



PROGRAM MANAGER
FCS
BRIGADE COMBAT TEAM
One Team-The Army/Defense/Industry

“The Future is Now”
Joint - Flexible - Responsive

Munitions Executive Summit

Mark Oetken
Director

FCS Warfighting Systems’ Integration

20 Feb 2008

Connect – Protect – Project... FCS

Non-Line of Sight Mortar (NLOS-M) XM1204



Infantry Combat Vehicle (ICV) XM1206



Non-Line of Sight Cannon (NLOS-C) XM1203



Armed Robotic Vehicle – Assault Light (ARV-AL) XM1219



Mounted Combat System (MCS) XM1202



Non-Line of Sight Launch System (NLOS-LS) XM 501



Communicate See Understand Act

Network



Class I Unmanned Air Vehicle (UAV) XM 156



Reconnaissance and Surveillance Vehicle (RSV) XM1201



Command and Control Vehicle (C2V) XM1209



Class IV Unmanned Air Vehicle (UAV) XM 157

Tactical and Urban Unattended Ground Sensors

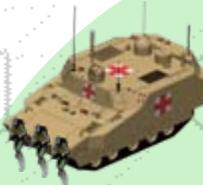


AN/GSR-10 AN/GSR-9

Soldier-Centric Network



Medical Vehicle Treatment (MV-T) XM1208



Medical Vehicle Evacuation (MV-E) XM1207



Field Recovery and Maintenance Vehicle (FRMV) XM1205



MULE-T XM1217

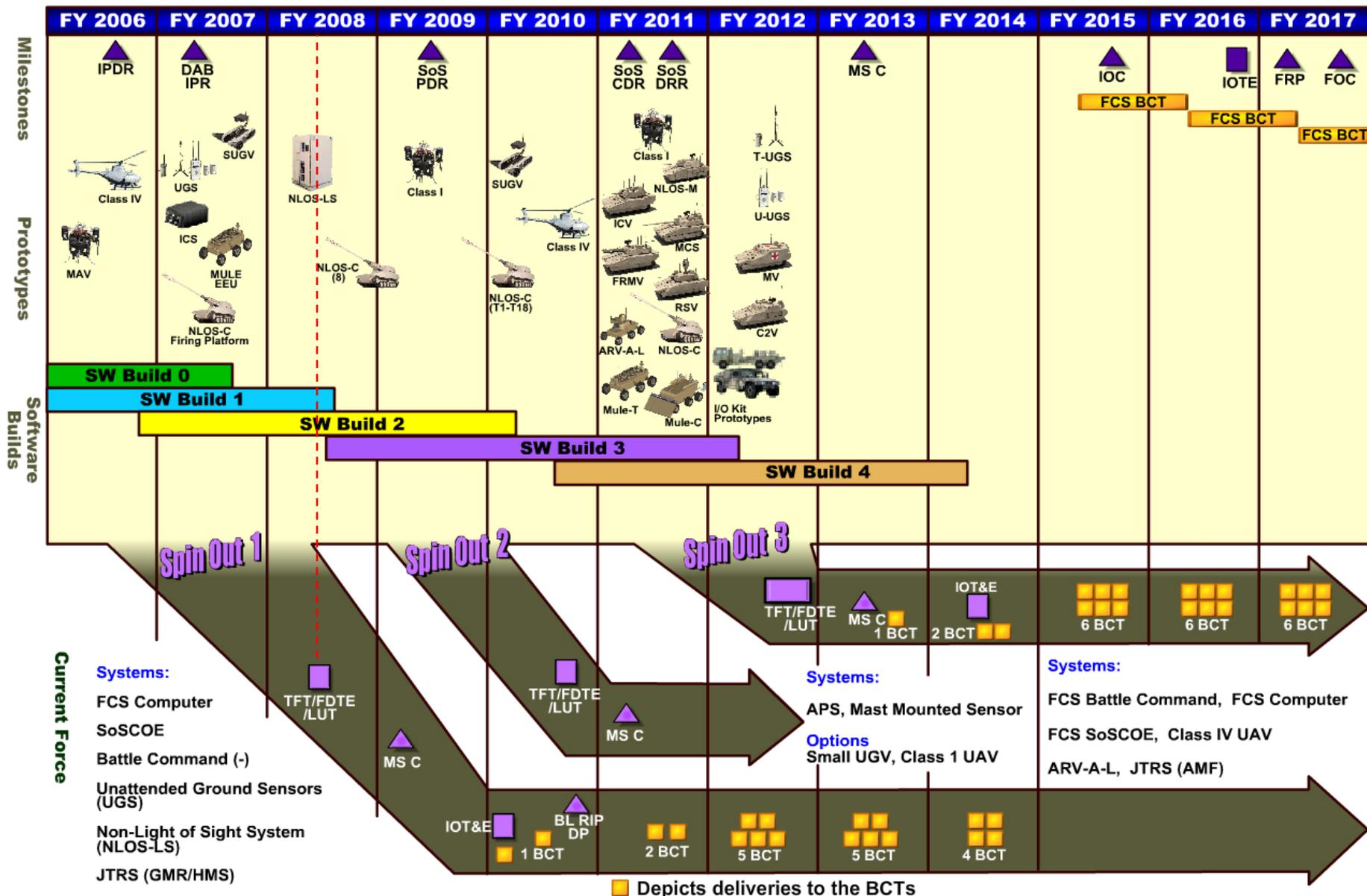


MULE-C XM1218



Multifunctional Utility/Logistics and Equipment Countermine and Transport

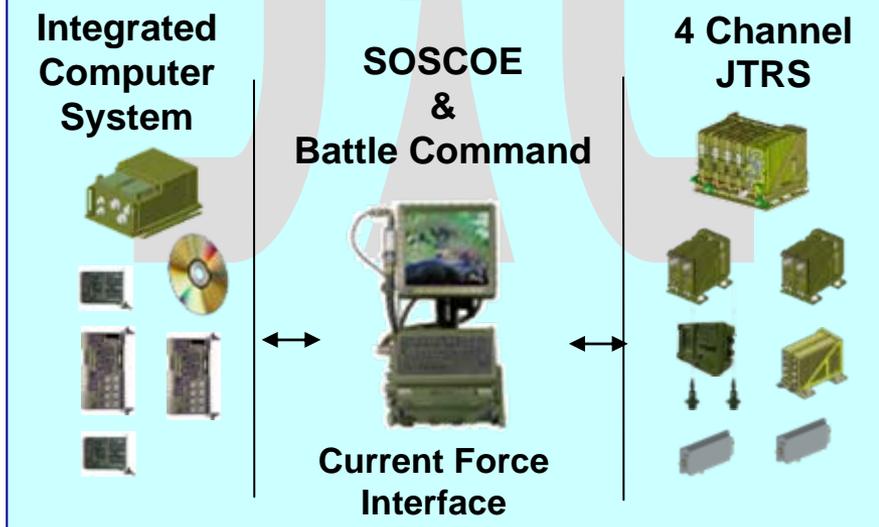
FCS (BCT) System-of-Systems Schedule



Spin Out 1: *The Future is Now*



Network Capability Integration Kit



Capability Improvements:

- Force protection
- Precision networked fires
- Interoperability

Milestones:

- ✓ Critical Design Review – Q2 FY07
- ✓ First Network Kit Delivery – Q2 FY07
- ✓ Software Qualification – Q4 FY07
 - Limited User Test – Q4 FY08
 - Milestone C – Q2 FY09

Unattended Sensors & Munitions



Relevant to Today's Force

Spin Out 1: Unattended Ground Sensor (UGS)

