

CNAT

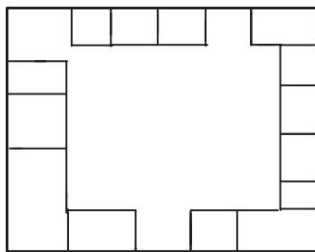
Brandon Elizondo, Kirkland Keith, Suzanna Gudivada, Austin Sehnert, Benjamin Zaley
In Motion Care LLC
Dr. Daji Qiao

Project Vision

- Create an application that tracks CNAs and equipment
- Provide the ability to view previous CNA movement
- Notify when to check on residents
- Ensures the safety of residents
- Make the day-to-day life of staff easier

Initial Conceptual Sketches

Potentially a start page with filters to select what date needs to be viewed.



Expandable map of facility. Can click on a room to view data

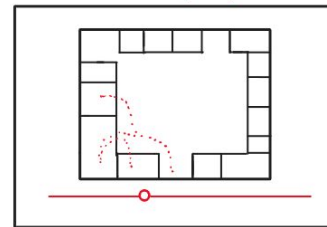
Date field: Allow interval of dates

Ability to view individual CNA contributions

Room#	Date	Total time in Room	Nurse 1	Nurse 2	...
132
Living Room
Bath Room

N2	Time in	Time out	
Room #	Play

Playback feature to view where nurse has been in a given time interval



Initial Conceptual Sketches

↑ In Motion Care

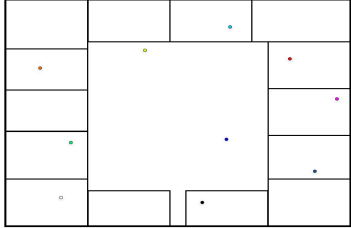
Room 132

Date
Thursday Oct 10, 2019

Nurse	Time In	Time Out	Total Time	Living Room	Bathroom
Nurse 1	1:13 pm	2:34 pm	1:21	1:13 - 1:19 1:40 - 2:34	1:19 - 1:40
Nurse 2	4:25 pm	4:32 pm	0:07	4:25 - 4:32	
Nurse 3	8:33 pm	9:00 pm	0:27	8:33 - 8:34 8:50 - 9:00	8:34 - 8:50

