Software Vision Document

CrashPad
Vision Document for CrashPad

Revision History

Date	Revision	Description	Author
06/04/2020	0.0	Document Created	Alex Pettyjohn
06/08/2020	0.5	Division of workload/added features	Anthony Woods Aaron Elam
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06/14/2020	.13	Wording consistency changes Renter → Guest) & Product name / company name	Arya Habibi
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1 Introduction

1.1 Purpose

The purpose of this document is to build an online system for listing and booking[1] short term rentals[2]. Hosts[3] range from single unit owners to large businesses. Guests include personal travelers, international travelers, and corporate clients scheduling business trips. The proposed platform must provide competitive functionalities while remaining easy to use and reliable. Guests must be able to book and manage their reservations as well as provide feedback to the property owner. Owners must be able to list their units, apply any special conditions they have for renting, and manage a landlord account.

1.2 Solution Overview

The proposed application combines the best features of existing online booking programs with a simple to use user interface and robust features that appeal to each user group. By combining user requested features into a single web application, users can minimize the need to handle many different platforms with individual logins, restrictions, and shortcomings. Property owners (Hosts) will list their availability to a platform that advertises their units for them. These owners need only fill out a form containing the appropriate information to create a listing. Guests will then be able to search these listings by characteristics and availability dates to find the right fit for them, then book their stay using the same application. Payment and agreement to terms will be handled by a standardized method across the web application to remove the concerns for security from both ends of the transaction. Renters and hosts will be put in touch to arrange in person check in and check out processes like acquiring keys, but all other aspects of the transaction will be handled through the web application. After the stay, both the host and renter will be prompted to provide feedback that will be available for future users to review.

1.3 References

Software Vision Document (SVD) template provided by Dr. Palacios for use within his software engineering course. This template served as a foundation for this document. Dr. Palacious additionally provided a completed Software Design Document (SDD) as a reference for section contents. Definitions of key terminology drawn from *Engineering Software Products* (Somerville 2015) and lecture materials from CS 3398.

Data on competitors for the proposed software were drawn from annual earnings and customer information reports published by Airbnb and Vrbo. Requirements for web browsers are averaged from Mozilla Firefox, Google Chrome, and Microsoft Edge published software requirements. Standards for web design and implementation drawn from W3C and the Internet Assigned Numbers Authority.

2 User Description

2.1 User/Market Demographics

2.1.1 Renter Demographics

Guests using online platforms tend to be younger than the traditional hotel rental customer, with approximately 75% of guests falling between the ages of 18 and 45. The majority of the older demographic book through corporate accounts rather than individual. Male and female guests make up approximately equal portions of total users with a slight leaning (54%) toward female guests. 90% of prospective guests indicated they had stayed in a traditional hotel, while 45% indicated having stayed in a private short term rental.

2.1.2 Host Demographics

Hosts tend far older than the renter demographic, with 55% of all hosts being age 65 or older. 56% of prospective hosts are female. These older hosts often list renting of a family home after children have moved out as the primary reason for listing. 30% of hosts list 3 or more units or through an LLC, and 45% of hosts listed rental income as their primary source of income.

2.2 User Personas

2.2.1 James, the Business Traveler

James, age 31, is a Senior Software Developer for Microsoft in Redmond, Washington. Windows 11 is in its final development stages and James will be coordinating with Senior Management in Ireland for 37 days. He, and several of his subordinates, will need to stay

near the meeting location. James is operating on a budget from the company and is looking for ways to reduce costs while keeping everyone in decent accommodations.

James and his team are business clients for the proposed software. As average costs of hotel stays continue to rise, customers like James have begun to branch out to less traditional housing options. Low rates, flexible stays, and incentives for travelers appeal to this type of user. James has been tricked by shady marketing in the past and now relies on user reviews to get a clear picture of what a property is like before he visits. He would never book a poorly reviewed room and is hesitant to book a stay at a property with no reviews available.

2.2.2 Tina, the Property Owner

Tina, age 57, is a property owner in the downtown Austin area. She has a condo that she is renting out to help pay down her mortgage. She is able to rent out this listing for a reasonable amount, all while competing with the nearby hotels due to her competitive pricing. She is currently using flyers and leaving business cards in local businesses to market her property. Competition is stiff and Tina is increasingly struggling to keep her condo occupied without listing online.