Urban-UGS

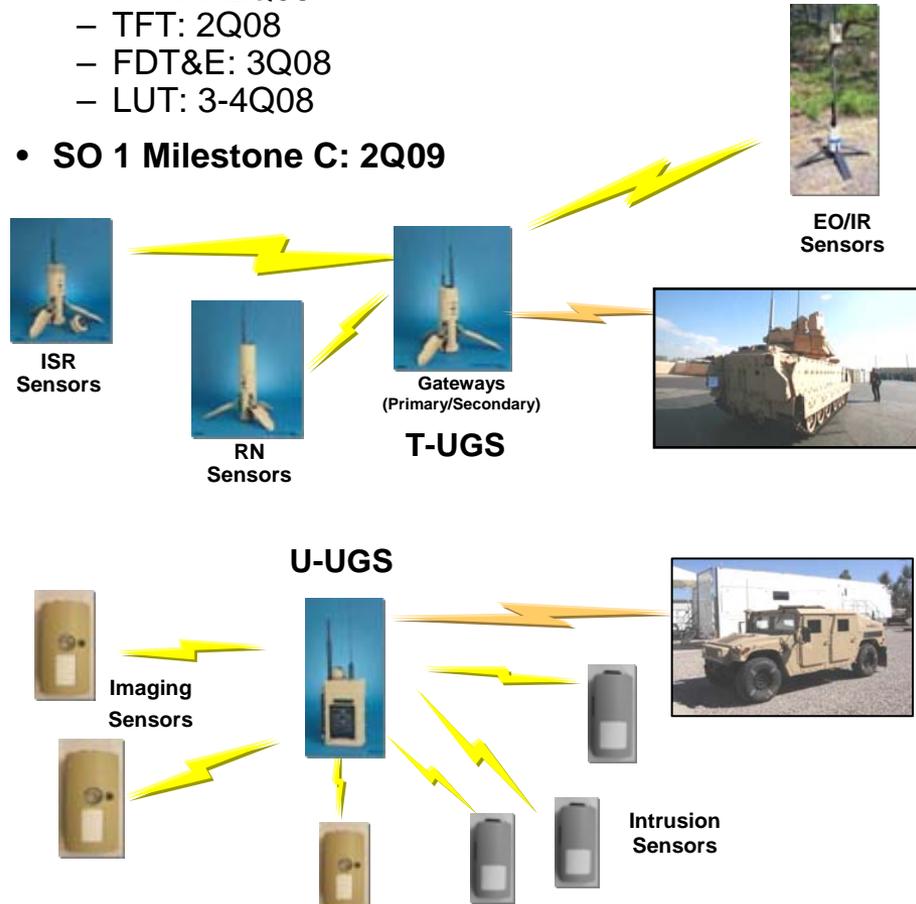


KEY ACCOMPLISHMENTS:

- ✓ UGS NET
- ✓ T-UGS and U-UGS prototypes delivered for test

FY08-09:

- Army Evaluation Task Force Events
 - PTRR: 2Q08
 - TFT: 2Q08
 - FDT&E: 3Q08
 - LUT: 3-4Q08
- SO 1 Milestone C: 2Q09



Tactical-UGS



Spin Out 1: Non Line of Sight Launch System (NLOS-LS)

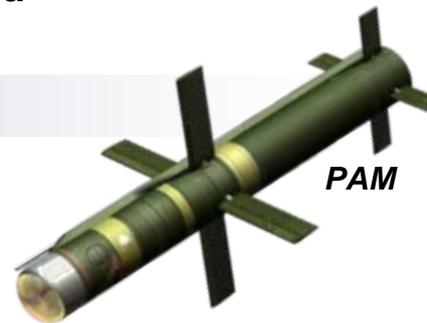


KEY ACCOMPLISHMENTS:

- ✓ Current Forces Integration
- ✓ (AFATDS (FA Control Cell), FOS, CFFT)
- ✓ 5 Container Launch Units (CLUs) Delivered
- ✓ New Equipment Training & Logistics Demonstration Conducted

✓ FY08-09:

- **NLOS-LS Flight Testing**
 - CFT-12: 2Q08
 - CTV-2: 2Q08
 - CFT-13: 3Q08
 - NLOS-LS GTV 1-9: 4Q08-1Q09
- **Army Evaluation Task Force Events**
 - TFT: 2Q08
 - FDT&E: 3Q08
 - LUT: 4Q08
- **SO 1 Milestone C: 2Q09**
- **NLOS-LS Flight LUT: 2Q09**
- **Production Decision/LRIP I Award: 3Q09**



Spin Out 1: New Equipment Training at Ft. Bliss

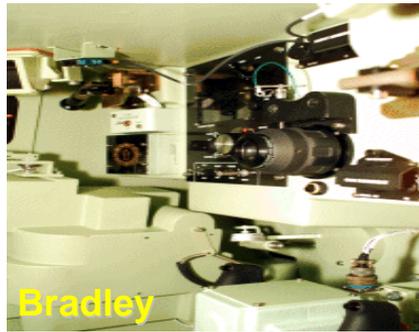
Close Combat Tactical Trainer (Simulation)



Classroom



Abrams



Bradley



HMMWV



NLOS-LS

Live



T-UGS

Manned Ground Vehicles (MGV)

