QuickLook: Changing the Way the US Army Looks at the Battlefield

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Introduction

Need:

- Logistics is Achilles Heel for Army Mobility
- Army Transformation Vision Demands Reduced Logistics

Quicklook Approach:

- Launch UAV's from Organic Howitzers/Mortars - "Bullet to Bird"
- Low cost expendable design
- Instant organic targeting/BDA
- First round effects with Look-Shoot-Look
- Situational awareness
- Battlefield imagery at extended ranges

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Quicklook Features

Gun/Mortar Launched UAV

- **Preprogrammed autonomous fire and forget**
- **Can be re-tasked in flight**
- **Heavy fuel engine/folding propeller**
- **Inflatable wings**
- **Full GPS/INS**
- **Visible sensors**

24 hour all weather capability

155mm under development

Potential 120mm mortar and gun versions for FCS

Potential 105mm gun version for FCS (MRAS)
(Multi-Role Armament System)

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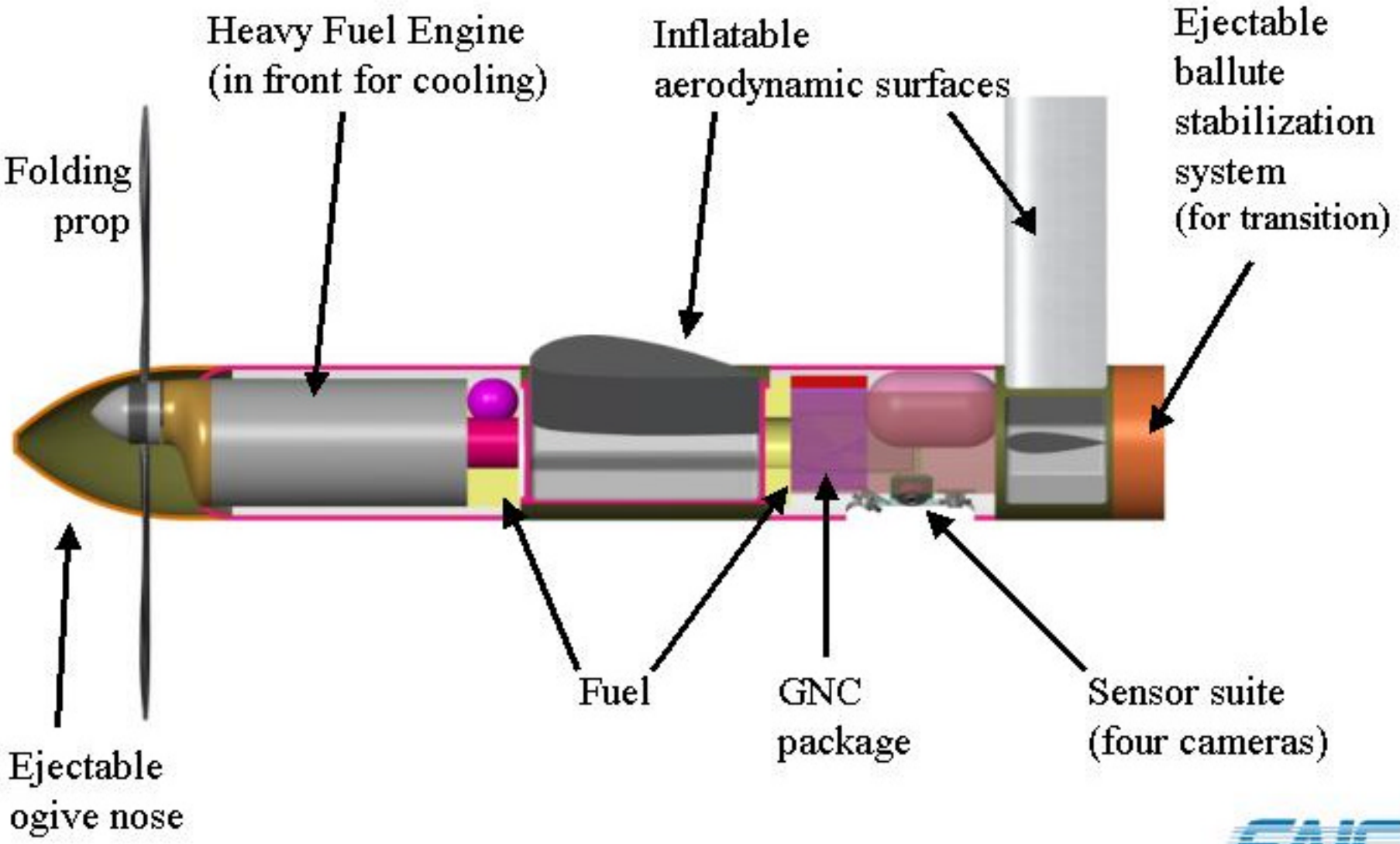
QuickLook Subsystems