Despite being somewhat tech savvy, Tina has been hesitant to move her business online. She often feels lost when navigating complex menus on other websites and worries about the safety of using a website to rent. She enjoys simplicity while using her services and is interested in scaling her rental side hustle into a passive-income generating machine. She hopes that listing through an online service can reduce the labor involved in renting out her condo and provide her with the opportunity to screen prospective guests more thoroughly.

2.2.3 Jaren, the International Traveller

Jaren, age 21, is a barista at a coffee house in Innsbruck, Austria. He is originally from Austria and speaks German as his first language. He is only fluent in German, but typically travels to and from other countries internationally. Sometimes he has issues with booking rentals in areas that speak languages other than German.

Jaren is young and highly adaptable to electronics & technology. Unfortunately, he still has been unable to consistently find a web application that offers highly effective translation opportunities. The language barrier often limits Jaren to renting from larger hotel chains that have interpreters on staff, driving up the cost of his travel. Jaren would

prefer to limit all interactions with property owners to the application and to have all instructions, conditions, and billing be presented to him in his first language.

2.2.4 Bart, the Family Vacationer

Bart, age 35, is an Mechanical Engineer with Lockheed Martin. He has a wife, two children, and a dog that he wants to bring for a family vacation over the summer. Bart schedules his vacation time months in advance to ensure that his entire family can clear their schedules for the trip. While availability is usually not a concern, Bart's family comes with unique requirements that make booking a challenge.

Travel with children requires that he find housing with enough beds for the family to stay in the same unit. Bart's oldest child is wheelchair bound, and requires access ramps and other accessibility features. Finding pet friendly housing is also key in his decision making as no one in the family wants to leave the dog behind. Although some rentals provide more amenities than others, a search engine or filter for these listings would best serve users like Bart. Ideally he would filter properties by type, number of beds, accessibility, and pet friendliness.

2.3 User Environment

Target users live and work around the world, often booking stays outside their home country. International users pose unique concerns in translation for languages, establishing rental terms, and collecting payment. A prospective user would likely be turned away by a failing in any of these areas. Booking time is also a key factor in appealing to users. Users seek to book travel accommodations as simply as possible with minimal time spent clicking and searching. Individual hotel websites and larger aggregating sites seek to reduce the booking process to as few clicks as possible. Users frequently interact with these rental services via phone, app, or website. The proposed application is being developed for in browser use on a traditional computer or via mobile browser. An app would be a future avenue for expansion, but exceeds the scope of initial development.

On the property owner side, hosts seeking to list on the proposed platform want to appeal to as many users as possible. An online platform allows hosts to reach users living well outside their home area, but such a platform risks feeling impersonal and difficult to navigate. Many hosts depend on rental income and need some assurance of their ability to keep their units rented. Many of these hosts are older users with limited technical

knowledge. They seek an easy to use platform that combines their business needs with a simple interface.

2.4 Key User Needs

The following key needs have been identified by sampling potential users and are presented in ranked order. Rankings are based on the frequency with which users mentioned a need and by how much emphasis they place on that individual feature.

2.4.1 Searching by restrictions/amenities

Users often present unique criteria for rental units that are very important to their decision making process. Restrictions like pet friendliness, smoking rooms, or family suites often make or break a decision to rent a unit. Both guests and hosts prefer to be very clear in communicating these requirements in advance. Most platforms allow hosts to list specific concerns and expect users to read the listing and select the right room. Conflicts arise when renter and hosts are not on the same page.

2.4.2 Competitive pricing

Travel is expensive, and prospective users know this all too well. Would-be guests are looking for a good deal on housing and would use the proposed software to find deals. Hosts are competing with traditional hotels and seek a platform to show how their pricing compares. When users of existing software are made to compare listings across several websites or platforms, they can easily become lost when navigating different taxes, fees, or prices shown in each. Surveyed users frequently requested that pricing be shown up front including any fees, deposit, or tax amount before they are made to go through the booking process.

2.4.3 Booking incentives

Prospective users have interacted with other platforms that offer rewards for booking and may need further incentives to leave their current reward program. Individual hosts currently have little means to offer a reward program and see the appeal of platform wide rewards filling this role. Existing reward systems depend on loyalty to a specific hotel chain or property, a style that is simply not flexible enough for travelers today. Surveyed users reported they would be likely to rent from a platform that offered rewards for repeated or longer stays. Hosts indicated they would be willing to offer discounts to their daily rate when guests book extended stays.

