

# PRINCE2™ - Business Case

<b>Project Name:</b>	AI-driven Assessment System		
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<b>Author:</b>	Jessica Nguyen – Student ID: [REDACTED] (contributed 100%) Samuel [REDACTED] – Student ID: [REDACTED] (contributed 100%) Aaron [REDACTED] – Student ID: [REDACTED] (contributed 100%) Jason [REDACTED] – Student ID: [REDACTED] (contributed 100%) Timothy [REDACTED] – Student ID: [REDACTED] (contributed 100%) Nabil [REDACTED] – Student ID: [REDACTED] (contributed 100%)		
<b>Owner:</b>	Jessica Nguyen – Student ID: [REDACTED] (contributed 100%)		
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Note: This document is only valid on the day it was printed

## Revision History

Revision Date	Previous Revision Date	Summary of Changes	Changes Marked
21/03/2025	-	Initial draft creation. Sections completed: Executive Summary, Reasons, Business Options, Timescale	N/A
22/03/2025	21/03/2025	Expected Benefits, Expected Dis-benefits.	N/A
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## Approvals

This document requires the following approvals. A signed copy should be placed in the project files.

Name	Signature	Title	Date of Issue	Version
Husam [REDACTED]	.....	Tutor	31/03/2025	1

## Distribution

This document has been distributed to:

Name	Section/s	Date of Completion	Version
Jessica Nguyen	Business Options, Expected Benefits	27/03/2025	1
Samuel [REDACTED]	Expected Dis-Benefits, Costs	28/03/2025	1
Timothy [REDACTED]	Major Risks	23/03/2025	1
Aaron [REDACTED]	Executive summary, reasons	25/03/2025	1
Jason [REDACTED]	Investment Appraisal	31/03/2025	1
Nabil [REDACTED]	Timescale	23/03/2025	1

Overview

**Purpose** A Business Case is used to document the justification for the undertaking of a project, based on the estimated costs (of development, implementation and incremental ongoing operations and maintenance costs) against the anticipated benefits to be gained and offset by any associated [risks](#).

The outline Business Case is developed in the Starting up a Project process and refined by the Initiating a Project process. The Directing a Project process covers the approval and re-affirmation of the Business Case.

The Business Case is used by the Controlling a Stage process when assessing impacts of issues and risks. It is reviewed and updated at the end of each management stage by the Managing a Stage Boundary process, and at the end of the project by the Closing a Project process.

**Contents** *The Business Case should cover the following topics.*

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**Advice**

*The Business Case is derived from the: Project mandate and Project Brief – reasons; Project Plan - costs and timescales; The Senior User(s) - expected benefits; The Executive - value for money; Risk Register and Issue Register.*

*The Business Case can take several formats, including Document, spreadsheet or presentation slides; Entry in a project management tool.*

*The following quality criteria should be observed:*

- *The reasons for the project must be consistent with the corporate or programme strategy*
- *The Project Plan and Business Case must be aligned*
- *The benefits should be clearly identified and justified*
- *It should be clear how the benefits will be realized*
- *It should be clear what will define a successful outcome*
- *It should be clear what the preferred business option is, and why*
- *Where external procurement is required, it should be clear what the preferred sourcing option is, and why*
- *It should be clear how any necessary funding will be obtained*
- *The Business Case includes non-financial, as well as financial, criteria*
- *The Business Case includes operations and maintenance costs and risks, as well as project costs and risks*
- *The Business Case conforms to organizational accounting standards (e.g. break-even analysis and cash flow conventions)*
- *The major risks faced by the project are explicitly stated, together with any proposed responses.*

## **Executive Summary**

The Netherlands government request for the implementation of an AI-driven system to create a more efficient and streamlined approach to their assessment process for residential applications, distributing social housing to those in need. This implementation aims to provide significantly reduced processing time, enhanced efficiency whilst maintaining fairness in the allocation process.

Key benefits include:

- 1) Reduced application processing time by up to 50%+
- 2) Increase the accuracy of eligibility assessment precision by 85%+
- 3) Cost reduction in operational expenses including human resources for assessments
- 4) Enhanced transparency and fairness when allocating social housing
- 5) Scalability to handle higher volumes of user interaction

The system will implement existing residency and applicant databases and will automate all the evaluation process by utilising an AI-driven system that integrates an eligibility criterion. User-friendly interfaces for applicants and government officials will also be provided to ensure usability and seamlessness. A budget of \$2,000,000 over the course of 12 months will deliver a substantial return on investment through the systems improvements in operational efficiency, reducing manual labour and increasing allocation speed.

