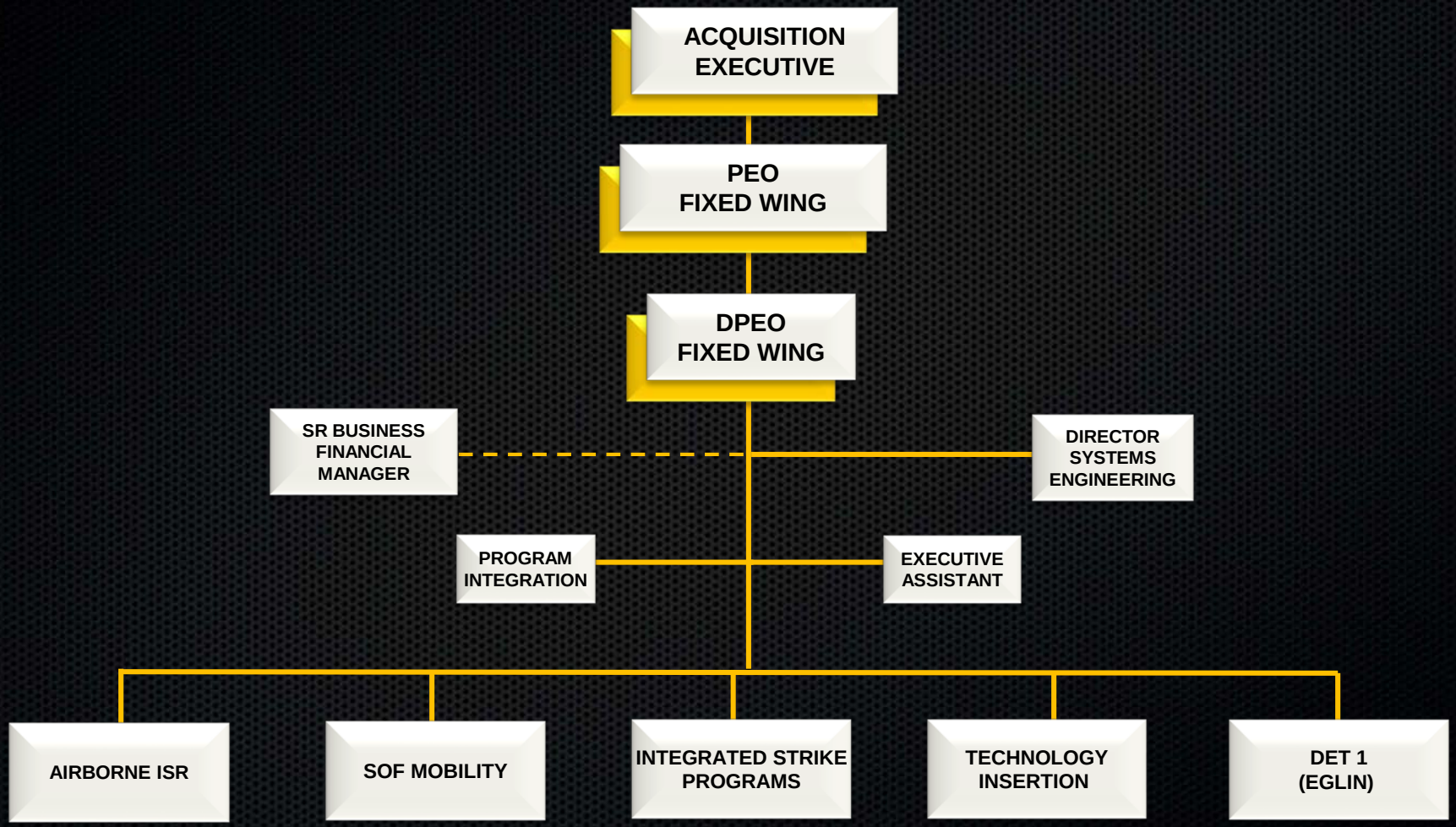
SPECIAL OPERATIONS FORCES INDUSTRY CONFERENCE

