

Affordable Moving Surface Target Engagement



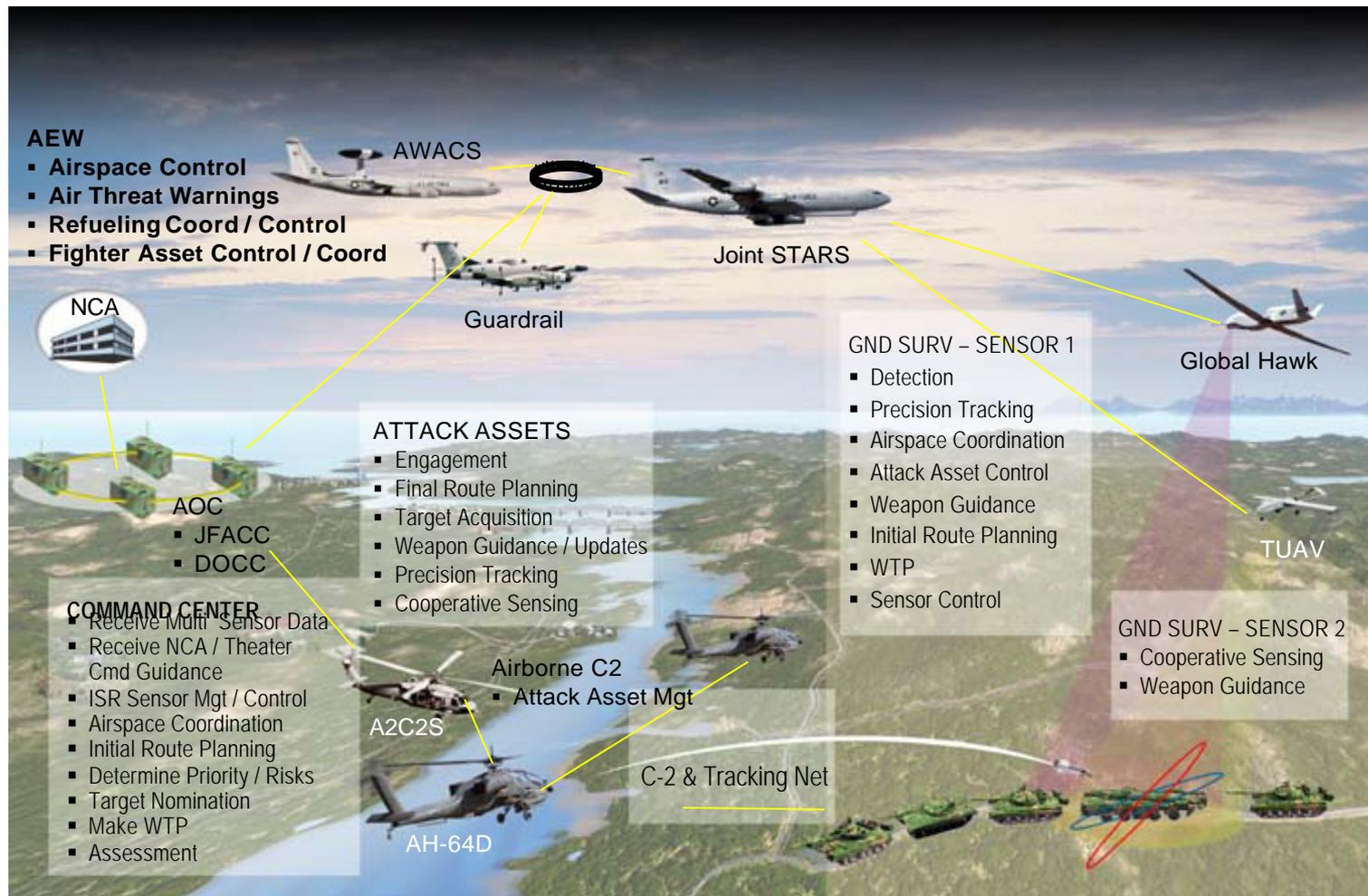


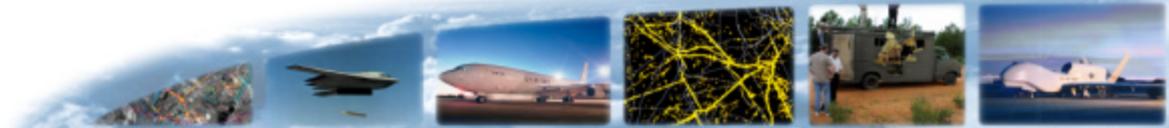
The AMSTE Project

- AMSTE technology has the potential to provide the commander with the ability to quickly, in all weather, defeat anti-access capabilities and rapidly halt aggression
- AMSTE is a technology program integrating legacy and emerging systems into a network-centric system of systems
