



RESILIENT MISSILE WARNING & TRACKING (MWT)
MEDIUM EARTH ORBIT (MEO) PROGRAM

Space Starts Here

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SYD 84/MT SPD

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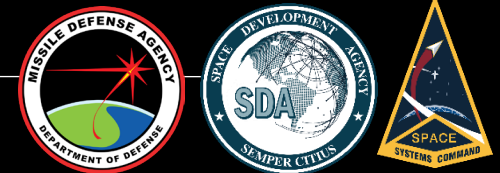


A New Class of Threat Requires a New Class of Architecture

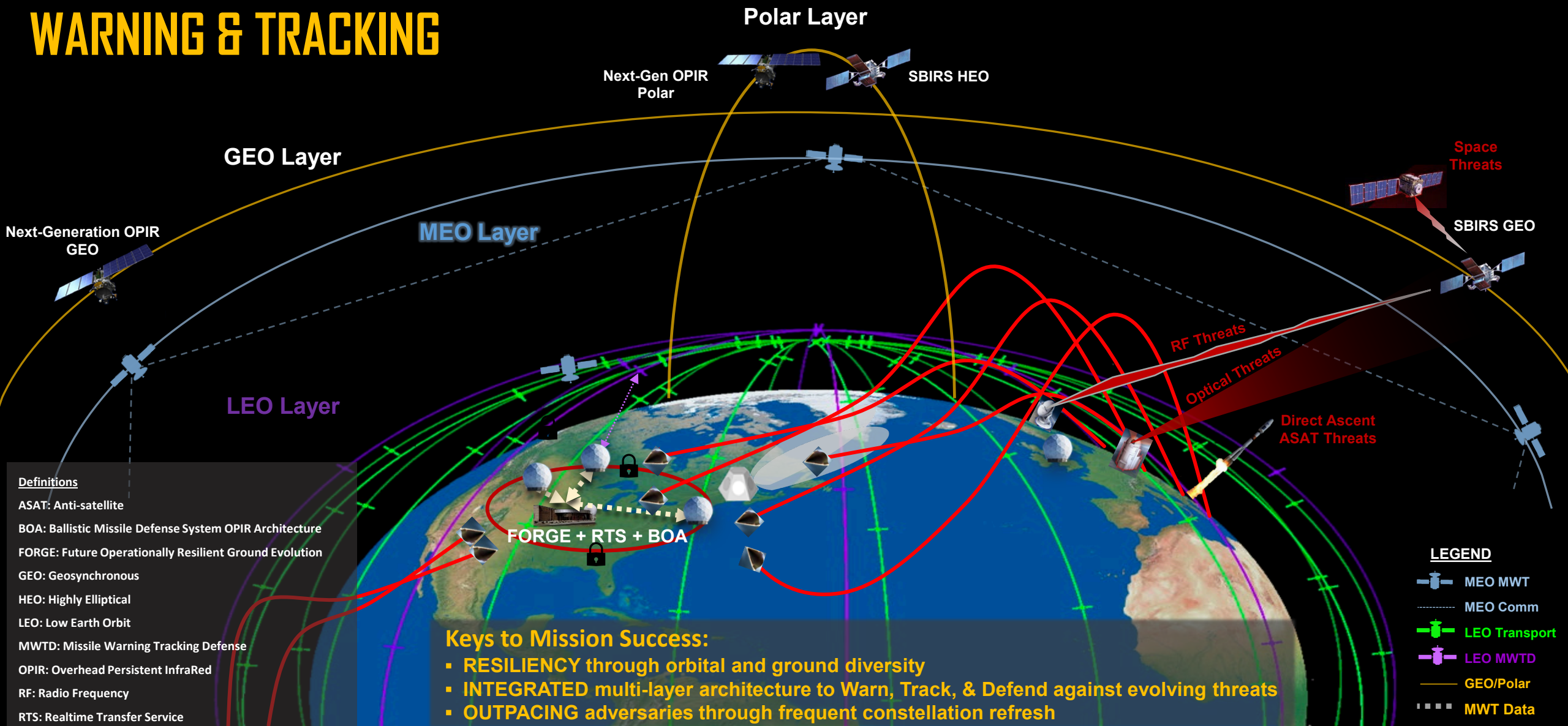
- Hypersonic glide vehicles: dimmer, maneuvering, unpredictable trajectories
- Legacy systems alone cannot maintain custody
- Resilient MWT delivers a multi-orbit architecture designed to defeat new threats
- Supports homeland defense, Combatant Command (CCMD) operations, and the broader missile defense kill chain



