



F-35

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F-51
Mustang



O-2
Skymaster

F-86
Sabre



OA-37
Dragonfly

F-89
Scorpion



A-10
Thunderbolt
II

F-102
Delta
Dagger



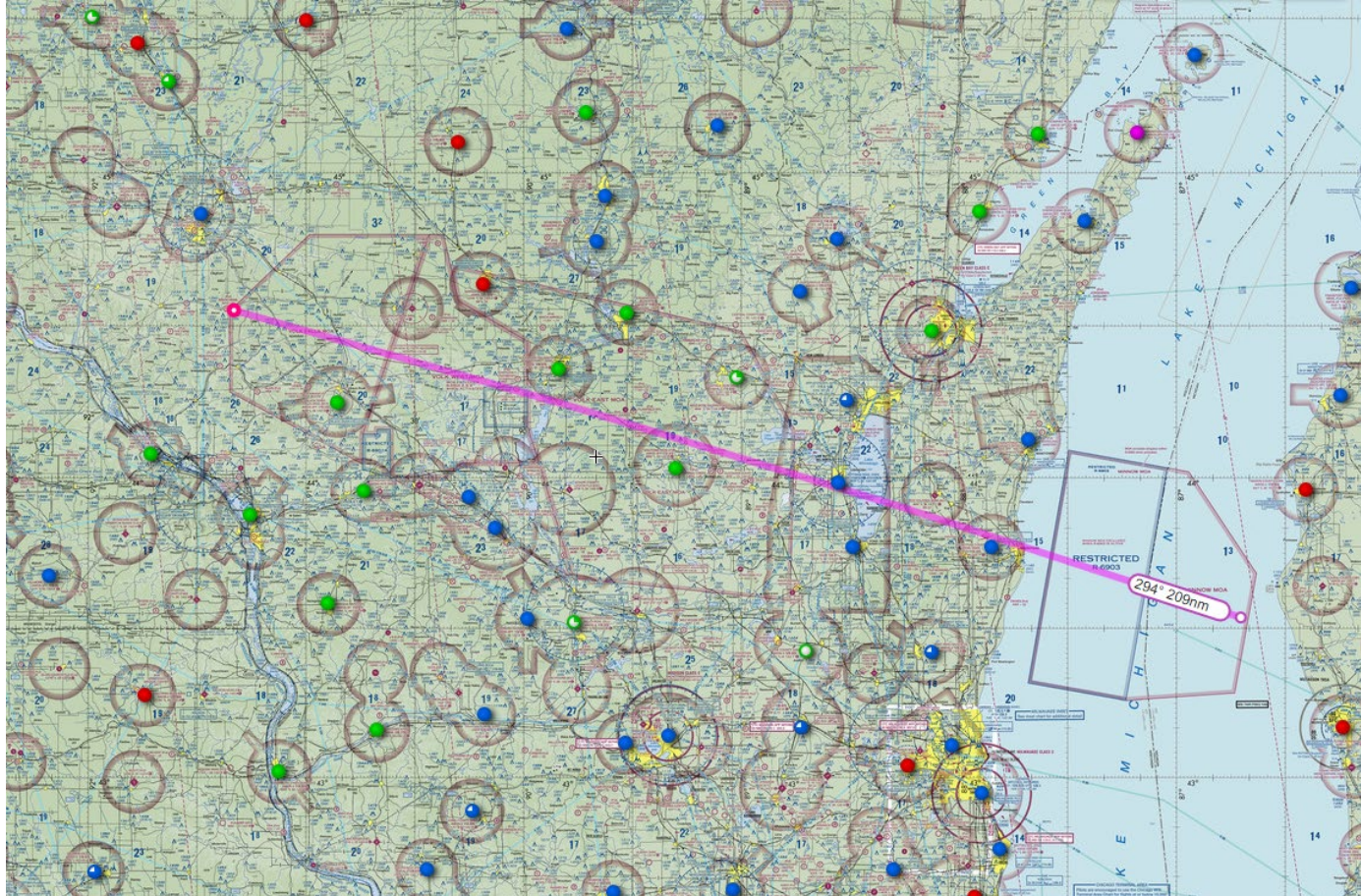
F-16
Fighting
Falcon



F-35A

April 2023 - Present





What Is F-35?

- **Family of 5th Generation multi-role aircraft**

- *Very Low Observable Signature*
- *Advanced Sensors and Fusion*
- *Networked Enabled Operations*

- **First “Triservice” aircraft since F-4**

USAF, USN, USMC

- **Purchased by 17 countries**

- *US, UK, Canada, Italy, Netherlands, Australia, Norway, Denmark, Finland, Germany, Israel, Japan, Korea, Poland, Belgium, Singapore, Switzerland*

- **Countries considering**

- *Czech Republic, Greece, Romania, Spain, Hungary, Qatar, UAE*



LOW OBSERVABLE PRINCIPLES



509th Bomb Wing (BW).
The Latin motto DEFEN-
SOR VINDEX means
Defender and Protector.



325th Bomb Squadron
(BS), 509th BW



393rd BS, 509th BW



394th Combat Training
Squadron, 509th BW



The SPIRIT OF MISSOURI (88-0329) was the first B-2A Spirit assigned to the 509th Bomb Wing. The aircraft was delivered to the Wing at Whiteman Air Force Base (AFB), Missouri on 17 December 1993.



Air Combat Command
Insignia (Port Side of
Aircraft)



Low Visibility 509th BW
Insignia (Starboard Side of
Aircraft)



Fighter Generations



F-35 Family



F-35A USAF, all foreign sales

Designed to operate from conventional runways, the F-35A is the most common variant operated by the United States Air Force and most international allied customers.

Technical Specifications

Length	51.4 ft / 15.7 m
Height	14.4 ft / 4.38 m
Wingspan	35 ft / 10.7 m
Wing Area	460 ft ² / 42.7 m ²
Horizontal Tail Span	22.5 ft / 6.86 m
Weight Empty	29,300 lbs
Internal Fuel Capacity	18,250 lbs / 8,278 kg
Weapons Payload	18,000 lbs / 8,160 kg

USAF: 1763 planned, 414 delivered (9/2023)
 More numerous than all other USAF aircraft except F-16 (~900)
 Has Gun



F-35B USMC, United Kingdom

The F-35B lands vertically like a helicopter and can take off in very short distances, allowing it to operate from austere, short-field bases and a range of air-capable ships. The F-35B is operated by the United States Marine Corps, the United Kingdom and the Italian Air Force.

Technical Specifications

Length	51.2 ft / 15.6 m
Height	14.3 ft / 4.36 m
Wingspan	35 ft / 10.7 m
Wing Area	460 ft ² / 42.7 m ²
Horizontal Tail Span	21.8 ft / 6.65 m
Weight Empty	32,300 lb
Internal Fuel Capacity	13,500 lb / 6,125 kg
Weapons Payload	15,000 lb / 6,800 kg

USMC: 353 planned
 Short (not vertical) takeoff, vertical landing
 External gun only, limited fuel, smaller weapon bay



