



Enabling Precision Strike with the ISR “IoT”

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Agenda

- *What's new at AT&L*
- *System Affordability – The Power of BBP 3.0*
- *The ISR “Internet of Things (IoT)”*
- *Summary*



AT&L Perspectives

- *The Four “nots”:*
 - *Tech superiority is **not** assured*
 - *R&D is **not** a variable cost*
 - *Time is **not** recoverable*
 - *Our tech superiority is **not** a down the road problem. It is NOW*



The Offset Strategy

- *The rest of the world is catching up*
- *We've developed (or developing) effective counters*
 - *EW*
 - *Longer range weapons*
 - *Non conventional radars*
 - *Counter-space*
 - *Cyber and information operations*
- *Budget remains uncertain – Sequestration is a huge problem*



What's being done?

- Better Buying Power 3.0
 - Released BBP 3.0
 - Purpose: continue strengthening culture of cost consciousness, professionalism and technical excellence
 - Goal: Achieving dominant capabilities through technical excellence and innovation



Focus Areas for BBP 3.0

- *Achieve Affordable Programs*
- *Achieve Dominant Capabilities While Control Costs*
- *Incentivize Productivity in Industry and Government*
- *Incentivize Innovation in Industry and Government*
- *Eliminate Unproductive Processes and Bureaucracy*
- *Promote Effective Competition*
- *Improve Tradecraft in Acquisition of Services*
- *Improve the Professionalism of the Total Acquisition Workforce*