## Reasons

There are several compelling reasons to implement an AI-driven system to automate the assessment of residential applications:

- 1) **Efficiency and Speed**: To manually assess all residential applications is time consuming for government officials. The implementation of an AI-System will significantly reduce processing time and increase allocation rates
- 2) **Scalability**: With increasing population size, the government will require a system to handle the increasing load and volume of applications without the need of proportionally increasing staff
- 3) **Consistency and Fairness**: Applying the eligibility criteria uniformly without human bias will ensure there is equitable treatment and assignment for all applications
- 4) **Cost Reduction**: Automating the process will decrease manual labour resulting in a decrease in cost per application reviewed, as more work is being done in less time
- 5) **Resource Optimisation**: As AI automates this process, human resources can be reallocated into different roles within the organisation, overall bolstering their workforce
- 6) **Applicant Experience**: Applicants with experience faster more transparent services which will result in applicants making better informed decisions, improving their experience
- 7) **Data-Driven Analysis**: The system will be able to synthesis data to make valuable insights into future policies and developments
- 8) **Adaptability**: Can reflect changes in the housing market conditions and policies in real-time to ensure concurrent and effective information.
- 9) **Decrease in Error Rates**: Lowering error rates by eliminating human oversight, overall improving the accuracy of housing allocations
- 10) **Trust and Transparency**: As the system will no longer be mediated by humans, data-Driven decisions will be made which will ensure a fair and just system which will enhance public trust in the housing allocation process and system.

## **Business Options**

The AI-driven assessment system should be developed to integrate external data with the priority list of residences, enabling automation for application reviews. This investment is worthwhile, as online applications are much more convenient compared to manual processes, streamlining overall business operations. Thus, significantly supporting effective decision-making for housing allocation.

A variety of factors for this chosen business option are previously mentioned under 'Reasons' of this documentation, emphasising operational efficiency and cost optimisation. The project budget is capped at \$2,000,000, providing enough investment for the development of this system and ongoing maintenance costs.

To further strengthen this objective, resource optimisation is essential for large government organisation, especially in the housing assistance division. As cost of living rises, there is a demand in public housing, increase chances of homelessness and low-income earners that cannot afford their own housing, causing operational strain on employees. Additionally, this will alleviate the pressure of these employees in this division and to be re-allocated in other areas of government operations that are of benefit, reducing unnecessary remuneration.

This system also provides a source of business growth improving user experience within the application process and reduce the loss of applications within manual reviews. This can also enable real-time tracking of applications for data analysis, providing organisational and manageable documentation for strategic decision-making through innovation of other technologies to build end-user satisfaction which increases chances of profitability.

Lastly, the implementation of housing legislations and fairness algorithms into the system, enabling to consistently produce unbiased decisions, complying with these regulation requirements as humans tend to develop discrimination more. Thus, lowering the potential legal risks and complaint management with these applicants.

## Expected Benefits

There are several benefits contributing to a resourceful, efficient housing allocation:

### 1) Adaptability

- a. The integration of external data on obtaining the priority list of applicants for each residence and accepting applications for assessment
- b. 50%+ faster processing times compared to manual methods of reviewing applications.
- c. Accuracy on eligibility assessments by 85%+

### 2) Human Resource Efficiency

- a. Streamline manual processes for employees and re-directing them in other areas that are of use within these government operations
  - i. Human judgement results in biased decision-making
- b. Automation in application processes will reduce employee remuneration by 25% provides for strategic cost optimisation to other operational areas
  - i. Analysts are not required to perform data analysis as AI algorithms can identify common trends

### 3) Data Analysis

- a. Using metrics from system data to review performance on applications received, by determining the profitability of this system and identify potential approaches to generate revenue.
- b. Simplistic, manageable data extraction for reporting purposes. Manual applications may be lost during the review process.

