

Evaluating Complex System Development Maturity – The Creation and Implementation of a System Readiness Level for Defense Acquisition Programs



Presented by:
Eric Forbes
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Northrop Grumman Mission Systems

Wednesday, 15 October 2008 (6:00 – 8:00 pm)

Applied Physics Laboratory, Johns Hopkins University

Presentation: A 2006 Government Accountability Office (GAO) study of Department of Defense (DoD) technology transition processes concluded that a lack of insight into the technical maturity of complex systems during development has led to an environment of program cost overruns, schedule slips, and reduced performance. A key aspect of current development practices is the reliance on the Technology Readiness Level (TRL) as a key provider of maturity assessments. While the TRL has been well proven for its effectiveness in gauging individual technology maturity in research and development, its extrapolation to the complex systems of systems integration dictated by emerging DoD requirements brings about a host of issues. Principally, by looking only at the status of individual component technical maturity, TRL fails to account for the complexities involved in the integration of these components into a functional system and creates the opportunity for performance gaps to remain hidden until late in the development cycle.

To address this lack of a true system-level maturity analysis process, the Northrop Grumman Corporation, the Stevens Institute of Technology, and NAVSEA have collaborated to create and implement a methodology known as the System Readiness Level (SRL). The SRL is a composite rating system relying on input from the traditional TRL scale as well as a new readiness gauge known as the Integration Maturity Level (IML). These two scales are combined analytically to provide a systems readiness indicator that yields a holistic assessment of both the maturity of individual technologies within a system as well as the status of their corresponding integrations and interdependencies. This presentation will detail the application and value of this methodology to complex DoD integration efforts as well as the theory behind the SRL concept and the steps taken to minimize ambiguity and subjectivity in the evaluation process.

Speaker: Eric Forbes is a systems engineer with the Northrop Grumman Corporation currently working on the Littoral Combat Ship Mission Package Integrator (LCS MPI) program. In addition to his work on the development of the System Readiness Level, Eric is also responsible for management of a number of technology planning and process improvement efforts. His previous work within the company has included research and development, systems engineering, and business development activities for a wide cross section of missile systems and C4ISR projects. Eric earned a bachelor's degree in Aeronautical and Astronautical Engineering from the University of Washington and a master's degree in Aerospace Engineering from the Georgia Institute of Technology.

Note: Dinner will be held in the Howard County Room #3 (to the right of the guard station and down the end of the hallway of the main cafeteria), followed by the topic discussion.

Dinner: Boneless Breast of Chicken Florentine, Quiche Lorraine, Caesar Salad, Seasoned Rice, Fresh Vegetable Du Jour, Rolls and Breads, Pastries, Coffee and Tea.

Dinner Reservations: To register for dinner, contact Dave Griffith at d.griffith@ngc.com or call **410-993-2806**. **Dinner Cost:** For non-members: **\$15**; For INCOSE members: **\$10** the Friday before the meeting date 10 Oct, **\$15** afterwards. To pay by credit card or PayPal, visit our website: <http://www.incose.org/chesapek>; or to pay by USPS, mail checks (payable to INCOSE-CC) to:

Dave Griffith, PO Box 142, Linthicum, MD 21090-0142.

Dinner Cancellation Policy: If you make a dinner reservation and then find that you will be unable to attend, please notify us by Monday prior to the meeting to avoid liability for payment for the meal we will order for you.

Presentation ONLY: FREE (no reservations necessary)

Corporate Sponsor: We wish to thank the Applied Physics Laboratory for supporting the systems engineering profession through use of their facilities.

Our Evening's Agenda

5:45 – 6:00 pm	Arrival and Socializing
6:00 – 6:45 pm	Dinner
6:45 – 6:50 pm	Member Introductions
6:50 – 6:55 pm	Chapter Business Items
7:00 – 8:00 pm	Presentation

Directions: **JHU APL**, 11100 Johns Hopkins Road, Laurel, Maryland 20723, Phone (443) 778-5000
See APL's Visitor Guide for more: <http://www.jhuapl.edu/newscenter/visitor/default.asp>

From Washington DC and Capital Beltway (I-495):

Take I-95 North toward Baltimore, 10 miles to Columbia exit (MD Route 32 West),
Go 2.5 miles to the Washington DC exit (US Route 29 South).
Go 1.5 miles south and take Johns Hopkins Road exit (bear right at the top of the hill).

Or from the Capital Beltway (I-495):

Take US Route 29 North (Colesville Road) 10 miles and follow signs for the turn onto Johns Hopkins Road.

From Baltimore and Baltimore Beltway (I-695):

Take I-95 South toward Washington DC.
Go 13 miles and take Columbia exit (MD Route 32 West).
Go 2.5 miles and take Washington DC exit (US Route 29 South).
Go 1.5 miles south and take Johns Hopkins Road exit (bear right at the top of the hill).

Once you're on Johns Hopkins Road:

APL is a half-mile west of US Route 29 on your right side. Go past the first entrance, continuing past the pond and take the next right turn onto a tree-lined lane. Park in the visitor's lot on your left side. Enter at the main entrance marked **Building 1** (flagpoles and traffic circle in front).

Dinner is held in the Howard County Room #3. Howard County Room #3 is located at the end of the cafeteria hallway to the right of the entryway just before the Guard's desk.