F-35C USN, USMC

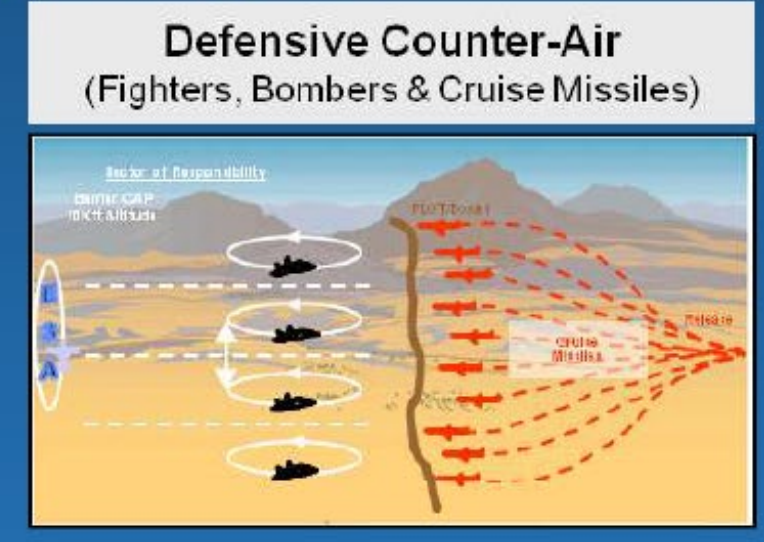
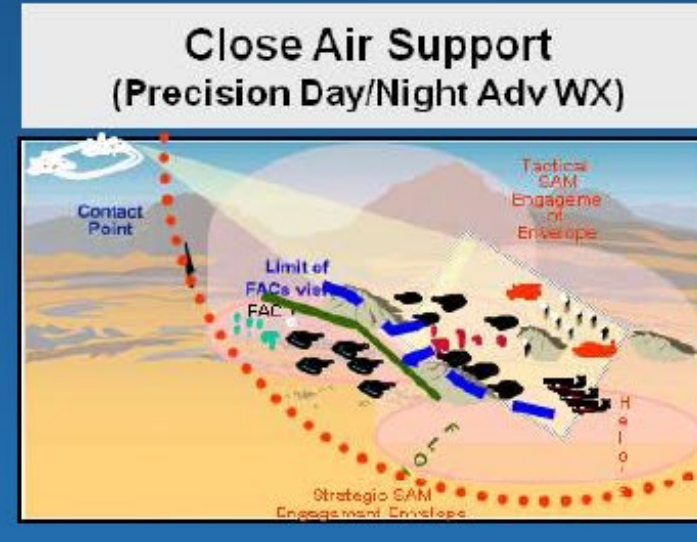
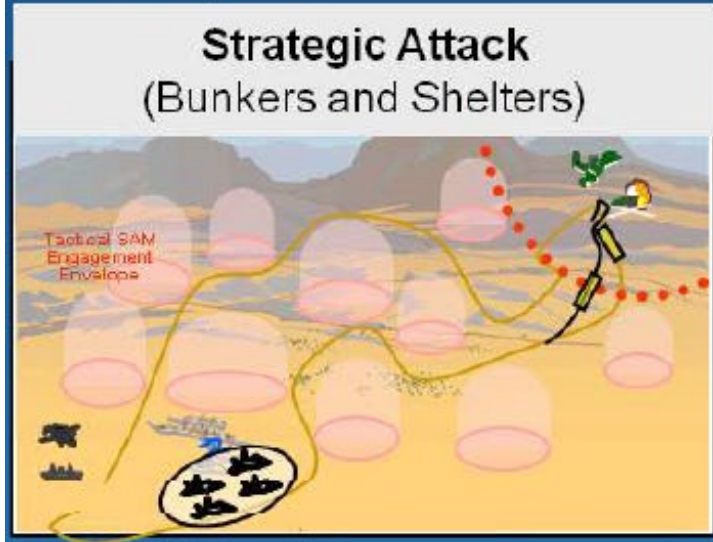
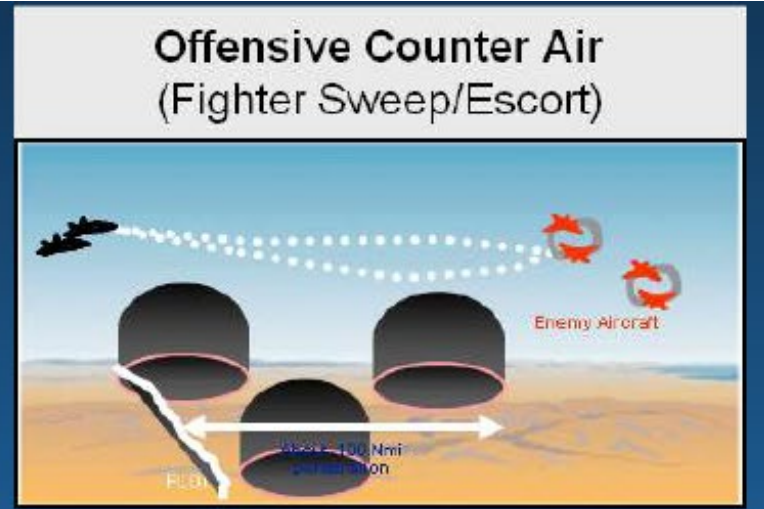
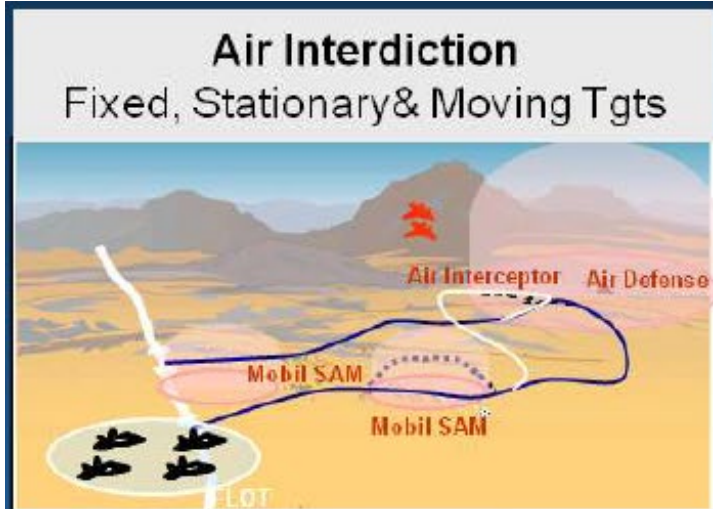
As the Navy's first stealth fighter and the world's only 5th Generation, long-range stealth strike fighter, the F-35C was designed and built explicitly for aircraft carrier operations. The F-35C is operated exclusively by the Department of the Navy.

Technical Specifications

Length	51.5 ft / 15.7 m
Height	14.7 ft / 4.48 m
Wingspan	43 ft / 13.1 m
Wing Area	668 ft ² / 62.1 m ²
Horizontal Tail Span	26.3 ft / 8.02 m
Weight Empty	34,800 lb
Internal Fuel Capacity	19,750 lb / 8,960 kg
Weapons Payload	18,000 lb / 8,160 kg

DoN: 247 planned
 Larger wing that folds, routine use hook, dual nose gear
 External gun only.

F-35 Mission Areas



F-35 Overview

Aero Performance

Fighter Class Range, Speed, Acceleration and Maneuverability



Weapons Capacity

+18k lbs of Internal and External Weapon Carriage



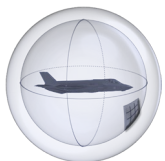
Signature

Enhance Battlespace Access and Survivability



Electronic Support Measures

Maintain Awareness of The Adversary



Network Enabled

Robust Comm Suite with LPI/LPD Datalink



Sensor Fusion

Utilize Information Dominance for Common Operating Picture



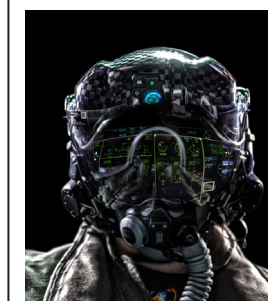
Advanced Sensor Suite

Unprecedented Situational Awareness



Pilot Interface

Enhance Pilot Decision Making



Electronic Attack

Deny Threat Awareness



- VLO Signature
- Advanced Sensors
- Integrated Sensor Fusion
- Interoperability
- Fighter Performance



Aerodynamic Performance

>43,000 lbs thrust



Supersonic Speed & Extended Range



The Pratt & Whitney F135 is the most powerful fighter engine in the world. With a top speed of Mach 1.6, the F-35 is a long range, supersonic fighter, even with a full complement of internal weapons and fuel.



VLO Weapon Capacity



	External			Internal		External	Internal		External		
Station	11	10	9	8	7	6	5	4	3	2	1
Store Type	A/A	A/A, A/S	A/A, A/S, Tank	A/A, A/S	A/A	-	A/A	A/A, A/S	A/A, A/S, Tank	A/A, A/S	A/A
Structural Capacity (lb)	300	2,500	5,000	2,500	350	1,000	350	2,500	5,000	2,500	300



Total Weapon Capacity

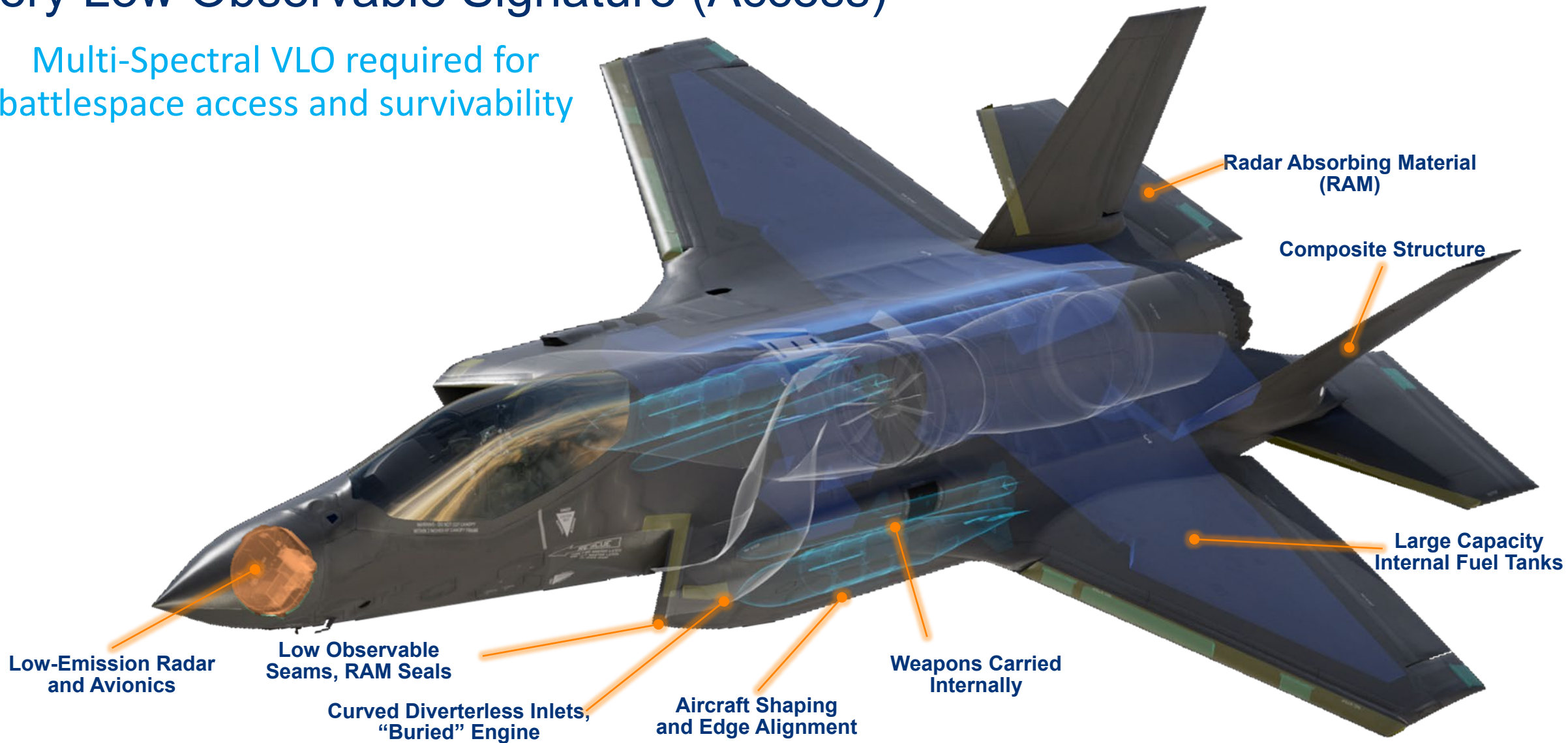


	External			Internal		External	Internal		External		
Station	11	10	9	8	7	6	5	4	3	2	1
Store Type	A/A	A/A, A/S	A/A, A/S, Tank	A/A, A/S	A/A	-	A/A	A/A, A/S	A/A, A/S, Tank	A/A, A/S	A/A
Structural Capacity (lb)	300	2,500	5,000	2,500	350	1,000	350	2,500	5,000	2,500	300
			7,500						7,500		



