F/A-18 & EA-18G Program

Capable, Affordable & Joint Interoperable...Today & Tomorrow

CAPT "BD" Gaddis
F/A-18 Hornet & EA-18G Program Manager
24 April, 2007

Key Messages

F/A-18E/F Super Hornet: It's the most capable, affordable, and effective multi-mission fighter-attack aircraft in the world. It will fly and fight from carrier flight decks thru 2030.

The F/A-18E/F and EA-18G, and its advanced sensors, pinpoint targeting, computing and connectivity capability, and precision weapons, has already started to transform the way Navy fights (e.g. AAW, ASUW, NTISR and TST).

Next generation capability -- cooperative, multi-moving, and multi-spectral targeting, Combat ID, IP-based networking, and networked enabled weapons -- is on the F/A-18E/F Super Hornet & the EA-18G Growler "Flight Plan."

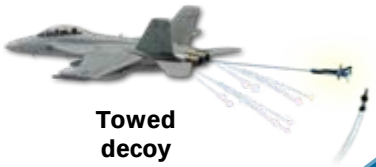
Navy Carrier Strike Groups & F/A-18 Hornets

- Carrier flight decks are now filled with Hornets, Super Hornets and USMC F/A-18A+ only
- Production continues 3 months ahead of schedule
- "Flight Plan" in place to ensure Super Hornet paces the threat past 2024
- Super Hornets will fly and flight from carrier flight decks until 2030
- Long term support in place
- Long term complement to F-35 LITENING II Strike Fighter

The F/A-18E/F is the key element of the USN's long-term force structure

The Multi-Mission Super Hornet
Flexible Air Power

Survivability: IDECM Block 2 & ALR-67 (V)3 ALQ-214 and ALE-50/55



Towed decoy

Advanced Crew Station (ACS)
- Advanced Situational Awareness
- 8x10 Large Display

Advanced Computing Architecture

F414-GE-400
Time-on-wing >600 hr

Advanced mission computer
- Open architecture, portable, scalable
- HOL/C++ OFP
- Commercial SEE
- Fiber channel switch/OI

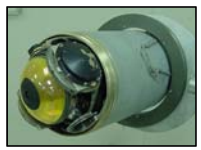
Digital solid state recorder
- COTS
- Annotated Image Transfer
- JMPS compatible

All-Weather Precision Attack
Air Dominance
Electronic Attack
OCA/DCA
CMD
NTISR
TACRECCE
Fighter Escort
Tanker
Air Defense Suppression
Maritime Strike
Close Air Support

Air-to-Ground

ATFLIR

Active Electronically Scanned Array (AESA) Radar



IR Search & Track Pod

Air-to-Air

JDAM 500
JSOW
GBU-24B/B
GBU-16
GBU-32
BRU-55
HARM
HARPOON
SLAM_ER

JHMCS
(front and aft seat)

AIM-9 Sidewinder
AIM-120A/B/C AMRAAM

Road RECCE mission

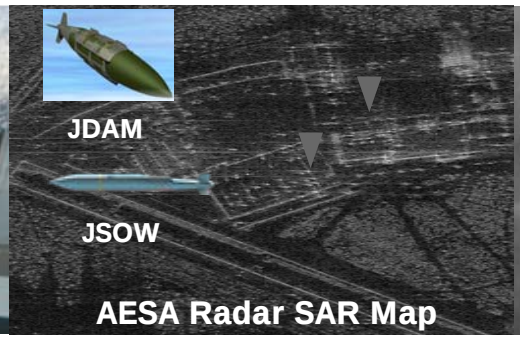
Digital network connectivity (MIDS L16 and DCS radio with VMF)

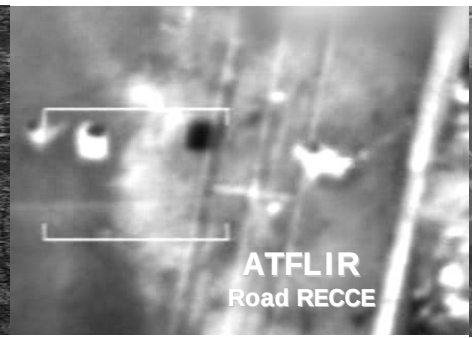
Reconnaissance

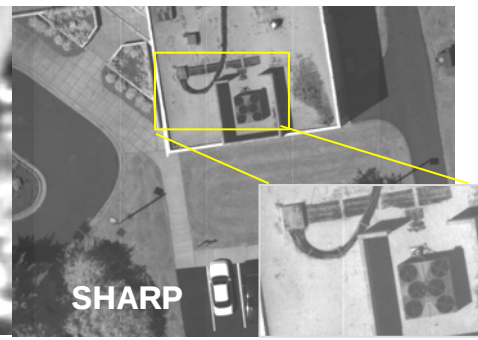
Tanker

Unprecedented multi-mission flexibility...
First day of the war capable and everyday thereafter

