The Future of Energetic Formulation, Characterization, and Manufacturing (Tech Session 3A)

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SERDP • ESTCP SYMPOSIUM
2019 | Enhancing DoD's Mission Effectiveness

Multi Domain Operations

"… the Army's got to be able to sink ships, neutralize satellites, shoot down missiles and deny the enemy the ability to command and control its forces." – ADM Harry Harris

Multi- Domain Operations

Critical Multi-Domain Operations Questions

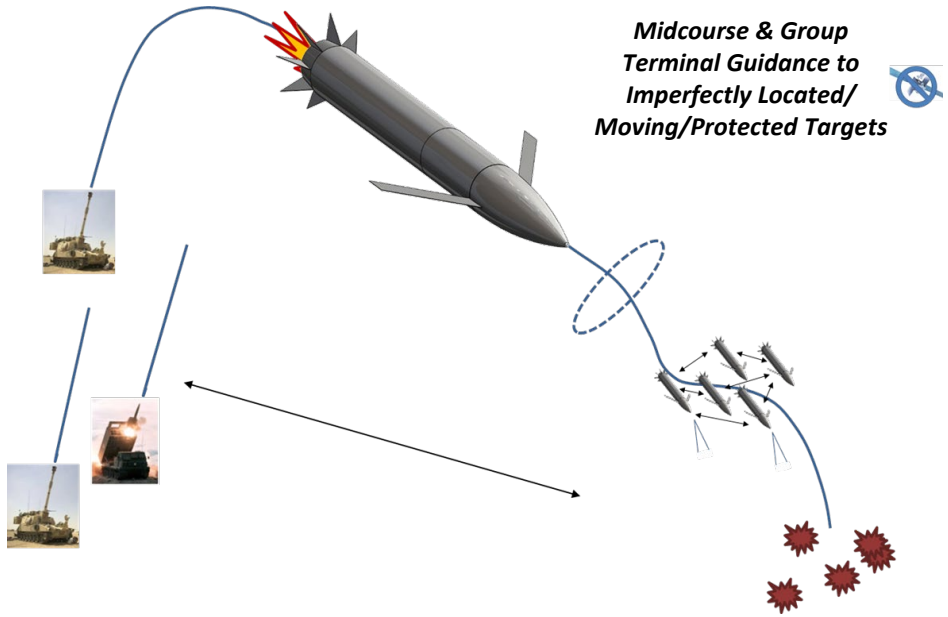
- How does the Joint Force compete to enable the defeat of an adversary's operations to destabilize the region, deter the escalation of violence, and, should violence escalate, enable a rapid transition to armed conflict?
- How does the Joint Force **penetrate** enemy anti-access and area denial systems throughout the depth of the Support Areas to enable strategic and operational maneuver?
- How does the Joint Force **dis-integrate** enemy anti-access and area denial systems in the Deep Areas to enable operational and tactical maneuver?
- How does the Joint Force **exploit** the resulting freedom of maneuver to achieve operational and strategic objectives through the defeat of the enemy in the Close and Deep Maneuver Areas?
- How does the Joint Force re-compete to consolidate gains and produce sustainable outcomes, set conditions for long-term deterrence, and adapt to the new security environment?

Army Modernization Priority Strategy for Long Range Precision Fires

Foundational Research Products

All echelons of fires require:

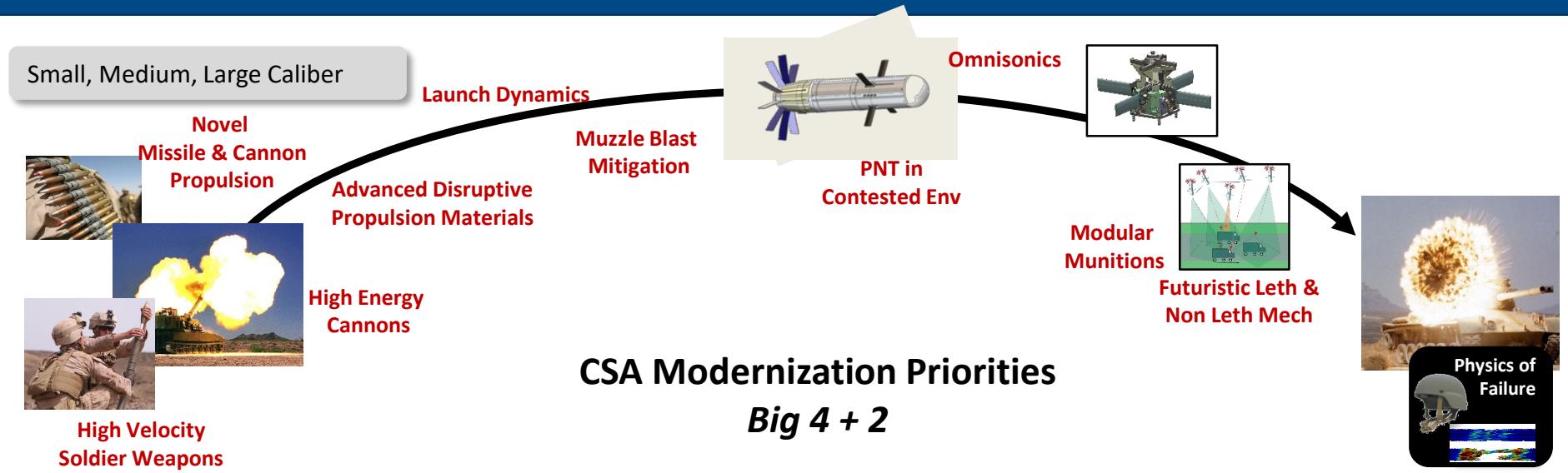
Increased Launch, Flight, and Terminal Survivability



