



## OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE SYSTEMS ENGINEERING

### System of Systems Engineering Collaborators Information Exchange (SoSECIE)

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#### **Identifying Decision Patterns Using Monterey Phoenix**

*Mr. John Quartuccio, Naval Postgraduate School*

An automated means to identify behavior patterns would enable system developers to gain the benefit of past results in current and future system design. Analysis of decision patterns captures the interactions of human operators, systems, and their interface with the environment. Monterey Phoenix (MP) uses a formal language thereby exploiting the precision of lightweight formal methods as a means to model behaviors across domains, with applicability to the design of systems of systems, operational procedures, communication networks, business processes, and social interaction. This presentation illustrates a concept of identifying patterns in a model of a decision process for a surgical procedure and an aviation emergency serving as case analyses. The results support a Bayesian belief network and an analysis of the decision structure. Finding embedded behavior patterns may be used as a means to catalog and classify intrinsic structures or architectures that are useful to system of system developers.

#### **Biography**

Mr. John Quartuccio is a PhD student within the Department of Systems Engineering at the Naval Postgraduate School, Monterey, California. Mr. Quartuccio has over 34 years of engineering acquisition experience, serving as a civilian for the U.S. Navy. Positions have included systems engineering and human systems engineering, delivering products within naval aviation domains. Research interests include behavior analysis, systems of systems architectures, model-based systems engineering, with the current emphasis on deriving patterns within system architectures. He has recently published two IEEE papers on these topics. He has a B.S. degree in Mechanical Engineering from The Pennsylvania State University and a M.S. degree in Applied Mechanics from Lehigh University. He is currently employed at the Systems Engineering Department of the Naval Air Systems Command / Naval Air Warfare Center / Aircraft Division, Patuxent River, Maryland.