

*Málaga, June 2013*

Executive Summary

TITLE: D3.7.1: Devising a list of requirements imposed by the contexts in which real- world problems appear (time constraints, competition between companies, etc.). Analyze the different design options for metaheuristics to deal with scalability (large number of variables) and uncertainty (noise, robustness, dynamic functions).

PAPERS RELATED:

- Francisco Luna, J. Francisco Chicano, Enrique Alba. Robust solutions for the software project scheduling problem: a preliminary analysis. *International Journal of Metaheuristics*, 2(1): 56-79 (2012).
- J. Francisco Chicano, Alejandro Cervantes, Francisco Luna, Gustavo Recio: A Novel Multiobjective Formulation of the Robust Software Project Scheduling Problem. *EvoApplications 2012*: 497-507.
- F. Luna, D. González-Álvarez, F. Chicano and M. A. Vega-Rodríguez, On the Scalability of Multi-Objective Metaheuristics for the Software Scheduling Problem, *Intelligent System Design and Applications (ISDA 2011)*, pp. 1110-1115

ABSTRACT: In real-world problems, uncertainties are present in any optimization problem. For example, the manpower required to do a task in a software project cannot be known in advance with a high precision. Thus, optimization techniques need to be endorsed with mechanism to deal with this uncertainty.

Scalability is another issue when facing real-world problems. Many instances of these problems in Industry have a large scale and algorithms used to solve the small instances could not be appropriate for large instances. In these works we study uncertainty and scalability.

GOALS:

1. Analysis of efficiency, efficacy, scalability and robustness in academic benchmarks.
2. Analysis of efficiency, efficacy, scalability and robustness in problem generators.

CONCLUSIONS: Attending to different quality indicators the following conclusions can be drawn:

1. GDE3 performs the best with respect to I_{HV} and I_{ϵ}
2. NSGA-II and MOCell reached the second best values for these indicators

RELATION WITH PAST none.

DELIVERABLES: