Status Letter

Week 5 - 2/22/15
LFEV

Team Milestones:

VSCADA:

Last week:

System block diagrams and the GUI designs are drawn and included in the user manual. Able to run python code automatically after the system startup.

This week:

We are going to deliver the user manual. We will set up the logging daemon on the virtualbox. Install Linux on the embedded system once it arrives. Place the order for dashboard and microcontrollers.

DYNO:

Last Week:

User manual completed and submitted to the website. Temperature sensor for motor selected and ready to order. Dyno software loaded onto computer. Dyno software works with Dyno sensors.

This Week:

Computer controllable throttle input to motor controller for safe and accurate out of room testing. Motor controller programmed using the Curtis software.

TSV:

Last week, we completed the schematic for implementing CAN on the BoB. We also completed schematics for a full system reset and the 24V pack indicator, though due to technical difficulties they are not all integrated into the same DxDesigner file. Additionally, we produced a pack wiring diagram for the TSV packs which was conspicuously missing from last year.

For next week, we plan to begin working on the CDR, write the maintainability plan and fix the AMS board schematics. Also we will put out orders for the AMS boards, the new LCD displays and the computers we will be using.

GLV:

Last week we sketched out all panel interfaces except the Cockpit Panel. We also sketched out the internal layout/circuit diagram sketch of the VCI, TSI, and Side Panel. These sketches were added to our working User Manual.

In the upcoming week, the GLV team plans on purchasing components for the GLV Power and VCI subsystems as well as the connectors for system integration. A new user manual will be submitted.

Outstanding Action items:

Website: Ken has started the process for getting us hosted long term. --Steve
Morton Papers

Budget:

Item/Group	Quantity	Price	Total
SCADA			
Embedden Computer System	1	400	400
Dashboard LCD display and controller	1	100	100
Wireless Radio	1	50	50
GPS radio	1	50	50
DC-DC converter	1	35	35
Safety Loop Solid State Relay	2	10	20
Slave Sensor Micro Controller Hardware	4	15	60
		total	715
GLV			0
24V battery	1	185	185
Smart Charger	1	25	25
overvoltage protector - LTC4365	1	2	2
PolySwitch - LVR055	1	2	2
Container	1	150	150
Board	1	40	40
Red LED - McMaster-Carr 2779K7	2	9.62	19.24

Green LED - McMaster-Carr 2779K2	2	14.52	29.04
Wiring and fuses	1	150	150
Acrylic Frame	1	16.68	16.68
Veam Powerlocks	4	55	220
Tractive System Active Light Lamp	1	44.6	44.6
Physical Container	1	150	150
Circuit Board	1	40.79	40.79
Speaker - BUZZ PIEZO CIRC 42.85MM PANEL	1	37.55	37.55
Audio Amplifier	1	8	8
Temperature Sensor	4	6	24
Current Sensor	2	15	30
Voltage Sensor	2	19	38
Rate of Discharge Sesnor	1	15	15
Rate of Charge Sensor	1	15	15
State of Charge Sensor	1	6	6
VCI Container	1	150	150
		total	1397.9
DYNO			0
0 AWG (gage) wire - 50ft	1	$75.00	$75.00
Wire connector package	1	$50.00	$50.00
Temp sensor - LM20CIM7/NOPBCT-ND	3	$1.00	$3.00
4 to 8 pin adapter Motor controller	1	$20	$20.00
		total	$148.00
TSV			
Advanced Circuits PCD AMS and BOB boards	32	16	$512.00
parts from Mouser	1	459	$459.00
parts from digikey	1	141.7	$141.70

