

*Group number: 18*

*Project title: Radio Frequency Readout Device (RFRD)*

*Client &/Advisor: Dr. Qiao*

*Team Members/Role: Brandon Baxter/Team Leader, Vaughn Dorsey/Team Webmaster, Luke Myers/Team Communication Leader, Kurt Turner/Team Key Concept Holder, Aaron Haywood, Robert Buckley, Mehdy Faik, Kellen Yoder, Michael Miller*

**o Weekly Summary (Short summary about what you did this week)**

The focus of this week was conducting initial research. We also organized weekly meeting times for the subgroups, organized our google drive for documenting relevant information, and determined a meeting time with Dr. Qiao. Each of the three subgroups also generated initial questions to ask our advisor. We posed these questions and discussed further details/plans for the project on Monday, 9/19 with Dr. Qiao and Dr. Song.

**o Past week accomplishments (please describe as what was done, by whom, when)**

- Brandon Baxter: Looked into what a capacitor sensor was and tried to wrap his head around how it is going to be useful to the project as a whole. Found information about different types of energy harvesting that could come in handy for long ranged transmission.
- Vaughn Dorsey: Worked on updating the build of Android Studio that I have installed and began experimenting with building Android apps. Also started freshening up on programming in C.
- Luke Myers: Did some initial research into capacitive sensors and some of their applications. I also created some folders in our shared google drive folder to keep our research organized and allow everyone to update the weekly report throughout the week.
- Kurt Turner: Set up email list for the group. Preliminary research on types of RF devices.
- Aaron Haywood: Did some research on antennas and energy harvesting.

- Robert Buckley: I looked into RFID reader options. It looks like we need to use higher frequency RFID tags than most to be able to read them from 5 meters, and this is likely going to cause the reader equipment to be in the few hundred dollar range.
- Mehdy Faik: brainstormed antennas, set up doodle poll, honestly largest effort went into devising questions that'll help define constraints, goals and method for the project.
- Kellen Yoder: Researched frequency restrictions for our module. Tried to figure out what frequencies may interfere with any FCC regulations.
- Michael Miller: Researched RFID and capacitance sensors.

**o Pending issues (if applicable)**

- Brandon Baxter: Need to figure out how the capacitor sensor is supposed to be used
- Vaughn Dorsey: Need to figure out what all the software actually needs to do.
- Luke Myers: Still need to figure out how the IC modifies the RD to cause a change in the capacitance sensor readings.
- Kurt Turner: Need to know more about the goal of the project; specifically, what the capacitance sensor is measuring.
- Aaron Haywood:
- Robert Buckley: Do we need read/write capabilities or just read?
- Mehdy Faik:
- Kellen Yoder: Could not find a clear statement on what frequencies cannot be used. Still looking.
- Michael Miller:

**o Individual contributions**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b>	<b><u>Hours this week</u></b>	<b><u>HOURS cumulative</u></b>
Brandon Baxter	Capacitance sensor research with readings about energy harvesting	2 hours	2 hours
Vaughn Dorsey	Begin work on setting up development environment for future programming work. Met with rest of reader group to figure out where to start	1.5 hours	2.5 hours
Luke Myers	Studied the basics of capacitance sensors. Met with rest of circuitry-based group. Did some basic research into RFID technology.	2 hours 1 hour 1 hour	4 hours

Kurt Turner	Set up email list. Research on types of RF devices.	1 hour	1 hour
Aaron Haywood	Research on antennas and energy harvesting	2 hrs	2 hrs
Robert Buckley	Researched into RFID reading options.	3	4
Mehdy Faik	Brainstormed antennas, set up doodle poll, honestly largest effort went into devising questions that'll help define constraints, goals and method for the project.	3	3
Kellen Yoder	Frequency research for powering the module.	2 hours	2
Michael Miller	Researched RFID and capacitance sensors.	2	2

**o Comments and extended discussion**

**o Plan for coming week (please describe as what, who, when)**

- Brandon Baxter: After the meeting with Dr. Qiao on Monday, he will conduct more research into energy harvesting as well as the research into the complexity of the IC (which it cant be too complex due to the energy harvesting characteristics).
- Vaughn Dorsey: After meeting with the professor to have questions answered, start attempting to draft design documents for the software and determine software functionality. Also continue freshening up C and Java skills.
- Luke Myers: Continue to conduct research on capacitance sensors (hopefully with additional insight from our meeting with Dr. Qiao).
- Kurt Turner: Meet with Dr. Qiao to ask about the capacitance sensor.
- Aaron Haywood:
- Robert Buckley: Choose RFID reader we want and distributor to get it from.
- Mehdy Faik:
- Kellen Yoder: More research about what the module group will be doing as far as the actual unit, requirements for coding, and helping Vaughn and Robert with anything code related that I can.
- Michael Miller: Meet with the professor to discuss the project. Continue research.

**o Summary of weekly advisor meeting (if applicable/optional)**

We met with Dr. Qiao and Dr. Song on Monday, 9/19 to discuss initial questions from each of the three subgroups. We discussed particulars concerning the capacitor sensor and received clarification on what it will be utilized for. We also discussed an overview of the project and touched on the different components that each of the subgroups will be focusing on. We ended by discussing the timeline for the project.