Tutorial Proposal to:

The Thirteenth International Conference on Networking ICN 2014
&
The Ninth International Conference on Systems ICONS 2014

Telecommunication Network Lifecycle Management and Systems Engineering Techniques

Proposed by
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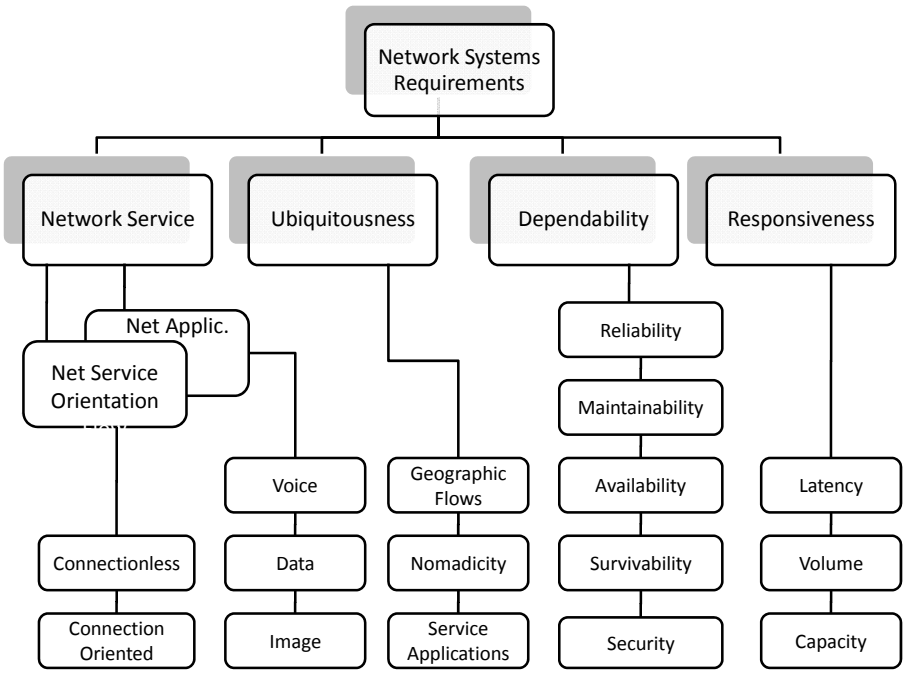
I. Overview

The goal of this tutorial is to provide attendees a keen appreciation of the relationship between the network lifecycle, project management, and systems engineering techniques necessary to successfully design, develop, acquire, and field complex telecommunication networks.

What the telecommunication networking discipline has in common with the Information Technology field as a whole is that a significant number of projects fail because of poor definition at the beginning of the lifecycle of a system. As a consequence, this tutorial places heavy emphasis on network definition activities including network user requirements, system requirements, concept definition, component specification, and planning.

Emphasis will be placed on how to determine customer needs, translate those needs into network system attributes, develop an architecture capable of having the required network attributes, and specify and select components that will interact successfully to meet the necessary functional and performance attributes capable of satisfying user needs. A systems engineering perspective will also be included that provides for the decomposition of complex network systems into subsystems and major components.

A taxonomy of network system attributes (system requirements) will be presented and the systems engineering techniques described to help ensure the chosen architecture and components exhibit these attributes. The attributes are shown on the next page.



Examples and tutorial exercises will be included so that attendees can actively participate. Examples and exercises will cover data and voice applications, and also cover such topics as functional allocation to components and how to select components necessary to meet high reliability, maintainability, and availability requirements.

Tutorial modules and content are shown below.

II. List of Tutorial Modules and Content

A. INTRODUCTION
- **(1) Network Lifecycle and Project Management Methodology**
- **(2) Network Project Archetypes**

B. NETWORK PROJECT DEFINITION
- **(1) Network User Requirements**
- **(2) Network System Requirements**
- **(3) Network Concept Definition**
- **(4) Network Specification**
- **(5) Network Project Planning**

C. NETWORK PROJECT IMPLEMENTATION
- **(1) Network Source Selection**
- **(2) Network Design and Integration**

D. NETWORK OPERATIONS
- **(1) Network Deployment**
- **(2) Network Operations & Maintenance**

Audience

The tutorial will be very useful for those looking to understand the interaction between network lifecycles, program management, and systems engineering. University professors, graduate students, and industry professionals are likely to benefit from this tutorial.

Duration

Three (3) hours is proposed.

Instructor Biography

Andy Snow is a Professor in the School of Information and Telecommunication Systems (ITS) at Ohio University. As part of ITS, he is an active researcher and teacher. He received his PhD from the University of Pittsburgh (1997) in Information Science, from the Telecommunications Program, while his bachelor's and master's degrees are in electrical engineering from Old Dominion University. His publications appear in such journals such as *IARIA International Journal On Advances in Networks and Services, IEEE Transactions on Reliability, IEEE Transactions on Engineering Management, Journal of Networks and Systems Management, Telecommunications Policy, Journal on Mobile Networks and Applications, International Journal of Industrial Engineering, IEEE Computer,* and *Information & Management*. Andy has two research streams: (1) critical information system and telecommunications infrastructure dependability, and (2) telecommunications & information system project management. Prior to returning to university for an academic career, he held positions as electronics engineer, member of the technical staff, manager, director, vice president, and general manager in telecommunications carrier, systems integration and consulting firms. Andy is President Emeritus of the Information & Telecommunications Education and Research Association (www.itera.org) and also is an ITERA and IARIA fellow.

Gary Weckman's industrial engineering degrees include the PhD from the University of Cincinnati, and a masters and bachelors from the University of Louisville. His primary research focus has been multidisciplinary applications utilizing knowledge extraction techniques with artificial neural networks (ANN). He has used ANNs to model complex systems such as large scale telecommunication network reliability, ecological relationships, stock market behavior and industrial process scheduling. His research has appeared in numerous journals and conferences. Before joining the Ohio University faculty in 2002 as an associate professor in Industrial and Systems Engineering, Dr. Weckman was a faculty member at Texas A&M University-Kingsville for six years. He has also practiced industrial engineering for over 12 years at such firms as General Electric Aircraft Engines, Kenner Products and The Trane Company. During his varied career, he has had a number of different technical responsibilities which involved developing and implementing various decision support and forecasting systems and techniques. Weckman was elected to the Tau Beta Pi and Alpha Pi Mu Honor Societies, and is an IARIA fellow. He is also a member of Institute of Industrial Engineers, American Society of Safety Engineers, Institute of Electrical and Electronics Engineers (IEEE), and is a State of Texas Professional Engineer.