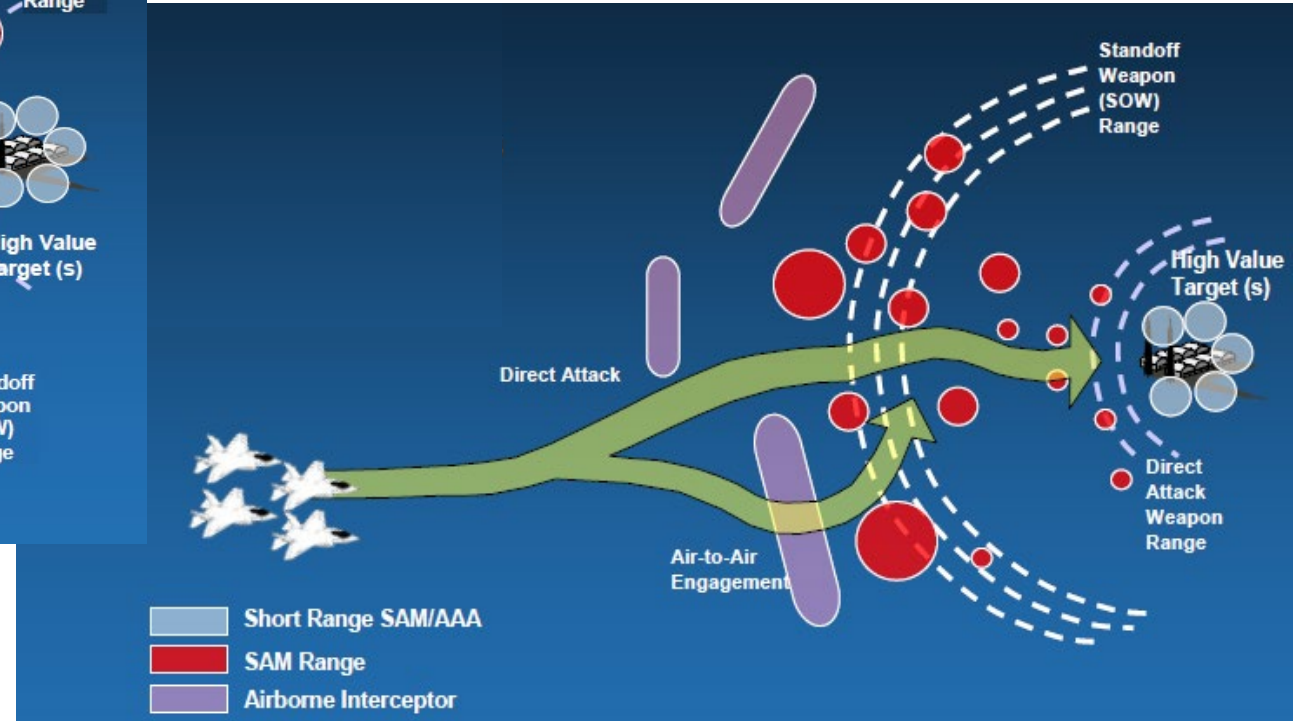
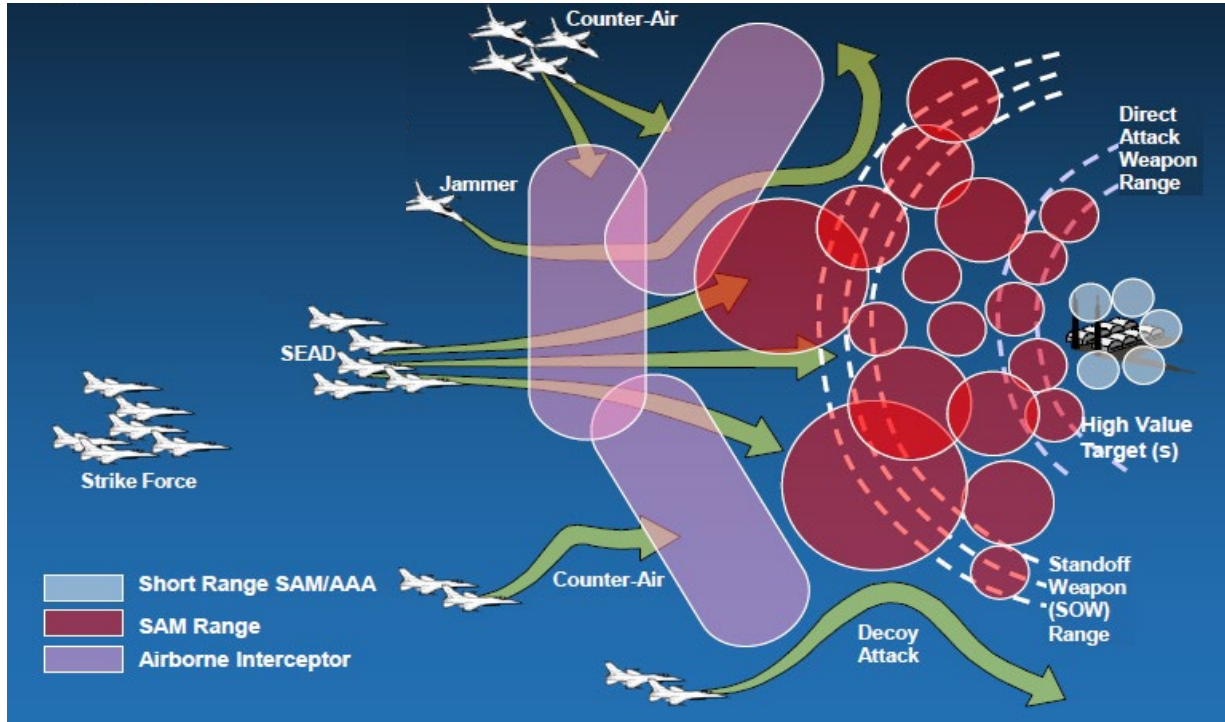
Very Low Observable Signature (Access)

