



*Málaga, Diciembre de 2014*

## Executive Summary

**TITLE:** **D5.9.1: Assigning routes in the vehicle routing problem: the dynamic case.**

**PAPERS RELATED:**

- Y. Bravo, G. Luque , and E. Alba, Takeover Time in Evolutionary Dynamic Optimization: from Theory to Practice, Applied Mathematics and Computation (Impact Factor: 1.35). 01/2015; 250. DOI: 10.1016/j.amc.2014.10.107
- Y. Bravo, G. Luque , and E. Alba, Global Memory Schemes for Dynamic Optimization, Natural Computing, 2014 (submit)

**ABSTRACT:** The Vehicle Routing Problem has many applications both in research and industrial domains. Since traffic conditions and company needs can be highly variable, we propose to model and study the VRP as a Dynamic Optimization problem. Research in techniques, metrics and convergence.

**GOALS:**

1. Design and implement algorithms to tackle dynamism in the vehicle routing problem like adding memory, using temporary flexibility in routes, and parallel versions, and theory-guided approaches.

**CONCLUSIONS:**

1. A new model of takeover time for EDO has been proposed, which overcomes the limitations over an initial previous model and shows greater efficiency over a comprehensive set of test-bed functions.
2. Theoretical models has been used to build a new reactive EA for EDO. It uses the takeover time model to finely-tune the non-uniform mutation and thus to control the convergence time along the run according to the DOP features. The results have validated the improvements of the proposed strategy over the diversity-generating approaches..
3. A uniform approach was proposed to carry out an integral analysis of current design memory variants based on a comprehensive set of benchmarks. Results show the benefits and drawbacks of each strategy, as well as the effect of the algorithm and problem features in the memory performance.

**RELATION WITH PAST**

**DELIVERABLES:** PRE: D3.4.2