This update focuses on the MEO segment and its integration with the broader Resilient MWT architecture



FUTURE RESILIENT MISSILE WARNING & TRACKING



Definitions
 ASAT: Anti-satellite
 BOA: Ballistic Missile Defense System OPIR Architecture
 FORGE: Future Operationally Resilient Ground Evolution
 GEO: Geosynchronous
 HEO: Highly Elliptical
 LEO: Low Earth Orbit
 MWT: Missile Warning Tracking Defense
 OPIR: Overhead Persistent InfraRed
 RF: Radio Frequency
 RTS: Realtime Transfer Service
 SBIRS: Space Based Infrared System

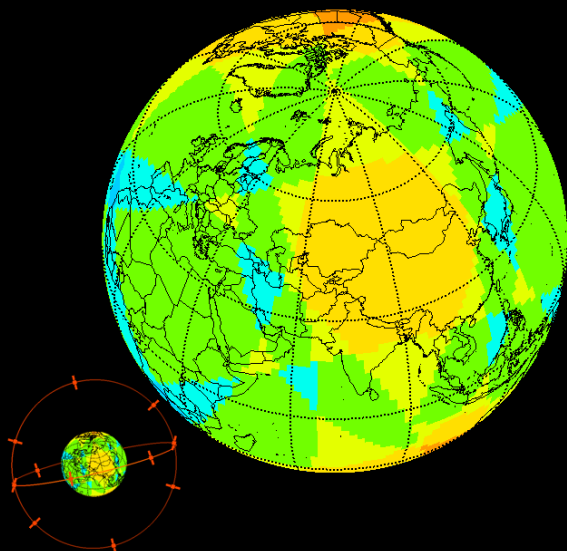
- Keys to Mission Success:**
- **RESILIENCY** through orbital and ground diversity
 - **INTEGRATED** multi-layer architecture to Warn, Track, & Defend against evolving threats
 - **OUTPACING** adversaries through frequent constellation refresh



MEO Path to Global Tracking & Global Coverage

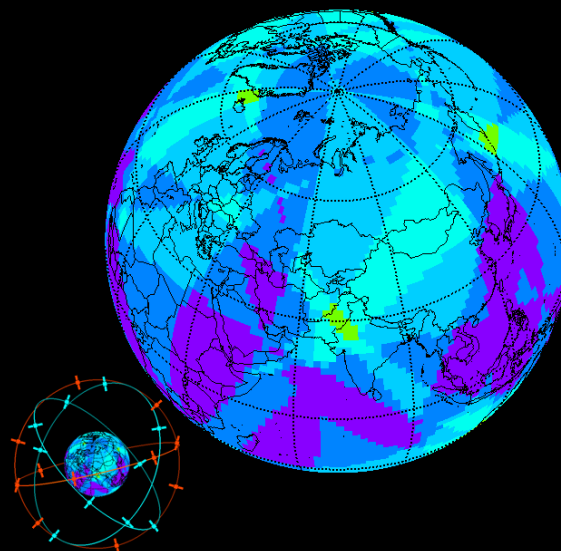
MEO Epoch 1

- 12 space vehicles (SV) in 2 planes with agile pointing of satellite
- Continuous global 1-fold access
- ~98% global geometric stereo access



