A FUTURE NAVAL CAPABILITY
Time Critical Strike

Warfighters need the ability to strike time-critical tactical, operational, and strategic targets at the right moment in the battle. We therefore aim to help them project power and destroy, neutralize, or suppress targets of immediate importance to them. We are developing technologies that enable strike against targets in compressed vulnerability windows in all joint operations, in any environment, under all conditions. We don't want the enemy to be able to hide, or flee, or get in the first blow.

Why is this Future Naval Capability important? Our future adversaries aren't likely to be so obliging as to present themselves as easily detected and classified stationary target arrays. They will be mobile or moving, they will do their best to hide in clutter, and they will be uncomfortably close to friends and neutrals. Our forces will need to deliver strikes with unprecedented accuracy, flexibility, and speed.

What's our investment strategy? In developing our core investment program, the Time Critical Strike FNC IPT focused on identifying and filling capability gaps, fulfilling commitments to funded acquisition programs, and designing a strategy that would provide the wherewithal to execute the program. Five enabling capabilities will get us there:

· *First priority.* We need to be able to defeat expeditionary warfare targets with Naval fires.

· *Also first priority.* We need to be able to defeat relocatable targets at long ranges.

· *Second priority.* We need to be able to defeat short dwell-time mobile targets at long ranges.

· *Third priority.* We need to be able to defeat moving targets at long ranges.

· *Fourth priority.* We need to be able to defeat hard and deeply buried targets at long ranges.

How are we filling the gaps in those enabling capabilities? Each enabling capability will have a set of milestones and transition opportunities. Wherever possible, demonstrations and transition opportunities within the Time Critical Strike FNC have been leveraged to support more than one enabling capability.

First Priority: Defeat expeditionary warfare targets with Naval fires.

Fire support in urban terrain—particularly during operations other than war and large-scale maneuver—presents some of our most difficult challenges: identification of enemies, friends, and neutrals; avoiding collateral damage; fire support coordination with ground forces; and low-cost volume fires. Key technological solutions support precision targeting, shortening the decision and execution cycle, and tailoring warhead damage and effects.

· *In FY 2003:* Soft urban target kill and light armor kill demonstrations of barrage round technology.

· *In FY 2004:* Hyperspectral imaging for high-volume urban battlespace search, detection, and targeting. Enhanced target location and acquisition system for precision targeting and position transmission in urban targeting. Image and video analysis for detection and identification of urban targets in cluttered terrain. Real-time execution and decision support systems for collaborative mission planning and real-time integrated strike packaging.

· *In FY 2005:* Precision strike navigation.

· *In FY 2006:* Weapon image link. Real-time precision radar for urban target detection and classification.

· *In FY 2007:* Mission responsive ordnance for soft target kill, and for multiple or dispersed target kills. Advanced gun barrel technology for heavy payloads at high muzzle velocities.

Transition Opportunities:

· Barrage Round (volume fire, soft target 5-inch gun round)—transition to Naval Surface Fire Support in FY 02.

· Hand-held day sight precision location system with digital fire support message capability—transition to AN/GVS-5 and TLDHS in FY 04.

· Durable gun barrel and high energy munition propellant—transition to the Advanced Gun System in FY 05.

First Priority (continued): Defeat relocatable targets at long ranges.

Conducting strikes deep in enemy territory under conditions of enemy air dominance requires us to be able to locate small and fugitive targets like ballistic missile transporter-erector-launchers (TELs), and to discriminate them from decoys. Key technological advances are needed in target acquisition and tracking at long, stand-off ranges.

· *In FY 2005:* Ship launch, control, and recovery of Naval Unmanned Combat Air Vehicle (UCAV-N), with multi-mission flight demonstration.

· *In FY 2006:* Real-time precision radar for target detection of moving TELs. Weapon image link for image communication demonstration and weapon damage information. Cruise missile real-time retargeting for detection and identification of moving enemy vehicles.

· *In FY 2007:* High speed strike weapon technology for high-speed guided flight.

