The Chair of Logistics & Supply Chain Management is offering the following Project Study in cooperation with a global supplier of tooling, engineered components and advanced materials:

**Time-Variant Safety Stocks in Multi-Echelon Supply Networks Using Guaranteed-Service Approach**

**About the client:**
The US-based stock-listed company provides a broad range of applications tools, materials and processes to manufacturers in a wide range of end markets (e.g., aerospace & defense, automotive). The firm generates sales in equal thirds from North America, Western Europe and emerging markets.

**Problem situation:**
While foreign markets offer great opportunities, the problems with locating in a foreign country can be substantial, making site location, inventory, and transportation decisions a vital part of supply chain design. The company faces a challenging environment because of increasing customer service requirements and of higher supply uncertainties in some Asian regions. The project seeks to explore how to hedge against uncertainties using ‘better adjusted’ safety stocks levels. The recommended system aims at taking not only location but also timing criteria into account. For this purpose, ‘classical’ and recent facets of multi-echelon safety stock methods using guaranteed service approach shall be explored, applied and tested - in combination with time-varying safety stock approaches. The proposed planning ideas are to be evaluated using real-world data. Moreover, the approaches shall be integrated into an existing user-friendly decision tool. The thesis builds on previous results with a business partner.

**Selected research tasks:**
- to evaluate multi-echelon strategic safety stock methods
- to evaluate time-variant safety stock methods and its implementation in software products
- to enhance existing safety stock models using stochastic optimization
- to evaluate the developed system in regard to service levels, costs, benefits, etc. with the use of numerical examples
- to further develop a graphical user interface in order to visualize the recommendations

The project team will be coached and supervised by Dr. Martin Stößlein. Kick-off and regular milestone meetings are held via telephone conference. An introduction into multi-echelon safety stock optimization models will be provided by the instructor. Non-Disclosure Agreements are to be signed.

**Requirements:**
The project study targets students of the study-program TUM-BWL. Qualified candidates have attended the lecture 'Inventory Management', 'Global Supply Chain Strategy' or similar. An interest to 'deep dive' into business modeling using stochastic optimization is a must (the project study also prepares for Master studies at our chair). Excellent work attitudes are required. The thesis is to be written in English.

**Begin:** October 2013 (6-months part-time)
**Advisor:** Dr. Martin Stößlein (martin.stoesslein@tum.de)

For further information please see the Dr. Martin Stößlein in room 1569. Any interested student or group, please send your application (CV and transcripts of records) by email to me. Thank you.