a streamlined transition to the OpenAI API, minimising future integration complexities.
* Data-Driven Solution Selection: The comprehensive research we conducted, in which I actively participated, enabled a confident and well-reasoned selection of the ChatGPT API as the appropriate technical pathway. This thorough evaluation of potential solutions provides a realistic and justified direction for development.
* Clear and Detailed Roadmap: Our detailed Semester 2 sprint plans, which I contributed to developing, offer a clear, week-by-week guide. This structured approach simplifies effective task management, ensures the achievement of defined milestones, and supports the project's overall feasibility and efficient resource utilisation.
* Strong Compliance Framework: The project's commitment to stringent compliance requirements, including the utilisation of official government sources, further ensures that the resulting output will be highly trustworthy and relevant for our industry partner within a regulated sector.
* Demonstrated Team Capability: The team's demonstrated capabilities in Phase 1, encompassing scope definition, user story development, solution evaluation, and prototype construction, collectively instil confidence in our ability to successfully execute Phase 2 objectives.

These factors provide strong assurance that our Phase 2 goals are both relevant and entirely feasible for delivery.

## My responses to challenges so far have been…

A significant challenge I encountered pertained to the unexpected expansion of the project's scope. Initially, the project aimed solely at planning for an LLM; however, it evolved to require a functional implementation. My response involved proactively advocating for and facilitating the integration of Google Gemini into the prototype. This transformation of a potential impediment into a tangible achievement clearly demonstrated my adaptability and strategic problem-solving capabilities.

A further challenge involved navigating the complexity of evaluating multiple sophisticated LLM solutions and discerning the optimal fit, particularly when balancing compliance requirements and cost implications. I undertook extensive research and contributed significantly to the informed decision to proceed with the ChatGPT API. This evidenced my capacity for critical thinking and sound judgment, particularly within complex technical scenarios.

Throughout these challenges, my approach consistently emphasised proactive planning, clear communication, and collaborative problem-solving. I ensured the team maintained clearly defined tasks and effectively leveraged individual strengths to overcome obstacles. My active involvement in meetings, including goal setting and progress monitoring, consistently underscored my commitment to teamwork and a professional methodology for maintaining project efficiency.

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