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## **Editorial**

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### **Lorna Uden**

Faculty of Computing Engineering and Sciences (FCES),  
School of Computing,  
Staffordshire University,  
College Road, Stoke-on-Trent,  
Staffordshire ST4 2DE, UK  
Email: L.uden@staffs.ac.uk

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Welcome to V13N1 issue. There are four papers in this issue. The first paper is ‘A survey on automation of security requirements in service-based business processes’ by Fernando A.A. Lins, Erica T.G. Sousa and Nelson S. Rosa. According to these authors, companies using service-oriented computing (SOC) are reluctant to communicate over the internet without guarantees that secure actions have been adequately used. This paper provides a holistic view of current initiatives and tools to model and enforce security requirements in service-based business processes along with open research and practical challenges on this subject.

The focus of this study was to present current initiatives on the automation of business processes considering security requirements. This study classified these initiatives into three main groups focusing on modelling, translation and enforcement mechanisms. Some of these works have contributions in one or more groups, while they can be considered viable options to addresses some of the most relevant security-aware business process automation issues.

In each one of the presented groups, a comparative overview was performed to evaluate the research initiatives, and the open research challenges were described. The main idea is to provide theoretical and practical support for industrial readers and software designers to model, translate and enforce security requirements for business processes. The intention is that this work can serve as a source of theoretical and pragmatic ideas for those who want to execute their business processes having in mind security concerns.

The second paper is ‘Q-DWSO: hybrid approach for QoS-aware dynamic web services orchestration’ by Reena Gupta, Raj Kamal and Ugrasen Suman. According to these authors, quality of service (QoS) is a non-functional property of a service and plays an important role in a dynamic web services (WSs) selection during execution of a task and in the overall composition process. A dynamic selection takes into account the different QoS attributes, which bind with each WS.

The paper considers the use of QoS-aware WS selection scheme for local optimisation. This scheme ensures the composition in trustworthy environment on the basis of trust rate of SPs. The five basic QoS attributes used here response time, throughput, availability, reliability, and execution cost. These authors argue that this approach satisfies the optimality at local level using QoS attributes and reduces the search time complexity exponentially. Locally optimised service compositions simplify the process of global optimisation for CWS. The proposed approach also considers all the

orchestration structures such as sequential, parallel, switch, loop, and hybrid structures to provide a better performance.

According to these authors, their approach provides a time complexity efficient composition when used along with the usages of hybrid orchestration structure. A comparison with the existing approaches shows that the proposed approach is efficient and reduces the computational time complexity. However there are limitations such as: scaling up; QoS constraints thresholds; UDDI registry updating and loops and conditional structures.

The third paper is ‘Rational graph: a model for complex networks’ by Ameera Jaradat. According to this author, real life networks like social, biological, and technical networks have amazing characteristics. These networks grow rapidly by the continuous addition of new nodes without following any organisation. Despite their huge sizes, these networks have a short path length, high clustering, and power law degree distribution. The author in this paper investigated the topological characteristics of these types of networks and explored the main graph models that have been proposed to represent the dynamics and growth of these networks.

In this paper, the author presents a graph model that closely imitates complex networks. The proposed model takes off from a random graph. This graph then grows by the addition of new connections and new nodes in a meaningful way that imitates real life interactions, and generates a graph with structural properties similar to those observed in complex networks.

The results showed that the model produces networks with a small characteristic path length, a high clustering coefficient, and a scale free degree distribution. It would be useful in future, to study different types of real life.

The final paper is ‘Big data multi-query optimisation with Apache Flink’ by Radhya Sahal, Mohamed H. Khafagy and Fatma A. Omara. According to these authors, Flink is an open-source Apache-hosted big data analytic framework for processing batch and streaming data. For historical data processing (batch), Flink’s query optimiser is built based on techniques which have been used in the parallel database systems. Flink query optimiser translates the queries into jobs which are repeatedly submitted with similar tasks. Therefore, exploiting the similarity of tasks can avoid redundant computation.

In their paper, Flink multi-query optimisation (Flink-MQO) system has been proposed and built on top of Flink software stack. It is considered as an add-on to Apache Flink to optimise multi-query based on data sharing. The Flink-MQO system exploits the data sharing opportunities of selection operators to eliminate the redundancy and duplication of data in-network movement of multi-query. Experimental results show that the exploiting of shared selection operators in big data multi-query can provide promising query execution time. Therefore, Flink-MQO system can potentially be used in the stream processing to improve the performance of the real-time applications. It would be useful to extend the proposed Flink-MQO system to address the effects of sharing ratio through multi-query in the case of batch and streaming processing.