Innovative Composite Parts

Week 1 status report

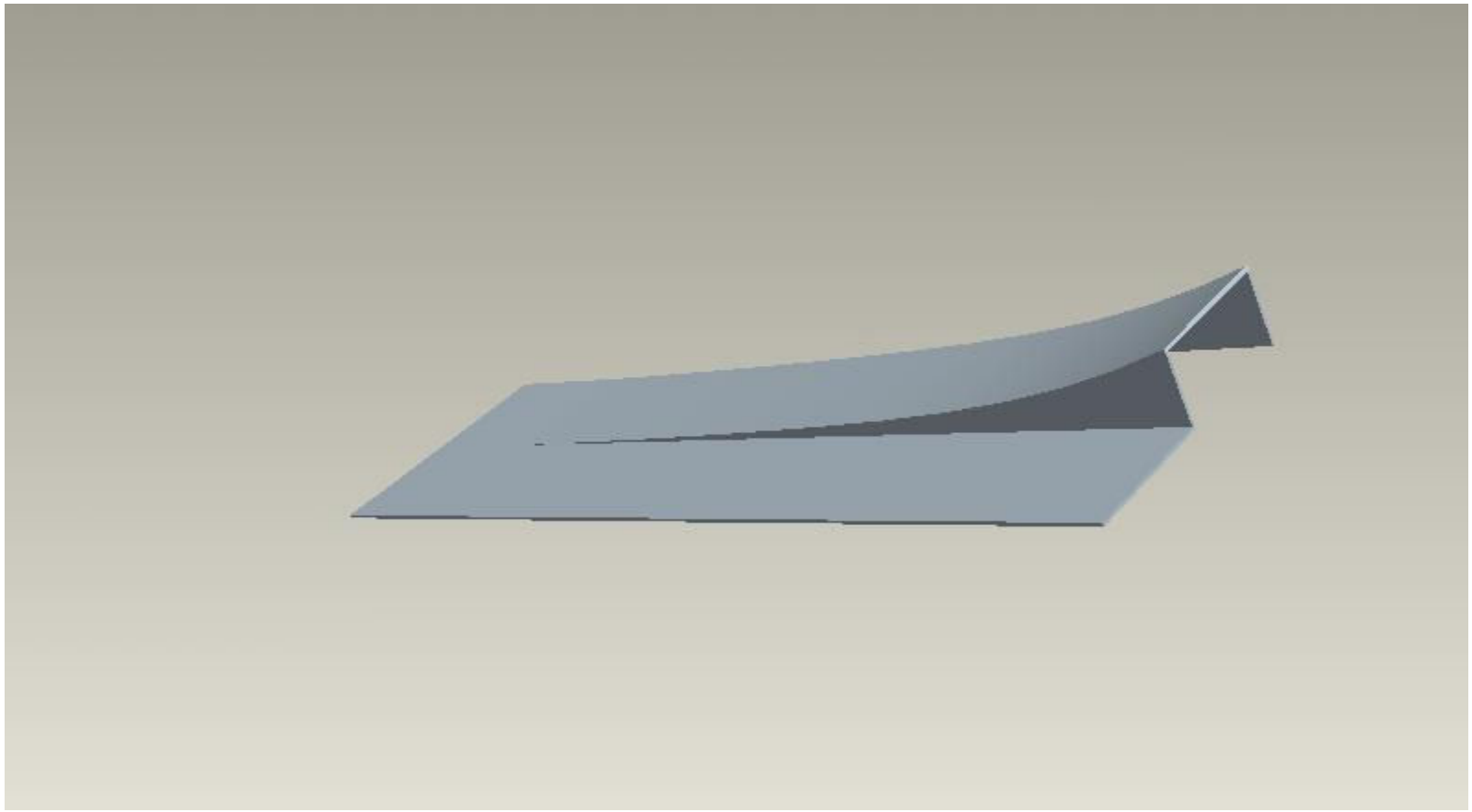
Staffing Requirements

Name	Discipline	Responsibilities
David Holland	ME	Project Manager. Manage interface between individual team assignments (i.e. chassis design, manufacture, undertray mounting, etc..). Also responsible for structural composite analyses.
Theodore Kusnierz	ME	Design and analyze pedal box. Manufacture pedal box, and assist with manufacturing of monocoque and jigs.
Anthony Salvo	ME	Flow simulation and validation of aero package. Flow models should be comprehensive, including entire car.
Ryan Baldi	ME	Work with Charles to create manufacturing plans and jigs. Also responsible for composite coupon testing and total chassis testing. Assist with manufacturing of monocoque and jigs.
Charles Thomas	ME	Carbon monocoque designer. Responsible for overall chassis shape, packaging, and suspension/roll hoop integration.
Martin Iwanowicz	ME	Design amplifier and wiring harness for embedded strain gage data acquisition. Work with Anthony to develop and implement testing plan for aero package.