Multi-Spectral VLO required for battlespace access and survivability



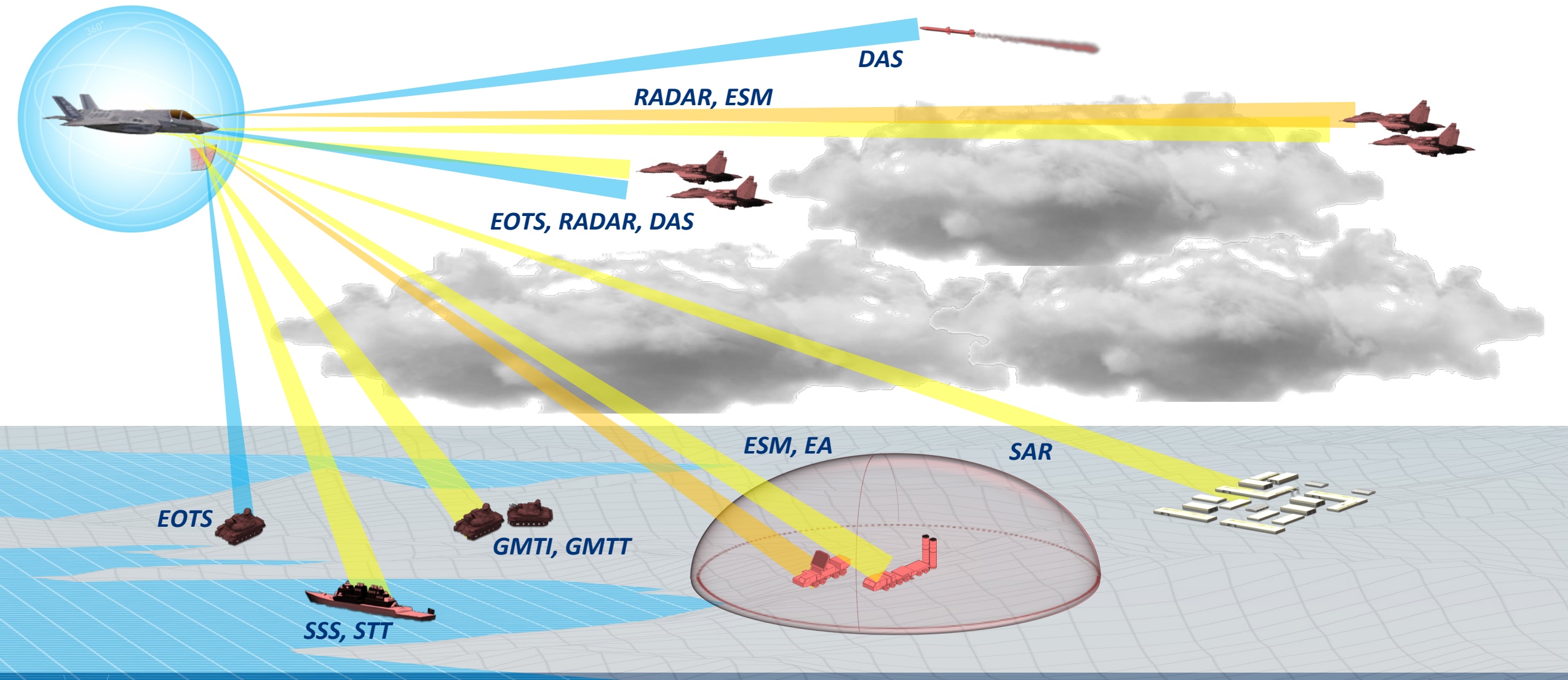
Impact of VLO

Fundamentally Changes Battlespace

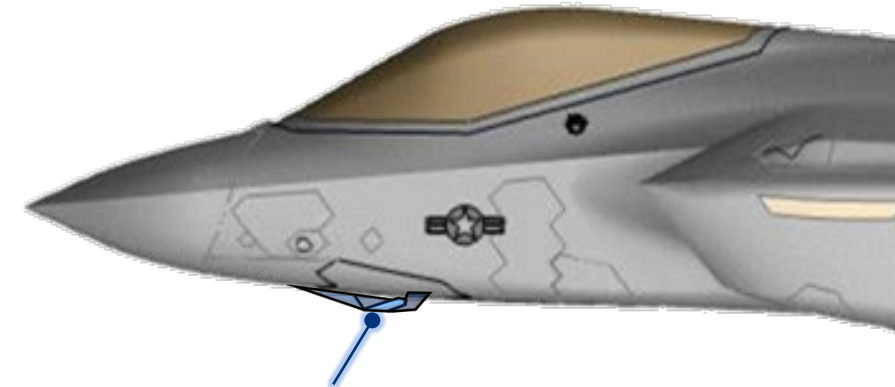
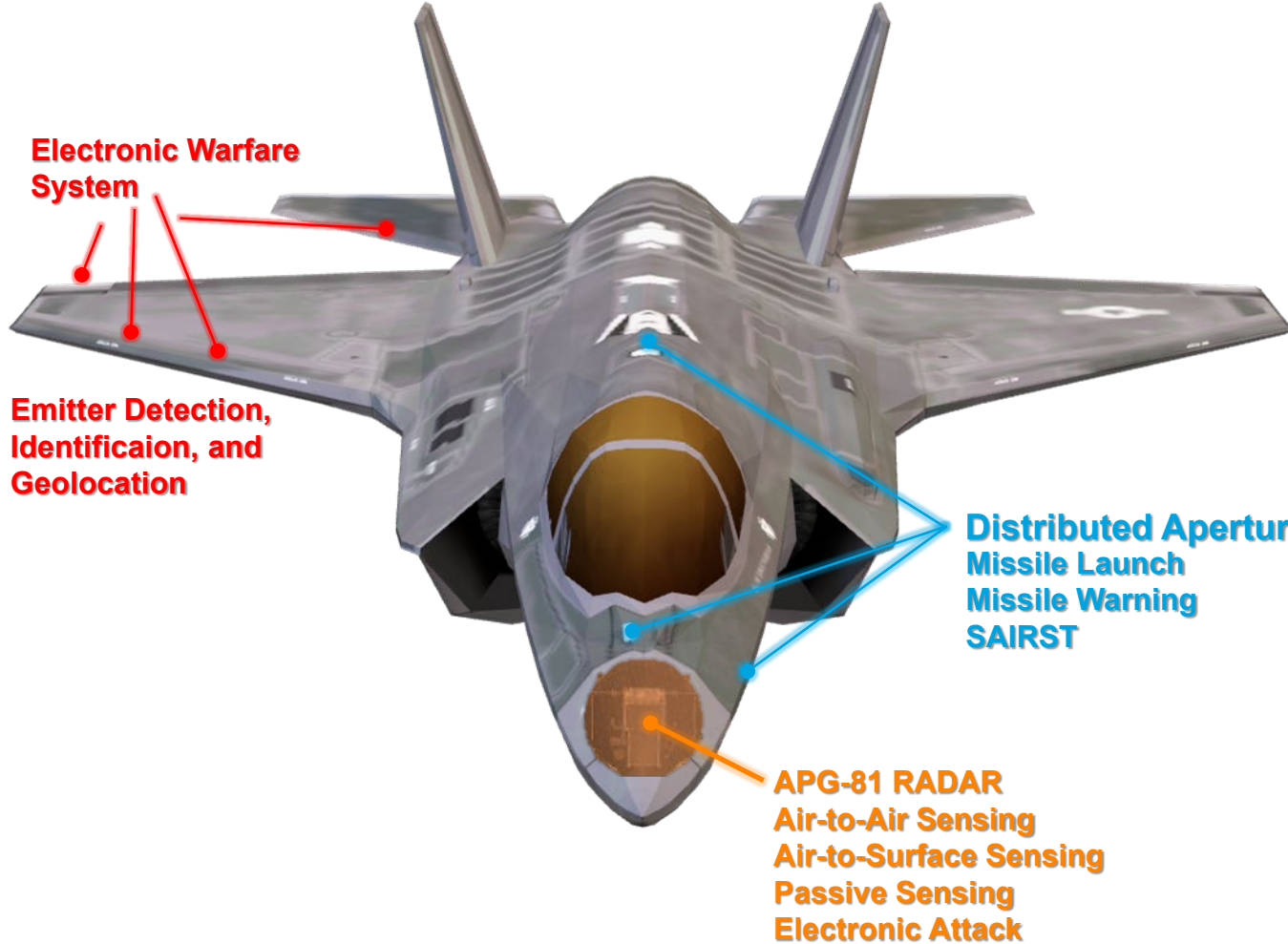


Mission Systems (Awareness)

Provides 360° Multi-Spectral Battlespace Awareness during Day, Night, and Adverse Weather