### 4) Cost Reduction

- a. Automation in application process will decrease manual review processes for employees by 20%
  - i. Decreasing administrative costs by 20% for document verifications
  - ii. Decreasing customer service teams as AI chatbots can be implemented to assist users

### 5) Risk Management

- a. Incorporating fraud detection and compliance with housing regulation
- b. Automated screening with high-risk tenants, such as assessing their payment habits

## Expected Disbenefits

There are several dis-benefits of implementing an AI-based system for social housing distribution:

- 1) Reduced Human Oversight
  - a. The AI model may lack human judgment and empathy when assessing anomalous cases
  - b. Applicants may feel additional considerations are not factored in for cases such as personal hardships
- 2) Increased Workload
  - a. The AI model is designed to separate applications based on certain criteria; however, government officials have the final judgment which slows down workflow
- 3) Algorithmic Bias and Fairness
  - a. Based on studies, AI models favour certain demographics or regions due to historical data.
  - b. Potential biases and unfairness can be present when allocating residences
- 4) Implementation and Maintenance Costs
  - a. The initial implementation of the AI model and the integration of residence databases may outweigh the efficiency gains
  - b. The costs to maintain the system can overshadow current method of human assessment.
- 5) Unplanned System Outages
  - a. Delays in system performance can cause a large backlog of applications which slows allocation process
- 6) Security and Data Privacy Concerns
  - a. Using AI models to assess applicant eligibility with full access to all data creates certain security risks
  - b. Data breaches or unauthorised access to the model can lead to the breaches in privacy for all applicants which ultimately leads to compliance issues regarding privacy regulations
  - c. Severe backlash will occur if the system gets attacked and data is compromised



## Timescale

- **Project Timeline:**
  - The project is scheduled to run for 10 weeks. This includes:
    - Detailed planning and design.
    - System development and testing.
    - Deployment and handover to the client.
    - Initial post-implementation support.
  - The project will commence upon approval of the Project Initiation Document (PID), with an anticipated start date of [Insert Start Date]. Key milestones will be defined in the Project Plan.
- **Benefits Realisation:**
  - Some benefits, such as quicker application processing and reduced administrative burden, are expected to be realized shortly after the system goes live.
  - Other benefits, including long-term cost efficiencies, improved data-driven decision-making capabilities, and enhanced applicant satisfaction, will be realized progressively within the 10-week project and immediately following.
  - A detailed Benefits Review Plan will be developed to outline how and when these benefits will be measured and evaluated. This plan will include specific metrics, data collection methods, and reporting frequency.
- **Detailed Planning:**
  - The Project Plan will provide a comprehensive schedule, including:
    - A breakdown of project stages and activities.
    - Key milestones and deliverables.
    - Dependencies between tasks.
    - Resource allocation and timelines.
  - Regular project status meetings and progress reports will be used to monitor adherence to the schedule and identify any potential delays.

## Costs

The expected costs of this project will be divided into 3 sections: Development Costs, Implementation Costs, and Maintenance Costs.

### 1. Development Costs (\$1,100,000)

#### 1.1. Requirements Gathering - \$100,000

- 1.1.1. Identifying the requirements of the Netherlands Government criteria that allows for applicant's residence
- 1.1.2. Collecting information of the type of AI model and defining parameters
- 1.1.3. Identifying the implementation of the existing database for property listings

#### 1.2. Software Development- \$450,000

- 1.2.1. Developing the selected AI model and integrating external database containing applicant and residence data
- 1.2.2. Implementing the parameters for automated decision making
- 1.2.3. Creating User Interface for applicants and administrators

#### 1.3. Hardware and Infrastructure - \$250,000

- 1.3.1. Setting up cloud servers to hosts AI model and databases
- 1.3.2. Implementing storage for secure data management and scalability

#### 1.4. Quality Assurance Testing - \$150,000

- 1.4.1. Conducting user acceptance testing
- 1.4.2. Performing system audits to mitigate vulnerabilities and breaches
- 1.4.3. Ensuring system is complaint with government regulations

#### 1.5. Training - \$150,000

- 1.5.1. Conducting training for government officials to operate the system
- 1.5.2. Providing instructions for applicants
- 1.5.3. Implementing change management strategies to ensure smooth adoption

### 2. Implementation Costs (\$400,000)

#### 2.1. Integration and Deployment - \$400,000

- 2.1.1. Connecting government databases for the data retrieval for AI model
- 2.1.2. Ensuring authentication protocols for secure system access

