



HIGH LEVEL DESIGN DOCUMENT

TEAM NAME: PIXEL PALS

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Version History

Version	Date	Changes
1	November 18, 2023	Initial submission
2	November 22, 2023	Appendix C: Internal Roadmap, summary of planning statistics, Appendix D: Wireframe

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Introduction

The SpaceSurfer project plan is a comprehensive and structured document outlining key components and implementation details for the successful execution of this system. This foundational guide provides a clear and organized framework of project information including the project scope, resource and cost allocation, timelines, roadmap, risk management, site map, and test plan. The project plan will be effective for keeping the development team and stakeholders aligned and informed of the progressions of SpaceSurfer.

Project Scope

SpaceSurfer will be designed to streamline facility management for various organizations, spanning from office spaces to public amenities like restaurants, libraries, and parks. SpaceSurfer prioritizes reservation accuracy and respects time constraints, allowing users to book up to one week in advance in a 24-hour format. Focusing on security, SpaceSurfer implements robust measures in place to safeguard sensitive data across all facility types, ensuring compliance with privacy regulations. SpaceSurfer cannot be used to directly communicate between employees and managers.

Initial System:

- Single-page web application
- Facilities in Irvine, California
- Users age 13 and up
- PST timezone
- Utilizing the Imperial System
- Support American English Language
- A score of 75 or more for every category on Google's Pagespeed Insights

Initial System:

- The system would have 3 super admins preset in the system

Initial Audience:

- All companies or facilities located in Irvine, California
- Anyone in Irvine or surrounding areas

Support:

- Standard desktop display resolution (1920 px x 1080 px)
- Tablet and smartphone display resolutions
- Compatible with browsers using Google Chrome version 105.0.5195.127 or later

Resources & Cost Estimations

Team Roles

Name	Role	Skills
Kay Kayale	Team Leader, Project Manager, Full Stack Developer	JavaScript, HTML, CSS, C#
Carine Gordillo	Business Analyst, Full Stack Developer	JavaScript, HTML, CSS, C#, SQL
Sarah Phan	QA, Full Stack Developer	HTML, CSS, C#, SQL
Brandon Galich	QA, Full Stack Developer	CSS, C#, SQL
Sarah Santos	Full Stack Developer	C#, SQL
Jason Lam	Full Stack Developer	C#, SQL

Role Descriptions

Team Leader

- Ensures the successful execution of the project by managing the team to meet project goals and expectations

Project Manager

- Ensures the project is completed on time, within budget, and meets all specified requirements; a vital role in the planning, executing, and monitoring processes of the project

Business Analyst (BA)

- Ensures the project meets business requirements expected by stakeholders (i.e., clients and end-users); bridges the gap between business requirements and technical implementation of those requirements

Quality Assurance (QA)

- Ensures the project meets specified system quality standards/requirements, minimizes defects, and functions as intended

Full Stack Developer

- Software developer with front-end and back-end coding capabilities; ability to handle various technologies and responsible for a broad range of tasks

Resource Cost Estimations

Service	Category	Cost
AWS	Cloud Computing Platform	\$0.00
Discord	Communication Platform	\$0.00
GitHub	Code Hosting Platform (Version Control and Collaboration)	\$0.00
Google Drive	Cloud-based File Storage	\$0.00
MySQL	Open-Source Relational Database Management System	\$0.00
VisualStudio	IDE	\$0.00
VS Code	Open-Source Code Editor	\$0.00

Time Cost Estimations

Each team member has been allocated 12 hours a week to work on the project. Given the workload necessary to design, implement, and test the system, 12 hours per member per week is an efficient estimate to finish the project on time. Giving 12 hours a week per member estimates 2 hours of work a day per member. This time estimate accounts for members' unplanned absences and overtime.