Microcontroller	3	308	$924.00
Micro SD card 4GB Class 10 industrial	3	10.54	$31.62
Fuse - 200A, Class T, A3A, 300Vac/160VDC	4	28.34	$113.36
Fuse Holder - 200A AC, 300V, a Pole, molder	4	71.81	$287.24
Fans - 119x25 24DC 100CFM 5W 2900RPM 43 dbA	4	40.95	$163.80
AIR - 350A contractor	7	94.35	$660.45
50A miniTactor	7	40	$280.00
Panel Drain, Line 3, Grey	4	51.26	$205.04
Panel Source, Neutral, Blue	4	54.33	$217.32
LCD Character Display Module STN Y/G	4	11.5	$46.00
Galvanically Isolated Ethernet	4	102	$408.00
Other Parts	1	1600	$1,600.00
			$0.00
			$0.00
		total	$6,049.53

Total Money	5000
Total Requested	8310.43
Remaining Money	-3310.43

Tasks due within the last 7 days
Printed from Asana

Adam Cornwell

☑ **Adam Cornwell:** ~~Finalize system states and define inputs/outputs~~   due Feb 18

Alex Hytha

☑ **Alex Hytha:** ~~Temp Sensor chosen and ordered~~   due Feb 21

☑ **Alex Hytha:** ~~TSV Safety Plan~~   due Feb 19
TSV safety plan must be written

☐ ~~Removing AMS PCBs~~

☐ ~~Removing Batteries~~

☐ ~~Reset AMS PCBs~~

☐ ~~Reset Pacman~~

☐ ~~AIR bypass~~

☐ ~~voltage/current probing~~

☐ ~~High power plugs~~

Aloysius Posillico

☑ **Aloysius Posillico:** ~~TSI Panel Sketches -AP~~   due Feb 21

☑ **Aloysius Posillico:** ~~TSI Circuit Sketches -AP~~   due Feb 21

Bikram Shrestha

☑ **Bikram Shrestha:** ~~Design GUI for 3 modes~~   due Feb 20

Brendan Malone

☑ **Brendan Malone:** ~~User manual~~   due Feb 19

Daniel Zakzewski

☑ **Daniel Zakzewski:** ~~Side Panel BOM -DZ~~   due Feb 21

☑ **Daniel Zakzewski:** ~~VCI Circuit Sketches -DZ~~   due Feb 21

☑ **Daniel Zakzewski:** ~~Side Panel Internal Layout Sketch -DZ~~   due Feb 21

☑ **Daniel Zakzewski:** ~~Side Panel Circuit Sketches -DZ~~   due Feb 21

Hansen Liang

☑ **Hansen Liang:** ~~Choose new LCD display, interface~~   due Feb 22

Jaejoon Yang

☑ **Jaejoon Yang:** ~~Proposal for 20V indicator design~~   due Feb 22

John Bloore

☑ **John Bloore:** ~~Dyno to computer integration with sensors~~   due Feb 21

John Gehrig

☐ **John Gehrig:** Place the purchase for embedded system   due Feb 23

☑ **John Gehrig:** ~~Finalize schedule with faculties~~   due Feb 22

Jordan Blake

☐ **Jordan Blake:** Completed pack wiring diagram   due Feb 22

Jordan Frank

☑ **Jordan Frank:** ~~TSI Safety loop circuit sketch -JF~~   due Feb 21

Kai Ottaway

☐ **Kai Ottaway:** Rearrange top of box   due Feb 19

Katie Nellis

☑ **Katie Nellis:** ~~Proposal for full system reset designs~~   due Feb 22

Nate Hand

☐ **Nate Hand:** Motor Controller Cooling system built   due Feb 21

Nick DiNino

☐ **Nick DiNino:** GLV Battery Circuit Sketches -ND   due Feb 21
Significant redesign of the circuit used as a power monitor has pushed back sketching of the circuit.

