

Project Requirements Document

Team SmartRG

Team Members

- Brandon Wicka
- Jill Farnsworth
- Zuo Chen Xie
- Matthew Gordon
- Vince Gandolfo

Introduction

SmartNetwork is a mobile application that connects to a home router and displays useful statistics and data about a home's wifi. In addition, the app displays a heat-map depicting the wifi signal strength throughout a home or building and will have this data stored in the cloud for further use.

What is it?

The app will contain an option in the navigation bar that will display wifi speed and statistics real-time. A visual will elegantly display the current speed while having graphs and statistics on request. The next big feature is to generate a heat map on google maps that shows the connectivity in a household. The user will be required to set a pin on the location of the router and on the spot they currently think they are. The user will set a pin for his/her current location, then start a test. The test will gather wifi traffic statistics and calculate a connectivity value. This is repeated until the user has tested every room (or is satisfied with the number of tests done). Using the connectivity values, a visual will be overlayed on a map that gives the user a good idea of how the wifi connectivity is throughout the house and stored in the cloud for later use. The last big feature is to allow the user to view previously created heatmaps. Any user can view any heatmap and can search via router MAC address, or house address.

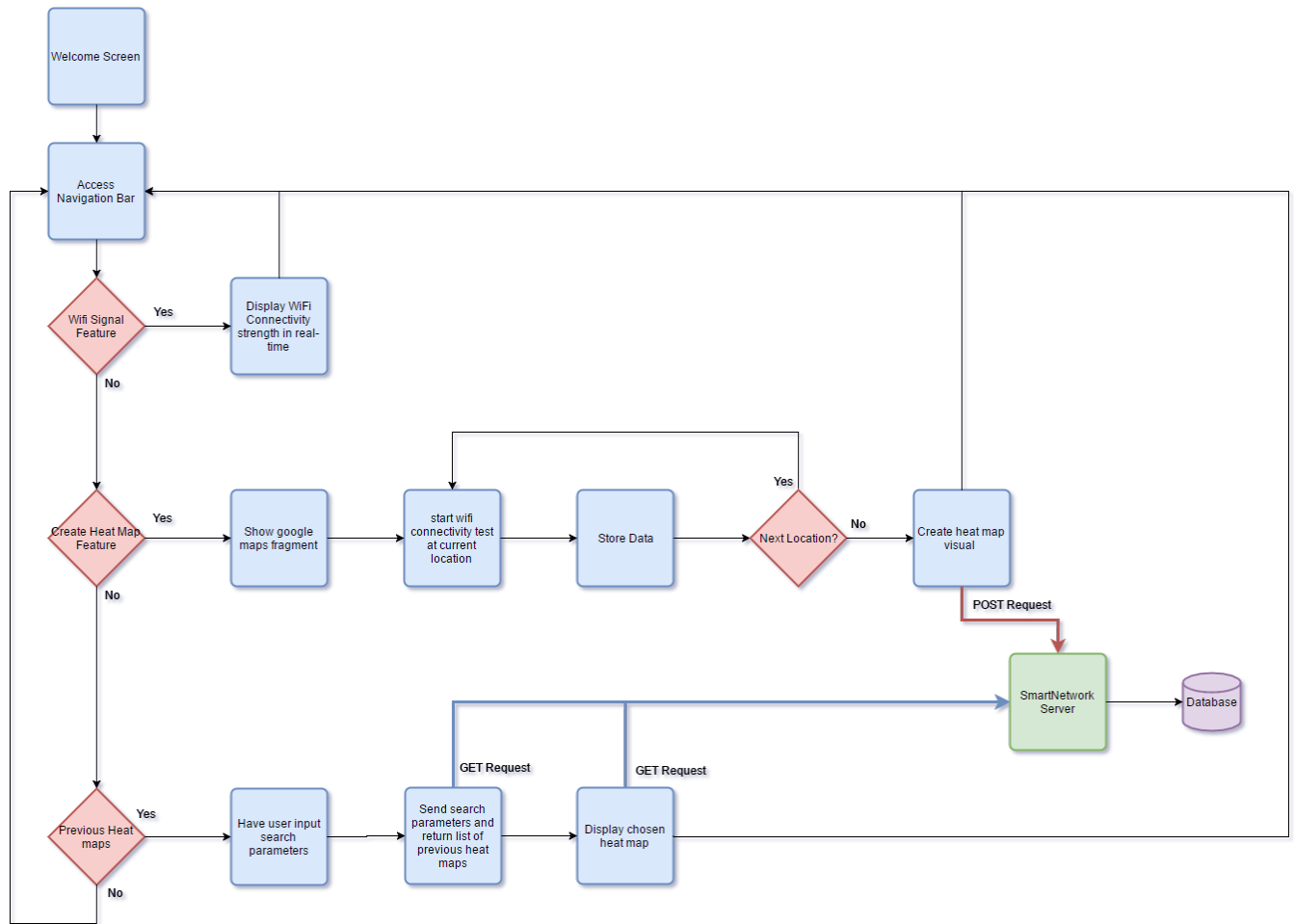
Who will use it?