2.4.4 Accessibility/translation

Despite making up a smaller portion of users, accessibility features were rated as very important by those with specific needs. Listing what rooms are or are not accessible to certain disabilities can help hosts appeal to the correct users and help guests make the right choice for them. Translation and interpreting services via a web platform helps users booking outside their home country feel confident they know the terms of their booking. By handling these matters in advance, the proposed software appeals to users who would be hesitant to book otherwise.

2.5 Alternatives and Competition

2.5.1 Short term rental apps

Apps such as Airbnb and Vrbo gave rise to the short term rental industry. These platforms have strong name recognition and an established user base. Users may feel more comfortable using a service they or their friends have already interacted with. These companies have struggled in terms of customer service and have become increasingly dominated by corporate hosts who own a great many properties. As costs and fees rise, the appeal of these platforms compared to chain hotels has decreased. Users seek to recapture the feeling and savings of renting from a small time owner. Hosts enjoy using these platforms to reach a large audience, but are often made to pay large fees and deal with unruly customers.

2.5.2 Chain Hotels

Large chain hotels have dominated the industry for decades. While often more expensive than renting from a private owner, these companies offer some incentives to remain competitive. Users are willing to pay extra for building cleanliness, security, and involvement in a rewards program. Hotels offer amenities like food service and pools that appeal to travelers. This option has no appeal to hosts seeking to rent out a property they already own.

3 Stakeholders

Project Stakeholder	Degree of Involvement	Product Needs	Program Needs
Dr. Palacios	Angel Investor	Updates on user analytics and trajectory.	Enough return on investment to warrant future funding.
Customer support agents	Aid Guests and Hosts with any issues they may have with the platform.	Adequate tooling for support.	Enough agents to adequately serve a growing number of users.
Host	End User	Ease of use, tools to manage and list properties	Server support, payment processing, data management
Guest	End User	Ease of use to find and rent accommodations for short-term rental.	Server support, payment processing, data management
Development Team	Software Design/Development	Marketable application scoped for development in allotted time	Software architecture that is easy to develop and expand

4 Product Overview

4.1 Product Perspective

The application implements an easy to use and clean interface that allows all types of users to easily navigate the application. By using familiar design philosophies such as material design, this product will feel familiar to use by many people who use other products that employ material design (such as google products). Additionally, because of the nature of the application being hosted server side, the user does not need to interface with any hardware and only needs a web browser to access the application. These requirements will allow the application to run on almost all systems and increase system compatibility. The application also puts communication upfront by allowing users to easily communicate with the company and the property owner. Because of the application's easy to use user interface - the client will be able to easily communicate and will make the overall application experience pleasant.

4.2 Product Position Statement

For individuals who need a service to enable them to make or host lodging accommodations, CrashPad is an accommodation reservation service which provides users the ability to easily find and make lodging reservations on the go or host their own properties for others to use. Unlike Airbnb which provides users the ability to manage or make reservations, CrashPad caters to all types of travelers whether they are local, business or international travelers.

4.3 Summary of Capabilities

4.3.1 Functional Capabilities

This application allows the client to easily sign onto the application using their own account or SSO through google or other services. These different methods of sign on allows users to easily access the application. Additionally, the application allows users to view all listings of properties in their area or in a user defined area. This allows users to easily navigate properties that they are interested in and increases ease of use and client satisfaction. Additionally, the searching function allows users to easily sort and filter properties by their needs. In a more technical aspect - there is testing to ensure that all

data input fields are validated to ensure that the user inputs the correct data. This ensures that the user puts in the correct data and lessens mistakes that the user could make which could slow down the reservation process.

4.3.2 Non-Functional Capabilities

This application is a server side application which allows users to access the service from any device and increases software compatibility with devices. Additionally, all data is stored on database servers which are optimized for the application and allow users to quickly pull and push data to the database. Because this application is server side, it can easily scale up to demand by spooling up additional servers - this load balancing allows the application to keep up with demand and allows servers to be deployed in different geographical locations which can speed up response times for different regions.

4.4 Assumptions and Dependencies

4.4.1 List of Assumptions

This application is to be a web based application in which a software download is not required for the use of this product. During the use of this product, it is assumed that there is a system in place to verify the host's ownership of property posted. Additionally, there will also be a system to broker any transitions that result on the service and legalese will exist to protect the service, its company and employees from legal action .

