

# STK'S CUSTOM LOGIC ALLOWS ANALYSTS TO MODEL ISR DATA FOR AIRBORNE EARLY WARNING SYSTEM

## HQ USAF/A9 Assesses Future Program Risk with STK

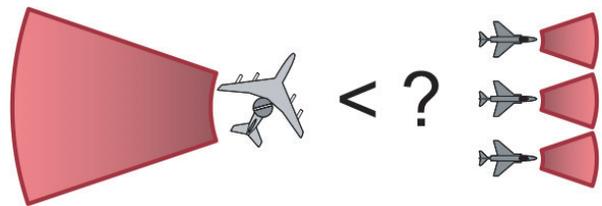
**THE STRATEGY:** Headquarters U.S. Air Force A9 (HQ USAF/A9) performs quality studies and analyses, assessments, and lessons-learned to illuminate emerging DoD issues. This allows them to fireproof key USAF leadership positions and decisions—sharpening the warfighter's edge. In mission-level combat analysis, ISR can be the variable group. However, ISR affects various components of a complex kill-chain. In 2009, HQ USAF/A9 integrated STK with MATLAB, Ruby, and Google Picasa to illuminate the risk inherent in various future ISR acquisition programs.

**THE TACTICS:** Analysis used MATLAB and Picasa to cull through a design matrix. The scenario provided understanding of how a candidate system provides situational awareness. The team used detection data from completed STK models to understand where engagements would occur. While this analysis provided insight, events can cause different action chains and sample paths. Evaluating overall effectiveness required a model that used STK's capabilities under the control of custom logic. The team attempted a discrete event approach, a COM implementation, and pseudo-real-time control. Custom logic enabled one model to respond to a variety of questions. This allowed for cascading chains of unanticipated events within a complex system.

"STK is at the sweet spot between high-fidelity models of RF, communications, engagement geometries, and outstanding visualization—which provides instant and rich feedback to the analyst on how these models are functioning. STK has enabled A9 to quickly respond to some of the most challenging questions in the DoD."

— TIMOTHY BOOHER, HQ USAF/A9

### What ISR investments should the Air Force make?



U.S. AIR FORCE

When Pentagon leadership needed to ascertain how Intelligence, Surveillance, and Reconnaissance (ISR) reduces risk in the air and missile defense mission; HQ USAF A9 integrated STK with MATLAB, Ruby, and Google Picasa to illuminate the inherent risk. The flexibility, support, and feedback available enabled them to complete a year-long study in a month—and influenced the acquisition of a major ISR program.

**THE ENGAGEMENT:** Using STK, HQ USAF/A9 rapidly built and visualized scenarios to understand system capabilities in ISR—as well as Integrated Air and Missile Defense (IAMD)—letting the team respond to an urgent analytical request. Their legacy suite involved complex code modifications—and studies usually took a year to complete. Using STK documentation, code demonstrations, and AGI support; the team completed their study in one month. Thanks to STK, they were able to adjust and test different approaches and comprehensively examine the tradespace—all with necessary graphical feedback.