↑ In Motion Care

Live Metrics



Active Tags: 10 Inactive Tags: 4

Another Metric: 30%

Another Metric: 2:18

Another Metric: 0 Another Metric: 209

↑ In Motion Care

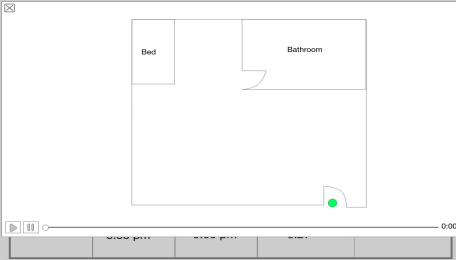
Nurse 3

Date
Thursday Oct 10, 2019

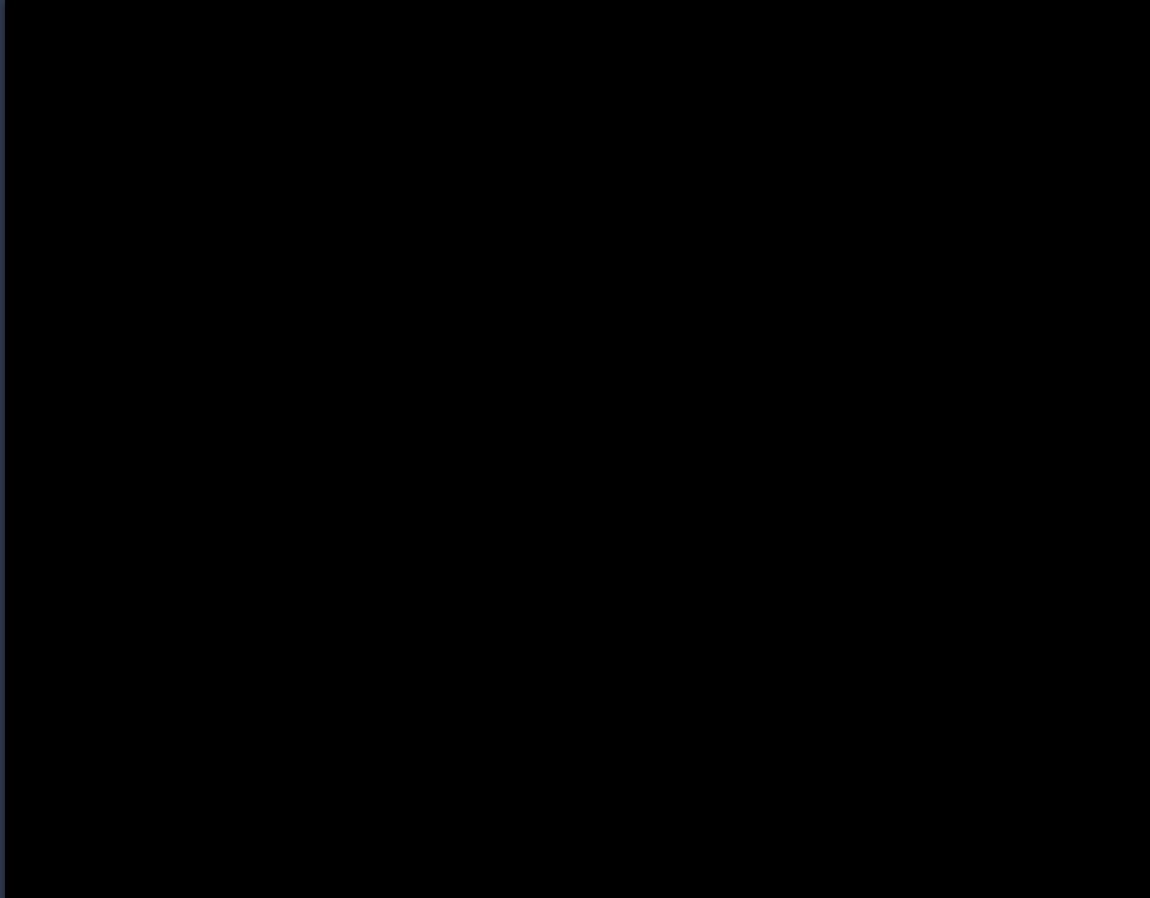
Room	Time In	Time Out	Total Time	Video Playback
124	1:13 pm	2:34 pm	1:21	Play ▶
103	4:25 pm	4:32 pm	0:07	Play ▶
155	8:33 pm	9:00 pm	0:27	Play ▶