Timeline

Outlined in Appendix A, the project timeline consists of all remaining milestones, sprints, features, and functions. All features and functions are separated by low-level design, implementation/code, and testing. These work items are calculated to the estimated hours within the sprint. The following statistics are outlined in the project timeline:

- Total Milestones: 4
- Milestones Remaining: 3
- Total Sprints: 14
- Average Sprint Hours (weekly): 82 hours
- Average Sprint Hours per Member (weekly): 14 hours
- Average Sprint Hours (daily): 12 hours
- Average Sprint Hours per Member (daily): 2 hours

Roadmap

Outlined in Appendix B, the project roadmap is a simplified and client-friendly version of the project timeline. The roadmap is ordered by milestones and displays which features are expected to be done.

Outlined in Appendix C, the project gant chart is an internal roadmap for team members to reference. The chart details the features and their functions. Furthermore, the timeline specifies when designing, coding, unit testing, and automated testing should be completed for every feature function.

Risk Management

Risk	Description	Impact	Probability	Mitigation Strategy	Tolerance
Schedule delays	Being behind schedule will cause delays in our project. Having to spend	High	High	We will keep updating our schedule as the project progresses to account for possible delays. When addressing delays in	Team members can be behind schedule by at most one app functionality.

	<p>more time on a certain milestone will result in fewer team members being able to work on the next milestone. There is a possibility of feature dependencies, so delays may cause later features to have less time to be worked on.</p>			<p>schedule, we will determine if more resources and time should be spent on the item causing delays and how much more time should be allotted. We will determine how much this delay will set us back and see if any compromises can be made to make sure we don't fall too behind schedule. To better prevent delays in schedule from happening, we will allocate more time than necessary to more complex items in the project.</p>	<p>Team members will be allowed a one-week extension if necessary. If our project falls more than one sprint behind, we will be at risk of not completing our project.</p>
Project changes	<p>This will include changes to our project's requirements as well as what features our project will have. These changes will cause delays since we will have to make modifications to our schedule to accommodate those changes.</p>	High	High	<p>Changes in the project will first be discussed within the team. We will discuss whether aspects of the project must be descoped to complete the project in time as well as if more development needs to be added and done that was unaccounted for in planning. Our consensus will then be discussed with the client to see what changes are feasible. To mitigate this risk, we will determine during sprint planning if there are any possibilities of changes to the project plan, schedule, features, or requirements. From there, we will discuss how to address those changes if they were to happen.</p>	<p>Changes in our project's requirements should not add more than 200 hours of work. Due to our limited time, large changes will result in an unfinished project.</p>

Technical challenges	Since we are working with complex technologies and unfamiliar tools on new platforms, the development of our project can have delays.	High	High	We will perform risk assessments during sprint planning to identify potential technical challenges. For features that may require more research and work and are at a higher risk of facing development issues, we will allocate more time toward that feature. We will also have recovery sprints to better research how to develop the features in our project.	If technical challenges result in our team being behind by more than one sprint, our project will be at risk of being incomplete.
Team availability	This will include both planned and unplanned absences of team members. Planned absences will account for school breaks as well as time constraints specific to each member. Unplanned absences will account for sick days, members dropping out/failing the class, and emergencies.	Medium	High	We will account for planned absences during our sprint planning. To mitigate the impact of unplanned absences, we will allocate more time than necessary during our development phase. This will ensure that our schedule will have a buffer to account for unexpected delays. We will also maintain good communication within our team so that we all know if any member will be absent.	For unplanned absences, team members will be allowed up to one week of absence. If an absence were to occur, we would determine its impact on our sprint. If these absences result in our team being more than one sprint behind, then our project will be at risk of being incomplete.
Scope creep	Unplanned additions to the scope of our project may cause delays. The additional time spent on the new changes may	Medium	Medium	To mitigate scope creep, our project will have clearly defined requirements which will ensure both the team and the client have a clear understanding of what will be delivered. Any	Changes to the scope of our project must not exceed 200 additional hours. Due to the time constraint of