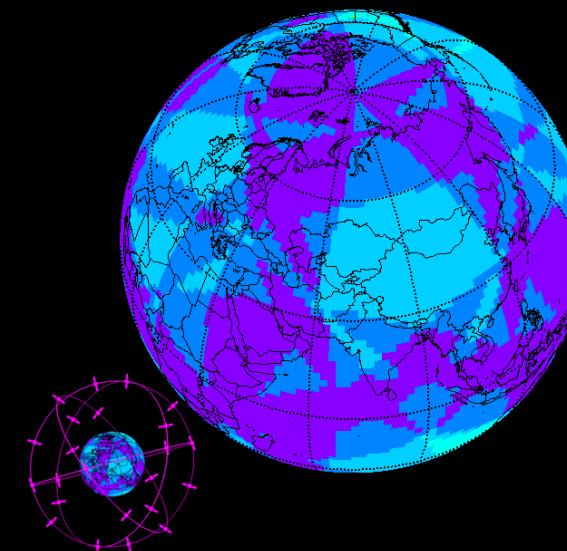
MEO IWC (Epoch 1 + Epoch 2)

- 22 SVs in 4 planes with agile pointing of sensor
- Continuous global geometric stereo + access
- Higher-fold access may improve capacity for stereo collection under sensor tasking contention



Representative MEO FWC (i.e. E3 + E4)

- SVs in 4 planes w/ wide area coverage sensors
- Continuous global stereo + **coverage**
- Higher-fold coverage may improve ability to support improved track quality thru dynamic tasking

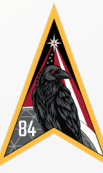


Capability	Regional Tasked Access / Coverage	Global Missile Tracking Access	Global Tracking Coverage
Scope	Regional	Global	Global
Persistence	Intermittent	Intermittent	Persistent
Key Difference	Must be tasked	Global reach, not continuous	Continuous custody

FWC: Full Warfighter Capability
IWC: initial warfighter capability

Constellation Colors:
■ E1 ■ E2 ■ FWC





Resilient MWT Program Overview

Epoch 1 – Space Segment		Epoch 2 – Space Segment			
Purpose: Builds the foundation of the MEO constellation		Purpose: Expands capacity and coverage toward global tracking			
Mission: Deliver MWT operational message data to satisfy CCMD requirements		Mission: Deliver MWT/Missile Defense message data for CCMDs			
CONOPS: GOCO operations with Mission Delta 4 Mission Directors		CONOPS: Same GOCO construct with Mission Delta 4			
Total: 12 SVs across 2 planes		Total: Up to 3 planes (~13-16 SVs)			
Launches: Contractual launch dates (3QFY27 & 2QFY28); Risk-adjusted launch dates (2QFY28 & 1QFY29)		Launches: 2QFY29 & 4QFY29; additional Epoch 2 Vendor 2 Launch in Q1FY31 (TBD)			
Role in Capability: Forms initial backbone of MEO tracking		Role in Capability: Adds more SVs/planes → scales resilience and coverage			
IWC Contribution: Provides >60% GTA by 2028		IWC Contribution: First two Epoch 2 planes + Epoch 1 = GTA in 2030			
FWC Contribution: Pathfinder for the transition of OPIR to MEO orbit for MWT		FWC Contribution: Expands industrial base & design solutions to burn down NRE risk for FWC			
Common Ground					
Purpose: Creates the ground infrastructure to ingest, process, and operationalize data					
Mission: Provide MWT/Missile Defense message data through integrated ground ops					
CONOPS: System baseline established; ongoing maturation for missile track custody	Epoch 1: 3 GEPs + MEO MSOC + Factory Reach Back Center (FRBC)	Epoch 2: Adds 2 GEPs + Backup MSOC	Epoch 3: TBD as constellation expands	IWC: Begins delivering initial ground-enabled capability by 2028+	FWC: Supports full constellation operations in 2031+

Definitions

CONOPS: Concept of Operations

FWC: Full Warfighter Capability

GEP: Ground Entry Point

GOCO: Government-Owned, Contractor-Operated

GTA: Global Tracking Access

IWC: Initial Warfighter Capability

SV: Space Vehicle

Epoch 1 builds first operational planes, Epoch 2 scales to global access, and a common ground system enables fused, end-to-end missile warning and tracking for the joint force



