

---

## Editorial

---

### Francesco Palmieri\*

Department of Industrial and Information Engineering,  
Second University of Naples,  
Via Roma, 29 - I-81031 Aversa (CE), Italy  
Email: fpalmier@unina.it  
\*Corresponding author

### Antonio Skarmeta

Department of Information and Communication Engineering,  
Facultad de Informática,  
University of Murcia,  
Campus de Espinardo 30100 Murcia, Spain  
Email: skarmeta@um.es

**Biographical notes:** Francesco Palmieri is an Assistant Professor at the Second University of Naples. He received his MS degree and PhD in Computer Science from the Salerno University. His research interests concern advanced networking protocols and architectures and network security. He has been the Director of the Networking Division of the Federico II University of Napoli. He contributed to the development of the internet in Italy as a senior member of the Technical-Scientific Advisory Committee and of the CSIRT of the Italian NREN GARR. He serves as the Editor-in-Chief of an international journal and participates in the editorial boards of other ones.

Antonio Skarmeta is Full Professor at the the University of Murcia Spain. He received the MS degree in Computer Science from the University of Granada and BS (Hons.) and the PhD degrees in Computer Science from the University of Murcia. He has work on different research projects in the national and international area, like Euro6IX, 6Power, Positif, Seinit, Deserec, Enable and Daidalos, SWIFT, IoT6 and Openlab. His main interest is in the integration of security services at different layers like networking, management and Internet of Things. He is associate editor of several publications. He has published over 90 international papers and being member of several programme committees.

---

## 1 Introduction

The emerging large-scale distributed computing paradigms, such as clouds and grids, allow their users to locate applications/services, computing and storage resources anywhere in the world, relying on a completely ‘transparent’ transport infrastructure, according to an abstract model that hides the resources’ specific physical location by providing declarative interfaces to services known as Web Services, including messaging protocols, standard interfaces, directory services, as well as security layers, for efficient/effective business applications’ integration. Such interfaces can be considered

like some kind of internet-oriented integration adapters providing standardised features to represent and provide data in a universally-readable fashion to internet-based applications. They will support the process of merging the existing heterogeneous information resource available on the internet into an abstract imaginary space where all the available entities can be accessed in a common way.

The internet is indeed the basis of all the above paradigms; it has grown very fast in the last years in its pervasiveness and coverage, empowering a large variety of network based cooperative systems, ranging from Ubiquitous and Pervasive Computing infrastructures and web-based systems to the Internet of Things (IoT), gaining a significant attention from both commercial and non-commercial organisations.

This scenario, despite its great potential impact on the Information Society, also raises new performance, security, privacy, and multi-tenancy support concerns and poses new research challenges associated to the involved communication and service delivery solutions. Inevitably, these challenges will influence the next generation internet by affecting the migration process from the current internet, that has already reached its full technical maturity towards its future vision.

Accordingly, the goal of this special issue has been featuring latest advances and directions in this amazing evolution process by exploring the potential of new architectures, protocols, services and applications in the next generation Future Internet environment.

We are sure that the experiences presented in this Special Issue may significantly contribute to the work and studies conducted by academic researchers, industry professionals, students, and everyone interested in this subject wanting to extend their knowledge about new service models, technologies and advanced security perspectives, within the above scenario.

## 2 Special issue contents

This special issue is composed of seven contributions, carefully selected according to their subject and accepted based on merit contents. These works cover a variety of topics, including cloud computing, advanced web services, smart buildings and security.

The available distributed computing/storage paradigms such as Grids and Clouds are creating the opportunity to realise new services and business models that decrease time to market, improve operational efficiencies of both public and private organisations and engage customers in new ways.

In this environment, Pop et al. present a novel reputation-based near-optimal genetic scheduling algorithm for independent tasks in inter-Cloud environments. It uses load-balancing as a way to measure the optimisation impact for providers and minimum execution time as a metric for user performance.

From a different point of view, Amato and Venticinque present a solution for a multi-objective constrained brokering among Cloud Service Level Agreement (SLA) proposals from different Cloud vendors, implementable within a Cloud Agency where specialised agents offer vendor-agnostic SLAs characterised by constraints and objective functions.

In a more service-oriented perspective, Yin and Xu propose a unified QoS-based framework for web service recommendation, providing various recommending strategies and relying on three service-neighbourhood enhanced QoS prediction models based on Probabilistic Matrix Factorisation.

On the other hand, Robles et al. define a model for variability in prosumer service personalisation, considering the dependencies between user personalisation actions. Such model can be integrated in customisable service templates, and is associated to a declarative language for the specification of the above dependencies that can support the prosumers through the personalisation process in a proactive way, allowing the semiautomatic generation of assisted personalisation processes.

The ubiquitous presence of network services and the availability of sophisticated sensor and control devices represent a great opportunity for the deployment of new intelligent services fostering the creation of a more efficient and sustainable environment.

Accordingly the work by Moreno et al. illustrates a IoT-based user-centric smart building management system, providing users with customised comfort services, control abilities and feedback about their energy consumption as well as personalised steps for saving energy according to an environmental-conscious approach.

The diffusion of these new network-based services open new security challenges to be faced by using flexible and effective techniques able to operate with very different and heterogeneous devices and technologies.

To cope with these problems Huang et al. present a new encryption approach, called Secure Feedback Encryption Method supporting cloud file storage and delivery services. In this approach, plaintext blocks are encrypted by using three security mechanisms, including a sequential-logic style encryption method, a three-dimensional operation and a dynamic transition box. The purpose of these mechanisms is increasing the encryption complexity and unpredictability of the generated ciphertext in order to reduce the probability of the encryption process being cracked.

Finally, Li et al. propose a flexible and scalable anonymous authentication scheme for anonymous cloud access services, relying on attribute-based signatures, that can be used to realise fine-grained access control in several internet-based applications (e.g. online e-book services such as Safari online), which need to ensure privacy to their users.

### **3 Acknowledgements and thanks**

We would like to express our sincere appreciation of the valuable contributions made by all the authors and our deep gratitude to all the highly qualified anonymous reviewers who have carefully analysed the assigned papers and significantly contributed to improve their quality.

Our special thanks go to Prof. Fatos Xhafa and Prof. Leonard Barolli for inviting us to prepare this special issue and to Prof. David Taniar, Editor in Chief of the *International Journal of Web and Grid Services* for his support throughout the entire publication process.