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PANEL

COMPETENCY-BASED APPROACH TO INFORMATION SYSTEMS PROGRAM DEVELOPMENT: GUIDANCE FROM THE MSIS 2016 GLOBAL COMPETENCY MODEL

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Abstract:

The panel has three objectives: First, it will present multiple perspectives on competency-driven approaches to developing and evaluating degree programs in Information Systems and compare the competency-driven approach to earlier, teaching topic or body of knowledge –driven approaches. Second, it will introduce the (nearly) completed version of the MSIS 2016 global competency model to the members of the global IS community and celebrate IS community's efforts to improve the quality of graduate education. Third, the panel will discuss the essential role the competency-driven approach has as a foundation of MSIS 2016.

Keywords: MSIS, IS curriculum, competency model, IS education

I. INTRODUCTION

The process to revise the MSIS 2006 curriculum recommendation (Gorgone et al., 2006) was officially launched in December 2014 after a careful preliminary evaluation period and worldwide open and transparent selection process for the members of the globally representative task force. The task force with members from three continents and six countries started its work in January 2015. By the time of AIS SIG-ED 2016, the MSIS 2016 development process has been featured in a rich variety of IS conferences and other meetings, including ECIS 2015, PACIS 2016, AMCIS 2015, MALC 2015, AIS SIG-ED 2015, ECIS 2016, PACIS 2016, and AMCIS 2016. In addition, the MSIS 2016 task force has maintained the website msis2016.org, which has offered the members of the IS community an opportunity to provide feedback either on the website, directly to the task

force, and through four separate surveys. Finally, the task force has released multiple interim deliverables (June 2015, March 2016, July 2016, and August 2016; available on the project website) for comments and specific feedback. Thus, the MSIS 2016 process has been designed to be highly participative and broadly representative of a variety of viewpoints from around the world.

It is very likely that by AIS SIG-ED 2016, the MSIS 2016 Global Competency Model will have been submitted for approval to both ACM and AIS (at the time of writing, the first steps of the approval processes have already been taken after the last scheduled face-to-face meeting of the task force at AMCIS 2016). Therefore, AIS ED-SIG 2016 will be an excellent opportunity to announce the launch of MSIS 2016 and discuss its role and implications. The panel will have three objectives: First, it will present multiple perspectives on competency-driven approaches to developing and evaluating degree programs in Information Systems and compare the competency-driven approach to earlier, teaching topic or body of knowledge –driven approaches. Second, it will introduce the (nearly) completed version of the MSIS 2016 global competency model to the members of the global IS community and celebrate IS community's efforts to improve the quality of graduate education. Third, the panel will discuss the essential role the competency-driven approach has as a foundation of MSIS 2016.

II. DESCRIPTION OF THE TOPIC

As discussed above, this panel will feature a (nearly) completed version of the MSIS 2016 global competency model. Thus, the panel can serve as a celebration of the IS community's collective achievement in developing IS graduate education further. We propose to accomplish this by emphasizing a specific focus area of the MSIS 2016 process: moving from a content-driven program/curriculum model to a competency-driven model.

In the competency-driven approach to specifying educational programs, the focus is on graduating students' competencies developed through program learning outcomes. The relevancy of this model (see, for example, Bowden 2004) was identified already in early preparatory discussions regarding new directions for the MS curricula. For example, in Topi et al. (2014), two nationally leading institutions — one from Ireland and another from Australia — independently cited Bowden's thinking as an influence underlying their revised curriculum models. When the task force started its work, its members from around the world emphasized the importance of the competency-driven approach particularly at the graduate level and proposed various regional models as possible sources for consideration. Particularly in Europe, there has been a considerable level of interest in IS competencies during the last decade, leading to the development of the e-CF and SFIA models (see below).

There are multiple reasons why choosing the competency-driven curriculum model is beneficial:

- It moves the focus away from what is being taught to what the students are expected to learn. This, in turn, will move us from an instructor-led educational model to a model that considers a significantly broader range of contextual and pedagogical models for reaching the desired outcomes.

- It will help us focus more on the students' preparation for their professional roles without reducing university education to pure career preparation (assuming the specified program outcomes include high-level general competencies that enable life-long learning and career progression in addition to specific skills for early-stage careers).

- It will allow us to strengthen the professional image of the IS field by articulating explicitly to potential employers what the competencies of IS graduates are.

- The competency-driven model will also help us as a field understand better what our field's specific competency-development goals are compared to other fields, forcing us to consider our identity and focus compared to other disciplines within computing and various domains (including business).