Progress

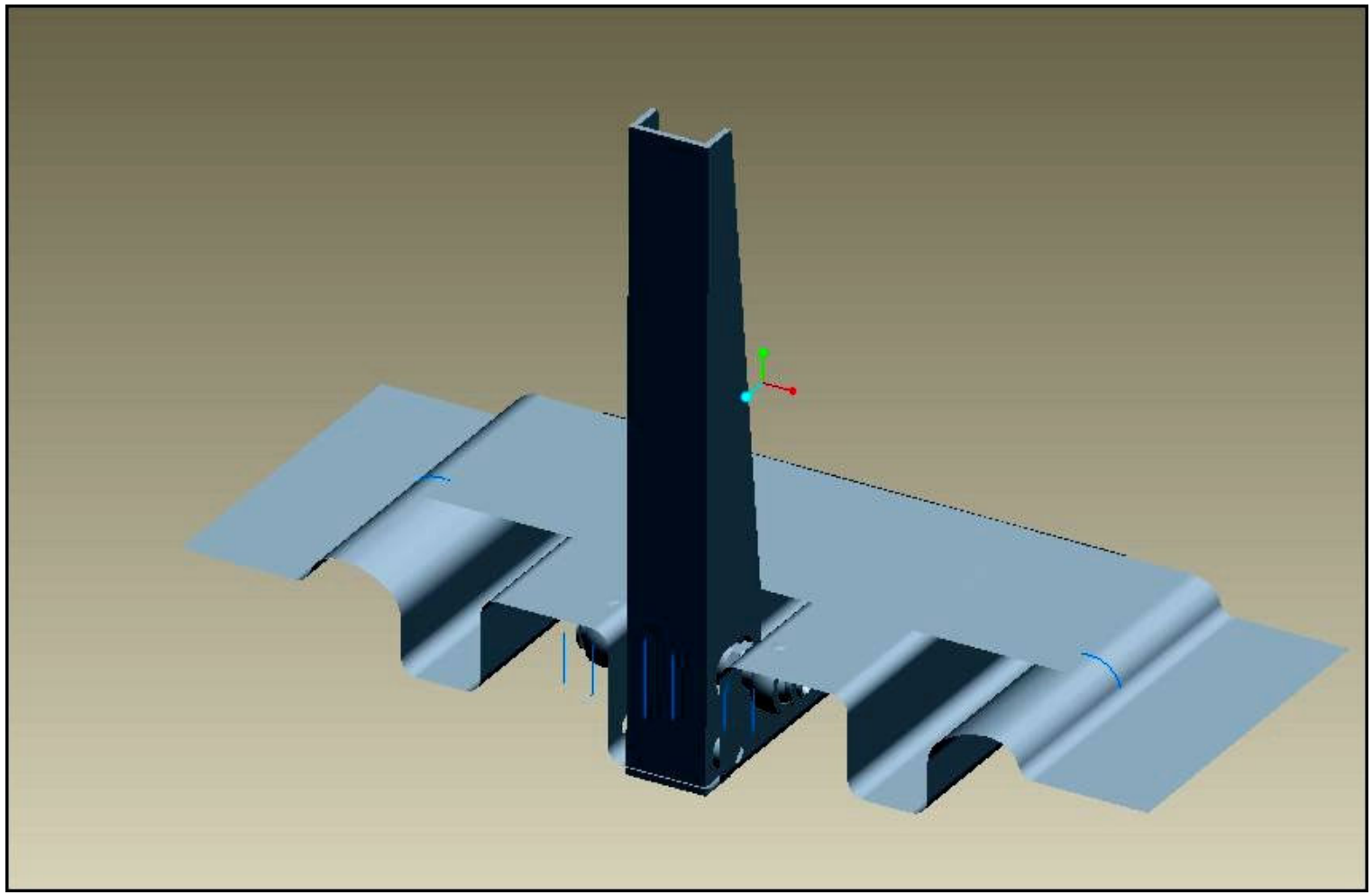
- Initial design of aerodynamic undertray
- Completed steel tube rear end for carbon monocoque
- Researched cost of MDF for monocoque plug.
- Nearly finalized pedal box model geometry
- Determined configuration of outboard suspension, steering, and roll hoop mounting