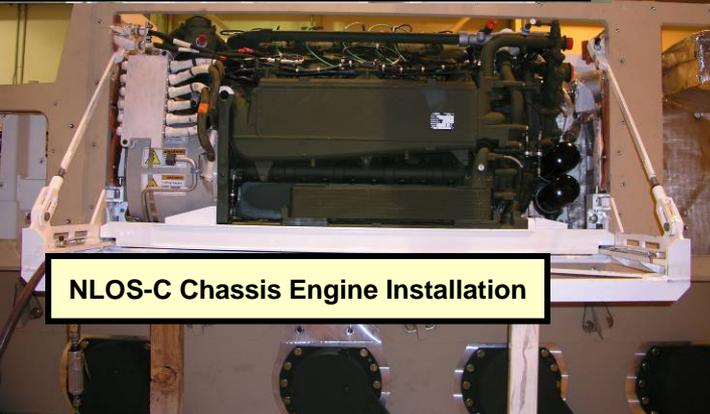


C2V / RSV Rooftop De-confliction Test Rig



NLOS-M 5-Round Burst

APS Short Range Countermeasure First Flight – Design Verification Test



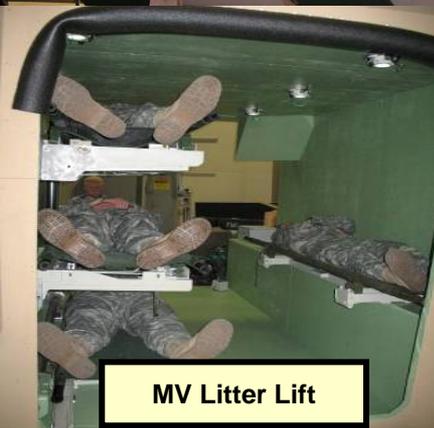
NLOS-C Chassis Engine Installation



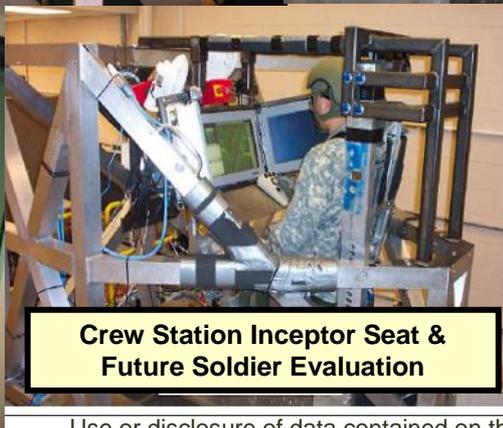
Traction Drive System in NLOS-C Chassis



MCS XM360 Electric Gun Elevation Drive Testing



MV Litter Lift



Crew Station Inceptor Seat & Future Soldier Evaluation

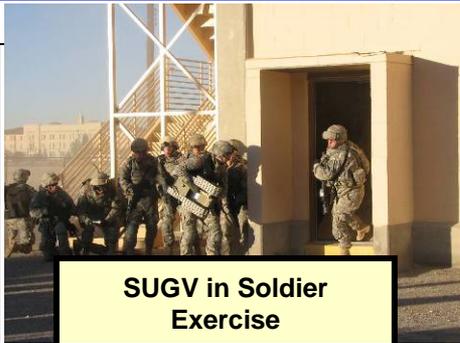


ICV Mock Up Demo



120 MM MCS Cannon

Unmanned Ground Vehicles (UGV)



SUGV in Soldier Exercise



SUGV Water & Land Test



Packbot on Patrol in Iraq

SUGV Drop Test



SUGV

ANS LADAR and Imaging Perception Module (IPM)



Robotic Convoy – Obstacle Avoidance Testing



Robotic Convoy – ANS Integrated onto STRYKER & LMTV Platforms



Autonomous Navigation System ANS



MULE 1 meter step



MULE EEU in Soldier Exercise



EEU in Soldier Exercise



MULE EEU at NLOS-C Factory Dedication (Elgin, OK)



MULE 1.7m Gap

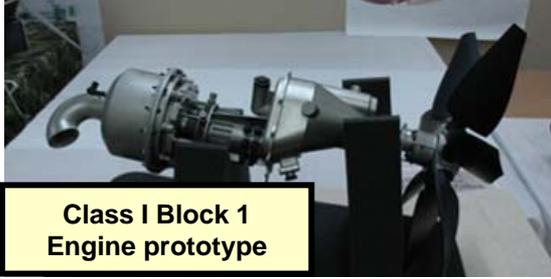


EEU Testing Urban Terrain Muskogee, OK

MULE

Unmanned Aerial Vehicles (UAV)

