MSc in Business Analytics

Module Name: Project Management for Business Analytics

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GROUP PROJECT

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Project Name:	SmartPensions with Decision Support System Integration
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1.0 Scope Plan

The project scope for SmartPensions focuses on four major features including retirement planning, tax optimisation, goal tracking and monitoring, and investment guide. Retirement planning feature will allow the users to get recommendations for their retirement planning using machine learning algorithm. Tax optimisation and investment guide feature will also use machine learning algorithms to help users to optimise their tax and recommending which investment based on their preferences, respectively. Finally, for goal tracking and monitoring, provides a comprehensive summary of their goal and at the same time, serves as a dashboard.

The project will utilise agile methodology, so there will be a scrum team. The scrum team consists of Product Owner, Scrum Master, and development team.

1.1 Agile Breakdown Scope

Since this project will adopt agile methodology, agile breakdown scope is suitable to provide an overview of the scope. It contains theme, epics, sprint, and sprint goal. Figures 1.1 and 1.2 show the breakdown scope of this project. There are 20 sprints and 9 epics in total, where each sprint has its own task or sprint goal. Each task and goal are specific and contributes to the main aim of the project.

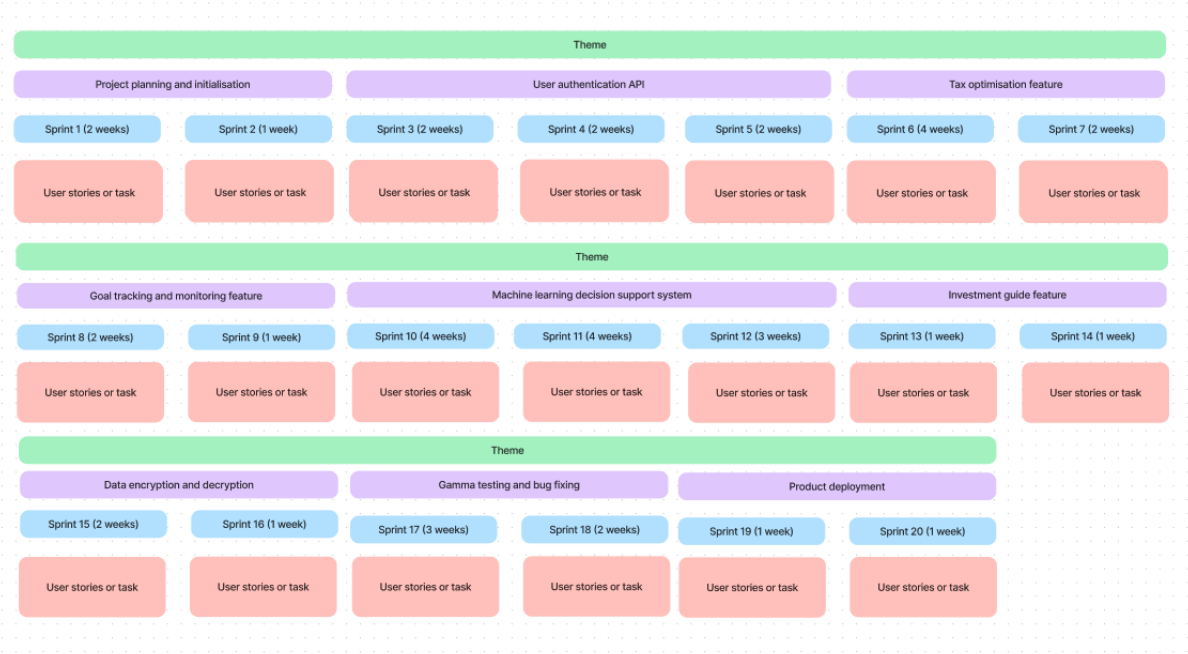

Figure 1. 1: SmartPensions Breakdown Scope

Epic 1: Project planning and initialisation

Task or user stories:

- Define project scope, objectives, and requirements.
- Finalising project planning documents.

Epic 2: User authentication API

Task or user stories:

- Create wireframes and UI prototypes.
- As a user, I want to login and profile page to be user friendly.
- Create database for user profile and login credentials.
- Integrate user authentication API.
- Integrate MFA.
- Test MFA and user authentication API.

Epic 3: Tax optimisation feature

Task or user stories:

- Gather information on Irish tax regulations.
- Create database for tax profile.
- As a user, I want to tax optimisation page to be user friendly.
- Develop initial tax optimisation algorithm.
- Finalise tax optimisation algorithm.
- Integrate tax optimisation algorithm.

Epic 4: Goal tracking and monitoring feature

Task or user stories:

- Create a table for dashboard and link it with user profile table.
- As a user, I want to see a clear overview of my goals so that I can monitor my progress.
- Create wireframes and UI prototypes.
- As a user, I want to be able to set specific goals within the app so that I can track my progress.
- Test goal tracking and monitoring functionality.

Epic 5: Machine learning decision support system

Task or user stories:

- Data gathering and pre-processing for machine learning model.

- Develop ML models
- Machine learning model training.
- Create database for ML input.
- Create wireframes and UI prototypes.
- Testing machine learning model.
- Integrate machine learning model using ML API.
- As a user, I want to get recommendation for retirement planning based on my input.
- Testing ML model.
- Integrating ML model using ML API.

Epic 6: Investment guide feature

Task or user stories:

- Gather information on investment option in Ireland.
- Create wireframes and UI prototypes.
- Develop UI for investment guide and backend logic.
- As a user, I want the app to provide investment guide based on my preferences.

Epic 7: Data encryption and decryption

Task or user stories:

- Develop data encryption algorithm.
- Integrate data encryption and decryption.
- As a user, I want to ensure that sensitive data within the system is properly encrypted to protect it from unauthorised access or breaches.

Epic 8: Gamma testing and bug fixing

Task or user stories:

- Perform Gamma testing.
- Gather feedback.
- As a user of the application, I want the software to perform optimally to enhance my overall experience and productivity.
- As a user, I expect to use the app without encountering any bugs or issues that disrupt my experience.

Epic 9: Product deployment

Task or user stories:

- Prepare app deployment for iOS and Android.
- Deploy app to respective environment.
- Monitor app's performance.

Although, some of the user stories have been created, these user stories will change depending on the project as the project goes on. These user stories and tasks are not fixed it can be iterated by the product owner. At each sprint, a unit testing will be done before each sprint release.

1.2 Product Backlog

Figures 1.2, 1.3, and 1.4 show the screenshot taken from Jira software, the product owner will utilise Jira for keeping the product backlog and updating product backlog as product owner will be the one who is responsible for product backlog. Each product backlog has its own user story for calculating the Earned Value Management (EVM) in chapter 3.

