# S.A.T.I.R.E. Milestone 1

## Software Team

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### Client
Dr. Stephen Wood

# Purpose

- To develop an AUV capable of monitoring coastal regions for environmental and/or security threats.
- Design the master control software for the prototype S.A.T.I.R.E. AUV.
- Design a modular system open to the future additions of new capabilities after the AUV prototype proves basic functionality has been implemented successfully.

# Functional Requirements

- The AUV must be capable of fully autonomous operation throughout its mission.
- The AUV must be energy efficient to maximize the limited power supply.
- The AUV must have emergency and self preservation capabilities.
- The AUV will need communications capability in order to transmit collected data as well as coordinate with other Tires in the event multiple units are deployed, templates will need to be in place for this.
- Templates must be in place for implementation of a database to manage data collected.

# Design

- The system will be designed to be a modular as possible. The system is being designed with the intent that it will be expanded upon after the initial prototype and must accept new code without damage to existing functionality.
- The AUV will be running on the Mission Oriented Operating System(MOOS).

# MOOS

- The MOOS database and communication methods will be responsible for managing data between the differing modules.
- MOOS IVP helm will takes a GPS origin coordinate and create a cartesian graph. This will be the foundation of the world modeler and used for navigation.
- MOOS behavioral scripts and mission files will be used to design and control mission plans.

# UML
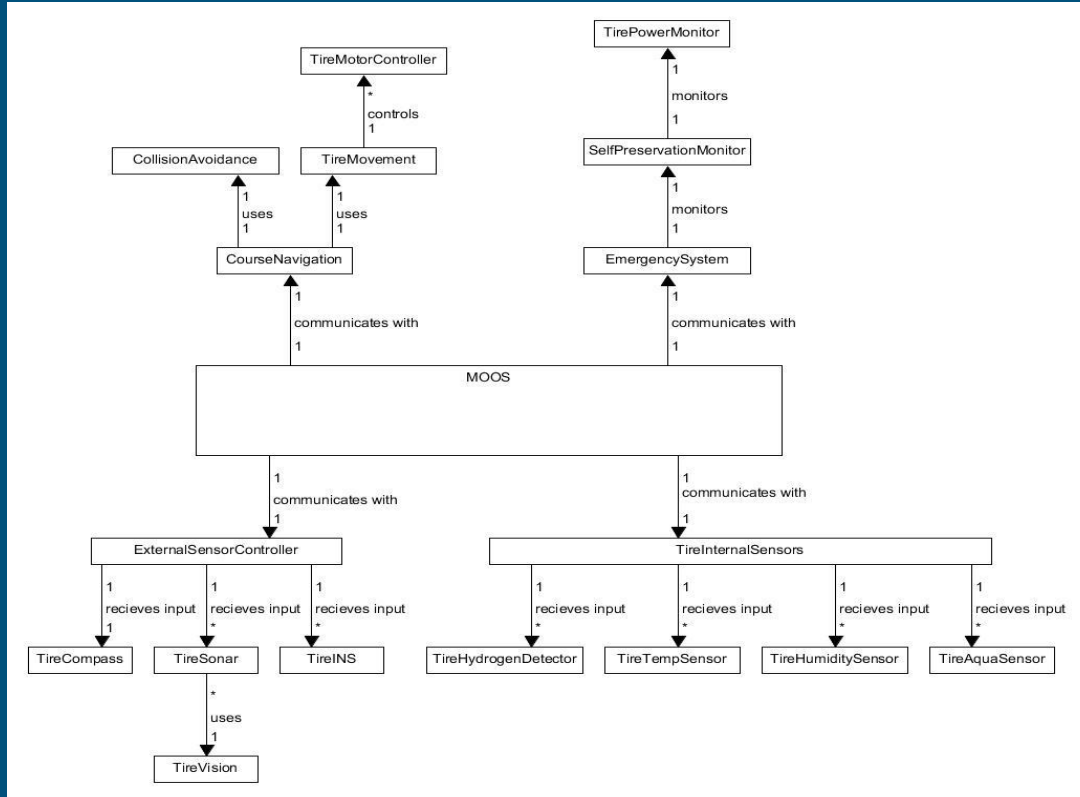
# Test Plan

- Testing each module will start with ensuring that the module can correctly send and receive messages from the MOOS database.
- Test planning will be done based on input from the hardware team to ensure the test are appropriate to the intended operating conditions.
- Systems to be tested include:
  - External Sensors
  - Internal Sensors
  - Navigation systems
  - Collision Avoidance
  - Emergency System

# Questions?