

Welcome message for the Special issue on: IoT-as-a-Service from the Editors-in-Chief

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On behalf of the Editorial board, we welcome you to the inaugural issue of the ICST Transactions on *IoT-as-a-Service*!

We are delighted to launch this new transactions journal after a preparatory process that has received encouraging support from the Editorial Board and from ICST / EAI.

The Internet of Things (IoT) era is widely seen as looming just around the corner, expected to have a significant impact on most aspects of entities of all kinds, from citizens through enterprises small and large to government bodies. The amount of smart devices is huge and grows in a staggering rate, while connectivity gets a wider coverage. Smart objects get immersed in everyday life and the amount and variety of contextual data they can produce, or the actions they can take on their immediate environment, is enormous. At the same time smart objects are becoming more capable and sophisticated by having stronger processing power, larger amounts of storage, and longer battery life.

For this trend to have a big impact, be successful, and be widely adopted and useful it needs to be tightly integrated with the most advanced operational technology trend manifested by a cloud backed “Everything as a Service”. IoT poses various specific challenges, which are not yet covered by existing cloud offerings, chief among these are the heterogeneity, security and scalability issues. In addition, developing and deploying IoT based applications should be made as accessible as possible such that the entry barrier for new innovations in this area is lowered. Thus, an appropriate cloud should support a high level of “as a service” paradigm. This deployment paradigm will enable the easy adoption of IoT based services and applications by end users, while calling for smart objects providers as well as platform middleware

providers to architect their solutions accordingly. To maximize impact and adoption, the development of such newly created applications should be made as accessible as possible. Moreover, the same rule of thumb applies also for the ingestion and exposure of smart objects via the architected platforms. The supporting business model would support a pay-as-you-go paradigm, enabling small to large entities to participate and contribute.

In particular, this transactions journal concentrated around contributions from the following areas:

- Smart objects as a service
- IoT marketplace – for offering IoT based applications and services
- API economy – for easier and tighter integration
- Semantic Web technologies for IoT: registry, storage
- IoT delivery platforms – existing and emerging platform and architectures for exposing and interacting with IoT
- Non Functional Requirements (NFR) for IoT – security, scalability, responsiveness and more
- Standardization – standard areas needed
- Business models
- IoT DevOps
- IoT data management and related analytics
- IoT application deployment success stories
- Mobile First IoT: mobile backend as a services (MBaaS) and smartphone as data prosumers
- Mobile technologies as the IoT Server Gateway

This inaugural issue presents five scientific contributions.

The first paper, by B. Anggorojati et al. presents a novel platform for the deployment and execution of content-centric Machine-to-Machine (M2M)

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applications, which relies on a local cloud of gateways, recently developed and tested within the BETaaS European project.

The second paper, by I. Montes et al. handles problems faced in infrastructure coverage and capacity needed by future IoT applications, by having service providers engage in mutually-beneficial modes of collaboration.

The third paper, by M. Fazio et al. discusses challenges the programmable embedded IoT systems may pose to the development of Assistive Technologies (ATs), with particular reference to the Human-Computer Interaction (HCI). The proposed solution decouples the Assistive Technologies tools from the computers and/or ICT systems.

The fourth paper, by H. T. Tran et al. discusses challenges faced by IoT based services due to the foreseen inter-dependencies between a plethora of components comprising the complete solution; each component having its own separate lifecycle. This paper presents a vision of service co-evolution in IoT, based on an agents' architecture.

The fifth paper, by L. Maglaras et al. presents a social perspective of ad hoc vehicular networks and propose novel ranking, clustering and routing methods, including also security issues that arise from the interconnection of vehicles.

For the preparation of this first issue we would like to acknowledge the work of all our editors, reviewers and authors who have positively supported this publication initiative. We will be happy to receive from our readers any suggestions, including possible proposals for future special issues, which may contribute to further maintain the high scientific quality and relevance of this journal.

We hope you will find this first issue thought provoking for your research in the field of IoT Systems and worth considering for your future dissemination work.

About the Editors-in-Chief

Benny Mandler received his B.Sc. with honours from the Vesalius College in Brussels (VUB), majoring



in computer science with a minor in social sciences. He received his M.Sc. from Boston University. Mr. Mandler is working as a research staff member in IBM's Haifa Research Lab and has more than 20 years of professional experience in distributed software systems research, design, and development.

His main areas of expertise include storage (focus on advanced file systems) and high availability and group communication systems. Mr. Mandler has published several papers, has issued numerous patents, and has represented IBM in several standard bodies. In his current position Benny is the coordinator of the EU FP7 project *COMPOSE* focusing on the creation of an IoT platform.



David Carrera received the MS degree at the Technical University of Catalonia (UPC) in 2002 and his PhD from the same university in 2008. He is an associate professor at the Computer Architecture Department of the UPC. He is also an associate researcher in the Barcelona Supercomputing Center (BSC) within the "Autonomic Systems and

eBusiness Platforms" research line. His research interests are focused on the performance management of data center workloads. He was a summer intern at IBM Watson (Hawthorne, NY) in 2006, and a Visiting Research Scholar at IBM Watson (Yorktown, NY) in 2012. He has been involved in several EU and industrial research projects. He received an IBM Faculty Award in 2010. He is an IEEE member.