Class I UAV



Class I Block 1
Engine prototype

Class I Block 0
with soldier



Class I Block 0
in Flight



Class I Block 0
Flying at Orogrande

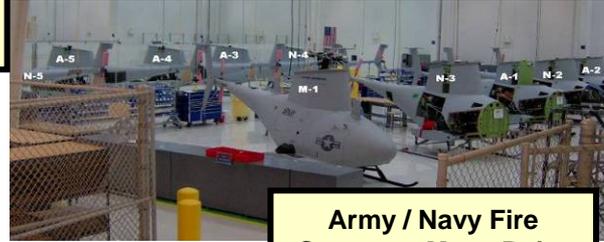


Experiment 1.1



Army A7 undergoing
shipping inspection
process at SAC

A2 Engine Run at Moss
Facility 7 August 07



Army / Navy Fire
Scouts at Moss Point
Facility



N1 being flown at
AUVSI Demo at
Webster Field, MD

Class IV UAV



Army A5 on Display @
Quantico, MD Marine Day



Army A2 being loaded on C130 at
Trent Lott International Air Port, MS

NLOS-LS

NLOS-LS Air Drop from C-130 aircraft
2 May 07, Ft. Bragg



Loading of NLOS-LS Container Launch Unit (CLU) onto C-130 aircraft



Air Drop of CLU unit



Upright landing of CLU unit



Soldiers prepping the NLOS-LS



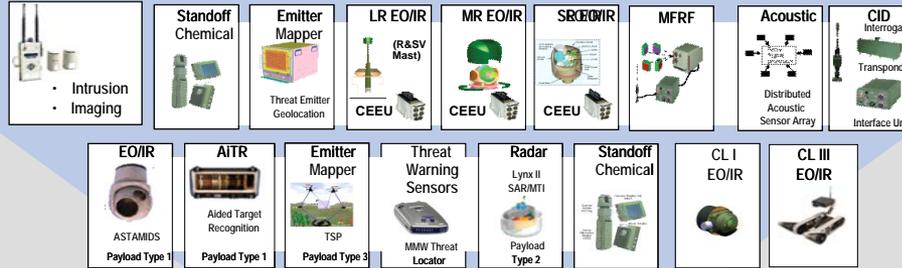
NLOS-LS Firing test

Soldiers



Future Brigade Centric Team Network

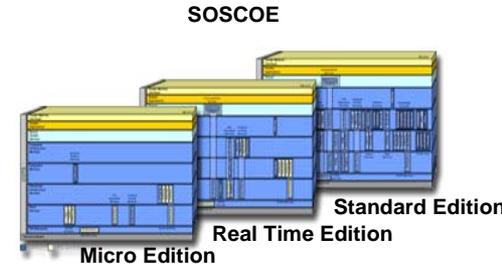
Sensors



Sensors

- See First**
 - Sensor cueing
 - Multi-spectral wide area search
 - BSO detection/reporting
- Understand First**
 - Distributed sensor fusion
 - Situation & threat refinement
- Act First**
 - Planning and preparation
 - Mission execution
 - Collaboration & synchronization
- Finish Decisively**
 - Overwhelming combat power at the right time & place

Network



WIN-T JC4ISR



ICS

Effectors



NLOS-LS: *Joint – Flexible – Responsive – Lethal*

New Military Capability

- Networked missile
- Vertical launch with 360 degree coverage
- Multiple targeting modes
- Moving target engagement
- Terminal imagery snapshot

Flexible

- Platform Independent -- 2 CLUs on FMTV
- Sling load forward
- C-130 transportable



Responsive



- In-flight Target Location Updates (IFTU)
- Fire and Forget Capability
- 15 targets from one launcher
- Automatic target acquisition