4.4.2 List of Dependencies

The system will be dependent on proper procedure in place to ensure that the correct host is able to post property. This system is also predicated on that fact that there is a database in place where these postings are stored. In the case that the availability of the system is diminished, any inaccessible data will be unavailable to the user.

4.5 Cost and Pricing

4.5.1 Client Cost

The product is free to access for potential guests. Guests who book a room will be charged fees by the host (e.g. cleaning, parking). An additional service and payment

processing fee will be charged to each guest at time of booking. Hosts with three or fewer listings will not incur any fees to list their property; However, the company will take 3% of the rental price once a rental is confirmed and paid for. Hosts with more than three properties will pay a $10 listing fee in addition to the 3% commission for each listing. This additional fee deters repeat listings by the same host or “spam” on the platform.

4.5.2 Upkeep Cost

The majority of ongoing service costs will be maintenance of servers and databases. This will include server time for the main application processing - such as site scripting and web server rental. Database management costs are projected to exceed primary operation costs as the user base grows. Load balancing features will be implemented to appropriately scale resources to current user population to minimize overhead costs. Lastly, a large portion of company cost will be in advertising established markets as many companies already exist in this market.

5 Product Features

5.1 Create User Accounts

Allow users to create one of two types of account: Guest[4] or Host. Guests may use their email, Google, or Facebook account to register. Hosts have to supply more information during registration.

5.2 Starter-tips or checklist for new Hosts

Features that assist new Hosts will ensure that there is no confusion on what guests are expecting to have as amenities. The items that hosts are providing will also be listed on the page.

5.3 Filters for amenities in the property

Optional filters for kid-friendly equipment, pet-friendly equipment, and other typical Guest checklist items.

5.4 Messaging system for Guests and Hosts to communicate

Having a clear line of communication is a must for booking accommodations. Since the Company is the mediator, the system should reveal as little information as possible to the owner.

5.5 Live-translation of conversations

Will be beneficial for international travelers who may not understand one-another. Can be used in conjunction with a team of human translators.

5.6 Management system for hosts

Allow hosts to post and manage multiple properties. Host will have the option to edit any of these properties and will be notified if there is interest from a guest.

5.7 Host Analytics

Hosts will have the option of downloading and viewing analytic data on their properties. This will include criteria such as: Number of bookings, Number of dollars earned, and Average rating. This data will also be able to be filtered by time and specific property.

5.8 Property and guest rating system

Both guest and host will be able to rate their experiences. Guests will be able to rate the property for certain criteria (such as cleanliness or host response). Hosts will be able to rate guests based on their treatment of the property and adherence to rules.

5.9 Search for rental properties

A guest will be able to search for available properties. The search criteria will be the location, check-in and check-out dates, and the number of rooms needed.

5.10 Sortable search results

After performing a search, a guest will be able to sort the properties returned in the results. The results can be sorted by price, property rating, or distance from a location such as a zip code or Disney World or Austin Convention Center.

5.11 Reservation cancellation

After a reservation is placed, a guest may cancel their reservation up to 5 days before the reservation starts. The total amount will be refunded to the guest's credit card, minus a 3% cancellation fee.

5.12 Create a property listing

A host will be able to create listings for property they own. The host will need to provide the address, a description, the number of rooms, any amenities (eg: dog friendly, child friendly, etc…), the daily rate, and at least one photo.

5.13 Guest approval process

Hosts will have the ability to approve guests before the reservation is complete. Once the guest completes the reservation process the host is notified of the reservation and the guest rating and may accept or reject the reservation request. The host may also automate the process by specifying a minimum rating for a guest to stay.

5.14 View current rental

A guest can view their current reservation on the phone app. This will show them the address of the property, pictures, and the message history between the host and guest.

5.15 Navigate to property

During the time of the rental, when a guest views their current rental on their phone app a "navigate to property" button will be visible. When the user presses the button, the app will launch a navigation app (eg: Google Navigate, Apple Maps, Waze, etc…) that will be programmed to navigate to the property.

