# Project Overview

## Brief Description

Our client, Applied Imagination, is looking to develop an online search engine for start-up companies and small businesses to analyse the market that they are interested in entering into. It is mainly targeted at users who have limited business experience, and so will provide easy to understand charts and diagrams when displaying its search results. The system will have the advantage over existing search engines by providing more information about local businesses with a smaller online presence.

## Overall Goals

The purpose of the software is to provide a tool that is able to search through multiple sources, including local business listings in order to aggregate data to present to users looking to market their ideas. Its goal is to be able to compete with larger search engines, such as Google, with its main appeal being its visualisation of search results showing competitor proximity, size and the similarity of their products.

## Stakeholders

Users - The key stakeholders in this project are the users. They are people who want to start up small to medium sized businesses and would like to see an overview of the competitors in their target market. Having this tool would help in determining the viability of their start-up business. They will be primary stakeholders and can be either technical or non-technical.

Investors - The investors in this project want the project to succeed, as they have invested money into it and would like a high return on investment. They will be non-technical secondary stakeholders.

Banks - Banks would be a stakeholder in this project as they need to know if they should approve loans to potential businesses when presented with the information gathered by this tool. They will be non-technical secondary stakeholders.

Applied Imagination - Applied Imagination is the owner of this software tool. They want the product to be successful and able to be monetised. They are the administrators of the tool as they will be managing user accounts and payments, and provide support for their customers. They will be non-technical primary stakeholders.

Developers - The developers are responsible for maintaining the tool and updating it over time. They will also have to monitor how the tool is used by the users, in order to find out which features should be changed or added. They will be technical primary stakeholders.

Competitors - The competitors in the user’s target market could lose their customers. They will be secondary stakeholders.

Community - The community would have a larger variety of businesses to shop from, and more businesses in the area could mean more jobs available in the community. They will be secondary stakeholders.

# Story Map

Customers

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| **Authentication** | **Support** | **Define Search** | **Elicit Search** | **Result Visualisation** |
| 13. Authentication | 16. Tutorials | 1. Market Overview | 5. Search Through Multiple Sources | 6. Intuitive Visualisation |
|  | 14. Live Customer Support | 9. Keyword Priorities | 2. Concise Results | 8. Transparent Search Results |
|  |  | 12. Chatbot for Search | 4. Redefining Search Results | 7. Interactive Visualisation |
|  |  |  | 3. Feedback While Searching | 10. Export Visualisation |
|  |  |  | 11. View Search History |  |

# Administrators

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| **Authentication** | **Administration** |
| 13. Authentication | 15. Tool Administration |

# User Story Cards

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| **ID No**: 1  **Title**: Market Overview  **Statement**: As a customer, I want to search for similar businesses in a local area, so that I can know who my competitors are.  **Acceptance Criteria**:   * I must be able to specify the area that I am interested in * I must be able to specify the business type * I must be able to see the location of where my competitors are * I must be able to visit the websites of my competitors * I can see the general prices of my competitors’ products   **MoSCoW**: Must have  **Estimation:** 40 – Main algorithm might take a while |  | **ID No**: 2  **Title**: Concise Results  **Statement**: As a customer, I want a concise set of search results, so that I am not overwhelmed with information.  **Acceptance Criteria**:   * I don’t want the results to have too many pages, as I don’t have time to read through them all * I only want results that are relevant to my search terms * I don’t want to see any duplicate search results from companies using multiple websites to advertise   **MoSCoW**: Should have  **Estimation:** 5 – Need algorithm to finetune the results |

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| **ID No**: 3  **Title**: Feedback While Searching  **Statement**: As a customer, I want to see feedback while a search is taking place, so that I can stay informed on the progression of the search.  **Acceptance Criteria**:   * I can see what tasks the search is currently performing * I can be confident that the search has not stalled   **MoSCoW**: Could have  **Estimation:** 3 – Need the functionality to display search progress |  | **ID No**: 4  **Title**: Redefining Search Results  **Statement**: As a customer, I want to be able to redefine my search when I get the results, so that I can pivot on my train of thought.  **Acceptance Criteria**:   * I can see related search term suggestions when viewing my search results * I can add or remove search terms after the initial search and have the tool search again   **MoSCoW**: Should have  **Estimation:** 2 – Main algorithm should already be completed |

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| **ID No**: 5  **Title**: Search Through Multiple Sources  **Statement**: As a customer, I want the search to use multiple different sources, so that I can be sure that the majority of my target market has been covered.  **Acceptance Criteria**:   * I can see a breakdown of the websites from which the search results came from * I would like to see the sources that the search engine is analysing in real time * I won’t need to use another search engine to find more results   **MoSCoW**: Must have  **Estimation:** 20 – Different websites have different APIs that will take time to write code for |  | **ID No**: 6  **Title**: Intuitive Visualisation  **Statement**: As a customer, I want to see the results of my search presented in a clear and intuitive way, so that I can easily understand the information without having any advanced analytical skills.  **Acceptance Criteria**:   * I can see a chart showing the sizes of my competitors * I can see a chart showing how close my idea is to other competitors * I can see charts showing the current market saturation of my business idea * I can see the visualisation, data sources, and competitors in one view * The results should be in simple words * The charts should have clear metrics   **MoSCoW**: Must have  **Estimation:** 13 – Static image might not take too long, just process data |