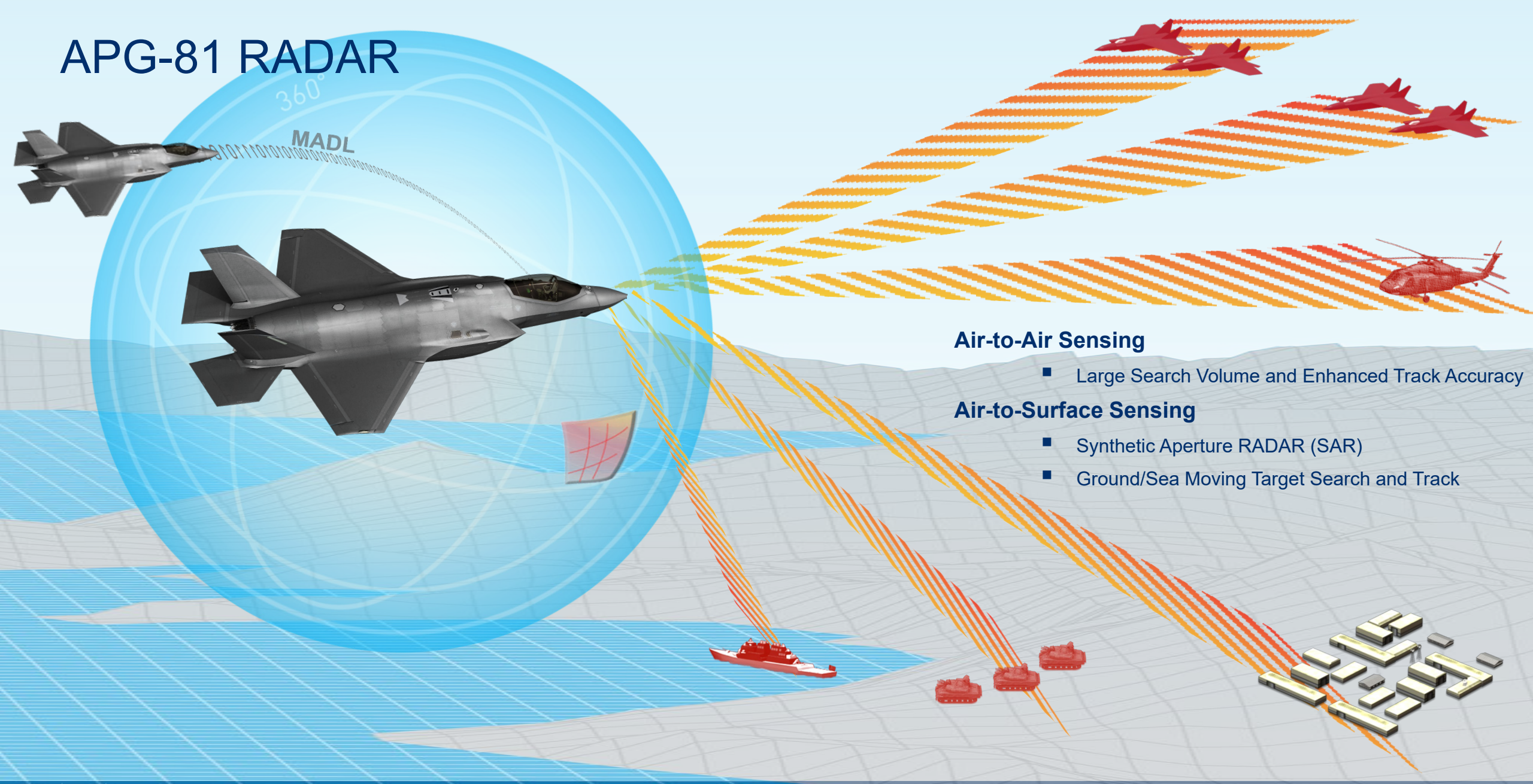
Mission Systems Components



Passive and Active Mission Systems



APG-81 RADAR



Air-to-Air Sensing

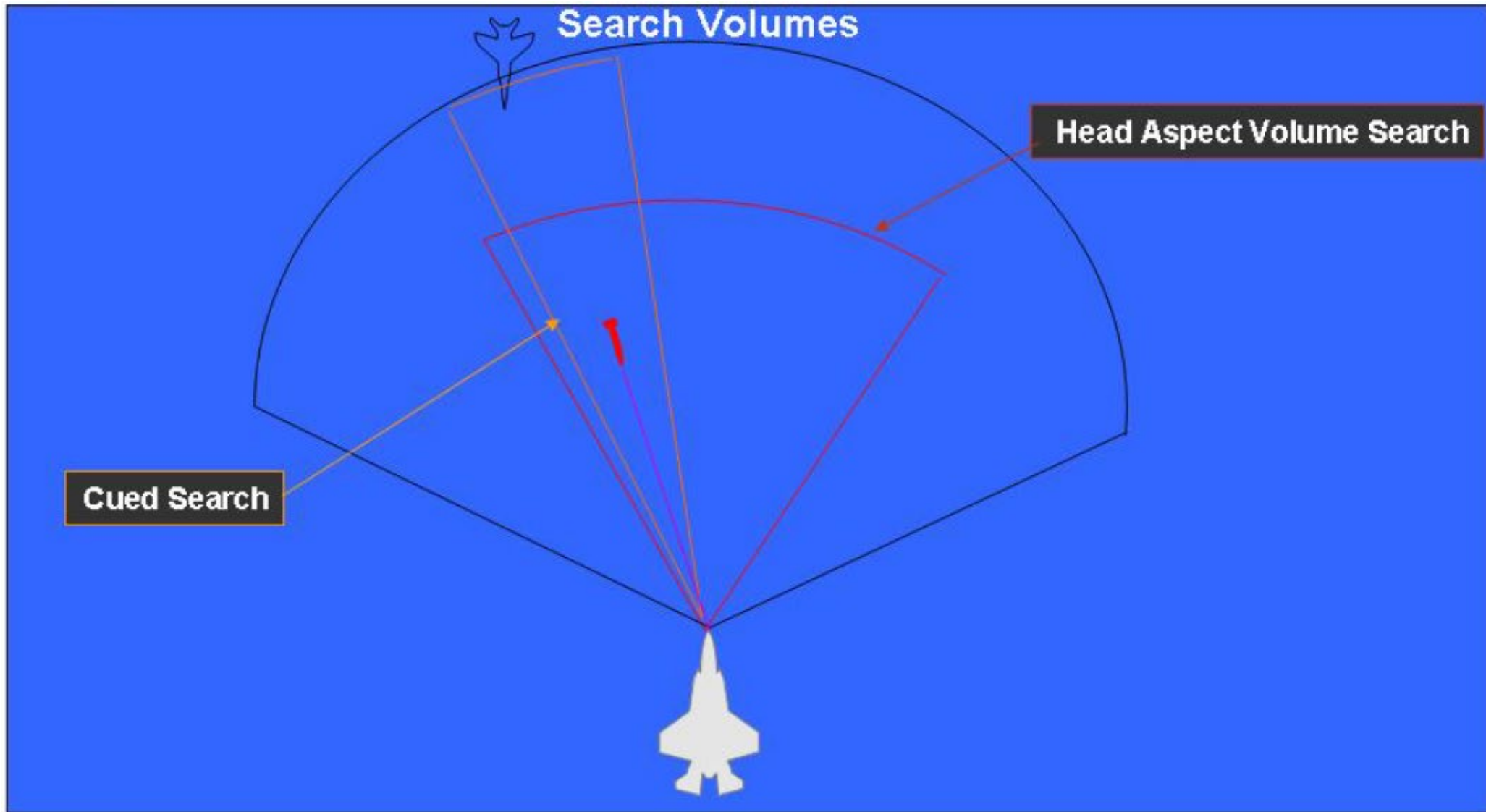
- Large Search Volume and Enhanced Track Accuracy

Air-to-Surface Sensing

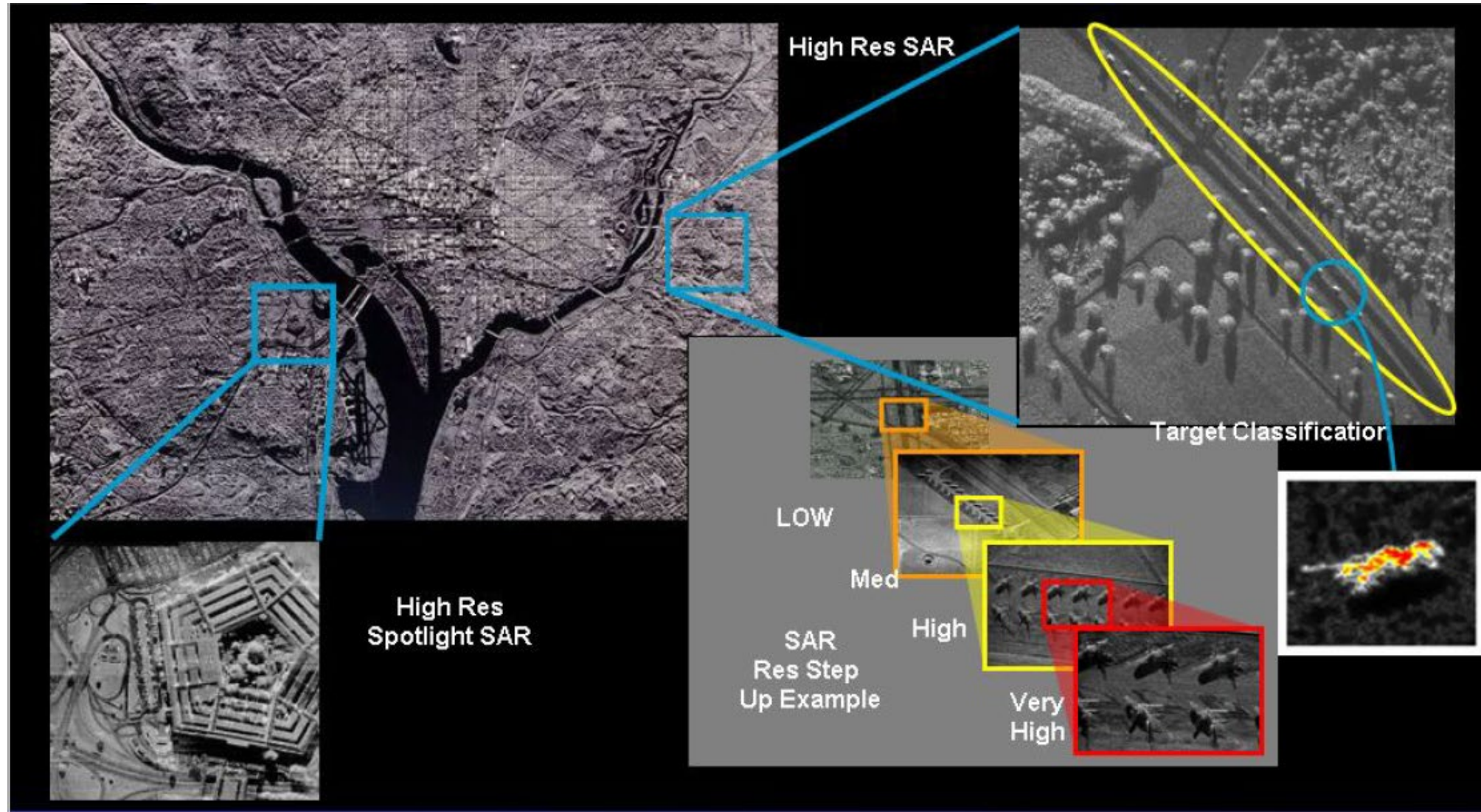
- Synthetic Aperture RADAR (SAR)
- Ground/Sea Moving Target Search and Track