Super Hornet Links the Power of the Network to the Warfighter

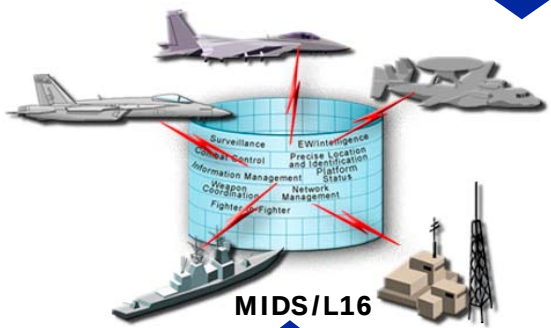






AIRCRAFT SENSOR INTEGRATION

DCS/VMF
nine-line brief



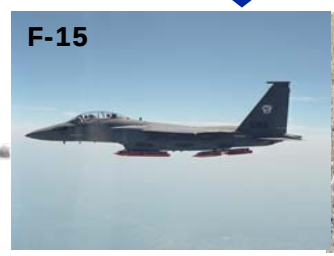
MIDS/L16

SHARP DATA LINK

CONNECTIVITY PATHS

E-2D

Ground Station
(CAOC)



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F/A-18E/F "Flight Plan"
Next Generation Capability Paces the Threat

POM08/PR09	POM10	POM12	POM14

Distributed Targeting

Onboard Geo-Registration Multiple Movers Combat ID
IRST Distributed Targeting Processor

Sensor Integration

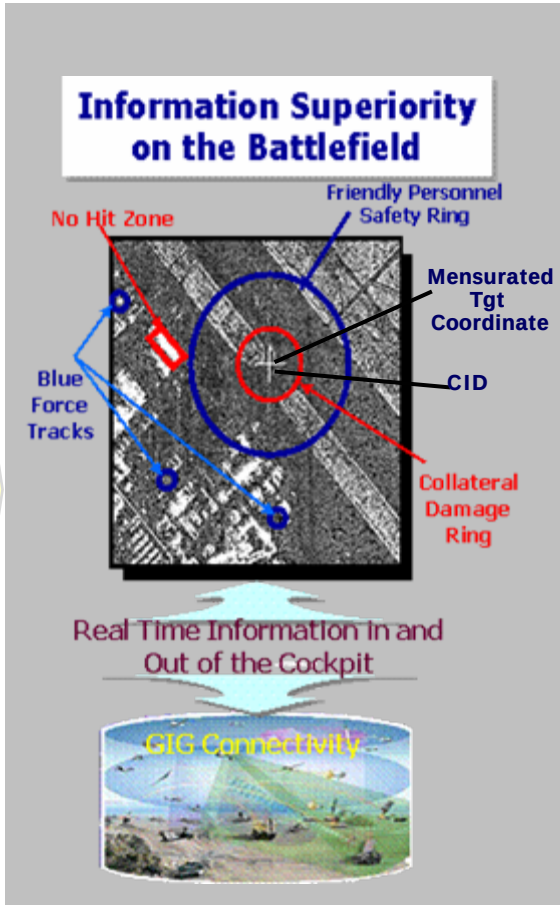
Electronic Surveillance Electronic Attack Combat ID Fusion
Cooperative Targeting Emitter Geo-Location

Airborne Networking

Mode "5" IFF MIDS-JTRS w/TTNT Network Applications & Services SATCOM UAV Connectivity

New A/A and A/G Weapons Integration

Networked Enabled Weapons AMRAAM HOBS Dual Mode Weapons



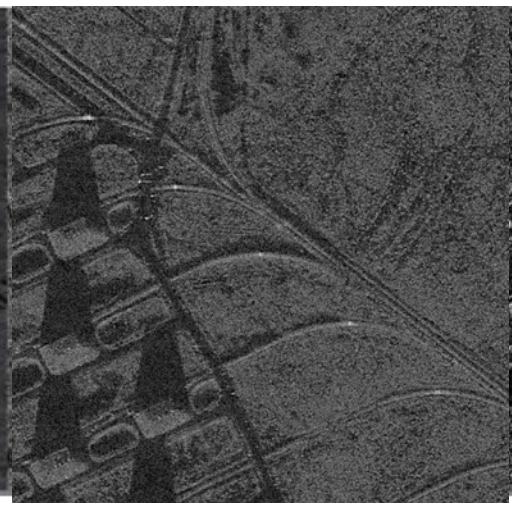
Developed with Open Architecture Principles