- The AMSTE network requires interoperability between GMTI ISR systems (i.e., Joint STARS, Global Hawk, Aerial Common Sensor [ACS]) and strike systems (air-launched and surfaced-launched)



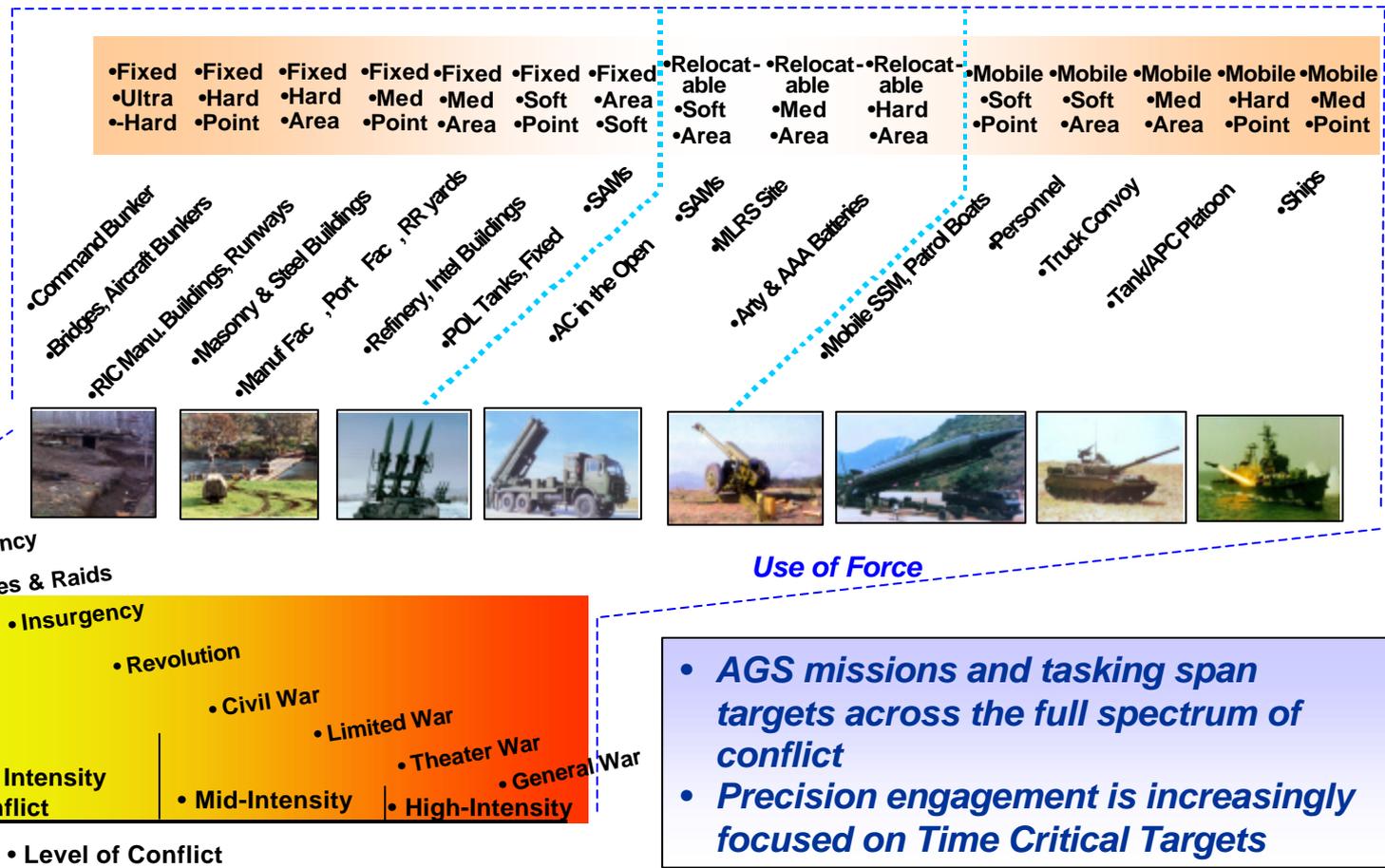
AMSTE Nominal Architecture





Requirements: Spectrum of Conflict Drives Need for Ability to Engage Moving Targets