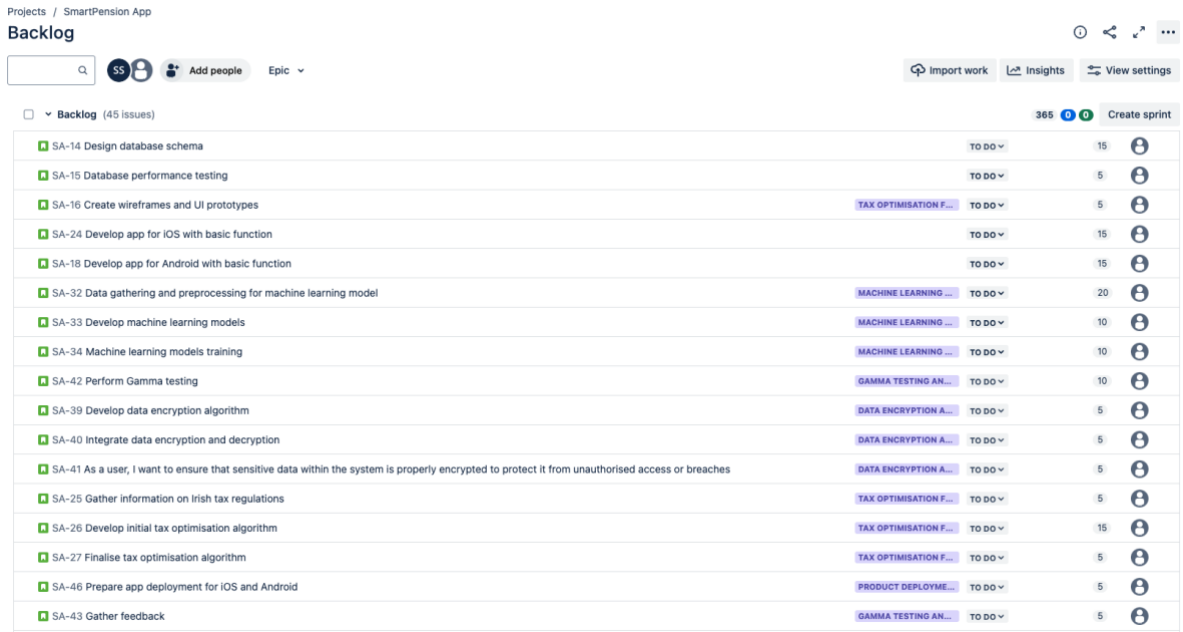

Figure 1. 2: Product Backlog (1st page)

In this case the product backlog contains user stories or tasks of each sprint, story point, status, and assigned epic. For example, A user story "As a user, I want to ensure that sensitive data within the system is properly encrypted to project it from unauthorised access or breacher" status is "to do", has a story point of 5, and assigned to "Data encrypted and decryption" epic. Product owner will continuously refine the product backlog as new information such as

priority, evolution of product vision, and more becomes available. This will ensure that the stakeholders will be satisfied.

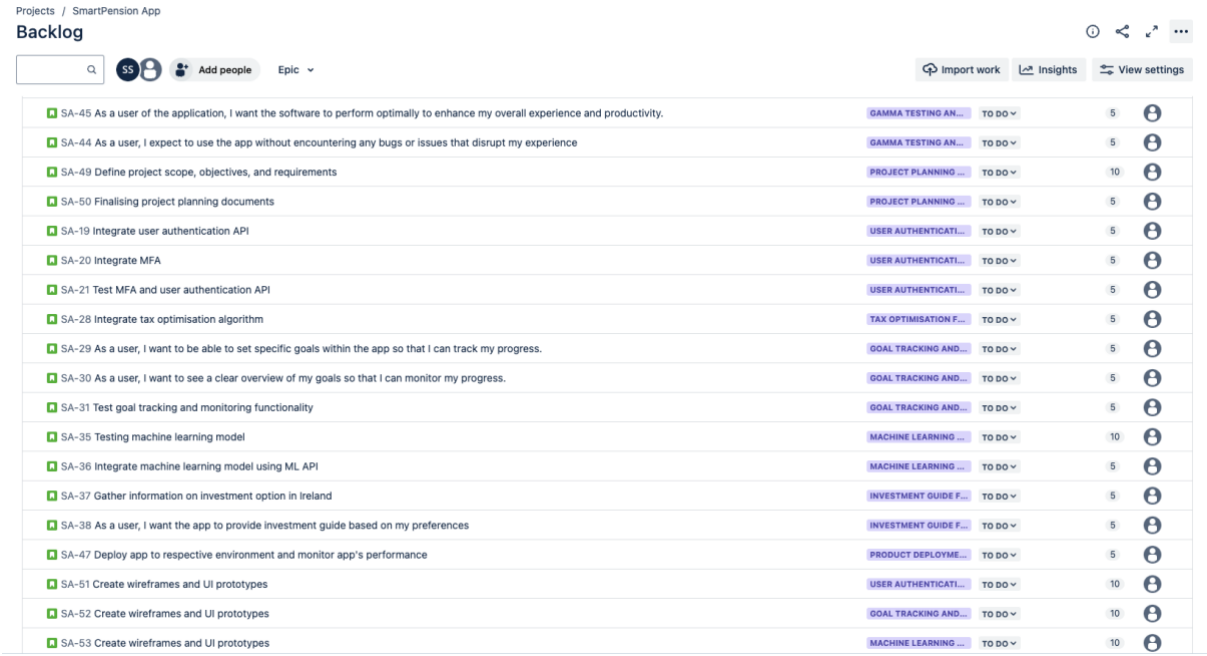

Figure 1. 3: Product Backlog (2nd page)

In a nutshell, product backlog can be a highly effective tool for project or product management if it is well maintained by the product owner, consequently, it enables the scrum team to focus on delivering value to customers despite the changing circumstance.

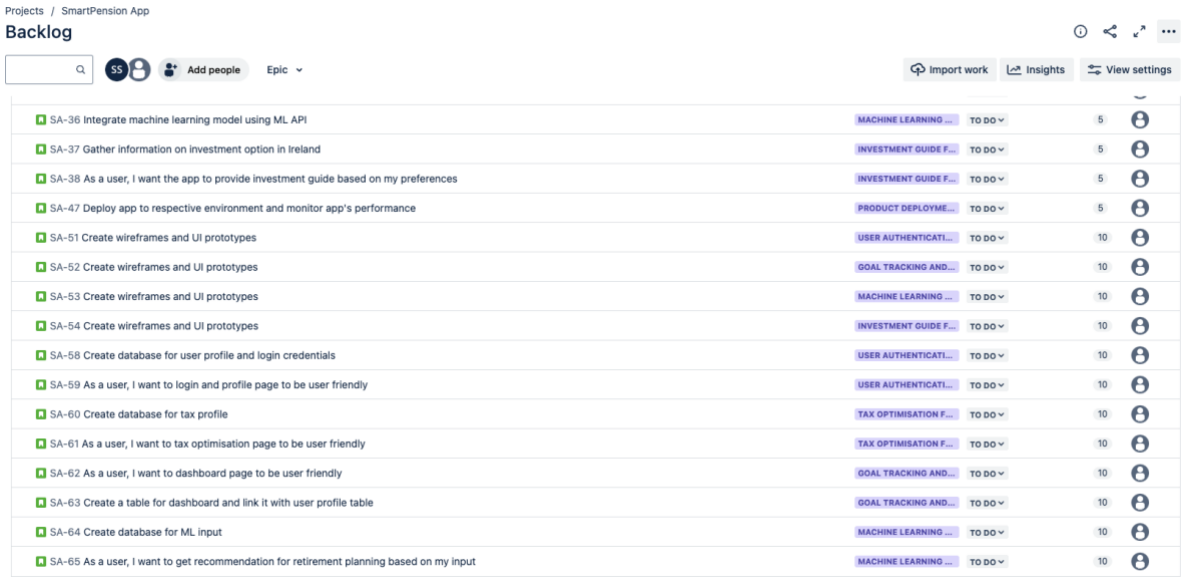

Figure 1. 4: Product Backlog (3rd page)

1.3 Action Priority Matrix

Action priority matrix is important for the project because it helps the product owner to decide the priority for each item. In this case, user authentication API item is the highest rank (has the

highest priority) because it has higher benefit than cost as shown in figure 1.5. By deciding priority of each item, resources can be allocated properly, the risk of project inefficiency and delays can be significantly increase. This action priority matrix follows benefit by cost framework, where the higher benefit indicates better importance and lower cost shows better feasibility. In this matrix, items are prioritised according to their probable benefits compared to their costs. This is why item with higher benefit like "Machine learning and decision support system" ranked lower because the cost associated to it is relatively high.

