



Seminar Speaker: Dr. Philip J. Smith, The Ohio State University
Industrial Engineering Distinguished Leader Seminar Series

Time and Location: Wednesday 4/6/16 from 12:20 to 1:10, Freeman Auditorium

Title: Distributed Work in the National Airspace System and ISE Directions for the Future

Abstract: This talk will be given in two parts. Topic 1: Distributed Work in the National Airspace System. Because of its cognitive complexity, the responsibility for operating the National Airspace System (NAS) is distributed among many organizations and individuals. An understanding of how this distributed work system functions requires consideration not only of the allocation of control and responsibility, but also of the distribution of data, knowledge, processing capacities and characteristics, goals and priorities. It further requires consideration of how alternative architectures for distributing work impact performance in the face of uncertainty, where the level of uncertainty changes over time. The design of this distributed system in terms of how different architectures for distributing work have evolved within the NAS. These architectures differ in terms of the nature of control (management by directive, by permission or by exception), in terms of the level of abstraction at which control is exercised, and in terms of the timing of control (through constraint propagation).

Topic 2: Industrial and Systems Engineering at OSU – Directions for the Future. Industrial and systems engineering has traditionally been a field that has developed conceptual advances that apply across a number of different application areas, while also having a real impact on the design and functioning of the systems within these applications. This focus on new conceptual approaches and models as inspired by the needs and opportunities of specific applications has been a very effective strategy for generating important advances in the field. Current demands from the workplace and from R&D funding sources, along with rapid advances in technologies for everything from sensing to communication to decision support to the design of advanced materials, provide the field both an opportunity and a challenge, and raise two questions that will be addressed:

- What application areas will be most powerful in guiding the field to focus on opportunities for making major conceptual advances in the future?
- What conceptual frameworks are most likely to inspire such major advances?

Bio: Philip J. Smith, Ph.D. is Professor and Chair of the Department of Integrated Systems Engineering at The Ohio State University and is a Fellow of the Human Factors and Ergonomics Society. Conceptually, his research has focused on cognitive systems engineering, design induced error, the design of distributed cognitive work systems and continuous adaptive planning.

With funding from the FAA and NASA since 1988, he has completed extensive research focusing on air traffic flow management, airline operations control and airport surface management. He has also collected converging evidence to evaluate conceptual advances using military planning (U.S. Army), medical problem solving and the design of interactive critiquing systems (National Heart, Lung and Blood Institute) and Problem-Based Learning (U.S. Department of Education) as research contexts. Among other awards, he and his students were given the award for "Best Paper" in Human Factors in 1999; the Airline Dispatchers Federation "National Aviation Safety Award" in 2001; Best Paper Award, 2008 Air Traffic Control Association Conference; and the Air Traffic Control Association David J. Hurley Memorial Award for Research in Collaborative Decision Making, 2009.