Editorial

J. Gerber* and A. Rindos

IBM, Center for Advanced Studies (CAS),
3039 E Cornwallis Road,
Research Triangle Park, NC 27709, USA
Email: jgerber@us.ibm.com
Email: rindos@us.ibm.com
*Corresponding author

Biographical notes: J. Gerber is the Global Program Manager for the IBM Cloud Academy. Her focus ranges from partnerships focused on university research and classroom projects to IBM 'Built on Cloud' entrepreneurship projects and hackathons, to middle school workshops introducing CyberSecurity and Design Thinking. Prior to joining the IBM Cloud Academy, she led the IBM Academic Initiative program and has extensive experience in leading technical enablement and routes to market for cloud and cloud related technologies. She has held leadership roles within WebSphere marketing, developerWorks, IT strategy and architecture services, middleware services, and the former personal computing division. She earned her degree from the University of Illinois – Urbana/Champaign and is based in RTP, NC.

A. Rindos is currently the Director for the IBM Cloud Chief Technology Office, and also heads the Research Triangle Park Center for Advanced Studies (CAS; IBM North Carolina university relations) and IBM Cloud Academy. Most recently, he was the WW CAS Leader (for 29 centers), and has previously headed the WebSphere Technology Institute as well as performance for Tivoli and Networking Hardware divisions. He is a member of the IBM Academy of Technology, an IBM Senior Technical Staff Member, as well as an NC State Adjunct Associate Professor. He joined IBM in 1988, after receiving his PhD in Electrical Engineering from the University of Maryland. Prior to IBM, he was a Neurophysiologist at the National Institutes of Health in Bethesda MD.

Cloud computing continues to be a disruptive technology, enabling business organisations as well as K-12 and higher education to be more responsive than ever to user demands. While the cloud is focused on achieving economic advantages and infrastructure flexibility with scalability, the evolution of cloud is bringing more services oriented to specific application areas such as machine learning, AI, security, data collection, and data analysis. A report from McKinsey's Silicon Valley group[1] has found that "enterprises are planning to transition IT workloads at a significant rate and pace to a hybrid cloud infrastructure, with off-premise environments seeing the greatest growth in adoption" by 2018. Additionally, cloud service providers are evolving to offer the availability of pre-tested and more secure run-time and API services where agile development cycles can accelerate innovation. For academic researchers cloud computing enables teams across multiple institutions to quickly collaborate from concept to prototype with the ability to conduct real-time demonstrations with key stakeholders. Students can also build critical skills as they can tackle real-world issues while

Copyright © 2017 Inderscience Enterprises Ltd.

connecting with a global network of entrepreneurs and developers. The power of cloud platform services can bring machine learning, natural language processing and deepQA services to any project or user – be it from research or student communities.

Cloud computing aligns with a number of challenges that most public sector and educational institutions face. These challenges include reducing the costs of information technology, optimising services and making information and resources available and secure whenever and wherever they are needed. Additionally, cloud solutions can help with meeting new and evolving federal, EU, and country regulatory and reporting requirements/laws. Some of the best practices that have emerged to address these challenges range from consolidation and conservation of resources to improving student success and accelerating scientific research or becoming entrepreneurs.

ICA CON was established to provide the IBM Cloud Academy community with a forum for getting together annually to share global research, experiences and best practices around this transformational and disruptive IT paradigm. The 3rd International IBM Cloud Academy Conference (ICA CON 2015) was held in Budapest, Hungry from 21–23 May 2015 on the campus of Budapest University of Technology and Economics (BME). That conference brought together over 100 presenters and participants from 20 countries. The conference had over 40 oral presentations, numerous poster sessions and featured invited keynote talks by industry and academic experts. The conference continued to confirm that cloud computing is indeed delivering its promises within the education arena.

From ICA CON 2015, eight papers were selected for this special issue that target the following research issues in cloud computing:

- integrating mobile internet of things
- enhancing MongoDB NoSQL datastores
- using containerisation (Docker) technologies
- achieving security for PaaS implementations
- standardising cloud persistent-storage with an API service
- optimising critical applications in infrastructure-as-a-service clouds
- aligning data analysis with capacity planning
- realising the benefits of a hosted collaboration platform.

As cloud computing provides the backbone for technologies which enable smart cities and homes, smart grids, intelligent transportation systems and healthcare – these ICA CON papers published with the support of the *International Journal of Cloud Computing* will help those who are deploying cloud-based computing models in an era of cognitive computing. With some analysts estimating that by 2020 every person on the planet will possess between 5 and 10 embedded systems, these papers provide insights regarding how the integration of cloud technologies can enable academic institutions to efficiently meet the real needs for interdisciplinary educational and research approaches, while achieving efficiency and compliance requirements.

Acknowledgements

We would like to thank the ICA CON 2015 authors for their contributions, including those whose papers are not included in this special issue. We also would like to acknowledge thoughtful work from many reviewers, specifically those from the Budapest University of Technology and Economics, who provided valuable evaluations and recommendations.

Notes

1 IT as a service: From build to consume; September 2016; Arul Elumalai, Irina Starikova, and Sid Tandon – http://www.mckinsey.com/industries/high-tech/our-insights/IT-as-a-service-From-build-to-consume.