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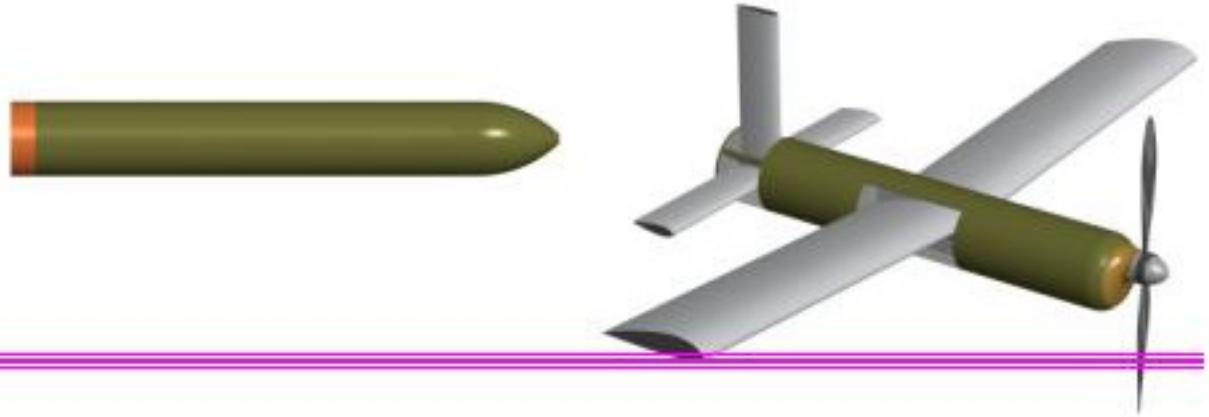
Quicklook Family of Loitering Munitions

Baseline: 155mm, gun launched, visible sensor for target ID and location



Potential Option: 120mm mortar/gun launched version, visible or IR sensor

Potential Option: 105mm gun launched version, visible or IR sensor

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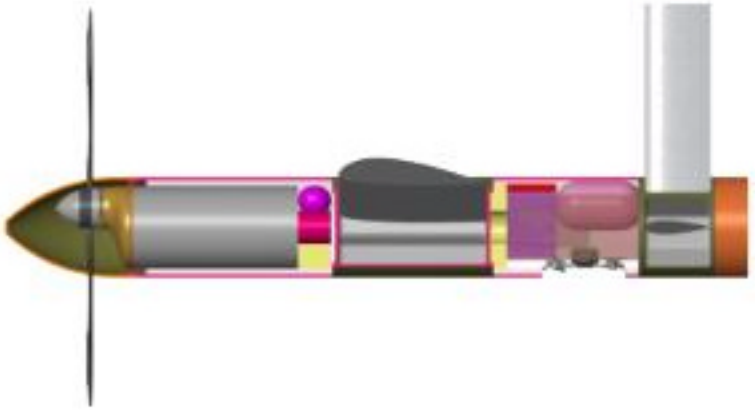
Program Summary

- ARDEC Science and Tech Objective (STO)
- $2M SAIC effort FY99-02
- Key program goals (not all goals listed):
  - 155mm x 39" with Army 155mm guns
  - Autonomous flight, 30 minute endurance
  - Targeting to 50 meter absolute precision
  - BDA
  - Gun launch to cruise flight
  - Heavy fuel engine



Program Leverages other Army, Navy, Air Force funding at SAIC

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Gun Launch to Cruise

Release ballute
Deploy wing and vertical fin
Release ballute
Roll and pitch to glide slope