↑ In Motion Care

Nurse 3



Prototype Implementation



Current Conceptual Sketch

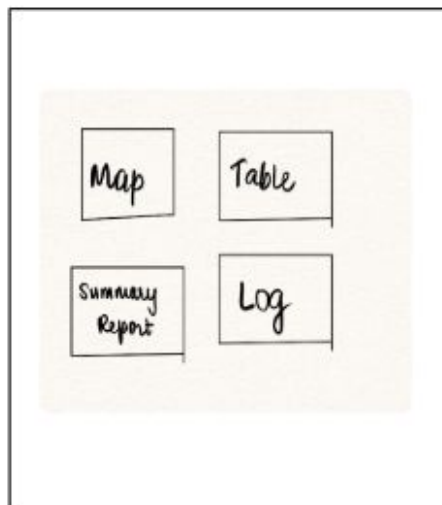


Figure 1. Homepage

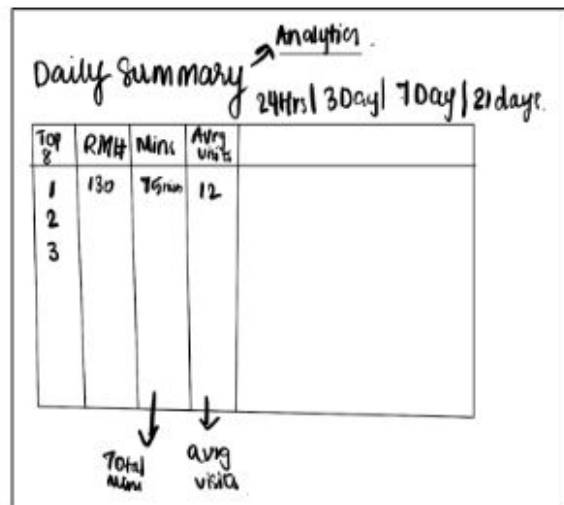


Figure 2. Daily Summary

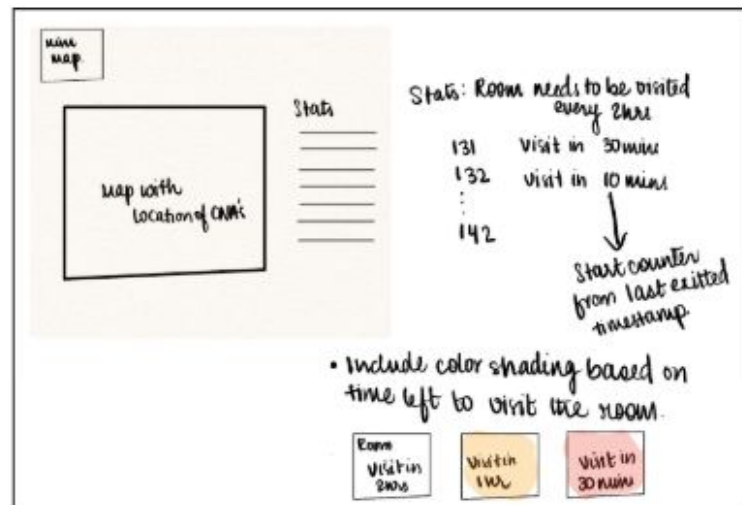


Figure 3. Map page

Functional Requirements

- Dashboard to select sub-applications
- Resource tracker
- Care plan
 - Editing, viewing, auditing
- Statistics
 - Weekly summary of time visited per room
- Google Chrome