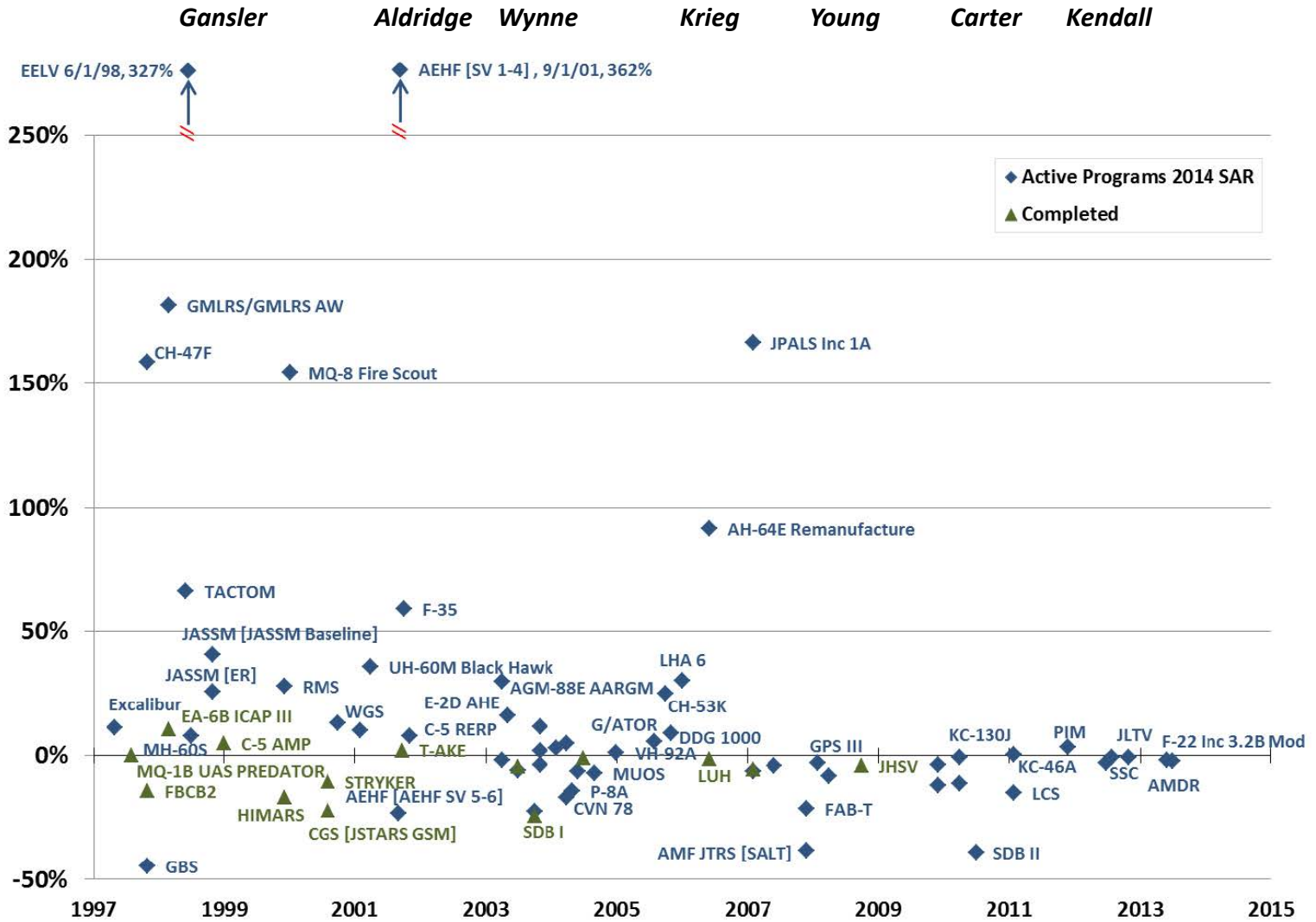
Addressing Affordability

- Systems Engineering, especially around and before M/S A
- Enhancing Prototyping to reduce risk in the S&T program before entering a POR
- Interoperability and modularity – open systems
- Modeling and Simulation

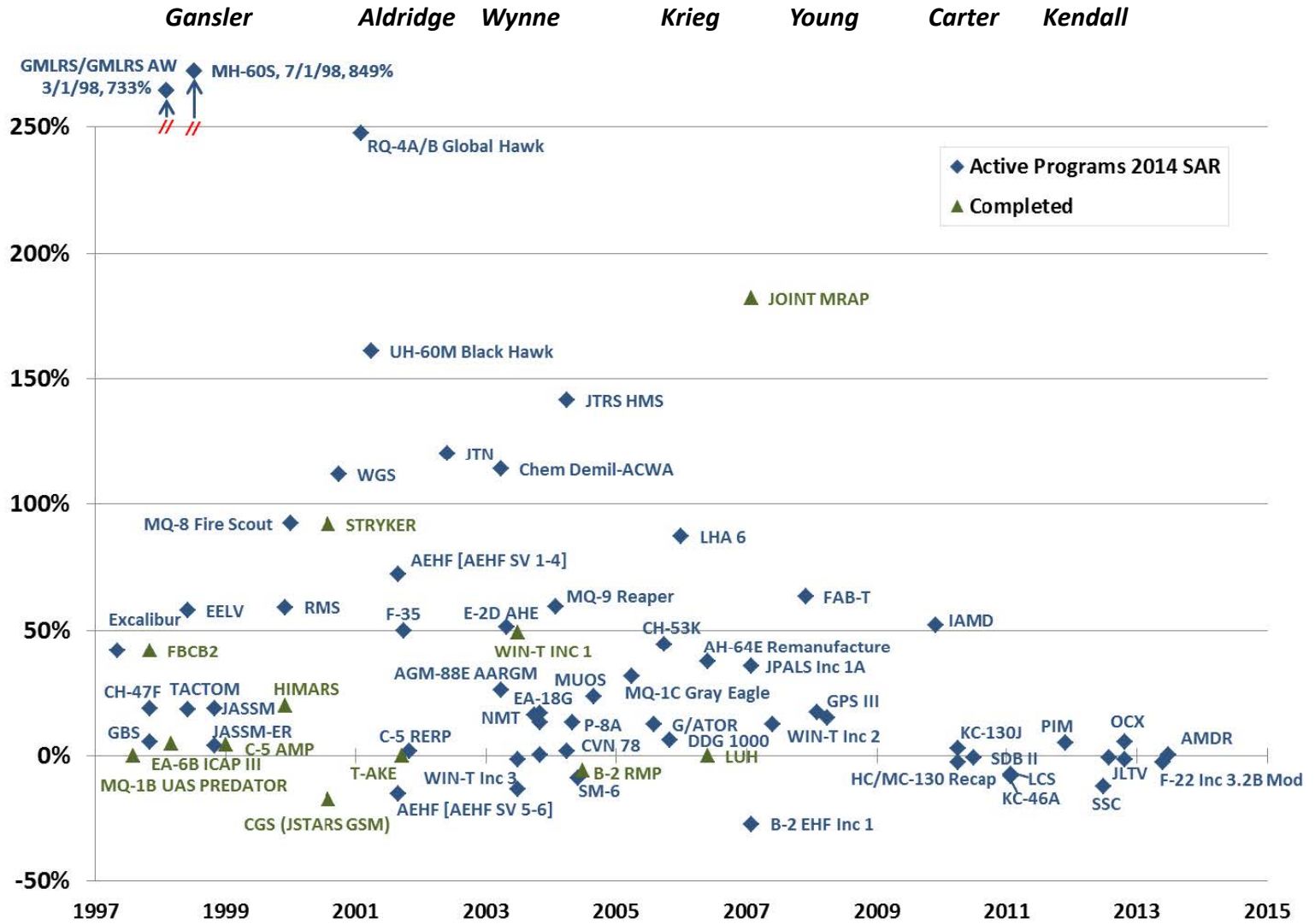
Acquisition Priority is moving towards a greater focus on designing and conceiving our systems not just for performance but lifecycle costs too!