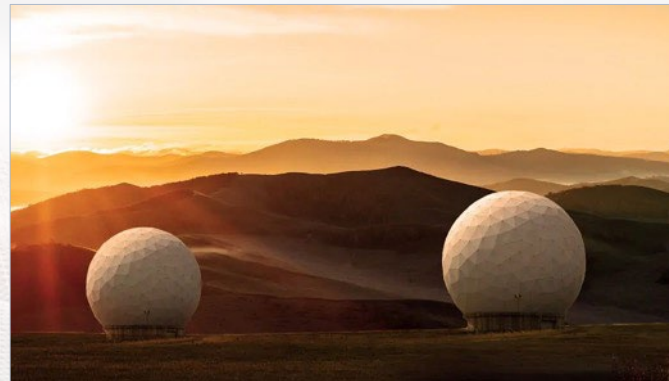
Ground Segment: Deliver Before Launch

Investments thus far have resulted in:

- FORGE-integrated mission data processing environment
- GEPs 1–3 build-outs occurring now; GEPs 4–5 in contract pathway
- BGIF fully supporting ops, integration, software cycles
- Integration testing underway for Processing and Ground Mission Management (PGMM), BOA, and Joint Overhead Persistent Infrared Center (JOPC)



MSOC, opened at BGIF in July 2025, enables real-time monitoring and tasking of MEO missile warning assets.



Representative relay ground station design supporting OPIR processing and data relay operations.



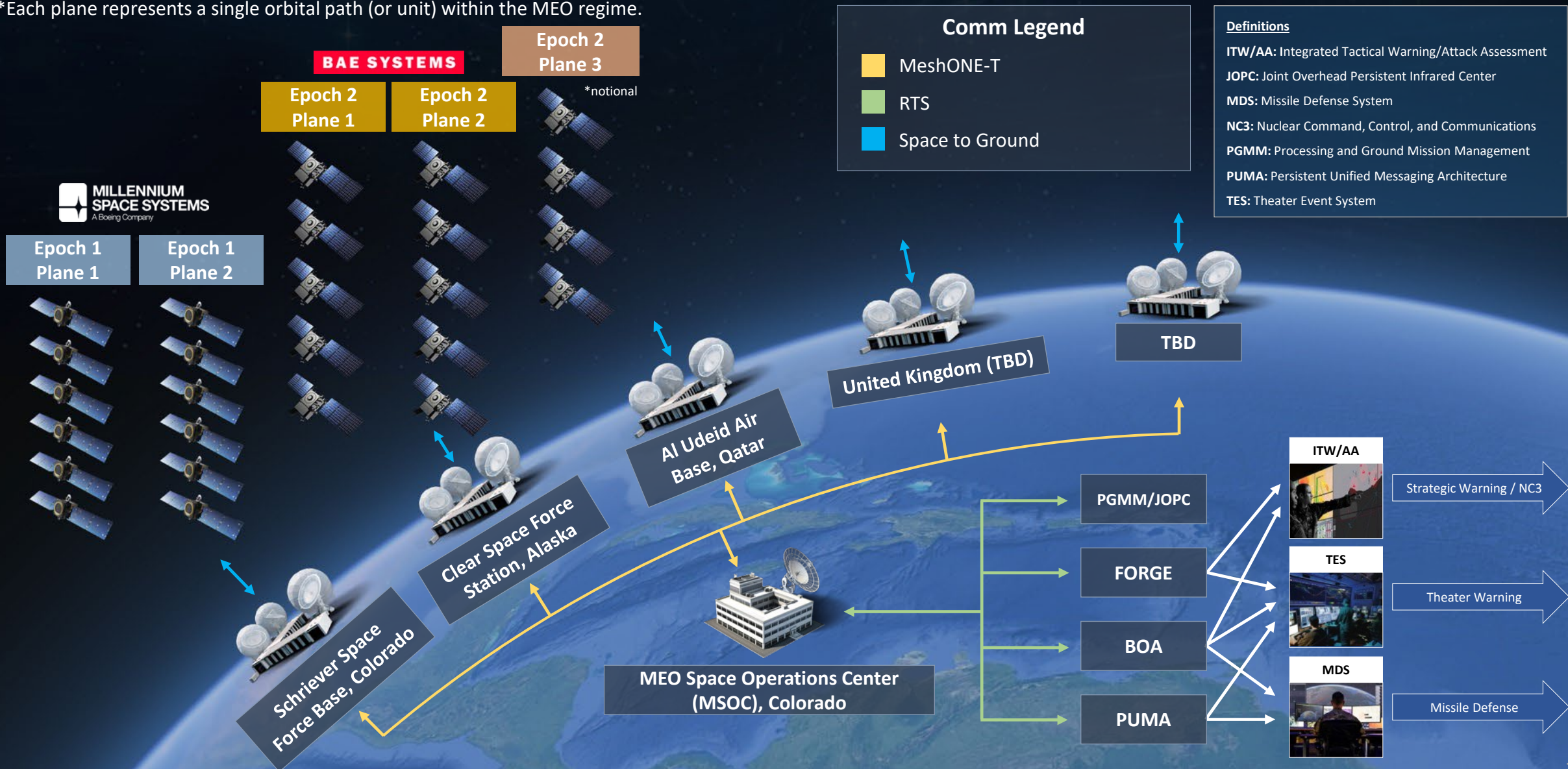
Illustration of GEO and MEO sensor integration with FORGE for missile warning and tracking operations.

