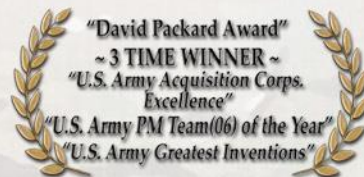




2017 NDIA Munitions Executive Summit

**COL M. Gutierrez, Project Manager,
Maneuver Ammunition Systems**

27-29 MAR 2017



Armament Systems Platform Integration

SOLDIER WEAPONS

GROUND



MHS
MS C Approval
Phase I Downselect
Competition



XM1158 7.62mm ADVAP
MS B - DEC 16
XM1161 7.62mm OWL
MDD - DEC 16
XM1154 7.62mm RRA



Shotshell Study @ MCoE



.50 Cal Ammo CDD
Initiated AROC

ROTARY



NAVY



PHALANX
C-RAM



AIR



MOUNTED

M829A4:
FMR / FRPDR - MAY 16
AWARD PY2 OPTION - AUG 16

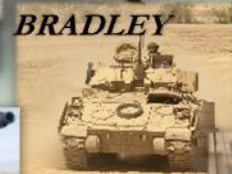
AMP:
EMD PHASE 1 EFFORTS
COMPLETE-ON SCHED.-
WITHIN COST
PHASE 2 DOWNSelect -
ON SCHED. - JAN 17



40mm HV Anti
Personnel Devel.



ABRAMS
M1A1



STRYKER MGS

M724A2
TC-STD APPROVAL
AWARDED FIRST PROD.
ORDER



AROC Approved
AoA Ongoing

30x173mm AB for
Stryker Lethality



MOUNTED SYSTEMS



Priorities & Focus

Future Capabilities to Defeat Threats in Lethal, Contested Complex Environment

- Airburst Munitions for Mounted & Dismounted Fight - Autonomous/Programmable
- Extended Range Munitions - across the portfolio
- Increased Precision/Guided

Current Development Programs	
7.62mm One Way Luminescence (OWL)	40mm Day/Night/Thermal Training (DNT)
7.62mm Lightweight Small Caliber Ammo	120mm Advanced Multi-Purpose (AMP)
7.62mm Reduced Range Ammunition (RRA)	Stryker ONS 30 x 173mm

Emerging Needs	
5.56, 7.62 & .50 Cal	OWL, LW Ammo, Reduced Range Training
40mm Grenades	HE Airburst, Door Breach
30mm Cannon	HE Airburst
105mm Multi-Purpose	
120mm Extended Range	

