



MSc in Business Analytics

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GROUP PROJECT

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1.0 Introduction

Based on a study made by Royal London Ireland (Weston, 2023), only one in three individuals can afford a retirement at the age of 66, mainly because of reliance on the state pension. Furthermore, there is only handful of Irish workers can retire early due to many factors such as insufficient pension funds, working in private sector, and more. There are many ways to save money for retirement such as stocks, bonds, Approved Retirement Fund (ARFs), and many more. However, according to a report made by (Coyle, 2022), one in three Irish workers only rely on state pension for retirement and have not arranged any plan in gaining income in retirement. Hence why SmartPensions is a great way for them to plan their retire, make it early or late retirement. The main feature of this application is the integration of decision support system within the application where it uses decision support algorithm to analyse user data and provide an appropriate retirement plan.

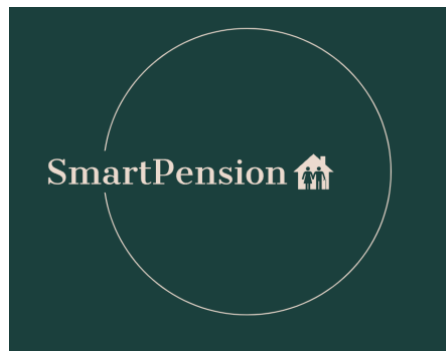


Figure 1. 1: SmartPensions Logo

1.1 Goal of SmartPensions

The aim of this project is to develop an application for retirement planning for Irish workers called SmartPensions where it allows users to input specific data related to their pension and suggests appropriate retirements plan and/or investment for users to be able to retire at the appropriate or early age without needing to depend on state pension for government sector.

1.2 Objectives of SmartPensions

The three main objectives of SmartPensions which are ensuring accessibility and inclusivity, enhancing retirement preparedness, and ensuring robust data privacy measures.

1.2.1 Ensuring Accessibility and Inclusivity

Ensuring that all individuals, despite their background or circumstances can access the application is crucial. This can be achieved by providing user friendly interface to accommodate users with different levels of technological proficiency and knowledge in

finance. SmartPensions will adopt the principles of user interface design for both iOS and Android platform to accomplish this objective.

1.2.2 Enhancing Retirement Preparedness

Integrating decision support system in SmartPensions, offering personalised retirements plans and investment strategies based on user's data, goals, and financial situation. Consequently, increasing the chance of early retirement by providing tools to track progress, adjust goals, and invest efficiently. The decision support system will be based on machine learning algorithm with the best model, this will allow the application to suggest the best possible options or retirement plans for users.

1.2.3 Ensuring Robust Data Privacy Measures

Since this application will be operated in Ireland, it needs to comply with the General Data Protection (GDPR). SmartPensions will have a secure authentication and authorisation by using two-factor authentication API, encrypt sensitive data using encryption algorithms, and update the app regularly and apply patches if needed. Data collection and usage policies transparency are required as per GDPR rules and regulations.

1.3 Deliverables

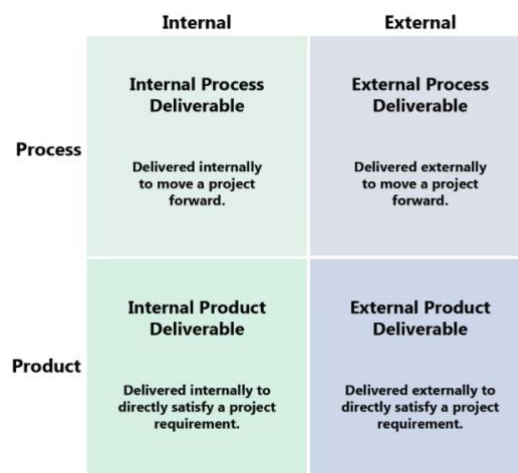


Figure 1. 2: Types of Project Deliverables (York, 2023)

Project deliverables are crucial in any project because they outline the intangible and tangible outputs of the project within the scope (York, 2023). There are two types of project deliverables which are internal and external. In simple terms, internal project deliverables are for the internal collaborating department of the project and external project is for the external parties outside

the organisation. Table 1.1 below illustrates the tangible and intangible project deliverables of SmartPensions.