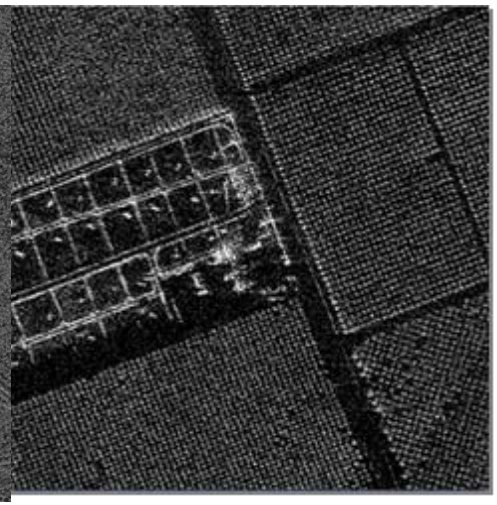
- Modular Design
- Reusable Application Software
- Life Cycle Affordability

AESA Radars in Production
Beginning Full Rate Production in 2007

Facts and Figures

- First Fleet deliveries began in Jan ’06
- First fleet introductions complete!
- First AESA equipped squadron already flying today – VFA-213
- (31) AESA equipped aircraft currently in the Fleet
- (84) APG-79 radars already on order
- Over 5000 Flt Hrs in Fleet & Test
- VFA-213 deploys in 2008





The high resolution APG-79 is changing the game for the warfighter

AESA / JDAM / Link 16

Precision Strike Capability Over the Network

F/A-18E/F AESA SAR map and aircrew designated targets

Link 16

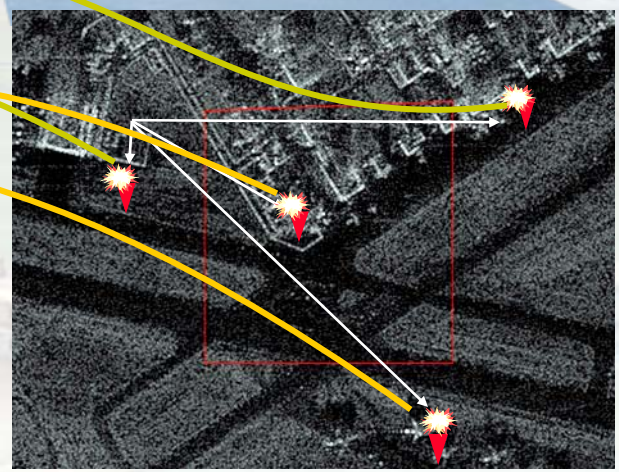
Link 16

Target designation received by AESA aircraft via Link16

- AESA precision self-targeting thru the weather in a networked environment
- Integrated weapon system performance
- AESA is a force multiplier
- Thru link 16 network and future networks all joint forces have AESA capability

Major component of NCO strategy roadmap

- Targeting coordinates sent over MIDS from AESA aircraft to non-AESA strike aircraft
- Multiple target attack in single pass
- Machine-to-machine targeting
- High volume precision fires



All four MK-84 JDAM hit their targets well within specification limits

ATFLIR

- Long-range, high resolution sensor for positive target identification and accurate targeting with high power laser
- Geo-Point accuracy for self- targeting with precision weapons delivery
- High Resolution sensor for Non-Traditional Intelligence Surveillance Reconnaissance in support of ground forces
- Integrated with AESA and APG-73 Radar, JHMCS, MIDS, and Solid State Recorder
- Imagery sent to ground forces thru aircraft data link to Rover III with streaming video, annotated imagery transfer over Link 16, or digital radio with 9-line brief

