U.S. Defense Modeling and Simulation Office

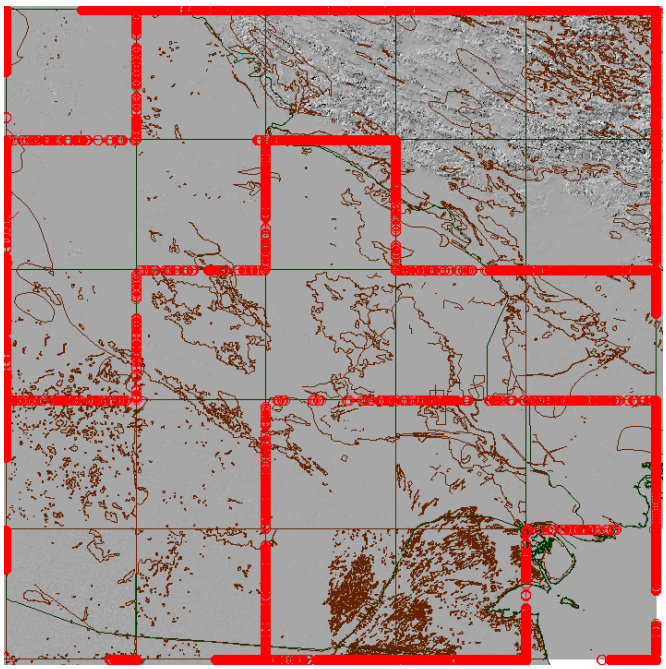
DMSO

Success Stories

June 2004

SEE-IT
The Synthetic Environment Evaluation – Inspection Tool

The Defense Modeling and Simulation Office (DMSO) is moving forward to transition the technology of the Synthetic Environment Data Representation & Interchange Specification (SEDRIS). Part of the technology-based family of tools and applications in SEDRIS is the Synthetic Environment Evaluation – Inspection Tool (SEE-IT), an analysis tool developed by the Institute for Defense Analyses (IDA) that can automatically identify anomalous constructions in digital environmental representations. It has been designed to locate and describe environmental representation conditions that will cause abnormal behavior by computer generated forces interacting with the associated terrain. Further, SEE-IT can also signal conditions that could cause incorrect analyses based on use of the environmental data or that would present anomalous scenes when presented to a human observer as an "out the window" view.



WARSIM Southwest Asia: Top-level shaded relief with areal feature outlines (brown & green) & topology errors

Top level view of an early-build version of a WARSIM database

This 5º square area was actually built as 25 separate (1º square) databases

The build process allowed topological errors (vertical tears)

SEE-IT provided the first integrated view of the entire database

Note that the problems occur at the 1º cell boundaries

Early identification of this systematic problem allowed an engineering solution that avoided delivery of an unacceptable database

DMSO has been the SEE-IT primary sponsor for development since the conclusion of the Defense Advanced Research Projects Agency (DARPA) Synthetic Theater of War (STOW) effort. During this period, SEE-IT has been successfully applied to analyze databases from many different simulation programs. These include the Army's Warfighters Simulation (WARSIM) and the Combined Arms Tactical Trainers (CATT) family of simulations and, more recently, the databases used in a series of major joint experiments at Joint Forces Command (JFCOM). The WARSIM and JFCOM programs relied heavily on SEE-IT analyses and both have provided funding to help tailor the available analyses and integrate the analytical process into their database build cycle.

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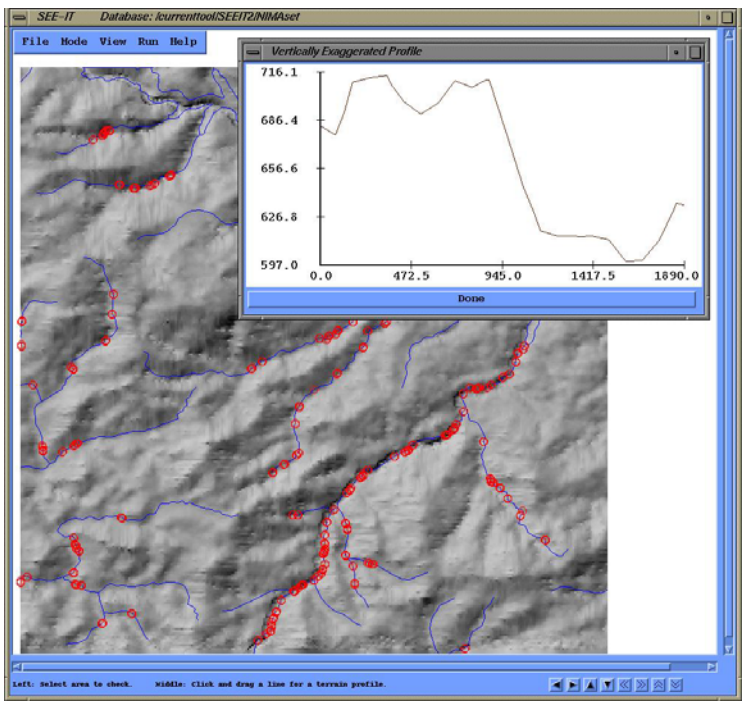
SEE-IT in use today in NGA data quality assessment

In FY04, the National Geospatial-Intelligence Agency (NGA), formerly the National Imagery and Mapping Agency (NIMA), became a SEE-IT sponsor. The NGA has recently made fundamental changes in its operational strategy, moving away from in-house geospatial data production tied to the delivery of paper map products. The NGA now contracts with commercial enterprises to produce digital environmental data that will be delivered as digital products. As part of this change, the NGA now has far less control over the production process, to include quality control of the data.

To address the quality assurance challenge, NGA has sponsored further development of the SEE-IT software. This version is being tailored to ingest native data formats in accordance with NGA's new Geospatial Intelligence Feature Database (GIFD) and apply the analytical processes that were developed for use with SEDRIS Transmittal Format (STF) data. New analyses, specific to the characteristics of the NGA data, are also being developed and incorporated into the tool. The NGA version will be used at IDA to provide analytical results to NGA, installed in the NGA regional offices, and provided to NGA contractors for use as part of their production process.

SEE-IT will continue to be available as one of the SEDRIS technology-based family of tools, ingesting STF data and producing analytical results describing the characteristics of that data.



Inset shows a vertically exaggerated cross-section view of the elevation data under a segment of a river feature

SEE-IT combines NGA feature and elevation data to identify conditions that arise when such data is integrated

SEE-IT marks locations where rivers change slope direction based on the elevation data surface

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