

# Cannon Artillery and Mortar Precision Effects



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# Cannon Artillery and Mortar Precision Effects Capabilities



- All weather 24/7 continuously “loitering” precision capability
  - ✓ Responsively and precisely attack targets...can precisely “mass” fires
  - ✓ Minimizes collateral damage...“discretion” & “close” engagements
  - ✓ Inherent scalability with multiple shooters and multi-round missions
  - ✓ Dramatically reduced logistics burdens (less qty's and transport/storage)
  
- Employed with current cannon artillery & mortar systems and structure...& accurate targeting systems (FS3, LLDR, PSS-SOF)
  - ✓ Easily additive to current systems and capabilities...“compatibility” is key
  - ✓ Maintains current smoke & Illum capabilities...“precision” smoke w/PGK?
  - ✓ Maintains area fire & suppressive fires capabilities...“precise” area fires?
  
- PM CAS Indirect Fire Precision Efforts
  - ✓ Excalibur provides 155mm artillery <10m CEP capability out to 40 kms
  - ✓ Precision Guidance Kit (PGK) for 155mm & 105mm artillery projectiles
  - ✓ Exploring 105mm artillery & 120mm mortar precision with ARDEC / ARL

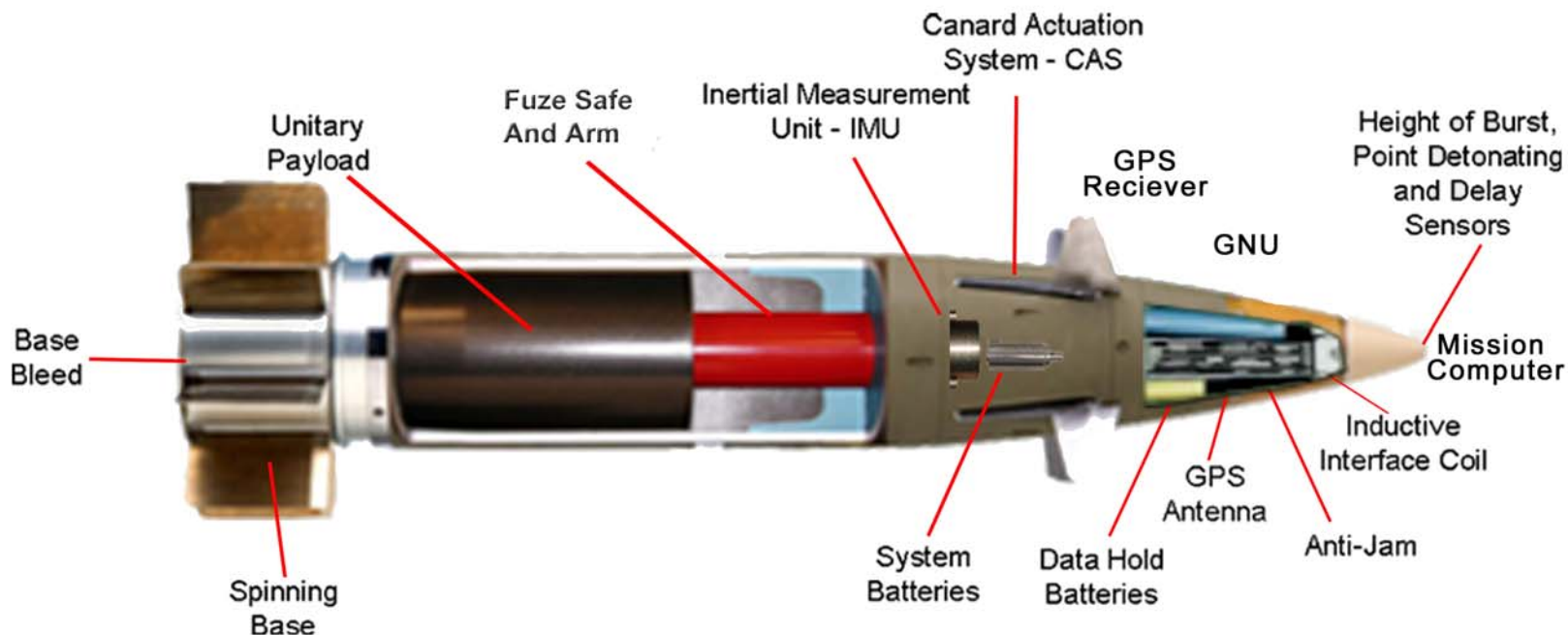


# XM982 Excalibur



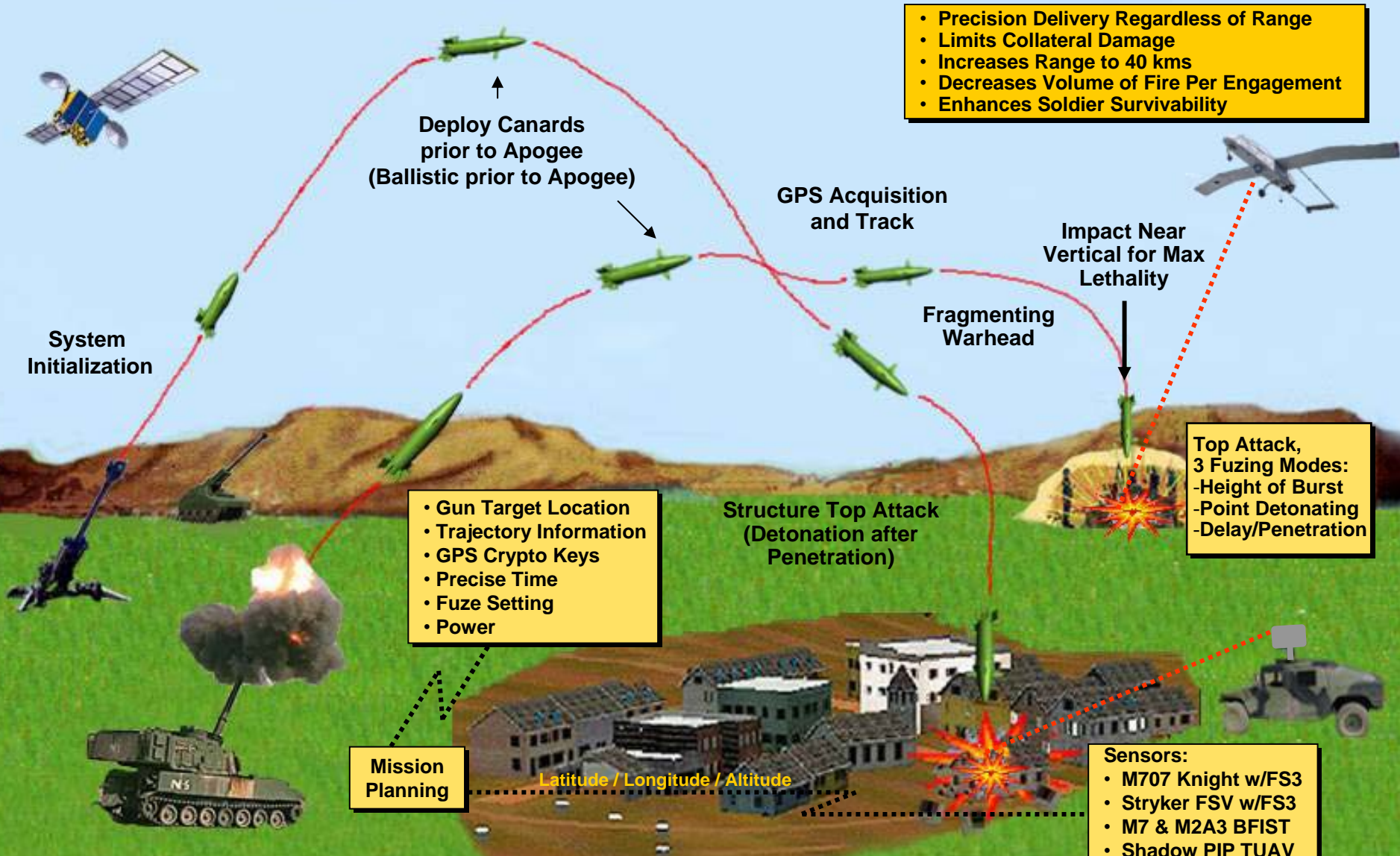
## System Characteristics/Description:

- ✓ Precision Guided 155mm Cannon Ammunition (CEP < 10m)
- ✓ Fin Stabilized, Gliding Air Frame
- ✓ All Weather, Day/Night, Fire & Forget, Urban/Complex Terrain
- ✓ Compatible with NLOS-C, Paladin and LW155 Howitzer Platforms
- ✓ One Meter Length / 106 lb





# Excalibur Concept of Operations



- Precision Delivery Regardless of Range
- Limits Collateral Damage
- Increases Range to 40 kms
- Decreases Volume of Fire Per Engagement
- Enhances Soldier Survivability

- Gun Target Location
- Trajectory Information
- GPS Crypto Keys
- Precise Time
- Fuze Setting
- Power

- Top Attack, 3 Fuzing Modes:
  - Height of Burst
  - Point Detonating
  - Delay/Penetration

Mission Planning

Latitude / Longitude / Altitude

- Sensors:
- M707 Knight w/FS3
  - Stryker FSV w/FS3
  - M7 & M2A3 BFIST
  - Shadow PIP TUAV



# Excalibur Video



PRECISION STRIKE  
XM982  
EXCALIBUR  
FOR GUNNERS AIRWILL 151

EXCALIBUR M982  
155MM ARTILLERY  
PRECISION PROJECTILE

The image shows a video frame with a dark brown grid background. At the top, there is a horizontal strip with a fiery, orange and yellow background. On the left side of this strip is a circular logo for "PRECISION STRIKE XM982 EXCALIBUR FOR GUNNERS AIRWILL 151". To the right of the logo is a 3D rendering of the Excalibur M982 155mm artillery precision projectile, shown from a side-on perspective. Below the strip, the text "EXCALIBUR M982 155MM ARTILLERY PRECISION PROJECTILE" is displayed in a bold, yellow, sans-serif font.



# Excalibur Program Status



- Excalibur Block Ia-1
  - ✓ Operational use in theater
  - ✓ Block Ia-1 production deliveries ongoing
- Excalibur Block Ia-2 (longer range version)
  - ✓ Block Ia-2 operational test planned for Jun 09
- Excalibur Block Ib
  - ✓ Increased reliability and significantly reduced unit costs
  - ✓ Competitive Source Selection ongoing



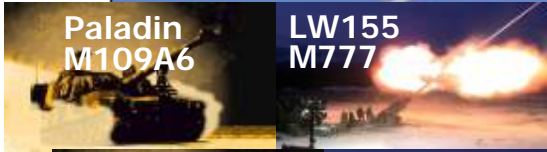
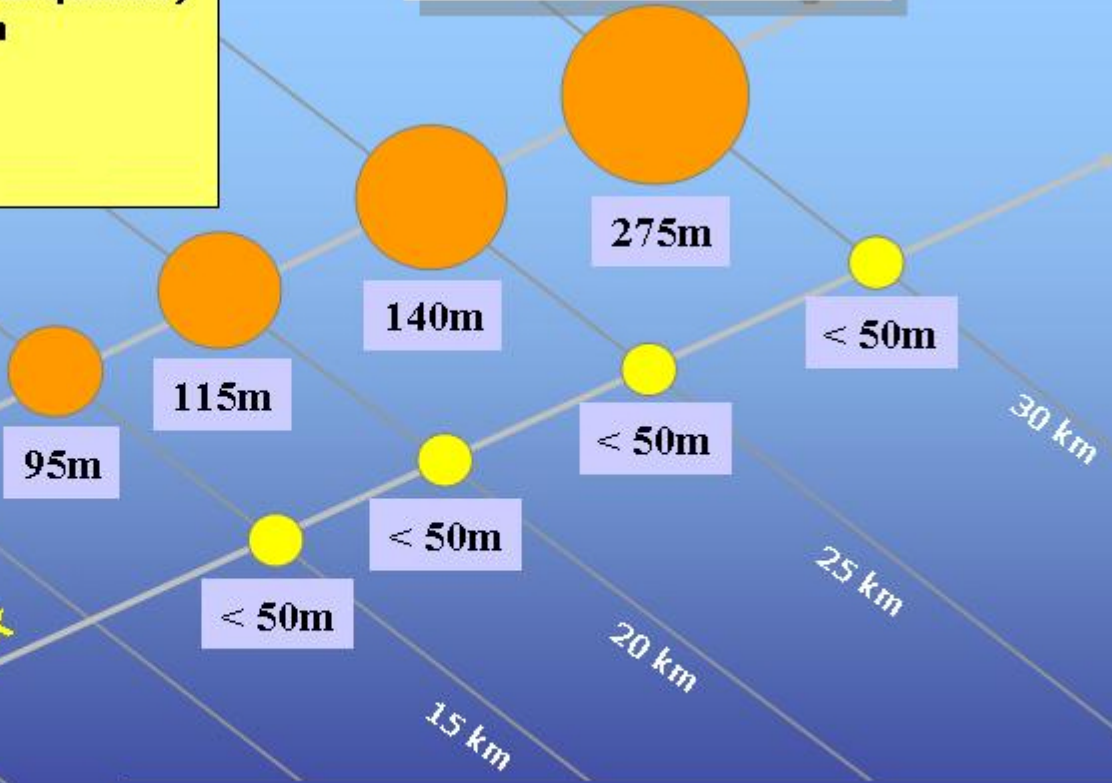
# Precision Guidance Kit (PGK) 155mm Projectile Accuracy

