

*Málaga, December 2014*

## Executive Summary

**TITLE:****D3.2.2: Propose several implementations of GAs, ACO, PSO, which run over the most appropriate technology selected above.****PAPERS RELATED:**

- Javier Matos and Enrique Alba, Benchmarking Metaheuristics on Portable Devices (unpublished)

**ABSTRACT:**

In this work we study the computing capabilities of a smartphone and a tablet in contrast with those of a desktop computer. Our interest focus on understanding the behavior and scalability that portable devices exhibit when executing metaheuristic to solve optimization problems. For that, we use a GA and SA algorithms to solve the Onemax and Rastrigin problems. We perform many experiments solving a wide set of instances for both problems with our algorithms to gain insight about the performance of portable devices. After that, we present the results obtained for the analysis. The results focus on the relative execution time of the portable devices in comparison with a desktop computer used as the baseline. We conclude that smartphones and tablets are powerful devices capable of executing metaheuristics for solving real and challenging problems.

**GOALS:**

1. Understanding the behavior and scalability that portable devices exhibit when executing metaheuristic to solve optimization problems.

**CONCLUSIONS:**

1. In this work we have presented a study on the performance of portable devices when executing metaheuristics to solve well-known optimization problems. The algorithms tested are GA and SA, and the problems solved were Onemax and Rastrigin.
2. We discovered that portable devices are competitive in using metaheuristics for solving optimization problems, and in some circumstances their execution time is as much as five times that of a regular desktop computer.
3. The results also show that portable devices can scale as much as a desktop computer for the algorithms and problem instances that we used, giving us the sense that we are really working with a desktop computer instead of a smartphone or a tablet.
4. We have observed some kind of penalty related with the execution of really short computations that affects portable devices, but as the computation takes longer, the execution time of the portable device differ from that of the desktop computer just by a constant factor.

**RELATION WITH PAST** D3.2.1**DELIVERABLES:****OTHERS:**