Scenario: a driver named John aims to reach destination X safely within the shortest possible time, i.e., he needs to find the shortest and least congested route, and he needs to avoid collisions and maintain enough gas to reach its destination.

In order to find the shortest and least congested route, John needs to depend on a *map* that is made available to drivers by trusted provider (e.g., Google maps). Google maps produces and disseminate such map that is provided to users (e.g., drivers) within seconds and they are valid for hours. Moreover, to facilitate choosing the shortest possible time, the *map* should contain information concerning *traffic congestion*, since it is related to the purpose of finding the shortest and least congested route respectively. Therefore, such information can be considered as sub-part of the *map*. *Traffic congestion* can be obtained either from RSU (a trusted source) or from other vehicles using the same route. Usually, vehicles are not trusted for such information, because they may *disseminate false information in order to affect the decisions of other drivers* (e.g., bogus information attack). Such information can be provided within seconds (10 seconds max) and are valid for minutes or even hours.

Moreover, John needs to avoid collisions in order to arrive at its destination safely, to simplify the scenario we consider John is able to safely drive its car in general and he needs assistant only when he merges into traffic flow while entering a highway. In such situations, John and another driver (Leo for example) who is passing through the same highway entrance point rely on RSU to provide them with *merge information* concerning the traffic flow to avoid any possible collision (pass traffic *merge point* safely). RSU provides John with such information within 20 seconds, and it provides Leo with the same information within 30 seconds.

In order to maintain enough gas to reach its destination, John needs to receive notifications about nearby gas stations through PoI notifications. A gas station aims to sell its services to vehicles, and they announce about such services through PoI notifications, which is sent to RSUs to be broadcasted to passing vehicles. Although PoI notification received from RSUs are trusted, but RSUs should not trust all notifications that come from PoI, since PoI may provide falsified information for their own benefits, i.e., increase traffic flow to their facilities that might increase selling their service.

Depending on the methodology, can you please use STS-IQ Tool to do the following:

- Use the modeling component provided by STS-IQ tool to model the scenario in terms of its main actors (agents and roles they are playing). For each identified role/agent, identify and model their goals and information that might be needed for achieving such goals, identifying actors dependencies for goals to be achieved and information to be provided, etc.
- Use the analysis component provided by STS-IQ tool to analyze the IQ model concerning the scenario, in case there is any violation to the properties of the design, modify the model accordingly until the IQ requirements model is verified correct and consistent
- Use the automated support to derive the final IQ specification from the IQ requirements model.