

*Málaga, July 2012*

## Executive Summary

- TITLE:** D4.3.1: Review of performance metrics in VANETs
- PAPERS RELATED:** J. Toutouh, J. García-Nieto, E. Alba. **Intelligent OLSR Routing Protocol Optimization for VANETs**. IEEE Transactions on Vehicular Technology, 60(4):1884-1894, May 2012. DOI: <http://dx.doi.org/10.1109/TVT.2012.2188552>
- J. García-Nieto and E. Alba. **Automatic Parameter Tuning with Metaheuristics of the AODV Routing Protocol for Vehicular Ad-Hoc Networks**. In LNCS of the Seventh European Workshop on the Application of Nature-inspired Techniques to Telecommunication Networks and other Connected Systems, (EvoCOMNET'10) EvoWorkshops10, Springer-Verlag, pp. 21-30, Istanbul, 2010
- ABSTRACT:** A series of different performance metrics have been evaluated as QoS network indicators for VANETs. From this evaluation, several metrics like: Network Throughput (NT), Number of Drop Packets (NDP), and Normalized Routing Overload (NRO) have been considered, together with the most commonly used in the state of the art [NBG06], consisting on: Packet delivery ratio (PDR), Normalized routing load (NRL), and Average End-to-End delay of a data packet (AEED). These last three metrics were selected to be implemented with software scripts and adapted to Ns-2 network simulator. In concrete, they stand for the fraction of the data packets originated by an application that a routing protocol delivers (PDR), the ratio of administrative routing packet transmissions to data packets delivered (NRL), and the average difference between the time the first data packet is originated by an application and the time this packet is received at its destination (AEED).
- GOALS:**
1. Selection of most relevant performance metrics for QoS measurement in VANETs
  2. Generation of software scripts to implement QoS metrics
- CONCLUSIONS:**
1. PDR, NRL, and AEED are frequently used in the state of the art, as well as commonly used in popular network simulators/applications.
  2. The use of these metrics is also recommendable for comparing results with other techniques and research studies in the state of the art.
- RELATION WITH PAST DELIVERABLES:** PRE: D4.1.1-2012 (advisable reading)
- OTHERS:** [NBG06] Naumov, V., Baumann, R., Gross, T.: An evaluation of inter-vehicle ad hoc networks based on realistic vehicular traces. In: Proceedings of the 7th ACM MobiHoc, pp. 108–119. ACM, New York (2006)