Col Eric Forsyth

PROGRAM EXECUTIVE OFFICER

FIXED WING

PEO-FW Organization



Program Executive Office Fixed Wing

ISR - FIND


MQ-1C Gray Eagle


MQ-9 Reaper


RQ-20A Puma


Scan Eagle


Aerosonde


JAVAMAN


MC-12W


U-28A/PC-12

MOBILITY - INFILTRATE

CV-22 Osprey


EC-130J Commando Solo

C-146A Wolfhound


C-145A Skytruck

MC-130J Commando II


MC-130H Talon II

STRIKE - FINISH


MQ-9 Reaper

MQ-1C Gray Eagle


AC-130U Spooky

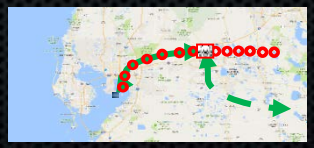
AC-130W Stinger II

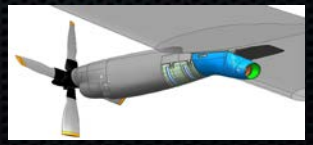

AC-130J Ghostrider


Stand Off Precision Guided Munitions

TECHNOLOGY INSERTION

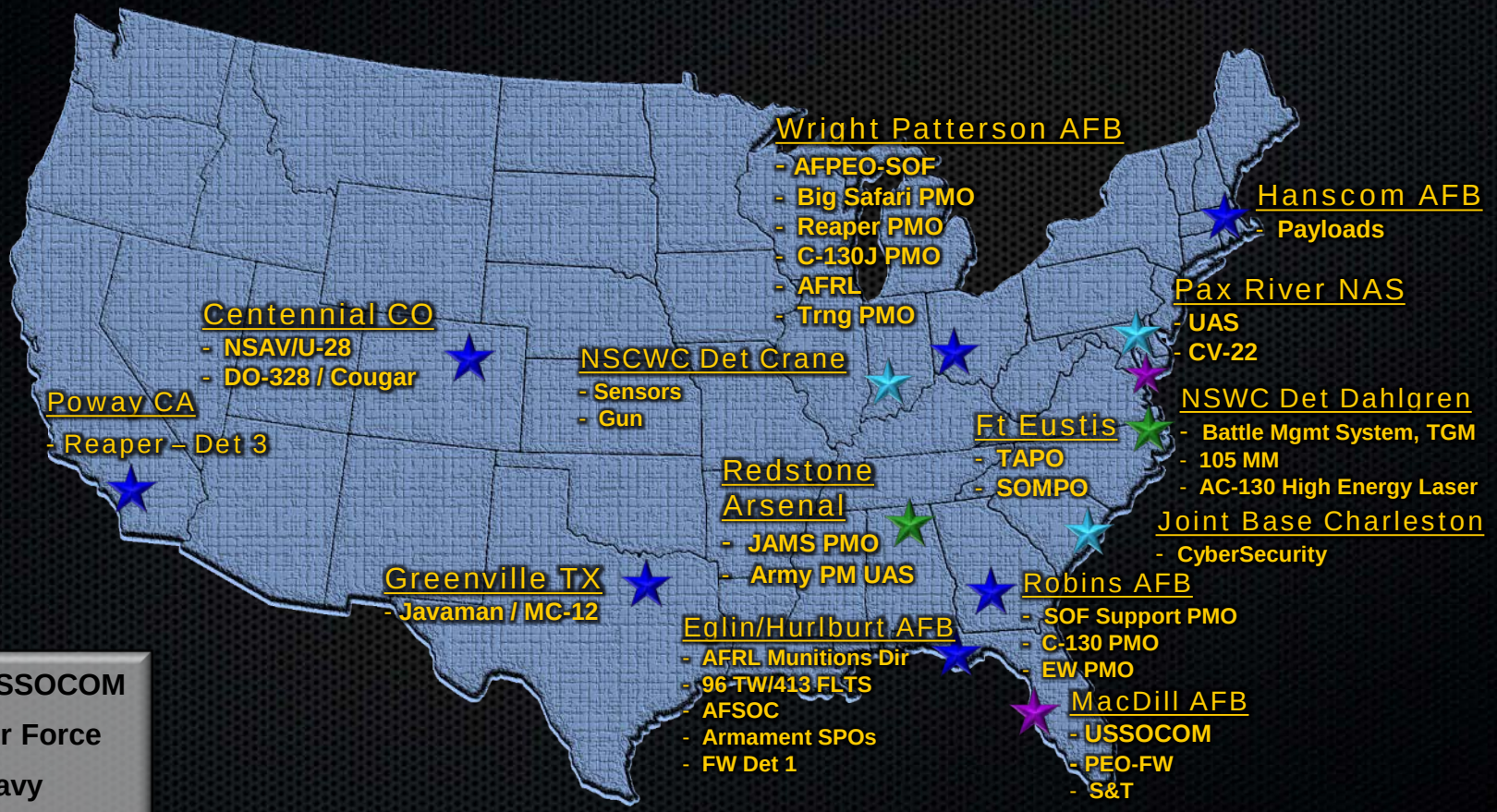

Sensors


Mission Automation


Survivability


Kinetic Effects / DE

Acquisition Support Enterprise



CY17 Execution Priorities

- Set the conditions for SOF C-130 recap success
- Provide timely airborne ISR solutions in support of theater and national SOF
- Develop and field capabilities that will permit SOF aviation to operate in the contested environments
- Pursue demonstrations and prototypes to address capability gaps

Airborne Intel, Surveillance, & Recon (AISR)

U-28A

Scan Eagle

JAVAMAN/MC-12W

MQ9 Reaper

Manned ISR

- Capability Description: Provide Tactical Airborne Intelligence, Surveillance, and Reconnaissance (ISR)
- On-Going Efforts: Missile Warning System Upgrades, Engine Infrared Suppression, IMINT and SIGINT Upgrades
- Future: Low Cost Modifications Focused on Communication System Upgrades

ACQUISITION STRATEGY

- **Operational System in Sustainment with Evolutionary Mission System Technology Insertions**

PERIODS OF PERFORMANCE

- **12 Months per Mission Design Series**
  - **U-28: 1 Nov - 31 Oct**
  - **MC-12: 15 Dec – 14 Dec**

MILESTONES

- **None – In Sustainment**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

	U-28	MC-12	JAVAMAN
• FY17:	$252M	$33M	$433M
• FY18:	$228M	$49M	$432M

CURRENT CONTRACT/OEM

- **Sierra Nevada Corp (U-28)**
- **L3 Communications (MC-12/JAVAMAN)**

Next Generation ISR

- Capability Description: Provides Next Generation of Tactical Airborne ISR In Support of Special Operations Forces
- Ongoing: Analysis of Alternatives (AoA) to Identify Potential Platforms and Systems
- Future: Material Solution Analysis; CDD; Risk Reduction Efforts; FY20 POM Preparation

ACQUISITION STRATEGY

- **AoA Jul 16 – Jun 17**
- **Program Objective: Missionize / Sustain TBD Aircraft**
- **Design Approach: Modularized / Rapidly Reconfigurable Design**

PERIOD OF PERFORMANCE

- **AoA Jul 16- Jun 17**

MILESTONES

- **Completed ISR Study – ID'd 14 Gaps**
- **Completed AoA**
- **CDD**
- **Material Solution Analysis FY18 IQ**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **FY17: $1M RDT&E**

CURRENT CONTRACT/OEM

- **Johns Hopkins University - Applied Physics Lab (JHU-APL) for NextGen ISR Study and AoA**

Unmanned ISR

Group I UAV
- Max Payload: ~5 LBS
- Max Radius: ~10nm

GROUP II UAV
- Max Payload: ~10 LBS
- Max Radius: ~200nm

GROUP III UAV
- Max Payload: ~90 LBS
- Max Radius: ~1000nm

GROUP IV UAV
- Max Payload: ~1150 LBS
- Max Radius: ~1400nm

GROUP V UAV
- Max Payload: ~3750 LBS
- Max Radius: ~10000nm

Medium Altitude Long Endurance Tactical

- Capability Description: SOCOM MQ-1C and MQ-9 Aircraft are Armed, Multi-Mission, Long-Endurance Remotely Piloted Aircraft That Provide a Unique Capability to Find, Fix, and Finish functions through Intelligence Gathering, Coordination, and Reconnaissance Against High-Value, Fleeting, and Time-Sensitive Targets
- On-Going Efforts: 24 Currently Active Modification Projects
- Future: Increased SIGINT capabilities; Improved Full Motion Video sensors; Reduced Detection capabilities; Improved Weather Mitigation capabilities

ACQUISITION STRATEGY

- **Evolutionary Acquisition Program that Provides Improvements to MQ1C and MQ-/9 UAVs, Ground Control Stations, and Training Systems, Mission Payloads, Aircraft Weapons Integration and Modification**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Post Milestone C, Tech Insertion and Sustainment**