Cumulative Growth Over Original MS B Baseline of MDAP Planned Total (From Start to Completion) Quantity-Adjusted Unit-Procurement Recurring-Flyaway Funding (controlled for maturity; 1997–2015)



Cumulative Growth Over Original MS B Baseline of MDAP Planned Total (From Start to Completion) RDT&E Funding (controlled for maturity; 1997-2015)

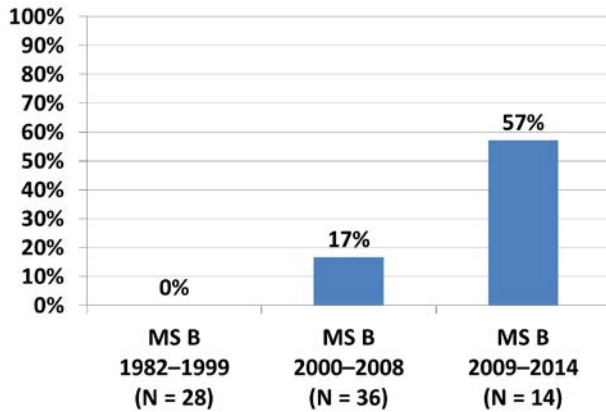




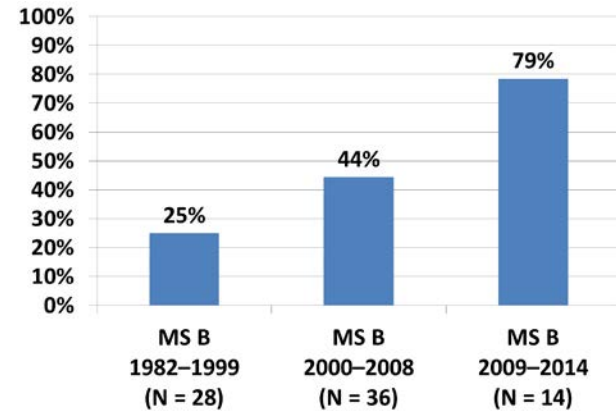
Proportions of Active MDAPs With Reductions Since Original MS B Baseline in Cumulative Planned Total (From Start to Completion) Funding (2009 and 2014 SARs)