Lethal

- Effective against armored, non-armored, stationary and moving targets

PAM Bunker Sled Test - 21 May 07



Joint

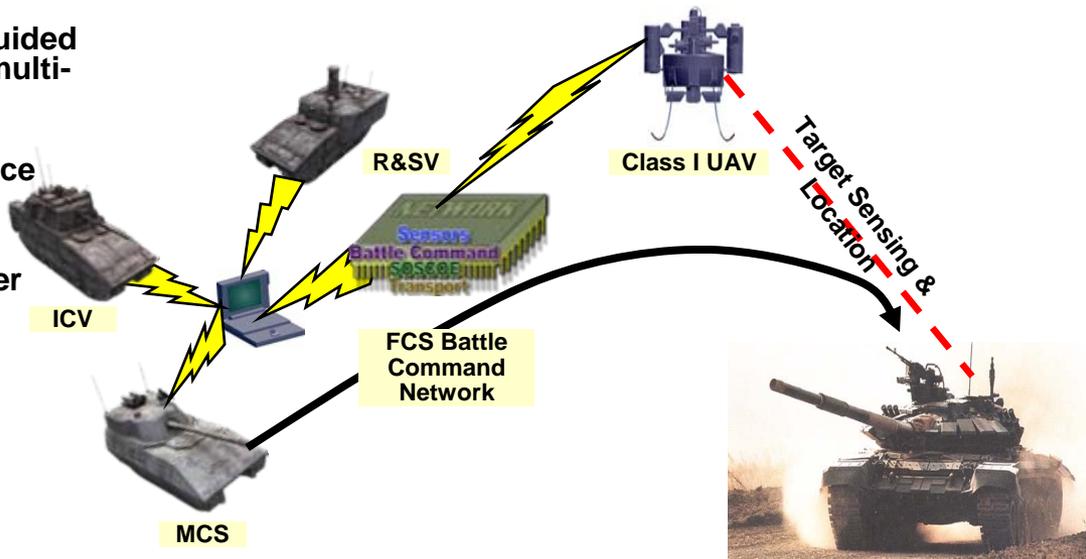
- Adopted by the USN for the Littoral Combat Ship



Mid-Range Munition: *Flexible – Responsive – Lethal*

New Military Capability

- 120mm precision-guided smart munition w/ multi-mode seeker
- BLOS fires extend maneuver battlespace
- Moving target engagement
- Autonomous or laser designated modes



Responsive

- Targeting information and airspace deconfliction via FCS Battle Command
- Target observation by MCS via sensor-to-shooter link

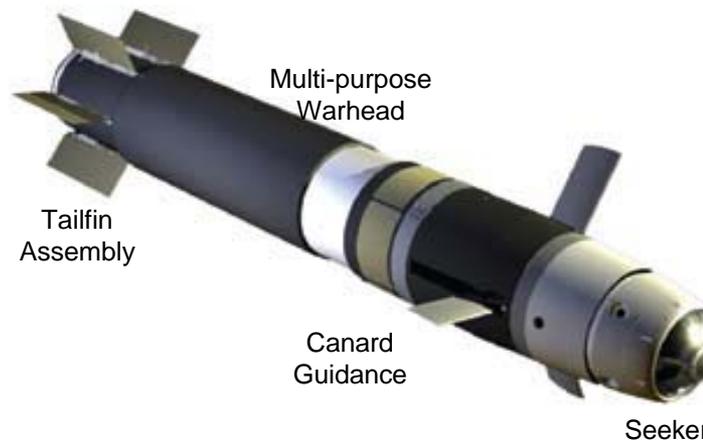
Flexible

- Cooperative or Network engagements
- Compatible with Current Force (Abrams) with application of Ammo Data Link



Lethal

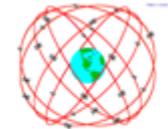
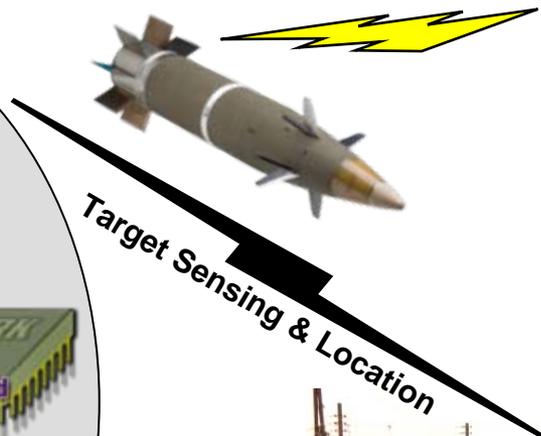
- Effective against stationary and moving targets including:
 - Main Battle Tanks w/ ERA
 - Light Armored Vehicles
 - Earth & Timber Bunkers



*Excalibur: Joint – Flexible – Responsive – Lethal

New Military Capability

- 155mm precision guided munition
- Fire and forget
- GPS/INS guidance
- In-theater now



GPS



Joint

- Adopted by the USMC

*FCS Complementary Program

Flexible

- All weather/day-night
- Steep angle of attack (urban terrain)
- Compatible with digitized 155mm systems
- Growth for additional payloads
- Extended range capability