POINT OF CONTACT

- **813.826.0549 (SAM)**

FUNDING

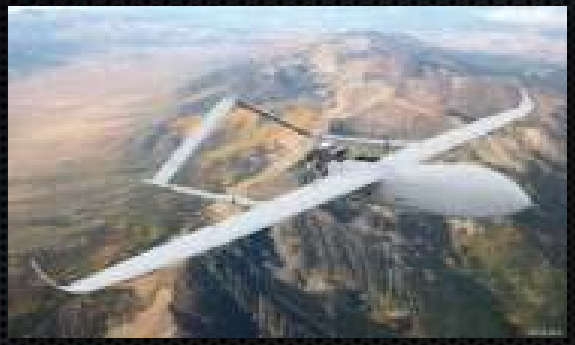
	MQ-1C	MQ-9
FY17	$ 3.49M	$ 77.3M
FY18	$ 0.72M	$ 81.9M*

***Pending Congressional Add and OCO Requests**

CURRENT CONTRACT/OEM

- **General Atomics (MQ-1C, MQ-9)**
- **Raytheon (FMV Sensor)**
- **Various C2/HMI, SIGINT, and Weapons Vendors**

Small UAS (SUAS) / Multi-Mission Tactical UAS (MTUAS) / Medium Endurance UAS (MEUAS)



- Capability Description: Runway Independent Launch/Recovery and Modular/interchangeable Payloads
- On-Going Efforts: Electro Optical/Infrared, SIGINT/EW, and Communications Relay Payloads Interoperable with Joint and SOF Architectures
- Future: Reduced Size, Weight and Power; Small Footprint Launch/Recovery; Type 1 Encryption

ACQUISITION STRATEGY

- **Evolutionary Acquisition Programs that Deliver, Integrate, and Qualify SOF-Unique Mission Kits, Mission Payloads, Air Vehicle Enhancements, and Ground Station Upgrades**
- **Contractor Owned and Operated (MEUAS)**
- **Government Owned and Operated (SUAS/MTUAS)**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Post Milestone C (SUAS/MTUAS/MEUAS)**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

	SUAS	MTUAS	MEUAS
FY17	$30M	$ 83M	$209M
FY18	$9M	$67M	$147M

CURRENT CONTRACT/OEM

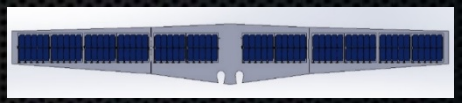
- **AeroVironment (Puma AE)**
- **Insitu (Scan Eagle)**
- **AAI (Aerosonde)**

Special Applications for Contingencies

Peebles Payload

Silent Echo Payload

Solar Puma Wings



- Special Applications for Contingencies (SAFC) Develops and Integrates Technology and Payloads
- Evolutionary and Spiral-Based for Technology Insertion and Low Volume Procurement for UAS
- 21 On-Going Projects: Payload Development, Testing, Evaluation and Demonstration

ACQUISITION STRATEGY

- **Matures technologies for transition to UASs**
- **Employs multi-phase development approach to take a product from initial concept to transition onto a platform**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Multiple**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **SAFC FY 17 Funding 21.549M**
- **SAFC FY 18 Funding 22.082M**

CURRENT CONTRACT/OEM

- **Multiple**

Integrated Strike Programs

AC-130W Stinger II

- Capability Description: Modified MC-130H with a Precision Strike Package (PSP) to deliver Close Air Support (CAS) and Air Interdiction (AI) missions
- On-Going Efforts: IR Suppression, Helmet Mounted Display, Improved Crew Comms, and Hellfire
- Future: Enhanced Defensive Countermeasures and Small Glide Munition

ACQUISITION STRATEGY

- **Modified 12 MC-130W Aircraft with Precision Strike Package**
- **Currently maintaining and operating 9 AC-130W (3 retired Mar 17)**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Post MS B, Engineering and Manufacturing Development**
- **Complete Operational Utility Evaluation**
- **Block 20 Deployment – Fall 2016**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **FY17 $16M**
- **FY18 $10M**

CURRENT CONTRACT/OEM

- **ATK (30mm Gun)**
- **L3 TCS (Installation)**
- **L3 Wescam (FMV Sensor)**
- **L3 ForceX (Software)**
- **NSWC Dahlgren (PGW Systems)**
- **SNC (MOP/SOPGM Door)**

AC-130J Ghostrider

- Capability Description: Modified MC-130J with a Precision Strike Package (PSP) to deliver Close Air Support (CAS) and Air Interdiction (AI) missions
- On-Going Efforts: Started Block 20 IOT&E, IOC on track for end of FY17, Block 20+ DT Jun 17 (Combat System Officer Station, Special Mission Systems and Defensive System Upgrade
- Future: Improved Defensive and Sensor Capability, Additional Weapons Integration, Improved Crew Situational Awareness

ACQUISITION STRATEGY

- **ACAT II production program to recapitalize all legacy AC-130s. AC-130J provides precision direct action targeting support for primary missions of CAS and AI.**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Post Milestone C, Production, Tech Insertion and Sustainment**

POINT OF CONTACT

- **813.826.9482 (TILO)**

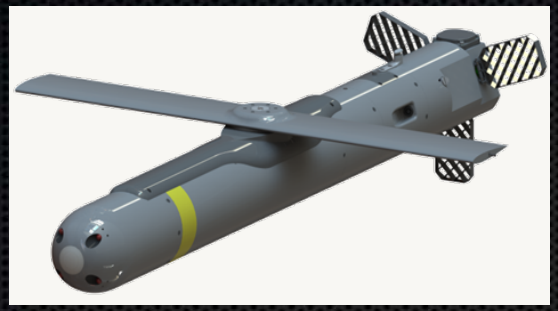
FUNDING

- **FY17 $259M**
- **FY18 $270M**

CURRENT CONTRACT/OEM

- **ATK (30mm Gun)**
- **Lockheed Martin (Installation)**
- **L3 Wescam (FMV Sensor)**
- **L3 ForceX (Software)**
- **NSWC Dahlgren (PGW Systems)**
- **SNC (MOP/SOPGM Door)**

Stand Off Precision Guided Munitions (SOPGM)



- Capability Description: Procure and develop Precision Guided Munitions (PGM)
- On-Going Efforts: Integrating Small Diameter Bomb II, Small Glide Munition and Enhanced Paveway II on SOF platforms
- Future: Investigate SMART 105, Guided 30mm and Weapon Data Links

ACQUISITION STRATEGY

Commodity procurement or limited development of SOF-unique precision guided munitions and integration of service common precision guided munitions onto SOF platforms to meet operational and training requirements

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Integration, Production and Sustainment**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **FY17 $97M**
- **FY18 $78M***

***Pending Congressional Add and OCO Requests**

CURRENT CONTRACT/OEM

- **Boeing Defense**
- **Dynetics**
- **Lockheed Martin**
- **Raytheon Missile Systems**