Ground progress enables parallel execution of Epoch 1 operations and Epoch 2 integration



Resilient MEO OPIR MWT (OV-1)

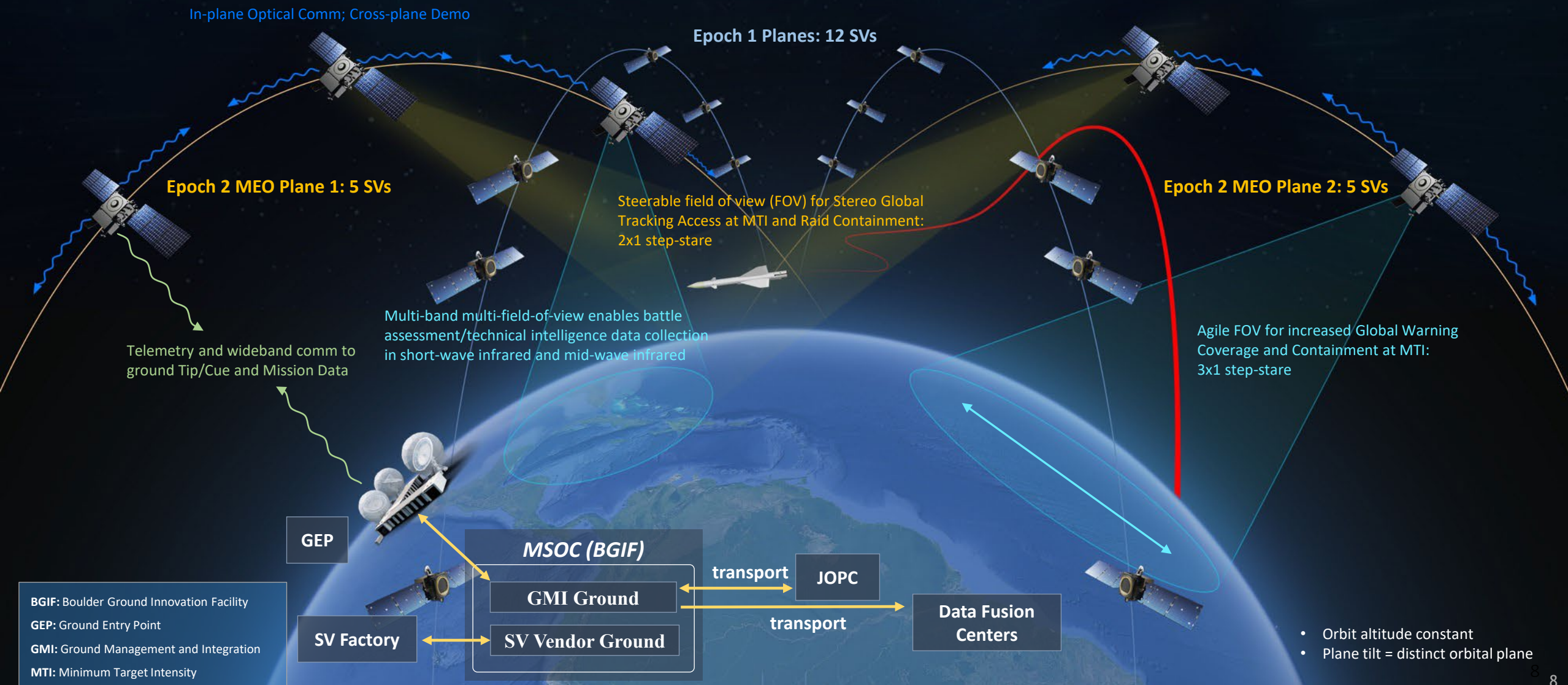
*Each plane represents a single orbital path (or unit) within the MEO regime.





