

EE/CprE/SE 491 WEEKLY REPORT 1

Start Date – End Date: 8/26/2024 - 9/19/2024

Group number: sdmay25-18

Project title: Weather Triggered Wireless Telemetry System

Client &/Advisor: Daji Qiao and Sarath Babu

Team Members/Role:

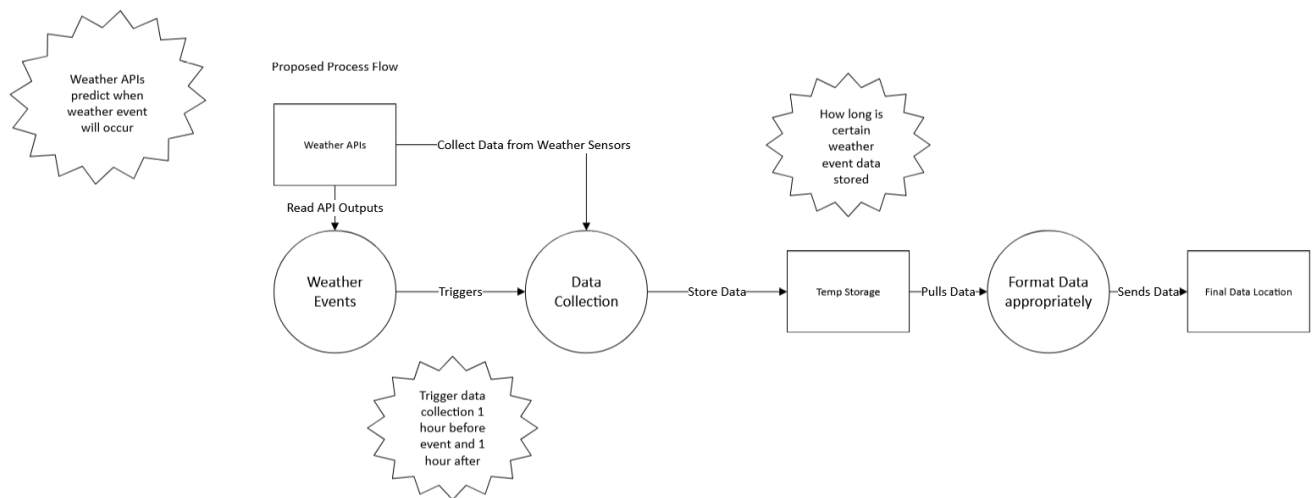
1. **Alex Chambers:** Individual Component Designer
2. **Alexander Christie:** Client Interaction
3. **Adam Fields:** Data Formatting
4. **Nisha Raj:** Team Lead
5. **Aidan Gull:** Component Integration
6. **Colin Kempf:** Documentation

Weekly Summary

The objective for the week was to create a conceptual diagram that articulated what the system would look like to us. We were asked to create the diagram based on what we believed the system looked like to us. We also incorporated external factors into the diagram which included weather APIs which would tell us when a weather event would occur which then would allow our software to start the data collection process from the disdrometers stationed on the various hardware equipment. We also brainstormed the data collection process and how this would be stored and how to make it accessible for the users. Another objective for the week was to get familiar with the ARA framework. This included getting access to their jumbox which would allow users to access containers from our private computers. We also were asked to run some of the experiments the ARA team already had. These projects helped us get familiar with the different hardware components ARA utilized and the different readings that could be collected from each of the components. Our advisors gave us more information about the structure of the hierarchy of the datasets and how we could possibly implement a GUI for users to easily access the datasets and filter for what they want.

