

TTAPS

Tactical Target Analysis and Prediction System

Improving Time Sensitive Target Operations


Since the first Gulf War, the US and its coalition allies have had difficulty in effectively engaging fleeting targets such as SCUD launchers and mobile SAM sites. The goal is to engage these targets as quickly as possible by conflating sensor, weapon, target, and operating environment information in order to provide a more complete understanding of the battlespace and the relationships within it.

New algorithms and display methods are required to assist strike planners in visualizing the probable future movement of these types of targets. The projected future movement of the vehicle will also be used to assist the operator in planning a loiter path for a surveillance asset or weapon. Scenarios involving multiple ground vehicles complicate the visual picture. The visu-


alization method developed should support the operator in analysis of the movement prediction algorithms results to further reduce the area where the ground vehicle could be located. That information would then be used for performing a search of the area to locate the vehicle.

TECHNOLOGY DESCRIPTION


AVI is developing a *Tactical Target Analysis and Prediction System (TTAPS)* based on advanced artificial intelligence, terrain reasoning, and visualization technology adapted from the computer gaming market. TTAPS will provide strike weapons planners with an unprecedented level of situational awareness, seeing target and weapon relationships in 3D along with accurate National Geospatial Agency (NGA) derived terrain and feature data.




“Serious Games” technology for a breakthrough in battlefield situational awareness





TTAPS includes terrain and road analysis to find the most-likely ingress/egress routes, reducing the UAS search area



A decision support tool that can give a commander **tactical advantage** ...



...in planning and executing air and ground operations

“... a much more meaningful and dynamic representation of what is happening.”
 – Cdr Thomas Schibler, SIMEX 07-2 NSW Sponsor

TTAPS provides an intuitive and interactive 3D visual environment using computer game technology to help route sensor and weapon platforms and quickly locate ground targets

TTAPS Features and Functions

TTAPS is a decision support tool that gives commanders tactical advantage in the planning and execution of air and ground operations: tasking unmanned air systems (UASs), assisting Navy SEAL teams locate and disable improvised explosive device (IED) factories, targeting Tomahawk missiles, and more.

TTAPS presents a full real-time 360-degree view of the battlespace, providing situational awareness far superior to that currently available. It reduces the time to find targets and to discriminate between similar targets, and will potentially reduce the number of airborne assets needed in theater. TTAPS can also be used during mission planning stages where it will reduce time, effort, and risk factors. The features and benefits of TTAPS include:

Enhanced situational awareness Move the 3D viewpoint anywhere in the theater, at any altitude or on the ground, and move it quickly and easily from vehicle to vehicle. As a result, UAS operators can control multiple platforms with higher efficiency and reduced risk.

Better target location and tracking Uses sophisticated path finding and artificial intelligence to calculate and display probable routes of ground tracks, either on road networks or off-road across terrain, reducing the search volume for UAS tasking.

Improved analysis of UAS and other air platform options Supports “what if games” using time-distance calculations, along with

areas of sensor coverage and threat weapon zones, to improve mission planning.

Natural view of track movement Displays hostile, friendly, neutral, and unknown track data in three-dimensional format, including track history data.

Minimize Fog of War Data Filtering enables users to minimize clutter to view and analyze, battlefield elements by geographical area, target type, affiliation and time of track report

Faster training Built with computer gaming technology so its look and feel is second nature to today’s generation of warfighters; they get hands-on right away and learn quickly.

Affordability TTAPS makes maximum use of open-source software tools, including the Delta3D gaming engine, and runs on standard commercial-grade laptops and PC’s.

Flexible data interface Can be easily adapted to various data feeds including Cursor on Target (CoT), the Joint Command, Control and Collaboration Interface Exchange Data Model (JC3IEDM), Service Oriented Architectures (SOA), and other network-centric architectures.

High-quality NGA products TTAPS displays a full three-dimensional view of the theater, created from NGA-derived terrain and feature data.

About Applied Visions, Inc.

Applied Visions provides software engineering, product development, and research services for government and commercial customers. AVI specializes in visual solutions to complex defense, national security, information security, infrastructure protection, financial and business problems. AVI serves the Navy, Air Force, Army, DARPA, DHS, the intelligence community, and prominent technology, financial, and Fortune 1000 firms.

For More Information on TTAPS

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