6 Exemplary Use Cases[5]

<table>
<tr><td colspan="2">Use Case Name:
Message Translation</td><td>ID:
0001</td><td>Priority:
Medium</td></tr>
<tr><td>Primary Actor:
Guest or Host</td><td>Source:
Guest or Host</td><td>Use Case Type:
Business</td><td>Level:
User</td></tr>
<tr><td colspan="4">Interested Stakeholders:
End Users, Support</td></tr>
<tr><td colspan="4">Brief Description:
After successful booking of a rental, the user decides to contact the host of the rental asking a question about an amenity listed. The host sees this message in their language along with a notification that it is translated. The host replies and they are able to sort out the question.</td></tr>
<tr><td colspan="4">Goal:
Clear communication between users regardless of their preferred language.</td></tr>
<tr><td colspan="4">Success Measurement:
Message arrives translated with an error rate under 1%</td></tr>
<tr><td colspan="4">Precondition:
Message sent by registered user
Recipient has set a preferred language in their account settings
Trigger:
User and recipient have set different preferred languages</td></tr>
<tr><td colspan="4">Typical Flow of Events:
1. Sender writes message in his/her preferred language
2. Message language is detected after sending
3. Message is translated
4. Message delivered to recipient in preferred language</td></tr>
<tr><td colspan="4">Assumptions:
Both sender and receiver have preferred languages, would otherwise write in different languages</td></tr>
<tr><td colspan="4">Implementation Constraints and Specifications:
Preferred language must be maintained when viewing a sent message from either end. Initial senders should see message history in their preferred language, while the initial recipient will see all messages in their own.</td></tr>
</table>

Use Case Name: Search Result Filtering		**ID:** 0002	**Priority:** Medium
Primary Actor: Guest	**Source:** Guest	**Use Case Type:** Business	**Level:** User
Interested Stakeholders: End Users			
Brief Description: When looking for a rental, the user is presented with search filters above the listings found in the city the user wants to book in. Amenities and needs that have been found to be the most important are featured. The user applies two of the filters and is presented with properties that have been listed with those attributes. If a property does not have them, the user can report the property.			
Goal: Allow users to sort search results using descriptive criteria.			
Success Measurement: Listings are filtered accurately and by predefined criteria when keyword search is inadequate			
Precondition: Host must tag their listing with certain searchable traits (e.g. “pet friendly”) **Trigger:** During a search, prospective guest selects to filter by the given search condition			
Typical Flow of Events: 1. Guest initiates a property search 2. Specific options to narrow results are presented 3. Guest selects 1 or more conditions to narrow results 4. Result list changes as more conditions are selected 5. Final results are narrowed until Guest is happy with results			
Assumptions: The user desires some specific feature that is not common to all listings			
Implementation Constraints and Specifications: Search criteria must be specific enough to narrow listings. Criteria must be exhaustive in all categories. Options should be mutually exclusive such that no listing belongs to multiple categories in the same option (e.g. Cannot belong to the “under $100” category and the “$100-200” category at the same time)			

Use Case Name: List a Property		**ID:** 0003	**Priority:** Medium
Primary Actor: Host	**Source:** Host	**Use Case Type:** Business	**Level:** User
Interested Stakeholders: End Users, Support			
Brief Description: The host starts creating a listing. During listing, there is a list of other properties in the area, what they offer, and their prices. After this initial research, a checklist of amenities is presented and the user selects what they can offer. Afterwards, the user can set a price and list the property.			
Goal: Host users list a property as available for rent and include relevant details/photos.			
Success Measurement: Generated listing is satisfactory to the host and contains all relevant listing information			
Precondition: Host is the owner of one or more properties **Trigger:** Host creates account with the intent to list a property			
Typical Flow of Events: 1. Host is prompted to enter basic details 2. Host is prompted to tag features of the property 3. Host uploads pictures of the property 4. Host agrees to terms and conditions 5. Host reviews listing and publishes			
Assumptions: Host has the appropriate permissions to rent their unit. Host lives within the service area and is not barred from short term rentals under local law.			
Implementation Constraints and Specifications: Listings should be checked for duplication to prevent “spam” on the platform. Verification of property ownership must be conducted before listing is made public.			

Use Case Name: User Submitted Review		**ID:** 0004	**Priority:** Medium
Primary Actor: Guest	**Source:** Guest or Host	**Use Case Type:** Business	**Level:** User
Interested Stakeholders: End Users, Support			
Brief Description: A guest stayed at a rental and decided to leave feedback for other guests to see. The user goes to the app, looks at the recent rentals, and clicks on the rental they want to review. The user then writes a review that is published for others to see. Users searching property listings can then view the published review.			
Goal: Users are prompted to provide feedback on their stay that is made available to future renters.			
Success Measurement: High rate of user reviews after a stay. Reviews are visible within a reasonable time after stay.			
Precondition: User has booked and completed a stay on the platform **Trigger:** After payment is complete, an email reminder to review is sent within 48 hours.			
Typical Flow of Events: 1. Guest stays at a property listed on the platform 2. Guest is prompted to review their stay 3. Guest responds to questions ranking aspects of their stay 4. Guest completes a free response review where they may make specific comments 5. Review is published and scores averaged with overall reviews.			
Assumptions: Users have an underlying desire to provide feedback and address both positive and negative aspects of their stay. Feedback should be constructive and not used as an alternative to normal support channels.			
Implementation Constraints and Specifications: Users may only review properties at which they have stayed, and only within a reasonable time period following the stay. Users with serious issues with their stay (severely negative reviews) should be directed to a support page.			