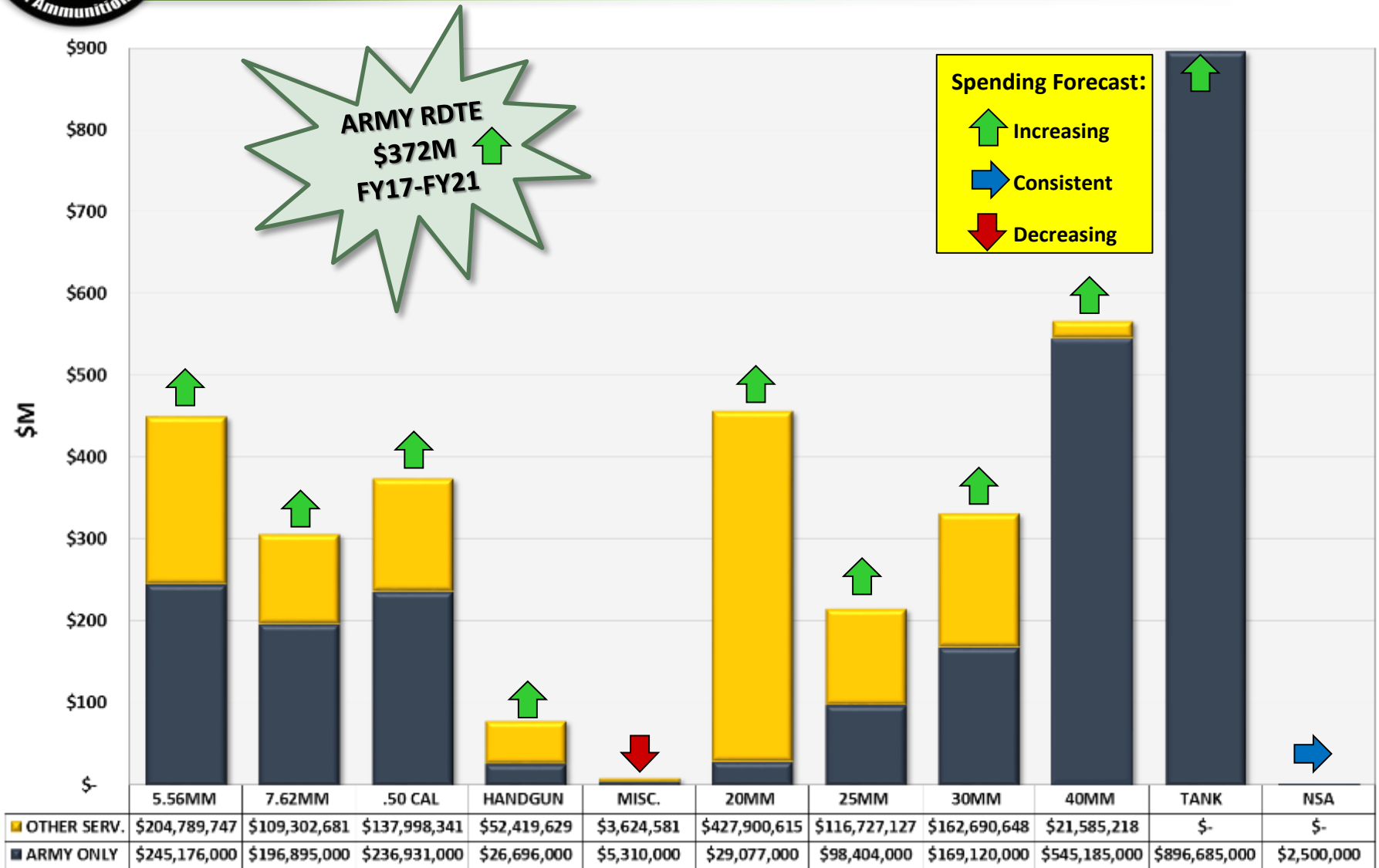
Potential for Increased Production to Support the Joint Warfighter

- FY17 DoD budget with Congress - potential for significant increases in ammo buys
- PM MAS now buying all Non-Standard Ammo for CENTCOM
- FY17 projections - 950M rounds Standard/91M Non-Standard