Link 16 Image Transfer - Fielded -

VMF Image Transfer - Fielded

NTISR - Road RECCE

Rover III Streaming Video To JTAC

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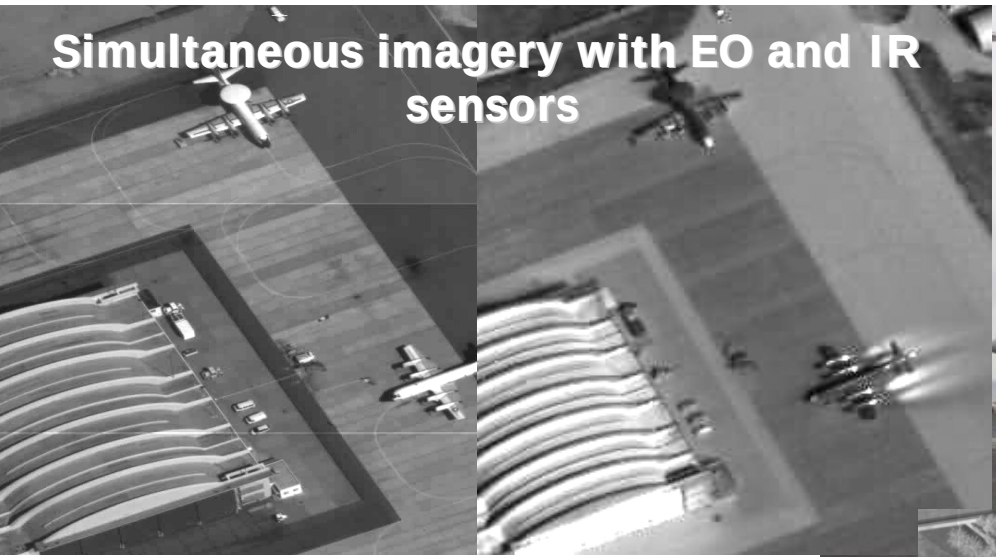
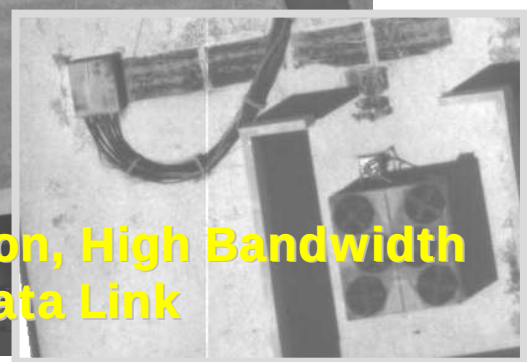
SHARP Recon Pod with Common High Bandwidth Data Link – Deployed in OIF II

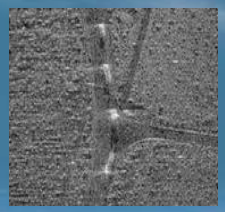


Simultaneous data link down to multiple ground stations (e.g. Navy CVN, Army TES-F, Marine Corps TEG)



F/A-18E/F Sensor Integration

AESA SAR



ALR-67(v)3

SEID

Geo-Locate

- ALR-67(V)3 antenna coverage enables 360° geolocation

Sensor Integration Roadmap

- Digitally cued ALR-67(V)3 receiver
- AESA and ALR-67(V)3 integration
- Specific Emitter Identification
- Single Ship Geolocation
- Multi-ship Geolocation
- ELINT recording

Targeting Options:

- HARM/AARGM
- Georegistration of mensurated target coordinate
- JDAM
- JSOW Target Template
- HGEA w/ALQ-214 & AESA (POM10)

AESA APG-79 High Gain ESM in FWD Sector at for greater ranges

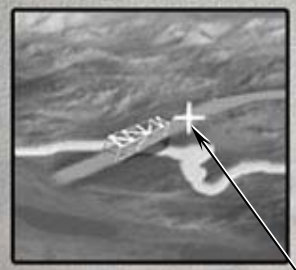
Faster and more accurate target location sufficient for:

- Data made available to EOB Enterprise
- Reduces ambiguity and increases precision
- Threat situational awareness
- Targeting for SEAD (HARM, AARGM)

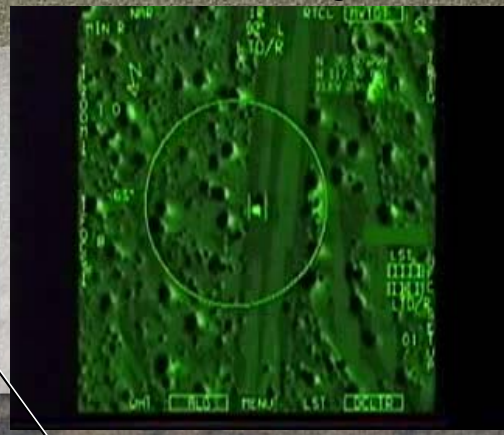
Air Interdiction
Image Precision Targeting