Deliverable	Description
Process Internal	<ol style="list-style-type: none"> 1. A detailed project plan that outlines the scope, objectives, milestone, and timeline for the development and deployment of SmartPensions. 2. Comprehensive requirement documents that specify the functional and non-functional requirements of the project. This also includes user stories, use case scenario, acceptance criteria, product backlog, and sprint backlog. 3. A testing plan that outlines the testing approach, test cases, test scenarios, and tools to ensure the reliability, security, and quality of SmartPensions app.
Process External	<ol style="list-style-type: none"> 1. Provide tutorials on the app to new users and user guides on the website to educate users on how to use the SmartPensions app. 2. Setup of customer support infrastructure. This includes helpdesk systems and outsource ai chatbot to aid and support to SmartPensions users. 3. Deploy patches when needed and respond to each level of security vulnerabilities accordingly. Release minor update every month and major update annually or there is a major feature needed to be included to increase app's performance and user satisfaction.
Product Internal	<ol style="list-style-type: none"> 1. An alpha version of the SmartPensions app for internal testing and validation. To identify any bugs or kinks before release. 2. A beta version of the SmartPensions app for limited release to selected users and stakeholders. It is a pre-release version of the app. To find any vulnerabilities to the security, provide performance evaluation, and usability testing.

	3. Release candidates or gamma version of the SmartPensions app. The app will undergo rigorous testing and validation to ensure the app is ready for production deployment.
Product External	<ol style="list-style-type: none"> 1. The official release of the SmartPensions app to the public through Apple Appstore and Google Play, or other distribution channels. 2. Provide user documentation with user manuals, FAQs, and tutorials. To assist SmartPensions users in navigating the app and fully utilise the features. 3. Create surveys and feedback forms to collect feedback and insights from SmartPensions users for future improvements and enhancements.

Table 1. 1: Project Deliverables

1.4 Project Milestone

1. Initiation: Defining the project scope, objectives, and requirements. Product backlog will also be created in this phase. Establish the product and scrum team as well as appoint Scrum Master.
2. Requirement gathering and analysis: Gather requirements such as non-functional and functional requirements by conducting interview, survey, and market research. All stakeholders will be involved in this milestone. Validation of each requirement to prioritise features will be done as well.
3. Design planning and development: Create system design documentations before initiating the development phase. After that, begin the development phase, where developers will start the coding and integrate API within the application's environment. Data engineer will build a machine learning model to the decision support system and develop the database structure.
4. Testing (Alpha version): Release alpha version for internal testing to find bugs and issue with the application.
5. Testing (Beta version): Release beta version for selected stakeholders to see the performance of the application and fix any bugs.

6. Regulatory compliance and legal review:
7. Final testing (Gamma version): Conduct the final test rigorously to ensure readiness for production deployment
8. Production deployment: Release the official product to the public via Apple Appstore for iOS and Google Play store for Android platforms.
9. Product maintenance: Provide ongoing support to users using customer service channels, including email, feedback form, and AI chatbot. Monitor the performance of the application and user feedback for improve the application by implementing future updates or respond to cyber threats.

2.0 Project Requirements

2.1 Business Requirements

Purpose Statement:

The app aims to assist Irish citizens in planning for retirement effectively by providing comprehensive decision support tools and resources.

Target Users:

Irish citizens aged 18 and above, particularly those approaching retirement age or actively planning for retirement.

Regulatory Compliance:

Compliance with Irish financial regulations, tax laws, and data protection regulations.

Monetization Strategy:

Subscription Model: Users will pay subscription fees to access premium features of the app. This will provide regular income by offering additional services or features over a period of time.

Content marketing: The application will be able to offer special content for sale, such as retirement planning, tax optimization or investment strategies. Users will be able to pay to access these contents.

Advertising Revenues: The application will generate revenue by displaying advertisements. Advertisements that promote products and services related to financial services can appeal to the relevant user base.

2.2 Solution

User Interface:

Intuitive and user-friendly interface accessible via mobile platforms (iOS and Android).

Features:

1. Retirement calculator: Calculate retirement savings based on user inputs.
2. Investment guide: Provide personalised investment recommendations.
3. Retirement planning algorithm: Analyse user data to generate customised retirement plans using machine learning algorithm.
4. Goal tracking and monitoring: Allow users to set and track retirement goals.
5. Tax optimisation: Offer strategies for tax-efficient retirement planning.
6. Implement machine learning algorithms for user behaviour analysis and predictive modelling.