As of 2014

Development

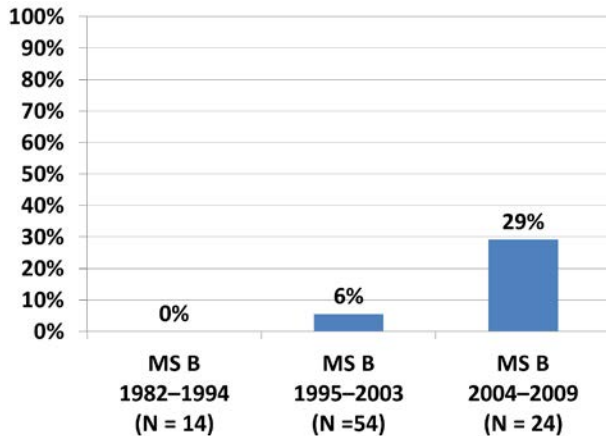


Unite Procurement

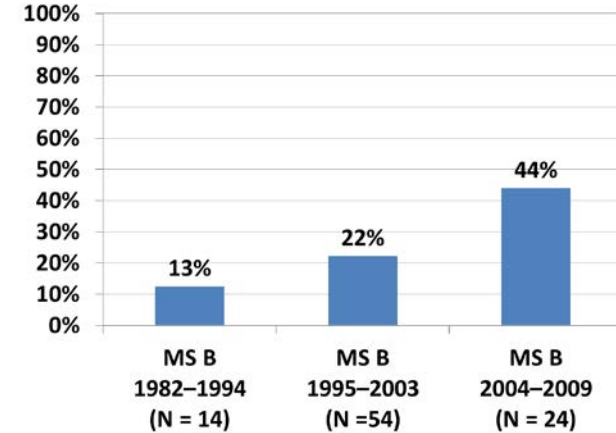


As of 2009

Development



Unite Procurement





Countering Threats

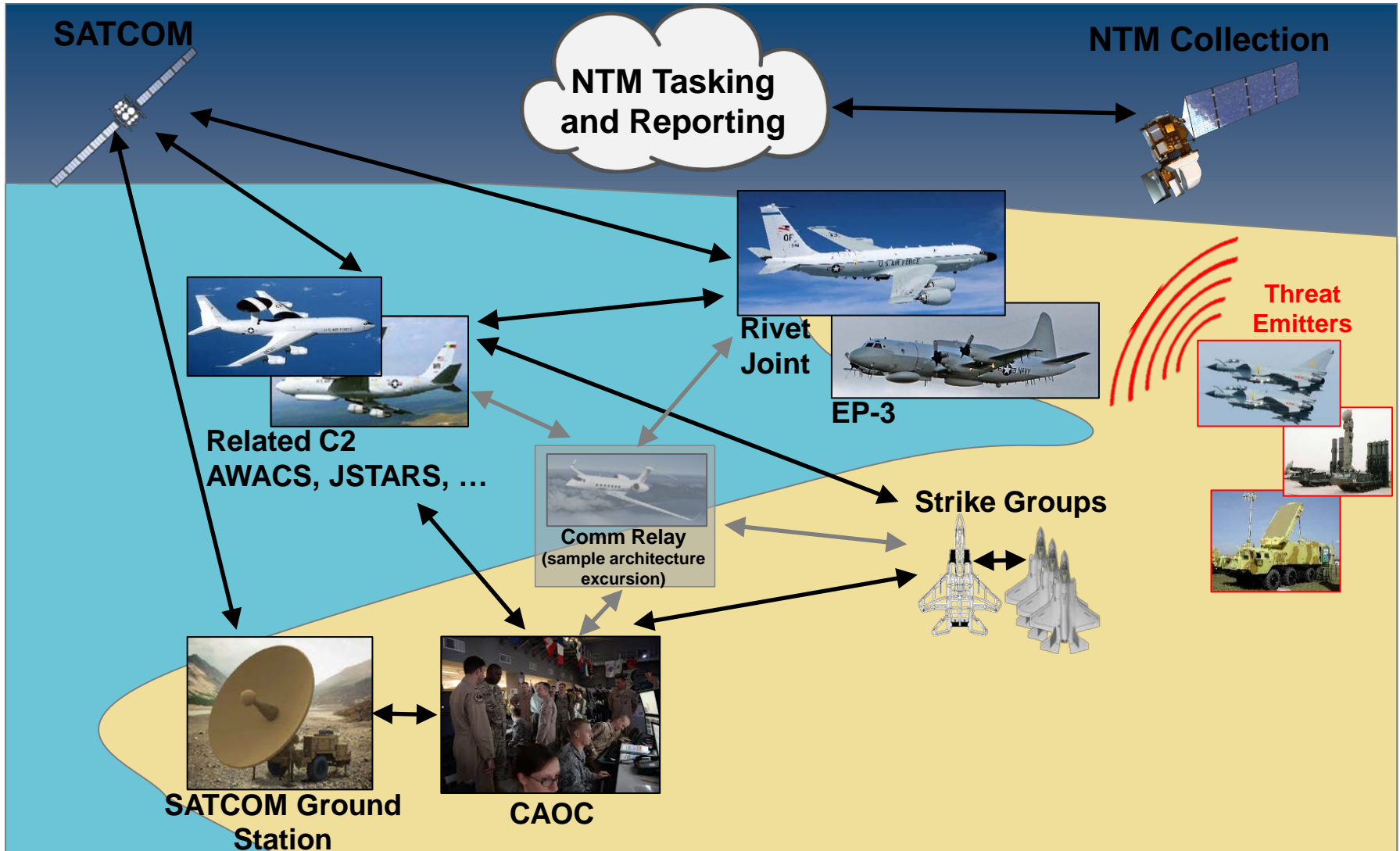
- Countering Weapons of Mass Destruction
- Electronic Warfare
- Delivering Space based Capabilities with or w/o a space layer (PNT, Comms, ISR)