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| **ID No**: 7  **Title**: Interactive Visualisation  **Statement**: As a customer, I want to have a visualisation that I can play around with, so that I can manipulate the results to my liking.  **Acceptance Criteria**:   * I can zoom in on the visualisations * I can drag within the visualisations * I can rotate the visualisations around * I can filter the data sets returned   **MoSCoW**: Should have  **Estimation:** 20 – 3D visualisations difficult to optimise |  | **ID No**: 8  **Title**: Transparent Search Results  **Statement**: As a customer, I require transparency in the search results, so that I know the data is trustworthy and can be cross-referenced.  **Acceptance Criteria**:   * I can see where each result came from in the form of a link * I can see how many results were found * I can see when the listings for each result were last updated   **MoSCoW**: Must have  **Estimation:** 1 – Just need to link results to source |

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| **ID No**: 9  **Title**: Keyword Priorities  **Statement**: As a customer, I want to be able to specify the keywords in my search, so that I get results more related to aspects that I deem to be important.  **Acceptance Criteria**:   * I can change the search priorities of the keywords I have entered * I am able to see what priorities or weightings the tool has given to each of my keywords in the search * I am prompted to enter multiple different constraints when defining my searches * The search engine is able to correctly identify the keywords   **MoSCoW**: Should have  **Estimation:** 40 – Search engine optimisation is difficult |  | **ID No**: 10  **Title**: Export Visualisation  **Statement**: As a customer, I want to be able to export my search results and visualisations to commonly used file formats, so that I can show them to interested parties.  **Acceptance Criteria**:   * I can select which format to export my results to * I can select which section of the results to export   **MoSCoW**: Could have  **Estimation:** 8 – Depends on export formats, maintaining visualisation may be difficult |

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| **ID No**: 11  **Title**: View Search History  **Statement**: As a customer, I want to be able to see my recent search history, so that I can revisit my previous ideas.  **Acceptance Criteria**:   * I can see a log of my search terms and the priorities given (to each term), in chronological order * I can redo a previous search by selecting it in my search history   **MoSCoW**: Would have  **Estimation:** 1 – Should not be too difficult |  | **ID No**: 12  **Title**: Chatbot for Search  **Statement**: As a customer, I want to be able to refine my ideas using an interactive chatbot to aid in my searches, so that I turn an abstract idea into something more concrete.  **Acceptance Criteria**:   * The chatbot is able to correctly identify the keywords in my responses * I will be asked follow-up questions by the chatbot based on my previous inputs   **MoSCoW**: Would have  **Estimation:** 100 – Requires a lot of machine learning and training |

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| **ID No**: 13  **Title**: Authentication  **Statement**: As a user, I want to be able to log into the system, so that I am able to access the services available to me.  **Acceptance Criteria**:   * There needs to be a login interface for users to sign into the system * Users should be able to sign out of the system at any time * Administrators should be able to monitor the accounts of customers * Users should be able to manage their subscription to the service   **MoSCoW**: Should have  **Estimation:** 8 – Encryption required |  | **ID No**: 14  **Title**: Live Customer Support  **Statement**: As a customer, I want to be to have access to live customer support, so that I can get real-time assistance with my problems in using the tool.  **Acceptance Criteria**:   * There is a live-chat service available for me to message the online live support staff, in real time * There is a call centre that I am able to call for any problems that I have with the tool   **MoSCoW**: Would have  **Estimation:** 5 – Setting up chat room |

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| **ID No**: 15  **Title**: Tool Administration  **Statement**: As an administrator, I want to be able to get feedback on how the customers interact with the tool, so that I can see which features are the most commonly used  **Acceptance Criteria**:   * I can see the searches done by customers * I can see how customers are navigating through the system * I can see the frequency at which each feature is being used   **MoSCoW**: Should have  **Estimation:** 20 – Need to record a lot of data and display it |  | **ID No**: 16  **Title**: Tutorials  **Statement**: As a customer, I want to be able to have access to tutorials showing me how to use the tool, so that I can learn how to use it as fast as possible.  **Acceptance Criteria**:   * I will be able to see a visual guide showing how to use the tool when I first use it * There should be a way to access the tutorials at any time if I need to view them again   **MoSCoW**: Would have  **Estimation:** 2 – Need visual guidance for multiple features |

# Non-Functional Requirements

## Performance

The search shall be fast enough such that it does not exceed the user’s attention span, without compromising on the breadth of results.