Change in Character of War



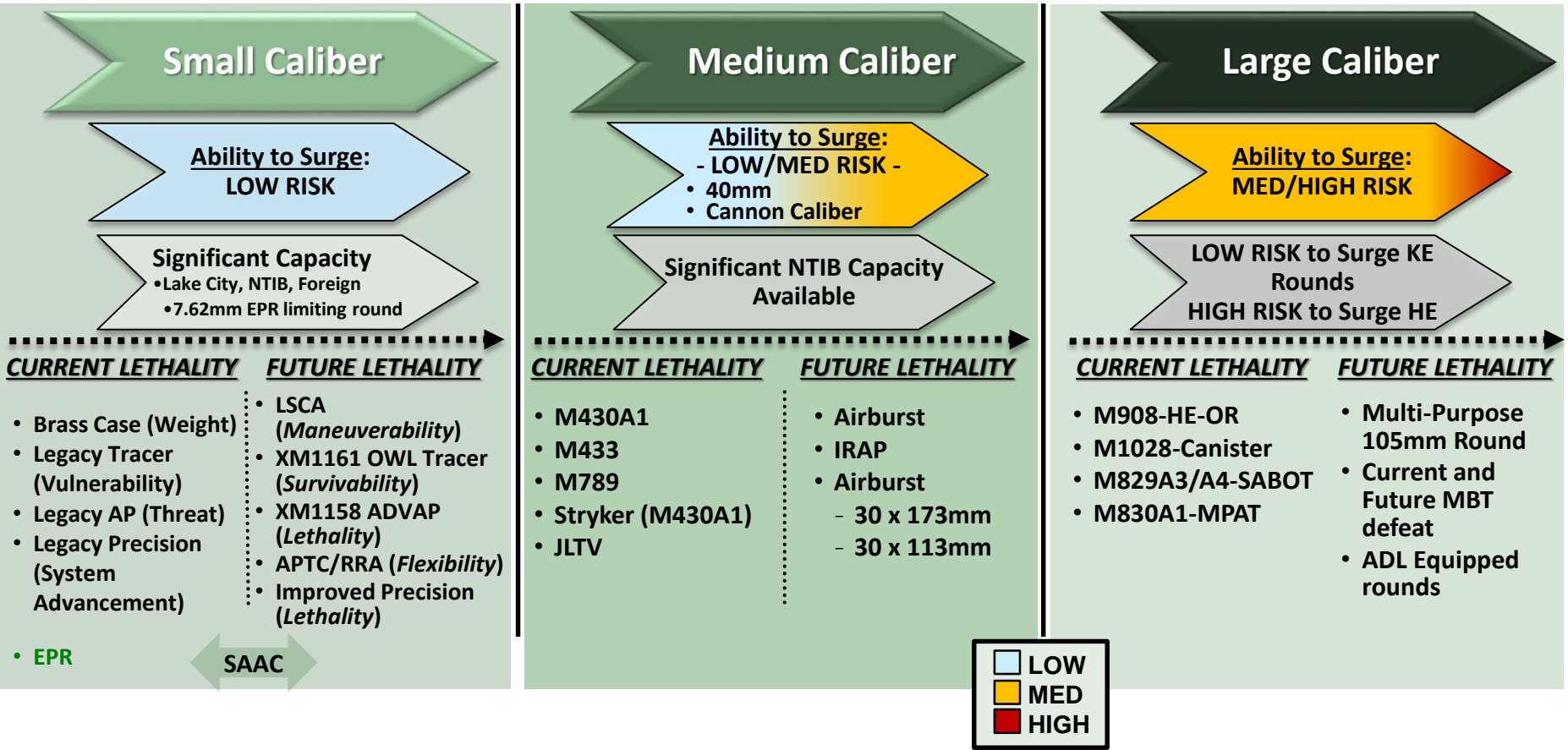
PM-MAS PB17 Budget Outlook (FY17-FY21)





Scenario--Threat Based Posture

- Multi-Caliber approach to Overmatch threat capabilities
- Focus R&D Investments in that direction
- Maintain Industrial Base capacity & surge





Industrial Base Posture

Key Trends

SMALL CALIBER AMMUNITION

(5.56mm, 7.62mm, .50 CAL, Misc)

- Small Caliber ammunition products in relatively good position
 - ✓ Potential for Lake City AAP competition in FY18-FY19
 - ✓ Maintaining Second Source for high demand products
- Boutique Items – Close Combat Mission Capability Kit (CCMCK), Short Range Training Ammunition (SRTA) etc. more dependent on other service buys

MEDIUM CANNON CALIBER

(20mm, 25mm, 30mm)

- 30x173mm Ammunition for Stryker ICV ONS
 - ✓ Short-term Urgent Materiel Release (UMR) of Ammo
- Potential 30x173mm Program of Record
 - ✓ Full Materiel Release for Army
 - ✓ Programmable Airburst Development
- New emerging requirements could increase outyear demand
 - ✓ Increased lethality for JLTV
 - ✓ 30mm AB

MEDIUM CALIBER AMMUNITION

(40mm Grenades)

- Requirements could increase outyear demand
 - ✓ Low Velocity High Explosive Airburst Development
 - ✓ Potential Adoption of 40mm Door Breaching Ctg.
 - ✓ Potential High Velocity Anti-Personnel Capability on MK19
- TP-DNT production starting late FY17
- High FMS demand for M430A1

LARGE CALIBER AMMUNITION

(105mm, 120mm)

- Potential for multiple IDIQ contracts to facilitate quick response to emerging FMS requests
- Increased consumption of training rounds will drive increased production requirements starting early FY20s
- War Reserve stocks of 120mm tactical ammunition will be maintained until replaced with new production AMP and M829A4
 - ✓ Stocks of most 105mm tactical ammunition are beyond design life with no existing IB capacity for new production

NON NATO STANDARD AMMUNITION

(NSA)

- High demand for Non-Standard Ammo
 - ✓ Consolidate CENTCOM procurements
 - MOA between SOCOM and PD NSA in development to procure all Non-Standard Ammo through PD NSA