Integrating the ISR Enterprise

- “Internet of Things (IoT)”
 - *The Internet of Things (IoT) is the network of physical objects or "things" embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data. (Wikipedia)*
 - *The Internet of Things (IoT) has been defined in Recommendation ITU-T Y.2060 (06/2012) as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies*

ELINT Study Overview





U.S. AIR FORCE

Concept of Operations

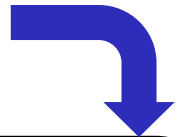
Mission Statement

JSTARS is the primary airborne element of the AF TACS designed to provide vital BMC2 in support of air, land, and maritime operations. It provides deep look, wide area surveillance using its GMTI/SAR radar and it's robust voice and data communications suite to control, coordinate, de-conflict and synchronize offensive and defensive fires in support of tactical forces

Desired Effects

- BMC2 at the tactical edge
- Battlespace Awareness
- Decision Superiority Enable Commanders
- Anticipate, Plan, & Monitor Current Ops
- React to Changes, Establish Priorities
- Exploit Emerging Opportunities

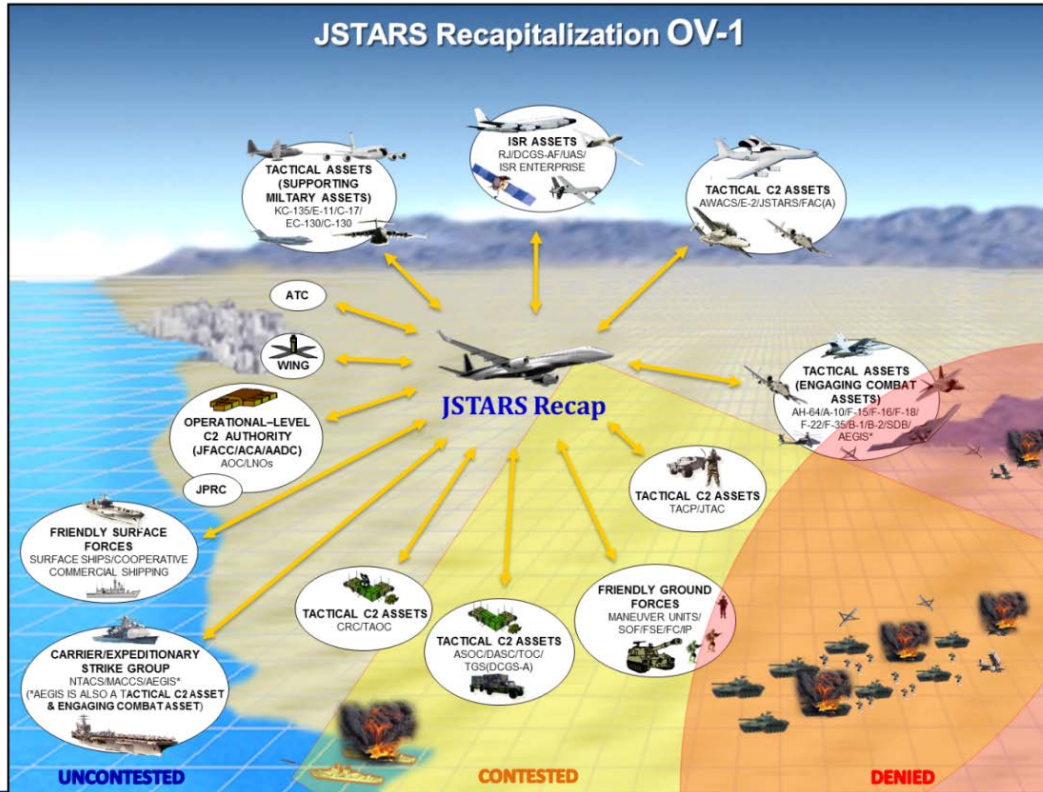
Enables Execution of



Supported Missions

- Close Air Support
- Interdiction
- SEAD
- Personnel Recovery
- Special Ops
- Homeland Defense
- Airlift/Airdrop Ops
- Maritime Ops
- ISR Ops

Critical Element of the TACS



Shortening the Kill Chain across the ROMO



Overview of Global Hawk High Altitude Long Endurance Enterprise



U.S. AIR FORCE

Mission:
Imagery



**Global Hawk
Block 10**

- 2000 lb payload to meet 30hr endurance
- 2 operating as Navy Maritime Demonstrators
- USAF operated for 10 years, then transferred all to USN and NASA