• A high percentage of the target set is mobile or relocatable



• AGS missions and tasking span targets across the full spectrum of conflict

• Precision engagement is increasingly focused on Time Critical Targets



Many High Priority Targets Are Mobile & "Time Critical"

Adversaries Move for Sanctuary

Type Target:

Soft



Medium



SA-6 GAINFUL SURFACE-TO-AIR MISSILE



Hard



Weapon Required:

Area

Area/Armor Piercing

Armor Piercing

Precision Is Key to Placing Targets at Risk with Minimal Collateral Damage



AMSTE Addresses the Kill Chain from Target Nomination through Engagement



FIND, FIX

- Search
- Detection
- Cueing
- Handover
- Combat ID



TARGET, TRACK

- Track Association
- Gridlocking
- Georegistration
- Georegistration
- Track Maintenance



ENGAGE

- Weapon Assignment
- Precision Track
- In Flight Update
- Continuous footprint update
- Terminal Maneuver



ASSESS

- Kill Assessment

AMSTE FOCUS



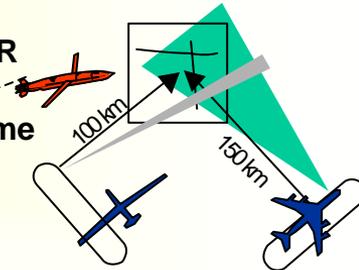
Open System of System Architecture Accounts for Wide Mix of Configurations

(1) ISR Sensors Only

Concept: Use multiple MTI/SAR standoff platforms to provide track maintenance and endgame targeting solution

Variants:

- Single ISR, Two ISR
- Artillery, Naval Fire support, airborne weapon
- Command guided w/ or w/o seeker on weapon

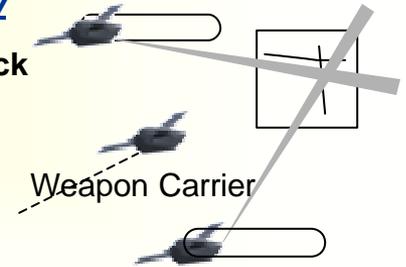


(2) Attack Sensors Only

Concept: Use multiple attack aircraft to respond to nomination cues without interactive ISR support

Variants

- Two, Three, or Four ship (1 ship is weapon carrier)
- Command guided w/ or w/o seeker on weapon

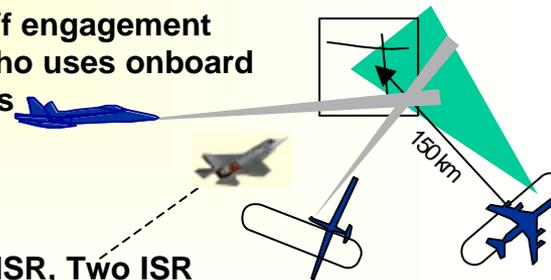


(3) ISR Augmented with Attack Sensor

Concept: Use ISR(s) for track maintenance, handoff engagement control to attacker who uses onboard sensors plus receives measurements for endgame tracking

Variants:

- Two Ship with One ISR, Two ISR
- Active vs. Passive attack platform sensor
- Command guided and/or seeker on weapon

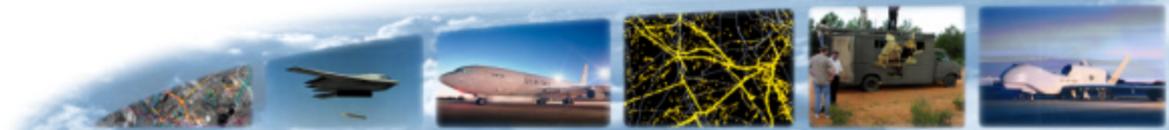




AMSTE II Concept

- Receive cue to high value target
- Locate and track high value, mobile targets in real-time and all weather primarily using surveillance radar assets
- Maintain track on high value targets during approval/weapon-target pairing cycle
- Position/task second radar to illuminate target and form highly accurate bi-lateration track
- Assign guided weapon to target
- Continuously pass target location, velocity, and time data to the weapon until it impacts target