Resilient MEO OPIR MWT -- Key Features

*Each plane represents a single orbital path (or unit) within the MEO regime

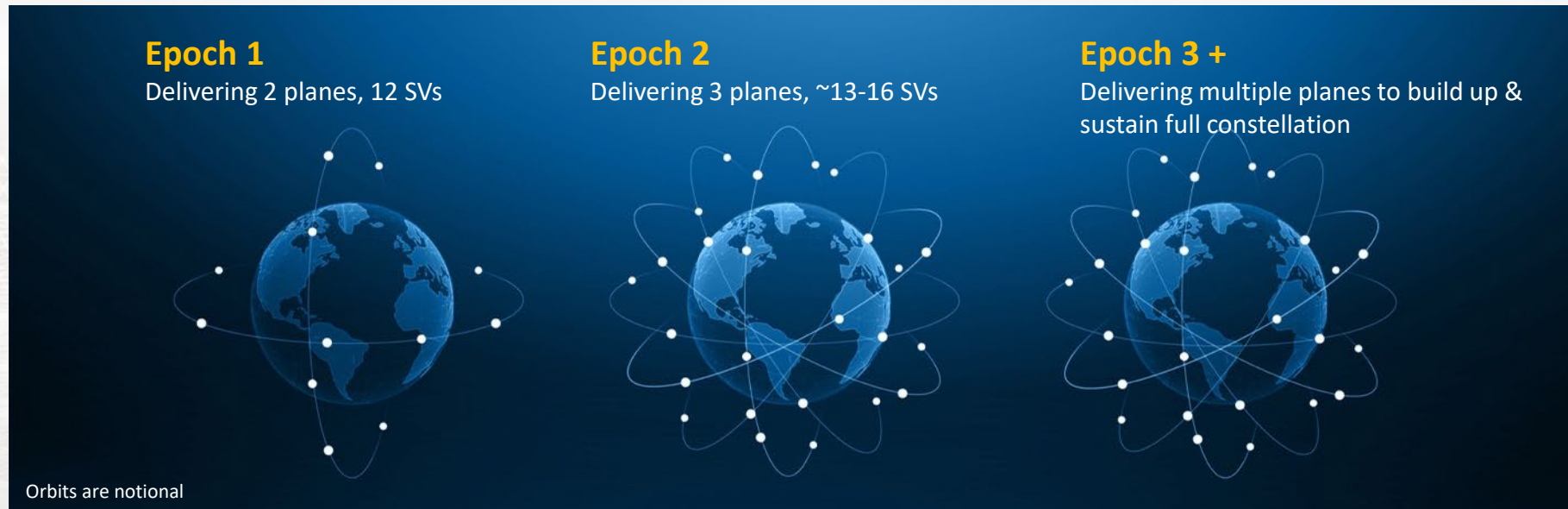


BGIF: Boulder Ground Innovation Facility
GEP: Ground Entry Point
GMI: Ground Management and Integration
MTI: Minimum Target Intensity