Use Case Name: Cancelling a Reservation		**ID:** 0005	**Priority:** Medium
Primary Actor: Guest	**Source:** Guest	**Use Case Type:** Business	**Level:** User
Interested Stakeholders: End Users, Support			
Brief Description: A guest decides they do not want to keep their reservation. They may cancel the reservation and receive a refund minus a small fee.			
Goal: Allow a guest to easily cancel any reservation and feel satisfied to return to the site to book again.			
Success Measurement: Low number of complaints to support that guests would like to cancel.			
Precondition: User has booked but has not completed a stay at the reservation. The cancellation must be performed 5 or more days prior to the reservation date. **Trigger:** After booking a reservation, the option to cancel is presented any time the guest views it.			
Typical Flow of Events: 1. Guest books a reservation. 2. The guest wishes to cancel a reservation they have booked. 3. Platform either notifies the guest that they are ineligible for a refund OR they are given information about fees involved with cancelling. 4. Guest completes or disengages from the cancellation. 5. The guest is refunded the amount of the reservation minus a fee. 6. Host is notified of cancellation from the date.			
Assumptions: Assuming the guest will be notified and remember the 5 day cancellation rule.			
Implementation Constraints and Specifications: Payment processors will be outside of our control. Ensuring that guests and hosts are compensated correctly will be difficult.			

7 Nonfunctional Requirements

7.1 Usability

The overall user interface of the program will be designed to remain functional and visually appealing to users. Interfaces for site features will be based on industry best practices and seek to feel similar to other applications users likely encounter. This familiar feeling will ensure user comfort and decrease time spent learning the website features. Usability will be assessed through focused user testing with groups representing different types of users (e.g. potential guests, property owners). Feedback from these groups will be the basis for user interface changes. Where possible, features will be implemented to be customized to fit user preferences. Additionally, the site will be made accessible to those with hearing or vision concerns by providing proper alternatives to sound or video based features.

7.2 Reliability

Overall reliability of the system is crucial to maintaining both individual and commercial users. Failure to correctly process user requests may result in their discontinued use of the platforms and leave a lasting negative impact. To address reliability concerns, a number of tests shall be devised and used as acceptance criteria for all revisions/iterations of the software. While these test cases cannot be exhaustive, they will provide a foundation and ensure that core features function in all new versions. The web-based nature of the program allows for revisions to be made without requiring updates on user's machines. This allows for regular bug fixes or improvements to be deployed addressing issues that make it past the test cases. When such issues arise, new test cases shall be created to test that these problems do not reoccur in future versions. The development team understands that no software can be perfect, and will continue to refine and improve the product well after release.

7.3 Performance

Given the variety of alternative renting platforms on the web, providing timely service to users will be required to stay competitive. Performance of web based applications is

limited to some degree by the speed of the user's internet connection. To provide the best experience for all users, this application will handle the majority of required operations using web servers. Little processing load will be placed on the users machine. Overall response time will be assessed by time to serve each user request, with the caveat that some users will experience high delay caused by the network rather than by slow response.

7.4 Supportability

The proposed application will be designed with a long life in mind. Its dependence on existing, long lived, and well supported formats such as HTML[6] and CSS[7] reduce the likelihood of a shortening of product life due to changes in technology. In the event of changes to these underlying systems, including a major update that would cause deprecation of some features, a long overlap window is generally provided. These windows often last years, providing ample opportunity for the development of alternatives. The user databases are expected to continue to grow over time, with the hope of large growth in user population. Maintaining this information will be a priority for product support after deployment.

