Press Release

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Research project develops new algorithms for the optimization of large-scale logistics networks

Network planning to become more resistant to uncertainties in input data

The research project RobuNet (short for robust network design for large-scale logistics networks) is currently developing innovative solutions for robust and efficient network design. The project team, consisting of 4flow and mathematicians from the Combinatorial Optimization & Graph Algorithms (COGA) group at the Technische Universität Berlin, is developing new mathematical models and optimization algorithms for facility location and routing decisions. The goal is to be able to model and efficiently optimize very large and complex logistics networks despite uncertainty.

The developed solutions will be robust with respect to varying conditions and are thus ideal as a long-term solution that can meet everyday logistics requirements. The project will make use of case studies to ensure the feasibility of the new models and algorithms.

The algorithms currently available for the robust design of large-scale logistics networks cannot adequately realize the full optimization potential. The models used for planning and designing logistics networks today reproduce static conditions for the most part. This leads to planning results that are vulnerable to fluctuations of input variables. It is a matter of fact that such fluctuations exist in everyday logistics. For example, a high degree of variety in products and variants leads to fluctuations in demand. In addition to this, costs for transportation and logistics facilities depend greatly on volatile energy prices. Especially when selecting locations, the robustness of the planning result plays an important role, since the choice of location is a long-term strategic decision.

The three-year research project, supported by Investitionsbank Berlin, a local economic development bank, and the European Union

will last from August 2012 through July 2015. For more information in German, go to www.robunet.de.

About 4flow
4flow provides consulting, software and services for logistics and supply chain management. 4flow consulting offers one-stop management consulting, concept development and implementation support for logistics and supply chain management. 4flow vista is the standard software for supply chain design and optimization. 4flow turn is the web-based software for dynamic inventory optimization. 4flow management handles the routine planning, optimization and operation of clients' supply chain networks worldwide. 4flow research develops practical innovations, and conducts supply chain research relevant to the industry. 4flow academy offers training and further development for supply chain professionals. For more information, please visit www.4flow.com

About COGA
The core competencies of the Combinatorial Optimization and Graph Algorithms group are at the intersection of mathematics, operations research and information technology. The 30-member research group is financed primarily through third-party research funding and connects cutting-edge research with applications directly in the field. The COGA group is contributing its broad competency in network optimization, robust optimization and the development of algorithms to the project. COGA's main project tasks include mathematical modeling and defining the complexity of the issues being focused on as well as developing approximation algorithms and efficient heuristics. For more information, go to www.coga.tu-berlin.de.

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