Veins Release Plan 1

High Level Goals:

- Extend SUMO to implement a more diverse set of modules attached to each vehicle class.
- Implement a dynamically and statically configurable rogue car class using the TraCI protocol.
- Extend SUMO to support more complex DSRC communications containing any and all relevant traffic data.
- Code is of good quality but the object is a proof of concept/feasibility.

User Stories:

- **Sprint 0 (3 weeks)**
    - As a developer, I want to learn how to simulate traffic, build a network of roads, and generate a scenario map using SUMO so that we can understand the mechanics of the software. [Ryan] [Harshaan] [Alexis] (2)
    - As a developer, I want to learn how to use Veins to implement simulation models for vehicular networking. [Ryan] [Harshaan] [Alexis] (2)
    - As a developer, I want to learn how to coordinate OMNET++, SUMO, and Veins to implement complex traffic simulations using MiXiM, TraCI and other various communication protocols. [Ryan] [Harshaan] [Alexis] (5)

- **Sprint 1 (2 weeks)**
    - As a user, I want to be able to simulate rogue cars within a traffic simulation by adding a simple flag to my vehicle type definitions so that we can mimic unwanted network behavior within a real computer network. [Ryan] (14)
    - As a user, I want to be able to simulate randomness in the current test program so that we can replicate similar network behavior. [Ryan] [Harshaan] [Alexis] (16)
    - As a developer, I want to be able to edit SUMO scripts to retrieve and show data from road traffic simulations so that we can locate the execution of events that we want to modify. [Ryan] [Alexis] (7).
    - As a developer, I want to be able to compare the expected trip times between a normal car and a modified rogue car so that we can detect network irregularities. [Ryan] [Harshaan] [Alexis] (18)

- **Sprint 2 (1 week)**

    - As a user, I want to be able to simulate the same rogue cars within a traffic simulation, and observe the data collected from the simulation with a more intuitive python script or vehicle class declaration. [Ryan] (17)
    - As a developer, I want a more complex traffic simulation with pedestrians, emergency vehicles, and other abnormalities in speed, safety, and traffic in our simulation for demonstration as well as testing purposes. [Harshaan] (24)
    - As a developer, I want to be able to take Basic Safety Messages (BSM) and implement them into a new vehicle device so that it can be used to produce DSRC messages. [Alexis] (16)

- **Sprint 3 (1 week)**
    - As a user, I want to be able to modify and specialize the rogue car class so that specific nodes and edges can be modified to affect the behavior of the rogue car class differently. [Ryan] (28)
    - As a developer, I want a more complex traffic simulation with pedestrians, emergency vehicles, and other abnormalities in speed, safety, and traffic in our simulation for demonstration as well as testing purposes. [Harshaan] (16)
    - As a developer, I want to extend the SUMO open source software by fully implementing a DSRC devices with Basic Safety Messages. [Alexis] (18)
- **Sprint 4 (3 weeks) (finals and spring break)**
    - As a Developer, I want TraCI python functions to rely on object interactions rather than coordinate interactions [Ryan] (18).
    - As a developer, I want a fully modular rogue car and DSRC design that is viable in more complex scenarios than their original testbed. [Harshaan] (15)
    - Packetize traceable DSRC data using CISCO proprietary encapsulation code to be transmitted to Veins [Alexis] (23)