PM MAS FY17/ FY18 Competitive Opportunities

FY17 / FY18					
FY17					
Program/ Item/ Description	Projected RFP Release	Projected Award Date	Total Potential Contract Value	Contract Strategy*	Contract Type**
7.62mm Bottleneck Blank	AUG 16	MAR 17	\$6.25M	C	IDIQ
Shotshell	AUG 16	MAR 17	\$20.1M	C	IDIQ
120mm Tank Training	JUL 16	MAR 17	\$671.1M	LC	FFP
Small Cal Non Recurring Engineering	JUL 16	APR 17	\$65M	C	IDIQ
5.56mm Frangible	DEC 16	AUG 17	\$52.8M	C	REQ
NSA IDIQ (CONUS)	JAN 17	AUG 17	\$500M	C	IDIQ
40mm Systems	FEB 17	SEP 17	\$483M	C	FFP
FY18					
M830A1 Refurbishment	JUN/FY17	OCT/FY18	\$9M	LC	FFP
Medium Caliber Family	DEC 17	JUL 18	\$2B	LC	IDIQ
40mm IRAP	NOV 17	MAY 18	\$28.9M	C	FFP
PM MAS Support	DEC 17	MAY 18	\$10M	C	IDIQ
*Competitive (C), Small Bus Set-Aside (SBSA), National Tech. & Industrial Base (NTIB), Sole Source (SS), Limited Competition (LC)					
**Firm Fixed Price (FFP), Indefinite Delivery/ Indefinite Qty. (IDIQ), Requirements Contract (REQ)					
AWARDED					



MAS FY17/18 DOTC Opportunities

FY17

Small Caliber

- One-Way Luminescence (OWL) - Pursuing alternate tracer compounds
- Prototype equipment, tooling, and component technologies

Medium Caliber

- 40mm Fuze Reliability Analysis (M549A1 & M550)
- 40mm High Velocity Mann Barrel Development/Qualification (Breeches and Other Testing Equipment)

Large Caliber

- Next Generation Composite Kinetic Energy Tank Ammunition Prototyping
- Improved Tank Ammunition Primer prototypes

FY18

Small Caliber

- Prototype solutions to enhance performance, affordability, and environmental effects in small caliber ammunition
- One-Way Luminescence (OWL) - Pursuing alternate tracer compounds
- Prototype equipment, tooling, and component technologies

Medium Caliber

- Improved performance 20mm (CRAM)
- Multi-mode LW30mm (Material & Personnel)
- Medium Caliber Airburst Munitions

Large Caliber

- Line of Sight - Beyond Line of Sight (LOS-BLOS) large caliber Guided Tank Munition (GTM) prototype munitions



PM-MAS Request for Industry Input

- PM-MAS has R&D Funds to execute EMD Programs for validated requirements (Most cases) – IRAD – Strategy should support Govt. vision
 - Identify/Minimize potential sole source situations at all levels of suppliers
- Create additional sources of supply for 120mm Tank Ammo components
 - Primers/Primer Components
 - KE Composite Sabot Material
 - Obturators
 - 105mm Wear Reducing Liners
- Develop supporting technologies for 120mm Guided Tank Munition and 105mm multi-purpose cartridge
- Industry input will be considered in developing acquisition strategy


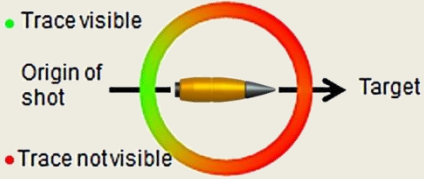



Message to Industry

- **Contested complex near peer adversaries create potential to be outsourced, out ranged, out protected and out of balance**
- **Overall Direct Fire Ammunition Production rising next few years**
 - Near Peer scenarios will put upward pressure on War Reserve requirements
- **Overall increase in R&D across Portfolio with focus on speed to field**
- **Consolidation for Non NATO Munitions**
 - Requirements not going away anytime soon
 - CENTCOM / Big Army / SOCOM consolidation



