VIPER MODELING & SIMULATION

MTI's ViPER is comprised of a high-performance, containerized back end of services, with a tailored 4D (3D plus time) user interface. The UI can be browser based, or a thick client UI for higher client-side workload applications that contain embedded analysis tools.

ViPER as an application is most powerful when tailored to a specific user group. ViPER has been tailored in past efforts to: Carrier Strike Group planning, Special Warfare planning for SEALs, submarine planning and operations, Carrier Air Wing (CVW) planning, Army Airborne planning, and others. The same underlying architecture and UI tools are reused for all implementations, but tailored with data representations and interactions that support the user's needs.

ViPER is designed to plug in calculation services and decision support tools to improve the operator's ability to get their job done quickly, reliably, consistently, and with less tedium of data entry and transcription.

Some examples of this include plugging in sun/moon ephemeris services from the US Naval Observatory, satellite vulnerability tools for submarine operations from JHU APL, three dimensions earth models from NGA, terrain shading calculation tools from NASA, and many more.
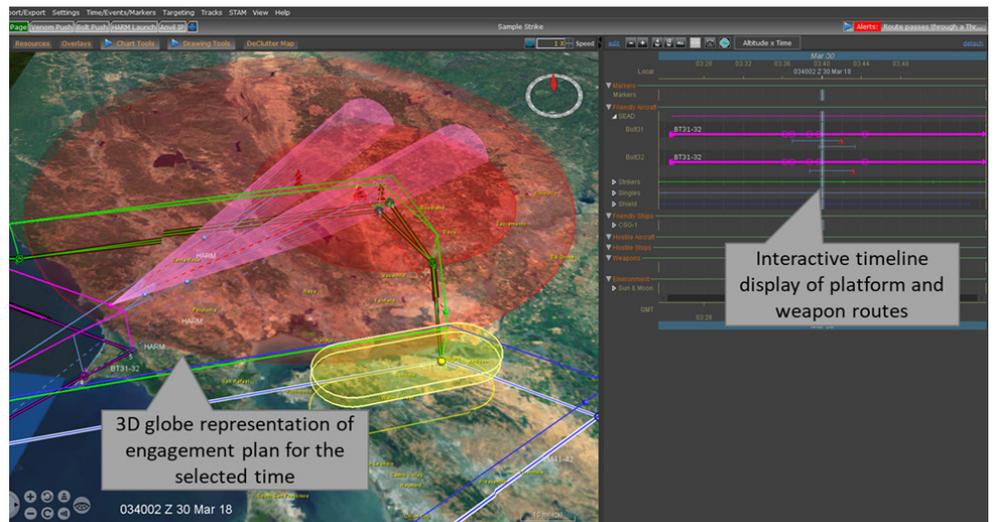

Figure 1 ViPER for CVW Planning

In a model and simulation environment, ViPER has three main tasks to support: scenario development, simulation play/replay, and integration of real and simulated results. Given ViPER's intuitive UI for force laydown, visualizing and manipulating geographic and temporal factors, plus whatever additional dashboard tools are developed, ViPER helps analysts rapidly craft realistic scenarios that can be understood visually, without reviewing tables of data and settings.

Scenarios can even be generated with some real-world references embedded in the background to provide planning context.

With the scenario generated, the simulation runs can be calculated. Once calculated, ViPER can present the simulation results as an animation on the 3D globe, plus plotted parameters and events of interest on the timeline. The animation can be played through, or any time of interest can be selected for review. ViPER can be used to highlight times and locations of interest that the simulation generates, creating an "auto-brief" of the scenario results for more rapid feedback to the operators.

If the M/S scenario has a real world parallel to which the analysts want to compare, the original scenario analysis can be loaded into ViPER along with all recorded data from the real-world scenario, and the two scenarios aligned in time to allow comparison of real vs. predicted. Again, ViPER can be extended to automatically search for specific points of comparison between real and simulated data to identify times and locations of interest.

MTI has the designers and developers to tailor ViPER to your needs, and rapidly integrate ViPER to support your modeling and simulation needs.
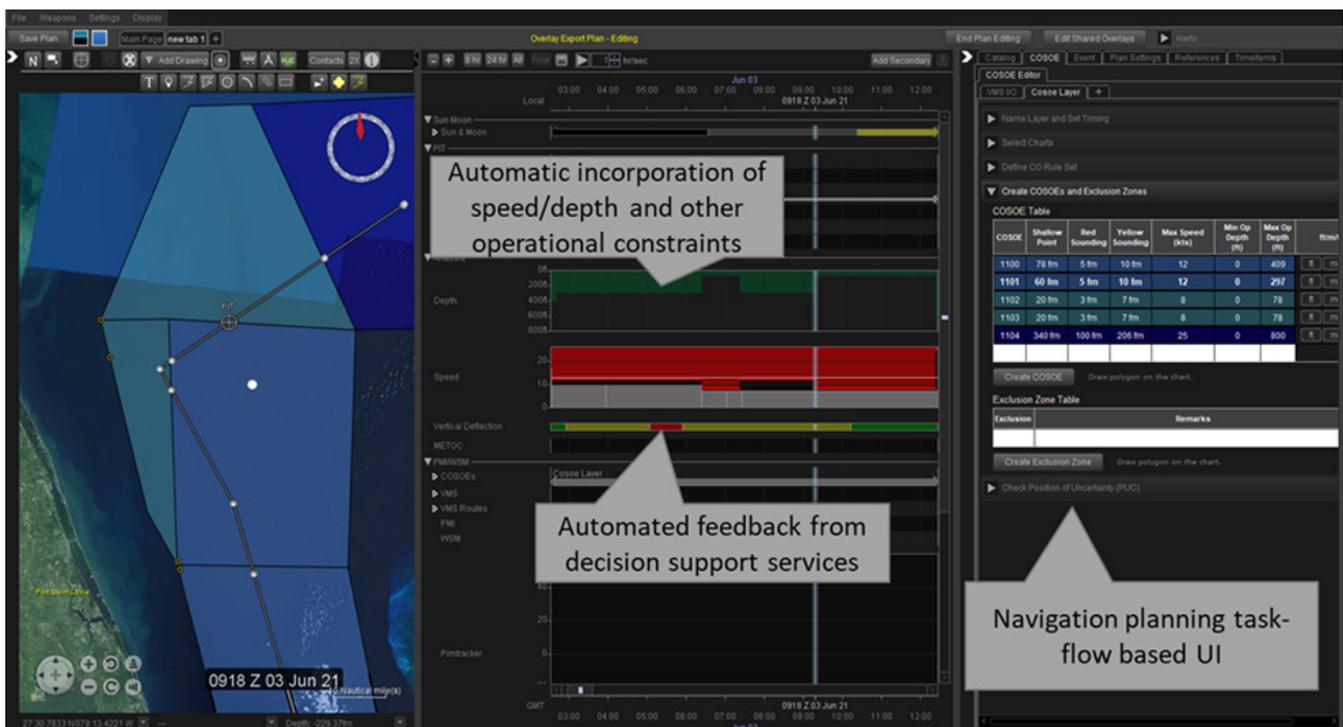

Figure 2 Submarine ViPER with Task-Flow Based UI and Decision Support Services

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