

## At a Glance

### Advanced Weapons

- Near term
  - ◆ Reduce the weight of weapons systems, components and ammunition
  - ◆ Reduce operator burden for remote weapons stations
  - ◆ Reduce weapons spectral signatures
  - ◆ Extend the service life of weapons systems
- Mid term
  - ◆ Automatic target detection, recognition, identification, tracking and handoff capability at standoff distances in dismounted targeting systems
  - ◆ Affordable fires accuracy and lethality against small tactical platforms from small manned tactical platforms
  - ◆ Improved life cycle performance for small arms (reduced barrel erosion, improved operational performance)
  - ◆ Precision fires for companies
- Far term
  - ◆ Precision fires for the individual warfighter
  - ◆ High-velocity launch for kinetic kill projectiles to defeat future armor
  - ◆ Precision engagement and escalation of force from unmanned ground, air and surface platforms
  - ◆ Non-lethal engagement capability

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Warfighters capable of being employed in small, distributed units will locate and decisively engage larger enemy forces by applying timely, reliable, precise and accurate fires (kinetic and non-kinetic) from a myriad of platforms. Tactical units will be able to operate well beyond conventional parameters of direct-fire mutual support. Warfighters will use integrated, lightweight optics and sensors to see through all battlefield conditions (day, night, low light and obscuration), and they will use lightweight, organic, manned and unmanned platforms and advanced weapons for the rapid, accurate, effective application of firepower across the full range of military operations. They also will apply non-organic and joint fires optimally. Increased intelligence capabilities delivered by company intelligence cells will generate more potential targets in the future.

The Precision Universal Mortar Attack (PUMA) Future Naval Capability program is currently the lead program in the Advanced Weapons Technology Investment Area portfolio. PUMA will develop and demonstrate (fiscal year 2014) a Global Positioning System guidance kit for mid-range 120 mm mortar ammunition to provide an addition to the Expeditionary Fire Support System (EFSS) Family of Munitions (FoM). The PUMA Flight Controlled Mortar munitions will provide a precision capability between the upper end of the M1101 HE round range and the lower end of the Precision Extended Range Munition round range. This will enable the EFSS FoM to have a less than 20-meter circular error probability of 50 percent over the entire range of all the system's munitions.

### PUMA



### Research Challenges and Opportunities:

- Develop a low-cost, lightweight, low-power, guidance, navigation and control system for an 81 mm and 120 mm mortars with trajectory shaping for engagements in complex terrain and less than 10 meters' circular error probability precision.
- Develop low-cost; accurate; fire-and-forget; low-size, weight and power precision missile subsystem technologies.
- Identify and automate engagement tasks that can be performed effectively and safely by machines.
- Develop wireless lethal effectors for safe and legally permissible employment from unmanned platforms.
- Economically design and apply superalloys to weapon systems to minimize erosion, extend service life, reduce weight and enhance high-temperature performance.