

# Industrial application of graph theory and combinatorial optimization - three case studies.

JENS CLAUSEN

Department of Informatics and Mathematical Modelling  
The Technical University of Denmark

The use of computer support for decision making in companies and public institutions is increasing dramatically. Airlines, public transportation companies, banks, and health care institutions use decision support in material- and manpower planning, routing, scheduling, and investment planning.

Often, the underlying model in a decision support system is a graph model in combination with a mathematical programming model for the problem at hand. We present three cases from recent projects involving production planning, planning lines of work for aircraft, and driver rescheduling in a public transportation company, thereby highlighting the challenges met in practical applications of graph theory and combinatorial optimization.