	result in less time being spent on other planned aspects of our project.			proposals to make changes will go through the process of being discussed, reviewed, and then approved/rejected. Each change proposal will be analyzed for its impact on the project.	our project, large additional workloads may result in our project being incomplete.
Communication issues	This will include poor communication among team members as well as between the team and the client. This may cause misunderstandings on the requirements of the project which will lead to reworks and delays.	Medium	Medium	Our team will have two meetings every week so that we ensure everyone is on the same page project-wise. Weekly meetings will allow us to better address problems in a timely and more effective manner. Our daily stand ups will also allow for all team members to have a clear understanding of who has what roles and responsibilities and who needs help. Lastly, we will discuss during our sprint retrospectives any changes in communication that need to be made as well as any necessary feedback.	If communication issues arise and our team is put behind schedule by more than one sprint, then our project will be at risk of being incomplete.
Resource constraints	This will include insufficient budgets and delays or problems with licensing and policies. These will cause delays in our project since they are unplanned and would need more allotted time to fix.	Low	Low	To mitigate this risk, we will consider resource planning in our sprints. This will ensure we have a clear understanding of the resources needed for the project. The things to consider will include hardware, software, and other tools that may be necessary to complete our project. In cases where we meet problems with a resource, we will negotiate whether other	If resource constraints arise and our team is put behind schedule by more than one sprint, then our project will be at risk of being incomplete.

				outlets can provide that resource for us or if we can remove the need for that resource depending on how impactful it is toward our project.	
Environmental factors	These factors may include power outages, strikes, and natural disasters. All of these can disrupt the development of the project and cause delays.	Low	Low	Since environmental factors are out of our hands and are unexpected, there is not much we can do to prevent these risks. However, to deal with environmental factors that can affect our project, we will maintain good communication with each other and the client so that we can plan how to tackle delays that may occur due to this risk.	If an environmental factor causes our team to be behind by more than one sprint, our project will be at risk of being incomplete.

Test Plan

Features to be Tested:

- Personally Identifiable Information (PII) collection
- User registration
- Employee account creation by Company Managers
- User login/logout functionality
- User account view and update
- User account deletion and its effects
- User account recovery
- System admin usage analysis dashboard
- Logging functionalities
- Archiving functionalities
- Manager floor plan image upload
- Creation and modification of reservable spaces

- Reservable space availability accuracy
- User space reservation
- User cancel reservation
- User modify reservation
- User view of all reservations
- Reservation confirmation email

Features not to be Tested:

- Third-party service integration (e.g., external APIs) that are not finalized.
- Features under development and planned for future release cycles, which include:
 - Inventory catalog
 - Reservation rebooking
 - Layout selector
 - Schedule downloader
 - Advanced analytics
 - Expense tracker
 - QR code reservation
 - Task Manager Hub
 - Waitlist for reservable space
 - Service provider integration

Test Strategy:

- Utilize a combination of manual and automated testing strategies to cover functional, usability, and performance aspects.
- Implement regression testing to ensure that changes do not disrupt existing functionalities.
- Conduct security testing focused on user data protection and compliance with relevant standards.

Test Objectives:

- To validate that all critical paths for user actions are functioning as expected.
- To ensure the application handles account and data management securely.
- To confirm that the UI/UX is intuitive and error-free.
- To verify the correct implementation of features as per requirements.

Pass/Fail Criteria:

- All critical functionalities must perform as expected without critical bugs.
- All security protocols must be upheld with no breaches or data leaks.
- Performance should meet the predefined thresholds for load times and response times.
- No major defects that impair user experience.

Test Deliverables:

- Test Cases and Scripts
- Test Execution Report including defect logs
- Performance Test Reports
- Security Test Reports
- Final Test Summary Report

Testing Tasks:

- Prepare test cases for each feature based on user stories.
- Set up test environments and required data.
- Execute test cases and record results.
- Perform regression tests after each development cycle.
- Report and track defects to resolution.

Environmental Needs:

- Access to a stable test environment that mimics production.
- Devices and browsers for compatibility testing.

Wireframe

The wireframe, Appendix D, is a visual representation of our web application and serves to illustrate how different parts of the application relate to each other. This includes the layout of various views, pages, or screens, and how users will navigate between them. By mapping out these relationships, wireframes help designers and developers understand the flow of the user experience, making it easier to plan and design efficient and intuitive interfaces.