

Abstract of Thesis presented to UFF as a partial fulfillment of the requirements for the degree of Master of Science (M.Sc.)

A new modelling for the resource-constrained task scheduling problem

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This work presents a new modelling to be used on resource-constrained task (project) scheduling problems (RCTSP or RCPSP). Some RCTSP(RCTPSP) models use a renewable resource approach within a planning horizon composed of periods, i.e. in the course of the problem, after the tasks activation, these can generate budget in fixed or variable amount at each following period. On the proposed modelling, from the moment when a task is activated until the last considered period, a quantity of resources called profit (associated to the activated task) is available at each period. Thus, the quantity of available resources, at a given period, will depend on what tasks were activated until this period and when it happened. This modelling reflects, in a more realistic manner, big company expansion projects, that can be made in steps and allow, at once, to get some profits before the project conclusion. Some heuristics were proposed to handle this problem including concepts of GRASP and Evolutive Algorithms (EAs) meta-heuristics. This work shows how certain problem parameters can be calibrated and ways to combine, efficiently, construction heuristics and local searches, in a GRASP and/or EA structure.