Small Caliber Ammunition

PROJECT:	<p align="center">Precision Munitions</p> 	<p align="center">One Way Luminescence (OWL)</p> 	<p align="center">Reduced Range Training Ammunition (RRTA)</p> 
PURPOSE:	Develop scalable precision munition technologies to increase precision capability in multi-target and specialized missions	One-way visible, full day/night tracer for 5.56mm and Cal 0.50" Reduced Range Training Ammunition (RRTA).	Develop 7.62mm training rounds for reduced Surface Danger Zones (SDZ) ranges with a trajectory match to current combat ammunition
PAYOFF:	Engage targets at greater ranges, with increased P(h), in non-ideal/combat relevant conditions	Increase soldier survivability by removing tracer signature/visibility from threat	Allow full capability on restricted training ranges and collective training
PROGRAMMATIC:	FY13-17, multiple TRL 6	FY17-20, TRL 6	FY15-17, TRL5
OPPORTUNITIES:	<ul style="list-style-type: none"> • Prototype manufacturing, MANTECH initiatives • Novel materials 	<ul style="list-style-type: none"> • Novel concepts and materials 	<ul style="list-style-type: none"> • Prototype manufacturing, MANTECH initiatives • Novel materials



U.S. ARMY
RDECOM



ARDEC S&T IN SUPPORT OF PM- MANEUVER AMMUNITION SYSTEM



Medium Cannon Caliber Ammunition

PROJECT:

Advanced Lethality and Accuracy System for Medium Caliber (ALAS-MC)



50mm x 228mm PABM-T



50mm x 228mm APFSDS-T

Aviation Armaments System Technologies (AAST)



Advanced airburst multi-purpose ammunition

Accurate Rapid Controlled Hybrid Effects Round (ARCHER)



PURPOSE:

Part of ALAS-MC STO which is developing an integrated armament system to include family of 50mm x 228mm ammunition to include Programmable Air Bursting Munition and Armor Piercing munition

Selectable proximity/point detonation fuzed LW30mm ammunition for Apache and future LW30mm requirements

DARPA Collaboration: Command guided, medium caliber munition that can enable mounted maneuver through engagement of multiple threats

PAYOFF:

Extended range and optimized lethal effects against all target sets

Provide burst capability and increase lethality performance against multi-domain targets

Increase number of stowed kills and reduced collateral damage while filling the cost gap between conventional bullets and precision missiles

PROGRAMMATIC:

FY15-FY19, TRL 6

FY16-FY20, TRL 6

FY19-23, TRL 6

OPPORTUNITIES:

- Warhead design
- Power sources
- Prototype manufacturing, MANTECH initiatives

- Fuzing with focus on prox.
- Advanced warheads against personnel and light vehicles

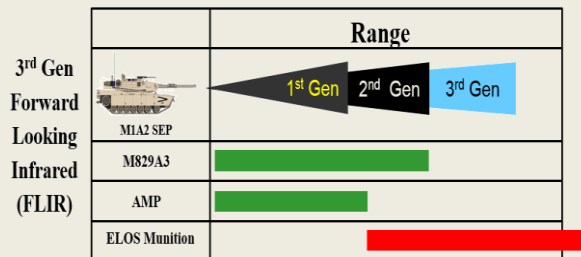
- Control actuation to enable high g maneuver
- Weapon system fire control



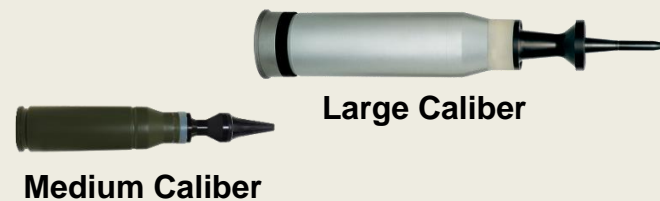
Large Caliber Ammunition

PROJECT:

Extended Line of Sight (ELOS)



Advanced Munition Warhead Manufacturing Improvements MANTECH (AMWMI)



PURPOSE:

Munition capable of guiding, seeking, detecting, maneuvering, and hitting a threat target at extended line-of-sight ranges

Improved Tungsten manufacturing process for kinetic energy penetrator that meet DoD directive to replace Depleted Uranium (DU)

PAYOFF:

Complements the range capability of GEN 3 FLIR Sight System to counter growing threat posed to the Abrams Tank Fleet and the maneuver force

Single point failure mitigation for drop in replacement for medium and large caliber KE penetrators

PROGRAMMATIC:

FY19-21, TRL 6

FY15-FY17, TRL 6

OPPORTUNITIES:

- Munition guidance to enable precision hit
- Terminal sensor

- Life Cycle Pilot Process