**CS691 - Computer Science, Fall 2022**

**Project Initiation Document**

Project: StayMatch

Project Manager: Prathima Seethalam Radhakrishna

Start Date: February 02, 2023

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Document Details

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Approvals

This document requires the following approvals:

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Distribution

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| Name | Role | Date of Issue | Version |
| Daulet Kapezov | Document purpose, Project Controls | 02/05/2023 | 1 |
| Ajay Kumar Peduri | Background to the Proposed Work | 02/05/2023 | 1 |
| Shubham Mishra | Vision | 02/05/2023 | 1 |
| Kritika Agarwal | Project Objectives | 02/05/2023 | 1 |
| Prathima Seethalam | Project Scope | 02/05/2023 | 1 |
| Akshat Shanbag | Business Case | 02/05/2023 | 1 |
| Dhruv Chamaria | Assumptions, Stakeholders, Risk Management Strategy, Deliverables | 02/05/2023 | 1 |
| Rahul Mendes | Constraints, Communication Plan,  Project Plan | 02/05/2023 | 1 |

# Document Purpose (assigned to Daulet)

This document has been established to document the essential details required to oversee the project. It will outline the extent, goals, duties, responsibilities of those involved, expenses, and expected costs and deliverables related to the House Rental Web Application.

The PID dictates the following critical aspects:

* Details of the approach to be adopted for the implementation of the House Rental Web Application Project.
* Details about distinct roles and responsibilities in the project
* Description of functions and activities.
* Explanation of the processes.
* Details of the communication plan between team members and the stakeholders.
* Quality records, risks, project controls, and exceptions.

The contents of this document may evolve throughout the project and any alterations will be documented in the PID. The PID will serve as a reference whenever significant project decisions are made and will be used to evaluate the success of project management and delivery of all project outcomes at the end of the project.

# Background to the Proposed Work (assigned to Ajay)

Most students face a similar challenge in managing their housing needs, particularly in finding affordable and suitable accommodations. The process of searching for a house, contacting landlords, and negotiating rent can be time-consuming and overwhelming. Additionally, students often struggle with dividing rent and other expenses among their roommates. To address these problems, a new app "StayMatch" will be developed to simplify the process of finding and renting a house for students. This app offers a user-friendly interface to search for available rentals and communicate with landlords. By using this app, students can save time and money while finding the perfect housing solution that suits their needs. Whether it's a single room or a full house, StayMatch makes it easy for students to find their next home.

# Vision (assigned to Shubham)

We consider that the existing system (methods of locating a property) for an international student to view properties, connect and negotiate with owners/brokers, and manage paperwork is severely inadequate. The user will be able to readily access properties in their desired city or pin code. Our system will not only eliminate the problem of communication with the broker/owner, but it will also simplify other operations such as paperwork and bookkeeping.

# Project Objectives (assigned to Kritika)

* To create a portal that enables renters/international students to choose from numerous rental properties based on their needs, preferences, location, and money value.
* Develop a search functionality for the occupant to filter out.
* To streamline the owners/landlords to rent their property easily on the website.
* To connect the owner/landlords using their contact details for the rental property in that you are interested.
* To find a convenient solution enabling international students to fulfill their need for accommodation in the new city.
* To Wishlist the properties that match your criteria and you are interested in

# Project Scope (assigned to Prathima)

Our website offers a platform where users find their homes according to their needs and can also directly connect with the landlords and get house reviews from previous tenants’ feedback. The application also offers a feature for users to find roommates of their choice.

The features include the following:

* Registration of web application for renters and landlords.
* Search Filters for finding homes for the renters.
* Add homes to the favorites list and check out when interested.
* Display of landlord’s contact details to the renter.

For the team, We will

* Analyze airbnb.com, roomies.com, zillow.com, and sulekha.com.
* Focus on user-friendly UI development.
* Best Coding practices
* Use reliable API and databases to manage large user data.
* Ensure all team members have the required skills.
* Coordinate and manage program development.