☑ **Nick DiNino:** ~~GLV Battery Panel Sketches -ND~~   due Feb 21

Rameel Sethi

☑ **Rameel Sethi:** ~~Simple startup software on Virtualbox~~   due Feb 20

Sam

☑ **Sam :** ~~Software level CAN outline and library design~~   due Feb 20

Stephen Mazich

☑ **Stephen Mazich:** ~~User Manual~~   due Feb 19

William Stathis

☑ **William Stathis :** ~~Schematic implementation for CAN bus~~   due Feb 22

Yiming Chen

☑ **Yiming Chen:** ~~Complete User Manual~~   due Feb 20

Zach Helwig

☑ **Zach Helwig:** ~~VCI Panel Sketches -ZH~~   due Feb 21

☑ **Zach Helwig:** ~~GLV Hub Panel Sketches -ZH~~   due Feb 21

☑ **Zach Helwig:** ~~Side Panel Panel Sketches -ZH~~   due Feb 21

Unassigned

☐ User Manual Update   due Feb 21

☐ ATP submission 2   due Feb 21

☐ D011 - Calibration and Accuracy   due Feb 23

Any data acquisition system design or test plan must be accompanied by a Calibration and Error Analysis document that estimates the uncertainties associated with all system measurands. This document must include both analytical estimates of measurement uncertainty, as well as a justified design of acceptance tests to determine the uncertainty achieved in practice. The testing design from this document shall be incorporated into the system ATP.

☐ D004 - Acceptance Test Plan   due Feb 23

The Acceptance Test Plan (ATP) is a document that describes how the system as a whole will be tested and demonstrated so as to prove compliance with all requirements and specifications. The ATP should include forms that can be filled out by testers during execution. These filled out forms will be used to create the ATR.

Compliance must be conclusively proved in any of the following three ways:

• Analysis – detailed logical analysis can demonstrate compliance by reasoning from known facts (a priori or empirically) similar to the form of a mathematical proof. Analysis can be used cited research results in conjunction with the documented results of subsystem QA testing, along with generally accepted technical principles to prove system level requirements are met. Analysis memos and relevant data are attached to the ATR.

• Test – an explicit test, experiment, or demonstration can be used to prove compliance with a certain requirement by acquiring new empirical facts and combining these with analysis as described above. The comprehensive results of any measurements conducted as part of an ATP test is included in the ATR, along with date and time of the test, the pass/fail criteria, uncertainty, statistical confidence, pass/fail result, witness name, and witness signature..

• Inspection –compliance is made evident by directly examining the system. Photographs with detailed annotations or other evidence gathered in an inspection is included in the ATR.

The ATP should be arranged to minimize the work involved in testing. If possible, multiple requirements should be demonstrated by each test. The ATP should include a compliance matrix making it obvious that all requirements have been addressed by the plan.

Numerical specifications shall be considered "passed" if the measured value is demonstrated by empirical statistical trials to meet the specification at a 90% confidence interval.

Incomplete Tasks due within the next 7 days
Printed from Asana

Adam Cornwell

☐ **Adam Cornwell:** PACMAN Communication Library   due Feb 27

Alex Hytha

☐ **Alex Hytha:** Complete and submit ATP Final draft   due Feb 28

Aloysius Posillico

☐ **Aloysius Posillico:** TSAL Circuit Schematic -AP   due Feb 28
☐ **Aloysius Posillico:** TSAL Approval and Submission -AP   due Feb 28
☐ **Aloysius Posillico:** TSAL Component Purchase -AP   due Feb 28

Brendan Malone

☐ **Brendan Malone:** Model the motor in software   due Feb 28

Daniel Zakzewski

☐ **Daniel Zakzewski:** Cockpit Panel BOM -DZ   due Feb 28
☐ **Daniel Zakzewski:** Cockpit Panel Panel Sketches -DZ   due Feb 28
☐ **Daniel Zakzewski:** Cockpit Panel Internal Layout sketch -DZ   due Feb 28
☐ **Daniel Zakzewski:** VCI Internal Layout Sketch -DZ   due Feb 28
☐ **Daniel Zakzewski:** VCI Purchase of Components -DZ   due Feb 28

Hansen Liang

☐ **Hansen Liang:** User Interface Demonstrations   due Mar 1
☐ **Hansen Liang:** Maintainability plan   due Mar 1

