Groundstation: Design

Team #25
High-Altitude Rocketry Challenge
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Abstract

The *Groundstation* software will collect telemetry from a rocket while is in flight and graphically display the telemetry in real-time. Groundstation is made up several different components: collection of data, storage of data, interpolation of data, and display of data. This document will examine nine different components of the system. For each of these components, three different technologies will be described and evaluated for use in this component. Finally, a recommendation will be made about which technology should be used.

I. Introduction

1) Identitication of the SSD
2) stakeholders
3) concerns
4) selected viewpoints
5) design views
6) design overlays
7) rationale

Maybe we don't need all of this stuff in the intro? I think some of it is covered below.

II. Structure Viewpoint

Entity (Author: Your name here)
Name: PC
Type: Component
Purpose: Why does it exists?
Contents: Stuff here.

Entity (Author: Albert Morgan)
Name: Package Manager
Type: Subprogram
Purpose: The package manager will install, track, and update software dependencies on the server.
Contents: Because Groundstation will be using Node and JavaScript for both the frontend and backend, Node Package Manager (NPM) will be used [1]. NPM has a large repository of both server-side and client-side JavaScript packages.

Entity (Author: Your name here)
Name: Frontend
Type: Component
Purpose: User interface
Contents: Stuff here.

Entity (Author: Your name here)
Name: Backend
Type: Component
Purpose: Web server software stuff
Contents: Stuff here.

Entity (Author: Your name here)
Name: Node
Type: Subprogram
Purpose: Runs the backend
Contents: Stuff here.

Entity (Author: Your name here)
Name: Serialport
Type: Library
Purpose: Node serialport library
Contents: Stuff here.

Entity (Author: Your name here)
Name: Log
Type: Data store
Purpose: This is where data gets logged
Contents: Stuff here.

Entity (Author: Your name here)

Name: jQuery
Type: Libary
Purpose: UI stuff
Contents: Queries the J

Entity (Author: Your name here)
Name: 3.js
Type: Libary
Purpose: UI stuff
Contents: All of your 3 needs

Entity (Author: Your name here)
Name: Rocket
Type: Component
Purpose: Gets high
Contents: ZOOM

Relationship (Author: Your name here)
Name: jQuery
Type: Libary
Contents: UI stuff Queries the J

Entity (Author: Albert Morgan)
Name: Web server
Type: Process
Purpose: The web server will serve three primary functions:

- Server web pages to the clients.
- Receive telemetry from the serial port and convert it into json.
- Make the json data available to the clients.

Contents: The web server will run on the Raspberry Pi. The web server has three primary functions: Groundstation will use the Apache [2] web server.

Entity (Author: Albert Morgan)
Name: Web browser
Type: Process
Purpose: The web server
Contents: The client will use a web browser to connect to the Groundstation web server and access the content. The web browser may be any of:

- Chrome version 54 or higher
- Edge version 14 or higher
- Firefox version 49 or higher
- Safari version 10 or higher

Relationship (Author: Your name here)
Name: Web browser composition
Type: Composition
Contents: The web browser runs on the PC

Relationship (Author: Your name here)
Name: Frontend composition
Type: Composition
Contents: Stuff

Relationship (Author: Your name here)
Name: Backend composition

Type: Composition
Contents: Stuff

Relationship (Author: Your name here)
Name: jQuery composition
Type: Composition
Contents: Stuff

Relationship (Author: Your name here)
Name: 3.js composition
Type: Composition
Contents: Stuff

Relationship (Author: Your name here)
Name: Node composition
Type: Composition
Contents: Stuff

Relationship (Author: Your name here)
Name: Serialport use
Type: Use
Contents: Stuff

Relationship (Author: Your name here)
Name: Log composition
Type: Composition
Contents: Stuff

Relationship (Author: Your name here)
Name: Web browser use
Type: Use
Contents: Uses the web server

Relationship (Author: Your name here)
Name: Frontend / Backend relationship
Type: Composition
Contents: Backend servers frontend

Relationship (Author: Your name here)
Name: Backend / Rocket
Type: Use
Contents: Gets data from the rocket

Relationship (Author: Your name here)
Name: NPM / Frontend
Type: Use
Contents: Frontend uses NPM

Relationship (Author: Your name here)
Name: NPM / Backend
Type: Use
Contents: Backend uses NPM

Relationship (Author: Your name here)
Name: NPM / Backend

Type: Use
Contents: Backend uses NPM

III. Interaction

Talk about how the system will get data from the serial port and how it will get sent to the web browser.

IV. Algorithm

Stuff about the event-driven architecture maybe.

References

[1] Node package manager. [Online]. Available: https://www.npmjs.com
[2] Apache. [Online]. Available: https://www.apache.org

Nancy Squires Date

Natasha Anisimova Date

Terrance Lee Date

Albert Morgan Date