

Summary Report
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IT Professional's Conference on Information Systems Governance

Approximately 100 IT professionals participated in the 2014 IT Pro Conference on Information Systems Governance, held at the National Institute of Standards and Technology, May 22, 2014. Although definitions vary somewhat, *information systems governance* may be thought of as the means for ensuring that IT resources are best managed to achieve organizational goals. Sponsored by IEEE, NIST, and Noblis, the conference was designed to bring together IT professionals from industry, government, and academia, to address the new challenges in information systems and share ways to deal with them. The conference featured twelve presentations focused on three questions:

- What are today's biggest challenges in getting the most value from IT, while delivering successful projects and reliable information systems and infrastructure?
- What works now to keep critical systems safe while keeping pace with advances in technology?
- What is on the horizon that technology and business leaders need to anticipate?

Conference attendees also enjoyed three keynote talks: “Smart Networked Systems and Societies: What Will the Future Look Like?” from Ram Sriram, NIST; “A Transformative Internet?”, Jeffery Voas, NIST; and “System and Software Assurance – Rationalizing Governance, Engineering Practice, and Engineering Economics”, from Paul Croll, IEEE Technical Council on Software Engineering IEEE Software and Systems Engineering Standards Committee.

Ram Sriram of NIST gave the first keynote, entitled “Smart Networked Systems and Societies: What Will the Future Look Like?”, addressing the “Internet of Things” paradigm. In the near future, there will be more devices than people on the planet, and most people will never be away from net-connected sensors because sensors will be embedded in our bodies.

Seth Earley, from Earley and Associates, discussed the information systems eco-system and essentials for information systems governance, in “Information Governance in the Age of Big Data”. He described how semantics and agreement on terms are key when integrating information systems between organizations, and that consistency of meaning provides consistency of data.

Naga Venkata Sudhakar Kolluru, of Tata Consultancy Services, discussed “Enterprise Governance Model for Hybrid Cloud”. He pointed out that there may be an overlap between traditional IT governance and cloud governance, but significant differences exist. In particular, there may be many international entities with cloud governance, leading to differences in locus of control and possibly contradictory policies.

Erran Carmel, American University, discussed “Governance in Enterprise Crowdsourcing”. Businesses are increasingly turning to “crowdsourcing”, in which tasks are contracted out to large numbers of independent contractors, often individuals. Governance questions for this environment include how to make projects flexible for specialized, measurable tasks appropriate for crowdsourcing.

Stephen Quirolgico, NIST, presented “App Vetting Systems: Issues and Challenges”, with lessons learned from a NIST project in the DARPA Transformative Apps program. Static analysis tools can be applied to mobile apps, but no single tool was adequate, so a variety must be used. Despite automated code analysis, human reviewers must understand programming to determine if vulnerability reports are correct or false alarms.

Ariful Huq, BITS Pilani, Dubai Campus, United Arab Emirates, described “A Comprehensive Mobile Application Development and Testing Lifecycle”. Conventional software development lifecycle processes do not map directly to the needs of mobile app development. For example, it must be possible to check if a design works on a large number of possible platforms, including many varieties of mobile phones or tablets, and apps must look native to the device to ensure user acceptance.

Don O'Neill, Don O'Neill Consulting, discussed the results of a survey of professionals in “Software 2015: Situation Dire”. Survey respondents believed the current state of practice is seriously deficient, especially in that many aspects of cybersecurity are not well understood. Concurrently, dependence on software is growing exponentially, as processors and sensors multiply and must be interconnected. O'Neill outlined a program for addressing the problem.

Jeffery Voas, NIST, presented the lunch keynote on “A Transformative Internet?” He pointed out that scaling problems make it impossible to truly deal with an “internet of everything”, as scalability fuels complexity and heterogeneity exacerbates interoperability problems. Traditional reliability testing provides little help because of scale limitations, but approaches such as combinatorial methods offer hope for addressing the increase in complexity.

George Strawn, Networking and IT Research and Development (NITRD), presented “Masterminds of IT”, reviewing some of the history and great figures of computer science. He argued that developers of information technology have two jobs – to create complexity and then hide it from the user. Contributions to Strawn's “Masterminds of IT” column in IT Pro were encouraged.