	Benefit			Cost			
	Customer Value	Business Value	Increase Conversions	Development Effort	Risk Factor	Score	Rank
Title	20	20	10	40	10	100	
User authentication API	8	9	7	6	5	87	1
Tax opitmisation feature	7	8	6	7	6	87	2
Goal tracking and monitoring feature	9	7	8	7	6	71	3
Product deployment	8	9	7	6	7	67	4
Investment guide feature	8	9	7	7	7	63	5
Data encryption and decryption	9	7	8	6	8	63	6
Machine learning and decision support system	9	8	9	9	8	61	7
Gamma testing and bug fixing	7	8	3	7	5	59	8

Figure 1. 5: Action Priority Matrix for SmartPensions

1.4 Change Control Process

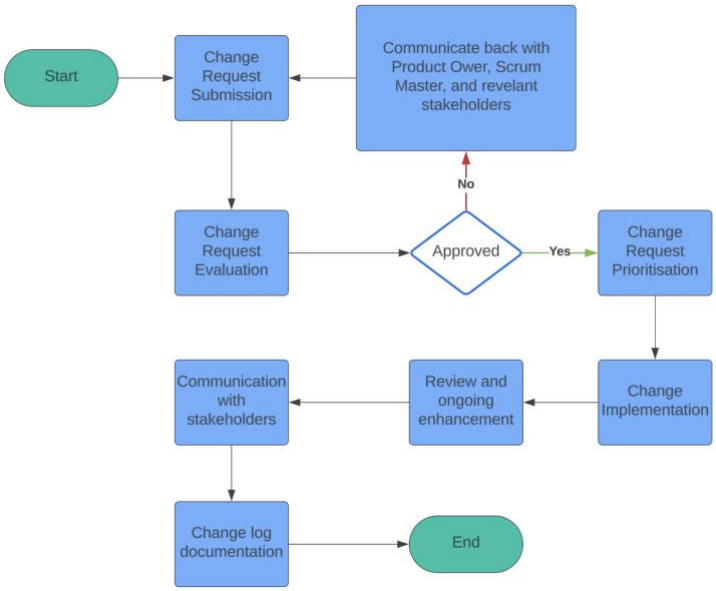

Figure 1.66: Change Control Process Flowchart

Change control process is a process where project manager or product owner submit any requests to the stakeholders and then stakeholders will decide whether to approve or reject the request. Figure 1.6 illustrates the flow of change control in this project, depicting the steps of

submitting, reviewing, deciding, implementing, ongoing enhancing, communication, and documenting.

Section A		
Requested by:		Change Request ID
Project Name:		Date of Request
Description of change:		
Reason for change:		
Section B		
Impact on scope (Circle One): 1. High 2. Medium 3. Low		Risk Associated:
Impact on schedule (Circle One): 1. High 2. Medium 3. Low		
Impact on cost (Circle One): 1. High 2. Medium 3. Low		
Section C		
Proposed solution:		
Estimated effort:		
Dependencies:		

Figure 1.77: Change Control Template First Part

Section D	
Sprint Number:	
Task to be completed	
1.	
2.	
3.	
4.	
5.	
6.	
Resouce Required	
1.	
2.	
3.	
4.	
5.	
6.	
Section E	
Product Owner Approval: Yes / No Scrum Master Approval: Yes / No Stakeholder Approval: Yes / No	Date of Approval:
Notes:	

Figure 1.88: Change Control Template Second Part

Firstly, a change can be submitted by any team member to the stakeholders, who then will evaluate and review the requests made by team member. Once approved, it can move to change request prioritisation phase, otherwise, the team member need to communicate back with product owner, scrum master, or relevant stakeholder. After that, change will be implemented, and review of the change will be done. If necessary, change need to undergo enhancement, if not, team member needs to communicate back with stakeholders to get confirmation. Finally, the change will be recorded in change log, example of change log is as shown in figure 1.9. Figure 1.7 and 1.8 above both depict the template of change control template for any of the members to fill for submission.

Change Log									
No.	Change Request ID	Date of Request	Request By	Description of Change	Approval By	Date of Approval	Sprint No.	Status	Review Date	Review Outcome
1	CR102	15/04/2024	Arslan	Add user authentication API for Google and phone number	PO, SM, SH	18/04/2024	11	Done	26/04/2024	Approved
2	CR101	25/05/2024	Shaqif	Changing machine learning algorithm from Adaboost to Linear Regression	PO, SM, SH	30/05/2024	23	To Do	N/A	N/A

Figure 1.99: Example of Change Log

2.0 Schedule Plan

A meticulously crafted schedule plan is the backbone of successful project management. The chronological blueprint guides the SmartPensions project from conception to deployment. Within this section, we present a comprehensive roadmap that delineates each phase of development with precision and clarity.

Our approach is methodical, with each task sequenced to ensure that dependencies are honoured, resources are optimally allocated, and milestones are achievable within the stipulated time frame. Recognizing the importance of pacing in project execution, we have adopted a no-overlap strategy, where the initiation of one task is contingent upon the completion of its predecessor. This ensures that our focus remains undivided, and that each component of the project receives the attention it deserves.

The schedule plan outlined herein extends over 58 weeks, an ambitious and realistic timeframe, providing a detailed timeline for the various stages of the SmartPensions project. Each week has been carefully accounted for, from the initial project planning and groundwork to the intricate details of software development and testing. The sequential nature of our plan underlines our commitment to precision, allowing for a structured progression through the project's lifecycle.

2.1 Defining Activities

Project Planning and Initialisation

Define project scope, objectives, and requirements: Establish the overall direction and constraints of the SmartPensions project.

Finalise project planning documents: Prepare and review project plans to be approved by key stakeholders.

User Authentication API

Create wireframes and UI prototypes: Design preliminary user interfaces for login and user profile management.

Create a database for user profiles and login credentials: Set up a secure database to store user information.

Integrate user authentication API: Develop and incorporate an API for handling user authentication processes.

Integrate Multi-Factor Authentication (MFA): Add layer of security by implementing MFA.

Test MFA and user authentication API: Perform thorough testing to ensure the security and functionality of the authentication features.

Tax Optimisation Feature

Gather information on Irish tax regulations: Research and compile relevant tax laws to inform the development of the tax optimization algorithm.

Develop initial tax optimization algorithm: Construct a basic version of the algorithm for optimizing user taxes.

Finalise and integrate tax optimisation algorithm: Refine the algorithm and integrate it into the application.

Goal Tracking and Monitoring Feature

Create a dashboard table linked with the user profile: Develop a system for users to set and monitor their retirement goals.

Test goal tracking and monitoring functionality: Ensure the feature accurately tracks and displays user goals.

Machine Learning Decision Support System

Data gathering and pre-processing for machine learning model: Collect and prepare data that will be used to train the machine learning models.

Develop ML models and integrate using ML API: Create models that will provide recommendations for retirement planning based on user input.

Investment Guide Feature

Gather information on investment options in Ireland: Compile data on various investment opportunities for the application's recommendation engine.

Develop UI for the investment guide and backend logic: Design the user interface and backend system for the investment guide feature.

Data Encryption and Decryption

Develop data encryption algorithm: Create an algorithm to encrypt sensitive data within the system.

Integrate data encryption and decryption: Implement the encryption system to protect user data from unauthorized access.

Gamma Testing and Bug Fixing

Perform Gamma testing: Conduct advanced testing to ensure the application is ready for production.

Gather feedback and fix bugs: Analyse user feedback to identify and resolve any remaining issues.

Product Deployment

Prepare app deployment for iOS and Android: Ready the application for launch on both major mobile platforms.

Deploy app to respective environments: Oversee the distribution of the application to app stores.

Monitor app's performance: Track the performance and user engagement post-launch to inform future updates.

