

A CASE STUDY: NORTHROP GRUMMAN'S JSTARS LAB USING RT3 FOR OBJECT TRACK QUERYING WITH REAL-TIME SITUATIONAL AWARENESS

Challenge:

- Implement a new interactive 3-D situational awareness and decision support solution to overcome JSTARS legacy system limitations.
- Quickly implement and transition to the new solution.
- Minimize retraining and operations disruptions by maintaining data identifiers and critical workflows from the legacy system.

Solution:

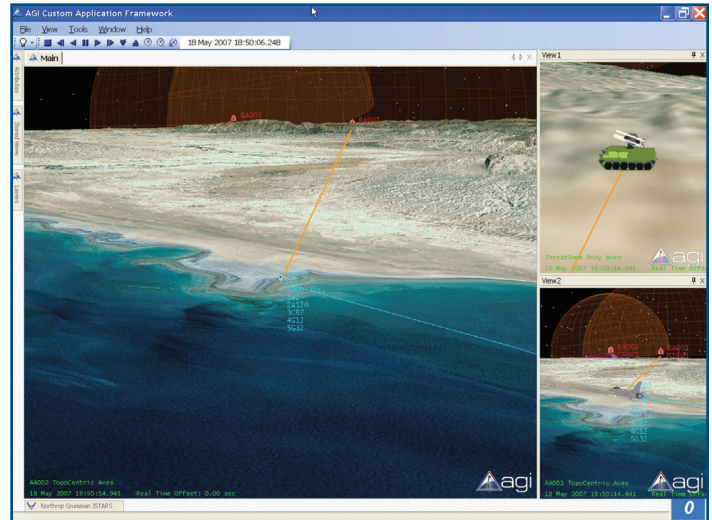
Northrop Grumman's JSTARS operators used AGI's new Real-Time Tracking Technology (RT3) and AGI's core analysis and visualization capabilities to display and interpret thousands of live tracks and support real-time decisions in the JSTARS' battle lab.

Results:

The new system improves data interpretation via 3-D altitude and terrain visual cues and increases situational awareness by streamlining user interfaces to prevent workflows from obstructing the display. In two weeks, a successful demonstration was complete that operators could evaluate without formal training.

Operators in Northrop Grumman's Joint Surveillance and Target Attack Radar System (JSTARS) lab needed to track tens of thousands of air and ground objects quickly and accurately to distinguish friendly (blue) vs. enemy (red) forces. To accurately assess airspace and potential ground threats and subsequently task blue forces, JSTARS needed to update its feature set to include interactive 3-D visualization of real-time situational awareness, reducing decision time for operators in the field. To effectively interpret their data, JSTARS engineers built an interface to demonstrate communication with AGI's Real-Time Tracking Technology (RT3), feeding their program-specific data into AGI's STK software for time-dynamic 3-D visualization and analysis.

The legacy JSTARS system presented several challenges. Using workstations with 2-D visualization and supplemental data print outs, it was difficult for operators to effectively bring terrain and altitude data into the situational awareness picture. Lengthy, complex filter pop-ups obstructed the 2-D display, limiting operators' ability to monitor aircraft in a timely manner, and reduce risk and vulnerability. JSTARS needed a simplified system to process a huge amount of data—including thousands of object tracks—in an interactive 3-D environment, while supporting their customized workflow and unique identifiers.



By leveraging AGI's RT3, the JSTARS application was able to query thousands of object tracks for quick assessment and to maintain constant situational awareness in 3D within a streamlined, easy-to-use interface.

With the new AGI-based solution, JSTARS analysts provide live data feeds via RT3 to filter tracks; define events and alerts; and archive live data for playback. Using RT3's out-of-the-box integration with AGI's 2-D and 3-D displays, JSTARS identifiers are applied to quickly assess time; position; friendly vs. enemy aircraft; and moving target indicators (MTIs). Specifically, friendly or enemy aircraft are easily identifiable to operators using JSTARS' pre-set parameters such as colors; models; markers; symbols; and labels. The new 3-D environment effectively incorporated terrain data and enabled rapid altitude assessment.

To address obstructed displays, JSTARS operators leveraged the extensibility and customization of AGI technology to define queries in a streamlined form of right-clicks and drop-downs that simplify the user interface, decrease response time, and maintain constant situational awareness. Operators use these queries to filter all displayed entities until only the tracks of interest remain, providing quick access to quality decision information in a dynamic, interactive 3-D environment. For instance, if a red aircraft is observed, operators can filter the blue tracks until only those which are optimal to task remain.

AGI's new RT3 software has aided Northrop Grumman's JSTARS team's mission of creating a demonstration real-time decision support tool that could be quickly implemented in real-world scenarios in support of defense and intelligence initiatives.

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