George Hurlburt, STEMCorp Inc., presented “Towards a Dynamic Design Architecture”, arguing that the Department of Defense Architecture Framework (DoDAF) is no longer adequate for today's systems, and an improved design architecture approach must be used. Embedded software today is so complex that it must be treated as a network. The new approach makes it possible to isolate any element and reason about it mathematically.

Art Friedman, National Security Agency (NSA), and Vincent Hu, NIST, discussed “Attribute Based Access Control and Attribute Assurance”. It has been estimated by the Gartner Group that by 2020, approximately 70% of industry may be using some form of attribute based

access control (ABAC). ABAC involves the use of access control rules that use attributes such as age, citizenship, location, etc., giving it a flexibility needed for large distributed systems. They discussed the problems with assuring that attributes are accurate and trustworthy.

Shailendra Kishore, Progress Software Development, presented “WaFeR: Model-Driven Test-Framework for Testing Web UI-based Applications”, a new test framework that allows properties and actions to be extracted and used to populate a template. Assertions for landing on a page and after-action assertions are also included. The tool includes a generic framework with product-specific library.

Xuefei (Nancy) Deng, University of Hawaii at Manoa, presented “Promoting IT Service Employees’ Customer-Oriented Behaviors: An Empirical Study of an ERP Support Center in a Healthcare Enterprise”. The research was motivated by changes in skills needed for IT, in particular a need for more interpersonal skills for user support. The IT governance focus led to answering two research questions – What customer oriented behaviors were demonstrated? and How do these behaviors affect the enterprise?

William Kelly, Metonymy Corp., presented inVideo - A Novel Big Data Analytics Tool for Video Data Analytics”, which addressed the hard problems in obtaining useful information from large sets of video data. He described applications for US Navy video data, and experience with education software which indexes transcripts of video and audio by time, enhanced by pattern recognition for features such as identifying faces or particular objects.

The closing keynote , “System and Software Assurance – Rationalizing Governance, Engineering Practice, and Engineering Economics” was presented by Paul Croll, Chair, IEEE Software and Systems Engineering Standards Committee; Executive Vice Chair, IEEE Technical Council on Software Engineering. He noted that compliance with FISMA and other security guidelines can be very expensive, and that IT governance needs to be applied to systems and software assurance throughout the engineering lifecycle, to verify that agreed best practices are really being used as expected.

Chaired by Irena Bojanova, University of Maryland University College, and Rick Kuhn, NIST, the program committee included: Morris Chang, Iowa State University, Wes Chou, US Department of Defense, Seth Earley, Earley & Associates, Raghu Kacker, US National Institute of Standards and Technology, Bill Van Order, Lockheed Martin, Tom Suder, Mobilegov, Jeffrey Voas, US National Institute of Standards and Technology, Linda Wilbanks, US Department of Education, and Joseph Williams, Seattle Pacific University.

A short survey revealed that the respondents (20% of the participants), found the organization of the conference to be mainly excellent (42%) or very good (32%); the quality and relevance of keynotes to be mainly excellent (37%) or very good (47%); the quality and relevance of presentations to be mainly excellent (21%) or very good (26%) or good (42%). They rated the conference overall as mainly excellent (37%) or very good (32%) or good (26%). The respondents also shared that the conference had the “right mix of up to date topics”, "full schedule of content” and “keynotes and presentations were really good and informative”; the keynotes “provided excellent insights into the future of IT” and “presentations followed nicely

with one another”; although there was also a contradicting note the “presentations seemed to be tangentially related, but didn't treat a common problem or address things at a similar level”. The respondents shared that they liked “organizers ability to keep presentations in order and on time”. Some recommendations for improvement are: “have more time for presenters to speak on their subject matter”, “either have fewer presentations (with longer presentation times), or the topics should be summarized more so that the content isn't rushed”, “networking opportunities outside presentations”. Overall, the respondents found the conference to be “great start to a valuable annual event“, “excellently organized and full of lively discussions”, “well organized and scheduled; material was very relevant to today's issues”, “very neatly conducted, very well managed”.