The purpose of this document is to provide you with further resources about your project and more details about the technical regulations that impact it.
Background and Need

The Phoenix solar car is the 3rd generation solar car designed by Oregon State University Solar Vehicle Team (OSUSVT). OSUSVT is planning to do the following:

1- Design a new car (4th generation) to race the World Solar Challenge (WSC) in Australia. The team is designing a car to participate in the **Cruiser Class for 2015**. Technical regulations for the Cruiser Class are assumed to be the same as the regulations published for the 2013 race.

2- Upgrade the current car (Phoenix) to race the American Solar challenge (ASC) 2014. This race will have two parts: a track race part that will take place in the Circuit of The Americas Followed by a cross country road race part for around 1500 miles.

Your Driver-Vehicle interface design **shall meet the regulations and requirements for the WSC 2015 race in order to implement it on the 4th generation car.** The interface **should be implementable on the Phoenix and comply with ASC 2014 race regulations.**

In stages that precedes your preliminary design stage, you are encouraged to look to the current interface design of the Phoenix, other designs by different solar vehicle teams around the world, and electric and hybrid cars such as Tesla Model S, Tesla Model X, Toyota Prius, etc.
1- Overview about the World Solar Challenge **WSC 2015**

Currently, OSUSVT is designing the exterior structural body of the car and testing the design for it’s expected power consumption for several speeds. You could meet the team lead to get any dimensions of the current design that will affect your design.

There is no driver-vehicle interface design being made as of this moment.

**WSC 2015 Technical Regulations**

Technical regulations for 2015 are not published yet. But they are expected to be similar to the technical regulations for WSC 2013 which can be found at this [link](http://www.worldsolarchallenge.org/files/7_regulations_for_2013_world_solar_challenge_release_copy_v11.pdf). The document includes regulations for several classes in the race, the team is designing a car for the **'Cruiser Class'**.

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**What is WSC Cruiser Class ?**

The Cruiser Class is aimed for practicality rather than speed, with the ultimate goal of an entrant being able to meet the requirements for road registration in the country of origin.

**Wheels:** 4

**Driver / Passenger:** 1 / 1 both facing forwards

**Stages:** Over-night charging at selected locations

With entrants scored according to their energy consumption and the subjective element of practicality, this is the first time subjective determinant of success will feature in one of the main classes. The judging concept exposes designers to the ‘real-world’ needs of industry to predict what end users (in this case our panel) find practical, attractive or present that essential point of difference from other contenders. Whether this be a new invention or innovative application of existing technology, we look forward to seeing some interesting outcomes.”

**Source:**
http://www.worldsolarchallenge.org/about_wsc_2013/2013_classes/michelin_cruiser_class
2- Overview about The American Solar Challenge ASC 2014

The Phoenix is expected to serve for one more year at the American Solar challenge. It ran with the same driver-vehicle interface for the last two races.

This year the Phoenix won the 1st place at the Formula Sun Grand Prix 2013 race which was a track race. It was driven by four drivers (including your technical advisor). Last year it participated in the American solar Challenge which was a track race followed by road race. For more videos and news articles about the race and the Phoenix visit :
http://groups.oregonstate.edu/solar/news


More details about the race:
http://americansolarchallenge.org/the-competition/ascfsgp-2014/
3- Technical assistance and help:

For any questions or need to interview subject matter experts please contact: Sami Al-AbdRabbuh at alabdras@onid.orst.edu.

- Inspecting Solar Car:

To inspect the Phoenix please coordinate with both 8.1 and 8.2 teams for a one hour time slot. You may pick any available time on this schedule: doodle.com/SamO_o.

Once confirmed meeting will be at the Aerolab, Here's the map with the lab highlighted: http://oregonstate.edu/campusmap/?zoom=17&type=normal&centerlat=44.5599508014977&centerlng=-123.28271627426147&layers=1,&locations=850.

- Interviewing team members:

If you would like to interview or ask any team members from the OSUSVT feel free to ask your technical advisor about that.

- Additional resources:

some additional resources will be provided upon request on both the course webpage and at this google drive page.
FAQs

What is the type of computer being currently used on the Phoenix?

Inelmatic XF700 (Inelmatic XF700HB-USNA2) screen is currently used on the steering wheel for rear view, controlling lights, horn and music and displaying several critical readings.

More technical details about the interface:

- High level interface running Windows 7 with 1.6 GHz Intel Atom D525 dual core hyper threaded processor
- Telemetry stored on solar car PC running SQL Server 2008
- LCD touchscreen, LCARS control interface
- Onboard communication implemented through high-speed USB and CAN networks
- Chase vehicle communication implemented through NETGEAR router and DataLinc FLC910E Ethernet radio
- USB GPS for location and speed

This is a snapshot of the interface screen:

A short video clip for the interface working in action:
http://www.youtube.com/watch?v=2FwM78UbmsE
(Note: in this video the rearview did not work in this clip, at the end of the video there is a brief explanation about the meaning of each display button)
• Is there any other devices being considered as an alternative for the Phoenix?

Yes, we just purchased an Acer Iconia 8.1-Inch tablet (http://www.amazon.com/dp/B00CM1BN5Q/ref=pe_385040_30332200_pe_309540_26725410_item)

• Do you EXACTLY know what you need to have as a driver interface for the car?

Not really, we do have some critical to know values and we do have some readings and controls that might be good to have. A rear view is a critical requirement that we can not race without. Additionally, knowing the velocity, battery state of charge (SOC), Array output are critical for a successful and safe drive.

A brief video is shared on the google drive while testing the car would show you how the current design of the Phoenix work. You are encouraged to critically evaluate this design, check different designs including the ones currently participating in Australia at the WSC 2013. (Check this blog, the youtube video at the top shows an example of an interface used by one of the teams at 1:06).

Some additional indicators we think might be important to have: RPM meter or number, an odometer, ..etc
An additional control we think might be important to have: cruise control which may toggle between constant: speed, RPM or voltage.

• Is there any other FAQs about the Phoenix structure and dimensions?

Yes, check here: http://groups.oregonstate.edu/solar/faqs