2.3 Transition

Training and Support:

Providing tutorials for app users to familiarise them with features and functionalities.

Offering ongoing customer support via email, chat, and AI chatbot for assistance and troubleshooting.

2.4 Project Quality

Risk Management:

1. **Data Security Risks:** Risk of data security breach, such as data leakage, data loss, or unauthorized access.
2. **User Education and Awareness:** Providing training to users on secure password selection and authentication measures.
3. To inform users about potential fraud and phishing attacks.
4. **Security Violations:** Risk of users' sensitive financial information being stolen or manipulated through the application by malicious attackers.
5. **Implementing Robust Security Measures:** We will ensure that user data is transmitted securely by using TLS in our application. In this way, we will protect sensitive information from unauthorized access and provide a secure communication environment.
6. **Technological Risks:** Risk of service interruption or user experience degradation due to technological issues such as technical malfunctions, infrastructure outages or cyber-attacks.
7. **Crisis Management and Emergency Plans:** To create crisis management and emergency plans, we will first identify possible crisis scenarios and prepare specific plans for each. Next, we will create crisis teams, clarify roles, and regularly test plans to make improvements. At the same time, we will inform users and stakeholders with effective communication strategies and be able to react quickly in case of crisis. In this process, we will ensure the safety of our business and users by constantly updating and implementing crisis management and emergency plans.

Testing:

1. **Unit Testing:** We will test each application component individually to ensure specific sections of the code function as expected. This helps our developers identify and rectify errors in their code promptly.

2. **Integration Testing:** We will conduct integration tests to confirm that different components work together seamlessly. This ensures the integrity and compatibility of our application.
3. **User Acceptance Testing (UAT):** User acceptance testing will be performed to validate that the application meets the requirements and expectations of end-users. This involves real users testing the application to identify any issues or areas for improvement.
4. **Compatibility Testing Across Devices and Browsers:** We will perform compatibility tests to ensure that the application functions correctly across various devices (such as smartphones, tablets, computers) and different web browsers (e.g., Chrome, Firefox, Safari). This guarantees a consistent and reliable user experience across different platforms.
5. **Performance Optimization:** We will review and optimize the code to improve application performance. We will reduce file sizes with image and data compression and reduce loading times using caching. Afterwards, we will make improvements by running performance tests and analyzing the results.

User Feedback Incorporation:

1. **User Feedback Collection:** We'll gather feedback through in-app surveys, feedback forms, and monitoring app store reviews.
2. **Feedback Analysis:** Our team will analyse collected feedback to identify common themes and prioritize actionable items.
3. **Implementation:** We will implement iterative updates based on user feedback to enhance usability, features, and overall user experience.

3.0 Acceptance Criteria

3.1 Retirement Calculator Feature

The retirement calculator within SmartPensions must accurately calculate retirement savings based on user inputs, including age, income, expenses, and retirement goals. These calculations should strictly adhere to industry-standard financial principles and projections to provide users with dependable estimates of their retirement savings.

3.2 Investment Guide

The investment guide component of SmartPensions should offer personalized investment recommendations tailored to the user's risk tolerance, investment horizon, and financial goals. These recommendations must be grounded in reputable financial sources and align with best practices in investment management to empower users in making informed investment decisions.

3.3 Retirement Planning Algorithm

The retirement planning algorithm embedded in SmartPensions must generate comprehensive retirement plans considering various factors such as current savings, expected expenses, inflation, and life expectancy. These retirement plans should be intricately customized to the user's unique financial situation and goals, providing actionable insights for retirement planning.

3.4 Goal Tracking and Monitoring

SmartPensions's goal tracking and monitoring feature must enable users to set and monitor progress towards retirement goals, such as saving targets and debt reduction. Users should receive timely notifications and updates on their progress towards achieving their retirement goals, fostering motivation and keeping them on track.

3.5 Tax Optimisation

The tax optimisation feature within SmartPensions must provide recommendations for minimising taxes on retirement income, including strategies for tax-efficient withdrawals and investment allocation. These recommendations should strictly adhere to relevant tax laws and regulations in Ireland to ensure compliance and maximise tax savings for users.