MEO Path to Defined Future State

- Target: Achieve and sustain MEO for global tracking coverage at Epoch 3 and subsequent Epochs
- Structuring into **planes** allows the government to scale or pause future buys
- Each Epoch is a **separate, appropriated decision**—no blank check
- SV target lifetime is 5 years



Meeting Capabilities Development Document requirements through spiral development



Multi-Vendor Approach

Different Designs, Same Standard – Not Duplicate Satellites

- Vendors use different **payloads, buses, crosslinks, processing, and manufacturing approaches**
- Each Vendor delivers its **own plane of capability**, not a copy of another vendor's SV design

Competition Lowers Cost & Improves Performance

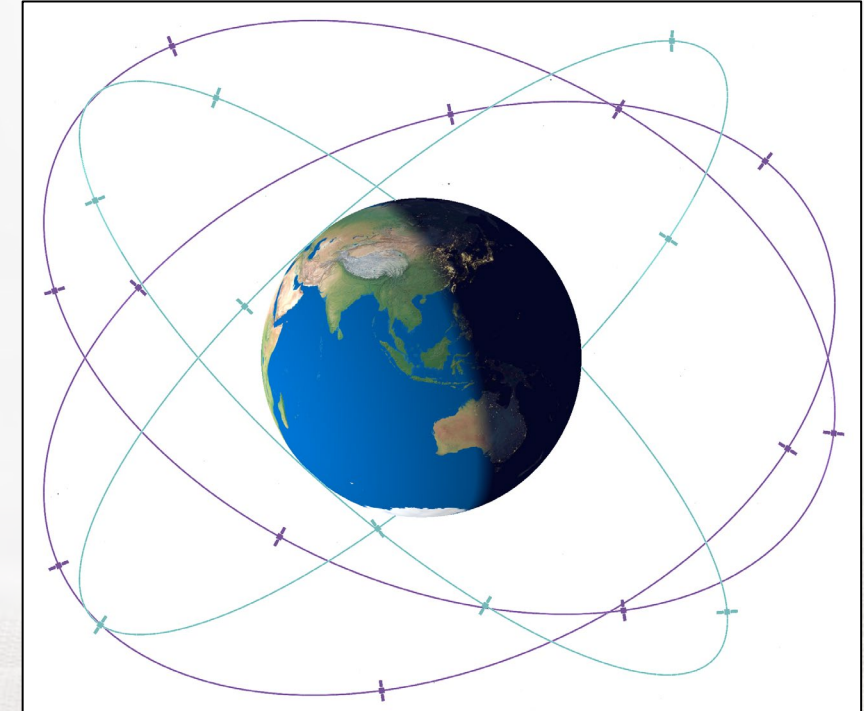
- Epoch model is built around **recurring competition every ~3 years**
- Drives vendors to invest in **factory capacity, digital engineering, and performance improvements**
- Preserves competition across Epochs **cultivating innovation**

Resilience & Risk Reduction for a Critical Mission

- Missile warning/tracking cannot rely on a **single vendor or single design**
- Epoch 2 vendors different from Epoch 1
- Multi-vendor Development **prevents single-point failures** and costly restarts

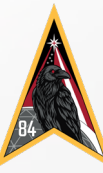
Buying Planes of Capability

- Each vendor's **plane** operates as a crosslinked system and may contain a different number of satellites
- Planes are **unique technical systems**, not identical production lots



MEO IWC – 2 Vendors, 22 SVs, 4 Planes, GTA
 To scale 10000km orbits at 45 deg inclination
 w/ planned operational phasing
 Purple orbits = MSS (6 SVs/plane)
 Teal Orbits = BAE (5 SVs/plane)

Space Force funds multiple vendors to deliver distinct technical solutions, preserve competition, ensure resilience, and avoid the programmatic risk of depending on a single design