- Increased effectiveness (kills targets quicker)
- Increased stowed kills per platform
- Reduced collateral damage
- Reduced logistics burden
- Closer support of friendly troops

CEP vs. Range

w/o PGK

w/PGK



PGK Increment 1 Provides CEP Accuracy of < 50 Meters



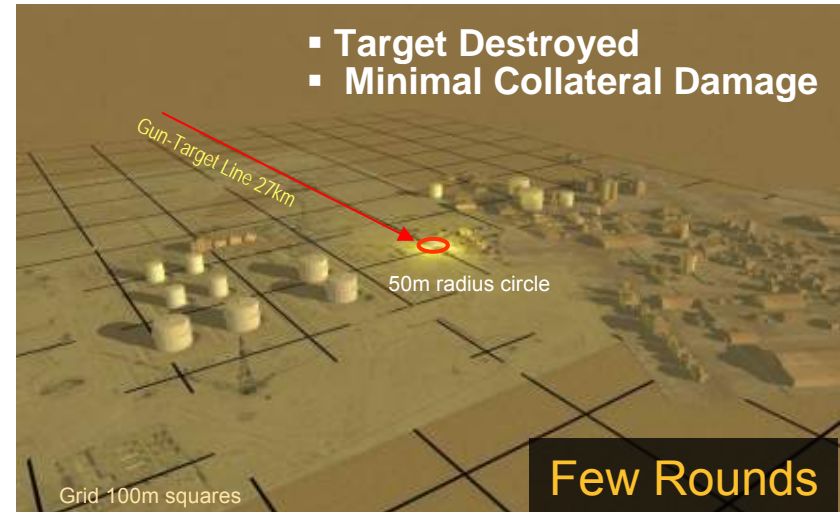
# Operational Benefits



Today's Capability: 183m CEP\*



PGK:  $\leq 50m$  CEP



\* M109A6 (Paladin) at 27km: 155mm (HE) M549A1

- Improves Accuracy – Significantly Reduces Ballistic Dispersion
- Significantly Decreases the Time Needed to Achieve Desired effects
- Minimizes Collateral Damage
- Increases Number of Kills per Basic Load of Ammunition
- Greatly Reduces Logistics Burdens





# PGK Design (Increment 1)



- Fits in standard 155mm High Explosive artillery projectile fuze wells (deep intrusion)
- GPS guidance (incorporates SAASM)
- 20 Year Storage Life (no battery)
- Proximity & Point Detonating Fuzing





