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# Allocation of Resources in Service-Oriented Computing
## – Multi-attribute Combinatorial Trading –

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**Abstract**

Considering computational resources as a utility is a novel and promising approach in distributed computing. A lot of research effort has been dedicated to establish appropriate technical architectures for split up and assignment of computational jobs to heterogeneous distributed computing resources. This research has been pooled in many national and international research projects under the term Computational Grid [Foster, Kesselman, 2004], Utility Computing or Service-oriented Computing. The general idea in these developments is the utilization of different resources, which are generally not under the users control for the execution of demanding computational jobs. A lot of effort has been spent on developing efficient technical methodologies for the distribution of computational jobs. However, from an economical perspective only little work has been done so far. Here, the major issue is the question about which job should be allocated to which resource under determination of time constraints and prices.

Key to this talk is the presentation of a novel and innovative allocation mechanism for trading Grid resources based on a multi-attribute combinatorial exchange (MACE) [Schnizler, Neumann, Veit, Weinhardt, 2006]. This allocation is computed by solving an integer program. Experiments are conducted that show possible computational solutions in allocation scenarios with up to 200 participants.

In the remainder of the presentation it will be shown, how fraudulent bidders may affect the robustness and stability of the obtained market-based allocations.

Foster, I., Kesselman, C. (2004). **The Grid 2nd Edition – Blueprint for a New Computing Infrastructure**. Vol. 2. Elsevier.

Schnizler, B., Neumann, D., Veit, D., Weinhardt, Ch. (2006). **Trading Grid Services - A Multi-attribute Combinatorial Approach**. In: European Journal of Operational Research, in Press.

Biographical Sketch:
Dr. Daniel J. Veit is a full professor of Business Administration and Information Systems at University Mannheim Business School, Germany. Prior to this position he was an assistant professor with University of Karlsruhe (TH), Germany, where he earned his habilitation degree in 2006 and his Doctorate in Economics and BA in 2002. He holds a Diploma (MSc-level) in Mathematics and Computer Science from University of Giessen, Germany. In 2003 he was admitted to the young researchers promotion program of Volkswagen-Foundation. He published a large number of articles on international conferences and in scholarly journals including Springer LNCS, ISeB and European Journal of Operational Research.

**3108 Etcheverry**
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**3:30PM-4:30PM**

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