7.5 Other Requirements

7.5.1 Applicable Standards

The proposed software will be developed in accordance with the W3C guidelines for web pages, including adherence to the following specific recommendations:

1. The web application shall run using HTML and/or CSS to ensure portability to the wide variety of available browsers and systems that customers may use.
2. Images shall be formatted as either Portable Network Graphics (.PNG) or Scalable Vector Graphics (SVG).
3. Images shall include alternative text to better serve those with limited vision. All site functionalities shall be accessible without input from a mouse.
4. A system shall be implemented to honor "do not track" requests sent by users.

Additionally, and in accordance with the standards set forth by the Internet Assigned Numbers Authority (IANA), the associated domain names and IP addresses will be registered to avoid overlap/conflict with other registered web pages. The IANA time zone

database will be used to manage differences in time zones between guests, owners, and the web servers.

7.5.2 System Requirements

As a web-based application, users will require a web browser and a stable internet connection to access the proposed software. Minimum system requirements will vary greatly between browsers (e.g. Google Chrome, Firefox, Safari). The following requirements are an aggregation of those listed in most common browsers:

Operating System:	Windows 7 or later, Mac OS X 'Yosemite' or later, or a 64 bit Linux distribution such as Ubuntu 14+ or Debian 8+
Memory:	2GB
Processor:	Intel Pentium 4+ or equivalent (SSE2 or ARM64 support) or any x86-64 CPU for Mac users
Data Storage:	200 MB

7.5.3 Licensing, Security, and Installation

The proposed software will be developed using open source libraries and other software except in cases where no viable open source option is available. As such, no licenses must be obtained to enable development of the application. None of the currently proposed systems depend on a library or software with a licensing requirement.

The following security measures will ensure the protection of sensitive data collected and managed by the proposed application. These data types include the handling of user account information including usernames, passwords, and payment information. Communication between the user, provider, and any intermediaries shall be authenticated to ensure that all parties are correctly identified. These communications will be further checked to ensure that only authorized actions are performed and that attempts to impersonate users with higher level permissions are caught before accessing sensitive data. Data being transmitted will use a secure protocol to prevent tampering and will be further checked for integrity. Where data storage is necessary, all data shall be encrypted using one or more methodologies to make access difficult by unauthorized parties.

No installation of the product is required by the end user as most web browsers include the necessary functionalities to run an HTML based web-application. If the user's browser does not support a current version of HTML, the user will be prompted to update or access the website from a different browser.

8 Documentation Requirements

8.1 User Manual

The proposed website's user manual will take the form of a brief user tutorial presented at account creation. Users will be presented the guide appropriate for their account type. For example, a potential renter will be shown a brief guide to searching properties, selecting a listing, and booking their stay. That same renter would not be shown the owner tutorial as they would need a property owner account to view this information or list a property for rent. No print copies of these tutorials need be created/distributed. Users with accessibility issues will be provided an additional tutorial covering accessibility features if they choose to self identify.

8.2 Online Help

The primary means to obtain online support for this application will be a frequently asked questions (FAQ) page. The initial page will be populated using common requests during user testing. The page can then be further expanded to include common requests after deployment. For more complex issues, including all those not covered in the FAQ, users will be directed to contact the web support team via email.

8.3 Installation Guides, Configuration, "Read Me" File

No installation guide is necessary for this product as it runs as an in browser web application. Default configuration settings will comfrom to the user's browser. If the user desires to change these configurations, they may do so during account creation or any time after by logging in and accessing their account settings. A "Read Me" file will be developed as a text version of the user tutorials. This document shall be made available to all users as an alternative to the site tutorial process.

8.4 Labelling and Packaging

Labeling shall conform to the overall client branding. This includes uniformity in naming, presentation of logos, and all graphics associated with the main web page. Additional labeling concerns arise when other businesses list their properties on the

proposed websites. Such listings will include the naming, logos, or graphics associated with individual properties in addition to those of the main website.

As the deliverables of this product are a web application, no packaging or distribution of software is necessary. The product will instead be set up on the owner's web servers and provided to users via a web browser.

9 Glossary

Term	Definition
Booking:	The process of renting a property.
CSS:	Cascading Style Sheets is a language for styling documents on the web.
Guest:	User of the application seeking short-term rental.
Host:	User of the application seeking to rent out the property they own for short-term rental.
HTML:	Hypertext Markup Language is a language for displaying documents on the web.
Short-term rental:	Furnished property that is rented out for a short period of time (usually days to weeks).
Use Case:	The interaction between a role (user or system) and a system to achieve a goal.
W3C:	World Wide Web Consortium, an organization that defines standards for the web.