A competency-driven, program outcome focused approach to specifying degree programs in Information Systems education can be viewed from a rich variety of perspectives that may or may not be mutually compatible. This panel will introduce a number of different contexts in which this approach either is currently in use or will be applied in the near future. Some of the perspectives include the following:

- The European e-Competence Framework (e-CF 2016; www.ecompetences.edu) is currently in version 3.0, and discussions regarding version 4.0 have started. This framework is the first sector-specific implementation of the European Qualifications Framework (EQF), and it specifically intends to articulate core competencies for ICT (IT) professionals.

- The Skills Framework for Information Age (SFIA 2016; originally introduced in 2000 and currently in version 6.0) is a framework originally developed by a consortium led by the British Computer Society and currently maintained by the SFIA Foundation. A demonstration of SFIA's broadening global appeal is the fact that IEEE-CS announced in 2012 that it will adopt SFIA to "define professional skill levels for its future information technology professional education products" (IEEE-CS, 2012).

- The European Commission and a consortium of partner organizations have established a European Framework for ICT Professionals (ictprofessionalism.edu) to "support the growth of digital skills in Europe." One of the goals of this initiative is to bring SFIA and e-CF closer to each other.

- Many national and international organizations are collecting and organizing occupation specifications based on their competency requirements in the context of specific tasks. For example, the U.S. O*NET (developed sponsored by the US Department of Labor/Employment and Training Administration) provides a collection of 974 occupations and through the website (www.onetonline.org) gives a competency-based view of the requirements for these occupations.

- Other computing curriculum development projects organized in the context of the ACM have already moved to a competency-driven approach, with IT 2017 development project for undergraduate degrees in Information Technology as the primary example.

- Various accreditation approaches and models around the world are increasingly often focused on program educational outcomes and graduating student competencies instead of specifications of curriculum characteristics.

- Given this focus on learning outcomes in industry and academia, both academic administration and faculty members responsible for curriculum management and development have to understand the requirements of the outcome-focused expectations and be able to demonstrate their programs' ability to help its student achieve the desired outcomes. This is true at all the levels (university, school, department, and program).

As described below, the panel will identify similarities and differences between these viewpoints, revealing opportunities arising from both distinctions and common connecting themes.

Overall, the panel will contribute to the conference in a significant way because it will stimulate a lively discussion on current trends in IS skills and curriculum design. The panel will surface and explore the tensions associated with developing a global IS curriculum that is both fresh enough to reflect the most advanced current thinking but yet also addresses the need to maintain and nurture the core competencies that have been consistently identified and emphasized over many years in the IS discipline.

III. STRUCTURE OF THE SESSION

The panel will start with a brief introduction by the moderator to provide an overview of competency-driven program design and its role in the MSIS 2016 project. The event continues with three segments each focusing on a category of viewpoints: 1) existing regional competency

models and industry relationships (Carvalho and Donnellan); 2) administration at various levels (Brown, Shen, Tan, and Thouin); and 3) competency-based approaches in accreditation and curriculum development (Karsten and Topi). Each panelist within a category will have 3-4 minutes to present key elements of their perspective followed by a brief integrative conversation regarding that category. Once all categories will have been covered, the general discussion involving all panelists and members of the audience will follow. Concluding remarks will provide a summary of the key themes.

Overall, at least half of the time allocated for the panel will be reserved for discussion. The primary role of the panelists' contributions is to build a foundation for active conversation among all session participants, including both panelists and the audience members. The discussion will contribute toward the session's goals of collecting feedback, learning about practical applications of competency-driven program development processes, and further developing ideas for improved master's level education in Information Systems. In addition, the session will give participants an opportunity to discuss MSIS 2016 and ask questions regarding the competency model and its application to curriculum development.

IV. PANEL PARTICIPANTS

Sue Brown is Professor of Management Information Systems at University of Arizona. She also serves as Visiting Professor at Hong Kong University of Science and Technology. Her research on the adoption and diffusion of IT by organizations and individuals has been published in *MIS Quarterly, ISR, JMIS, ISJ, JASIST, EJIS,* and other leading journals. She has served as Senior Editor for *MISQ* and Associate Editor for *MISQ, ISR, JAIS*, and *Decision Sciences.*

João Carvalho is Professor of Information Systems Department at University of Minho in Portugal. João has coordinated BS, MS and Doctoral Programs and been the head of the department and deputy dean of the faculty. He has led a task group to propose an integrated Master (5 years) in IS. He collaborates with the Portuguese national agency for the accreditation of degree programs in computing and in management.

