weekly memorandum

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| to: | James Pettit |
| from: | Bradford Stricklin |
| subject: | srt week 12 |
| date: | November 30, 2015 |
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**LAST WEEK**

This week I worked on data transmission in terms of packet structure and size for the various sensors. I also worked on how to best store the data that is collected. For this, the two options are to use a shield for an SD card or to use an external EEPROM chip.

Given a conservative data collection rate (we can always increase this rate later), I sought to ensure that two Arduino Megas could handle the load based on how and how often the data is collected from the sensors.

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| **Sensor** | **Sample Rate** | **Size of Packet** | **Transmission/Sec** | **Connection** | **Power Req.** | **Quantity** |
| Thermocouple | 2 Hz | 8 bits | 16 bits/s | Analog | Negligible | 3 |
| IMU | 10 Hz | 64 bits | 640 bits/s | Serial | 3.96 mW | 1 |
| Strain Gauge | 2 Hz | 32 bits | 64 bits/s | Analog | 500 mW | 2 |
| Pressure Transducer | 10 Hz | 16 bits | 160 bits/s | Analog | 120 mW | 2 |
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With two Arduino Megas sharing the data collection load, the equivalent sampling rate is 20 Hz which is well within the Megas capabilities.

<http://www.hobbytronics.co.uk/arduino-external-eeprom>

**THIS WEEK**

This week I would like to finish testing both methods and determine which is best for our purposes. For this, I will see how the Arduino Mega responds to storing large amounts of data using each method.