1. Technicians - ISP technicians who are installing routers into households and other buildings.
2. Developers - Software developers who are developing new software that goes on a router or interacts with one.
3. Home wifi user - Anyone who wants to check the connectivity to their router and determine which areas of their house has weak wifi.

Why is it useful?

Using real-time wifi speed display, a technician can test whether he/she has set the router in the correct spot for the signal to reach his/her current location. It is also useful for developers who are tuning the routers software and need to test if their changes have manipulated the wifi signal. The heat map creating feature is very useful for developers debugging routers, as they can see how the changes affected the entire house and for technicians installing routers in a home who can easier decide if the router is placed properly. Finally, viewing anyone's previous heatmaps allows technicians to debug wifi connectivity issues and move routers to a better location whether it was a different technician who created it or not.

System Architecture Overview



Requirements & System Models

User Stories

- A user can view Wifi connectivity strength in real-time.
 - Acceptance test: Current Wifi data including Mb/sec is displayed on the screen.
- A user can drop a pin on the map to designate the location of the router
 - Acceptance test: Pin exists on map; coordinates of pin match the coordinates of router; pin is labeled as router.
- A user can drop a pin on the map to designate a point in the house.
 - Acceptance test: Pin exists on map, coordinates of pin match the location where user intended to drop pin.
- A user can view speed tests results at point of pin drop.

- Acceptance test: Selected pin displays speed test data including drops and retries over a certain amount of time.
- A user can generate a Wifi heat map of the house.
 - Acceptance test: After the user has dropped pins around the house and the app has generated speed test data, a color-coded heat map of the house is displayed on the screen.
- A user can save a Wifi heat map.
 - Acceptance test: After heat map has been stored, it can be brought up again later.
- A user can create additional Wifi heat maps.
 - Acceptance test: A user can select option to generate another heat map, and go through the steps specified in earlier user stories.
- A user can navigate previous saved heat maps.
 - Acceptance test: A list of all heat maps is displayed (assuming no search criteria has been entered) and each one can be selected to show the saved map.
- A user will be able to search for a previous heat map by router mac address.
 - Acceptance test: When searching for previous heat map, the search field can be switched to MAC address and return heat maps with routers whose MAC address match the query.
- A user will be able to search for a previous heat map by house address.
 - Acceptance test: When searching for previous heat map, the search field can be switched to house address and return heat maps with routers whose location match the query.
- A user can view basic router information during real-time speed testing.
 - Acceptance test: A list of router specifications will be accessible while also being able to access the current wifi speed.

Appendices

Technologies Used:

- MongoDB
- NodeJS
- Android (SDK & NDK)
- Iperf3
- Linux