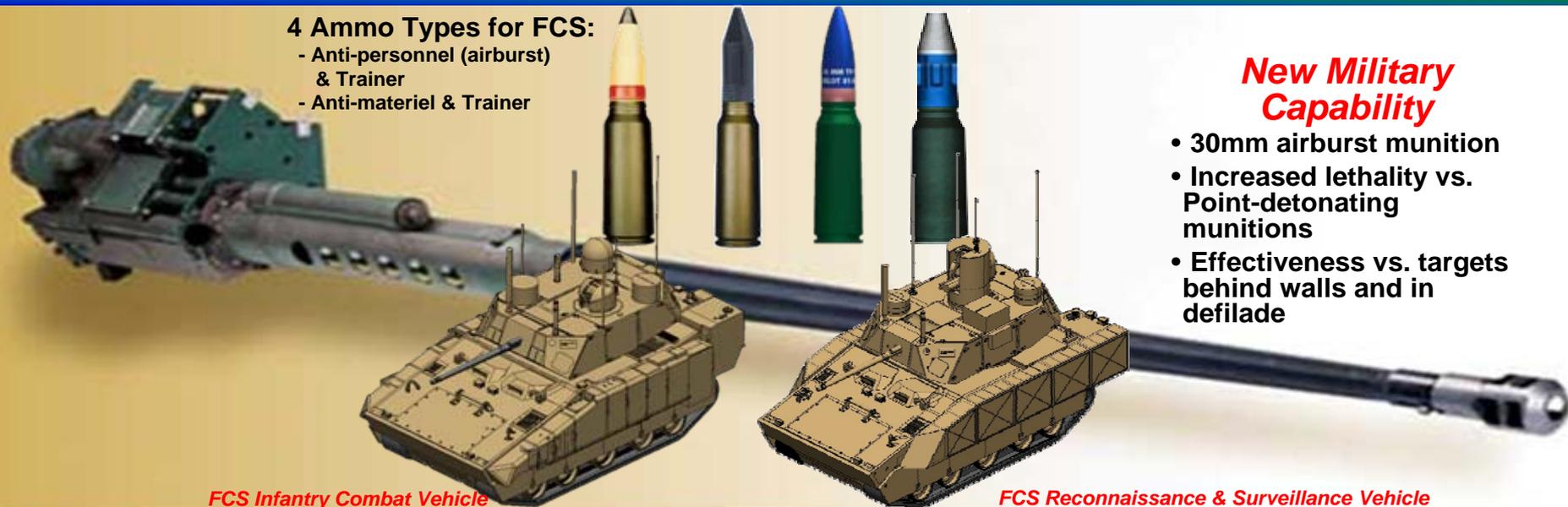
Lethal

- Effective against stationary point targets
- Unitary warhead
- Small CEP
- Selectable fuze: Height of Burst, PD, concrete penetrating Delay mode

MK44 30mm: *Joint – Flexible – Responsive – Lethal*

4 Ammo Types for FCS:

- Anti-personnel (airburst) & Trainer
- Anti-materiel & Trainer



New Military Capability

- 30mm airburst munition
- Increased lethality vs. Point-detonating munitions
- Effectiveness vs. targets behind walls and in defilade

Joint

Flexible

- Ready growth path to 40mm
- Interoperable with NATO standard 30x173mm ammo
- Logistics commonality across services enhances interoperability



Lethal

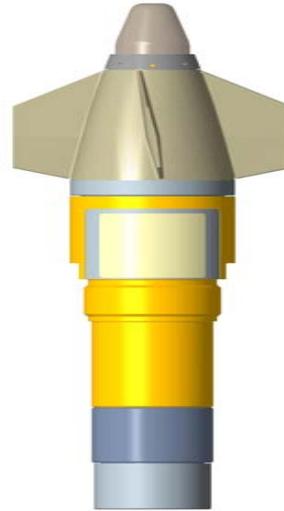
- Effective against stationary and moving targets including:
 - Light/Med Armored Vehicles
 - Rotary Wing Aircraft/UAVs
 - Reinforced Walls/Bunkers
 - Personnel/ATGM Crews
 - Targets in defilade



