



# Distinguished Lecturer Report

*Systems Council AdCom Meeting, September 21, 2018*

*Stephanie White*

## Proposal for 4 New DLs

Edward Addy



Donna Rhodes



Holly Handley



Peter Whitehead



## Dr. Edward Addy, Northrop Corporation

- ▶ Performed, managed and conducted research in V&V
  - nuclear weapon system safety analysis, space flight systems, financial systems, enforcement systems
- ▶ Secretary and editor, IEEE Standard 1012 System and Software Verification and Validation WG
- ▶ U.S. Technical Advisor to the ISO/IEC working group on systems and software life cycle processes
  - leading effort to adopt IEEE Standard 1012 as international standard
- ▶ Publications in V&V, software safety and software product lines
  - produced framework for performing V&V in a reuse-based software engineering environment (Annals of Software Engineering, 5, 1998).
- ▶ Represents Computer Society on Systems Council

# Edward Addy – Distinguished Lecturer Presentation

- ▶ “Verification and Validation within a System of Systems”
- ▶ Describes the conduct of V&V on a system of systems, including recursive aspects and the interrelationships of V&V and other technical processes across life cycle phases.
- ▶ Includes consideration of the role of V&V on the System of Interest during development of lower level systems and system elements and a description of System Element Interaction Analysis.
- ▶ Target audience: System Engineers, Software Engineers, System Acquirers, Suppliers, IT Managers
- ▶ Presented at SouthEastCon 2018 (extended tutorial form), 20 April 2018

# Dr. Holly A. H. Handley, Old Dominion University

- ▶ Associate Professor, Dept of Engineering Management and System Engineering, Old Dominion University
- ▶ Prior to joining ODU, Design Engineer for Raytheon Company (1984-1993) & Senior Engineer for Pacific Science & Engineering Group (2002-2010)
- ▶ Licensed Professional Engineer
- ▶ Research focuses on developing models and methodologies to better represent the human component during the architecting and design of socio-technical systems

# Holly Handley - Distinguished Lecturer Presentation

- ▶ “The Human Viewpoint: Including the Human Component in System Architectures”
- ▶ Process captures impact of human operators as part of larger system architecture
  - Informs on human capabilities and limitations for system design.
- ▶ Integrated set of models describe human tasks, roles and interactions
  - facilitates human-system trade-off considerations.
- ▶ Process reduces risk
  - balance between operator constraints & system performance.
- ▶ Example included - Aerial Reconnaissance Support Team (ARST) responding to changes in combinations of sensor types

# Holly Handley – “The Human Viewpoint”

- ▶ Target audience: System Engineers, Program Managers, Acquisition Professionals
- ▶ Learning outcomes:
  - Awareness of Human Viewpoint as a System Architecture View
  - Recognize Human View models as components of Stakeholder Analysis
  - Appreciate impact of the Human Operator on System Costs & Risks
- ▶ Variations presented at several Conferences, including NDIA Systems Engineering Conference 2015

## Dr. Donna Rhodes, MIT

- ▶ Principal Research Scientist, Sociotechnical Systems Research Center
- ▶ Director, MIT Systems Engineering Advancement Research Initiative (SEARI)
- ▶ Extensive collaboration with government, industry, academic partners
- ▶ Teaches graduate, professional & custom executive courses
- ▶ Held senior leadership positions at IBM, Lockheed Martin, and Lucent
- ▶ INCOSE Past President & Fellow; Associate editor of the journal, *Systems Engineering*.
- ▶ Over 150 publications; co-author of book *Architecting the Future Enterprise*
- ▶ Contributions recognized by numerous publication awards, INCOSE Founders Award, IBM Outstanding Innovation Award & Lockheed Martin NOVA Award.





## Donna Rhodes - Distinguished Lecturer Presentation

- ▶ “Why is Human-Model Interaction Important to the Future of Systems Engineering? “
- ▶ Engineers and decision makers in our envisioned future
  - immersed in highly interactive model-centric environments
  - using digital system models as a primary basis for system decisions
- ▶ Insufficient attention given to the necessary interactivity between humans & models
  - influences how models are conceived and how they are used in decisions
  - We need to understand the factors and conditions under which people trust and distrust models
- ▶ Talk shares collective wisdom of experts on why we trust (or distrust) models as a basis for making systems decisions, and discusses guiding heuristics for effective human-model interaction

## Dr. Peter Whitehead, Mitre

- ▶ Previously a Science and Technology Policy Fellow of the American Association for the Advancement of Science at NSF, Division of Electrical, Communications and Cyber Systems, and at the Office of Science and Technology Policy in the White House
- ▶ Program Manager and Systems Engineer Senior Staff at Lockheed Martin, Director of Research and Development at ViaSystems, Consultant to the Army, Military Intelligence (G2), Owner and President of a systems engineering consulting firm, Director of DMSP Mission Sensor Testing at Westinghouse Defense Corporation, and Industrial Engineer at ITT
- ▶ Editor of International Abstracts in Operations Research (2011-2018), the original journal of IFORS, & Associate Editor of IEEE Systems Journal
- ▶ Research interests include AI in foreign policy, the ethics and policy of AI, systems thinking, healthcare systems, and energy systems

# Peter Whitehead - Distinguished Lecturer Presentation

- ▶ “Systems Analysis in the New Millennium”
- ▶ An interactive session to explore the past, present and future of systems.
- ▶ A foundation in systems analysis; considers how a tool-agnostic approach can improve results for the client; involves case studies to demonstrate the critical thinking involved
- ▶ Lecture objectives:
  - Provide a brief history of systemic thinking and modern systems concepts
  - Introduce an objectives-driven cognitive approach to analyzing any system & explain the advantages of a systemic approach versus systematic approach
  - Encourage participants to look at systems with new eyes, in ways that foster innovation.
- ▶ Presented at SysCon 2018