Midcourse & Group Terminal Guidance to Imperfectly Located/ Moving/Protected Targets

Enhanced Output, Modular Lethality Against Distributed Soft/Hard Targets

MDO and Role of Energetics



CSA Modernization Priorities

Big 4 + 2

1. Precision Fires – Long Range Precision Fires

2. Next Gen Combat Vehicles

3. Future Vertical Lift

4.Network/C3I

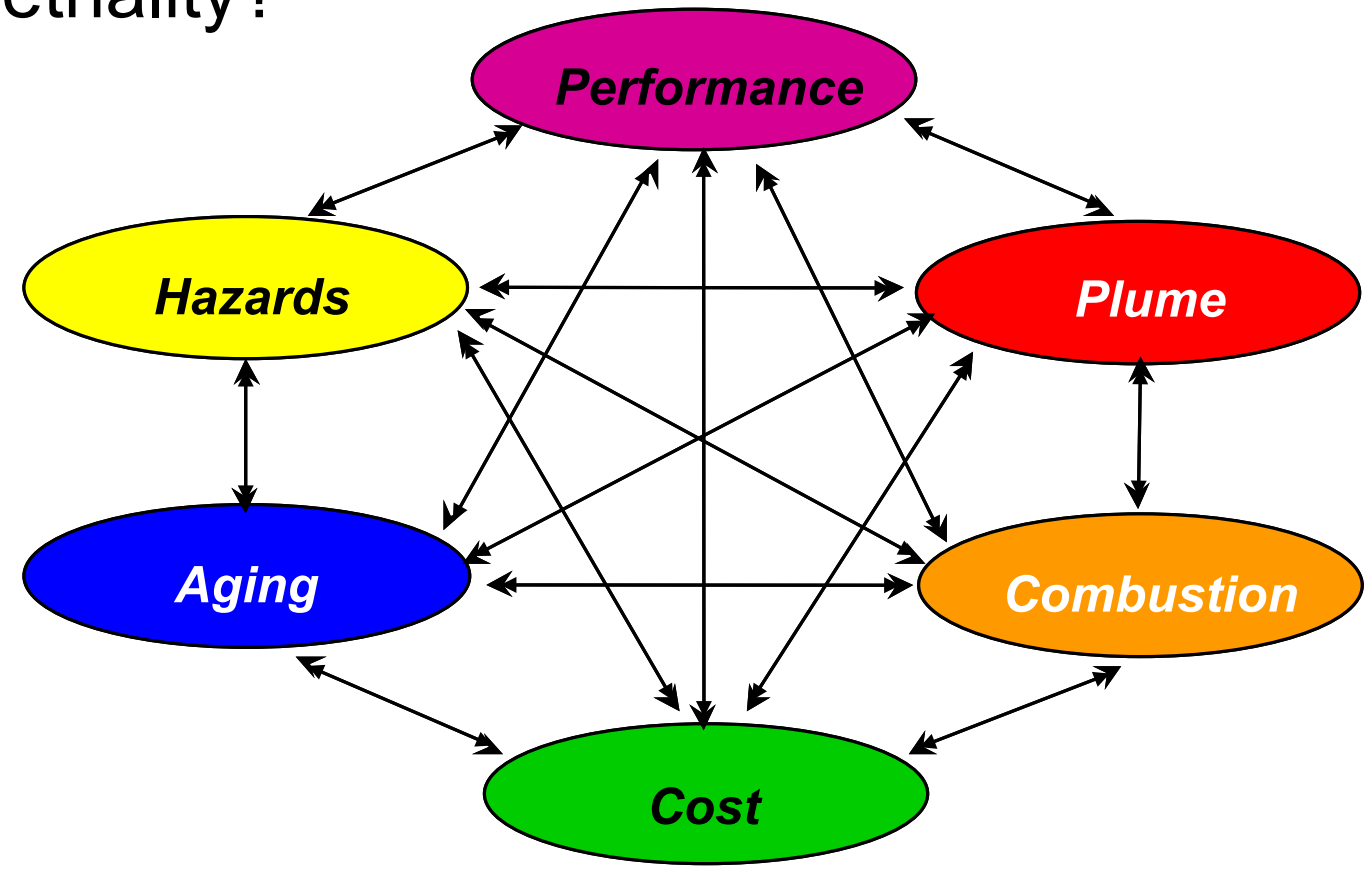
5. Air & Missile Defense

6. Soldier Lethality – Next Generation Squad Weapon

MCoE
Maneuver Force
Modernization Strategy

Key SERDP/ESTCP Challenge for Energetics

- How do we balance Environmental focused science with increasing demand on Lethality?



Agenda for Session 3A

Time	Item	Presenter
01:45 PM	Session Chair Introduction	Nirupam Trivedi
01:55 PM	Less Toxic Advanced Energetic Materials	Steven Son
02:25 PM	Time Delays: The Path Toward Environmentally-Benign Formulations	Lori Groven South Dakota School of Mines
02:50 PM	Analysis of Emissions in Muzzle Blasts	Kevin McNesby
03:15 PM	Break	
03:35 PM	Additive Manufacturing in Energetics; Formulations	Jeffrey Rhoads Purdue University
04:00 PM	Alternatives to Composition B Explosives	Karl Oyler
04:25 PM	Tactical Solid Rocket Motor Propellant Systems that Eliminate Isocyanates and Ammonium Perchlorate	Andrew Nelson
04:50 PM	Session Chair Wrap-Up	Nirupam Trivedi
05:00 PM	Adjourn	