**Business Case (assigned to Akshat)**

|  |  |
| --- | --- |
| **Application Name** | **StayMatch Application** |
| **Type of business model** | Our house renting application aims to create a seamless marketplace connecting renters with landlords or property owners.  Future Scope:  Through this application, renters can look for roommates. By providing in-depth reviews from previous tenants, renters can make informed decisions on their next rental property. The platform generates revenue through commissions on successful rentals.  Type of business model:  Brokerage (Commission based)  Advertising (future scope) |
| **The target audience of external users**  **(Customer Segments)** | **For whom are we creating value?**  Renters, brokers, landlords, and property owners.  **Who are our most important customers?**  Our house renting application values both renters and landlords/property owners as important customers.  Future Scope:  However, we particularly focus on catering to the needs of international students. As they often need to secure a rental property before arriving in the country, we aim to provide them with a convenient and efficient solution for their housing needs. |
| **Groups of internal stakeholders and business users** | **Indicate who will be using the system in your organization, i.e., internally.**  **users.**  The product development group and customer support team are internal stakeholders.  The future scope includes the Sales team if we plan to add an advertising business model.  **Do we need a product development group?**  Yes, a product development group would be responsible for designing, developing, and testing the application and maintaining and updating it.  **Do we need a sales group?**  If the business model for the house renting application is based on commissions from successful rentals, then a sales group may not be necessary once users grow as the platform will generate revenue through the transactions between renters and landlords/property owners. However, if the plan is to also monetize the application through advertising or sponsored listings, then a sales group would be responsible for securing these deals and revenue streams. The sales group would be responsible for identifying potential advertisers, negotiating deals, and ensuring that the application's advertising or sponsored listings are effectively promoted.  **Do we need a customer support team?**  Yes, a customer support team is necessary. They will help users, address concerns and issues, maintain user satisfaction and loyalty, handle a range of inquiries and issues, and track feedback to improve the application. They play an important role in ensuring user satisfaction and addressing any problems that may arise, which in turn helps to maintain customer loyalty and retention. |
| **Value propositions** | **What value do we deliver to the customer?**   Our house renting application proposes to deliver value by providing an efficient platform for rental properties, connecting renters with landlords/property owners. It streamlines the rental process and makes it easier for renters to find suitable properties and for landlords/property owners to list and promote their properties. It creates a win-win situation for both renters and landlords/property owners.  Future scope: It connects renters to renters, providing in-depth reviews, and catering to the needs of international students.  **Which one of our customer’s problems are we helping to solve?**  Our house renting application is helping to solve several problems for customers:  1.  Difficulty in finding a suitable rental property: The application provides renters with a wide range of options to choose from and makes it easier for them to find a property that meets their needs and preferences.  2.  Difficulty in connecting with landlords/property owners: The application connects renters with landlords/property owners, making the rental process more streamlined and efficient.  Future Scope:  3.  Difficulty in finding roommates: The application also helps renters looking for roommates, making it easier for them to find compatible roommates.  4.  Lack of in-depth reviews of properties: The application provides in-depth reviews from previous tenants, which helps renters make informed decisions on their next rental property.  5. Difficulty for international students in finding rental properties: The application's focus on catering to the needs of international students provides them with a convenient and efficient solution for their housing needs, which they may not find otherwise. |