Discard nose cover
Acquire GPS
Glide to engine start
Cruise to mission area

Deploy horizontal stabilizer
Continue despin

Finned ballute deploys
Despin, deceleration begin

Projectile Leaves Barrel

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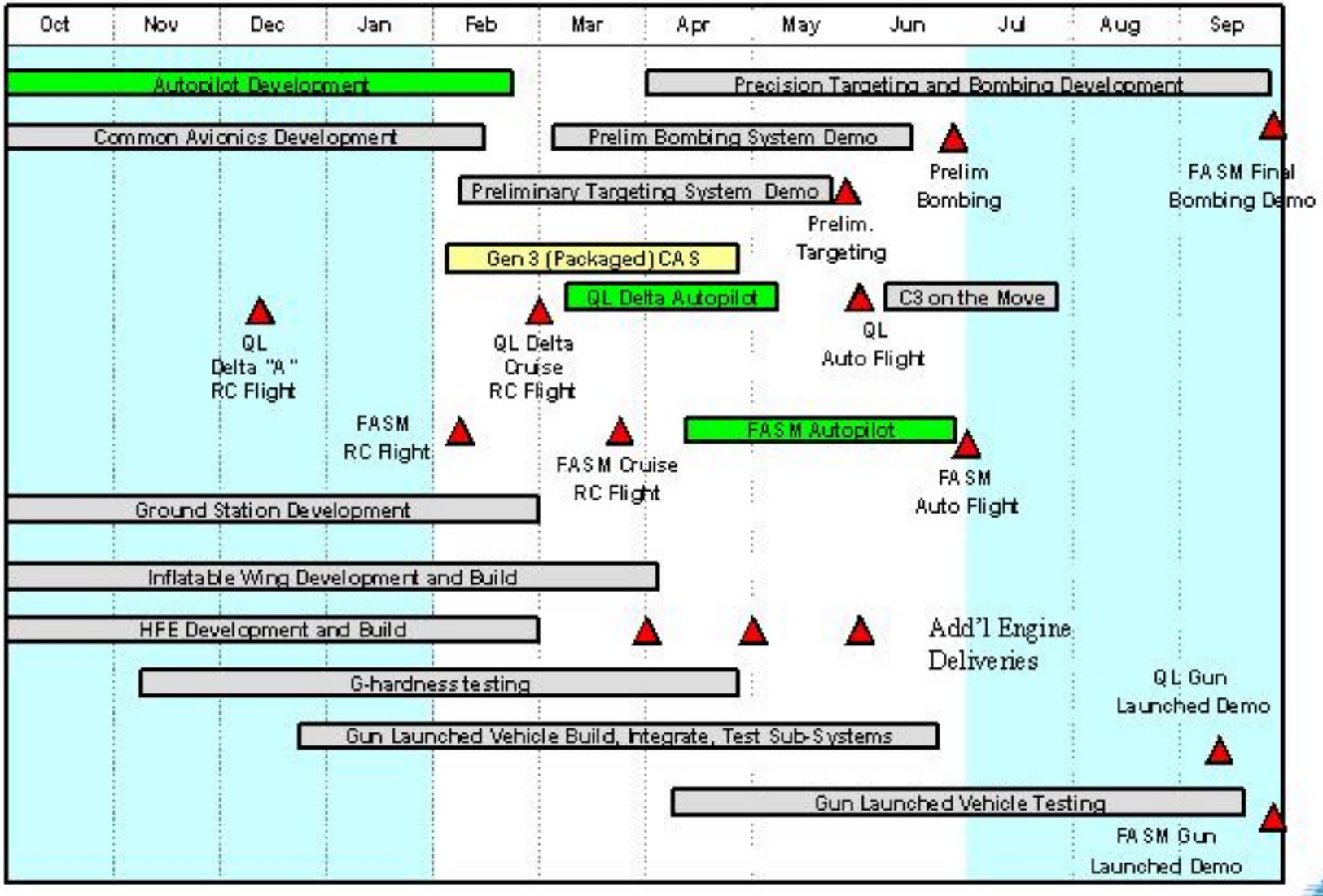
Program Schedule