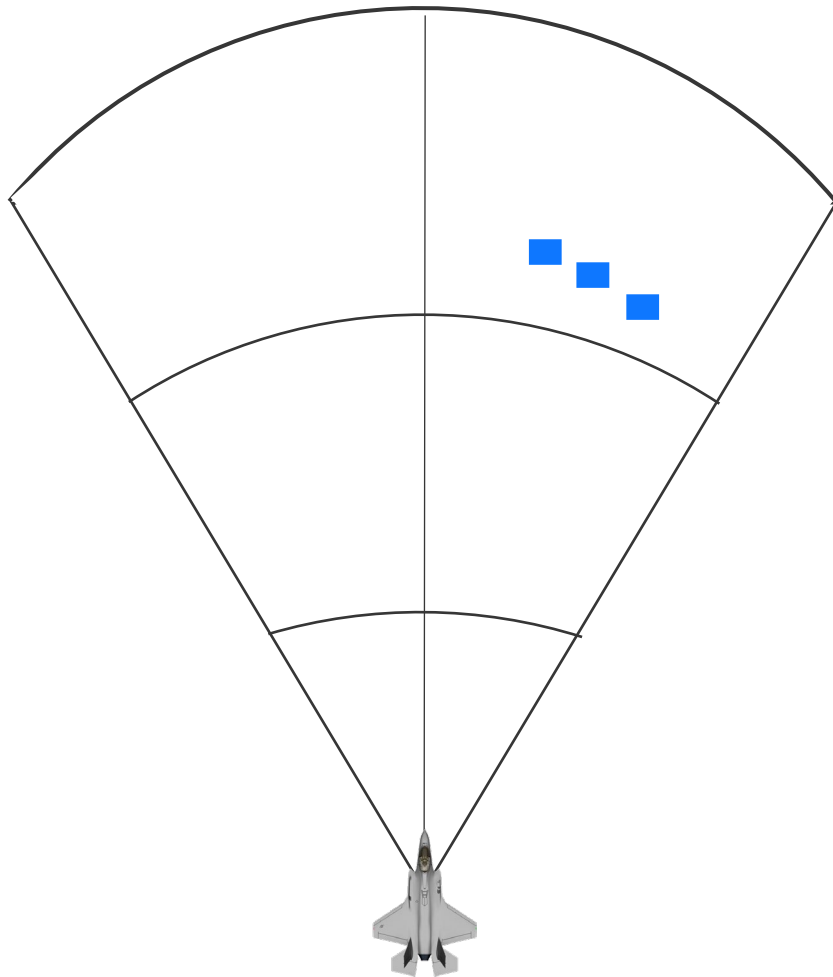
APG-81 Air-to-Air



APG-81 Air-to-Surface Synthetic Aperture RADAR (SAR)



APG-81 Moving Target Search and Track



Geographic Search

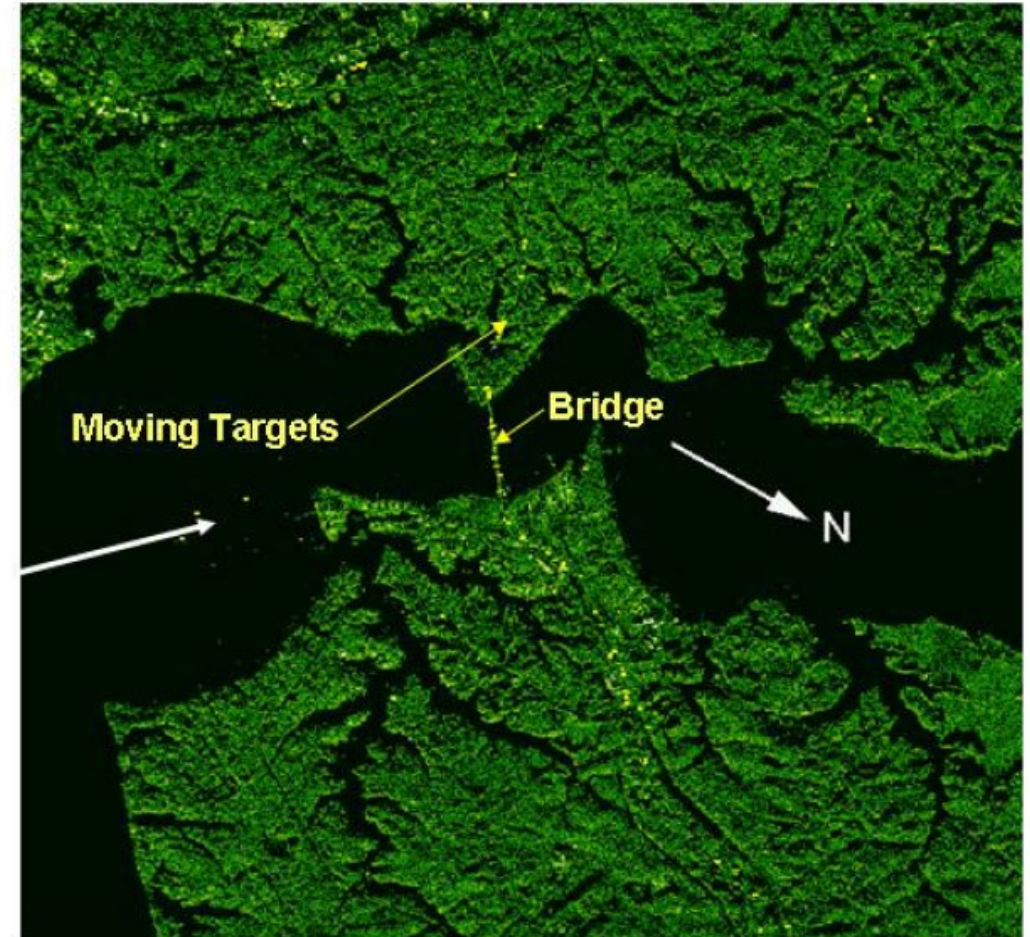
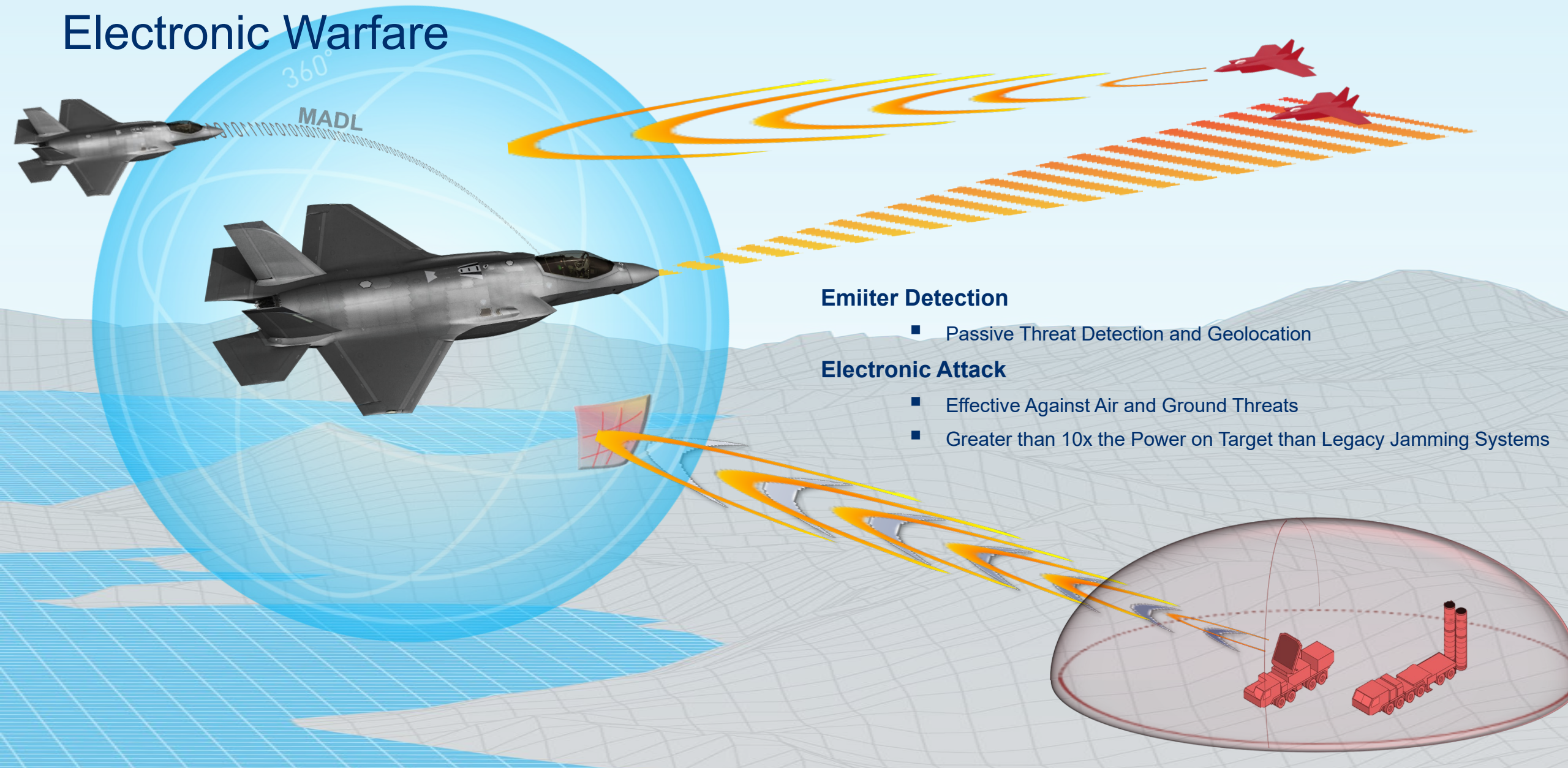


