Information and communication technology (ICT) continues to serve as a prerequisite for successful supply chain management (SCM) and its importance is non-negligible for the future. It incorporates and links to information systems, planning tools for decision support as well as supporting devices. While modern ICT systems are vital components in supply chains, their successful management rests on coordinated decision making throughout logistics networks. Simulation and optimization can be employed for, e.g., inventory, production, procurement, distribution planning, and beyond. Intelligent devices can, e.g., communicate with different partners in the supply chain, assist in collecting information, share product information, negotiate prices, and distribute alerts throughout logistics networks. Moreover, we see a continuing extension even towards economics issues.

This year, our minitrack consists of four papers dealing with intelligent decision support in the field of logistics and SCM. The papers provide a heterogeneous yet complementary ensemble as they consider different approaches in coping with the uncertainty and complexity found in real-world decision making.

Halil Ibrahim Guenduez and Huseyin Kadı-Kadir-Memet provide a unifying view on location and route planning. In this paper aspects of route planning are incorporated into location planning considered as a location-routing problem (LRP) with time windows. As methodology for solving the LRP the authors apply a simulated annealing approach and compare its performance with a sequential proceeding and a tabu search heuristic.

James Campbell re-visits hub-and-spoke networks and provides interesting evidence regarding the interplay of the use of connections between hubs and those along spoke arcs. Practical hub-and-spoke transportation networks provide efficient service between many origins and many destinations. These networks use hub facilities that provide a connecting, sorting and/or consolidating function designed to concentrate flows on the inter-hub links to exploit the strong economies of scale in transportation. Yet examination of the optimal solutions reveals that the flows on spoke arcs quite often exceed the flows between hubs. This might violate the premise underlying the model for economies of scale and raises an important question for hub location research using the basic model for economies of scale. Moreover, insightful differences between passenger and freight hub networks are derived.

Nathan Egge, Alexander Brodsky and Igor Griva provide an efficient preprocessing algorithm to speed-up multistage production problems. In a multistage production network (MPN) a number of products need to be manufactured where each product can be produced by one or more assembly nodes, each being composed of several machines working in parallel. Related problems are flexible flow shops or hybrid assembly systems. An online-decomposition algorithm based on offline preprocessing of static assembly components is applied to decompose the original MPN and reduce the search space of machine configurations. The authors focus on preprocessing and propose an adaptive algorithm that considers only a small part of the discretized range of assembly output values, by iteratively classifying outputs based on their predicted machine configuration.

Dominik Pfeiffer, Sarah Anwander and Bernd Hellingrath follow a different path than the previous papers in providing conceptual thoughts about supply chain flexibility. Ideas are presented and evaluated by means of a practical scenario from the table-top product manufacturing industry using the adjustment of production lot sizes and safety stock levels as examples for flexibility measures. A discrete event simulator is used to provide an evaluation of flexibility configurations.