

IOWA STATE UNIVERSITY

# Senior Design Weekly Report

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## Weekly Report 4

**Group: May-06**

**Group member: Chongli Cai, Qiaoya Cui, David Hoffman, Andrew Kom, Ailing Mei**

**Client: Garmin International**

**Advisor: Dr. Colin Christy**

**Period: 9/17/2012-9/23/2012**

**Date: 9/23/2012**

## Goals to Meet

The goals for this week were to divide up the part of the project plan that will be drafted by Friday, the 28<sup>th</sup>. In addition to this, we wanted to review some of the decisions made on the basic design layout. In particular, we wanted to determine the implementation of the current sensor chip in our circuit.

## Weekly Progress

We came to a conclusion that, for this to work, we would need to circuits for the current alone if a current sensor was used. This would be the sensor circuit, and the voltage range converter. The range converter would take the readings from the sensor and put it in a range that is then read by the Microprocessor's ADC. To simplify this, we have decided to instead make only one circuit that integrates both functions in to one. This would not use a current sensor, but doing some base research on a current measuring circuit, we have found some example circuit builds to try simulations with. There would also need to be a voltage range converter on the voltage side of the circuit, so the MCU can read the voltage value for its later power calculation. To sum up the previous, this would mean we would have one circuit for measuring current, and one circuit to measure voltage. In addition to this, we have scheduled a meeting with Steve from Garmin for Tuesday. He will have the PIC chip evaluation board with him, and so we should be able to start basic testing.

## Future Planning

As stated above, we will be receiving the PIC evaluation board this Tuesday. If we can get some time in a lab, we may start trying to mess around with basic programming. Also, given the decision to design our own current sense circuit with voltage that ranges correctly for the ADC, we will be trying simulations of a designed circuit to see if it will work with our requirements.

## Pending Issues

We are having some trouble communicating our weekly accomplishments to each other. We will need to sit down and get a set time at which we will have our weeks accomplishments listed. Related to this, we may be having some email issues where some emails just don't seem to get sent to everyone. This issue is one that needs to fixed quickly as to not disrupt the flow of communication between us. Also, the circuit change of design will require more work on our end to create a reliable and accurate circuit that may have been designed into the original sensor we were planning on using. So reliability of our circuit may become an issue in the future.

## Individual Contributions

### **Andrew:**

Wrote the Weekly Progress Report 4  
Scheduled Meeting with Steve W. from Garmin  
Met with Dr. Christy briefly to clarify our weekly meeting plan.  
Worked on the following project plan parts: Work Schedule

### **Chongli:**

Worked on the following project plan parts: Need Statement, Concept Sketch, System Description, Operating System and User Interface Description  
Read through some documents on the voltage and current circuit designs

**Ailing:**

Worked on the following project plan parts: Requirements statement, Functional requirement, Non-functional requirement, Market

Read through some documents on the voltage and current circuit designs

**Qiaoya:**

Worked on the following project plan parts: Work Plan Description

Researched the use of a current sensor, leading us to choose making our own solution instead

**David:**

Participated in the group discussion to change designs of the sensors

Worked on the assigned portion of the Project Plan