EE/CprE/SE 491 WEEKLY REPORT 3

February 12 - February 19

Group number: 9

Project title: Arinc429 Portable Receiver APP and Firmware

Client &/Advisor: Colin Cox & Daji Qiao, Mathew Wymore

Team Members: Eduardo Contreras, Riley Millam, Nicholas Morgan, Jared Staskal, Nate Trotter

- **Weekly Summary** *We met with our client and advisors on Thursday, February 16. During the meeting we discussed our current view of the requirements and system schema and decided on how to move forwards with revisions. Finally, on Friday Riley received the hardware from Colin so we should be able to begin getting familiar with it in the coming weeks.*

- **Past week accomplishments**
  - Researching Bluetooth Low Energy (BLE) - All
    - Researched on the use of BLE services and characteristics
    - Researched on how BLE clients and servers communicate to send and receive data
    - Researched frameworks for controlling a BLE device and managing data on a BLE device (GAP and GATT layers of BLE)
    - Read up on how Bluetooth Low Energy transmits data
    - Think about how to organize the information we send over BLE
  - Getting familiar with the Hardware from the client - All
    - Now that we've received the hardware we have started to test things with it to get more comfortable thinking about developing with it.
  - Discussed the creation an BLE API Document
    - Thought of the importance of a BLE API Document and how it will benefit the project during the firmware development process
- **Pending issues**
  - Need table that describes the Arinc429 data type of decoded labels

o **Individual contributions**

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Eduardo Contreras	- Took notes on the meeting with the client on February 16. - Studied how to decode Arinc429 labels and the use of Arinc429 bits - Took notes on research of the basics of sending and receiving data with Bluetooth Low Energy.	6	18
Riley Millam	- Attended the team meeting on February 16. - Has been in charge of communication with the client and advisors. - Received the hardware sent by the client - Studied BLE protocol, as well as ESP32 programming - Experimented with hardware	8	20
Nicholas Morgan	- Attended the weekly meeting on February 16. - Went over BLE modules and protocols - Planning to start a datasheet for BLE - Studied data sheets given by the client describing the technologies to be used in the project.	8	20
Jared Staskal	- Attended the weekly meeting on February 16. - Studied data sheets given by the client describing the technologies to be used in the project. - Helped write the Flutter app system requirements	8	20
Nate Trotter	- Attended the weekly meeting on February 16 - Studied data sheets given by the client describing the technologies to be used in the project. - Familiarized with new hardware	8	20

- **<u>Plans for the upcoming week</u>**

  Continue reworking the System Requirements, and the System Sketch. We also want to generate a plan for the data we transmit over BLE, so we have an easier time implementing it later. The final concrete part of our plan for the coming reporting period is to acquire a locker in the Senior Design Lab for the hardware components.

Flutter App System Requirements Rework WIP

Functional Requirements	
Number	Requirement
1	Communicate with the chip over Bluetooth Low energy
2	Read Arinc labels from the BLE
3	Decode the Arinc labels
4	Send Arinc labels over BLE
5	Receive multiple incoming labels at a time
6	Handle errors with the data(incorrect parity, etc.)
7	Describe new labels
8	Display SDI
9	Display SSM

Non-Functional Requirements	
Number	Requirement
1	Reliably connect to the chip (numbers tbd)
2	Easy to understand and use
3	Send labels quickly (numbers tbd)
4	Receive labels quickly (numbers tbd)
5	Decode labels quickly (numbers tbd)
6	Needs to be available for android and iOS
7	Needs to be maintained to be compatible with future OS updates
8	Be palatable to look at
9	Able to handle and decode multiple incoming labels at a time