
Editorial

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Biographical notes: Dickson Chiu, Founder of Dickson Computer Systems, received his PhD in Computer Science from the Hong Kong University of Science and Technology (2000). His research interests are in service science and information systems with a cross-disciplinary approach. He has published over 100 papers in journals and conference proceedings. He received a Best Paper Award in the HICSS conference (2004) and founded several workshops. He also serves the editorial boards of several journals and programme committees of many conferences. He is a Senior Member of both the ACM and the IEEE, and a Life Member of the Hong Kong Computer Society.

Ho-fung Leung is a Professor in Computer Science and Engineering at The Chinese University of Hong Kong. He leads research in intelligent agents, multi-agent systems, game theory, semantic web/ontologies and evolutionary computing. He is a Chartered Fellow of the BCS and a Senior Member of both the ACM and the IEEE. He is a Chartered Engineer registered by the ECUK and is awarded the designation of Chartered Scientist by the Science Council, UK. He received his PhD degree from University of London and DIC (Diploma of Imperial College) from Imperial College of Science, Technology and Medicine.

The global economy, as well as many organisations, is evolving to become service-oriented. In 2003, the IEEE Computer Society formally promoted services computing by creating a technical community for services computing. From a technology foundation perspective, services computing has become the default discipline in the modern services industry. In 2004, IBM Research officially adopted services computing as a research discipline (in computer science and engineering and mathematical science) and created the services computing professional interest community (PIC), which is the first dedicated research community to support services innovation research at IBM. In 2006, service science, management and engineering (SSME) evolved as one of IBM's academic activities.

Beyond the service oriented architecture (SOA), IBM proposed an emerging research and curriculum area called service science to the industry and academia, which is a combined discipline of technologies including computer science, industrial and systems engineering, management science, operations research, marketing, contracts and negotiations; as well as culture transformation and integration methods based on beliefs, assumptions, principles and values among organisations and humans. The creation, operation and evolution of such research and

practice raise concerns that range from high-level requirements and policy modelling through to the deployment of specific implementation technologies and paradigms and involve a wide (and ever growing) range of methods, tools and technologies. They also cover a broad spectrum of vertical domains, industry segments and even governments. In particular, intelligence in computing is required to achieve service excellence for the ever complicated requirements in the rapidly evolving global environment.

We have been seeking scientists, engineers, educators, industry people, policy makers, decision-makers and others who have insight, vision and understanding of the big challenges in service intelligence and service science (SISS). The mini-track Contract Management and Decisions Support in Services Science was held with the *39th Hawaii International Conference on System Sciences (HICSS-39)*, January 2006, Hawaii. Four papers were accepted for presentation. The first SISS workshop was held with the *IEEE EDOC2006 Conference* in October 2006 in Hong Kong and five papers were accepted for presentation. SISS was one of the conference themes for the *6th International Conference on Machine Learning and Cybernetics* in August 2007 in Hong Kong. Around 20 accepted papers

were related to the theme. In September 2008, the International Workshop on Service Intelligence and Computing was held with the *International Conference of Web Services* in Beijing, China.

To continue our efforts, this special issue on SISS consists of five exemplary articles. These articles can be categorised roughly into two groups, namely, intelligent service modelling and semantic service composition.

Three articles in this special issue focus on intelligent service modelling. In the paper 'Modelling and analysing reliable service-oriented processes', Zarras, Vassiliadis and Issarny introduce principled methods for the reliability analysis of web service-based business processes. They first translate BPEL specification to its corresponding UML model, annotate it with the necessary extensions for the specification of reliability properties and then further map it into block diagrams and Markov models for the subsequent computation of the process reliability.

In the paper 'Rule-based business process modelling and enactment', Goedertier, Haesen and Vanthienen develop a meta-model in which business rules as representation forms that can potentially define the semantics of business process models and business vocabulary. They also show how rule-based process models can be brought to execution in the context of service-oriented architecture.

In the paper 'Implementation of business processes in service-oriented systems', Král and Žemlička employ a service-oriented software system (SOSS) implementation approach to meet practical requirements on business processes. Their approach leads to a specific structured peer-to-peer architecture and requires development cycle aspects substantially different from the classical software development cycle.

Two articles in this special issue focus on semantic service composition. In the paper 'An approach for discovering/indexing and composition of distributed services', Zein and Kermarrec propose to describe and index a service by static properties (such as its location, its provider name, etc.), dynamic properties (behaviour) and interface (parameters, methods, etc.), in order to facilitate the association of an ontology and knowledge representation for clients to compose services dynamically.

In the paper 'Activity-centred and QoS semantics in service conceptual customisation and matchmaking', Galatescu, Greceanu and Neicu propose that the correlation of the service, process and request semantics facilitate the dynamic discovery of the services depending on the requestor's preferences and on the service advertised quality. They also show the steps for the verification of the semantic completeness and correctness of the services and requests and detail two complementary algorithms for the request-service matchmaking, based on functional semantics and on the service quality semantics.