Brian Donnellan is Professor at Maynooth University Business School and Academic Director of Innovation Value Institute. In addition to developing the curriculum for MSc in IT Management, Brian has participated in several related European Union projects, and worked on IT competency issues in the context of the Innovation Value Institute. He has also participated in panels discussing curriculum development (AIS SIG-ED IAIM 2011, AMCIS 2010 and ECIS 2008).

Eija (Helena) Karsten is Associate Professor in Information Systems at the Åbo Akademi University in Finland. She has MSc in Computer Science (University of Helsinki) and MA in Education (University of Minnesota). She earned her PhD in 2000, supervised by Kalle Lyytinen and Matthew Jones. During 2012-2014, she led a Ministry of Education funded project on joint curriculum development for doctoral studies between Finland and China. In 2011, she was the Finnish representative in the team evaluating 32 Information Systems degree programs in 18 universities in Sweden.

Jun Shen is Associate Professor at School of Computing and Information Technology at University of Wollongong in Wollongong, NSW of Australia, where he had been Head of Postgraduate Studies, and Chair of School Research Committee since 2014. He had been Director of Masters of ICT for 9 years since 2006 and is currently Director of Masters of IT. He was awarded PhD in 2001 at Southeast University, China. He served as IEEE Education Chapter Chair of NSW from 2007 to 2014. He has been Editor, PC Chair, Guest Editor, PC Member for numerous journals and conferences published by IEEE, ACM, Elsevier and Springer.

Bernard Tan is Professor in the Department of Information Systems at the National University of Singapore (NUS) and has served as Vice Provost (Education) at NUS since 2012. His earlier administrative roles include Associate Provost and Head of the Department of Information Systems. He has served on editorial boards of numerous leading IS journals, including *MISQ* (senior editor), *JAIS* (senior editor), *JMIS*, and *ACM Transactions on MIS*. His research has been published in a variety of leading information systems and computing journals, including *MIS*

Quarterly, *ISR*, *Management Science*, *JAIS* and several IEEE and ACM Transactions. He served as President of AIS in 2009-2010 and has been Fellow of AIS since 2011.

Mark F. Thouin is Director of Graduate Information Systems Programs at the University of Texas at Dallas where he teaches graduate and undergraduate courses, promotes academic programs in information systems, and founded an Information Systems Industry Advisory Board (IAB). His research interests include the study of clinical and administrative value of information technology in healthcare settings. He holds a Ph.D. from Texas Tech University, an MBA from George Mason University and a BS in Mathematics from Virginia Tech. Prior to joining UT Dallas, he worked for 13 years in a variety of management, technical, and business development positions providing IT consulting services.

Heikki Topi (Moderator) is Professor of Computer Information Systems at Bentley University. He has been actively involved in leadership roles in national computing curriculum development and evaluation efforts (including IS 2002, CC2005 Overview Report, and as co-chair of IS 2010 and the ongoing MSIS curriculum revision projects). He is coauthor of *Modern Database Management* and co-editor of IS/IT volume of CRC/Chapman & Hall's *Computing Handbook*. He served as member of the ACM Education Board from 2006 until 2016 and on the Board of CSAB from 2009 until 2015. Currently, he serves as Executive Director of PACE.

V. REFERENCES

Bowden, J.A. (2004) "Capabilities-driven Curriculum Design", in Baille, C., and I. Moore (eds.). *Effective Learning and Teaching in Engineering*, New York: Routledge, pp. 36–47.

E-CF (2016) *The European e-Competence Framework*. Available at http://www.ecompetences.eu, accessed Aug 18, 2016.

Gorgone, J. T., P. Gray, E. Stohr, J.S. Valacich, and R.T. Wigand (2006) "MSIS 2006: Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems." *Communications of the AIS,* (17)2, pp. 1–58.

IEEE-CS (2012) "IEEE-CS Adopts Skills Framework for the Information Age." Available at http://www.computer.org/web/pressroom/framework, accessed Aug 18, 2016.

SFIA (2016) *Skills Framework for the Information Age* v. 6. Available at http://www.sfia-online.org/, accessed Aug 18, 2016.

Topi, H., B. Donnellan, V. Ramesh, K. Conboy, C. Van Toorn, and R. Wright (2014) "Moving Toward the Next Generation of Graduate Degree Programs in Information Systems." *Communications of the Association for Information Systems*, (34)1, pp. 1-21.