Paladin Upgrade Through Integration of NDI technology

44th Annual Gun & Missile Systems Conference & Exhibition
Kansas City, MO

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Background & Overview

- **PIM program – Paladin/FAASV Integrated Management**
  - An integrated effort to ensure long-term viability & sustainability of the primary indirect fire weapons platform in the Heavy Brigades
  - Maximizes commonality with supported systems; minimizes development (primarily an integration activity)
  - Provides digital “backbone” to support Army wide VHM initiatives in longer-term

- Program includes replacement of hydraulic gun drives and rammer with high-voltage electric components
  - Hydraulics are a top-10 sustainment cost driver on M109A6
  - M109A6 slip ring is also a maintenance driver
PIM-SPH Objective Configuration Overview

Armament
- 39 caliber/ 155 mm (Paladin)
- Travel Lock (Paladin)
- 600V Electric Rammer (NLOS)
- Traverse, +/-800 mils

Electrical System
- Common Modular Power System (CMPS)
  Power Generation and Conversion

Power Train
Bradley-common
- Engine
- Transmission
- Final Drives

Suspension & Track
Bradley-common
- Road Arms
- Torsion Bars
- 19.1” track

COS Protection
CREW II
MCS - Improved

Gun Drives
- Integrated with PDFCS
- Equilibrated Elev Mech w/600V motor (NLOS)
- M109 Traverse Mech w/600V motor
- Electric Joysticks
- Manual Backups to drive Gun

Chassis (new structure)

Driver’s Compartment
- Integrates Bradley-common and Paladin components
Traverse Mechanism with Electric Drive
Electric Elevation Drive
Electric Projectile Rammer
Control components housed in former hydraulics compartment
Challenges

- **TRL**
  - What TRL is adequate for technology reuse?
  - Don’t neglect the effect of integration on TRL!
- **Challenges inherent in a sustainment project**
  - Baseline performance characteristics may be incompletely specified in existing requirements documentation
  - User may be accustomed to or reliant on features that are not in the defined requirements baseline
  - Design baseline developed using lower-maturity processes and standards
- Despite focus on sustainability rather than new functions or improved performance, requirements creep remains a challenge
Summary

- PIM leverages components, systems and proven technologies available today to ensure that the Paladin/FAASV fleet remains sustainable beyond 2050
- Electric drive contributes to improved system reliability and sustainability
- HBCT commonality reduces development, acquisition and sustainment costs