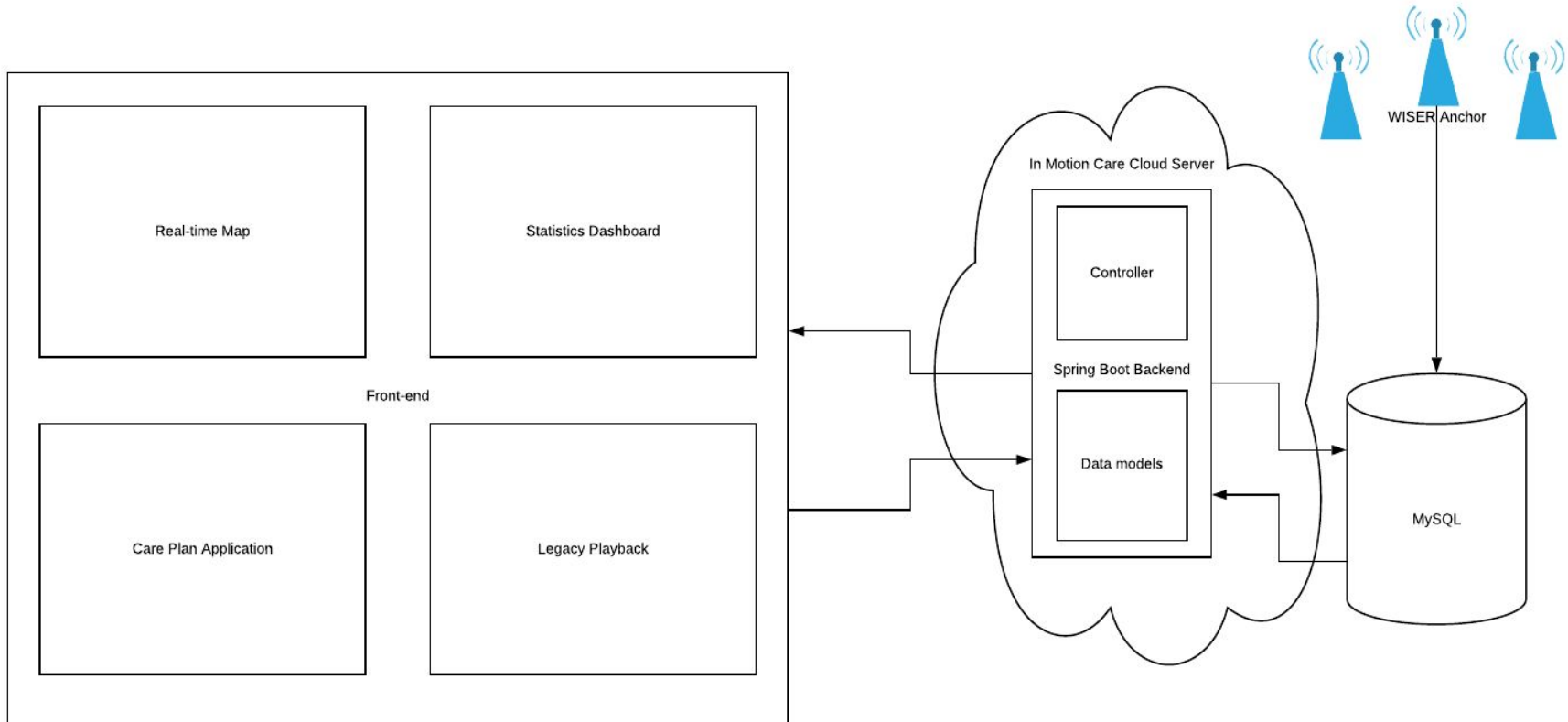
Nonfunctional Requirements

- Maintainable
 - Use technology already in use by client
- Scalable
 - Modular design implementation
- Secure
 - Provide levels of access
- Usable
 - Easily accessible and intuitively designed

Constraints

- Tracking must be done using WISER System technology
- Web application must be compatible with existing systems
- System changes must be discussed in detail

Conceptual Design Diagram



System Design

Systems, connections, communication,
and design

- Database
 - Design
 - Function
 - Complications
- Back-end
 - Architecture
 - Usage
- Front-end
 - Design
 - Implementation

Database

The image displays a screenshot of a database management interface showing the schema for eight tables. Each table is represented by a blue header with a dropdown arrow and a list of columns with their data types and constraints. The 'raw' table is the largest and contains the most columns.

Table Name	Columns
room	name INT(11), id INT(11)
shiftlog	device_id BIGINT(20), start INT(11), stop INT(11), person_id INT(11)
equipment	id BIGINT(20), name VARCHAR(50)
raw	deviceid BIGINT(20), row_num INT(11), time_stamp BIGINT(20), reportid BIGINT(20), err DECIMAL(10,9), x_val DECIMAL(10,4), y_val DECIMAL(10,4), z_val DECIMAL(10,4), num Anchors INT(11), tag BIGINT(20), battery DECIMAL(5,4), zones VARCHAR(50), t_elapsed BIGINT(20)
time	name VARCHAR(50), room INT(11), total_time BIGINT(20), bed BIGINT(20), bath BIGINT(20), living BIGINT(20), fireplace BIGINT(20), lounge BIGINT(20), tv BIGINT(20), nurse_station BIGINT(20)
zones	name VARCHAR(20), id VARCHAR(20)
nurse	name VARCHAR(100), position VARCHAR(30), id INT(11)
activity	zone_id VARCHAR(20), device_id BIGINT(20), timeslot INT(11), time BIGINT(20), room_num INT(11), category VARCHAR(20)

- Current database for In Motion Care
- Currently in the process of designing new database
- Complications
 - Built primarily for IMC's care plan app
 - Does not contain data that can be accurately presented
 - No functional relationships between tables
 - Must be carefully rebuilt with IMC to ensure data stability between applications

Back-end

- Spring Boot Server
 - Supports a Representational State Transfer (REST) API
 - Allows easy control of information flow
 - Supports Cross-Origin Resource Sharing
 - Allows secure requests and data transfers between front-end and back-end

- Broken into three key sets of components:
 - Controllers: Controls all activity that goes through its given URL
 - Models: Classes made to present and store data in an easy, accessible way
 - Repositories: Access points for our database

Front-end

- HTML5
 - Most recent full release
 - Easy to use video playback
 - Common ground between browsers
- Google Chrome
 - Common, ~70% of market share^[1]
 - Considered power hungry
 - Currently limited development
- ReactJS
 - Interactive components
 - Easily scalable
 - Also power hungry
 - Aligns with clients' other applications.

