

UTC INSTITUTE FOR ADVANCED SYSTEMS ENGINEERING

Moving policies from documents to models a VA case study

Systems engineering has made constructive effort to move from document centric approaches to becoming more model centric. Model Based Systems Engineering has found to reduce risk, improve communication, improve quality, and increase productivity. In recent years Systems Modeling Language or (SysML) is the preferred method for MBSE; it not only models all aspects of complex systems (structure and behavior) but also provides analysis capabilities. SysML is based on object oriented design principles that reduce the complexity through inheritance, hierarchies and polymorphism. Healthcare is a dynamic complex system of system built to accomplish overall patient health and recovery. Healthcare policy traditionally is designed based on subject matter expert opinion, experience, and clinical evidence. Lack of a test and evaluation phase before policy implementation in a complex system often leads increasing complexity of policy communications, potentially leading to ambiguous, confusing, and easily misunderstood communications around mandated process and system changes. To address these issues we built and tested a methodology for moving healthcare policy from documents to models. The methodology involved structural and behavioral modeling and analysis of documents, identifying common failures, collecting evidence of failure in the field and recommending changes to the policy. The current methodology was deployed on VA policy, the future research involves building general policy architecture representing policies and their relationships across different VA programs, identifying failures or gaps and validating policy architecture across the VA programs

Shamsnaz Virani

Shamsnaz S. Virani, Assistant Teaching Professor of Systems Engineering at Worcester Polytechnic Institute, earned her Ph.D. in Industrial and Systems Engineering from The University of Alabama at Huntsville. Prior to joining WPI, Dr. Virani worked with The Pennsylvania State University and The University of Texas at El Paso developing and teaching systems engineering research and curriculum. Dr. Virani's research interests include Modeling Based Systems Engineering (MBSE), Engineering Education and Team Mental Models. To that end she is modeling healthcare policy to identify failures and gaps and built an engineering curriculum to teach engineering in high school. She also worked with a multidisciplinary research group that uses an artificial intelligence (AI) based technique to develop shared team mental models to better understand team mental model convergence. She has published in several peer-reviewed journals and conferences in Systems Engineering, Engineering Education and Engineering Management. She serves on the organizing committee for INCOSE and ASEE-SED Academic forum 2015 and 2016. She is also founding member of Empowering Women as Leaders in Systems Engineering (EWLSE) at INCOSE. She is a member of International Council of Systems Engineers (INCOSE), American Society of Engineering Education (ASEE) and Institute of Industrial and Systems Engineers (IISE)

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11:00am – 12:00pm

UConn, Storrs Campus – ITE Building 336

[To view the live webcast please click here](#)

Upcoming Distinguished Lectures

10/06/16 – Olivier de Weck
When is complex too complex?
Graph energy, proactive complexity
management and the first law of
systems engineering

10/17/16 – Wei Chen
Design under uncertainty;
multidisciplinary design
optimization; simulation-
based design

Upcoming Seminars

09/08/16 – Chris Ha
Think Like a Customer, Act
like a Startup in Analytics Space

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