Jaejoon Yang

☐ **Jaejoon Yang:** Communicate new TSV plan with MechEs   due Mar 1
☐ **Jaejoon Yang:** Put in order for AMS, LCD, and computers   due Mar 1

John Bloore

☐ **John Bloore:** Computer controllable throttle input to motor controller   due Feb 28

John Gehrig

☐ **John Gehrig:** Embedded Linux Installation (VAB-820)   due Feb 27

☐ **John Gehrig:** Place the purchase for embedded system   due Feb 23

☐ **John Gehrig:** Place the order for dashboard and microcontrollers   due Feb 26

Jordan Blake

☐ **Jordan Blake:** Hardware interface control specification   due Mar 1

☐ **Jordan Blake:** Correct AMS layout errata   due Mar 1

☐ **Jordan Blake:** Completed pack wiring diagram   due Feb 22

☐ **Jordan Blake:** AIR failure sensor for main fuse   due Mar 1

Jordan Frank

☐ **Jordan Frank:** Connector Inventory -JF   due Feb 28

☐ **Jordan Frank:** Connector BOM -JF   due Feb 28

☐ **Jordan Frank:** Connector Order -JF   due Feb 28

Kai Ottaway

☐ **Kai Ottaway:** Rearrange top of box   due Feb 19

Katie Nellis

☐ **Katie Nellis:** Detailed specifications for each subsystem type   due Mar 1

☐ **Katie Nellis:** Updated system design   due Mar 1

☐ **Katie Nellis:** Correct BoB board errata   due Mar 1

Nate Hand

☐ **Nate Hand:** Program the motor controller using the Curtis software   due Feb 28

☐ **Nate Hand:** Motor Controller Cooling system built   due Feb 21

Nick DiNino

☐ **Nick DiNino:** GLV Battery Circuit Sketches -ND   due Feb 21
   Significant redesign of the circuit used as a power monitor has pushed back sketching of the circuit.

☐ **Nick DiNino:** GLV Power Internal Layout Sketch -ND   due Feb 28

☐ **Nick DiNino:** GLV Power Purchase of Components -ND   due Feb 28

Rameel Sethi

☐ **Rameel Sethi:** System Logging Daemon   due Feb 27

   ☐ **Yiming Chen:** System logging Daemon   due Feb 27

Sam

☐ **Sam :** CAN Communication Library Draft   due Feb 27

Stephen Mazich

☐ **Stephen Mazich:** Complete and submit Calibration and Error Analysis document   due Feb 28

William Stathis

☐ **William Stathis :** Enhanced requirements analysis   due Mar 1

☐ **William Stathis :** Revised WBS   due Mar 1

Yiming Chen

☐ **Yiming Chen:** System logging Daemon ‹ System Logging Daemon   due Feb 27

Zach Helwig

☐ **Zach Helwig:** Side Panel Design Approval and Submission -ZH   due Feb 28

☐ **Zach Helwig:** GLV Hub BOM -ZH   due Feb 28

☐ **Zach Helwig:** GLV Hub Internal Layout Sketch -ZH   due Feb 28

☐ **Zach Helwig:** Side Panel Panel Drawing -ZH   due Feb 28

Unassigned

☐ User Manual Update and Submission 2   due Feb 28

☐ User Manual Update   due Feb 21

☐ ATP submission 2   due Feb 21

☐ A summary of the approved system level Acceptance Test Plan. ‹ D001 - CDR Presentation   due Mar 2

☐ A safety plan per GPR005 if required for the team's subsystem. The plan must be approved   due Mar 2
by faculty and read and agreed to by all students in all teams. Given the significant addition of a
dynamometer, motor, and controller to the design, and the re-engineering of the TSV system, it is
anticipated that the safety plans from previous years will need revision. ‹ D001 - CDR Presentation