3.6 User Interface and Experience

The user interface and experience of SmartPensions should feature an intuitive and user-friendly design, facilitating easy navigation and interaction. Users should seamlessly access all features and functionalities of the app without encountering usability issues or barriers, ensuring a smooth and enjoyable user experience.

3.7 Data Security and Privacy

Data security and privacy are paramount in SmartPensions, necessitating the app to securely store and protect user data against unauthorised access or breaches. Compliance with relevant data protection regulations, such as GDPR, is imperative to safeguard user privacy and confidentiality.

3.8 Compatibility and Accessibility

Regarding compatibility and accessibility, SmartPensions should seamlessly operate across a range of devices and platforms, including web browsers and mobile devices (iOS and Android). Accessibility features must be thoughtfully implemented to ensure usability by individuals with disabilities, aligning with accessibility standards.

3.9 User Feedback and Satisfaction

User feedback and satisfaction are pivotal in SmartPensions's acceptance criteria. Feedback collected during beta testing and user acceptance testing should reflect overall satisfaction with the app's features, usability, and effectiveness. Any identified issues or concerns raised by users during testing must be promptly addressed to ensure final acceptance of SmartPensions.

4.0 Project Assumptions and Constraints

4.1 Project Assumptions

In the initial phase of executing SmartPensions, based on experience of working on similar projects, our team has considered the following assumptions that are likely to happen during this project:

- **Resource Sufficiency:** The team has sufficient resources to execute SmartPensions. These resources include the technical, operational, and financial resources required to create and execute SmartPensions. An optimistic planned budget of €500, 000 has been allocated to execute SmartPensions open to reviews in successive phases of our project.
- **Scope Creep:** As we have done due diligence during the planning phase, specifically during requirements elicitation, the scope of the project will not change.
- **Invariability of Costs:** The team has assumed that operational, financial, and human resources costs will not change during the timeline of this project.
- **Timeline:** SmartPensions will be completed within the allocated time. The first pilot will be launched within the 6 months of project initiation. After feedback from users and stakeholders, any upgradation on design and features will be allotted a reasonable time in which, with the available resources, the team will complete the project within the allocated time.
- **Stakeholder Participation:** We have assumed full commitment from internal stakeholders (management and staff hired to execute SmartPensions) both during the planning and execution phase of this project, especially in terms of resources that need to be signed off. Moreover, during the initial phase, we have assumed to have sufficient levels of user input and feedback in planning, design, execution, and review phases of our project.
- **User engagement:** Our research suggests that, out of 3 million Irish people between the ages 18-65 (Central Statistics Office, 2016), our team assumes a convergence of 20% in the first year with successive increases over the years.
- **Design and Content Appropriateness:** Based on the elicited requirements, SmartPensions's services on retirement planning and management, tax optimizations and investment decision support will contain all the necessary resources to enable users to make an informed decision. Moreover, with SmartPensions's user-friendly and

accessible design, the team will consider any potential visual and cognitive impairments particular to the targeted population.

Data Security - Since the app will contain sensitive and personal information (of both personal and financial nature), robust security measures are in place to guard against any potential threats from viruses, data losses and breaches. Our team has assumed threat tolerance level to be zero.

4.2 Project Constraints

At SmartPensions, the team has chosen to identify constraints of time, cost, scope, quality, resources, and risk. Table 4.1 below shows the project constraints report for SmartPensions.

Constraints Type	Constraint Description
Time	SmartPensions pilot app will be launched in 6 months
Cost	The allocated cost of €300,000 must be enough for software, hardware, data storage, design, and human resources required to create the app. The team must stay within the approved budget.
Scope	The team must not allow for scope creep – All work plans and planning and execution must stay within the scope defined.
Quality	SmartPensions app must meet all the expectations set out in requirements phase and user feedback given at the outset. The targeted users will be able to calculate retirement plans without any hassle with an app that is free from bugs.
Resources	SmartPensions requires a project manager leading a team of Software Developers, Data Engineer, and necessary software and hardware capabilities.
Risk	Time delays Scope creep Inadequate Resource allocation Personnel and managerial risks

Table 4. 1: Project Constraints Report- SmartPensions

5.0 References

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