Editorial

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Biographical notes: Carol Hernandez is a senior technical staff member and Cloud Solutions Architect responsible for developing reusable solution architecture patterns and ensuring the successful design of cloud solutions that adhere to IBM Cloud architecture and best practices. Prior to this role, she has led engagements with potential partners and universities that helped identify cloud requirements and opportunities in the automotive and public sector industry verticals. Before joining the cloud organisation, she has also led the architecture design and implementation of various virtualisation features and virtualisation management solutions for IBM Enterprise Systems. She joined IBM in 1998 after earning her PhD in Electrical and Computer Engineering from the Carnegie Mellon University in Pittsburgh, PA.

Andy Rindos is currently the Program Director in the strategic customer success organisation for IBM Watson and Cloud Platform. He also heads the Research Triangle Park Center for Advanced Studies (RTP CAS; IBM North Carolina university relations), WW CAS network, US university relations and the IBM Cloud Academy. Most recently, he was the Program Director for the Emerging Technology Institute for IBM Cloud (previously the IBM Middleware Chief Technology Office), and has previously headed the WebSphere Technology Institute as well as performance for the IBM Tivoli and Networking Hardware divisions. He is a member of the IBM Academy of Technology, and Adjunct Professor at the NC State and Duke Universities. 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 was at the forefront of digital transformation in 2017 and the rate of cloud adoption continues to rise in 2018. According to Forrester, the total global public cloud market will be $178 billion in 2018, up from $146 billion in 2017. Furthermore, enterprises are considering multi-cloud provider strategies to reduce risk and avoid

vendor lock-in. IDC has forecasted that, by 2020, over 90% of enterprises will use multiple cloud services and platforms.

As cloud becomes mainstream and more data and applications move to the cloud, there is an increased focus on core security practices, DevOps automation, cloud-native application design practices and achieving operational efficiency in a multi-cloud environment. According to Gartner, by 2020, more than 50% of enterprises will run mission-critical, containerised cloud-native applications in production, up from less than 5% today.

Cloud computing also continues to enable innovation and business transformation across industries driven by emerging technologies such as artificial intelligence (AI) and machine learning, virtual and augmented reality, blockchain, edge computing and digital twin, to name a few. Education is no exception; according to MarketsandMarkets, higher education expenditure on cloud-based infrastructure and application services will reach $2.7 billion by 2021 from $788 million in 2015, with a CAGR of 22.3%. AI and cloud are enhancing the learning and campuses experiences and enabling dynamic exchanges and participation between faculty, students, and parents, to improve student success and accelerate scientific research.

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 4th International IBM Cloud Academy Conference (ICA CON 2016) was held in Edmonton, Canada from June 2–3, 2016 on the campus of University of Alberta. The 5th International IBM Cloud Academy Conference (ICA CON 2017) was held in Wroclaw, Poland from May 24–26, 2017 on the campus of Wroclaw University of Science and Technology. The combined conferences brought together over 250 presenters and participants from 30+ countries. There were over 70 oral presentations, numerous poster sessions and featured invited keynote talks by industry and academic experts. These conferences underscore the importance of cloud computing in the education sector.

From ICA CON 2016 and ICA CON 2017, eight papers were selected for this special issue that target the following research issues in cloud computing:

- cloud analytics and IoT platforms for education

- achieving security in cloud and multi-cloud environments

- evaluating performance in the cloud

- achieving isolation in multi-tenant cloud environments.

Acknowledgements