Transition Opportunities: (See also transition opportunities for the first enabling capability.)

· Hyperspectral imager on an integrated gimbal with advanced signal processor—transition to F/A-18 SHARP and EP-3 Story Scanner in FY 04. *(Also supports the second, third, and fourth priorities.)*

· Region of interest, object of interest, image registration software—transition to Tactical Imaging System and Joint Targeting Workstation in FY 04 and FY05. *(Also supports the second, third, and fourth priorities.)*

· Collaborative mission planning and retargeting software—transition to Joint Mission Planning System in FY 04 and FY 05. *(Also supports the second, third, and fourth priorities.)*

· Fully integrated FOG IMU made exclusively under machine control—transition to JSOW, JDAM, and Tomahawk in FY 05. *(Also supports the second, third, and fourth priorities.)*

· Naval surveillance and suppression of enemy air defenses strike capable Unmanned Combat Air Vehicle (UCAV) technologies—transition to UCAV-N in FY 05. *(Also supports the second, third, and fourth priorities.)*

· Long-range precision synthetic aperture/ground moving target indicator radar and targeting system workstation—transition to EP-3 AIP/MMA and F/A-18 in FY 06. *(Also supports the second, third, and fourth priorities.)*

· Integrated aircraft and weapons data terminal software—transition to SLAM-ER in FY 06. *(Also supports the second, third, and fourth priorities.)*

· In-flight configurable warhead projectile—transition to Tomahawk in FY 07. *(Also supports the second, third, and fourth priorities.)*

Second Priority: Defeat short dwell-time mobile targets at long ranges.

One of the greatest challenges here is suppression of enemy air defenses, particularly when enemy air defense radars radiate intermittently.

· *In FY 2005:* Ship launch, control, and recovery of UCAV-N, with multi-mission flight demonstration. High-speed anti-radiation missile with ability to detect a mobile surface to air missile before its radar emits, and the ability to kill it even after the emitter shuts down.

· *In FY 2006:* Real-time precision radar for detecting moving ground targets. Weapon image link for image communication that supports terminal homing on moving targets, missile mission re-planning, and weapon damage assessment. Cruise missile real-time retargeting.

Transition Opportunities: (See also transition opportunities for the first priorities.)

· Integrated dual-mode seeker and high-speed propulsion on modified airframe—transition to HARM in FY 05.

Third Priority: Defeat moving targets at long ranges. Targeting and killing moving armored targets remains challenging, even in open terrain and with friendly air dominance.

· *In FY 2005:* Ship launch, control, and recovery of UCAV-N with surveillance mission flight demonstration.

· *In FY 2006:* Real-time precision radar for moving target detection and classification.

Transition Opportunities: (See transition opportunities for the first priorities.)

Fourth Priority: Defeat hard and deeply buried targets at long ranges. Key technologies required include the ability to acquire camouflaged targets, analyze structures, and effectively deliver warheads against deep targets.

· *In FY 2006:* Weapon image link for image communication demonstration, on-missile weapon re-planning and battle damage information.

Transition Opportunities: (See transition opportunities for the first priorities.)

What's some of the sustaining discovery and invention science and technology? Exploitation and delivery depend upon discovery and invention. In ONR's vertically integrated program, we will continue to exploit basic work that proves relevant to time critical strike.

· *Strike technology*, as a research area, is relevant to all aspects of the Time Critical Strike FNC: MEMS (micro-electomechanical systems, antenna technology, automatic target recognition, precision target handoff, automated weaponeering, reactive material warheads, mission responsive ordnance, advanced guidance techniques, and advanced seekers and sensors).

· *Radio frequency systems and architectures* and i*nformation systems, technologies, and operations* are crucial to the operational agility of Time Critical Strike, as are *electronics (materials and devices)* and *photonics*.

· *Advanced materials* (both structural and energetic) will be incorporated into future strike systems.

· Research into *air platforms*, especially into propulsion and aerodynamics for high-speed, small missiles, is expected to yield breakthroughs in strike technology.

· *Advanced electronics* for sensors and seekers.