2.2 Sequence Activities and Estimate Duration

EPIC NO	EPICS	Week	Start Date	End Date	Dependencies
1	Project Planning and Initialization	3	1-Jun-24	21-Jun-24	
2	User Authentication API	11	22-Jun-24	6-Sep-24	1
3	Tax Optimization Feature	9	7-Sep-24	1-Nov-24	1
4	Goal Tracking and Monitoring Feature	5	2-Nov-24	6-Dec-24	2,3
5	Machine Learning Support System	12	7-Dec-24	28-Feb-25	2,3
6	Investment Guide Feature	4	1-Mar-25	28-Mar-25	4
7	Data Encryption and Decryption	3	29-Mar-25	18-Apr-25	6
8	Gamma Testing and Bug Fixing	6	19-Apr-25	30-May-25	5,7
9	Product Deployment	5	31-May-25	4-Jul-25	8

Figure 2.1 : Table of activities duration and sequence for Smart Pension

The table outlines the Agile project management schedule for the SmartPensions project, structured into nine epics. Each epic represents a significant segment of the project, detailing the duration, start and end dates, as well as dependencies. This layout ensures a clear and organized view of how the project will progress over its lifecycle. It begins with "Project Planning and Initialization" and culminates in "Product Deployment," capturing all the critical

milestones in between. The dependencies column indicates the sequence and relationship between various tasks, ensuring a logical progression and coherent flow of activities aligned with Agile methodologies. This schedule is essential for tracking the project's progress and for guiding the team through each phase of development efficiently.

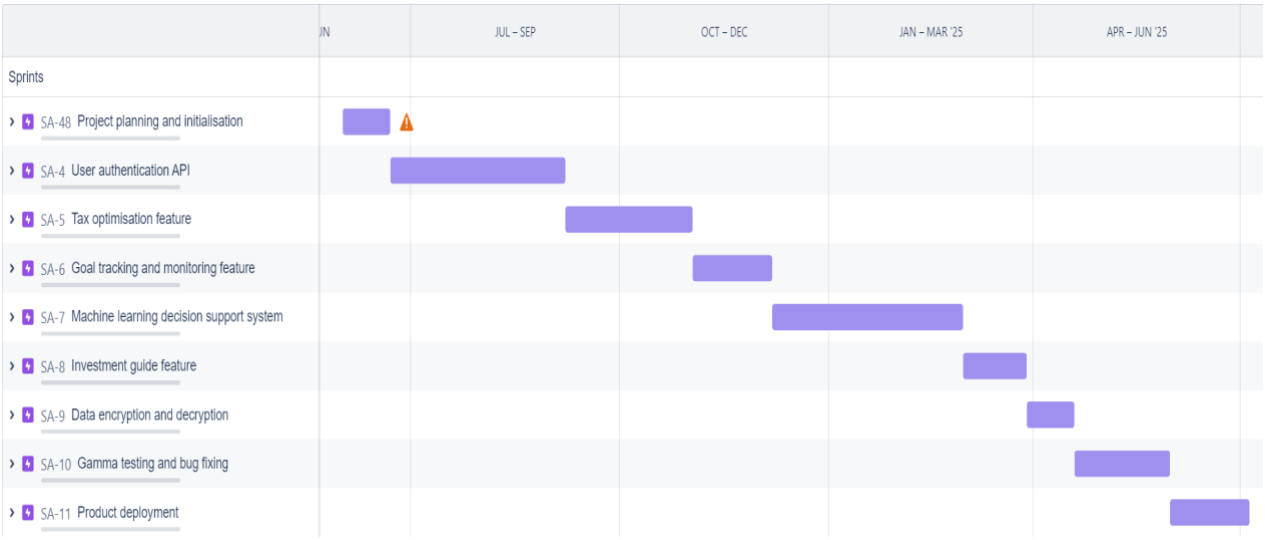

Figure 2.2 : Gantt Chart for Smart Pension

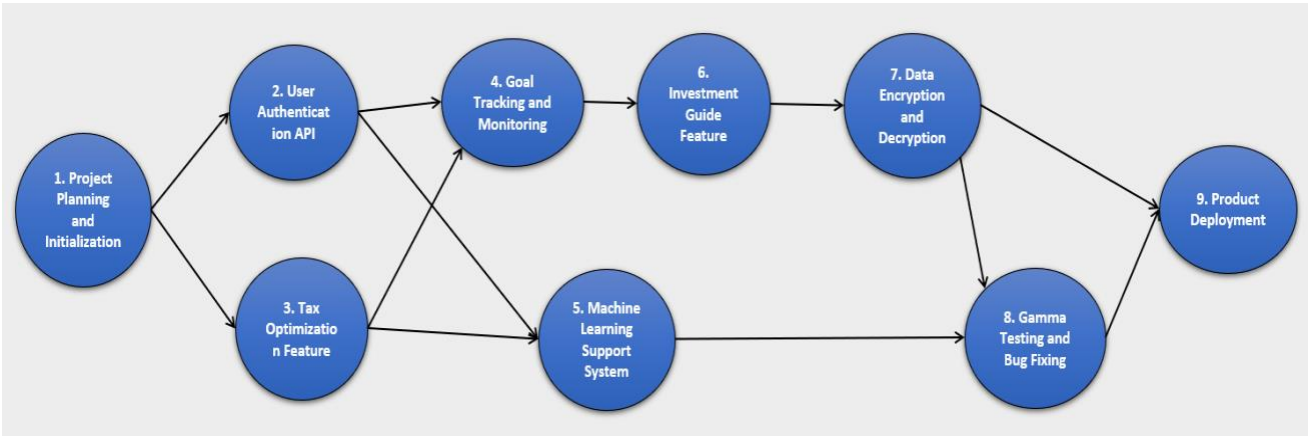

Figure 2.3 : Activity Network for Smart Pension

3.0 Project Budget

The team at SmartPensions has a total project budget of 300,000 €, for software, hardware, data storage, design, and human resources required to create the SmartPensions app. A contingency budget of 200000€ has also been kept aside to cover any sudden, unexpected changes in the execution of the project. The allocations among the nine Epics are based on optimistic expert estimates based on the complexity and duration of each Epic, as shown in Table 1 below.

Epics	**Cost Allocations**
Project Planning and Initialisation	10000 €
User Authentication API	30000 €
Tax Optimisation Feature	40000 €
Goal Tracking and Monitoring Feature	20000 €
Machine Learning Decision Support System	60000 €
Investment Guide Feature	20000 €
Data Encryption and Decryption	30000 €
Gamma Testing and Bug Fixing	10000 €
Product Deployment	20000 €

Table 1- Estimated Allocation of Project Budget

4.0 Resourcing Plan

Human Resources	Task/Activity	Allocation
Project Manager	Oversee project, coordinate team activities, manage stakeholders	Full-time throughout project duration
Software Developers	Design, code, test, and deploy SmartPensions application	Full-time during development phase
Data Engineer	Build machine learning models and develop database structure	Full-time during development phase, ongoing support
Quality Assurance	Test planning, execution, and reporting	Full-time during testing phases, part-time for maintenance
Project Coordinator/Administrator	Provide administrative support	Part-time throughout project duration
Subject Matter Expert	Provide specialized expertise as needed	As needed, project-by-project basis
Sales and Marketing Team	Responsible for promoting the app and generating sales	After the app development
Customer Support Representative	Provide support for users	After the app development

Table 4. 1: Resource Planning

The resourcing plan for the SmartPensions project is crucial for ensuring the successful development and deployment of the application. Each task and activity within the project require specific expertise and resources to be allocated effectively. Here is a detailed breakdown of the resourcing plan aligned with tasks and activities:

1. The project manager plays a pivotal role in overseeing the entire project lifecycle. They are responsible for developing comprehensive project plans, coordinating team activities, managing stakeholders, and ensuring that the project stays on track. The project manager's full-time allocation throughout the project duration ensures effective leadership and management.

