

## Guest Editorial Preface

# Advances Services for Big Data and Cloud Computing (Part 2)

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The size of datasets produced by large-scale scientific experiments, sensor networks, and the Internet of Things (Singh, Tripathi, & Jara, 2014) is increasing, with the exabyte range to be reached in the near term. Such large datasets need special techniques, approaches, and tools, to allow researchers to gain valuable insights from them, this emerging techniques to deal with huge quantities of data is the so-called “Big Data”. In the same way, Cloud Computing has gained momentum, as it combines flexibility, interoperability, and control over expenditure. It has created the opportunity for a new paradigm, with advanced services and changes also in the way people and organizations work and collaborate. All the computing infrastructure resources are provided as services over the Internet, giving raise to business models called “X as a service (XaaS)” where X is a generic resource that could be, for example, software, hardware, data storage, or network.

Interdisciplinary research is required to ensure a coordinated development of multifaceted solutions that will allow the combination of the advantages of both these innovative scenarios. The reader will, thus, find an articulated discussion of different aspects that provide insights for a deeper understanding of research efforts in this fascinating area.

Planning and management of resource allocation when the cloud infrastructure is geographically distributed is not trivial (Fiore, Palmieri, Castiglione, & De Santis, 2014). While geographical distribution improves data availability, the additional complexity it brings requires the refinement of modeling techniques in order for these to scale correctly to match the wide state space, achieve adequate performance, and be flexible enough so that various configuration options of architecture and workload can be supported. This is the subject discussed by Enrico Barbierato, Marco Gribaudo, and Mauro Iacono in *Modeling and evaluating the effects of Big Data storage resource allocation in global scale cloud architectures*, who apply Markovian Agents (MA) to model the reliability of storage allocation policies.

An important respect where the benefits of this coordinated development are readily visible is the Web of Data. Large amounts of interconnected data are made publicly available through different domains in an open environment, taking advantage of structured data sets freely accessible all over the world, related to many kinds of information. Concerns regarding integration, interoperability, security, and distribution should be addressed by application and services that have to manage this massive knowledge base. In the context of Cloud computing, several solutions have been proposed to address some of the security issues, in particular availability and access control, as well as efficient mapping techniques that organize efficient connection and delivery of data, leading to the Data as a Service (DaaS) model.

Quian He, Baokang Zhao, Liang Chang, Jinshu Su, and Ilsun You in *PSSRC: A Web Service Registration Cloud based on Structured P2P and Semantics* introduce a Web service registration system that combines support for fuzzy semantic Web service queries and ability to handle global-scale registration and access requirements on Web services.

Antonio J. Jara, Luc Dufour, Gianluca Rizzo, Marcin Piotr Pawlowski, Dominique Genoud, Alexandre Cotting, Yann Bocchi, and Francois Chabbey discuss in *I-BAT: A Data-intensive Solution based on the Internet of Things to Predict Energy Behaviours in Microgrids* a prediction system for microgrids based on a wireless network of sensor devices, which can forecast loads with high accuracy.

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