Cannon Artillery and Mortar Precision Effects

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What Level of Precision is Needed?

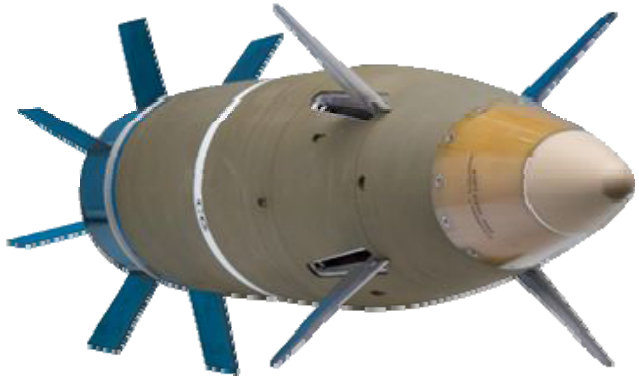
- Urban Density Can Vary Widely Over Small Distances Between Terrain Elements
- Munitions with Varying Levels of Precision May Be Most Cost-Effective

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 qtys and transport/storage)

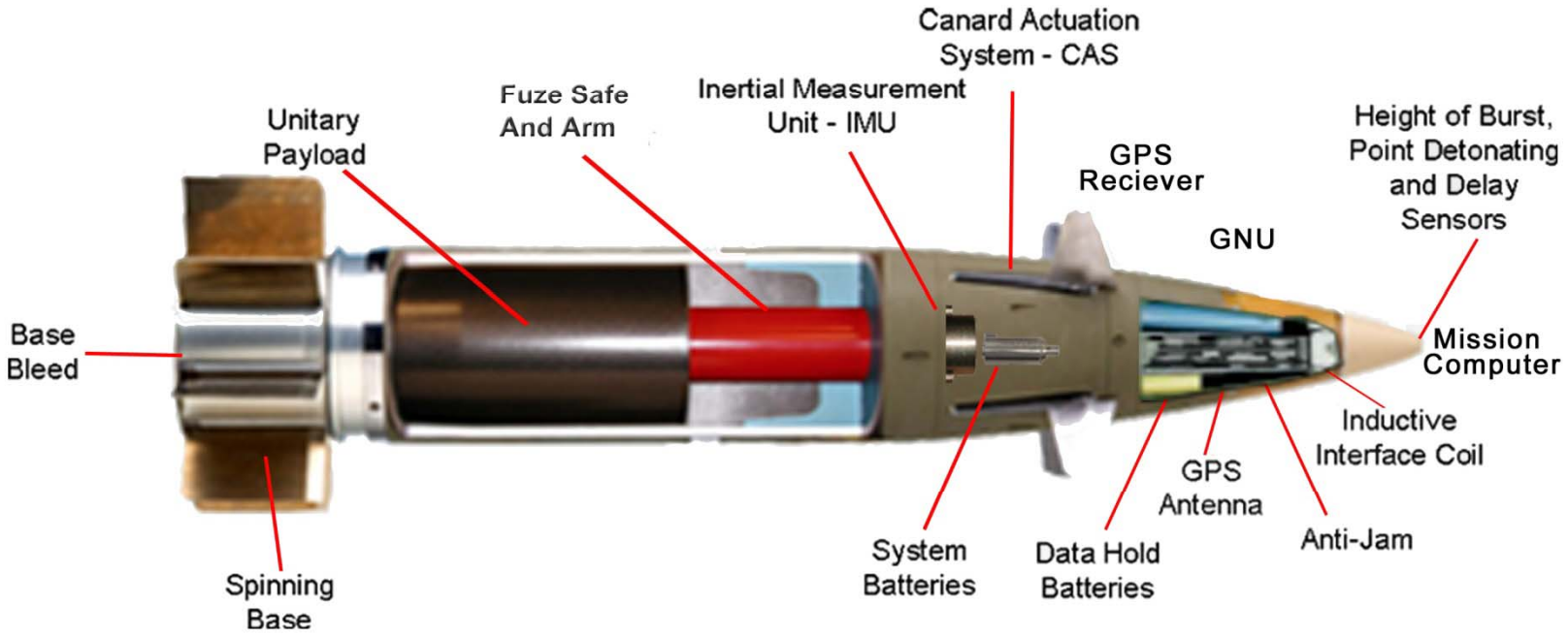
- Employed with current cannon artillery & mortar systems and force structure… & accurate targeting systems (FS3, LLDR, PSS-SOF, and others)
  - ✓ Easily additive to current systems and capabilities… “compatibility” is key
  - ✓ No additional manpower or force structure is needed
  - ✓ Maintains current Smoke & Illum capabilities
  - ✓ Maintains area fire & suppressive fires capabilities… “precise” area fires?