Undertray design (half model)



Completed steel tube rear frame

Pedal box design



Issues and Risks

Issues and Risks					
Description of Risk	**Possible Consequences**	**Probability of Risk**	**Severity of Risk**	**Overall Risk**	**Contingency Plan**
Current Risks					
Cannot obtain sponsorship for prepreg carbon	Manufacturing is delayed, project budget increases.	High	Low	Low	Purchase materials
Cannot obtain sponsorship for aluminum or tooling board	Manufacturing is delayed, project budget increases.	High	Low	Low	Purchase materials
Short-Term Risks					
Cannot procure preferred mold materials	Cannot manufacture mold on time.	Medium	High	Medium	Source other suitable materials
Long-Term Risks					
Mold is destroyed in part making process	Can not remake part if necessary, project timeline shifts if new molds are needed	Low	High	Medium	Remake molds from plugs
Unacceptable quality of final product	Tolerances not met, manufacturing is delayed, overall performance reduced.	Medium	High	Medium	Utilize proper methods of fabrication to ensure quality.
Chassis not complete in time for testing	Aero package will not be tested on composite chassis	High	Medium	High	Aero package can be tested on old racecar.

Weekly Plan

	Week 1	Week 2	Week 3
David Holland	Begin research of analysis methods for large scale composite structures. List and rank possible failure modes of chassis.	Decide generic material properties to use in rough analysis work. Familiarize self with large scale composites analysis in ANSYS.	Work closely with Charles Thomas to optimize stiffness and weight without compromising packaging efficiency. Finalize method for roll hoop attachment. Determine analysis techniques for structure.
Theodore Kusnierz	Research FSAE rules on structural equivalence. Begin planning of tests for structural equivalency. Begin work on composite pedal box.	Have initial composite pedal box modeled. Determine material and fiber orientations. Run initial analysis. Continue iterations. Begin impact attenuator documentation.	Finalize impact attenuator backing plate documentation. Continue pedal box.
Anthony Salvo	Become familiar with CFDesign software layout. Use online tutorials to better understand operation.	Begin diffuser modeling. Begin preliminary analysis without car.	Continue diffuser modeling, begin investigation of center of pressure.
Ryan Baldi	Investigate materials, cost, and testing.	Work with Charles to determine chassis size.	Begin sourcing of materials for manufacturing. Talk to Charles about jigging suspension.
Charles Thomas	Begin material selection, fiber orientation selection, and begin suspension point location and vehicle kinematics.	Finalize suspension point placement. Finish first iteration of chassis geometry. Work with David Holland to optimize stiffness.	Continue chassis iterations. Study packaging clearances to ensure no interferences will occur.
Martin Iwanowicz	Research strain gages. Aid Charles Thomas with Chassis design and assist with suspension point placement.	Source strain gages. Research DAQ use and placement. Finalize suspension point placement.	Work with Ryan Baldi on test plans, materials sourcing, and jigging.

Milestones

	MSD I				MSD II		
	Week 5	**Week 7**	**Week 8**	**Week 10**	**Week 3**	**Week 5**	**Week 10**
Anthony Salvo	Simulation running with car model.	Have CP location optimized	Manufacturing Plan	Manufacturing plans complete		Successfully mounted, DAQ	Verified downforce data and CP data.
Ryan Baldi	Final fabric selection for testing.	Fabrics sourced, jigs designed.		Fabric tested, all necessary data collected.		Jigs manufactured.	Final Assembly and Data collection on chassis.
Ted Kusnierz	Final pedal box design complete.		Pedal box manufactured.	Pedal box tested.		Jigs manufactured.	Final Assembly and Data collection on chassis.
David Holland	Chassis analysis model runs without errors.		Chassis analysis complete.	Chassis to roll hoop/rear box analysis complete.	Molds Complete	Chassis lay-up	Final Assembly and Data collection on chassis.
Charles Thomas	Chassis design complete.			Manufacturing plans complete	Molds Complete	Chassis lay-up	Final Assembly and Data collection on chassis.
Martin Iwanowicz		Successful connection of strain gages to DAQ system.	Test plan complete for undertray testing.	Fabric tested, all necessary data collected.			Final Assembly and Data collection on chassis.