PDR Presentation 2/8/17

Slide 2: **Overall WBS**
- Since not legible, label the main sections so it is somewhat legible/understandable
- Simplified version
- Main sections aren't communicated which is the goal

Slide 3: **Overall System Diagram**
- Not legible
- Simplified version of more of a top level
- Also with slide 2, main sections aren't communicated
- Keep this in mind for the poster
  - 10-15 seconds to get point across
  - Anything more than that to absorb isn't useful

GLV
- Slide 6: Full Safety Loop Diagram
  - Missing interfaces
    - SCADA can monitor state of relay
      - Might need to know if its overall safety loop trip or non-driver-resetable trip or maybe driver-resetable trip
    - Packs monitor state of safety loop
    - Cooling might also monitor state of safety loop
  - VCI and VUI acronyms are used in new ways but understood
- Slide 7: Team Breakdown
  - Professors will lose visibility of who is doing what
  - It will end up being are the teams getting their tasks accomplished
  - Since multiple people are sharing tasks, and visibility is being lost, the grade is essentially being shared
    - If there is an issue with it, work it out yourselves or tell a professor about it
    - If subsystem fails and one person worked really hard to try to make it work, professors can't see this so let them know before end of semester
  - Will adapt because things happen but make sure it stays fair

Interconnect
- How are you going to test the cables?
  -
- Slide 9: WBS 100% Rule
  - Interconnect is important, so don't think it is worth .875% of the work
  - Consider it 20-30% of functionality of project
  - This diagram is very misleading with percentages
- Testing
  - Realistic testing strategy would be to test continuity
  - Maybe make a tester box
    - 2-pin GLV connector where it would be green or red LED is connected right

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  -
    - ■ If there's a short between conductors or one conductor is open or pinning is wrong, the red light would show it
  - ○ Making a way to test would be a great technical component and valuable

VSCADA
- ● Slide 11: Different modes
  - ○ Statement of work confusion
  - ○ Doesn't imply anything about the state
  - ○ Maintenance view doesn't mean you need to throw a switch to have that view
  - ○ Demo possibility doesn't mean it needs to transform
  - ○ It isn't intended to be that you have a state for each mode that you will move between in a state diagram
  - ○ Once you are charging, you shouldn't only be able to see just charging
  - ○ The modes should not be mutually exclusive
  - ○ Don't consider it as the word mode maybe see it as a view - not a state
  - ○ Just because that hardware isn't availaible, and you need to demo mode that, not everything needs to be demo mode
- ● Slide 12: Proposed Drive Mode Display
  - ○ When battery is empty, should be an outline around the battery SoC box, not just have that side disappear
  - ○ temperature is of overall system?
  - ○ this can be critiqued and altered from this initial design
- ● Slide 13: WBS
  - ○ Other outcomes besides these listed
    - ■ Maintance demo required
    - ■ CDR outcomes
      - ● COM demo
      - ● UI demo
      - ● State demo
    - ■ Where is demo operation of communication links included?
    - ■ Need maintenance plan detailed in there

Cell App
- ● COM needs to be demonstrated prior to CDR
- ● To cell app and VSCADA
  - ○ Maintainability requirements → shouldn't have to be recoded, even if another part gets added aka another battery pack
  - ○ Expandability plan is one of top priorities
  - ○ VSCADA is discussing it during database development
  - ○ Maintainablity of the system, shouldn't have to maintain code
  - ○ If another CAN bus gets added, shouldn't have to write more code
  - ○ Maybe a new part can require new code, but adding more of existing part should not require new code

TSV
- Since both persons are splitting responsibility for packs, each will be labeled / known of who is responsible for which packs
- Assume packs will be fully functional without any supervisory connection or can bus?
  - For four packs in series, don't truly need AMS or PackMAN
  - Really only need wiring and mechanical safety for just power to be provided
  - Once 24V are closing AIRs, power can be provided
- Slide 18: WBS
  - When will each of these leaves/outcomes be delivered?
  - Now that we have a draft WBS, we should have an idea of what will be delivered each week
  - Status Letters (due Friday at 5pm) require that we need a plan of what needs to be delivered when so we know if we are on task on time or behind
- Because design was more fleshed out in previous years work, this team will be able to visualize more than most of when things will be able to be completed
- PSL should have visibility of what should happen each week
- Question on WBS in general:
  - Use colored outline but don't fill
  - Should be concluded that the red/brown boxes completed mean that the

    yellow/green item above it be 100% completed → Integration tasks should be shown

    there to make sure that all red boxes will fully equal green box

Cooling
- Slide 23: WBS
  - Not seeing how it get manufactured
  - Need to buy, build, and put it all together
  - All red items aren't fully making the green items
  - Missing the part when the actual product is made
  - Some things on here are almost irrelevant
    - Block diagram approved [on the existing system]
- Need to work with MechE
  - Needs to be able to be put into the car
  - Mechanical layout in dyno room may not be feasible for the car
  - Draw in the car to know where this is going → talk with Josh White
  - Diego will also be helping with this aspect

DYNO
- Plan sequenced or prioritized so it is ready first for the other subsystems that will be ready to go in first?
  - TSV will be in first so they are working on those aspects first
- Currently the throttle and the valve load control are accomplished through a USB DAQ board in the huff box
  - Need to physically be switched from that system

- ○ possibly measure torque and RPM (measured on dyno)
- ○ Need to come up with a solution of going from these 4 things wired to huff box to these 4 things connected in the new system
- ○ What is the system? Cut wires and solder? Unplug and plug something else in?
  - ■ Want to be as simple as possible so it can easily be done
- ● Comment on all WBS: Delete tasks for documenting existing functionality

Physics Modeling / Cruise Control
- ● Slide 27: Physics Modeling Goals
  - ○ Cooling system doesn't need accurate estimation to be designed
    - ■ Estimates of motor system loss can improve cooling system
  - ○ Should be a goal before virtual simulation
- ● Motor controller and motor system can be lumped for car performance but should be separated for cooling system

TSI
- ● Slide 34: Shutdown System State Machine
  - ○ How do you leave Ready-to-drive mode
    - ■ Push and hold ready-to-drive button
    - ■ Light will tell driver if they are in that mode or not
  - ○ How do the non-driver-resetable get reset
    - ■ User pushes master reset button
    - ■ Might need to push brake overtravel reset as well
    - ■ Placement of resets will be discussed with MechE team
    - ■ Rules are switch so might be able to push push-pull switch
    - ■ Double check if it needs to be a separate reset that you need to crawl under the car to reset
- ● Slide 35: WBS
  - ○ Trottle Delivered - what does that mean exactly
    - ■ Are there dependencies? Does throttle deliver require the box to also be delivered?
      - ● Requires PCB fabricated and tested
      - ● Box isnt a requirement
    - ■ Depends on a lot of other things so one of last things that will be delivered
    - ■ Plausibility circuits fabricated should be under the PCB outcome
    - ■ Developed algorithm was when they were discussing doing it in software
    - ■ Requires the test box but that's a separate green block
  - ○ Not sure if everything is in there

Slide 36: **Maintainability**
- ● Spelled out specifically in SoW
- ● Google drive and commented code isn't in requirements of maintainability plan

Slide 37: **Cost Analysis**
- ● Come up with a number that can be guaranteed that we won't go over