

Total Project Completion	Subsystems	Percentage	Team	Team member
83.03%	TSV (20%)	71.50%	TSV	Waseh, Sarah, Shu
	GLV (10%)	82.50%	TSI	Peter, Austin, Thomas
	Cooling (10%)	95.00%	VSCADA	Geoff, Connor
	IC (10%)	48.25%	GLV	Kevin, Russell
	Dyno (10%)	100.00%	Cooling	Russell
	VSCADA (20%)	95.00%	Dyno	Chen
	TSI (20%)	85.75%	Interconnect	Matt, Amrit
			Management	Waseh, Kevin, Nakul, Amrit
				Waseh - System management
				Kevin - General Management
				Nakul - Rules/General Management
				Amrit - Purchasing
This version of WBS means 100% by Mar 23				

TSV Delivered	TSV 1	AMS Delivered (30%)	TSV 1.1	Testing new AMS boards (20%)	TSV 1.1.1	Record AMS boards status (25%)			
					TSV 1.1.2	28 Functional AMS boards (25%)			
					TSV 1.1.3	verify/calibrate using the AMSVU (25%)			
					TSV 1.1.4	Document boards and their current status (25%)			
			TSV 1.2	AMS boards watchdog frequency recognized (10%)	TSV 1.2.1	Fixed AMS boards watchdog frequency (50%)			
					TSV 1.2.2	record list of parameters (watchdog frequency) of AMS boards which are not recognized (50%)			
	TSV 1.3	Connect Monitoring Connector to one AMS board (10%)							
	TSV 1.4	Diagram for the monitoring board connections (10%)							
	TSV 1.5	Parts ordered for new AMS boards (10%)							
	TSV 1.6	Fabrication of AMS boards (20%)							
	TSV 1.7	Install I2C cables (20%)							
	TSV 2	PACKMAN Delivered (30%)	TSV 2.1	Replace Crystal on PacMAN with better part (25%)	TSV 2.2.1	4 PACMan with potential Workability (35%)			
					TSV 2.2.2	Ensure all components are on the board (35%)			
			TSV 2.2	4 PACMan working with test unit (25%)	TSV 2.2.3	Ensure CAN bus working on all PackMan (30%)			
					TSV 2.3	Functional USB UART (20%)	TSV 2.3.1	Establish UART communication with TSV	
			TSV 2.4	Limit lower boundary of cell voltage (15%)	TSV 2.4.1	Test circuit with fixed lower limit in code (35%)			
					TSV 2.4.2	Fix code for lower limit (35%)			
			TSV 2.4.3	Determine source of problem for limitation (30%)					
	TSV 2.5	Delay Switch off of safety loop (5%)							
	TSV 2.6	Replace blade fuses (5%)							
	TSV 2.7	Update UI for PacMAN (5%)							
	TSV 3	Individual PACKS Delivered (35%)	TSV 3.1	Update Fuse in Packs (200A to 300A) (20%)					
TSV 3.2			Clocks working properly in all Packs (30%)	TSV 3.2.1	verify correct working of packs 3 and 4 (25%)				
				TSV 3.2.2	Fixed Pack 3 clock (25%)				
				TSV 3.2.3	Fixed Pack 4 clock (25%)				
				TSV 3.2.4	Record current status of packs 3 and 4 clock (25%)				
TSV 3.3	Packs Rewired (40%)	TSV 3.3.1	Correct Wiring of Buttons (25%)			2/16/18 Waseh			
		TSV 3.3.2	Added & Ordered USB cables(25%)			2/16/18 Waseh			
TSV 3.3.3	Grounding clamps ordered(25%)					2/13/18 Waseh			
TSV 3.3.4	Grounding of Pigtail connectors (25%)					Need IC1.3.3 Completed			
TSV 3.4	Replacing Dying cells (5%)								
TSV 3.5	Add new LCO/Charge cable(s) (5%)								
TSV 5	Management (5%)	TSV 4.1	Acceptance Test Plan						