SOF C-130s, CV-22, and Mission Systems

MC-130H

MC-130J

SMS

Silent Knight Radar

CV-22

EC-130J

Color Helmet Mounted Display

Low Cost Mod (Link 16)

MC-130 Recapitalization

- Capability Description: Modified C-130Js to Perform Low-level Infil/Exfil, Detect and Deny RF Threats, Airdrop, Resupply and In-Flight Refueling
- On-Going Efforts: Radio Frequency Countermeasures, Terrain Following Radar and Airborne Mission Networking
- Future: Automate SOF Mission Systems to Reduce Aircrew Workload, Enhance Capability for Ops in Denied Airspace

ACQUISITION STRATEGY

- **Post-production Modifications to New Aircraft Recapitalizing Legacy Fleet**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Milestone B:** Terrain Following Radar
- **Milestone B: Airborne Mission Networking**
- **Milestone B: RF Countermeasures**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

	MCJ	MCTF	AbMN	RFCM
• FY17:	$56M	$39M	$8M	$40M
• FY18:	$49M	$88M	$9M	$57/55

CURRENT CONTRACT/OEM

- **Lockheed Martin (C-130J, Inc3)**
- **Lockheed Martin/Raytheon (MCTF)**
- **BAE (RFCM)**

C-130 Modifications

- Capability Description: Sustainment Mods to Improve Reliability and Maintainability, Correct Deficiencies, Address Obsolescence, Incorporate Mission Enhancements, and Critical Safety Changes
- On-going Efforts: Radar Upgrades, Avionics Upgrades, Gun System Improvements, Structural Improvements, Military Information Support Operations Capability Replacement, and Installation of the SOF-Unique Portions of the C-130J Block Cycle Software and Hardware Upgrades
- Future: Install Emergency Equipment Bins, Light Weight Armor for Paratroop Doors, Hostile Fire Sensor

ACQUISITION STRATEGY

- **Operational System in Sustainment with Evolutionary Technology Insertions**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Post Milestone C: MC-130H**
- **Milestone B: EC-130J; De-Mod &RAMS**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **FY17: $26M**
- **FY18: $20M**

CURRENT CONTRACT/OEM

- **Various**

CV-22B Osprey

- Capability Description: Provides Long Range, High Speed, All-Weather, Infil/Exfil, and Resupply of Teams in Hostile, Denied, and Politically Sensitive Areas in a Single Period of Darkness
- On-going Efforts: Silent Knight Radar (SKR), Color Helmet Mounted Display, Suite of Integrated RF Countermeasures (SIRFC) upgrades, and Search/Landing Light
- Future: Defensive Weapon System, Airborne Mission Networking, Open Architecture, and Mission Automation

ACQUISITION STRATEGY

- **Operational Systems in Sustainment With Evolutionary Technology Insertions**

PERIOD OF PERFORMANCE

- **Various**

MILESTONES

- **Post Milestone C: Production and Sustainment Through a Joint Performance Based Logistics Contract**
- **Milestone B: SKR Integration**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **FY17: $40M**
- **FY18: $56M**

CURRENT CONTRACT/OEM

- **Bell-Boeing Aircraft Prime (OEM)**
- **Rolls Royce Engine Prime (OEM)**
- **Raytheon IN (Software Support)**
- **Multiple Contracts (Low Cost Mods)**
- **Final Aircraft Delivery in 2020**

NSAv and AvFID

- Capability Description: Non-Standard Aviation (NSAv) supports worldwide SOF Tactical/Strategic missions
- Aviation Foreign Internal Defense (AvFID) provides Tactical Airborne ISR in Support of SOF training Partner Nation Aircrews
- On-going Efforts: Cockpit, communication & cabin upgrades
- Future: Continued avionic obsolescence avoidance & compliance

ACQUISITION STRATEGY

- **NSAv – Utilizes 645 Aeronautical Systems Group to procure aircraft, necessary training systems, equipment, and aircraft upgrades/modifications. Single contractor**
- **AvFID – C-145 sustainment**

PERIOD OF PERFORMANCE

- **12 Months**
- **NSAv: 1 DEC 2016 - 30 NOV 2017**
- **AvFID: 1 May 2017 – 30 Apr 2018**

MILESTONES

- **NSAv**
  - **Delivered aircraft 18, 19 and 20.**
  - **Completed upgrade of six aircraft from Block 10 to Block 20 configuration.**
  - **Awarded Weapon Systems Trainer contract**
- **AvFID – In sustainment**

POINT OF CONTACT

- **813.826.9482 (TILO)**

FUNDING

- **NSAv FY17: $111M**
- **NSAv FY18: $112M**
- **AvFID FY17: $8M**
- **AvFID FY18: $8M**

CURRENT CONTRACT/OEM

- **Sierra Nevada Corp (NSAv)**
- **Sierra Nevada Corp (AvFID)**

FW Technology Insertion Process and Enablers

Lab Capabilities

User Requirements

PEO-FW Tech Insertion
Identify Innovative Solutions

Tech Insertion Roadmaps

POM & Budget

$$

Fiscal Year Priorities
Funding
PM Tracking
Contract Vehicle
Schedule
Technology maturation

Transition

Industry Engagement

BAAs OTAs CRADAs

PSP JCTD SBIR SAFC Eng Analysis RIF (etc.)

Capability Collaboration Events | Contracts / Agreements | Cougar Demo Platform | Funding Resources

Enablers

Dornier 328 Testbed
"Cougar"

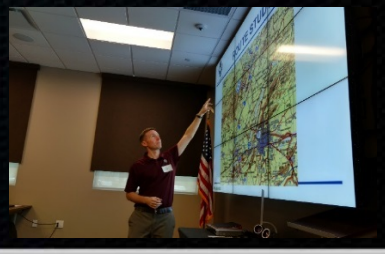
- Flexible Demonstration Platform for:
  - Requirement Validation of Programs of Record
  - Technology Advancement, Transition, and Insertion
  - Risk Reduction
  - TTP Development