| **Key Resources** | **What Key Resources do our Value Propositions require?**  Our house renting application's value propositions may require several key resources, such as:  1.  Technological resources: The application will require a robust and user-friendly platform, including a website and a database to store and manage user and property information.  2.  Customer Support resources: A customer support team is necessary to aid and address any concerns or issues that users may have with the application. The data on user behavior, preferences, and feedback will be useful in improving the functionality and user experience of the application.  3.  Marketing resources: The application may require an effective marketing strategy to generate awareness and attract users. This may include advertising, public relations, and influencer marketing efforts.  Their role will also include building and maintaining relationships with landlords, property owners, brokers, and other partners to build a strong inventory of properties.  **Our Distribution Channels?**  Our main channel is the website. Our distribution channels can include online platforms, social media, referral marketing, partnership, influential marketing, and in-person events.  **Customer Relationships?**  The customer relationships for our house renting application may include   * Self-help resources which include filters.   Future Scope:   * Feedback and reviews system to improve user experience and build trust. * Community building to share information and connect with others in the rental market. * Rewards and loyalty program to encourage repeat usage and referral.   **Revenue Streams?**  The revenue system for our house renting application could include  1. Commission-based model: The application could earn revenue by taking a commission on successful rentals made through the platform. This could be a percentage of the total rent or a flat fee per rental.  **Future Scope for revenue systems**:  1.  Advertising: The application could earn revenue by selling advertising space to relevant businesses and brands. This could include sponsored listings, banner ads, and in-app promotions.  2.  Premium features: The application could offer premium features such as featured listings, advanced search filters, and priority  customer support, which renters and landlords/property owners can pay for on a subscription basis or a pay-per-use basis.  3.  Referral fees: The application could offer referral fees to renters, landlords/property owners who refer others to use the platform. This could be a percentage of the commission earned on successful rentals made by the referred person.  4.  Other services: The application could offer other services such as rental insurance, utility bill payments, and moving services, and earn revenue through the fees charged for these services. |
| **How is the system used** | **What are the main business use scenarios?**  1. Renters searching for properties: Renters will use the application to search for properties that match their preferences and budget, view property details and photos, contact landlords/property owners for more information, and book viewings as well as save it for future reference:  2. Landlords/property owners listing properties: Landlords/property owners will use the application to list their properties, upload photos and property details, set rental prices, and manage bookings and inquiries.  Future Scope:  3. Renters looking for roommates: Renters will use the application to search for compatible roommates, view profiles and references, and contact potential roommates to arrange shared rentals.  4. Landlords/property owners searching for tenants: Landlords/property owners will use the application to search for potential tenants, view tenant profiles and references, and contact renters to arrange viewings.  5. Renters and landlords/property owners providing feedback and reviews: Renters and landlords/property owners will be able to provide feedback and reviews about properties and each other, which will be visible to other users and help to build trust and improve the user experience. |
| **Revenue generation, Revenue streams** | * **Commissions on successful rentals (Brokerage)** * **Advertising (future scope)** |
| **External Interfaces (data**  **feeds)** | Property management systems: to keep track of rental properties and their availability.  Future scope:  Payment systems: to process rental payments.  Social media platforms: to allow users to sign up and log in using their social media accounts.  Geographic Information Systems (GIS): to display maps and information about the location of rental properties.  Customer Relationship Management (CRM) systems: to manage interactions with renters and landlords. |
| **Expected Benefits** | Increased convenience for renters.  2.  Increased visibility for landlords/property owners.  3.  Improved matching by using data.  Increased trust and transparency due to feedback and reviews. |
| **Known Prototypes** | Reference some known portals on the Internet that are like your business case. You will use these prototypes for developing business and user requirements.  <https://www.airbnb.com/>  <https://www.roomies.com/> |
| **Front-end Technology** | HTML, CSS, Bootstrap, Material UI, and React Js |
| **Back-end, Database Technology** | Python and MongoDB |

