

# VSCADA Schedule

## *Team Milestones*

### Week 4

#### **User Manual Submitted**

Deliverable **D002** (User Manual) will be submitted.

#### **Submit Purchase Request for Computer, CAN Devices & Display**

A purchase request will be submitted for the main VSCADA embedded computer, supporting CAN hardware, and the dashboard display.

#### **Virtualized Debian Installation**

Debian will be installed and running on a Virtual Host. The system will be capable of automatically logging in, and executing a startup script.

#### **Generate User Interface Prototype**

A mock up of the user interface for all clients (desktop and dashboard) will be generated using a formal UI toolkit. The various client interfaces will be capable of launching on their respective platforms, functionality will be implemented at a later date.

#### **Demonstrate Client-Server Communication**

A simple 'hello world' server client application will be running on the virtual machine. This application will be capable of sending a simple client request and server response via TCP.

#### **Virtual Machine SocketCAN Demonstration**

SocketCAN will be installed on the virtual machine, and capable of interfacing with the 'Kvaser Leaf' USB CAN device. Sent CAN packets will be verified on an oscilloscope.

### Week 5

#### **Maintenance Manual Working Draft Submitted**

A VSCADA Maintenance Manual Working Draft will be submitted.

#### **System Logging Daemon**

A custom 'syslog' message logging library will be created along with a demonstration program capable of sending fake sensor warnings and events of varying priority level.

#### **Client-Server Real Time Communication**

The simple program designed in Week 4 will be expanded so the client is capable of monitoring and displaying data generated on the server in real time.

#### **RRDTool Demonstration**

A simple 'hello world' RRDTool application will be running on the virtual machine. This application will be graphing simulated real time sensor data.

## Week 6

### **CAN Communication Library**

A library will be delivered capable of interfacing with basic digital, serial and analog sensors via a custom CAN protocol. A demonstration program will also be delivered demonstrating proper functionality of the hardware and software.

### **Embedded Linux Installation (VAB-820)**

Linux will be installed on the VAB-820 embedded computer.

### **Acceptance Test Plan Submitted**

Deliverable **D004** (Acceptance Test Plan) will be submitted.

### **Motor Controller Communication Library**

A library will be delivered capable of interfacing with all necessary Motor Controller functions. A documentation will also be delivered demonstrating proper functionality of the library.

## Week 7

### **CDR Documents & Presentations**

CDR Documents and Presentations will be submitted. The team will be prepared to do the CDR presentation.

### **PACMAN Communication Library**

A library will be delivered capable of interfacing with all necessary PACMAN functions. A document will also be delivered demonstrating proper functionality of the library.

## Week 8 (Spring Break)

### **System Parts Installation On Embedded Linux**

VSCADA parts developed for Virtualbox in previous weeks will be installed on the embedded system.

### **Microcontroller CAN Firmware**

Firmware will be written for a microcontroller capable of sending digital, serial and analog data over a CAN Bus. These packets should be viewable from the Virtual Machine and VAB-820 embedded computer via SocketCAN.

## Week 9

### **Demonstration System Integration & Debugging**

System parts designed in the past six weeks will be integrated into a cohesive system demonstration for CDR, and for displaying system capabilities to other groups.

### **CAN Communication PCB Fabrication**

The General Sensor CAN Communication PCB GERBER files will be ready for fabrication and sent out for production.

## Week 10

### **Preliminary Demonstration System**

A primitive scada system will be functioning, and ready for demonstration to other groups. This system should be capable of allowing groups to test communications between themselves and the SCADA system in the future.

## Week 11

### **SCADA Server Maintenance Mode**

The main system server will be capable of performing all 'Maintenance Mode' tasks, and interfacing with all 'Maintenance Mode' client interfaces.

### **QA Report Submitted**

Deliverable **D006** (QA Report) will be submitted.

## Week 12

### **System Integration & Debugging**

Any remaining components not added to the SCADA system will be added at this time. Debugging and integration into other vehicle sub-systems.

### **SCADA Server Demo Mode**

The main system server will be capable of performing 'Demo Mode' tasks.

## Week 13

### **Final ATR Report Submitted**

Deliverable **D005** (ATR Report) will be submitted.

### **System Integration & Debugging**

Any remaining components not added to the SCADA system will be added at this time. Debugging and integration into other vehicle sub-systems.

### **Dynamometer Communication Library**

The main system is capable of sending messages to the Huff Box over serial ports.

## Week 14

### **System Integration & Debugging**

Any remaining components not added to the SCADA system will be added at this time. Debugging and integration into other vehicle sub-systems.

### **System Documentation**

All project documentation will be finalized and completed.

### **Completed Maintenance Manual Submitted**

A VSCADA Maintenance Manual Working Draft will be submitted.

## Week 15

### **Final Report & Maintenance Manual Submitted**

Deliverable **D003** (Final Report) will be submitted.

### **System Errata Documentation**

Any known bugs, and system errata will be documented for use by future students.