12 Demos, 36 Flights, ~129 Test Hours in FY17

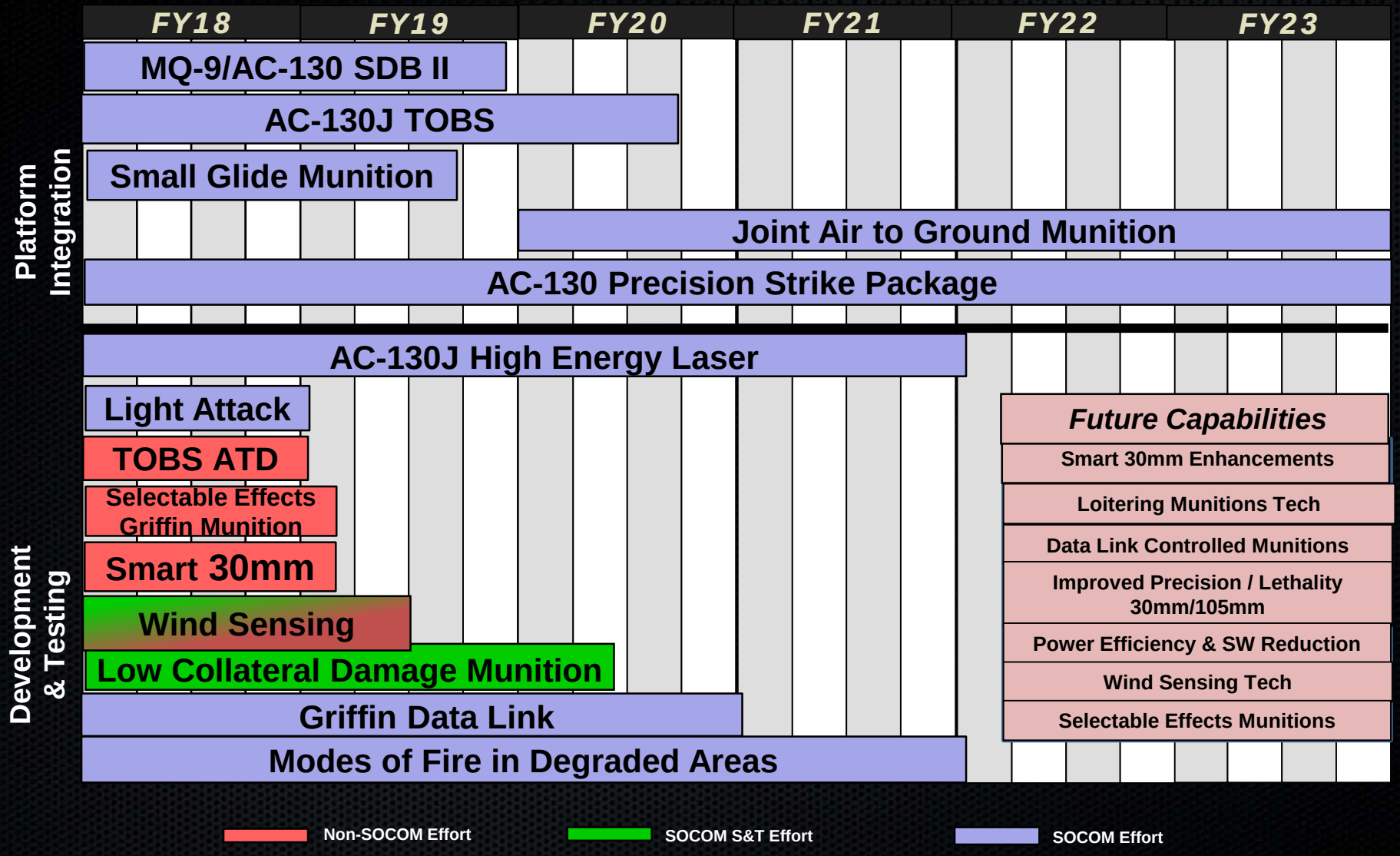
- PEO-FW Engaging/Collaborating on Focused Problem Set with Industry, Government Labs, and Academia

- Technology Push with Direct User Participation/Feedback
  - Requirements/Capability Gap definition
  - White Boarding/Brainstorming/Crosstalk
  - White Paper/Product pitch
  - Example: "GPS out of the Box" event

- **5 Events Completed in 1 Year**

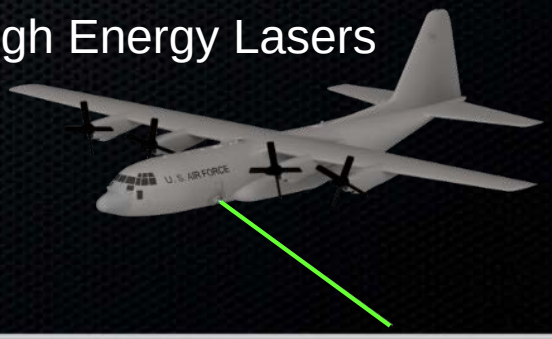


Strike / Munitions / Directed Energy



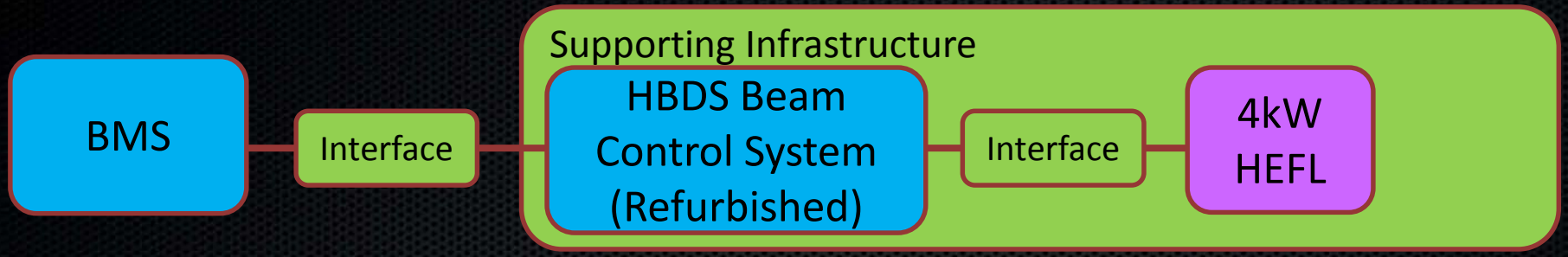
AC-130J High Energy Laser

- Objective: Demonstrate a Precise Airborne Low Kinetic Weapon System Capable of Ground Based Scalable Effects
- Approach:
  - Utilize existing USG components (i.e. Beam Control/ Beam Director/Laser) to demonstrate laser beam control in a relevant environment
  - Develop ICDs for laser system integration
  - Develop deliberate plan for industry laser integration
  - Build “laser agnostic” Beam Director sub-system capable of accepting (~2-3) industry lasers
- Outcome:
  - Inform DoD on Performance of Airborne Electric High Energy Lasers