Target **moving** surface threats from long range and rapidly **engage** with precision, stand-off weapons



AMSTE Concept

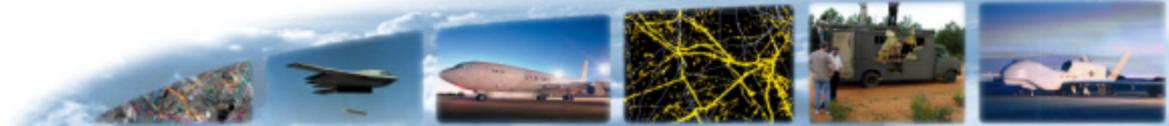




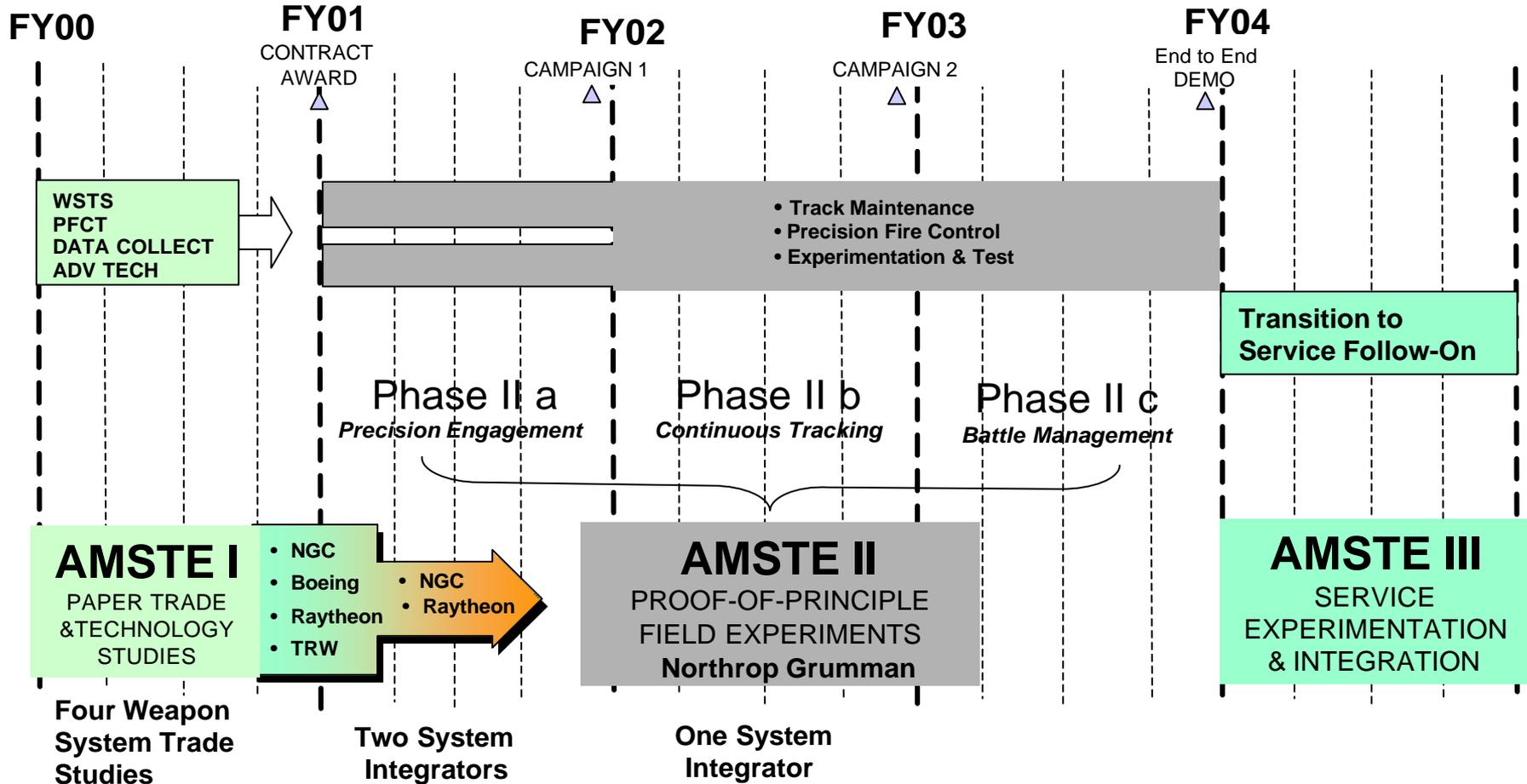
Customer Objectives

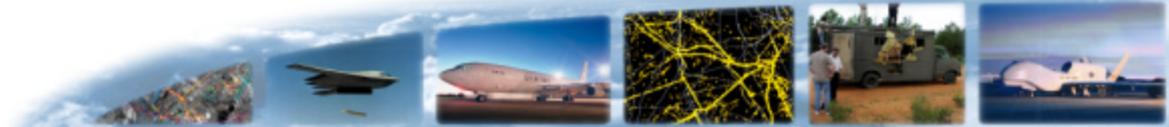
- Be able to successfully engage a maneuvering surface target
- Ability to maintain tracks from nomination through engagement
- Solution must be transition-able to services and solve the overall battle management challenge.

DARPA funded effort with AFRL (Rome) as technical agent.