MEO is Executing Rapid Acquisition Initiatives

- **Leverage MTA**

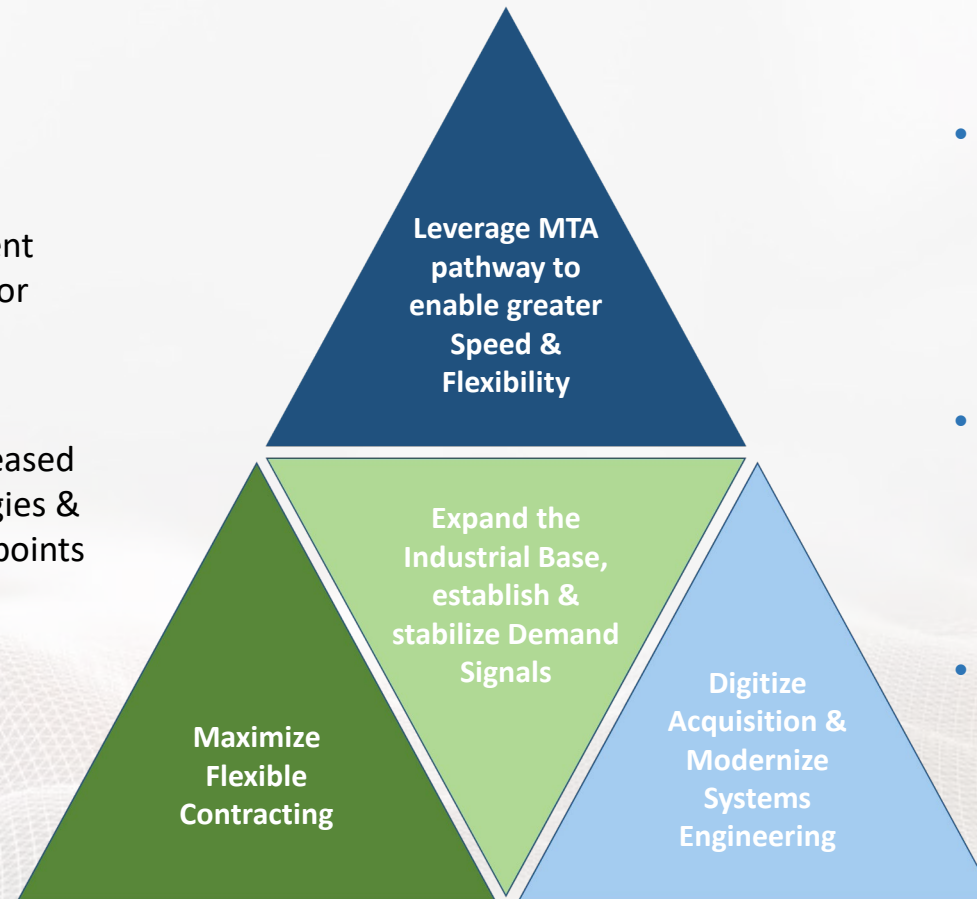
Reduced bureaucracy enables MEO's strategy of balancing speed of development & delivery with program management rigor

- **Expand the Industrial Base**

New market entrants in MEO fosters increased competition & provides diverse technologies & systems with varying capabilities & price points

- **Maximize Flexible Contracting**

MEO leverages flexible other transaction authorities (OTA) to deliver capabilities faster to the warfighter



- **Stabilize Demand Signals**

MEO's Epoch approach creates a stable, focused demand signal to enable increased consistency in planning, programming & budgeting

- **Digitize Acquisition**

MEO was "born digital" and leverages digital Model-Based Systems Engineering tools to reduce administrative burdens

- **Modernize Systems Engineering**

MEO's investments in digital engineering & model-based engineering will fuel rapid, iterative designs & tech insertion

Prioritizing speed, flexibility & rigorous execution to field resilient missile warning & tracking architecture at a rate that outpaces our adversaries



Summary

- Persistent, resilient custody of hypersonic and advanced missile threats requires a MEO-based approach
- Program investments are delivering space, ground, and integration capabilities
- Resilient MWT–MEO remains foundational to the joint missile warning, tracking, and defense enterprise



Questions?