2. Customer support representatives provide crucial assistance and troubleshooting support to SmartPensions users. Their full-time allocation during the initial deployment phase, with ongoing support as needed, ensures prompt response to user inquiries and efficient issue resolution.
3. The software developers form the backbone of the project, tasked with designing, coding, testing, and deploying the SmartPensions application. Their full-time allocation during the development phase ensures timely delivery of software components while maintaining quality and reliability.
4. The data engineer is crucial for building the machine learning models and developing the database structure for the decision support system within SmartPensions. Their full-time allocation during the development phase, with ongoing support for data-related tasks, ensures the successful integration of data-driven functionalities into the application.
5. Quality assurance testers are essential for ensuring the quality and reliability of the SmartPensions application. Their full-time allocation during testing phases, such as alpha, beta, and gamma, ensures thorough testing and identification of any issues or bugs before the final release. Part-time allocation for ongoing maintenance and updates ensures continued quality assurance.
6. Subject matter experts may be engaged as needed to provide specialized expertise in areas such as legal compliance, finance, or technology. Their allocation varies depending on specific project requirements and may be on a project-by-project basis.
7. Sales team and marketing team will promote the app to generate more revenue for SmartPension.

In addition to human resources, the SmartPensions project requires various other resources to ensure its successful execution. Financial resources are essential to cover expenses such as software licenses, equipment purchases, and marketing costs. Technological resources, including hardware and software tools, are necessary for development, testing, and deployment of the SmartPensions application. Data resources, such as relevant datasets and databases, are crucial for data analysis and machine learning model training. Infrastructure resources, encompassing office space, internet connectivity, and cloud computing services, support project operations. Legal and regulatory resources provide expertise in compliance with laws and regulations, particularly regarding data protection and financial regulations. Partnerships with industry stakeholders, financial institutions, and retirement planning experts offer

valuable support and expertise. Marketing and outreach resources are vital for promoting the SmartPensions application and raising awareness about retirement planning options. Lastly, training programs and skill development opportunities enhance the capabilities of project team members. By considering and incorporating these additional resources into the resource plan, the SmartPensions project can ensure comprehensive coverage to support successful project execution and achievement of project objectives.

By aligning resources with specific tasks and activities, the resourcing plan ensures that the SmartPensions project progresses smoothly, meets its objectives, and delivers a high-quality application to users. Regular communication and coordination among team members are essential for effective resource utilisation and project success.

	Tasks	Assigned To	% Allocation
1	Project planning and initialisation		
2	Define project scope, objectives, and requirements	Project Manager	30%
3	Create Product Backlog	Product Owner	40%
4	Finalising project planning documents	Project Manager	30%
5	User authentication API		
6	Create wireframes and UI prototypes	DT Dev Team	10%
7	As a user, I want to login and profile page to be user friendly	DT Dev Team	15%
8	Create database for user profile and login credentials	Data Engineer	25%
9	Integrate user authentication API	DT Dev Team	20%
10	Integrate MFA	DT Dev Team	20%
11	Test MFA and user authentication API	DT Dev Team	10%
12	Tax optimisation feature		
13	Gather information on Irish tax regulations	Subject Matter Experts	10%
14	Create wireframes and UI prototypes	DT Dev Team	10%
15	Create database for tax profile	Data Engineer	10%
16	As a user, I want to tax optimisation page to be user friendly	DT Dev Team	15%
17	Develop initial tax optimisation algorithm	Data Engineer	20%
18	Finalise tax optimisation algorithm	Data Engineer	15%
19	Integrate tax optimisation algorithm	DT Dev Team	20%
20	Goal tracking and monitoring feature		
21	Create a table for dashboard and link it with user profile table	Data Engineer	10%
22	As a user, I want to see a clear overview of my goals so that I can monitor my progress.	DT Dev Team	10%
23	Create wireframes and UI prototypes	DT Dev Team	10%

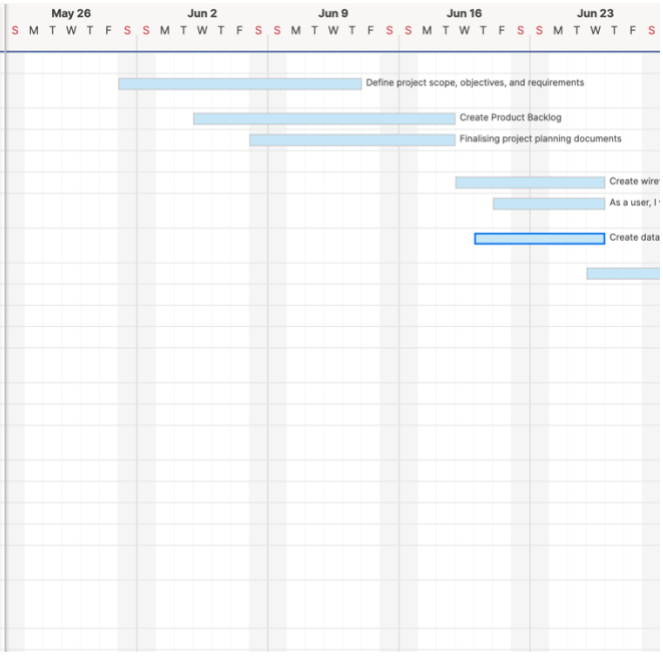

Figure 4. 1: Resource Planning with Allocation and Timeline

The project will also adopt Smartsheet as a resource planning tool, this web application allows SmartPensions's project manager and product owner to allocate resources throughout the project. By adopting this tool, the product owner and project manager can mitigate the risk of wasting resources and utilise their team members accordingly. Figure 4.1 shows the resource planning for SmartPensions, complete with allocation percentage and timeline.

Additional aspects that should be considered include-

1. **Risk Management:**

- Identify, assess, and mitigate risks related to resource availability.
- Address potential risks such as shortages in critical roles or unexpected changes in project scope.
- Develop strategies for managing risks effectively, including contingency plans and risk mitigation measures.

2. Resource Forecasting:

- Develop methodologies for predicting future resource needs based on project milestones.
- Proactively address resource requirements to avoid bottlenecks or delays.
- Utilize historical data analysis or expert judgment to forecast resource needs accurately.

3. Tracking System

- Utilize excel or google sheet to keep a track of resource utilization and staff productivity levels.
- Include considerations for potential sick leaves and unplanned absences in resource tracking.

4. Back-Communication Channel

- Establish channels to ensure project documents remain accessible to team members.
- Utilize collaborative platforms or document sharing tools to facilitate seamless communication and access to project documentation.

5.0 Project Communications Plan

5.1 Stakeholder Analysis

Stakeholder analysis is an analysis of all the internal and external individuals or organisations that have an indirect or direct interest of Smartpensions. Table 5.1 below shows the stakeholder analysis, there are three type of stakeholders which are primary, secondary, and tertiary stakeholder. Primary stakeholders are the one that have direct involvement with the app and at the same time have a high interest with the app. Secondary stakeholders have a moderate interest and do not directly involve with Smartpensions. Finally, tertiary stakeholders are the one who have a little interest with Smartpensions but they are indirectly affected by Smartpensions.