# Systems Council DL Talks, April – September, 2018

## ▶ Andy Chen

- “Safe and Secured AI”, AI for Good Summit, United Nations ITU, Geneva, Switzerland , May 15-17, 2018
- “The 4<sup>th</sup> Industrial Revolution”, China Industrial Big Data Innovation Summit, Chinese Institute of Electronic, Changchun, China, July 20, 2018
- “Artificial Intelligence: impact and Ownership” in “Smart ABC Expert Roundtable: A new concept of future-powered cities”, Telecom World 2018, United Nations ITU, Durban, South Africa, September 10-12, 2018

# Systems Council DL Talks, April – September, 2018

## ▣ Pierangela Samarati

- "Data Security and Privacy in the Cloud," University of Piraeus, Greece - 26 April 2018
- "Data Security and Privacy in the Cloud," Intensive Programme on Information and Communications Security (IPICS2018), Lesvos - 9 July 2018
- "Data Security and Privacy in Emerging Scenarios," 3rd IEEE International Conference on Smart Cloud (SmartCloud 2018), New York, NY, USA - 21-23 September 2018.
- "Data Security and Privacy in Emerging Scenarios," 17th International Conference on Cryptology And Network Security (CANS 2018), Naples, Italy - 2 October 2018.

# Systems Council DL Talks, April – September, 2018

Vincenzo Piuri

- "Biometric Technologies for Automated Border Control," University of Houston, Houston, TX, USA - 14 May 2018
- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," Microsoft Research 2018, Seattle, WA, USA - 27 April 2018
- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," City University of Hong Kong, Hong Kong - 22 May 2018
- "Artificial Intelligence for Biometrics," Fudan University, Shanghai, China - 23 May 2018

# Systems Council DL Talks, April – September, 2018

## Vincenzo Piuri

- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments, " Southern University of Science and Technology, Shenzhen, China - 23 May 2018
- "Advanced Biometric Technologies," Tongji University Shanghai, Shanghai, China - 24 May 2018
- "Artificial Intelligence for Biometrics," Nanjing University, Nanjing, China - 25 May 2018
- "Artificial Intelligence Technologies for Ambient Intelligence," International Artificial Intelligence Deans Forum, Xian, China - 28 May 2018
- Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," Xian Jiaotong University, Xian, China - 27 May 2018

# Systems Council DL Talks, April – September, 2018

## Vincenzo Piuri

- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," Harbin Engineering University, Harbin, China - 30 May 2018
- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," CAS, Beijing, China - 31 May 2018
- "Integrating Technologies for Ambient Intelligence Convergence of Artificial Intelligence, Machine Learning, Biometrics, Cloud Computing, Internet of Things, and Cyber-physical Systems," BUPT, Beijing, China - 1 June 2018
- "Integrating Technologies for Ambient Intelligence Convergence of Artificial Intelligence, Machine Learning, Biometrics, Cloud Computing, Internet of Things, and Cyber-physical Systems," Fordham University, New York, NY, USA - 18 June 2018



# Systems Council DL Talks, April – September, 2018

## Vincenzo Piuri

- "Computational Intelligence for Dependable and Resilient Cloud Computing," IEEE INISTA 2018 Thessaloniki, Greece - 3 July 2018
- "Advanced Technologies for Biometrics," IEEE TSP 2018, Athens, Greece - July 5, 2018  
"Ambient Intelligence Convergence or Artificial Intelligence, Machine Learning, Biometrics, Cloud Computing, Internet-of-Things," Montevideo, Uruguay - 12 July 2018
- "Ambient Intelligence Convergence or Artificial Intelligence, Machine Learning, Biometrics, Cloud Computing, Internet-of-Things," Asuncion, Paraguay - 16 July 2018
- "Ambient Intelligence Convergence or Artificial Intelligence, Machine Learning, Biometrics, Cloud Computing, Internet-of-Things," Santiago, Chile - 13 July 2018
- "Artificial Intelligence Everywhere Convergence of Technologies for an Integrated Infrastructure, UNI, Lima, Peru - 17 July 2018

# Systems Council DL Talks, April – September, 2018

## Vincenzo Piuri

- “Biometric Technologies for Humanitarian Applications,” Quito, Ecuador - 18 July 2018
- “Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments,” Bogota, Colombia - 19 July 2018
- "Advanced Biometric Technologies," INDICASAT-AIP, Panama City, Panama - 20 July 2018
- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," UBISymp 2018, Covilha, Portugal - 24 July 2018
- "Which future for our environment? IEEE Environmental Engineering Initiative," IEEE R8 Student and Young Professionals Congress, Porto, Portugal - 25-28 July 2018

# Systems Council DL Talks, April – September, 2018

Vincenzo Piuri

- "Artificial Intelligence for Cloud Computing Management," IEEE Cyber Science and Technology Conference, Athens, Greece - 12-15 August, 2018
- "Ambient Intelligence Adaptivity by using Artificial Intelligence, Machine Learning, and Biometrics in Worldwide Cloud-based Environments," ICCE 2018, Berlin, Germany - 3 September 2018

## Other Scheduled SysC DL Talks

### ▶ Robert Rassa

- Scheduled: Univ of VA. Nov. 2018, Specific date TBD

### ▶ Stephanie White

- Scheduled: Plenary talk, International Systems Engineering Conference, Israel, March 26 – 27, 2019

# Questions & Comments?

*Vote on each DL Candidate*

*Dr. Edward Addy*

*Dr. Holly Handley*

*Dr. Donna Rhodes*

*Dr. Peter Whitehead*