



THE LOGBOOK

A Publication of the
Wayne E. Meyer Institute of Systems Engineering
www.nps.navy.mil/meyerinstitute

April 2004
Volume 9

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USAF Center for Systems Engineering

In response to direction from the Secretary of the Air Force, Dr. James Roche, to strengthen the Air Force's systems engineering capabilities and to create an Institute for Systems Engineering, the Air Force sponsored a systems engineering forum at Wright-Patterson Air Force Base in August 2002. The forum included 44 participants from DOD, industry, FFRDC's, academia, and professional organizations. The participants at the forum concluded that although the systems engineering process in DOD "is not broken, the uniform application of systems engineering principles is broken". The participants of the forum recommended an organizational construct for a Center for Systems Engineering be separate from the senior level systems engineering enabling organization, with its own corporate board and director, and with roles to include education, training, collaboration, advocacy, and consulting.

The resulting Center for Systems Engineering was established at the Air Force Institute of Technology (AFIT) in February 2003. The Center was provided an initial allowance of 26 billets. The organization reports to the AFIT Commandant, BGen (sel) David Eidsaune, at the same level as the four AFIT schools. Mr. Mark K. Wilson was appointed as the Center's first Director in November of 2003. Mr. Wilson, a member of the Senior Executive Service, was formerly Technical Advisor for Systems Engineering at the Engineering Directorate of Aeronautical Systems Center, Wright-Patterson AFB; and prior to that, Technical Director of the Engineering and Technical Management Directorate at HQ Air Force Material Command.

Already, the Center has made great progress in reinvigorating Systems Engineering educational offerings at AFIT. AFIT has had an accredited systems engineering program since the 1970's, but in recent years enrollments had decreased. This year, 27 officers are enrolled in the curriculum. In addition, under the direction of a sub-committee of the Air University Board of Visitors, chaired by Dr. Alex Levis, Chief Scientist of the Air Force, the Center is developing systems engineering case studies that will be available to AFIT, NPS, and other universities. Initially case studies initial topics were the C-5, F-111, the Theater Battle Management Core System, and the Hubble Space Telescope. A team was formed for each case study, including several members who had played key roles in the development of each system. Drafts have been completed, and the first case studies will be available for use in the next few months.

The Center has been very active in forming partnerships with other institutions, including the Meyer Institute of Systems Engineering. Dr. Levis has included NPS representatives in the deliberations of his sub-committee, and Mr. Wilson has included the Director of the Meyer Institute on the center's Senior Council. The Center and the Meyer Institute are working together to include AFIT systems engineering and aeronautical engineering students in Integrated Student Projects at NPS.

In the future, courses and seminars will be shared by both institutes via VTC or web-based distance learning. The Meyer Institute plans to use the Center's case studies in its systems engineering courses and will develop similar case studies of Navy systems. Currently, studies of the F/A-18E/F, A-12, and a ship, yet to be determined, are being planned.

The model for the systems engineering case studies was written by Andrew P. Sage and George Friedman. Its title is "Case Studies of Systems Engineering and Management in Systems Acquisition", Systems Engineering, Volume 7, Number 1, 2004.

For further information on the Air Force Center for Systems Engineering at AFIT, contact Mr. Mark Wilson at mark.wilson@afit.edu, phone 937-255-3355 x3315 or visit the CSE web-site at <http://cse.afit.edu>





Meyer Institute Research Project Aids Joint Intelligence System Interoperability

The Meyer Institute of Systems Engineering is supporting the Joint Staff Intelligence community to research Command and Control (C2) and joint intelligence system interoperability deficiencies identified during Operation Iraqi Freedom (OIF). The Institute is coordinating with the Deputy Director for Intelligence Assessments, Doctrine, Requirements and Capabilities (J2P), who chairs the Joint Intelligence Interoperability Board (JIIB). The JIIB conducts a biennial Joint Systems Baseline Assessment (JSBA), with the goal of documenting technical and C2 deficiencies and weaknesses in Joint Targeting (JT) and Collections Management (CM) processes and identifying potential solutions.

For JSBA FY04, the Meyer Institute JIIB team is analyzing both the joint targeting (JT) and collections management (CM) processes and will develop baseline models for all phases of each process. Initially, the primary focus is on the USCENTCOM operational architecture. The analysis will assess the technical ability of current Joint and Service intelligence systems of record (SOR) to operate effectively and to exchange critical intelligence information in a Joint Task Force (JTF) environment. The JIIB will be able to apply the Meyer Institute process model findings to evaluate potential solutions. The ultimate findings and recommendations of the project regarding the capability of intelligence system interoperability could affect the full range of Combatant Commanders, Services, and Agencies holding a stake in joint intelligence operations.

Process modeling is at the core of the Meyer Institute approach and the initial effort includes developing realistic models for the CENTCOM Joint Targeting architecture. Although the formal documentation dates from seven years ago, substantial changes have been incorporated due to the quickly advancing state of technology and the requirements associated with the war on terror. Development of the model requires knowledge of process information flow, decision structures, rules, system-level architecture, and system parameters. The JIIB and Meyer Institute have agreed to an aggressive schedule, initiated in January 2004, to deliver the initial paper model product in April 2004, followed by the baseline targeting executable model in June 2004.

Mr. Rich Kimmel, of the Meyer Institute, is the project lead. Dr. John Osmundson and Dr. Nelson Irvine of the NPS Department of Information Systems (IS) lead the team of five researchers. The team also includes two NPS graduate students who are doing related thesis research and the effort supports several IS class projects.

