UTC INSTITUTE FOR
ADVANCED SYSTEMS ENGINEERING

Seminar Series

Applying Systems Engineering to the Development of Healthcare Capabilities

Modern healthcare is a complex socio technical system comprising a mix of: high technology products; different organisations with different objectives and incentives; a diverse range of professionals with different assumptions about what is, and should, be done; and, a set of working practices comprising a mix of very modern evidence base techniques and legacy custom and practice. Improving such a complex system requires the adoption of systems engineering approaches to ensure the improvement delivers the desired benefits and avoids unintended consequences.

Meaghan O'Neil will present a practitioner's view of applying systems engineering to improve healthcare system capabilities. She will discuss system approaches used for development and improvement of socio-technical systems and demonstrate how they apply in a healthcare context. In her first case study, she will present efforts to develop an artificial pancreas for management of type 1 diabetes mellitus, which requires an evolution from open loop to closed loop control. A second case study will outline systems efforts to address hospital acquired infections. In these examples, she will highlight a safety driven systems design approach based on the System Theoretic Accident Model and Process (STAMP) developed by Nancy Leveson of MIT. The presentation will include recommended approaches for identifying system improvements and highlight the importance of developing contextual and operational awareness.

Meaghan O'Neil

Meaghan O'Neil is a Senior Technical Product Manager for the verification and validation portfolio at MathWorks. She led the launch and ongoing development of Simulink Test, a simulation testing product for model-based design. Prior to joining MathWorks, Meaghan spent a decade in industry in system design and improvement at Johnson & Johnson, GE Energy, and Accenture. Following her graduate research at MIT, Meaghan has provided system safety consulting expertise for accident investigations and safety-driven design of healthcare system capabilities.

An advocate for enhancing systems application in the healthcare field, Meaghan has served as chair of the INCOSE (International Council on Systems Engineering) Biomedical and Healthcare Working Group and as a systems engineering advisor to AAMI (Association for the Advancement of Medical Instrumentation). She currently serves as INCOSE's Chief Financial Officer and as a Biomedical and Healthcare Industry Ambassador. Meaghan received a bachelor's degree in chemical engineering from Cornell University and a master's degree in System Design and Management from the Massachusetts Institute of Technology.

Monday December 5th, 2016

1:00pm - 2:00pm

UConn, Storrs Campus – ITE Building 336

To view live webcast click here

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