

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) Identification 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

A. Entity

(Author: Your name here)

1) *Name*: The name of the entity

2) *Type*: See section 4.6.2.2. Proccess/Library/Framework/Class/Module/Data Store/etc

3) *Purpose*: Why does it exists?

4) *Contents*: Stuff here.

B. Entity

(Author: Your name here)

1) *Name*: PC

2) *Type*: Component

3) *Purpose*: Why does it exists?

4) *Contents*: Stuff here.

C. Entity

(Author: Your name here)

1) *Name*: Node Package Manager

2) *Type*: Subprogram

3) *Purpose*: Manages packages

4) *Contents*: Stuff here.

D. Entity

(Author: Your name here)

1) *Name*: Frontend

2) *Type*: Component

3) *Purpose*: User interface

4) *Contents*: Stuff here.

E. Entity

(Author: Your name here)

1) *Name*: Backend

2) *Type*: Component

3) *Purpose*: Web server software stuff

4) *Contents*: Stuff here.

F. Entity

(Author: Your name here)

1) *Name*: Node

2) *Type*: Subprogram

3) *Purpose*: Runs the backend

4) *Contents*: Stuff here.

G. Entity

(Author: Your name here)

- 1) *Name:* Serialport
- 2) *Type:* Library
- 3) *Purpose:* Node serialport library
- 4) *Contents:* Stuff here.

H. Entity

(Author: Your name here)

- 1) *Name:* Log
- 2) *Type:* Data store
- 3) *Purpose:* This is where data gets logged
- 4) *Contents:* Stuff here.

I. Entity

(Author: Your name here)

- 1) *Name:* jQuery
- 2) *Type:* Libary
- 3) *Purpose:* UI stuff
- 4) *Contents:* Queries the J

J. Entity

(Author: Your name here)

- 1) *Name:* 3.js
- 2) *Type:* Libary
- 3) *Purpose:* UI stuff
- 4) *Contents:* All of your 3 needs

K. Entity

(Author: Your name here)

- 1) *Name:* Rocket
- 2) *Type:* Component
- 3) *Purpose:* Gets high
- 4) *Contents:* ZOOM

L. Relationship

(Author: Your name here)

- 1) *Name:* jQuery
- 2) *Type:* Libary
- 3) *Contents:* UI stuff Queries the J

M. Entity

(Author: Albert Morgan)

- 1) *Name:* Web server
- 2) *Type:* Process
- 3) *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.

4) *Contents:* Program The web server will run on the Raspberry Pi. The web server has three primary functions: Groundstation will use the Apache [1] web server.

N. Entity

(Author: Albert Morgan)

1) *Name:* Web browser
2) *Type:* Process
3) *Purpose:* The web server
4) *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

O. Relationship

(Author: Your name here)

1) *Name:* Web browser composition
2) *Type:* Composition
3) *Contents:* The web browser runs on the PC

P. Relationship

(Author: Your name here)

1) *Name:* Frontend composition
2) *Type:* Composition
3) *Contents:* Stuff

Q. Relationship

(Author: Your name here)

1) *Name:* Backend composition
2) *Type:* Composition
3) *Contents:* Stuff

R. Relationship

(Author: Your name here)

1) *Name:* jQuery composition
2) *Type:* Composition
3) *Contents:* Stuff

S. Relationship

(Author: Your name here)

1) *Name:* 3.js composition
2) *Type:* Composition
3) *Contents:* Stuff

T. Relationship

(Author: Your name here)

1) *Name:* Node composition
2) *Type:* Composition
3) *Contents:* Stuff

U. Relationship

(Author: Your name here)

1) *Name:* Serialport use
2) *Type:* Use
3) *Contents:* Stuff

V. Relationship

(Author: Your name here)

- 1) *Name:* Log composition
- 2) *Type:* Composition
- 3) *Contents:* Stuff

W. Relationship

- (Author: Your name here)
- 1) *Name:* Web browser use
 - 2) *Type:* Use
 - 3) *Contents:* Uses the web server

X. Relationship

- (Author: Your name here)
- 1) *Name:* Frontend / Backend relationship
 - 2) *Type:* Composition
 - 3) *Contents:* Backend servers frontend

Y. Relationship

- (Author: Your name here)
- 1) *Name:* Backend / Rocket
 - 2) *Type:* Use
 - 3) *Contents:* Gets data from the rocket

Z. Relationship

- (Author: Your name here)
- 1) *Name:* NPM / Frontend
 - 2) *Type:* Use
 - 3) *Contents:* Frontend uses NPM

. Relationship

- (Author: Your name here)
- 1) *Name:* NPM / Backend
 - 2) *Type:* Use
 - 3) *Contents:* Backend uses NPM

. Relationship

- (Author: Your name here)
- 1) *Name:* NPM / Backend
 - 2) *Type:* Use
 - 3) *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] Apache. [Online]. Available: <https://www.apache.org>

Nancy Squires

Date

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