Excalibur Increment Ia

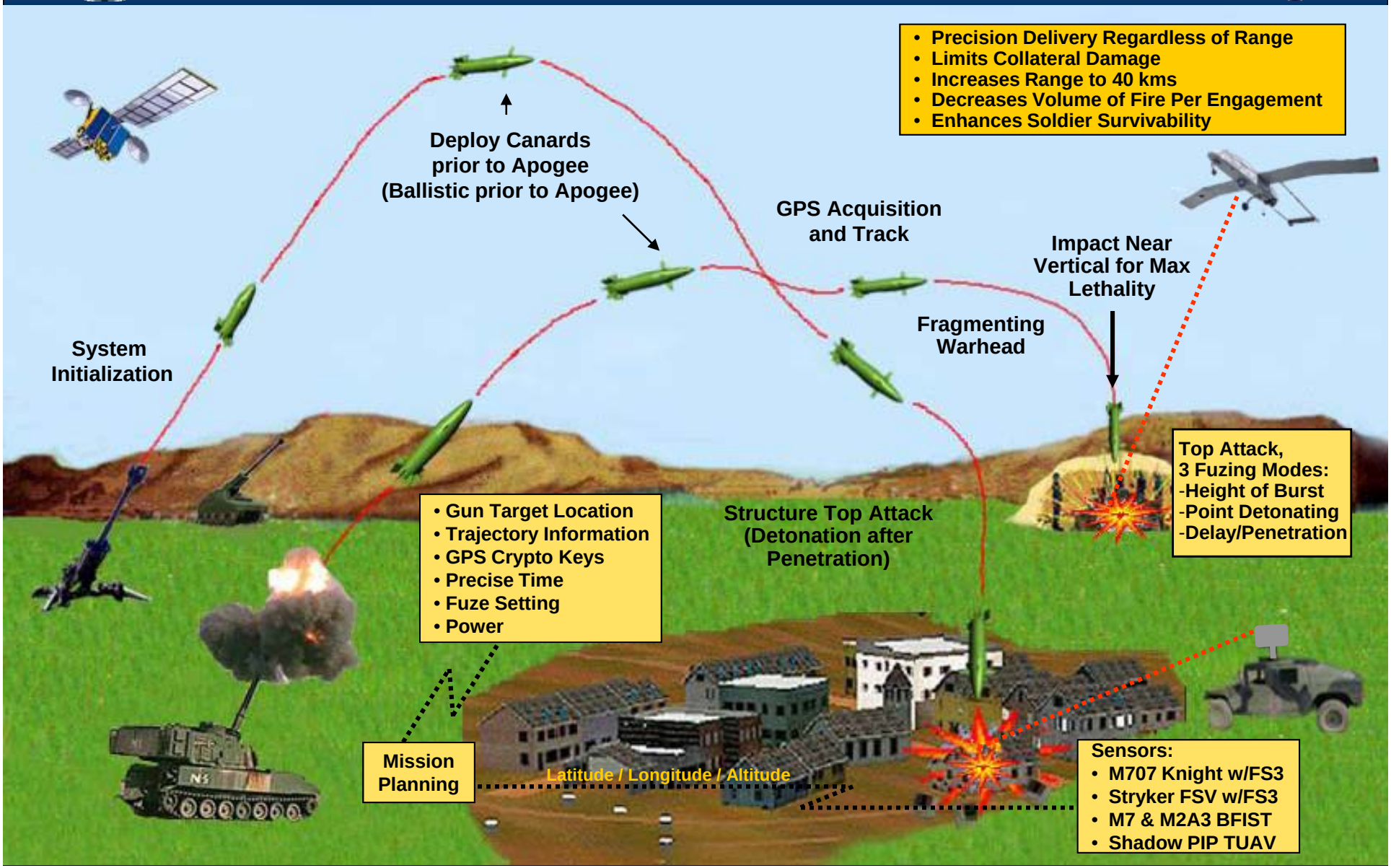


System Characteristics/Description:

- ✓ 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



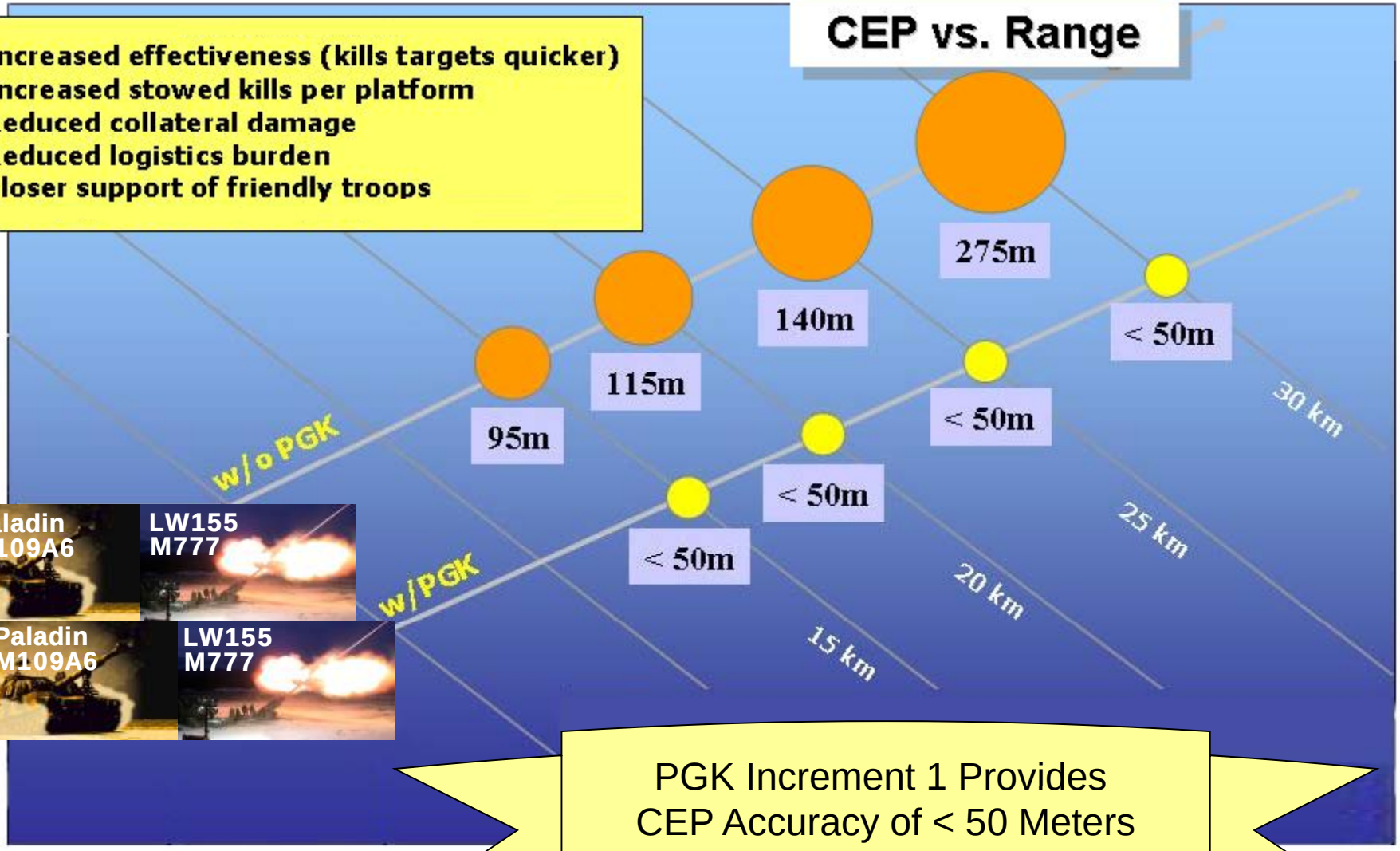
Excalibur Concept of Operations

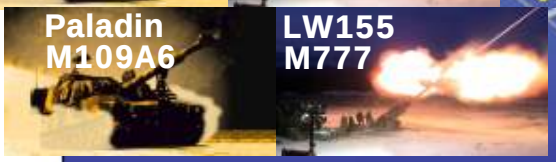


Excalibur Video

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



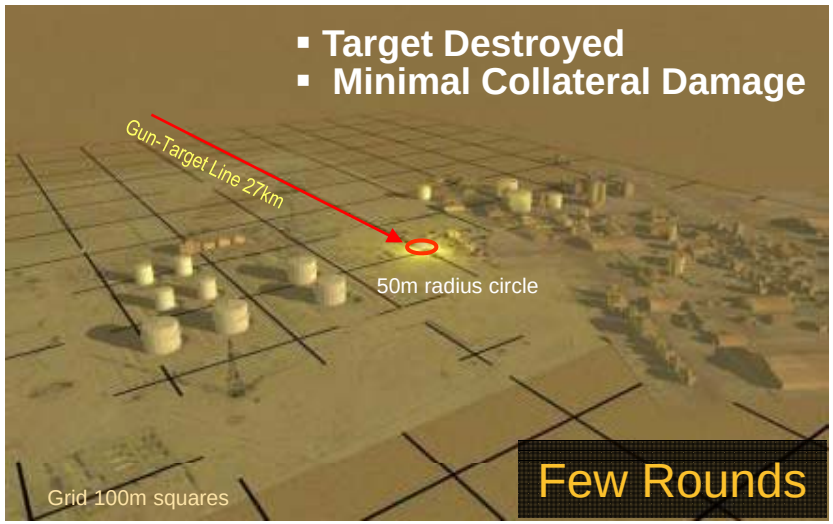


PGK Increment 1 Provides
CEP Accuracy of < 50 Meters

Operational Benefits

Today's Capability: 183m CEP*

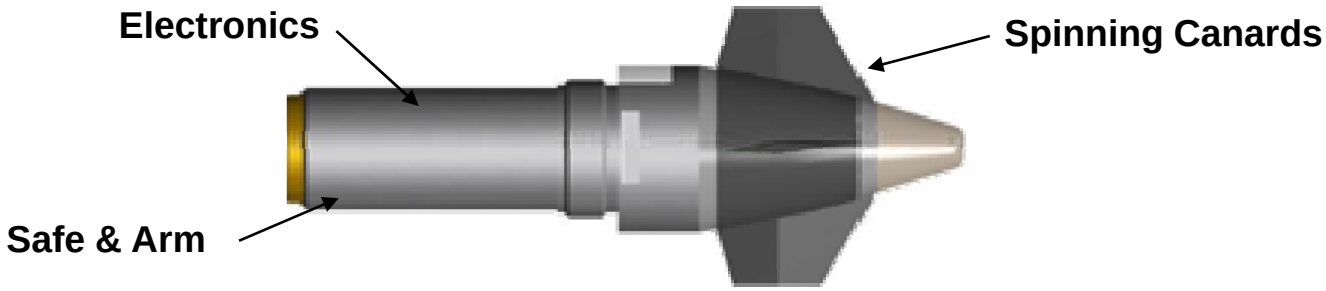
PGK: ≤50m CEP



* **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 and Enables Closer Support to Friendly Troops**
- **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

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
  - ✓ ONS for organic very responsive precision with <10m CEP
- "Cheap" or "Very Affordable" Precision
  - ✓ Key technologies… GPS, Fuzing, Power, AJ, & SALs
  - ✓ ARDEC/ARL CRADA efforts to mature components and integrated concepts…applicable to artillery and mortars
  - ✓ Several Industry efforts ongoing…should enable competition
  - ✓ Wider use in training…confidence, proficiency, and quantities

Is Very Affordable Precision "Coming Soon"?