### 3. Maintenance Costs (\$500,000)

#### 3.1. System maintenance - \$300,000

- 3.1.1. System updates for bug fixes and performance updates
- 3.1.2. Constant monitoring of systems for the reliability and uptime
- 3.1.3. Technical support for applicants and government officials
- 3.1.4. Optimising server resources to ensure performance is adequate
- 3.1.5. Optimising AI model to ensure system is up to date

#### 3.2. Security maintenance - \$200,000

- 3.2.1. Security audits to protect the applicant's data
- 3.2.2. Penetration testing to ensure system is secure

## Investment Appraisal

This investment appraisal evaluates the AI-driven housing allocation system by comparing the expected benefits and dis-benefits with the estimated project costs, ongoing maintenance expenses and implementation risks.

- The investment appraisal also applies to financial techniques to define the value of this project as a public-sector investment.
  - o The financial techniques include:
    - 1) Cash Flow Analysis
    - 2) Net Present Value (NPV)
    - 3) Payback Period

a) **Cost Overview:**

- This overview covers the AI model development, database integration, infrastructure, training, deployment and long-term system support.
  - The total project cost is \$2,000,000, which can be broken down as followed:
    - 1) Development Cost = \$1,100,000
      - 1.1) Requirements Gathering = \$100,000
      - 1.2) Software Development = \$450,000
      - 1.3) Hardware and Infrastructure = \$250,000
      - 1.4) Quality Assurance Testing = \$150,000
      - 1.5) Training = \$150,000
    - 2) Implementation Costs = \$400,000
    - 3) Maintenance Costs (Over 5 Years) = \$500,000
      - 3.1) System Maintenance = \$300,000
      - 3.2) Security Maintenance = \$200,000

b) **Expected Benefits Vs Expected Dis-Benefits:**

- The AI system is projected to deliver substantial returns over five years by reducing manual workload, increasing efficiency and improving the accuracy of the application process.
  - The analysis for the 'Expected Benefits' against 'Expected Dis-Benefits' are as followed:
    - 1) **Annual Cost Savings = \$650,000** — This was calculated from reductions in manual and operational tasks based on the 'Cost' section of this business case, such as:
      - 1.1) Training Efficiencies = \$50,000
        - o This annual saving is based on one-third of \$150,000 training cost ('Costs' Section – 1.5)
      - 1.2) Automation of IT/Admin via System Maintenance = \$100,000
        - o This is one-third of \$300,000 'System Maintenance' ('Costs' Section – 3.1)
      - 1.3) Document Verification Automation = \$200,000

- 4 Full-Time Admin Clerks no longer needed ~\$50,000 each are no longer needed = \$200,000 saved ('Costs' Section – 1.2.1 to 1.2.3)
- 1.4) Automated Data Analysis = \$150,000
  - 3 analysts × \$50,000 = \$150,000 annual savings from eliminated data analysis roles ('Costs' Section – 1.2.2 to 1.2.3)
- 1.5) Reduced Customer Support via Chatbot = \$150,000
  - 3 support staff × \$50,000 = \$150,000 per year saved ('Costs' Section – 3.1)
- 2) **Efficiency Value = \$350,000** — This was calculated based on performance improvements and non-cash operational value from automation, faster workflows and enhanced service delivery from the 'Cost' section of this business case, such as:
  - 2.1) Faster Processing (70% Improvement) = \$250,000
    - Estimated to 10 Full-Time roles × \$25,000 efficiency value = \$250,000 ('Costs' Section – 1.2.1 to 1.2.2)
  - 2.2) Real-Time Eligibility Checks = \$50,000
    - Estimated organisational efficiency from reduced backlogs and time loss = \$50,000 ('Costs' Section – 2.1.1 to 2.1.2)
  - 2.3) Increased Fairness and Transparency (Less Appeals) = \$50,000
    - Estimated value of reduced dispute resolution workload and reputational risk = \$50,000 ('Costs' Section – 1.2.2 and 1.4.3)

**Total Annual Benefit** = Annual Cost Savings + Efficiency Value

**Total Annual Benefit** = \$650,000 + \$350,000

**Total Annual Benefit** = \$1,000,000

- This will be used in the 'Cash Flow Statement' below

c) **'Expected' Cash Flow Statement (1<sup>st</sup> Financial Technique):**

- The annual figure of \$1,000,000 forms the basis of our financial model.
  - Over the next five years, the expected cumulative benefits from the 'Total Annual Benefit' amount to:

<u>Year</u>	<u>Cash Flow (\$)</u>
0	-\$2,000,000 (Investment towards new AI housing allocation system)
1	+\$1,000,000 (Expected cash flow from AI Housing allocation system)
2	+\$1,000,000 (Expected cash flow from AI Housing allocation system)
3	+\$1,000,000 (Expected cash flow from AI Housing allocation system)
4	+\$1,000,000 (Expected cash flow from AI Housing allocation system)
5	+\$1,000,000 (Expected cash flow from AI Housing allocation system)

- Overtime, the results show more than double the initial investment, providing a strong foundation for the investment appraisal from investing towards the AI housing allocation system that started off with a loss of \$2,000,000 to gaining \$1,000,000 each year afterwards.

d) **Expected Dis-Benefit Considerations:**

- Despite strong returns, the system carries certain risks and dis-benefits, such as:
  - 1) **Reduced Human Oversight** – Could Impact edge-case decisions
  - 2) **Potential Bias in AI Decision-Making** – Due to historic training data
  - 3) **Implementation Risks** – Includes system downtime or integration delays
  - 4) **Privacy Concerns** – Along with cyber risk exposure

e) **Expected Dis-Benefit Mitigations:**

- However, these certain risks and dis-benefits can be mitigated through:
  - 1) **Regular bias audits and retraining**
  - 2) **Continuous system updates funded within the \$500,000 maintenance budget** ('Costs' Section – 3)
  - 3) **Security protocols and regulatory compliance frameworks**

f) **Short-Term Sustainability (Payback Period):**

- To assess short-term sustainability, the 'Payback Period' method will be used to evaluate how long it takes to recover the initial investment.
  - The calculation of the 'Payback Period' is as followed below:
    - 1) Year 1 = +\$1,000,000 (Cumulative Value = -\$1,000,000)
    - 2) Year 2 = +\$1,000,000 (Cumulative Value = \$0)
      - Payback Period = 2 Years
        - Therefore, the AI system will fully recover its initial cost within 2 years, making the remaining 3 years to Year 5 purely profitable, even before accounting for long-term savings and strategic outcomes.

Overall, the AI-Driven housing system is showing a cost-effective and socially valuable investment in modern public service delivery based on the cash flow analysis and a two-year payback period.

## Major Risks

The implementation of the AI-driven housing allocation system project conveys several key risks that may impact its success and efficacy. These risks, in addition to their potential impacts and mitigation strategies will be summarised as follows:

- **Data Security and Privacy Issues:** Considering the sensitivity of applicant data, potential breaches or cyberattacks could expose private information, leading to legal ramifications. Encryption, multi-factor authentication and standardized security audits are imperative in reducing this risk.
- **AI Algorithm Bias:** A possible risk present in the use of AI models is unintentional favouritism for certain applicants due to biased data, which could lead to unfair housing allocation and reputational issues and damages. A mitigation strategy involves regular audits, diversification of training data and consistent monitoring of the model's behaviour.
- **System Integration Challenges:** Difficulties may arise when integrating the AI system with existing databases, possibly causing system downtime and delays. Pre-deployment testing and troubleshooting teams are critical to address this risk.
- **Downtime and Technological Issues:** Server outages, bugs, or AI malfunctions could disrupt the system's performance and consistency. This risk can be mitigated by implementing scalable infrastructure, failover systems and routine maintenance.
- **User Resistance and Acceptance Issues:** Applicants of the housing allocation and government officers may be hesitant to adopt the new AI system due to mistrust or unfamiliarity. This can be mitigated by providing thorough user training, resources, transparency and feedback mechanisms.
- **Compliance and Legal Risks:** There is a possibility of violations pertaining to data protection laws or housing regulations, leading to legal ramifications. Regular legal reviews and transparent audit processes will aid in ensuring compliance with legal requirements.
- **Budget Overruns:** Underestimation of costs may cause the project to exceed its \$2,000,000 budget. To prevent and mitigate this risk, cost tracking protocols, contingency fund, and consistent financial monitoring should be required throughout the project lifetime.