# Assumptions (assigned to Dhruv)

|  |  |  |  |
| --- | --- | --- | --- |
| Assumption | Validated by | Status | Comments |
| Meeting | Product Manager | In Process | The product manager will schedule one–two meetings every week for important updates and discussions. |
| Teamwork, Work Distribution | Product Manager | In Process | The product manager will assign work to all team members |
| Skill Requirement, Upgrade to recent technology | All Members | In Process | All members should cooperate on the programming works and also contribute new ideas |
| Owner’s Support | Product Owner, Support Team | In Process | The owner needs to make sure of the support from landlords and property owners. |
| Methodology | All members | In Process | The project will follow a waterfall methodology throughout the execution  The project will follow team governance guidelines and requirements |
| Project Resources | QA Analyst | In Process | Every two weeks the analyst will update or check the devices |

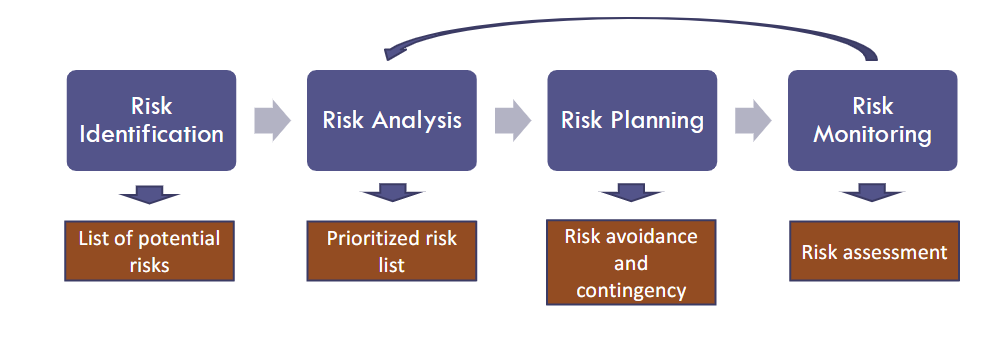
# Constraints (assigned to Rahul)

Things to consider throughout project delivery include: -

* Time: - Because this is a collaborative project, several persons with varying schedules and levels of availability will need to plan and find time to collaborate for this project. It will be tough to find time to conduct a meeting where every member is present and can effectively talk.
* Deadline: - Despite time constraints, set deadlines have been established and must be followed.
* Requirements: We must ensure that the application we build fulfills the needs of the client as well as any legal duties and standards.

# Risk Management Strategy (assigned to Dhruv)

|  |  |  |  |
| --- | --- | --- | --- |
| Risk | Probability | Impact | Mitigation Method |
| Departure/absence of teammate | High | High | To fill in for absent or departed team members, all members need to get accustomed to each other's activities. |
| Lack of development skills | Medium | High | Early in the project, individual group members should begin to practice developing abilities. |
| Software Limitation | Medium | Medium |  |
| Taking longer than expected to complete the project | Medium | Medium | Having a project plan and being organized. Complete each task before the deadline. If there is time, proceed as quickly as possible to the following stage. |



# Deliverables (assigned to Dhruv)

The deliverables of the project for phase 1 are

|  |  |  |
| --- | --- | --- |
| **No** | **Artifact Name** | **Responsible Party** |
| **1** | Project Plan | PM |
| **2** | PID document | PM |
| **3** | BRM Diagram | DBA |
| **4** | Context Diagram | Product Owner |
| **5** | Architecture Diagrams (2) | Lead Dev |
| **6** | User Requirements | Lead BA |
| **7** | RCT (includes func. decomp., supplementary reqs) | Lead BA |
| **8** | Use-Case Diagram (UML) | Lead Dev |
| **9** | Activity Diagram (UML) | DBA |
| **10** | Data-flow Diagram | Lead QA |
| **11** | Functional Requirements (user stories) | Product Owner |
| **12** | Class Diagram (UML) | Lead QA |
| **13** | Sequence Diagram (UML) | Project Team |
| **14** | ER Diagrams (conceptual, logical) | DBA |
| **15** | Table Specs | DBA |
| **16** | Source code sample (part of Application Demo) | Lead Dev |
| **17** | Test Plan document | Lead QA |
| **18** | Application Demo | All |

# Stakeholders (assigned to Dhruv)

This section will include a list of all known stakeholders and their interests in the project. It may be presented in the following format:

|  |  |
| --- | --- |
| Stakeholder | Interest |
| Development Team | Designing, Developing, and testing the application, as well as maintaining and updating it |
| Marketing and Sales Team | Identifying potential advertisers, negotiating deals, and ensuring the application's advertising or sponsored listings are effectively promoted. |
| Support Team | Address concerns and issues, and maintain user satisfaction and loyalty. |
| Landlords, property owners, and Brokers | List houses and get the right tenant for them. |
| Tenants and renters | Buying and renting out properties, finding roommates with like-minded thoughts |

# Project Team (assigned to Rahul)

The project team includes the following roles.