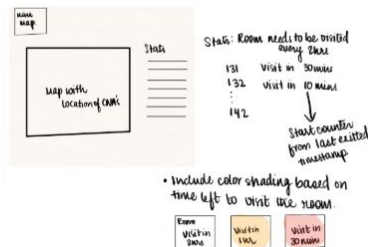
Analytics

Daily Summary 24Hrs | 3Day | 7Day | 21days

Top 3	RMH	Minic	Avg visits
1	130	75min	12
2			
3			

Total name

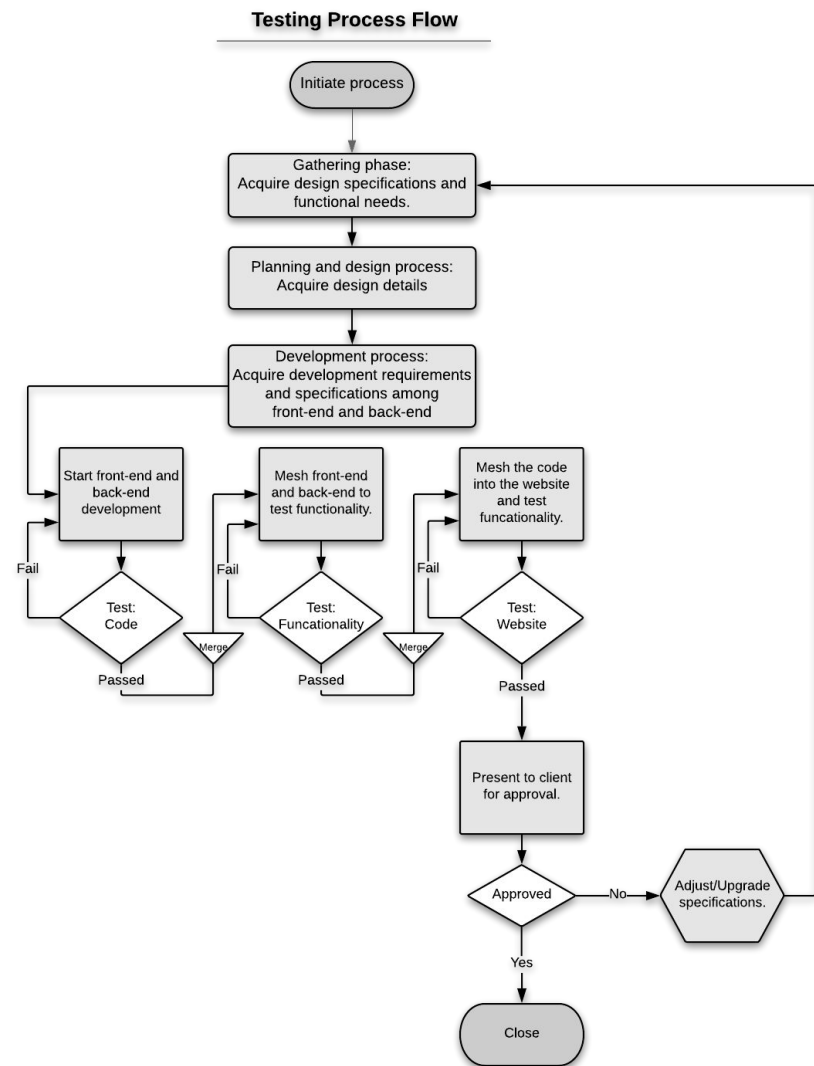
avg visits



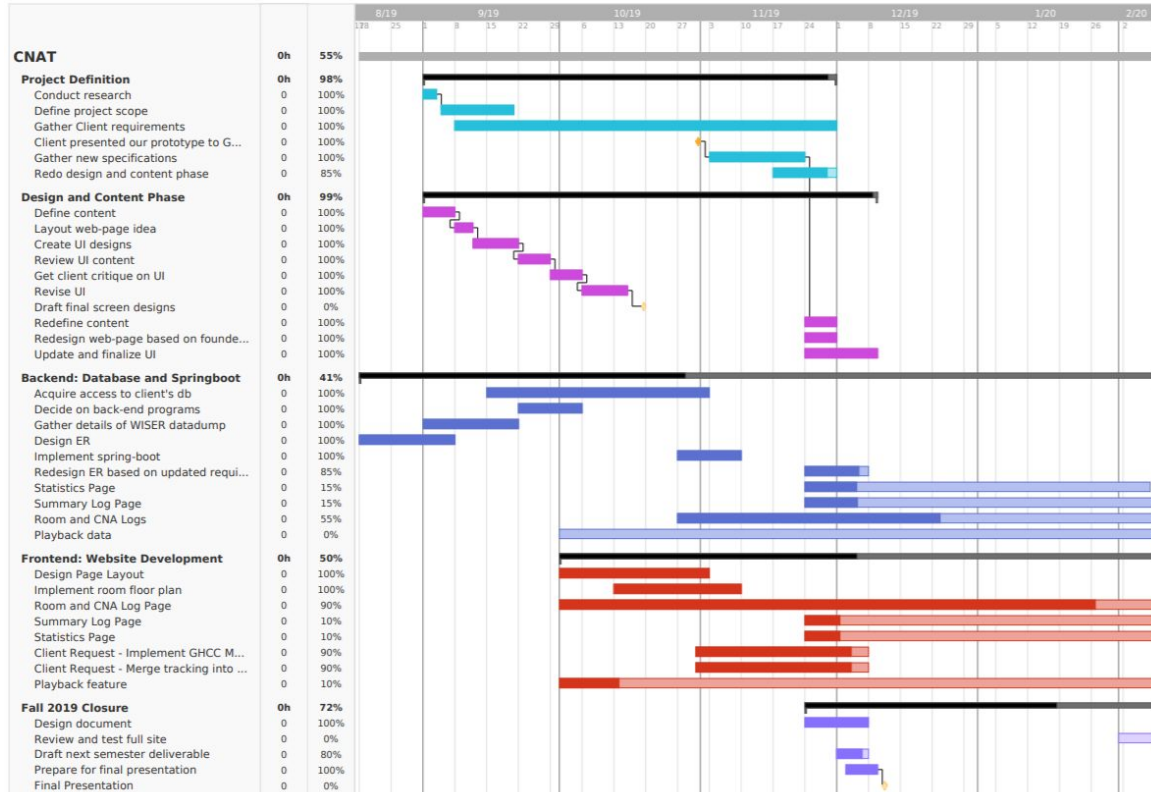
Test Plan

- Functional Testing
 - Mockito - Back-end Unit Testing
 - Jest - Front-end Unit Testing
 - Acceptance testing - Green Hills Retirement Community Staff
- Non-Functional Testing
 - Performance and usability feedback from Green Hills Retirement Community Staff

Testing Process Flow



Project Plan – Schedule/Milestones



Progress thus far

- Approximately half way through previous Gantt chart
- Gantt chart reworked due to changes in requirements
 - Redesign and recreate the database
 - Change the layout of the webapp
 - Tie together back-end and front-end

Project Plan

- Complete implementation of logs
- Complete implementation of summary reports
- Complete implementation of statistics view
- Implement room indicators based on data
- Implement playback feature
 - Back-end rendering of playback videos
- Rewrite database
- Complete API implementation

Individual Contributions

Austin	<ul style="list-style-type: none">• Created initial screen mock-ups• Conversion of existing application to React• Built home dashboard page for applications
Benjamin	<ul style="list-style-type: none">• Facilitated technical discussions over database design and critical data• Began developing new database schema to better fit all project requirements• Continued building models and controllers for the back-end communication with front-end
Brandon	<ul style="list-style-type: none">• Implemented mock-ups in HTML• Learned ReactJS and reimplemented mock-ups• Designed and implemented interactive map• Created first iteration of tracking and data views
Kirkland	<ul style="list-style-type: none">• Set up and initialized Spring Boot Server• Connected current database to project through back-end server• Started process of building models and controllers in back-end to facilitate communication with front-end application• Acted as point of contact with clients and advisors outside of meetings
Suzanna	<ul style="list-style-type: none">• Green Hills Community Center facility map and Aspen court map implementation• Project Planning: layout the project timeline and task deadlines• Report Manager: weekly reports• Implemented testing process flow

References

^[1] Liu, S. (2019). *Desktop internet browser market share 2015-2019* | *Statista*. [online] Statista. Available at: <https://www.statista.com/statistics/544400/market-share-of-internet-browsers-desktop/> [Accessed 10 Dec. 2019].

Questions?