Stakeholder	Description	Analysis
Primary stakeholders	Project manager	Project manager is the one who manages the project execution this includes planning, monitoring, and more. Project manager plays a significant role in ensuring the project is delivered in timely manner and does not exceed the budget.
	Product owner	Product owner is responsible in defining the project requirements, they will ensure that the project meets its requirements and satisfy stakeholders, at the same time delivers value to the end users.
	Development team	Development team is divided in two, i.e., app developers and data engineers. App developers are the one who will develop the app based on the requirements. While data engineers are the one who will handle the database and the development of machine learning models.
	End users	This is the individuals that who have a direct interest with the app. They will directly use the Smartpensions for planning their

		retirement. Their satisfaction and feedback are crucial to ensure the success of the project.
Secondary stakeholders	Scrum master	In this case, scrum master is not any other member of the scrum team. Scrum master will ensure that scrum team follows the principles and scrum practices. For example, scrum master will make sure that there will be a sprint retrospective after sprint completion.
	Subject matter experts	These are the individuals that have a specialised expertise in their own area like tax optimisation, machine learning algorithm, and more. They will provide guidance and insights to the scrum team to build the application.
	Marketing and sales team	Marketing team ensure that the app is promoted on different platform using different marketing strategy. While sales team engage with potential customers to promote Smartpensions.
	Financial institution	Financial institutions like Davy Asset Management, Zurich Life, and Merrion Investments Managers that offer pension plans to customer. Smartpensions's algorithm will recommend this financial institution for its users to invest to.
Tertiary stakeholders	Project sponsors	Project sponsors are the one who will provide funding for the project, and they are interest in the completion of the project.
	Regulatory bodies	Government bodies or other agencies that are responsible that the application comply with the regulations and law. Smartpensions may

		need an approval from these regulatory bodies.
	Competitors	As for now, there is no retirement planning app that incorporate machine learning algorithms for suggesting the retirement plan to the users. Although the competitors will be companies that offer retirement planner for their users or customers.

Table 5. 1: Stakeholder Analysis

5.2 Stakeholder Management Matrix

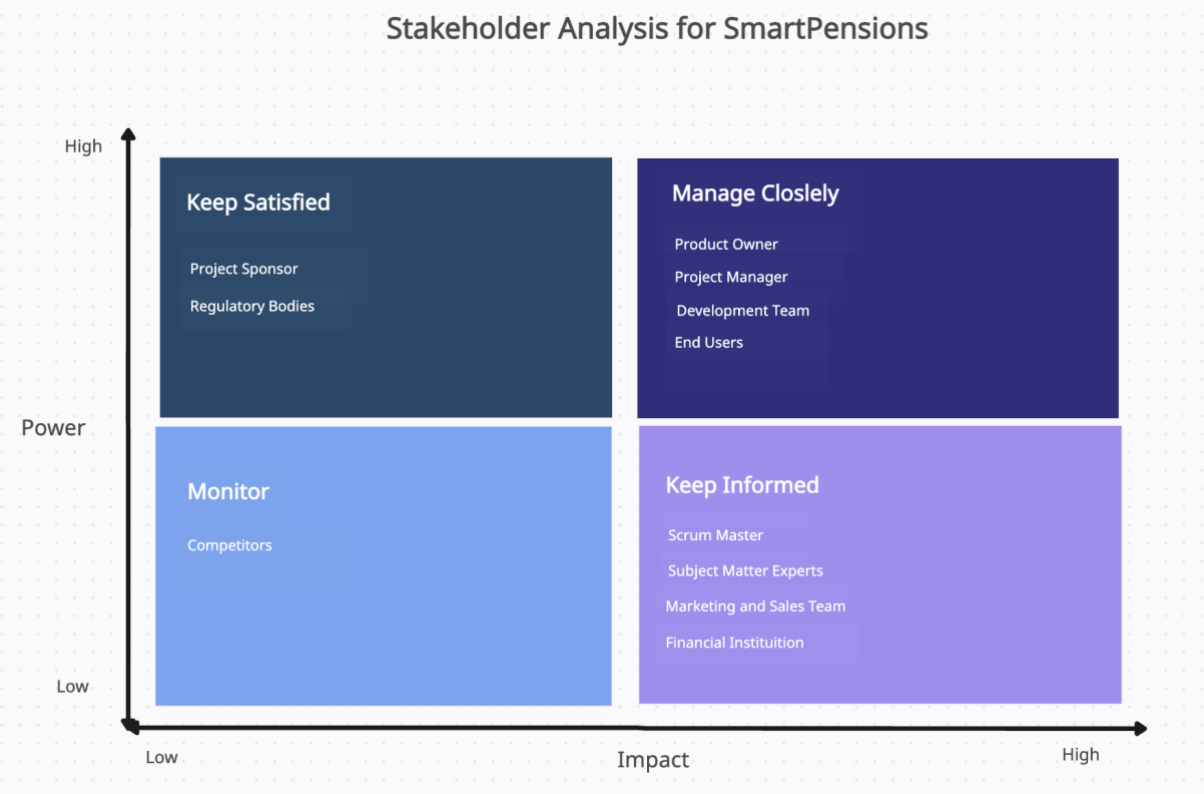

Figure 5. 1: Stakeholder Management Matrix of SmartPensions

There are 4 stakeholders that have high power and impact, which are product owner, project manager, development team, and end users. This means that these key stakeholders need to actively engage with the project to ensure the success of the project. Next, scrum master, subject matter experts, marketing and sales team, and financial institution will be kept inform regarding the project to make sure the collaboration and transparency exist. SmartPensions have to satisfy project sponsor by ensuring that the project's objectives are met, and the project

will be successful. At the same time, regulatory bodies like government need to be satisfied, meaning that the project needs to follow the law and requirements by government. Finally, SmartPensions needs to monitor their competitors so that they can stay ahead of their competitors.

5.3 Communication Plan

Communication Activity	Purpose	Communiaction Channel	Frequency	Owner	Attendees	Output
Daily Stand-up Meetings	Provide updates on progress, discuss any obstacles, and align on priorities.	In-person or virtual meeting room, or video conferencing.	Daily during work day	Scrum master	Development team	Action items and updated tasks
Sprint Planning Meetings	Plan and prioritise tasks for the upcoming sprint	Virtual meeting room or video conferencing	At the beginning of each sprint	Product Owner or Scrum Master	Development team, Product Owner, Scrum Master	Sprint backlog with user stories, acceptance criteria, and task assignments
Sprint Review Meetings	Demonstrate completed work to stakeholders and gather feedback	Virtual meeting room or video conferencing	At the end of each sprint	Scrum Master or Product Owner	Development team, Product Owner, stakeholders	Stakeholder feedback, identified improvements, and potential changes to backlog
Sprint Retrospective Meetings	Reflect on the previous sprint, identify what went well and what could be improved	Virtual meeting room or video conferencing	At the end of each sprint	Scrum master	Development team and Scrum Master	Action items for process improvement, identified issues, and potential changes to team practices
Email Updates	Share updates, announcements, and important information regarding the project	Email	Weekly or as required	Project Manager	All team members and stakeholders	Written communication of project status, milestones, and upcoming events
Project Management Tool Updates	Track progress, assign tasks, and update project status	Jira and Smartsheet	Continuous as tasks are completed or updated	Development team members and project manager	Development team, Product Owner, Scrum Master, Project manager	Updated task status, assignment changes, and progress tracking
Customer Feedback Sessions	Gather feedback from end users on product features, usability, and satisfaction	Virtual meeting room or video conferencing	After sprint release or iterations	Product owner	End users, Product Owner, development team	Identified user needs, feature requests, and improvement opportunities
Stakeholder Updates Meeting	Provide stakeholders with project updates, address concerns, and align on priorities	Virtual meeting room or video conferencing	Regularly and as required by stakeholders	Project Manager or Scrum Master	Key stakeholders and scrum team	Stakeholder feedback, alignment on project direction, and decisions on next steps
Bug and kinks Meetings	Prioritise and assign resolutions for identified bugs and issues	Virtual meeting room or video conferencing	Regularly based on bug reports and severity of the bugs or issues	QA team or scrum master	Development team, QA team, Product Owner	Prioritised list of bugs, assigned responsibilities, and resolution timelines
Change Control Board Meetings	Review and approve changes to project scope, requirements, or timeline	Virtual meeting room or video conferencing	Scheduled as needed when change requests are submitted	Key stakeholders	Project sponsors, Product Owner, development team representatives	Decisions on change requests, updated project documentation, and communication of approved changes

Figure 4. 2: Communication Plan for SmartPensions

Figure 4.2 above demonstrates the communication plan for SmartPensions, each activity has its own purposes, communication channel, frequency, owner, attendees, and output. This communication plan is vital for the project as it provides clarity to the team members and stakeholders so that everyone knows how, when, and why to communicate. Moreover, it ensures alignment between team members and key stakeholders by providing regular updates and review meetings. All in all, this communication plan serves as a guide ensuring effective communication between stakeholders and team members within the SmartPensions project.