Past week accomplishments

- **Conceptual Flow Diagram - Alexander, Group**
 - Created an initial concept sketch of how our team collectively saw the project working at completion based on our understanding of the requirements from the client.
 - Initial sketch:



- After presenting our conceptual flow diagram during the 9/13 meeting it was decided that, while a good starting point, the diagram should evolve over time to include more details. Because of this an effort will be made to update the process flow design every week to reflect the growth and scope of our project.
- Everyone in the group contributed to brainstorming and refining the diagram. Alexander Christie constructed the actual drawing.
- **Experiments with ARA Framework - Group**
 - Got access to our accounts, allowing use to utilize the ARA Dashboard
 - Conducted ARA Experiments found in the ARA User Manual to familiarize ourselves with the system
 - Specific experiments were highlighted by the client as places to start or of interest.
 - Everyone in the group did this as we each needed to do this to get an understanding of the system and data. We did this for the most part individually.

Pending issues

- No major issues came up this week that still need to be solved. We managed to communicate with our client about any issues with getting access to our ARA accounts and have gotten that working as of now.

Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Nisha Raj	- Brainstorming different design ideas and how to visualize the system	6	8

	- Aided in the conceptual flow diagram along with brainstorming a requirements concept diagram - Experimenting with ARA platform		
Alexander Christie	- Developed high level process flow diagram - Communicated with client on meeting schedules - Experimented with ARA platform	6	8
Aidan Gull	- Done several experiments with the ARA platform - Worked on note taking during meetings - Worked on developing the conceptual design diagram with the rest of the team.	6	8
Colin Kempf	- Helped brainstorm what the system architecture might look like in the conceptual flow diagram. - Contributed towards refining the conceptual flow diagram based on client responses. - Worked on documentation stuff, including both minutes of meeting and group documents.	6	8
Alex Chambers	- Helped brainstorm system structure - Experimented with weather APIs - Experimented with ARA platform	6	8
Adam Fields	- Experimented with the ARA framework - Focused on how the data is given to us when we ping the weather stations.	6	8

Plans for the upcoming week

- **Conceptual Flow Diagram (Continual):**
 - Continue to update the conceptual flow diagram, refined based on our own progress, understanding, and client satisfaction.
 - We will all contribute to the diagram, working together to find what works for our team and come to an understanding.
 - Specific members of the team also have specific tasks for this week:
 - Nisha Raj: Adding the hardware components to the design, highlighting how they will interact with our system.
 - Alexander Christie: Continue to update the drawing of the diagram
- **Individual Component Diagrams:**
 - Creating additional diagrams to break down the three different major components of our Conceptual Flow Diagram.
 - Specific member tasks:
 - Alex Chambers: Will create and design the sketches based on what he feels is important to showing how we view the components working.
- **Additional Experiments with ARA Framework:**

- As instructed by the client, continue to learn how the ARA framework works and understand their system through the experiments in the ARA User Manual.
- The group will all contribute to this based on what experiments they want to focus on to better understand ARA.
- **Research into Weather APIs:**
 - Research possible weather APIs that could be used to predict weather events.
 - Specific member tasks:
 - Nisha Raj & Alex Chambers: Investigating possible APIs.
- **Power Point (Continual):**
 - A slideshow to be constructed before every meeting with our client and advisor detailing what we have worked on and accomplished since the last meeting.
 - Specific member tasks:
 - Alexander Christie: Creating and design of the slide show and presentation.
 - Colin Kempf: Organizing what to include and creating content for the slides.

Summary of weekly advisor meeting

We have had two meetings with our advisor and client for this first report. The first took place on 9/5. During this meeting we introduced ourselves and the client gave an overview of the project, the existing research for the project, and their expectations for our work. They went over some first steps for us to tackle, notably a conceptual sketch.

We met again on 9/13. The meeting focused on the scope of the project and the expected deliverables. Our group presented the current version of the process flow diagram, answering questions and clarifications that the client and advisor had. They gave us feedback on our initial design to improve on in the weeks to come. They also explained that predictive forecasting for triggering data collection would come from third-party weather platforms, while real-time data collection would pull data from the disdrometers. The deliverables for this project were also clarified, highlighting specific fundamental requirements; weather forecasting, triggering measurements, and data generation.