* Project Manager
* Product Owner
* Lead Developer
* Developer
* Database Administrator
* Business Analyst
* QA Lead
* Tester

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Project Roles** | | | | | | | |
| **Process Area** | **Project Tasks** | Project Manager | Product Owner | Dev Lead | Developer | Business Analyst | QA Analyst | Tester | DBA |
| Project Management | Develop a project plan | A, R | C | C | I | C | C | I | I |
| Provide cost estimate | A, R | C | C | I | C | C | I | I |
| Hire resources | A, R | C | C | C | C | C | I | I |
| Establish a project portal on SharePoint | A, R | R | I | I | I | I | I | I |
| Maintain a project risk and issue log | A, R | R | C | C | C | C | I | I |
| Provide project status reports | A, R | R | C | I | C | C | I | C |
| Requirements | Perform requirements analysts | A | R | C | I | R | I | C | I |
| Gather business requirements | R | I | C | I | R | I | I | I |
| Produce functional requirements | A | I | C | C | R | C | I | I |
| Design | Produce high-level design specs | A | I | R | C | C | I | I | C |
| Produce data model | A | I | C | C | C | I | I | R |
| Produce detailed design specs | A | I | R | R | C | I | I | R |
| Coding | Establish a code repository | A | I | R | R | I | I | I | I |
| Develop component code | A | I | R | R | I | I | I | I |
| Testing | Develop a test plan | A | I | C | I | C | R | C | C |
| Establish a test repository | A | I | C | I | I | R | C | I |
| Develop test specifications | A | I | C | I | I | R | R | I |
| Execute testing, report defects | A | I | I | I | I | R | R | I |
| Conduct defect review calls | A | I | C | I | R | R | C | C |
| Produce, and deliver defect metrics | A | I | C | I | R | R | C | I |
| Support test environments | A | I | R | R | C | C | C | R |
| Deployment | Produce a deployment plan | A | I | R | R | I | I | I | R |
| Produce deployment procedures | A | I | R | R | I | I | I | R |
| Deploy software into production | A | I | R | R | C | C | I | R |

# Project Plan (assigned to Rahul)

This semester (Project I), this project will follow the Waterfall model comprised on the phases shown below. The implementation phase is scheduled for 2 weeks [28-Mar to 11-Apr] where the project team will implement the home page and login features, laying grounds for the next semester.