Image Overlay



Electronic Warfare



Emitter Detection

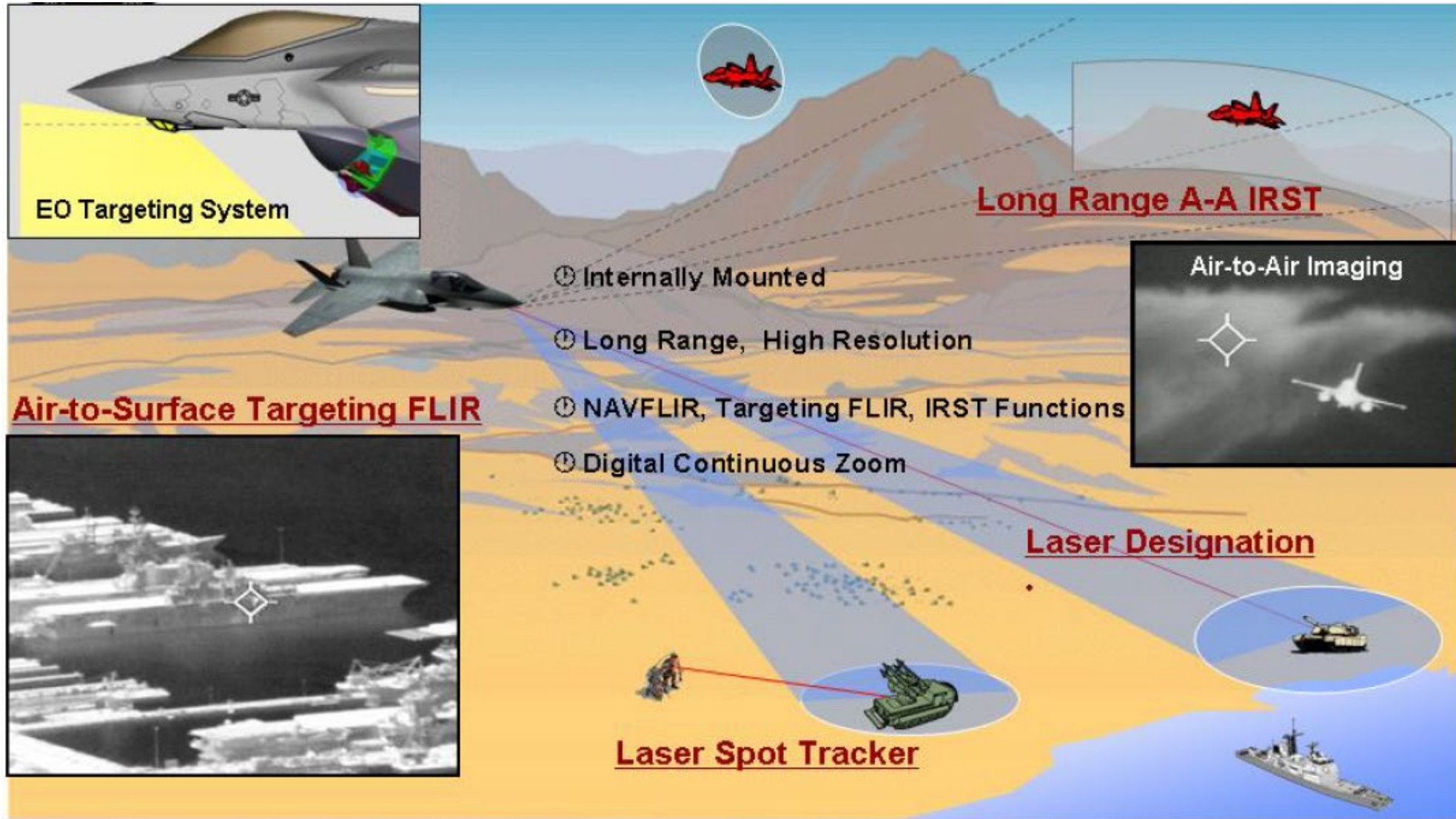
- Passive Threat Detection and Geolocation

Electronic Attack

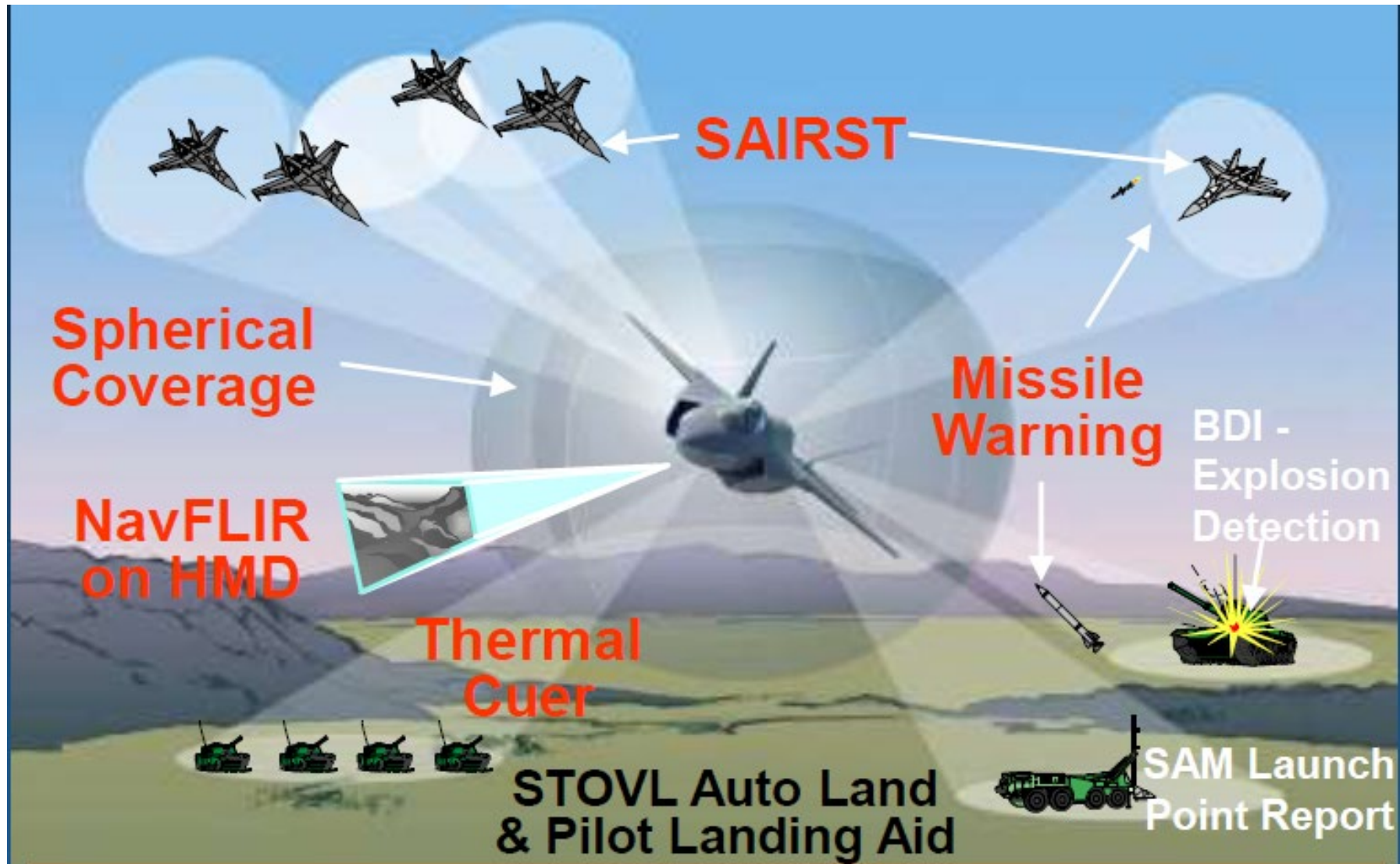
- Effective Against Air and Ground Threats
- Greater than 10x the Power on Target than Legacy Jamming Systems



Electro Optical Targeting System (EOTS)

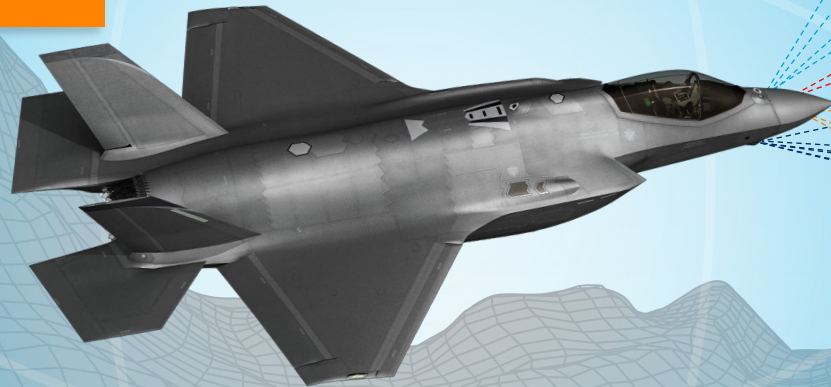


Distributed Aperture System (DAS)