AMSTE Program Schedule & Milestones



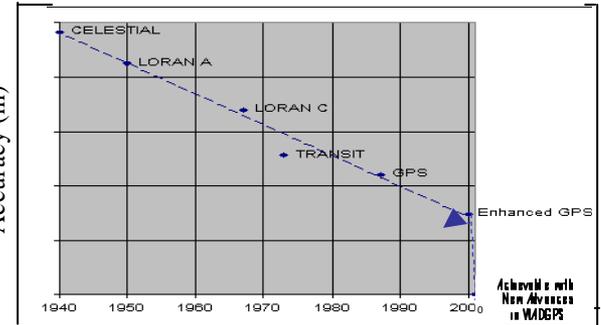


AMSTE Key Technologies

All Weather Precision Sensors

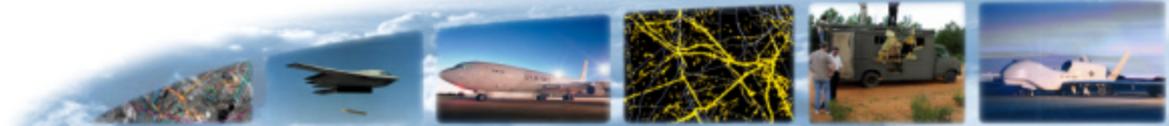
Precision Tracking

LTTM



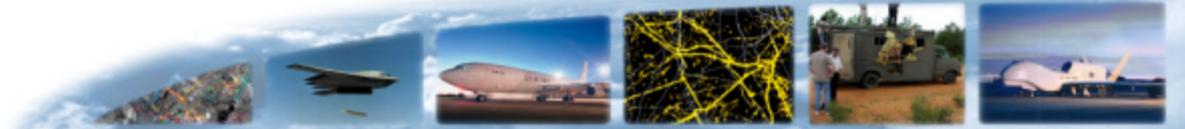
Precision Weapons

Enhanced Battle Management

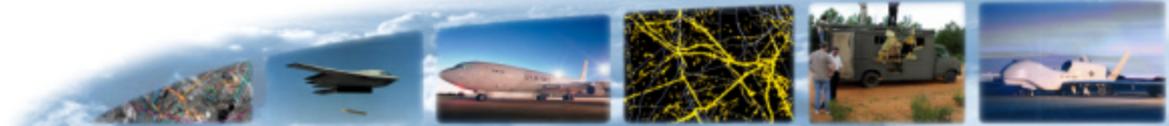


Summary

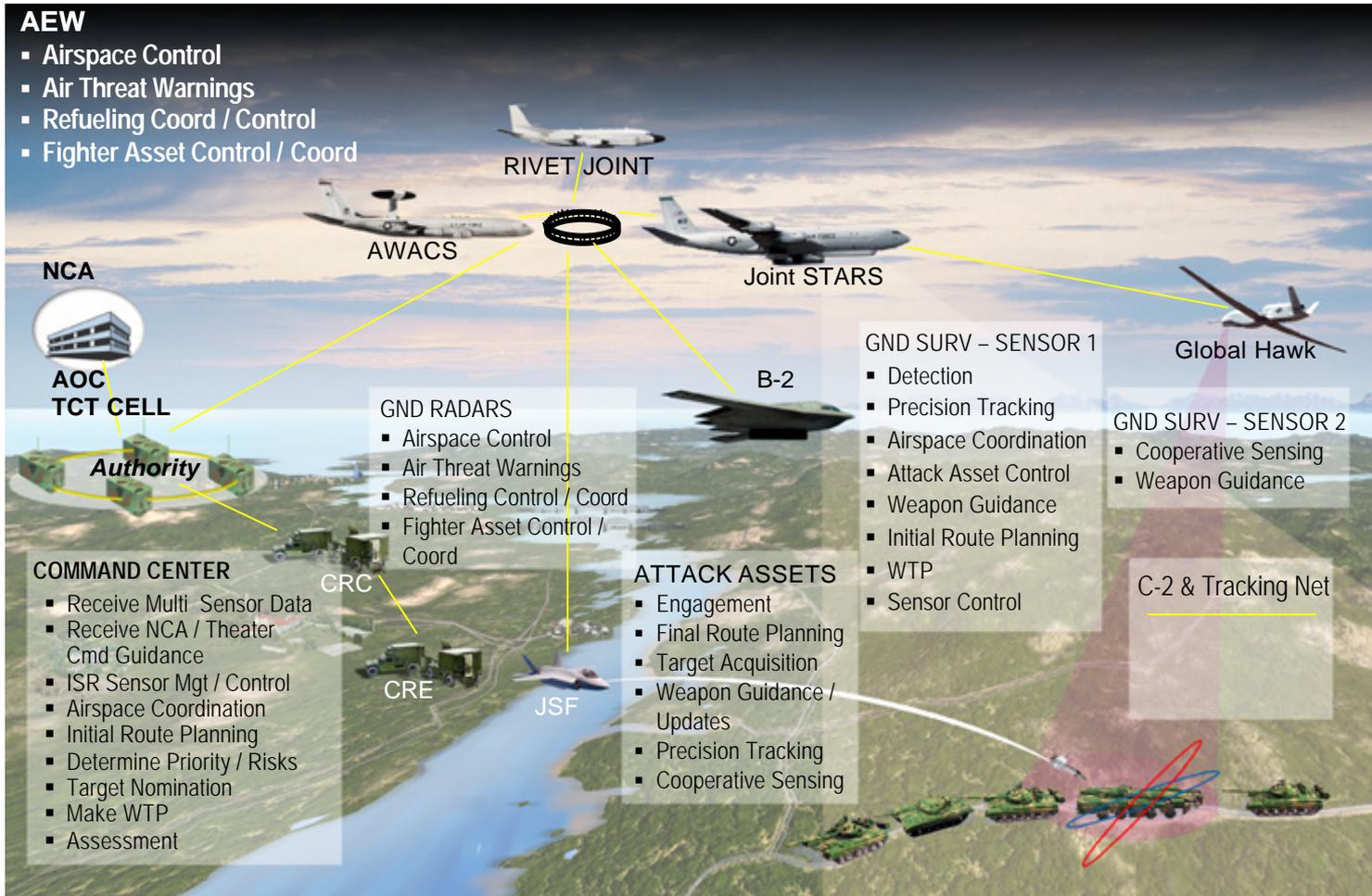
- Experimentally proving movers with increasing complexity of motion can be precisely engaged
- Developing an Architecture and Algorithms that support Long Term Track Maintenance
- Accounting for Battle Management implications to reduce decision timelines
- AMSTE brings unprecedented capability to warfighter
 - All weather, affordable, precision engagement from stand-off ranges
 - Denies adversary sanctuary of movement to avoid destruction

