Maritime Lethality Analysis Toolset (MLAT)

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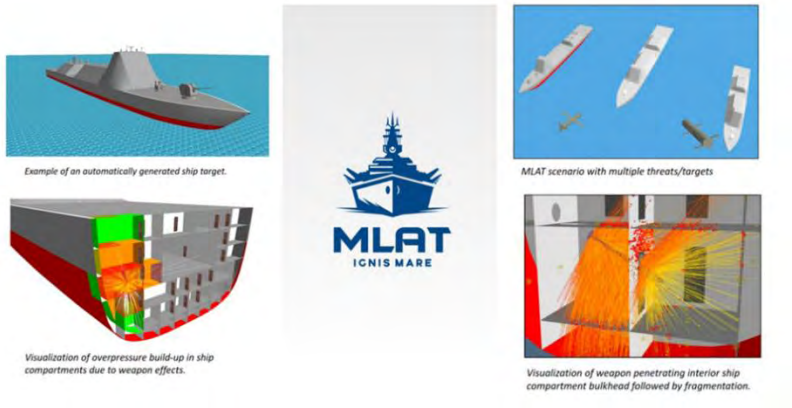

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SYSCOM: Naval Air Systems Command (NAVAIR) | *www.navair.navy.mil*

Program Sponsor: NAWC/WD

Other Potential Programs: Anti-ship weapon programs, mission planners, targeteers

Current TRL: 7

Projected TRL: 8 / Q3 2025

Keywords: Lethality, Modeling, Simulation, Maritime, Ship, Weapon, Explosion, Water

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THE CHALLENGE

Current lethality software tools available to the DoD are limited to use in buildings, ground vehicles, and air platforms. The warfighter lacks software tools to support planning and conducting kill assessment for maritime targets.

THE INNOVATION

K&C has developed an innovative fast-running physics-based lethality and vulnerability software called Maritime Lethality Analysis Toolset (MLAT) that can simulate the complex response of a ship target to weapon effects. MLAT's main capabilities are: 1) physics-based modules for the prediction of weapon effects, including AIREX, INDEX, UNDEX, fragment effects, perforation effects, fire from reactive materials, and flooding; 2) an automated ship target model generator that can be used to create MLAT ship target models; 3) Monte Carlo probabilistic methodology for calculating probability of kill for various ship systems; and 4) a comprehensive set of post-processing tools for parsing and visualizing the data produced by the tool.

THE NAVY BENEFIT

MLAT is currently the only comprehensive maritime lethality software available to the Navy, DoD at large, and DoD contractors with the capabilities to quickly generate ship target models and execute complex lethality analyses. With a comprehensive suite of loading and damage models that span nearly all possible damage mechanisms of interest, and an easy-to-use target generator, the MLAT application provides unmatched capabilities to the Navy and the wider DoD community. The capability to quickly create scenarios and run analyses, paired with a wide range of available methodologies, can drastically reduce weapon development cost and time, as well as improve the accuracy of predicted lethality effects.

THE FUTURE

Improved target fidelity, increased model accuracy, and the introduction of new physics models for non-conventional weapon effects are the three areas that can further enhance the MLAT software to make it an invaluable asset for assessing ship lethality. Feedback from the DoD and DoD contractors is also critical to align the MLAT capabilities with the community's requirements.