iGoFast Functional & Non-functional Requirements

Functional:

1. The traffic light automation system should be able to determine & display vehicle line-up
2. The system must be able to adjust signal priority based on traffic congestion
3. The system must not allow perpendicular lanes of traffic to go simultaneously (excluding right turns).
4. The system must display color-blind friendly light colors
5. The system must prompt vehicles to go
6. The system must prompt vehicles to slow down
7. The system must prompt vehicles to stop
8. The system must change multiple traffic lights at staggered times to control traffic flow
9. The system must account for manual button pressing for pedestrian crossing in priority calculation
10. The system must signal foot traffic to cross
11. The system must prompt verified users to log in for monitoring purposes
12. The system must allow administrators to set up a user name and password
13. The system will have a scan feature to account for new vehicles approaching the lights
14. The system must display left-hand turn lights
15. The system must display a countdown on pedestrian walkways which correlates to the next yellow light change

Non-functional:

1. The system shall be accessible to the color-blind
2. The system should avoid causing collisions (secure & reliable)
3. The system must be able to update in real-time and maintain a low margin of error (high reliability & response time)
4. The system must be able to run indefinitely (availability)
5. The system shall have a simulated environment display for testing
6. The system will use priority queuing algorithms
7. The system must be able to track at least 50 vehicles at a time