Abstract

The current research in Intelligent Transportation Systems (ITS) is lacking adequate tools to create overlay networks and services applied to ITS. Developing a custom made overlay network for ITS is complex and developers may focus on less important implementation details rather than on the algorithms and scenarios suitable for ITS overlays. In this report we present a new framework that provides software developers with tools that can aid them in the development and implementation of overlay networks for ITS, the ITS Overlay Framework. Its main contributions are: providing an approach to the development and simulation of ITS overlays that eases the transition to testbeds and real case usage; allowing users to create custom vehicle groupings based on coordinates, each associated with a different overlay network; allows users to define how nodes join a group overlay network based on their position, update themselves in the group overlay or switch to another group overlay, and send messages between themselves in the same group; supporting the development of different overlay network topologies and protocols. We have used the ITS Overlay Framework to implement and run three test scenarios that explore different groups and different overlay network topologies.