The project plan includes 5 milestones defined below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **High-Level Phase** | **Activity** | **Task Owner** | **Start Date** | **End Date** |
| **Project Initiation** | Project Discussion | Prathima SR | 17-Jan | 24-Jan |
| Project Definition | Prathima SR | 24-Jan | 31-Jan |
| Estimation of cost and  schedule | Prathima SR | 24-Jan | 31-Jan |
| Risks Definition | Prathima SR | 24-Jan | 31-Jan |
| Development of the  Business Case | Prathima SR | 24-Jan | 31-Jan |
| Staff allocation | Prathima SR | 24-Jan | 31-Jan |
| Project Environment | Prathima SR | 24-Jan | 31-Jan |
| **MILESTONE 1: INITIAL PROJECT PIAN** | | | | |
| **Discovery & Planning** | Definition of Business  Problem | Daulet Kapezov | 31-Jan | 07-Feb |
| Production of  Project Schedule | Daulet Kapezov | 31-Jan | 07-Feb |
| Confirmation of  Project Feasibility | Daulet Kapezov | 31-Jan | 07-Feb |
| Organization of  Project Team | Daulet Kapezov | 31-Jan | 07-Feb |
| Definition of Software  Methodology | Daulet Kapezov | 07-Feb | 14-Feb |
| Gathering of Business  Requirements | Rahul Mendes | 07-Feb | 14-Feb |
| **Analysis** | Business Requirements  Analysis | Rahul Mendes | 14-Feb | 21-Feb |
| System Requirements  Definition | Rahul Mendes | 14-Feb | 21-Feb |
| Requirements prioritization | Rahul Mendes | 21-Feb | 28-Feb |
| **MILESTONE 2: REQUIREMENTS COMPLETED** | | | | |
| **Design** | Architecture Design | Kritika Agarwal | 28-Feb | 07-Mar |
| Database Design | Shubham Mishra | 28-Feb | 07-Mar |
| System Interface Design | Kritika Agarwal | 07-Mar | 28-Mar |
| User interface Design | Prathima SR | 07-Mar | 28-Mar |
| **MILESTONE 3: DESIGN COMPLETED** | | | | |
| **Development** | Code Design | All | 28-Mar | 04-Apr |
| Coding and Development | All | 28-Mar | 11-Apr |
| Unit Testing | All | 28-Mar | 11-Apr |
| **MILESTONE 4: CODING COMPLETED** | | | | |
| **Integration & Testing** | Deployment of  Application to  Testing Environment | Ajay Kumar Peduri , Kritika Agarwal , Shubham, Prathima SR | 11-Apr | 18-Apr |
| Development of  test strategy | Akshat Shanbhag, Dhruv Chamaria | 11-Apr | 25-Apr |
| Test Planning | Akshat Shanbhag | 18-Apr | 25-Apr |
| Test Cases Design | Akshat Shanbhag | 18-Apr | 25-Apr |
| Test Cases Preparation | Akshat Shanbhag | 18-Apr | 25-Apr |
| Test Cases Execution | Akshat Shanbhag | 18-Apr | 25-Apr |
| Test Results and  Analysis | Akshat Shanbhag | 18-Apr | 25-Apr |
| **MILESTONE 5: TESTING COMPLETED** | | | | |
| **Implementation** | Deployment of  Application to production | All | 25-Apr | 09-May |

Milestones**:**

|  |  |
| --- | --- |
| MS1: Initial Project Plan | (01-31-2023) |
| MS2: Requirements Completed | (02/28/2023) |
| MS3: Design Completed | (03/28/2023) |
| MS4: Coding Completed | (04/11/2023) |
| MS5: Testing Completed | (04/25/2023) |

# Project Controls (assigned to Daulet)

The project will be conducted in English, covering all elements such as communication, written materials, and source code. Weekly meetings will be held, either in person or through online video conferencing, to review progress, assign tasks, and work together on project components.

The team will use Google Meet for virtual meetings, text messaging via Slack, and e-mail for team and professor communication. Project documents will be stored and shared through Google Workspace for convenient remote access and editing.

# Communication Plan (assigned to Rahul)

This section will include how stakeholders will be communicated with during the project and how frequently. This should include a note on where to find the Communications Plan if you have one.

|  |  |  |  |
| --- | --- | --- | --- |
| Stakeholder | Frequency | Type | Purpose |
| Professor | At key stages - meetings and deliverable drafts | Email/Slack | To approve project implementation and direction. Advise if there are any potential issues. |
| Tenants and renters | At key stages | Email, phone, personal meetings | Advice for features in the application, Learning specific requirements |
| Property Owners/ Broker Network | At key stages | Email, phone, personal meetings | Listing of houses |
| Project Team | Daily | Email, Google Meet, in-person meetings, Slack | Maintain progress and ensure that the team is meeting weekly requirements. |
| End Users | Potentially during the testing phase and after release. | Email, online testing sessions, attend workshops for website | Feedback |