# PGK Video

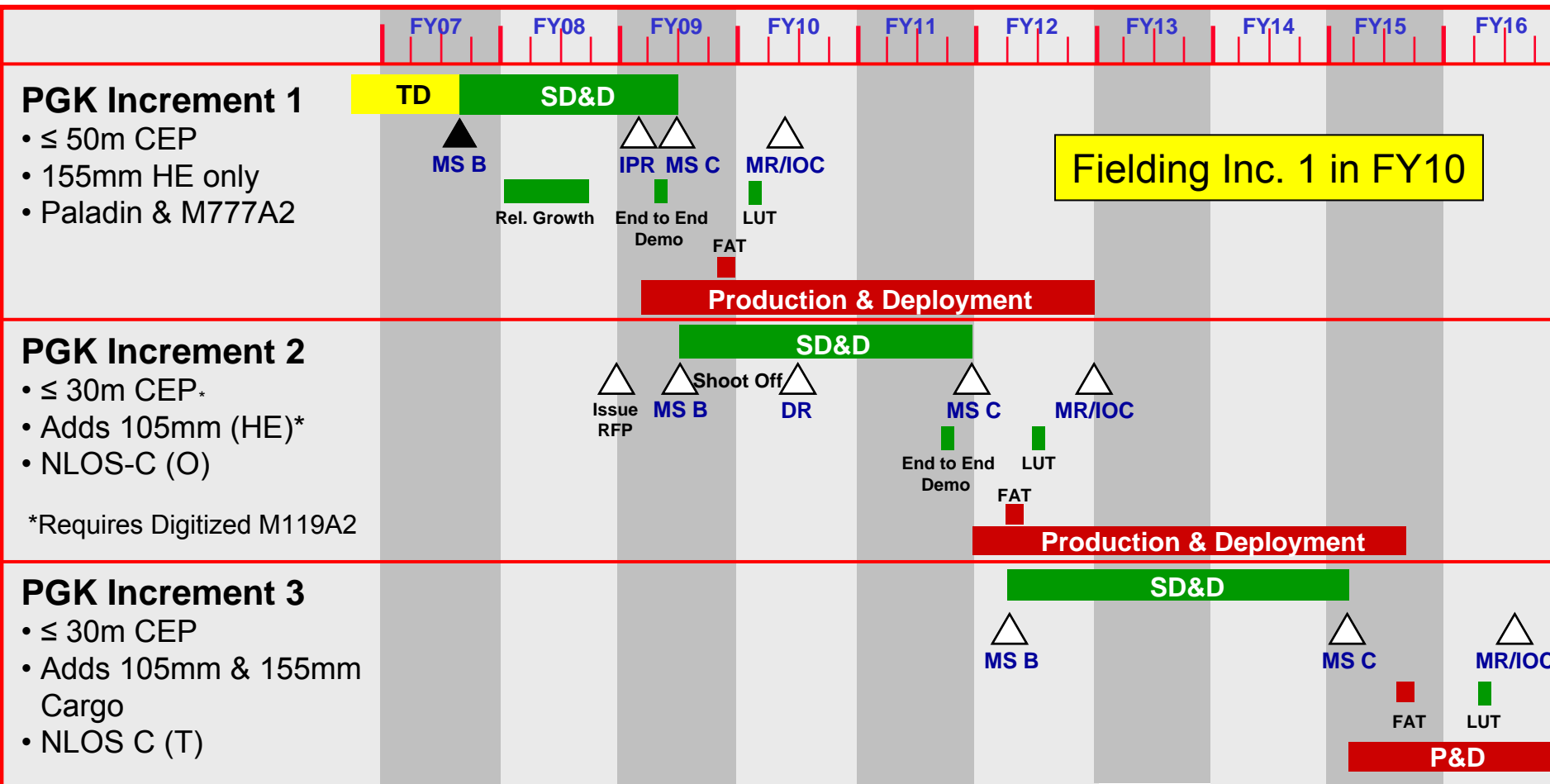




# PGK Incremental Schedule



17 Oct 07





# Emerging Needs/ Future Requirements



- IBCT Organic Precision Requirements
  - ✓ 40 Plus IBCTs within Army structure...have mortars & 105mm
  - ✓ PGK-2 is funded...implemented with 105mm digitization
  - ✓ Need for organic very responsive precision with <10m CEP
  
- “Cheap” or “Very Affordable” Precision is “coming soon”
  - ✓ Key technologies...IMUs, GPS, S&As, Power, AJ, & SALs
  - ✓ ARDEC/ARL VAPP effort to mature components and integrated concepts...applicable to artillery and mortars
  - ✓ Several Industry efforts ongoing...will enable competition
  - ✓ Wider use in training...confidence, proficiency, and quantities