INTERACTIVE PLANNING PROCESSES OF SYSTEMS DESCRIBED BY UNSOLVABLE MATHEMATICAL PROGRAMMING MODELS

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Many planning problems concerning e.g. the allocation of resources of a large organization, regional master plans, new data processing systems or other new systems can be described in theory by mathematical programming models. But these models will be too large to be solved by coded algorithms and computers, and their data-gathering problems are inhibitingly great. This poper proposes interractive planning processes for decision-makers and planners with this kind of problem.

We define primal and dual planning processes corresponding to primal and dual algorithms respectively. The former solve the maintenance problems of systems and the latter the design problems of new systems. We can distinguish four sets of systems, depending on the structure of the mathematical programming model which describes them best — linear, convex, nonconvex and decomposition systems — and define for each set detailed primal and dual planning processes based on some well-known algorithms.

Questions such as the following can be answered on the basis of the algorithm chosen: What are the essential tasks of planners and decision makers in interactive planning? Is the planning process adaptive? Is it possible to achieve the global optimum of the problem by continuing the planning process far enough?