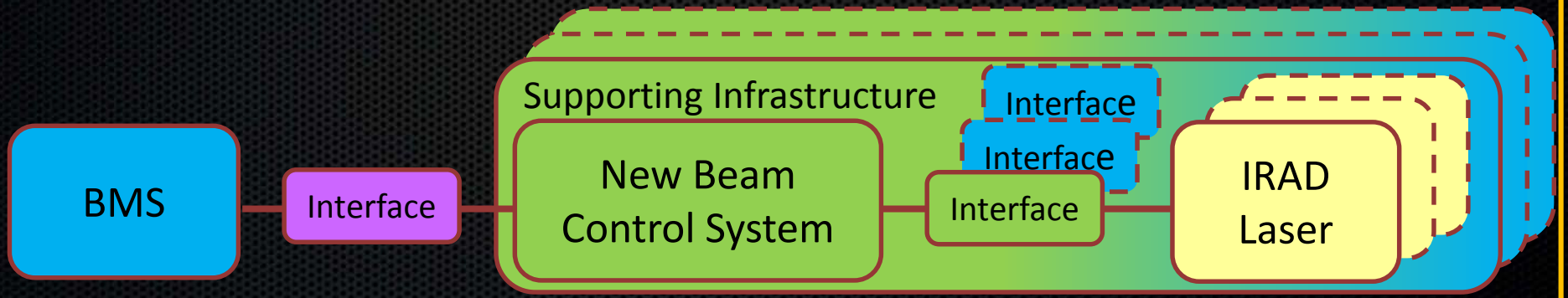


HEL Approach

Beam Control Risk Reduction

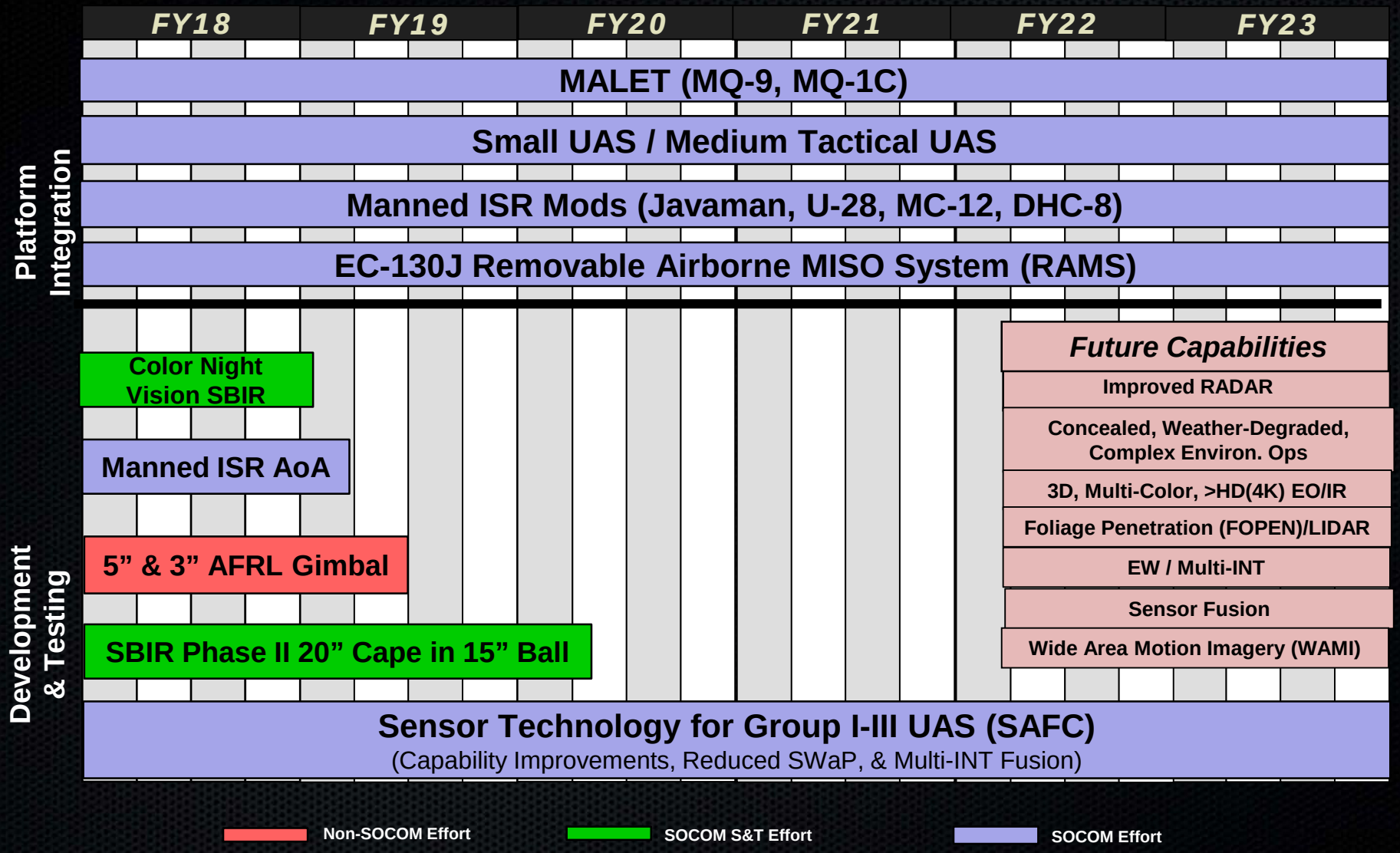


Laser Agnostic Industry Participates

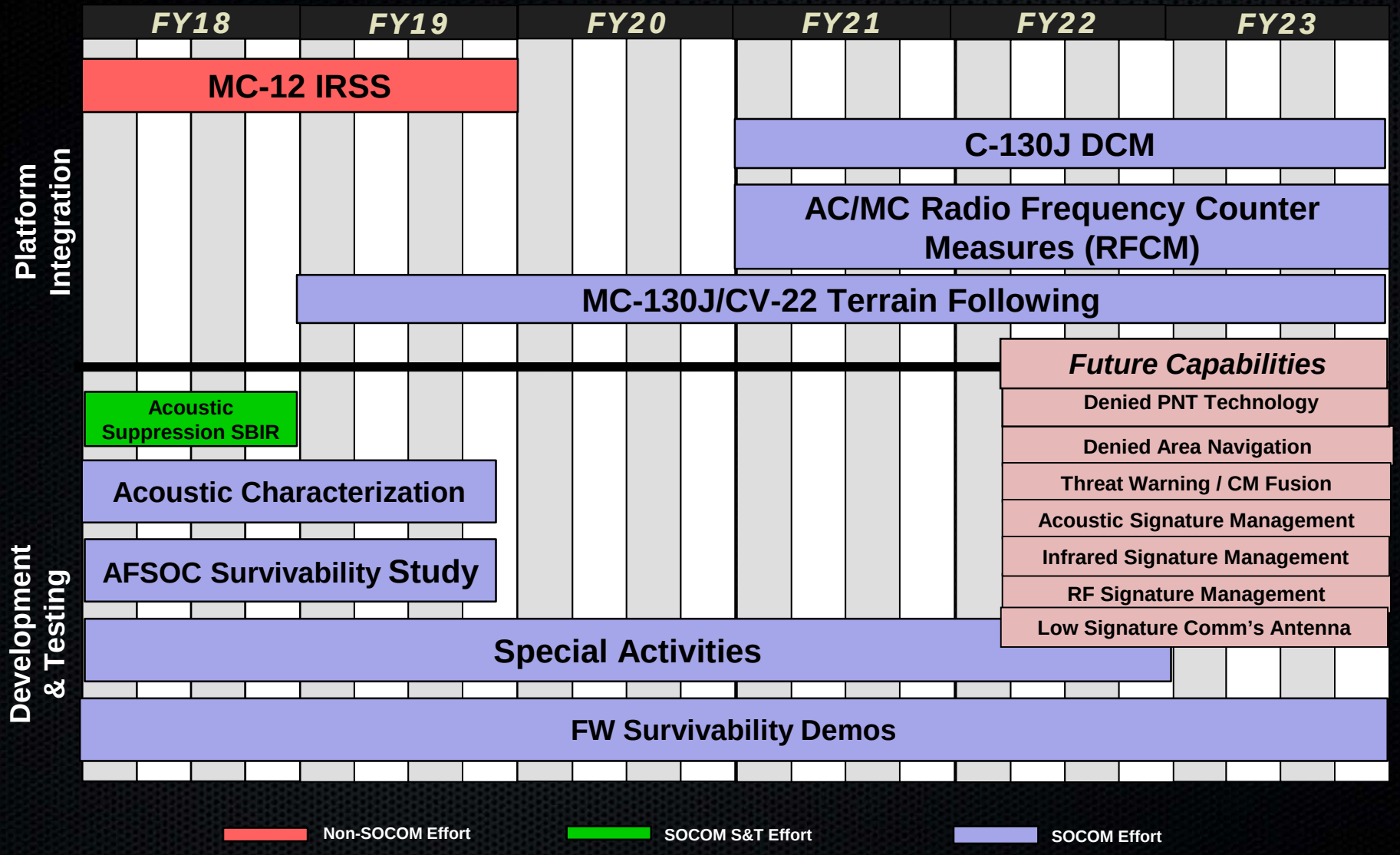


New Development | Modify | Reuse | Contractor Asset

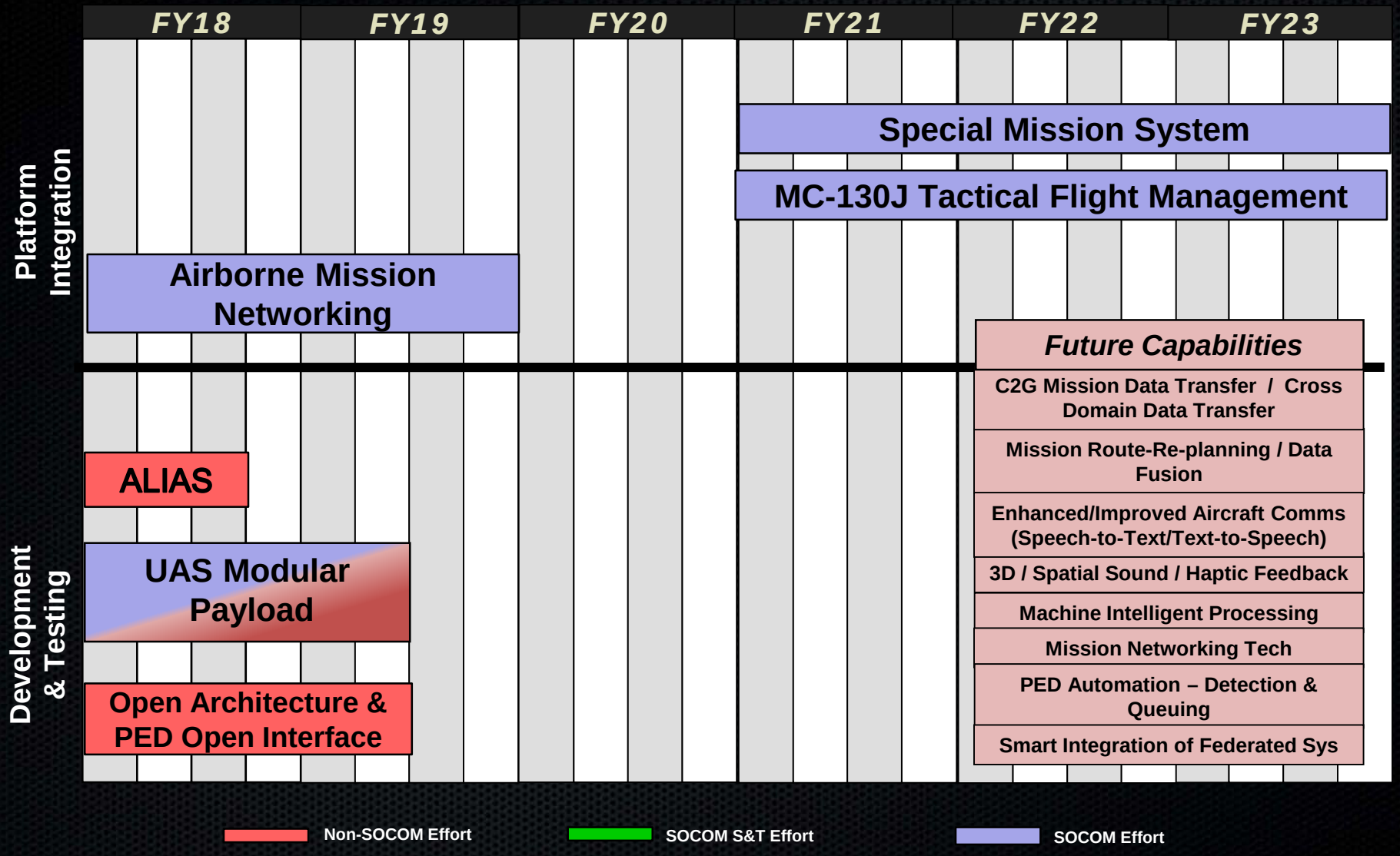
AISR /Sensors



Survivability



Mission Automation



Mission Automation Event Progress

- Hosted over 60 attendees across Industry, academia and Government including AFSOC crew members from AC-130J, MC-130J, U-28 and MQ-9
- Identified Top 3 Thrust Areas for Further Action:
  - C2G Mission Data Transfer / Cross Domain Data Transfer

