RoboBoat Senior Design Team

Customer Needs:

The objective of this project is to compete on behalf of Famu-Fsu College of Engineering in the RoboBoat 2019 competition in June using the fabricated vehicle developed through the years at the school.

Prompt	**Customer Statement**	**Interpreted Need**
General Objective	RoboBoat is an international competition that is designed to build and enhance a community of innovators, capable of making substantive contributions to the Autonomous Surface Vehicle (ASV) domain.	The completed design will attend competition
Initial steps to complete project	Understand last year's progress and complete design. Understand the tradeoffs necessary of what to fix and not to fix from last year.	Complete project efficiently and do not redesigned already designed parts
Suggested improvements from last year	Contact advisor more	Acquire more assistance from advisor
What specifically do we focus on	Focus on the 2 autonomous vehicles communicating	The design will communicate effectively at competition. Included is the need to complete the fundamental tasks (including Autonomous Navigation and Communication with Competition Mission Task Server) to qualify and to participate in the Raise the

		Flag task.
Judges Needs	Roboboat 2019 Rules	Roboboat 2019 Rules, section 9.1 Vehicle Requirements*
Needs to pass information along	Pass along the information to the next teams	Develop a method to pass progress onto future teams
Competition attendance	The team has been around for years, it should go to competition this year	The completed design will attend competition in June 2019

*The vehicle requirements are reproduced below

• Autonomy: Vehicle shall be fully autonomous and shall have all autonomy decisions made onboard the ASV.
• Buoyancy: The vehicle shall be positively buoyant and remain buoyant for at least 30 minutes.
• Communication: The vehicle cannot send or receive any control information while in autonomous mode (to and from Operators Control Station). Communication is allowed between the vehicle and subsystems (Unmanned Aerial Vehicle – UAV).
• Deployable: The vehicle must have its own 3 or 4-point harness for crane deployment and recovery.
• Energy source: The vehicle must be battery powered. All batteries must be sealed to reduce the hazard from acid or caustic electrolytes. The open circuit voltage of any battery (or battery system) may not exceed 60Vdc. Alternatively, vehicle can be wind powered (sailboats).
• Kill Switch: The vehicle must have at least one 1.5-inch diameter red button located on the vehicle that, when actuated, must instantaneously disconnect power from all motors and actuators.
• e-Kill Switch: In addition to the physical kill-switch, the vehicle must have at least one remote kill switch that, when actuated, must instantaneously disconnect power from all motors and actuators. If the remote kill switch system is turned off, vehicle must instantaneously disconnect power from all motors and actuators.
• Propulsion: Any propulsion system may be used (thruster, paddle, etc.). However, all moving parts must have a shroud.
• Remote-controllable: The vehicle must be remote-controllable (tele-operated) to be brought back to the dock. If the remote controller is turned off, vehicle must

instantaneously disconnect power from all motors and actuators. Controlling vehicle through a laptop is discouraged.
• Safety: All sharp, pointy, moving or sensitive parts must be covered and marked.
• Size: The vehicle must fit within six feet, by three feet, by three feet "box". • Surface: The vehicle must float or use ground effect of the water. Mostly submerged/flying vehicles are forbidden.
• Towable: The vehicle must have a tow harness installed at all times.
• Visual Feedback: Teams are required to implement a visual feedback system, indicating status of their ASV. Additional information on this is available in Appendix 16.3 Visual Feedback.
• Weight: The entire maritime system (including UAV) must be 140 lbs. or less.
• Payload: The vehicle must have a place to mount a GoPro (or similar) camera with an unobstructed view from the font of the vehicle.