6.0 Risk Plan

In the dynamic and complex environment of the SmartPensions project, managing risks effectively is crucial to achieving our strategic objectives and ensuring the successful deployment of the application. This Risk Management Plan outlines a systematic approach to identifying, analysing, and mitigating potential risks throughout the lifecycle of the project. By proactively addressing technical, legal, operational, and market-related uncertainties, we aim to enhance project resilience, maintain stakeholder confidence, and secure user satisfaction. This plan serves as a foundational guide for the project team to navigate through potential challenges, ensuring that risks are managed promptly and efficiently, thereby safeguarding the project's timeline, budget, and overall quality standards.

6.1 Identify Risks

Technical Risks

- **Machine Learning Model Performance:** The risk that the model does not effectively work with real-world data.
- **Data Security:** Protection of sensitive user data, particularly vulnerabilities that may arise during the implementation of data encryption algorithms.
- **System Integration:** Issues in integrating different system modules and APIs.

Legal and Compliance Risks

- **Data Protection Laws:** The obligation to comply with data protection laws like GDPR in Ireland.
- **Compliance with Financial Regulations:** Ensuring that investment and tax optimization features fully comply with local financial regulations.

Operational Risks

- **Project Management:** Disruptions in managerial aspects of the project such as timing and resource allocation.
- **Stakeholder Management:** Difficulties in managing stakeholder expectations throughout the project.

Market and User Adoption Risks

- **User Adoption:** The risk of users not adopting the application or negative user feedback.
- **Competition:** Presence of similar applications in the market and competitive conditions affecting the project's success.

Risk of Adapting to Technological Innovations

- **Technological Changes:** Integration of new technologies that emerge during project development and updates to existing systems.

Budget and Cost Control

- **Budget Overrun:** Exceeding the projected budget and the resulting need for additional financing.

Human Resources

- **Team Dynamics and Performance:** Potential communication problems or performance issues among team members in the project.

6.2 Risk Analysis

6.2.1 High Likelihood Risks

These risks are considered more likely given the nature of the project and the challenges it faces:

- **Machine Learning Model Performance:** The risk of not performing as expected on new data is high, as real-world data constantly changes, and it can be challenging for the model to adapt to these changes.
- **System Integration:** Integration between various system modules and APIs often involves technical difficulties.
- **Project Management:** Timing and resource allocation are significant factors that are difficult to manage given the project's complexity.

- **Stakeholder Management:** In large projects with many stakeholders and diverse expectations, the management process is often challenging.
- **User Adoption:** Users' adaptation to new technologies and their adoption of the application always carry uncertainty due to the volatile market structure.

Low Likelihood Risks These risks are considered less likely based on the current situation of the project and management strategies:

- **Data Security:** Advances in data encryption and protection technologies reduce the impact of this type of risk.
- **Legal and Compliance Risks:** Proper planning and execution of the project according to legal requirements mitigate this risk.
- **Competition:** Known market competition and strategic planning make this risk less likely.
- **Technological Changes:** The emergence and integration of new technologies during the project can be managed with regular technology monitoring and adaptation strategies.
- **Budget Overrun:** Effective cost management and continuous budget review processes make this risk less likely.

6.2.2 Critical Risks

These risks can have significant and profound impacts on the success of the project:

- **Machine Learning Model Performance:** Failure of the model could affect one of the project's core functions, directly impacting user satisfaction and overall project success.
- **Data Security:** Failure to protect sensitive user data can lead to legal liabilities and loss of user trust.
- **User Adoption:** If users do not adopt the application, it could seriously jeopardize the market success of the project.
- **Project Management:** Failures in timing and resource allocation could result in the project not being completed on time or exceeding the budget.
- **Stakeholder Management:** Ineffective stakeholder management could lead to the project not being supported or requirements being misunderstood.

Low Risks These risks are less likely to impact the project's success or are more manageable:

- **Legal and Compliance Risks:** Planning the project from the start in accordance with legal requirements makes this risk manageable.
- **Competition:** Market analyses and competitive strategies can reduce the impact of this risk.
- **Technological Changes:** Monitoring technology throughout the project and adapting to developments can minimize this risk.
- **System Integration:** System integration issues can be managed with good planning and testing processes.
- **Budget Overrun:** Effective cost control and financial planning can reduce the impact of this risk.

Risk Category	Likelihood	Criticality	Description
Machine Learning Model Performance	**High**	**Critical**	The risk of the model not performing well with real-world data, which can significantly impact one of the project's core functionalities.
Data Security	**High**	**Critical**	Inadequate protection of sensitive user data could lead to legal and reputational issues.
User Adoption	**High**	**Critical**	The risk that users do not adopt the app, which could jeopardize the market success of the project.
Project Management	**High**	**Critical**	Failures in timing and resource allocation could result in the project not being completed on time.
Stakeholder Management	**Medium**	**Moderate**	Ineffective stakeholder management could lead to the project not being supported or misinterpreted.
System Integration	**Medium**	**Moderate**	Integration issues between various system modules and APIs can involve technical difficulties but are manageable.
Legal and Compliance Risks	**Medium**	**Minor**	Compliance with legal requirements can be managed through careful upfront planning.
Competition	**Low**	**Minor**	Known market competition and strategic planning make this risk more manageable.
Technological Changes	**Low**	**Minor**	Monitoring technology during the project and adapting to new developments can minimize this risk.
Budget Overrun	**Low**	**Minor**	While this risk is manageable through cost control and financial planning, if uncontrolled, it could negatively impact the project.

Table 6.1: Risk Analysis Table

6.3 Risk Responses Plan

Machine Learning Model Performance

Mitigation Strategy:

- Conduct extensive testing with diverse datasets to ensure the model is robust.
- Implement continuous learning and adaptation mechanisms to adjust to new data.
- Engage machine learning experts for regular review and optimization of the models.

Contingency Plan:

- Prepare to revert to more basic algorithms or hybrid models if advanced models fail.
- Set aside budget and resources for additional development cycles.

Data Security

Mitigation Strategy:

- Implement state-of-the-art encryption technologies and secure data storage solutions.
- Regularly update security protocols and conduct penetration testing.
- Train staff on data security best practices and implement strict access controls.

Contingency Plan:

- Develop a rapid response plan for potential data breaches, including immediate notification procedures and remediation steps.
- Maintain insurance coverage for data breaches and cyber threats.

User Adoption

Mitigation Strategy:

- Engage potential users early in the development process through beta testing to gather feedback and build interest.
- Develop a comprehensive marketing plan that highlights the unique benefits of the application.
- Offer initial free trials or discounts to attract first-time users.

Contingency Plan:

- Plan for iterative product adjustments based on user feedback collected during the early stages of release.

- Expand customer support to quickly address any issues or concerns from new users.

Project Management

Mitigation Strategy:

- Use project management software to keep track of all tasks, dependencies, and deadlines.
- Conduct regular project review meetings to ensure all team members are aligned and any deviations are addressed promptly.
- Implement Agile methodologies to allow for flexibility and iterative feedback throughout the project lifecycle.