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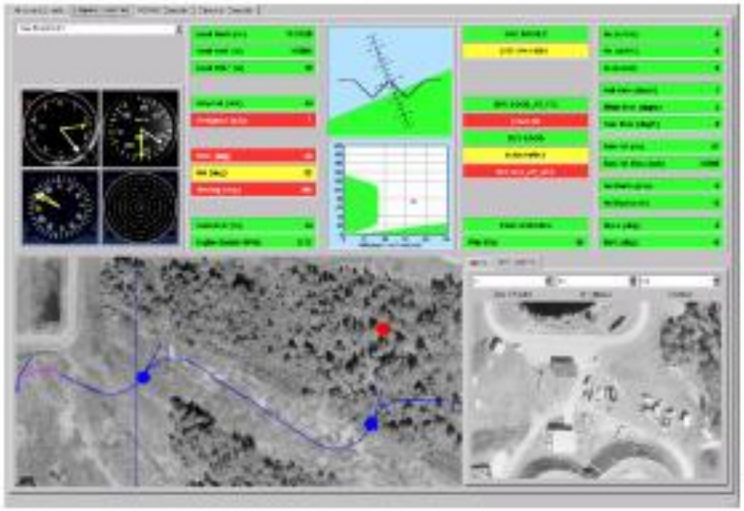
Key Progress

- **Avionics extensively tested in many flights of various airframes**
  - Radio and comm links proven
  - Flight test procedures proven
  - Ground Control Station complete
- **Autopilot software completed and tested**
  - Autonomous waypoint steering soon to be demonstrated
- **Inflatable wings developed, flown, and packed**
- **Heavy fuel engine developed and in bench testing**
- **Camera, IMU, GPS, and flight transceivers**
  - All fit into 155mm airframe; will be g-tested to destruction
- **Test bed gas gun completed and fired at 29 Palms**
  - used for g-testing and gun-launched vehicle checkout



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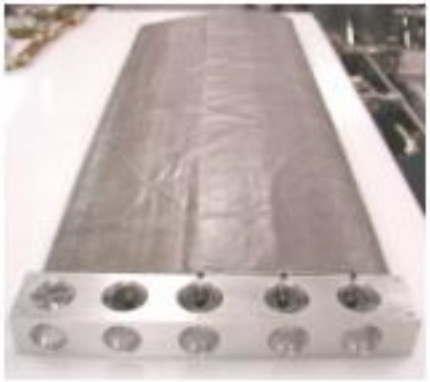
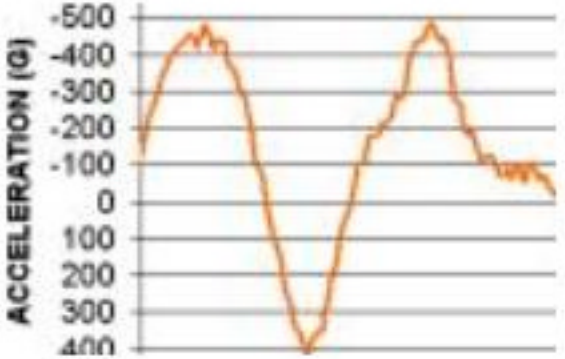
Inflatable Wing Progress

- Design cycle now short and low cost
- Low production costs
- Wings package easily within fuselage
- Wings meet gun & flight load req.
- Wings G tested to 500 G's
- Flight tested at > 3G's flight loads



Full semispan wing

Wing volume
in QL fuselage



Wing G shock test

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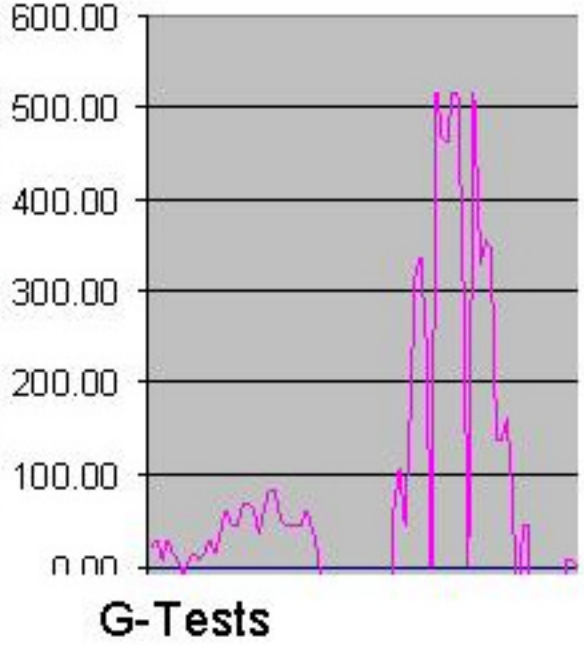
Key Progress