TSI Delivered	TSI 1	Board Delivered (30%)	TSI 1.1	Updated Circuit Schematic Delivered (30%)	TSI 1.1.1	Deliver TSAL Circuit (35%) - Peter		
					TSI 1.1.2	Deliver Plausability Adjustment Changes (35%) - Peter		
					TSI 1.1.3	Finished the layout (30%)		
			TSI 1.2	PCB Schematic Delivered/Ordered (35%)				
			TSI 1.3	Test of Old Board (15%) - Peter	TSI 1.3.1	Throttle Plausibility (50%) - Peter		
			TSI 1.3.2	Brake System (50%) - Peter				
			TSI 1.4	Build New Board (20%)	3/9/18	Peter		
	TSI 2	Firmware Delivered (40%)	TSI 2.1	Current Measuring Delivered (20%)	3/9/18	Thomas		
			TSI 2.2	IMD Status Delivered (20%)	3/9/18	Thomas		
			TSI 2.3	Temperature Sensor Delivered (20%)				
			TSI 2.4	CAN Communication with SCADA (20%)	TSI 2.4.1	Ability to send current measurement (20%)		
					TSI 2.4.2	Ability to send temperature measurement (20%)		
					TSI 2.4.3	Ability to send IMD status (20%)		
					TSI 2.4.4	Ability to set throttle to 0 from VSCADA (10%)		
					TSI 2.4.5	Sending voltage measurement to SCADA over CAN (10%)		
					TSI 2.4.6	Ability to receive data (10%)		
			TSI 2.5	Drive States Delivered (10%)				
	TSI 2.6	Voltage Measurement (10%)						
	TSI 3	Other TSI parts Delivered (25%)	TSI 3.1	Wiring/Test the board into new enclosure (30%)	3/23/18			
			TSI 3.2	Wiring Diagram (25%)				
			TSI 3.3	Calibration of Voltage/Current Sensor/Throttle Plausibility Pots (20%)	3/23/18			
			TSI 3.4	TSAL Mounted and Wired(10%)	3/23/18			
			TSI 3.5	Grounding and Sealing of TS cables (15%)	3/23/18	Austin (rely on IC1.3.4)		
TSI 4	Paperwork/Management (5%)	TSI 4.1	Acceptance Test Plan (60%)	3/26/18				
		TSI 4.2	Parts List/Bill of Materials (40%)					

Dyno	Dyno 1	Dyno Room Setup (35%)	Dyno 1.1	Motor installation & setup (20%)
			Dyno 1.2	GLV installation & setup (20%)
			Dyno 1.3	Cooling installation & setup (20%)
			Dyno 1.4	TSI replacement installed (20%)
			Dyno 1.5	Dyno software setup (20%)
	Dyno 2	System integration in Dyno room (25%)		
	Dyno 3	Dyno Software update (10%)	Dyno 3.1	Document current bugs (40%)
			Dyno 3.2	Fix the bugs (60%)
	Dyno 4	Dyno Maintainance(25%)	Dyno4.1	Dyno Software Rework(70%)
			Dyno 4.2	Improve Dyno Software Performance(10%)
Dyno 4.3			Find Solution to the Stuck Motor (20%)	
Dyno 5	Management (5%)	Dyno 5.1	Acceptance Test Plan	
VSCADA	SCADA 1	Store CAN data (20%)	SCADA 1.1	Install PeeWee (10%)
			SCADA 1.2	Determine the sampling rate of CAN data (10%)
			SCADA 1.3	Create the data file using PeeWee (10%)
			SCADA 1.4	Create Sqlite Scheme (20%)
			SCADA 1.5	Create PeeWee models (20%)
			SCADA 1.6	Create functions that store CAN data into database (10%)
			SCADA 1.7	Export CSV (10%)
			SCADA 1.8	Export CSV to USB flash drive on Pi (10%)
	SCADA 2	Monitor Data (20%)	SCADA 2.1	Determine if any values from CAN data exceed the maximum allowed values and flag them in database (20%)
			SCADA 2.2	Develop Mapping for CAN Data (20%)
			SCADA 2.3	Processing Binary CAN data (20%)
			SCADA 2.4	Log data that exceeds thresholds (20%)
			SCADA 2.5	Drop out drive mode (10%)
			SCADA 2.6	Ignore spikes in CAN data that could drop out of drive mode (10%)
	SCADA 3	Display CAN data(30%)	SCADA 3.1	Display important data values (20%)
			SCADA 3.2	Create a UML diagram for users (10%)
			SCADA 3.3	Order new display that will fit in the car (10%)
			SCADA 3.4	Setup USB Dashboard display (10%)
			SCADA 3.5	Configure Buttons and LEDs on Dashboard Display (20%)
			SCADA 3.6	Setup 7" Touch Screen Display (Order longer DSI Ribbon Cable) (10%)
			SCADA 3.7	Python Display for GLV (10%)
			SCADA 3.8	Indicate when data is not being received from a sensor (10%)
	SCADA 4	Integrate Pi with the Car (20%)	SCADA 4.1	Confirm that Pi stays in high power mode (20%)
			SCADA 4.2	Test receive data from TSV (20%)
			SCADA 4.3	Test receive data from TSI (20%)
			SCADA 4.4	Test that a user can SSH into Pi from laptop (20%)
			SCADA 4.5	Screw Pi into GLV (order/find male/female screw spacer) (10%)
			SCADA 4.6	Add screw terminals to PICAN2 board for powering Pi (10%)
	SCADA 5	Interact with Pi in car (5%)	SCADA 5.1	Setup Wifi module on Pi (100%)
	SCADA 6	Management (5%)	SCADA 6.1	Acceptance Test Plan

