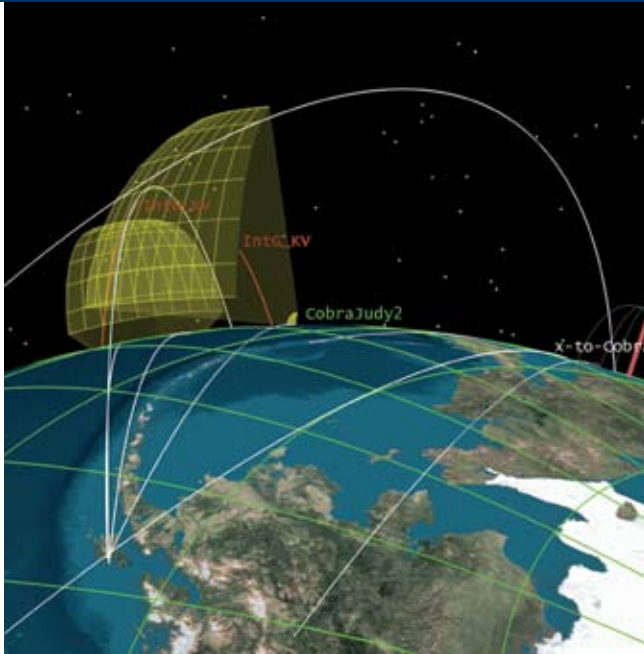


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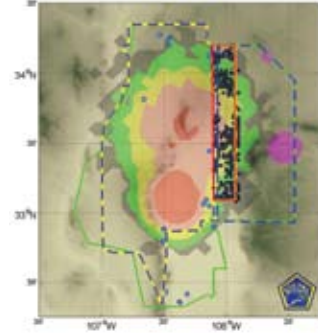


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Analysts at the System Test and Evaluation Planning Analysis Lab (STEPAL) in Huntsville, AL, employ assorted STK analysis software modules to graphically depict missile defense system elements and investigate questions related to missile flight test scenario geometry.



Assessing Missile Flight Tests



THE SYSTEM TEST AND EVALUATION PLANNING Analysis Lab (STEPAL) was established to provide the Missile Defense Agency (MDA) Ballistic Missile Defense System with an analytical resource to develop and assess flight test events that demonstrate the system's inherent performance capability. The ribbon cutting ceremony was performed on Nov. 1, 2002, at the Advanced Research Center in Huntsville, AL, by then Ground-based Mid-course Defense (GMD) program director Maj. General John W. Holly. This event initiated the STEPAL's direction to provide MDA leadership with technically sound, analytically based test-planning solutions.

STEPAL analysts employ assorted STK analysis software modules to graphically depict system elements and investigate questions related to test scenario geometry. Using STK's 3-D visualization component, trajectories, antenna patterns, facilities, vehicle locations, and sensor parameters are inserted into scenarios where they can be modeled and analyzed in 4D. These dynamic visualizations are routinely used during briefings to portray the pros and cons of various missile flight test options. "We're finding that the visual output of our simulations, created in STK, make a lasting impression with the customers that we're briefing," says Frank Grose, senior space systems analyst for contractor Science Applications International Corporation (SAIC) and STEPAL STK lead.

At the STEPAL, the dynamic output generated in STK Professional Edition is complemented with other STK modules. These include STK/Communications, STK/Radar, and STK/Missile Modeling Tools, which all aid in feasibility studies; safety and debris modeling and analysis;

and telemetry analysis. Grose says, "We have to model the threat capability, the system's operational characteristics, and flight safety constraints to make sure we're not violating range safety criteria. We also look at the demonstrated engagement parameters to see how well the flight tests fit into the operational space. STK allows us to do this quickly and extremely well."

The STEPAL also makes significant use of the Multiple Track Object (MTO) feature in STK. Used in conjunction with custom software and the STK/Integration Module, the MTO collectively displays large numbers of dynamic objects as a single STK object, which aids in debris analysis. According to Grose, with MTO, STEPAL analysts can "create objects efficiently and can track many, many objects that you couldn't possibly do if you had to make each one of them individually." Modeling each object to such detail provides mission planners with early insight into conflicts and issues even before they begin to impact schedules and budgets.

The implementation of STK software at the STEPAL is aiding its mission of analyzing pending MDA flight tests from concept through execution. Jeff Starks, STEPAL director, says STK's utility has far exceeded its initial expectations. "We first used STK for its visualization capabilities. Now, we also utilize STK's extensive analysis capabilities to supplement our STEPAL tools. STK is an integral foundation of the STEPAL tool kit." ▲