Engines:

- **Two heavy fuel engines in development**
- **First engine bench tested early '02**
- **Designed for 900 G's**
- **Tests to 500 G's to date**



Cameras:

Four strap down low cost high performance low light COTS cameras

Tests to 500 G's to date

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First Gun Launch Tests Late '01
29 Palms

Cargo vehicle
Test shown

Ballute, Wing deployment tests upcoming Spring '02

Transition to cruise flight September '02

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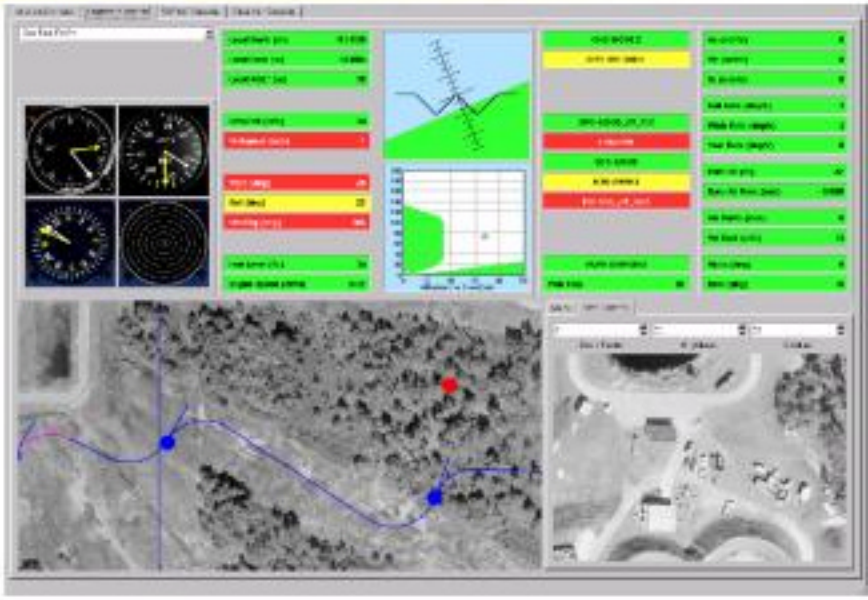
Ground Control Station in Two Briefcases



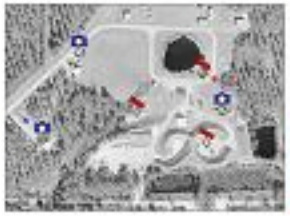
Com-link "Briefcase"

Ethernet

Panasonic 'Tough-book' Laptop Computer

Mission Planning

Mission Management



Tactical Support

Test Engineering

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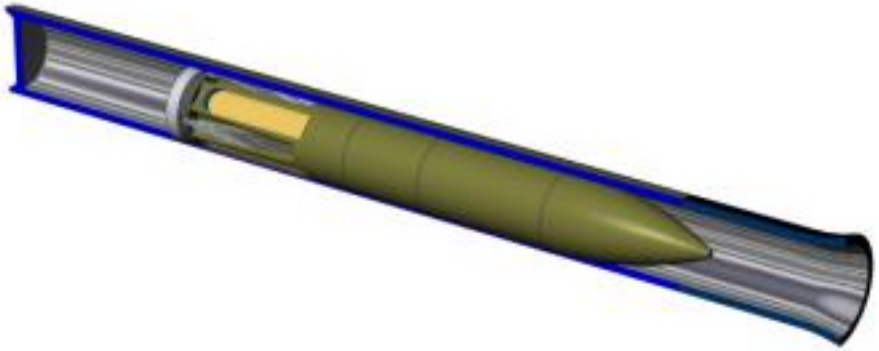
Transitions to Deployment
Legacy Systems + Future Combat System (FCS)



Legacy Systems

- 155mm howitzers
- 120mm mortars
- 105mm guns

Potential FCS Systems

- 120mm Self Propelled Mortar Vehicle
- 120mm Self Propelled Gun Vehicle
- 105mm gun version Multi-Role Armament System (MRAS)

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