GLV System Delivered	GLV 1	Functional SSOK lamp (45%)	GLV 1.1	SSOK Lamp Selected & Ordered (20%)	
			GLV 1.2	SSOK rework (80%)	
	GLV 2	Functional GLV in the new case (25%)	GLV 2.1	Draw GLV wiring diagram (50%)	
			GLV 2.2	Rewire GLV in the new case(50%)	
	GLV 3	Reorganize GLV (25%)	GLV 3.1	Wire organization (50%)	
			GLV 3.2	Rewiring Cockpit (50%)	
	GLV 4	Management (5%)	GLV 4.1	Acceptance Test Plan	
Cooling System Delivered	Cooling 1	Cooling System set up in Dyno room (45%)	Cooling 1.1	DC/DC converter selected & Ordered (40%)	
			Cooling 1.2	Test and integrate converter with cooling system(60%)	
	Cooling 2	Functional Cooling system in new cover (50%)	Cooling 2.1	Design new cooling system box/setup(25%)	
			Cooling 2.2	Fabricate and acuire the new cooling system(25%)	
			Cooling 2.3	Integrate system with the connector plate(25%)	
			Cooling 2.4	Create wires for the cooling system (25%)	
	Cooling 3	Management (5%)	Cooling 3.1	Acceptance Test Plan	



Management	MGMT 1	Project Status Letter (10%)	MGMT 1.1	Project Status Letter - week 1 (7.14%)
			MGMT 1.2	Project Status Letter- week 2 (7.14%)
			MGMT 1.3	Project Status Letter - week 3 (7.14%)
			MGMT 1.4	Project Status Letter - week 4 (7.14%)
			MGMT 1.5	Project Status Letter- week 5 (7.14%)
			MGMT 1.6	Project Status Letter - week 6 (7.14%)
			MGMT 1.7	Project Status Letter - week 7 (7.14%)
			MGMT 1.8	Project Status Letter - week 8 (7.14%)
			MGMT 1.9	Project Status Letter - week 9 (7.14%)
			MGMT 1.10	Project Status Letter - week 10 (7.14%)
			MGMT 1.11	Project Status Letter - week 11 (7.14%)
			MGMT 1.12	Project Status Letter - week 12 (7.14%)
			MGMT 1.13	Project Status Letter - week 13 (7.14%)
			MGMT 1.14	Project Status Letter - week 14 (7.14%)
	MGMT 2	ECE documentation Delivered (20%)	MGMT 2.1	PDR Delivered (30%)
			MGMT 2.2	CDR Delivered (30%)
			MGMT 2.3	User Manual Delivered (20%)
			MGMT 2.5	Final Poster Delivered (20%)
	MGMT 3	Photo Management (5%)	MGMT 3.1	Document all the required photographs that need to be taken (50%)
			MGMT 3.2	Take all the pictures (50%)
	MGMT 4	Sticker Management (5%)	MGMT 4.1	Document all the required stickers that need to place on the car (40%)
			MGMT 4.2	Select and order/make stickers (30%)
			MGMT 4.3	Place all the stickers (30%)
	MGMT 5	Competition Rules Management (10%)	MGMT 5.1	Create Check list (40%)
			MGMT 5.2	Verify all the rules (60%)
	MGMT 6	Video (10%)		
	MGMT 7	Formula Electric Forms Delivered (20%)	MGMT 7.1	Program Submission (2%) 12/08/2017
			MGMT 7.2	ESF-1 (15%) 11/10/2017
			MGMT 7.3	Team Photo (1%) 12/08/2017
			MGMT 7.4	Interim Project Management Report (5%) 02/02/2018
			MGMT 7.5	Impact Attenuator Data (15%) 02/09/2018
			MGMT 7.6	Site Pre-Registration (1%) 02/16/2018
			MGMT 7.7	Failure Mode Effects Analysis (10%) 02/23/2018
			MGMT 7.8	ESF-2 (20%) 02/23/2018
			MGMT 7.9	Design Reports (10%) 03/23/2018
			MGMT 7.10	Sustainability Report (10%) 03/23/2018
			MGMT 7.11	Design Specification Sheet (10%) 03/23/2017
			MGMT 7.12	Mentor Request (1%)
	* not all the MGMT 8 are required for ECE			