☐ An updated system design, comprising the final, detailed, and complete hierarchical   due Mar 2
subsystem breakdown. This breakdown shall be reflected in all other documentation consistently. BOMs,
test plans, ICDs, schedules, etc... shall all use the same breakdown. ‹ D001 - CDR Presentation

☐ Detailed specifications for each subsystem type, including interface definition, block   due Mar 2
diagram, state diagram, functional requirements, and QA test plan. ‹ D001 - CDR Presentation

☐ An enhanced requirements analysis showing that the detailed design and testing meets all   due Mar 2
requirements and constraints. Operation of critical circuits or systems shall be simulated and proven
against test benches using SPICE, Modelsim, Simulink, or other simulators. Simulation results shall be
presented at CDR. ‹ D001 - CDR Presentation

☐ A system state demonstration that includes a detailed software simulation of overall system   due Mar 2
states and state transitions. ‹ D001 - CDR Presentation

☐ User interface demonstrations with live computer interactivity that implements as much as   due Mar 2
possible the final look, feel, and functionality of every user interface.It is desirable that the state
demonstration be integrated with the UI demonstration. ‹ D001 - CDR Presentation

☐ Communication link demonstration that proves operation of any wireless or wired   due Mar 2
communication links. ‹ D001 - CDR Presentation

☐ Hardware interface control specifications captured in an interface control document and   due Mar 2
System Drawing that documents the exact way subsystem types are instantiated and interconnected both
internally, and project wide. Pinouts of all connectors, conductor assignments in cabling shall be
documented in the ICD. ‹ D001 - CDR Presentation

☐ Detailed software API specifications. ‹ D001 - CDR Presentation   due Mar 2

☐ A revised cost analysis and detailed program budget that documents costs to date and   due Mar 2
demonstrates compliance with financial constraints. ‹ D001 - CDR Presentation

☐ A revised program schedule that documents progress to date and identifies the tasks   due Mar 2
needed to complete the project. The schedule should identify system and software critical path drivers to
complete the project on time. ‹ D001 - CDR Presentation

☐ Report due a week before ‹ D001 - CDR Presentation   due Mar 2

☐ D011 - Calibration and Accuracy   due Feb 23
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estimates the uncertainties associated with all system measurands. This document must include both analytical estimates
of measurement uncertainty, as well as a justified design of acceptance tests to determine the uncertainty achieved in
practice. The testing design from this document shall be incorporated into the system ATP.

☐ D012 - Maintainability Plan   due Mar 2
The Maintainability Plan documents how the team plans to address the general maintainability requirements given in
GPR007.

Any team that creates or substantially improves software for the project shall deliver a software-specific maintainability
plan. Others must use the software written for this project over the 5-year life of the system. This deliverable documents
how software maintainability will be achieved.

The software maintainability plan must be delivered in written form and accompanied by an oral presentation. The plan
should answer the following questions:

☐ What is the design of the system API and how will this design support ongoing reliable operation,
maintenance and expansion?

☐ How is system configuration maintained? Will the system auto detect hardware configuration changes
or will configuration maintenance be required? If the latter, what is the consequence of
misconfiguration?

☐ What tool chain will be used? Is the tool suite up-to-date and actively supported? Is the tool suite
mature enough to have stable functionality? Evidence must beprovided to support assertions.

☐ What third party software will be incorporated into the system? How will this be maintained,
upgraded, or patched during the life of the system.

☐ How are requirements in GPR007 met?

☐ D004 - Acceptance Test Plan   due Feb 23
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testers during execution. These filled out forms will be used to create the ATR.

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documented results of subsystem QA testing, along with generally accepted technical principles to prove system level
requirements are met. Analysis memos and relevant data are attached to the ATR.

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acquiring new empirical facts and combining these with analysis as described above. The comprehensive results of any
measurements conducted as part of an ATP test is included in the ATR, along with date and time of the test, the pass/fail
criteria, uncertainty, statistical confidence, pass/fail result, witness name, and witness signature..

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