The **Chair of Operations Management** of **TUM School of Management** is looking for an interested and qualified student to conduct his/her

Master's Thesis

on the topic

Dynamic Runway Capacity Management

Description:

Runway capacity is one of the main bottlenecks at major airports. Efficient runway capacity management (RCM) enables airports to serve more aircrafts with the resources already existing. In times of growing air traffic this is an essential factor to keep pace with competitors. Current practice at many airports is to schedule aircrafts on a first come first serve basis which is often very far from optimal. For static scenarios there exist several approaches to improve the planning. However, in reality exact information about starting and landing aircrafts is not available in advance. Thus, fast (re)planning is needed whenever new information is revealed. Furthermore, several specific constraints have to be considered depending on the airport.
The aim of this thesis is to improve the RCM at Munich Airport. Therefore, the process of RCM at Munich Airport shall be formalized. In a next step, different alternative policies for the RCM have to be developed. Those policies should be evaluated using realistic data within a simulation framework (e.g. AnyLogic or Java using the SSJ library).

Scope of work:

- Literature review to gain knowledge about static and dynamic RCM.
- Formalization of the RCM at Munich Airport.
- Development of different policies for dynamic RCM.
- Development of a simulation framework to evaluate the policies using realistic data.

Prerequisites:

This thesis is suitable for a *TUM-BWL*, *TUM-WITEC*, *TUM-WIN* or *Information Systems* student whose major is in the Operations and Supply Chain Management. The student must have knowledge in mathematical modeling and simulation. Experience in AnyLogic or Java using SSJ is advantageous.

Begin: as soon as possible

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Literature:

Farhadi, F.; Ghoniem, A.; Al-Salem, M. (2014) Runway Capacity Management – An Empirical Study with Application to Doha International Airport. *Transportation Research Part E.* **68**, 53-63.

Any interested student, please send by email your application together with your curriculum vitae and transcripts of records.