Contingency Plan:

- Develop a plan for resource reallocation to cover critical tasks if delays occur.
- Have a buffer in the project timeline for unexpected delays or issues.

Stakeholder Management

Mitigation Strategy:

- Regularly update all stakeholders with the progress and any changes in the project.
- Involve stakeholders in major decisions and ensure their input is considered in project planning.
- Conduct stakeholder satisfaction surveys to identify and address concerns early.

Contingency Plan:

- Prepare to host additional stakeholder meetings or workshops if there is a sign of dissatisfaction or miscommunication to realign expectations and project goals.

Legal and Compliance Risks

Mitigation Strategy:

- Hire legal experts to review all project activities for compliance with applicable laws and regulations.

- Keep abreast of changes in legislation that may affect project execution, especially data protection laws.

Contingency Plan:

- Set aside a legal contingency budget to handle potential legal challenges or requirements for compliance updates.

Competition

Mitigation Strategy:

- Conduct ongoing market research to stay ahead of competitive trends and innovations.
- Differentiate the product with unique features or superior performance.

Contingency Plan:

- Adjust pricing strategies or enhance product offerings in response to competitive pressures.

Technological Changes

Mitigation Strategy:

- Establish a dedicated R&D team to track technological advancements and integrate relevant innovations.
- Partner with technology providers for early access to emerging technologies.

Contingency Plan:

- Plan for modular updates to the platform to incorporate new technologies without overhauling the entire system.

System Integration

Mitigation Strategy:

- Use proven integration platforms and middleware to facilitate seamless integration between different systems and modules.

- Conduct integration testing in stages to identify and resolve issues early.

Contingency Plan:

- Develop alternative integration approaches that can be implemented if initial plans fail.

Budget Overrun

Mitigation Strategy:

- Monitor project expenses closely against the budget.
- Implement financial controls and regular audit checkpoints to manage and forecast spending.

Contingency Plan:

- Secure additional funding sources or adjust project scope to match available funding if initial budgets are likely to be exceeded.

7.0 Stakeholder Definition of Done

Ensuring the successful completion and acceptance of the SmartPensions project involves setting clear criteria by stakeholders. These criteria cover various aspects to make sure the application meets expectations and aligns with goals.

1. **User Satisfaction:** Stakeholders want to make sure that SmartPensions meets user needs well. This includes users being happy with how the app works and finding it easy to use. Also, feedback from users should be positive. Stakeholders will measure user satisfaction through various means, such as user surveys, feedback forms, and app store reviews. They will analyse this feedback to identify areas for improvement and ensure that user concerns are addressed promptly. Additionally, stakeholders will monitor user engagement metrics, such as active usage and retention rates, to gauge the overall satisfaction and effectiveness of the application.
2. **Alignment with Business Goals:** Stakeholders want SmartPensions to support the business's aims. This means helping Irish citizens plan for retirement, following

financial rules, and making money through subscriptions and ads. Stakeholders want to see how the app fits with what users want and helps the business succeed. To ensure alignment with business goals, stakeholders will assess the extent to which SmartPensions contributes to the organization's strategic objectives. They will evaluate key performance indicators related to revenue generation, user acquisition, and market penetration to determine the app's effectiveness in achieving business targets. Additionally, stakeholders will conduct regular reviews of the app's monetization strategies and adjust them as needed to optimize revenue generation while maintaining user satisfaction.

3. **Quality Assurance:** Stakeholders check that SmartPensions meets quality standards and follows rules. This means sticking to Irish financial laws, protecting data, and passing tests for bugs and compatibility. They also want to make sure user data is kept safe. Quality assurance and compliance are critical aspects of SmartPensions's development and deployment. Stakeholders will oversee the implementation of rigorous testing protocols to ensure the app's reliability, security, and performance. This includes conducting thorough testing of both functional and non-functional aspects of the application, such as usability, accessibility, and data security. Additionally, stakeholders will ensure compliance with relevant regulatory frameworks, such as GDPR, by implementing robust data protection measures and regularly auditing the app's data handling practices.
4. **Timely Delivery and Budget Compliance:** Stakeholders want SmartPensions finished on time and within budget. They expect the project to hit milestones when planned and not spend more money than agreed. Timely delivery and budget compliance are essential for the success of SmartPensions. Stakeholders will closely monitor project progress against the established timeline and budget, identifying any potential delays or budget overruns early on. They will work collaboratively with the project team to address any issues that may arise and make necessary adjustments to ensure that the project stays on track. Additionally, stakeholders will prioritize project tasks based on their impact on timeline and budget, allocating resources accordingly to minimize disruptions and ensure timely completion.
5. **Stakeholder Engagement and Communication:** Stakeholders want to be involved in the project and kept informed. They expect to give input and get updates regularly, so everyone knows what is happening and can solve problems quickly. Effective stakeholder engagement and communication are essential for fostering collaboration

and ensuring project success. Stakeholders will actively participate in project planning, review meetings, and decision-making processes to provide input and guidance. They will also maintain open lines of communication with the project team, stakeholders, and other relevant parties to facilitate the exchange of information and timely resolution of issues. Additionally, stakeholders will leverage various communication channels, such as emails, meetings, and project management tools, to disseminate updates, share feedback, and address concerns proactively.

6. **Value Realization:** Stakeholders want to see SmartPensions making a difference. This means users saving more for retirement, making smart financial choices, and the app bringing in money for the business. They want proof that the app is working and helping people. Value realization is the ultimate measure of SmartPensions's success. Stakeholders will evaluate the app's impact on users' financial well-being and retirement preparedness by analysing key performance indicators, such as retirement savings rates, investment portfolio diversification, and retirement age distribution. They will also assess the app's contribution to the organization's bottom line by monitoring revenue generation, customer acquisition, and market share growth. Additionally, stakeholders will solicit feedback from users and stakeholders to gain insights into the app's perceived value and identify areas for improvement.

8.0 RACI Matrix

Task / Responsibility	Scrum Master	Development Team	Quality Assurance Team	Stakeholders
Project Planning	R	A	I	C
Requirement Gathering	R	A	I	C
Design and Development	R	A	I	C
Testing and QA	R	A	A	C
Budget Management	R	I	I	C
Timeline Management	R	I	I	C
Compliance with Regulations	R	A	I	C

User Feedback Collection	R	C	I	A
Communication	R	C	I	A
Stakeholder Engagement	R	I	I	A
Monetization Strategy	R	A	I	C
Data Security	R	A	A	C
User Satisfaction	R	I	I	A
Value Realization	R	I	I	A

Legend:

R: Responsible (Person responsible for completing the task)

A: Accountable (Person ultimately accountable for the task's completion)

C: Consulted (People who need to be consulted for input or feedback)

I: Informed (People who need to be kept informed about the task's progress or outcome)

9.0 Appendices

RACI MATRIX for the CA assignment

Task / Responsibility	Shaqif	Furkan	Arslan	Vedant
Project Communication	R	I	I	C
Comprehensive Risk Planning	I	R	R	I
Stakeholder Definition	R	I	I	A
Scope Plan	R	A	I	C
Schedule Plan	C	R	I	A
Project Budget	C	I	R	I
Detailed Resourcing Plan	C	I	I	R
Introduction	I	R	I	I
Project Overview	I	R	I	C
Scope and Timeline	I	R	C	I
Decision Support Project	R	I	I	C
Business Analytics Strategy	R	C	C	C
Data Sources	R	I	I	C
Visualization and Insight	R	C	I	A
Agile Team and Role	C	R	I	A
Key Risk and Mitigation	C	I	R	I
Project Progress and Achievement	A	I	I	R
Adaptations according to Audience	C	I	R	I

Legend:

R: Responsible

A: Accountable

C: Consulted

I: Informed