Editorial

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Collaboration and cooperation are essential for business partnerships, knowledge creation, and dissemination. In today's service and knowledge economy, virtual organisations (VO) are a valuable form for such endeavours, enabling organisations to utilise human capital, technology and information in innovative and more efficient ways. This is made possible by today's information-technology (IT) infrastructure, which bridges the spatial and time gap that used to separate different parts of the country and the world. More than that, a VO allows experiments to be performed that can evaluate different business and collaborative strategies before implementation. While this concept has been recognised in a number of instances, the task of implementation and validation remains to be elusive, particularly for VOs – as evidenced by the dearth of literature on this subject.

In this special issue of *IJSSS*, we have gathered a panel of international experts to examine whether today's IT infrastructure and evolving knowledge base have indeed accelerated and improved business operations, innovation and knowledge discovery. One of our objectives is to address this problem by employing a VO *couplet*. The first VO is a widely accepted one, in this case made up of enterprises that have teamed up to form a supply chain. The second one is a VO consisting of 'validators', whose role is to see whether any hypothesis – such as process improvement found by collaboration – can be substantiated and, more importantly, empirically verified. We call this couplet a VO^2 paradigm, or the *VO-squared* paradigm. Here, we concentrate on *construct validity* rather than *content validity*, suggesting that we are interested in testing the methodology in general, where the supply-chain case study is selected only for demonstration, and the concept can be generalised to other business enterprises. We will show that when implemented in a *service-oriented* and *cloud computing* architecture, such a VO^2 paradigm allows evolving validation of any claim of process improvement, knowledge-discovery and dissemination improvement, thus multiplying the value of collaboration and cooperation in the virtual space.

The following contributors have graciously penned innovative papers on this subject. Albert K. Toh and Qingyu Zhang, in their writing entitled 'A conceptual analysis of virtual supply chain collaborative network', suggest that in order to yield a competitive position, business-to-business interactions have become more networked and electronically connected in a supply chain. Organisations may collaborate across supply chain processes ranging from information exchange, coordination, cooperation, to close collaboration. Changing patterns of organisational forms and governance from extended enterprise to networked and virtual organisations are discussed in relation to

inter-organisational collaboration. As a new form of network organisation, the virtual network enterprise organises e-supply chain that is enabled by advanced information and communication technology. It was found that inter-organisational information systems for virtual supply chain and collaborative network organisation are promising areas of future research.

In their paper entitled 'Game-theoretic paradigms in collaborative research: Part 1 – theoretical background', Yupo Chan and Jeffrey McCarthy wish to better understand how to be successful in conducting collaborative scientific research among partners in a supply chain. The measure of success is validated by the implementation of research results among the sponsoring industries, resulting in economic advancement and other benefits. Our focus is the multi-party dynamics of knowledge acceptance, dissemination, and its translation into implementation. To understand the chemistry among participants, we review *game theory* and *information value theory*, both of which determine the effectiveness of collaborative research, considering the coexistence of cooperation and competition among participating enterprises.

In the companion paper 'Game-theoretic paradigms in collaborative research: Part 2 – experimental design', Yupo Chan and Jeffrey McCarthy examine the relationship between game theory/information value theory and the implication on field implementation of collaborative logistics-research results. They identify the circumstances under which research-result dissemination can lead toward a stable and fruitful relationship among all participants. An iterative experimental tool, consisting of a computational model component and a face-to-face gaming component, is proposed to empirically test the likely success of collaborative research, dissemination and implementation in today's information-based economy.

Finally, in their paper entitled 'Survey of SOA and cloud-based B2B e-commerce and supply chain applications', Chia-Chu Chiang, Albert K. Toh and Qingyu Zhang point out that, for a supply chain, service-oriented architecture (SOA) provides a flexible and standards-based approach to IT, employing a modular approach to delivering IT services. The ability of SOA to integrate with new services quickly and easily has attracted many companies to adopt SOA today. At the same time, cloud computing is now persuasive; it has unique capabilities in enabling efficient and cost-effective business processes. Since SOA and cloud computing share many common characteristics of service orientation for interoperability, this paper discusses the adoption of SOA for the future implementation of the cloud. Commercially available solutions are surveyed to show the current status and trends in this arena.

It can be seen that in this special issue, the international panel chooses to examine the integration of IT, communication technology, and transportation infrastructures among partners in a supply chain. An example enabler for such a VO may be an e-platform for the online management of

a   e-business processes among parties in a logistics chain

b   coordination/cooperation in trading practices.

This e-platform provides an interactive, interoperable and integrative web-based network for business-to-business e-commerce, well beyond the intermediate application to supply chains. The resulting SOA and cloud-based infrastructure are designed to experimentally identify the key ingredients of a participatory e-commerce portal, which facilitates

effective collaboration and interaction among all supply-chain participants in business operations, research and knowledge dissemination. Through a game-theoretic paradigm, scientific experiments can be performed in the virtual space to test out different ways to advance business practices in today's information-based economy.