

# Topic 15

## Discrete Optimization

Rainer Feldmann and Catherine Roucairol

Topic Chairpersons

Discrete optimization problems arise in various applications such as airline crew scheduling and rostering, vehicle routing, frequency assignment, communication network design, etc.

The advent of parallel computation has raised many expectations in this field: faster resolution of known problem instances, the possibility to solve larger instances of difficult problems, the opportunity to address new problems, etc. But parallel computation also challenges researchers to rethink their models and algorithms, and imposes a number of specific issues related, in particular, to efficient data structures, communication and information sharing mechanisms, workload distribution, performance measures, etc. Thus, the aim of this theme is to present recent developments related to the main areas in the edge of Parallel Computing and Operations Research.

In contrast to most of the other topics, the topic *Discrete Optimization* was new at this years Euro-Par conference. From a total of 7 submissions one was accepted as a regular paper, while two submissions were accepted as research notes.

The papers will cover different fields: In the first, the authors present a new parallel algorithm for a graph coloring problem arising in matrix partitioning problems in the field of numerical optimization. The second paper deals with a parallel implementation of GRASP, a heuristic local search algorithm. In a third paper the authors describe MALLBA, a library containing exact, heuristic and hybrid resolution methods for combinatorial optimization problems.

The papers altogether show that the effort required to harness the potential power of parallel computers should not be underestimated, and that the use of parallel computers leads to substantial savings and even makes it possible to modelize and solve larger problem instances than before.

Finally, we would like to thank all the contributors and referees for the excellent work they have performed in helping to make the workshop possible.