*Precision Guidance Kit (PGK): *Joint – Flexible – Responsive – Lethal*

New Military Capability

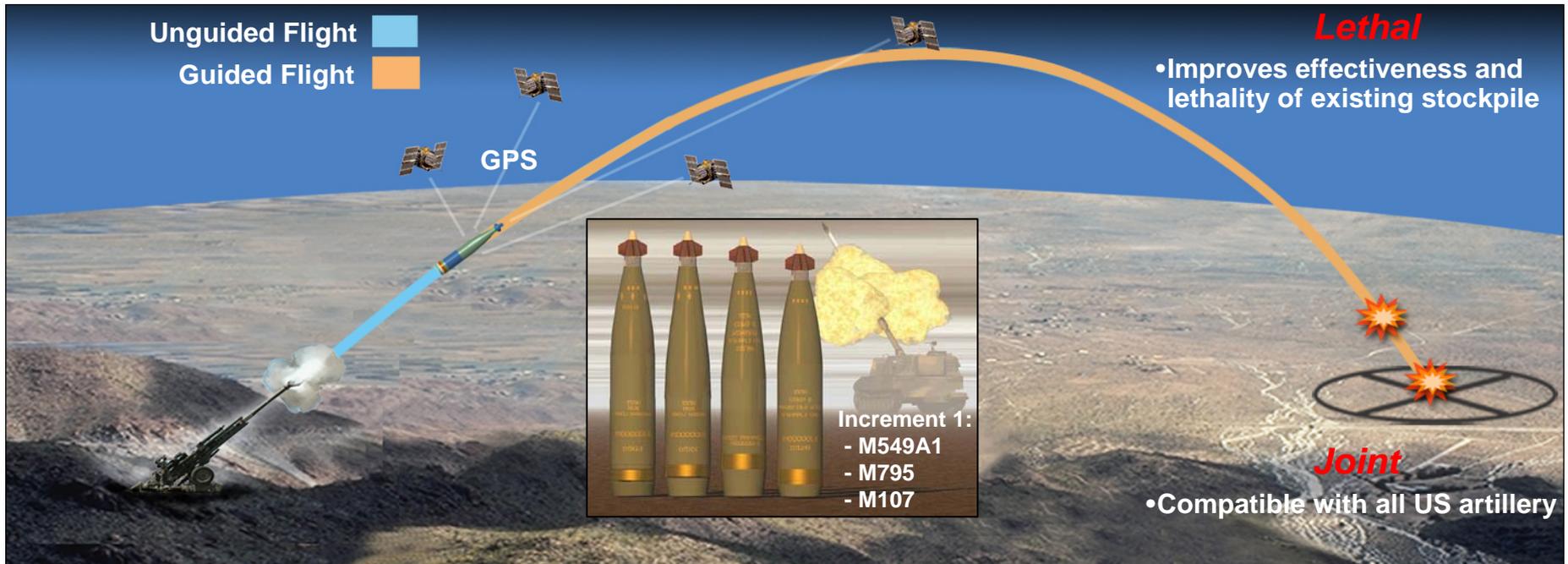
- Provides a combined fuze and GPS-based guidance system for conventional artillery projectiles
- Includes both proximity and point detonating fuzing modes



Flexible

- Transforms existing artillery projectiles into low cost precision weapons (reduced CEP)
- Enhances close support
- Increases stowed kills
- Reduces collateral damage
- Reduces logistics footprint
- Increment 1 targets 155mm HE projectile family

*FCS Complementary Program



Common, Remotely Operated Weapon System (CROWS) II – Flexible – Responsive – Lethal

Improved Military Capability

- Four-Axis Targeting
- 7.62mm Ballistic Protection Kit
- Uncooled Thermal Imager
- Reduced weight
- Improved reliability



Flexible

- Enables “arms room” concept via compatibility with M2, Mk19, M240 and M249
- Readily adaptable to other weapons (e.g., Javelin) and capabilities (e.g., Non-Lethal)
- Readily integrates with multiple platforms (e.g., MRAP, Abrams, HMMWV)



Responsive

- Three-Axis Vector Stabilization
- Auto Focus (Day and Thermal)
- Auto Track, - Lead, - Scan
- Target Reference Points

Lethal

- Enables target acquisition and engagement at the weapon’s maximum effective range



- **FCS Systems are in Soldiers' hands today**
- **The FCS Network is a key Current and Future Force enabler, providing a shared, real-time, Tactical Operating Picture**
- **FCS core and complementary munitions leverage the FCS network and systems, enabling decisive LOS, BLOS and NLOS fires**
- **Spin Out 1 provides an early slice of FCS network, sensor and unattended munitions capabilities to the Current Force**

FCS: *The Future is Now*