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# Scheduling function for management and optimization in production and service systems

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## Abstract

The point we are trying to explain in this communication is that a hard class of management problems needs appropriate optimization methodologies to be solved and that by using such methodologies one can obtain substantial gains and advances in the management of production and/or service systems. Such methodologies become more and more important in different management areas.

More precisely, the first part of this communication is devoted to the presentation of some concrete problems related to the management field (scheduling problems). In such problems a general common structure consisting in sequencing, assigning, organizing and optimizing can be observed. Indeed, the scheduling function consists in organizing activities in a specific system imposing some rules to respect. The scheduling problems are essential in the management of projects, but also for a wide set of real systems (telecommunication, computer science, transportation, production...). More generally, solving a scheduling problem can be reduced to the organization and the synchronization of a set of activities (jobs or tasks) by exploiting the available capacities (resources). This execution has to respect different technical rules (constraints) and to provide the maximum of effectiveness (according to a set of criteria).

Unfortunately, solving scheduling problems is not usually an easy task. The hardness of these problems is due to two aspects: the diversity of applications and the complexity of problems. Hence, it is not possible to construct a generic effective approach for solving them. Despite the great number of references and researchers dealing with these problems, it is well-known that most of them are hard to solve. The second part of this communication is devoted to the presentation of different exact and heuristic approaches (used for solving this type of problems).

## Biography

Imed Kacem received his "Diploma of Engineer" from ENSAIT (French High School) and his MS degree from Lille 1 University, both in 2000; his PhD degree in Computer Science in 2003 from the Ecole Centrale de Lille and his Habilitation Degree (HDR) from Paris-Dauphine University in 2007. From 2003 to 2009, he was Associate Professor with the Charles Delaunay Institute at the University of Technology of Troyes (UTT, France) in the Research Group for Optimization of Industrial Systems. During the year 2007/2008 he was with the National Scientific Research Centre (CNRS, France). Since 2009, he is Professor at the University Paul



Verlaine – Metz (UPV-M, France) in the Computer Science Research Group (LITA). **He is also the Head of the Computer Science Department at the same university since 2010.**

His research interests include combinatorial optimisation and scheduling. He is the author of nearly 100 publications in refereed journals, conferences, books and chapters of books.

He is Area Editor for Computers & Industrial Engineering. He is on the editorial boards of several other international journals (EJIE, IJAOM, Advances in OR, JSSM...). He was a Guest Editor for Computers & Industrial Engineering JSSSE, EJIE and IJAOM. He was the Organisation Chairman of the international conferences IEEE/CIE'39, IEEE/ICSSSM'06 and WAC/ISIAC'06.

He obtained the third '2009 Robert Faure Award' from ROADEF (Société Française de Recherche Opérationnelle et d'Aide à la Décision). He is listed in Who's Who In the World.