

EE/CprE/SE 492 REPORT 1

Aug 29 – Sep 5

Group number: 1

Project title: Heimdall

Client &/Advisor: Matthew Nelson

Team Members/Role:

Brandon Beaver – Project Manager

Alec Sutton – Design and Power Team Lead

Branden Buhler – Communications and Program Team Lead

Cullen White – Power Systems and Logistics Manager

George Cleaver – Communications and Controls Advisor

Lex Somers – Programming and Software Advisor

○ **Weekly Summary**

- As we return to work on the Heimdall Project, the team began reacquainting with the current status of the project, meeting with our faculty advisor, etc. The end of the semester saw some documentation issues to be addressed, as well as some work done over the summer towards the overall goal of a full video transmission over a high-altitude balloon flight. Most of the work this week was following the advisor/client requests for a new plan of action as noted in the State of the Project meeting, dividing the plan into phases, of which Phase I and Phase II are already completed. Beginning with Phase III, which involves an over-the-air test of the SDR module, which requires a bit more testing with the SDRangel software and the purchase of another HackRF SDR module before being achieved.

- **Past week accomplishments** *(Please describe/summarize as to what was done, by whom, when and, collectively as a group. This should be about a paragraph or two in length. Bulleted points are acceptable as well. Please keep only your technical details related to your project. Figures, schematics, flow diagrams, pseudocode, and project related results are acceptable, but please ensure that they are legible (clear enough to read) and to provide an explanation. If researching a topic, please add a few details about what was learned and how it is relevant to the project. If two or more people worked on a single task, be sure to distinguish how each member contributed to the task. Specific details relating to the assistance provided to other members may be included here. **Do not include classwork, such as individual reflection assignments, and group meetings as part of your duties.**)*

- **Brandon Beaver worked on:**
 - Organize meetings with HABET team to further collaboration, since HABET has mostly new members
 - Began organizing hardware/software for documentation purposes
 - Team/member assignment planning.
 - **Alec Sutton worked on:**
 - **Branden Buhler worked on:**
 - Finding a suitable time to meet with the team and in the lab that will correspond to my individual schedule.
 - **Cullen White worked on:**
 - Contributing to finding a schedule time that works for the Heimdall team.
 - Setting up a meeting with Professor Shannon on how we can improve our documentation.
 - **George Cleaver worked on:**
 - Helped determine weekly meeting times
- **Pending issues**
- **Brandon Beaver worked on:**
 - Push Professor Nelson to order new HackRF hardware
 - Finalize a schedule for testing ground OTA transmission and first test flight
 - Expand goals per phase
 - WORKING ANTENNA FOR TESTING
 - **Alec Sutton worked on:**
 - **Branden Buhler worked on:**
 - Identify parameters for payload antenna. Check math, logic, simulations, and create documentation.
 - Walk through HackRF, get a tutorial from teammates or advisor and create documents for others to use.
 - **Cullen White worked on:**
 - N/A
 - **George Cleaver worked on:**
 - Meet with professor Nelson to discuss summer progress with HackRF to determine immediate action items.
- **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>

Brandon Beaver	Began sourcing the remaining hardware, including the HackRF SDR Module, Linux OS-based laptop for a OTA transmission. Met separately with Advisor about scheduling HABET flights for the semester, spoke about any other testing schedules that would be best for Heimdall to achieve a successful launch.	2	2
Alec Sutton	Met with team and advisor to address goals and approach for this new semester as well as worked on scheduling regular meeting times and work times for the team.	1	1
Branden Buhler	Found a schedule that would work with me and the team, took a bit longer than expected due to extracurriculars and TA position.	1	1
Cullen White	Working on scheduling a time to meet with the Heimdall group. Setting up a meeting with Professor Shannon on how we can improve the team's documentation and the process of writing it.	1	1
George Cleaver	Team scheduling meeting with group to determine meeting times as well as a desired workflow for the semester	1	1
Lex Somers	Met with Team and advisor, started preliminary research/reading for SDR Angel integration with HackRF and GNU Radio.	2	2

○ **Comments and extended discussion**

- *This first week of the semester tends to be low in the productivity lane, as many members need to brush up of the state of the project. Taking the feedback from last semester's review panel, documentation of our hardware, methods and testing will be the focus for the upcoming weeks before any major tests can be performed. Once the website is updated, our documents are organized, a PC to PC based over the air transmission is a possibility within the next 2 weeks, though logistical setbacks could cause a delay, as the SDR hardware still must be ordered. The next meeting and work time for the semester needs yet to be firmly established, which is difficult given the teams' class/work schedules.*

○ **Plans for the upcoming week**

• ***Brandon Beaver will be working on:***

- *Establish firm work times for each team and a designated meeting time that works with our Advisor's schedule*
- *Documents upload/organized/written for past semester*
- *Acquire new Linux machine*
- *Begin software tests for first OTA transmission*

• ***Alec Sutton will be working on:***

- *Review documentation from previous semester and re-familiarize myself with HackRF*
- *Find recourses on SDR Angel*

- ***Branden Buhler will be working on:***
 - Depending on advisor availability, talk about payload antenna parameters.
 - For the first phase of our project this semester create a risk mitigation plan to identify where resources should be placed such as time researching, money, and effort working are all used to the maximum extent.
 - Improve documentation strategy for easy access whether that be through file system, git, or another use. Delegation of this may occur.
- ***Cullen White will be working on:***
 - Meeting with Professor Shannon to discuss how Heimdall can improve the documentation process.
 - Discuss with the Heimdall team on ways we can better the documentation.
- ***George Cleaver will be working on:***
 - Catching up with group on summer progress regarding updates with HackRF.
 - Reviewing previous semester documentation to determine steps going forward.
- ***Lex Somers will be working on:***
 - Researching HackRF and SDR Angel integration.
 - Review documentation and help plan steps for improvements
- **Summary of weekly advisor meeting**
 - Discussed meeting times with Mathew Nelson.
 - Discussed ways to improve the antenna and the antenna making process.
 - Discussed possibility of accessing a Linux-OS based laptop.
 - Discussed planning for scheduling HABET flights for the semester.