Sensor image correlated to reference image

Reference image used by seeker for guidance



Seeker image



Reference image loaded into JDAM before launch

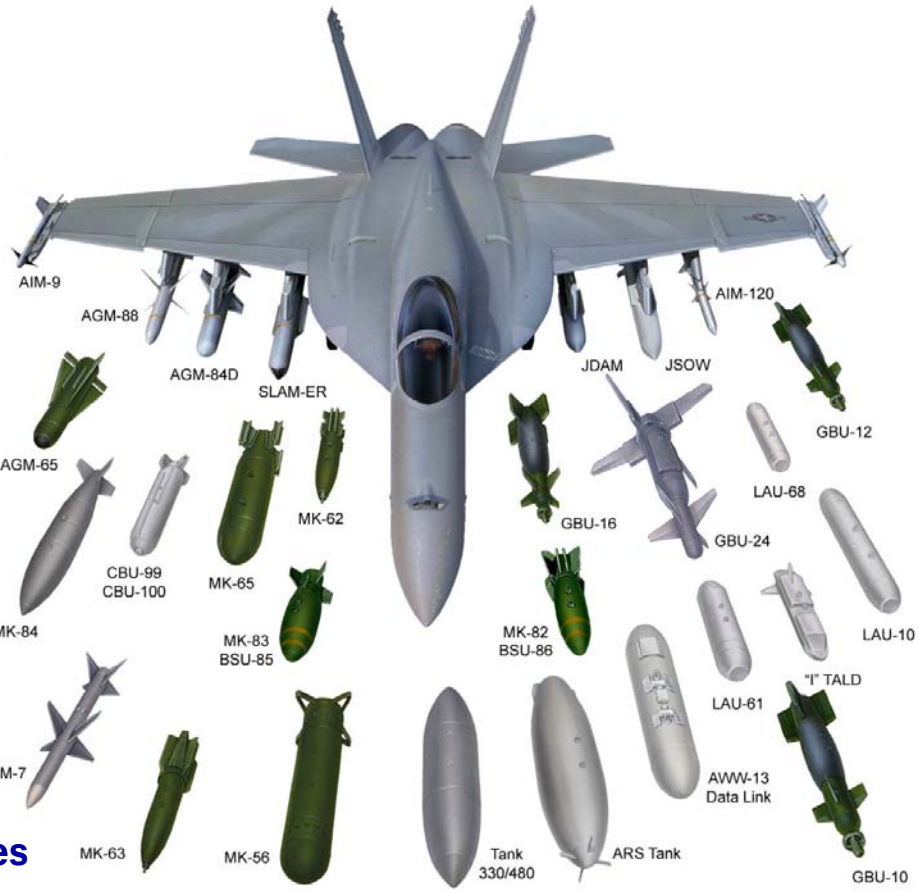
1. Pilot receives target assignment and image
2. Pilot finds target with onboard sensor
3. Sensor image correlated with reference
4. Reference image and target location loaded Into weapon
5. Moving target updates sent to weapon as pixel locations in reference image
6. Weapon matches it's seeker image to reference image
7. Weapon guides to pixel location in image until moving target detected and tracked.

Current target pixel location in reference image

- Pin point targeting
- Multiple target capability
- Weapons darta link capable
- Imagery to weapons

Multiple Moving and Stationary Target Capability at Long Range

Large Payload Capability and Multi-Mission Flexibility



Precision weapon delivery
Survivability
Advanced countermeasures

High Volume Precision Fires

Largest Payload, Significant Mission Flexibility

AIM-9X | SLAMER | JDAM

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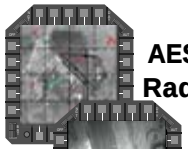
Multi-Source Integration
- Sensor Fusion & Combat ID -

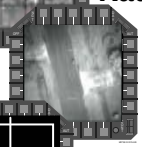
Multi-source integration enhances situational awareness for increased lethality and survivability

