Methods, Tools and Applications for Web-Based Integration of Supply Chains: Introduction to the Minitrack

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The web promises to enable smooth cross-organizational B2B integration. Recent web technologies such as XML-based industry standards, web-services (including web-service composition, coordination and transaction standards), agent technology, B2B integration hubs and the semantic web provide powerful tools to increase the efficiency of supply chains. Eventually, these technologies should enable the transformation of current static supply chains into dynamic virtual networks of enterprises. Although web-technologies remain evolving at a high pace, a (growing) gap can be observed between the state-of-the-art theories and practical applications. Most supply chains also include small and medium sized enterprises that may not be able to quickly adopt the recent technologies. Such companies may become the 'weakest link' blocking a supply chain as a whole to increase its efficiency and flexibility. Some claim that recent technologies such as agent and web-services may lower barriers for B2B integration. Others have said that these technologies are not yet ready for large scale applications to supply chains and propose Hub-based solutions, that are able to bridge technology gaps through custom made adapters and (semi-) automatic translations.

Currently, there exists a lack of empirically validated methods, tools and applications concerning the adoption of the latest web-based technologies to create efficient and flexible supply chains for supporting cross-organizational financial and logistic business processes. The minitrack serves as a platform to present and discuss research that addresses this gap. The minitrack focuses at solutions in the financial and logistics supply chains as in these area's there is a huge potential for application of emerging integration technologies and interesting problems and examples can be identified.

Out of several papers that were submitted, this minitrack carefully selected two excellent papers hat address and challenge the wide range of research topics and solutions that were briefly outlined in the above.

The first paper in this minitrack discusses the use of web coordination bonds as a Simple Enhancement to the current Web Services Architecture. The authors propose Web Coordination Bonds, analogous to the chemical bonds, as a set of such core artifacts for effective collaboration among web services. The paper demonstrates how Bonds can be employed to create (model) and enforce (deploy and execute) producer-consumer and shared-resource relationships, workflow scenarios, and atomic transactions.

The second paper in this minitrack deals with a Cooperative System to Support Inventory Leveling Negotiations. Negotiation between a party holding excess and the demanding party is a crucial issue in preventing excess inventory in logistics supply chains. The authors present a system to support cooperative negotiations aiming at levelling inventories of products and services, while stimulating the integration among them. The system proposed in the paper will be used by several Agencies within Brazilian Federal Government Defense Ministry, acting as a market for excess capacity of services and goods.

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