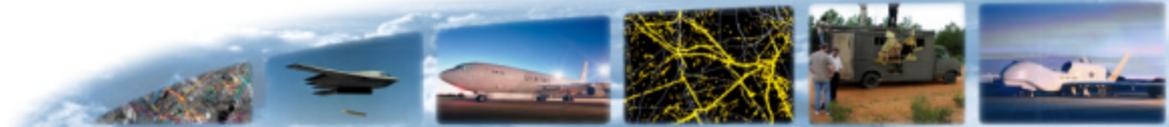


Back-Up Slides

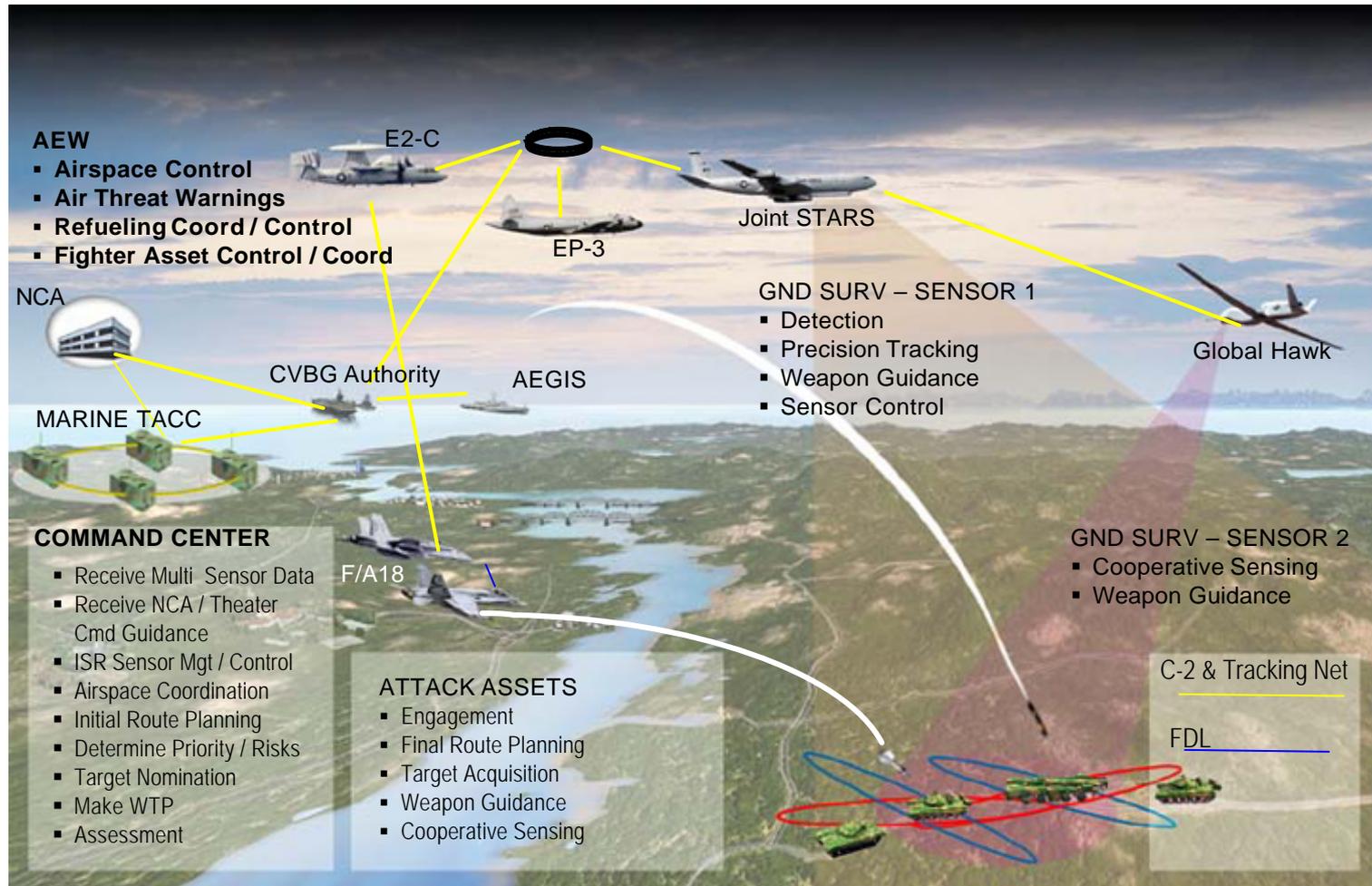


AMSTE Nominal Architecture





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AMSTE FY02 Program Builds on FY01 Successes