    Goal: C2G Mission Continuity – Utilize common framework for entire process

    Status: Investigating Security requirements / Implications
  - Mission Route Re-planning / Data Fusion

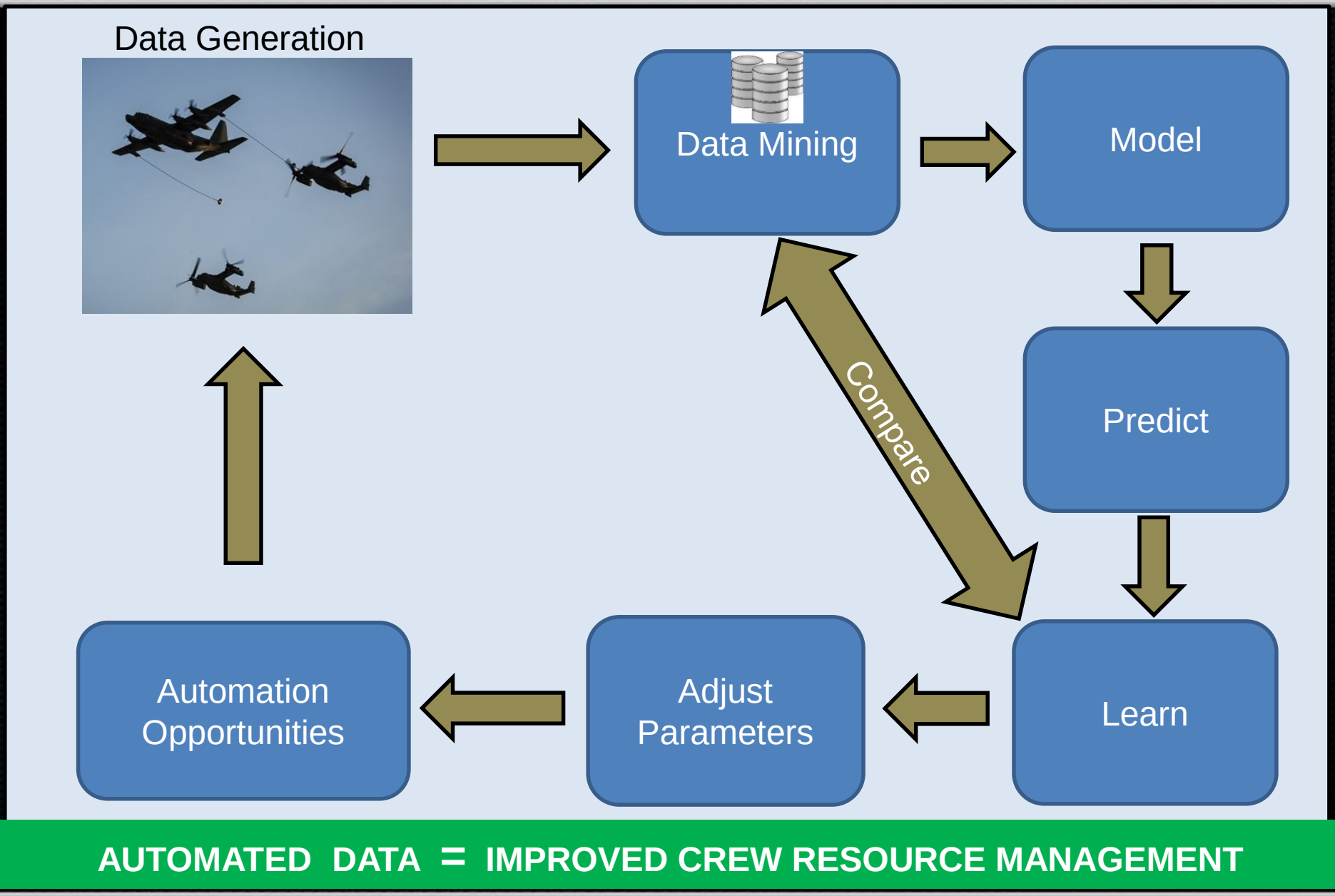
    Goal: Provide Actionable recommendations to crew for threats, weather, routes

    Status: Conducted Industry Day, Identified 4 potential solutions for follow-on evaluation
  - Enhanced / Improved Aircraft Communications Monitoring (Speech-to-Text/Text-to-Speech, keywords recognition, prioritizing channels) using Machine Learning

    Goal: improved AC communications both internal to crews and incoming to AC

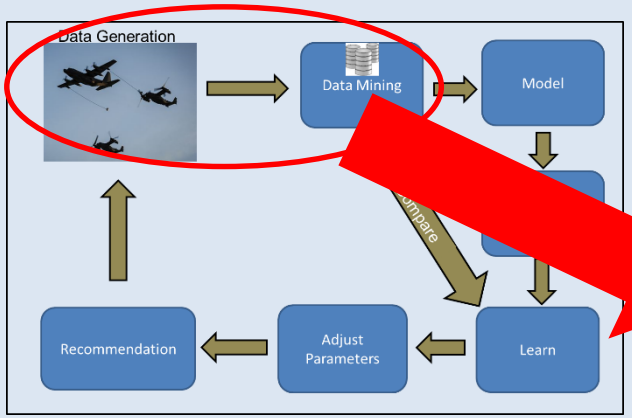
    Status: Gathering Mission Data for Analysis

Data Flow Concept



AUTOMATED DATA = IMPROVED CREW RESOURCE MANAGEMENT

AC-130 Example



Where we are today

Data Generation

Data Mining

Potential Data	Data Products & Mission Automation
Flight data (flying hours, systems performance, radar, position)	Diagnostics, training and improve mission proficiency
Strike Sensor video feeds & ops audio Geo-referenced images Metadata fusion Hyperspectral data exploitation	3-D virtual scenes Target identification Change detection Camo and decoy detection
Battle Management System Diagnostics Aircraft Data Bus Diagnositcs Audio recording (radio/ICS) Engagement Logging	In flight maintainer notifications Remote troubleshooting Autopiloted routes and weapon profiles Automated post flight debriefing storyboards & BDA
Threats & Intelligent Broadcasts No Strike Lists	Enhanced ISR for map/HMD/HUD Threat alerts and warnings

Next Steps

- Identify Data Collection Mechanism
- Build Data Repository
- Secure Appropriate Classification Approval
- Establish Vetted Vendor Pool
- Vendor(s) Conduct Mining Analysis
- Stakeholders Establish Objectives & Milestones
- Execute Coordinated Review Sessions
- Validate & Verify Automation Opportunities with Stakeholders
- Inject Automation Solutions into Test Aircraft

QUESTIONS?