Customer Needs

Team 503 conducted a meeting with the customer and sponsor, Dr. Anubi, discussing the needs and wants for the Formula 1/10th project. These customer needs will be the design parameters and foundation for the product which Team 503 designs and develops. These questions were asked during the first meeting with the sponsor to establish an initial basis for the project, and then some supplementary questions were asked via a follow-up email to clear any confusion and miscommunication between Team 503 and the sponsor. The questions that were asked of the customer, their response to the question, and how Team 503 interpreted their response in an engineering context are listed below.

Question	Response	Interpreted Need
What are the goals for this project?	The designed mechanical properties such as Moment of Inertia and Center of Mass should be consistent across different chassis. Variation in length is undesirable. The design should be easily scalable.	The F1/10th vehicle chassis has definite mechanical metrics and is easily reproducible.
What problems do you experience commonly with this type of project?	Time. It seems to take too long. It would be great if you can get it done in a timely manner	The design of the chassis will be constructed in a timely manner.
What kind of extra components or attachments need to be considered?	Expect the chassis components to remain the same	All iterations of the chassis will contain the same components.
What do you like about the chassis so far?	The ability to fully control the design of the platform is great.	The design of the chassis is unique and modular.
What do you dislike about the chassis so far?	The separate chassis are not identical. Control instructions are not able to be transferred simply between different chassis easily.	Designs produced will bear repeatable results.
What kind of different iterations would you like to see?	Many design iterations may not be reasonable under the time restraints present, but worthwhile, well-engineered iterations will be expected.	Iterative design will be necessary during this project. Excessive iterations may be counterproductive.
Is it fair game to reference competitor's cars or from any vehicle features you want?	Prefers well engineered solutions to aesthetic design. F1 car designs are great to draw from, well-engineered with years of Research and Development behind them.	The final design may be inspired by other effective designs. The function of the body will be more important than the form.
What are some featuring the car should have in the final design?	No fancy features. Just the simplest working design.	The design will be simple yet effective.
Would you prefer we work off the current chassis design or start completely from scratch?	I don't have a preference on this. Anything you like is fine.	The project may be referenced with a current chassis design or from scratch.
What do you see in other F1TENTH builds that you would like us to implement?	Nothing really. I think the building we have now may be good. Select one that works best according to your criteria.	The current build for the car is effective.

How modular would you like the car to be?	A fixed chassis with easily replaceable components.	The car will have a fixed chassis with accessible and replaceable components.
Would you like the final product to be plug-and-play or assembly based?	Plug-and-play.	The final product will feature a plug-and-play design.
What extreme loading cases will the chassis need to withstand?	Crashes, top speed, cornering/accelerating/braking forces, transport.	The chassis will withstand crashes and be practical while the vehicle is in motion.
What setting will these cars be used in?	Competition and teaching settings.	The final product may be utilized in competition and teaching settings.
What components need to be accessed most frequently?	Batteries and the onboard computer.	Power supply and onboard computer may have higher accessibility.

The design team made an effort to ask questions that could clearly define a direction for the project to move forward into. The customer responses proved to be highly informative and have allowed the team to begin on the path to produce a product that is satisfactory for the customer. A few of customer needs that standout include the need for clearly defined mechanical metrics, the need for consistency between iterations, and the need to keep the preexisting components the same. The overall take-away from the customer's needs is to develop a car that has defined and quantitative mechanical metrics such as center of gravity, center of mass, component positioning, etc., a car that is easily reproducible and identical to the car before, and a car that is robust and versatile enough to undergo various racing conditions, such as high speeds, sharp turns, and potential crashes.