

## **EE/CprE/SE 491 WEEKLY REPORT 2**

**February 5 - February 12**

**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** *Our client was on vacation this week so we had no meeting with them. The group did still get together to work on fleshing out both functional and nonfunctional requirements for the system. Outside of the meeting we continued to read up on the technologies we plan on using as well*
  
- **Past week accomplishments**
  - Researching Arinc429 - All
    - Read up on Arinc429 through the wikipedia page and the documentation provided by Colin
    - Understanding how to decode Arinc429 labels
  - Researching ESP32S23 - All
    - Reading up on the ESP IDF to develop on the chip, and reading up on the specifications for the chip
  - Researching and installing Flutter - All
    - Setting up a development environment for the flutter application
    - Did some testing and coding on Flutter
  - Writing system requirements for the firmware - Riley, Nicholas, Nate
    - Writing both functional and nonfunctional requirements for the firmware
  - Writing system requirements for the Flutter app - Jared, Eduardo
    - Writing both functional and nonfunctional requirements for the Flutter application
  
- **Pending issues**
  - Some uncertainty around specifics of the requirements for the project. This should be clarified more once we get feedback from the client on our proposed requirements.
  - Awaiting hardware from the client before we're able to explore firmware development more closely.
  - Need table that describes the Arinc429 data type of decoded labels

○ 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>
Eduardo Contreras	<ul style="list-style-type: none"> <li>● Attended the meeting on February 9.</li> <li>● Studied data sheets given by the client describing the technologies to be used in the project.</li> <li>● Studied how to decode Arinc429 labels and the use of Arinc429 labels</li> <li>● Helped write the Flutter app system requirements</li> </ul>	8	12
Riley Millam	<ul style="list-style-type: none"> <li>● Attended the team meeting on February 2.</li> <li>● Has been in charge of communication with the client and advisors.</li> <li>● Studied data sheets given by the client describing the technologies to be used in the project.</li> <li>● Helped write the firmware system requirements</li> </ul>	8	12
Nicholas Morgan	<ul style="list-style-type: none"> <li>● Attended the weekly meeting on February 2.</li> <li>● Studied data sheets given by the client describing the technologies to be used in the project.</li> <li>● Helped write the firmware system requirements</li> </ul>	8	12
Jared Staskal	<ul style="list-style-type: none"> <li>● Attended the weekly meeting on February 2.</li> <li>● Studied data sheets given by the client describing the technologies to be used in the project.</li> <li>● Helped write the Flutter app system requirements</li> </ul>	8	12
Nate Trotter	<ul style="list-style-type: none"> <li>● Attended the weekly meeting on February 2.</li> <li>● Studied data sheets given by the client describing the technologies to be used in the project.</li> <li>● Helped write the firmware system requirements</li> </ul>	8	12

- **Plans for the upcoming week**

We'll continue studying the technologies we'll be using in order to better understand how to progress. We are also planning to meet with Colin at some point in order to obtain the necessary hardware to move forwards. 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.

## Proposed Firmware System Requirements

Functional Requirements	
Number	Requirement
1	ESP32S3 to read in data from Holt 429 receiver
2	ESP32S3 to decode labels using the Flutter App
3	ESP32S3 to send data over Bluetooth Low Energy
4	ESP32S3 to connect to Smartphone
5	ESP32S3 to receive labels over Bluetooth Low Energy
6	ESP32S3 rejects incorrectly formatted words (incorrect parity, etc.)

Non-Functional Requirements	
Number	Requirement
1	Ability to quickly and easily update firmware
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	Flutter App is able to decode and receive multiple incoming labels at a time

## Flutter App System Requirements

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.)

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