



Málaga, August 2012

Executive Summary

TITLE: **D3.6.1: Key features of metaheuristics**

PAPERS RELATED:

- Y. Bravo, G. Luque and E. Alba. *Global Memory Schemes for Dynamic Optimization*. Natural Computing, 2014 (submitted)

ABSTRACT:

Nowadays, it is common to find problems (in system biology, mobile applications, etc.) that change over time, requiring algorithms which dynamically adapt the search to new conditions. In most of these problems, the utilization of some information from the past allows to quickly react and adapt after a change, if a similar scenario repeats. This is the idea underlining the use of memory in dynamic optimization. Adding memory to an algorithm requires several key design decisions to be made, concerning the memory content, the process of updating, and the process of retrieval. Many authors directly store the good solutions found in a finite explicit memory (Global Memory Scheme), but use different techniques for remembering and retrieving this information. In this deliverable, we survey and compare the current global memory variants, using a comprehensive set of benchmarks. Results show the benefit and drawbacks of each technique for different problems and change dynamics.

GOALS:

1. Study the utilization of the memory as mechanism to enhance the search.
2. Comparison of different memory mechanism.
3. Apply them to dynamic optimization.

CONCLUSIONS:

1. We have characterize the main steps in memory strategies.
2. We have compared the different design strategies for each step.
3. The global memory scheme is one of the most popular and easy to hybridize with other approaches such as diversity guided or multi-population.

RELATION WITH PAST

DELIVERABLES:

PRE: none

POST: D3.6.2 (advisable reading)