

Opening

Overview

- How did we decide on where to put all the subsystems?
 - Mostly in regards to the rules and keeping everything compact

Interconnect

- Do you think you will spend less on cables?
 - Since they are all new, no, but the cost of cables is less than total cost
- Will further optimizations be possible for interconnect?
 - It is optimized as much as possible for our subsystem locations as we see it now

VSCADA

- How did VSCADA work last year?
 - Not very well. They only had CAN
- Are there any rules with SCADA specifically?
 - Thankfully no
- Then why is SCADA important?
 - Hlps us get much more information about our project in real time
- Why did you rewrite SCAD from Python to C++?
 - The code last year did not work well and was hard to follow.
- What is causing SCADA to slow down?
 - Sampling rate in TSI, SQLite can't handle it
 - Nadovich: use sampling rate and storage rate
 - Sam: queue the info before storing, use a more robust database, multithreading
- What is the penalty for slow data acquisition in SCADA?
 - A failure will not stop the car. It's more to monitor than helo the car run
 - It's for analysis and debugging
- Why did you add a SCADA relay if it isn't required?
 - We only want to do it in extreme circumstances
 - SCADA can help with overheat for example
- Will each subsystem have its own connection and working with linux and threads?
 - Yes and Raspian (type of linux)
- How do you group this data in the SCADA system?
 - Data controller delegates to specific subsystem
 - May want to order them in terms of priority or sampling rate
 - Sam: We already have a system of priority
- Good job of having nothing show up when a subsystem is not running
- How do we tell importance of data displayed?
 - We only put up data that is necessary for that time of testing
- Do you have automated testing for SCADA?
 - We will look into it
- Why is SCADA supporting so many communication protocols?

- Different subsystems require different things and it was easier to modify SCADA than to force things to conform
- How much redesign from 2018 SCADA to 2019 SCADA?
 - Complete redesign, 2018 wasn't modular

GLV

- Is it bad if you plug in connectors to the wrong connection?
 - Don't know, it hasn't happened
 - Wire harnesses and thoughtful color coding can prevent misplugging
- Why is this car's GLV 24 V?
 - Need to power AIRs
 - We don't need those AIRs
 - No answer
 - Nadovich: It's because it reduces the current we need
- Make sure to rethink wiring for GLV before putting it on the car to avoid mistakes and GLV board breaking
- GLV enclosure needs to be redone so it is able to be sent to machine shop. MEs need to be pushed
- We can't blame the MEs for not having things done. Just talking to the machine shop will help tons.
- Is the battery enclosure necessary?
- Enclosures should be top priority
- Machine shop guys are experts

TSV

- Are you getting help from the manufacturer for cell characterization because you should reach out
 - This will be a lot of work to do on all 28 cells, should get as much help as possible
- Show packs to judges, especially about segment disconnect before we get too far into it
 - Read the rules
- Why aren't we using a circuit breaker?
 - More expensive than fuses (until you start blowing fuses)
- Why are we fusing for 300 A when expecting up to 600 A?
- Need to know sizes of TSV boards
- How are we testing that resistivity of pack will not cause a shortage or fire?
 - Testing plan
- For future presentation, show chips and reasons for using
 - This will especially upset Jack if you are using LT chips (works at TI)
- Hard to find an accurate current reading from our current design
- Make sure to get readouts from cell. Make sure to test fail states
- Have failure scenarios been tested ie board comms failure?
 - No, haven't manufactured anything yet

- Are packs mirror images of each other? If so then the spare will only be good to replace 1 pack

TSI

- “Do I have to talk about TSI?” -Tianyu
- What happens if throttle is outside the set range?
 - Not able to enter drive state
- What was the reason for new precharge/discharge
 - New motor controller
- Think about aluminum bars and 2/0 wire that needs to go in enclosure because Nadovich doesn't think there will be enough room for everything
- Need to make sure tsi is easily accesible for debugging
- Check FSM for drive mode
- Make TS/GLV division more clear
- Enclosures are the critical path

Cooling

- What is the cooling medium?
 - Water
 - Rules don't allow any other kind of liquid
- Have you had issues with leaks?
 - When integrating system, yes
 - It's been running smoothly for 2 weeks with no problem

Motor and Motor Controller

- What are the inputs and outputs
 - 5 V throttle
 - Can do torque or velocity mode, it depends on the configuration
- Will the controller be compatible if we change the motor?
 - Yes
- Consider time vs. money on making the decision on the motor
- Hayden explains about the encoder, amplifier, possible solutions, explains the story, and talks about how it could work in 30 minutes or we might just break the motor today while trying to fix it

Dyno

- Used to simulate a car running in safe isolation to test before moving and driving
- Frequency response to the dyno should be looked into and observed to be adjusted

Management

- Everything is done on KiCAD so we can work from home
- Is a one to two week turnover realistic for enclosures?

- Yes, they are good about that, as long as the designs are done early enough in the semester
- CAR DONE BY WEEK 8
 - Make sure people are willing to stay for spring breaks
 - Status of frame: not ordered
- Lead time for frame: week 1 or 2 of spring semester without suspension installed
- Start thinking about critical path
- Budget reaction: this is a large amount so prepare to pitch this in order to have a good chance of it being accepted
 - Ask companies for deals, like putting the company name on the car for a discount
 - We really need to sell a pitch because ECE department doesn't have the money to fund that
 - Reach out to TI education team