F/A-18E/F Block 2

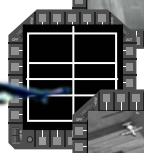
On-board



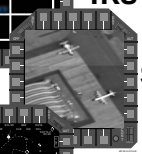
AESA Radar



ATFLIR



IRST



SHARP

EW Suit

Off-board

MIDS/L16

BACN

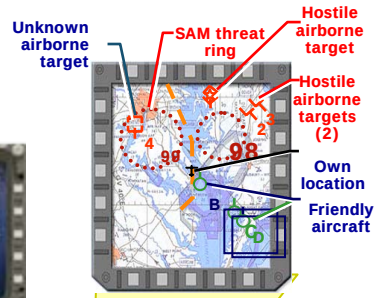
IP based Network

AARGM

A/A, A/G and Maritime MSI

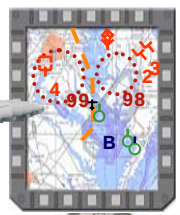
Front Seat Cockpit

Knowledge-Based SA & Targeting



Aft Seat Cockpit

EA-18G



ALQ-218 & SATCOM Receiver Aft Seat

CCS

MIDS/L16

BACN

IP based Network

AARGM

Warfighting Capability:

- Pinpoint target location error for land and maritime targets
- Combat ID from multiple onboard and offboard sources
- Employment of longer range, precision weapons
- Engagement of Stationary and Moving Targets
- Common Operational Air Picture

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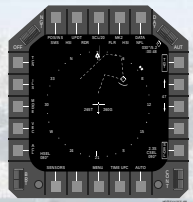
Multi-Spectral Air Dominance

E2-D

SURVEIL/ DETECT

AESA

TRACK / ID

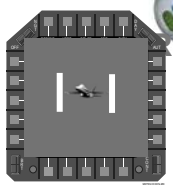


EW Suite
- ALR-67(V)3 RWR
- ALQ-214 Jammer

Cooperative Targeting – Enhanced Lethality & Survivability vs. Advanced Threat

MIDS LINK-16 / Advanced Network

Front and Aft Seat
- Enables High Off Boresight WPNS
- WVR Targeting



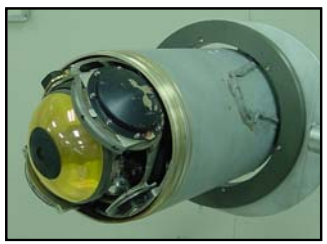
ATFLIR

ALLOCATE

AIM-120 AMRAAM
- Extended Range
- Enhanced Data Link

ENGAGE

AIM-9X BLOCK II
- Data link & P3I Fuze
- BVR Extended Range



IR Search & Track Pod
- Autonomous Search & Track
- Rapid / Large Scan Volume
- Long Range Detection

ASSESS

Super Hornet Block II providing Air Dominance against Advanced Air threats in 2024.

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Vision

UAV's are destined to become the next evolution of the worlds air combat forces.

The integration between manned and unmanned systems will be the first step in meeting those future systems, today.

Questions?

PRIORITY:

" Build a Fleet for the Future

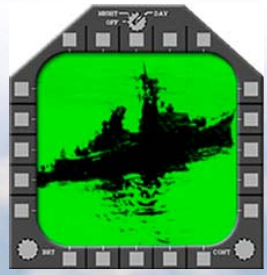
… balanced, rotational, forward deployed, and surge capable – the proper size and mix of capabilities to empower our enduring and emerging partners, deter our adversaries, and defeat our enemies"

- CNO (CNO Guidance 2007)

Anti-Surface Warfare

AESA Sea Surface Search (SSS)

Optimized for the Maritime Mission



"Flight Plan" includes capability for Maritime MSI and ID

Search

Track

- Cooperative Targeting
- Long Range Detection and Track
- Precision targeting of small vessels in sea clutter

- Network Enabled Weapons
  - HARPOON Block III
  - SLAM-ER
  - JSOW-C

Sea surface search mode detects surface ships at long range in any weather

F/A-18E/F Balanced Approach to Survivability

EFFECTIVENESS

SURVIVABILITY

Hard to See, Hard to Hit, Hard to Kill

Joint Interoperability and Networking

Multiple Platforms

The platform must seamlessly move its sensor and weapon information on/off the aircraft, then into and across a joint, networked Battle Space

Information Superiority achieved in a machine-to-machine environment ensures distributed sensors on the tactical edge of Battle Space deliver combat power from the right platform, at the right time with the right weapon

Information flow thru/into Battlespace

- COTP
- BHI
- Onboard Mensuration Coordinates
- BFSA

- Images
- Streaming Video
- Electronic Order of Battle (EOB)
- Surface Picture

- CID:
  - Fixed Target
  - Moving Targets
- Single and Multi-ship Geo-locate