

At a Glance

What is it?

- The Strike Accelerator FNC will accelerate the kill chain and enable rapid target identification and multiple target engagement for the F/A-18E/F/G.

How does it work?

- Radar and infrared data on shipping are processed and classified or identified by an Aided Target Recognition System.
- The high confidence output is quickly passed to the aircrew who make the final target determination and engagement decision.

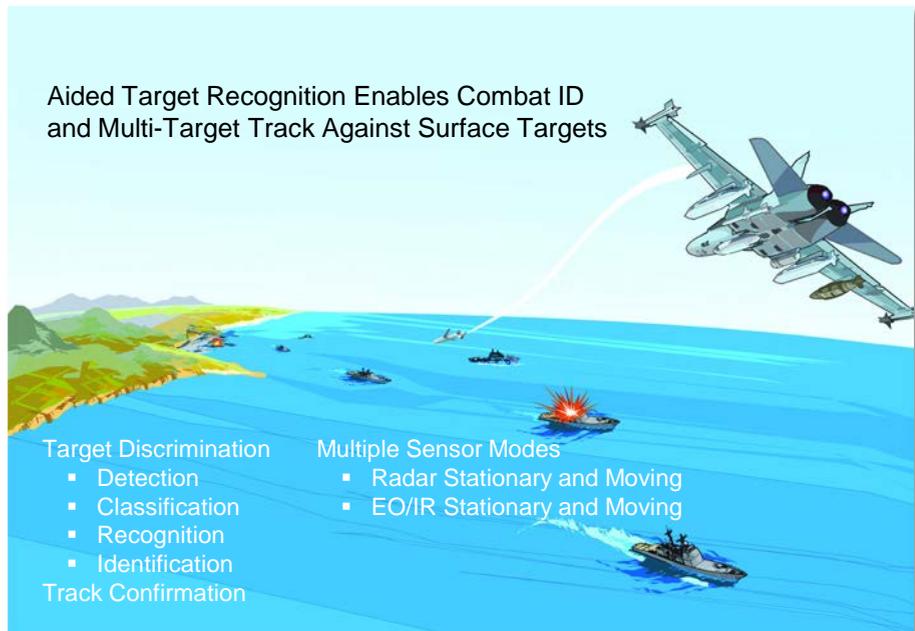
What will it accomplish?

- Speeds up target prosecution by reducing the data search and decision-making that the aircrew must complete to execute combat ID and multi-target track.
- This will allow the targeting of precision weapons against multiple stationary or moving targets by a single platform in a single pass in a crowded littoral environment.

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The Strike Accelerator Future Naval Capability (FNC) Product will develop and mature an Aided Target Recognition (AiTR) system to provide F/A-18 aircrews with a high decision rate and high classification/recognition/identification confidence against adversary surface combatants. When complete, this capability will automatically recognize and identify Ships-in-Port and Ships-at-Sea, even in a cluttered littoral environment. By reducing manual data search and target decision time by a factor of 10 to 100, Strike Accelerator will shorten key links in the kill chain – thus enabling traversal of kill chain in minutes and supporting combat ID and multi-moving target track aboard the F/A-18 E/F and EA-18G aircraft. Strike Accelerator will enable the Hornet platform to engage multiple desired points of impact per pass with precision weapons.

Stationary and moving maritime target data are provided to Strike Accelerator by the F/A-18's Active Electronically Scanned Array (AESA) Radar and Advanced Targeting Forward Looking Infrared (ATFLIR) optics pod. Strike Accelerator's advanced AiTR algorithms and multi-look, adaptive, and hierarchical architecture process the raw data inputs and produce outputs at four levels of fidelity for the pilot/aircrew. At the lowest fidelity level – target detection – targets are distinguished from non-targets in the sensor data. Target discrimination outputs then increase in fidelity from classification to recognition and finally to the highest fidelity level of identification. Target discrimination output decisions are passed on to the aircrew as reliable processed information for use in determining the need for further action.

Should discrimination at all levels fail to pass a quality test, this constitutes a no-decision event and (by design) no information is passed on to the aircrew. Strike Accelerator's adaptive discrimination will respond to the mission environment by tuning the AiTR system parameters. Multi-look discrimination will fuse the target decisions from multiple sensor images into a single decision. The multiple looks may come from the same sensor at different times or from different on-board sensors/modes or potentially from networked off-board sensors.

Research Challenges and Opportunities:

- Automated high-accuracy radar and optical target detection, classification, recognition, and identification
- Hierarchical target discrimination
- Adaptive target discrimination

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