GSAW2009 Tutorial B:

Introduction to Net-Centricity

Length: Half Day

Overview:

Advances in information technologies have radically altered the modern battlefield. This was initially asserted in 1996 with the release of Joint Vision 2010, which introduced the concept of Network-Centric Warfare (NCW) and placed networks with their ability to disseminate information quickly at the center of military strategy during next decade. NCW was further refined in 2000 with Joint Vision 2020, which reinforced the concept that an information advantage translates to a competitive advantage and identified the Global Information Grid (GIG) as a key enabler to this concept, "Information Superiority." The concept is that our success in the information age hinges upon the recognition that information is our greatest source of power.

These changes in Defense strategies have introduced a number of challenges for National Security Space (NSS) programs who are wrestling with what it means to be "net-centric." In addition, NSS programs must consider various implementation strategies for leveraging advances in information technologies. Furthermore, the technologies to achieve net-centricity are at various stages of maturity.

In this tutorial, the concept of net-centricity will be introduced. Key enabling technologies will be presented in accordance with the Net-Centric Checklist Design Tenets: Services, Data, Transport (networks), and Information Assurance. In addition, the way forward will be described. This will include the Transformation Satellite (TSAT) program and GIG interaction as well as Net-Centric Implementation Document development, a snapshot of net-centric governance, and implementation strategies employed by several programs.

Tutorial was given at GSAW 2008, and a longer version of the tutorial has been presented as part of The Aerospace Institute's Introduction to Net-Centricity course.

Instructors: Mary Nichols, Matthew Presley, Robert Lindell, Leo Marcus, and Judy Kerner, The Aerospace Corporation

Biography:

Mary Nichols is the Department Director for the Advanced Information Systems Technology Department (AISTD) at The Aerospace Corporation. AISTD supports Air Force and Intelligence Community customers in the areas of advanced software technology, distributed systems, and information fusion. Mary has 23 years of experience supporting National Security Systems in the areas of information fusion and information systems technology. Most recently Mary has coordinated and delivered an Aerospace two-day course on net-centricity. Mary has B.S. and M.S. degrees in Mathematics.

Matthew Presley is a Senior Project Leader at The Aerospace Corporation researching distributed computing, including service-oriented architectures and transparent distributed execution of applications. He received a BS Mathematics from Harvey Mudd College and a PhD Computer Science from UCLA, where he worked on the verification of parallel discrete event simulation engines. He has worked at Jet Propulsion Laboratories and Computer Sciences Corporation developing simulations and simulation technology. As Chief Scientist of Agari Mediaware, he led a team creating distributed middleware for integrating rich media applications.

Bob Lindell works at The Aerospace Corporation in the Computers and Software Division. Recently, he has been supporting space programs in the areas of networking and information assurance. Bob has previous worked at Information Sciences Institute (ISI) in their networking division. At ISI, he worked on various DARPA and NSF programs including the RSVP protocol, active networks, application layer multicast, and DDoS detection and prevention systems.

Leo Marcus is a Research Scientist at The Aerospace Corporation working in system security engineering, cryptography, adaptive security, formal methods, and fault tolerance. He received a BS Mathematics from Harvey Mudd College and a PhD in Mathematics (Mathematical Logic) from the Hebrew University of Jerusalem. He has taught math and computer science at UCSB and UCLA, and worked at the USC Information Sciences Institute. He has over thirty published papers in the fields of mathematical logic, formal methods, and computer security.

Judy Kerner is a Senior Project Leader at The Aerospace Corporation. She has over 35 years of experience in software architecture, software engineering, standards, and open systems, in both technical and management roles. Kerner currently works with programs on compliance with DoD strategy and policy on interface standards, open systems, architecture, and net-centricity. She has led panels and workshops at numerous conferences, and she initiated and was first chair of the annual GSAW conference.

Who Should Attend:

Target audience (preferred 40 or less) includes program management, engineering and support staff.