## Scalability

The search engine shall be able to support many concurrent users without a noticeable degradation in service.

## Accuracy and Precision

The search engine shall provide users with data relevant to their geographical location and/or location specified within their search constraints.

The search engine shall provide as many relevant results as possible to the user.

## Modifiability

The code shall be agile and flexible to make it easier to outsource.

The software shall be modular to enable extra features to be added in the future.

## Portability

The system shall be available across as many platforms as possible.

## Accessibility

The system shall be compatible with reader devices and accessibility options.

The system shall use a colour palette such that users with colour blindness are not disadvantaged.

ESOL (English for speakers of other languages) users shall be able to understand this tool and the search results returned, without having to seek help from translators or customer support.

## Reliability

The system shall not fail during non-maintenance periods.

## Availability

The system shall be working and available to users for as much of the time as possible, and shall be able to recover quickly when a failure occurs.

## Security

The system shall not store user search results such that their ideas cannot be retrieved by third parties.

## Usability

The software shall be easy to navigate for first time users.

The user interface shall be intuitive without visually jarring aesthetics

The user shall not have to invest much time into learning how to use the system.

# Appendix

## Initial questions

* What is the purpose of the product?
* What words would you use to describe the product in an ideal scenario?
* What problem is this product going to solve?
* How will you measure the success of this product?
* What aspect of the product will be most valuable to you?
* Are there any constraints or rules to which the product must conform?
* Can you describe the environment in which the product will be used?
* Who are the target users?
* Who are key stakeholders?
* How should the system deal with authentication?
* Are there any existing products that do the same thing? If so, how will this product be different?
* Do you need administrative functions? What attributes do you want to administrate?
* What information would you like to collect from the user? (Auditing)
* How will the system utilize historical data?
* Do you have any security concerns regarding the product?
* What security measures should the product have?
* How will the product be integrated with the cloud?
* What would a user do if the system crashed while he/she was using it?
* How should the system respond to crashes?
* What precautions should the system have in place to minimize data loss?
* What level of transparency do you want your product to have?
* How do you want privacy handled in the system?
* Tell us about the accessibility of data saved by a user?
* What hardware components will be involved? What hardware will be used by the client?
* What hardware will be used by the system?
* What if the software fails? What are the mission-critical aspects of the system?
* (Scalability) How many clients do you want to support?
* (Maintainability) How long do you expect this product to last? How do you plan to support it?
* What are the input and output of the system?
* How would you measure the performance of the product?
* How do you want your product to be serviced after releases?
* (Data Integrity) How would data integrity be achieved?
* (Usability) How easy do you expect the system to be to use for first-time users?
* (Interoperability) Are there any existing systems that you want your product to integrate with? Work with?
* How would you expect the efficiency of use of this product?
* How would you expect intuitiveness of this product?
* How would you expect this product to cause low perceived workload?

## Follow-up questions

* How would you measure the performance of the system? Are there any benchmarks you have in mind?
* Can you elaborate more on the stakeholders?
* What do you mean by beautiful? What websites do you consider as beautiful and have good UI design?
* Clarify what accessibility means here?

User Story User Types

* User (Parent)
  + Customer
  + Administrator

Changes from Assignment 1

* Updated project description to include why the system is needed
* Categorized stakeholders into technical/non-technical and primary/secondary
* Updated MoSCoW prioritisation for some user stories to make it more balanced - user stories 5 and 8
* Rephrased high level user activity titles in user story map.
* Rephrased user story 13 to support multiple user types.
* Added new user types (User, Customer, Administrator)
* Split user story map into role-based story maps
* Changed user story rationale for user story 9 to describe the benefits to the user.
* Changed user story 7 to should have from could have
* Identified user stories for first release

Estimation Technique

The estimation technique that we have selected is planning poker. The scale used is a commonly used exponential scale based off of the Fibonacci series. We believe that this technique is appropriate for our project as when estimating using numbers from the Fibonacci series, the estimations inherently have uncertainties to them, as compared to a more precise scale. The uncertainties allow for our estimations to be roughly correct in terms of how long the user stories will take to implement, and the uncertainties also grow as you go higher, which reflects on the increasing uncertainty of more complex tasks. Another reason why this technique is appropriate is that having a scale with uncertainty allows for the estimation process to be sped up when compared to linear scales [1].

Scale: 0, 0.5, 1, 2, 3, 5, 8, 13, 20, 40, 100

References

1. R. Tamrakar and M. Jørgensen, "Does the use of Fibonacci numbers in planning poker affect effort estimates?," *16th International Conference on Evaluation & Assessment in Software Engineering (EASE 2012)*, Ciudad Real, 2012, pp. 228-232. doi: 10.1049/ic.2012.003