Mission Systems Air-to-Air Employment

	360°	Hi Res
IR	DAS	EOTS
	Fusion	
RF	ESM	APG-81



Air-to-Air Missile Launch Detect

ESM Electronic Attack

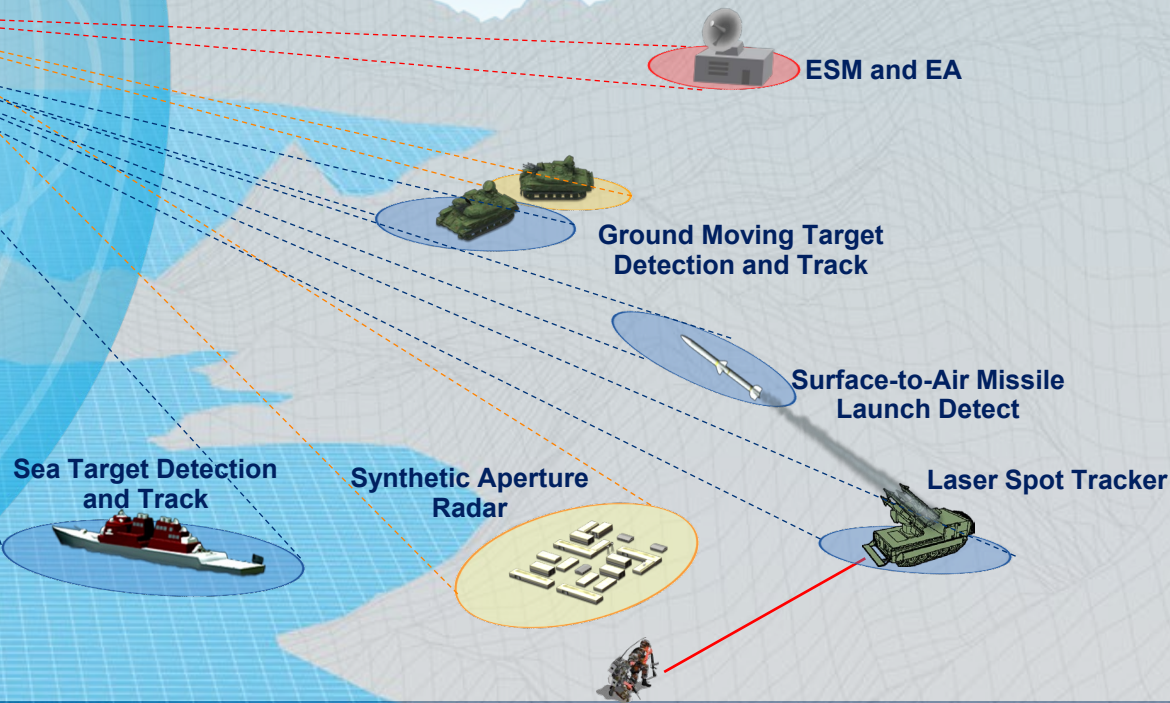
Air-to-Air Multi-Target Detection and Track

IRST

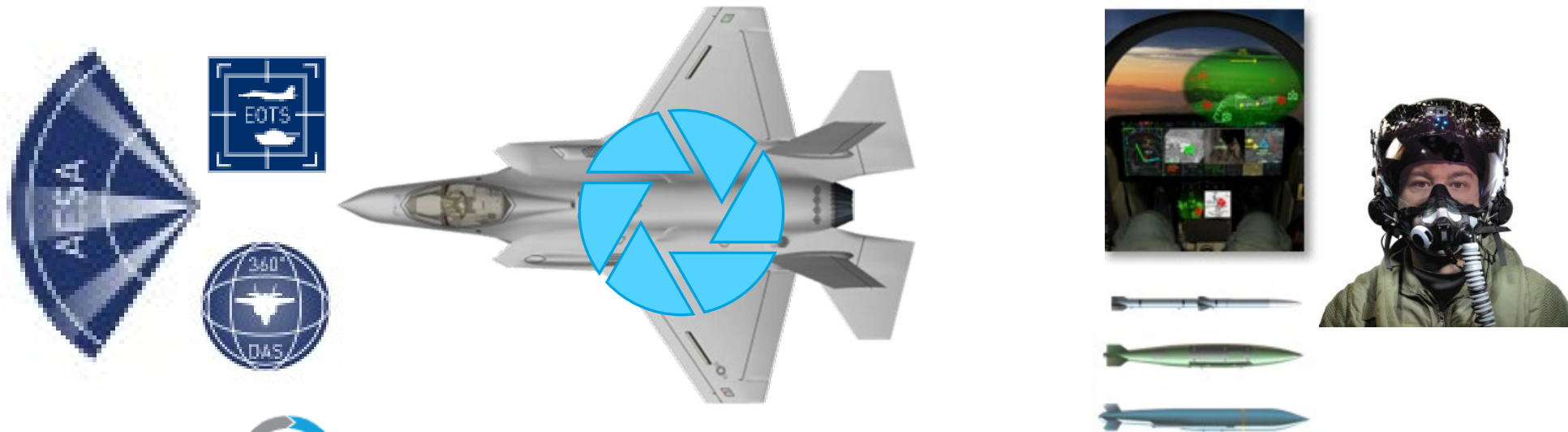
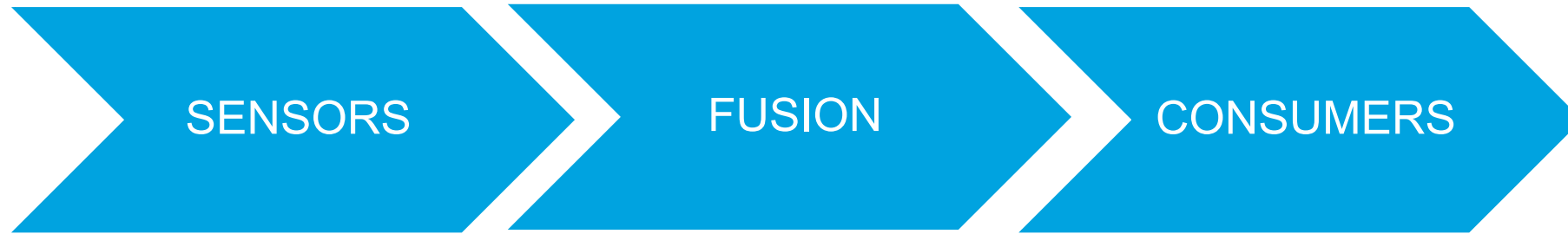


Mission Systems Air-to-Surface Employment

	360°	Hi Res
IR	DAS	EOTS
	Fusion	
RF	ESM	APG-81



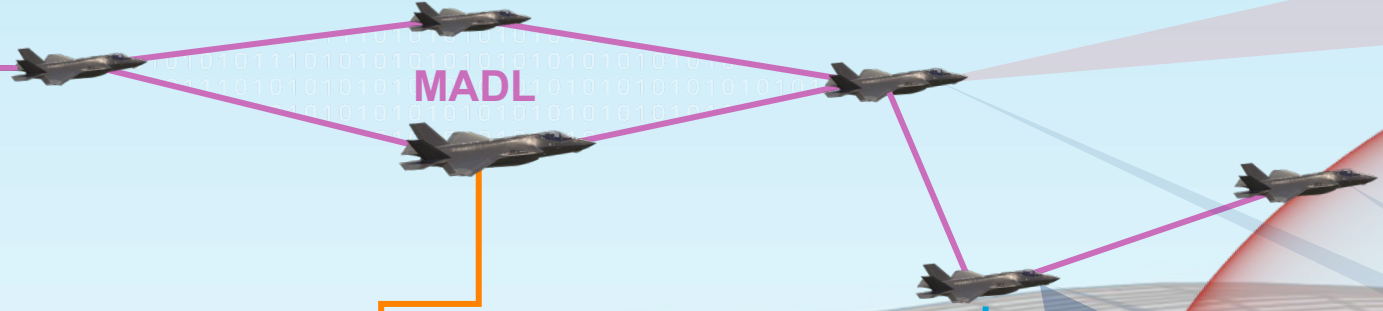
Sensor Fusion(Awareness)



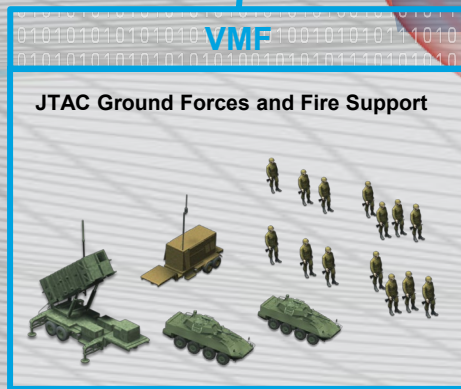
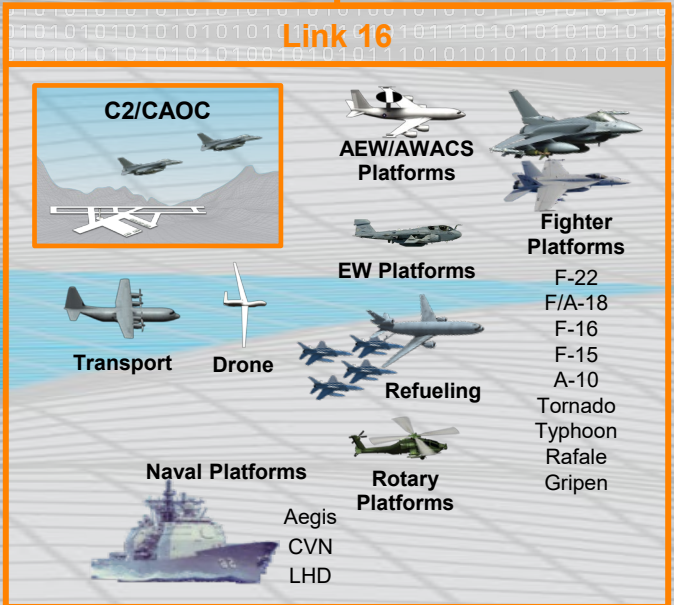
The F-35's advanced sensor fusion enables pilots to draw on information from all of their on-board sensors to create a single integrated picture of the battlefield that greatly enhances awareness and survivability.



Network Enabled Operations



- F-35 Communication Suite**
- Line of Sight VHF/UHF
 - HAVEQUICK II
 - SINCGARS
 - Combat Net Radio
 - Link-16
 - MADL



Summary

- 5th Generation Attributes
 - Multi-spectral VLO = Access
 - Advanced Sensors and Fusion = Awareness
 - Interoperability = Enhance Capability for All





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