Retired or transferred

Built: 7 of 7

Mission:
Comm. Relay



**Global Hawk
Block 20**

- 3000 lb payload to meet 30hr endurance
- 2.5x electrical power
- 3 operating as communication nodes (BACN) in theater

Sensors

- EO/IR (Imagery)
- Radar (SAR)
- Comm. (BACN)

Built: 6 of 6

Mission:
Full Multi-Int Strategic ISR



**Global Hawk
Block 30**

- Similar airframe as Block 20

Sensors

- EO/IR (Imagery)
- Radar (SAR)
- SIGINT (Signals)

Block 30i – Imagery only - 8 in fleet

Block 30M- Imagery + SIGINT – 13 planned in fleet

Built: 18 of 21

In Production: 3

Mission:
Ground Moving Target Indicator



**Global Hawk
Block 40**

- Similar airframe as Block 20

Sensors

- Radar (SAR and Ground Moving Target Indicator (GMTI))

Built: 11 of 11

Mission:
Maritime Surveillance



Navy MQ-4C Triton

- Different airframe and wings

Sensors

- EO/IR (Imagery)
- Radar (SAR, ISAR, Maritime Surface Surveillance (MSS))
- SIGINT
- Maritime Identification

USN Prgm

Built: 2 (Dev)
In Development: 1

ROK Global Hawk
Mission:
Full Multi-Int Strategic ISR



**Global Hawk
Block 30i**

- Similar airframe as Block 20

Sensors

- EO/IR (Imagery)
- Radar (SAR)

Block 30i – Imagery only

ROK Planned buy:
4x aircraft,
2 x Spare Engines,
2 x GCEs each capable of LRE & MCE

To Go: 4

Japan Global Hawk
Mission:
Full Multi-Int Strategic ISR



**Global Hawk
Block 30i**

- Similar airframe as Block 20

Sensors

- EO/IR (Imagery)
- Radar (SAR)

Block 30i – Imagery only

Japan Planned buy:
3x aircraft,
2 x GCEs each capable of LRE & MCE

To Go: 3

Mission:
Ground Moving Target Indicator



NATO AGS

- Block 40 / Triton hybrid for NATO

Sensors

- Radar (SAR and GMTI) and Maritime Moving Target Indicator (MMTI)

International Efforts

To Go: 5

USAF Platforms

Modernization of Aging USAF Global Hawks Will Benefit from Both Navy Triton and International Efforts

Integrity - Service - Excellence



Global Hawk Successes



U.S. AIR FORCE

- **Supporting the Warfighter**
 - Exceeded 164,000 flight hrs; over 113,000 hrs in “Combat” ops
 - Block 40 EOC: Sep 13; Blk 30s: Misawa May 14; Blk 40s: Guam Jun 14; Blk 30s Misawa Jul–Nov 15; Block 40s Jul- Dec 15
 - On-going humanitarian assistance
 - Transitioned Block 30 test aircraft and LRE to ops support
- **Setting Records**
 - Longest unrefueled flight by a USAF aircraft – 34.3 hours
 - “Ladyhawk”- all-female crew, Women’s History Month (Mar 2014)
- **Continuing Sustainment Excellence**
 - James Roche Sustainment Excellence Award three successive years
 - Drove down CPFH by 28% FY12 - FY13 and 39% FY13 - FY14
- **Delivering Capability**
 - Block 40 production is done – 11th A/C DD 250 26 Aug 14
 - Awarded Lot 11 AP/LRIP contracts (3 Block 30 A/C & 2 ASIP retrofit kits) – awarded in record time!
- **Operations Tempo Increasing**
 - Flew 17,536 hours in FY13, flew over 24,000 hours in FY14, on pace to fly over 28,000 hours in FY15
 - Flew a weekly record of 665 hours in Feb 2014



Integrity - Service - Excellence

UNCLASSIFIED

MQ-4 in Chamber



UNCLASSIFIED

UNCLASSIFIED

MQ-4 in Chamber



UNCLASSIFIED

UNCLASSIFIED

MQ-4 in Chamber



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Summary

- *ISR is a critical enabler*
- *ISR is an enterprise*
- *Future systems must be capable and affordable*
- *Tenets of the Department's focus on efficiency embedded in BBP 3.0*