PROGRAM EXECUTIVE OFFICE

AVIATION

Defense Technology and Affordability Requirements

February 15, 2012

Rusty Weiger DPEO Aviation

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Mission

Execute Life Cycle Management of Manned and Unmanned Aviation Weapon Systems for the Current Force and Transformation to the Future Force

What We Do:

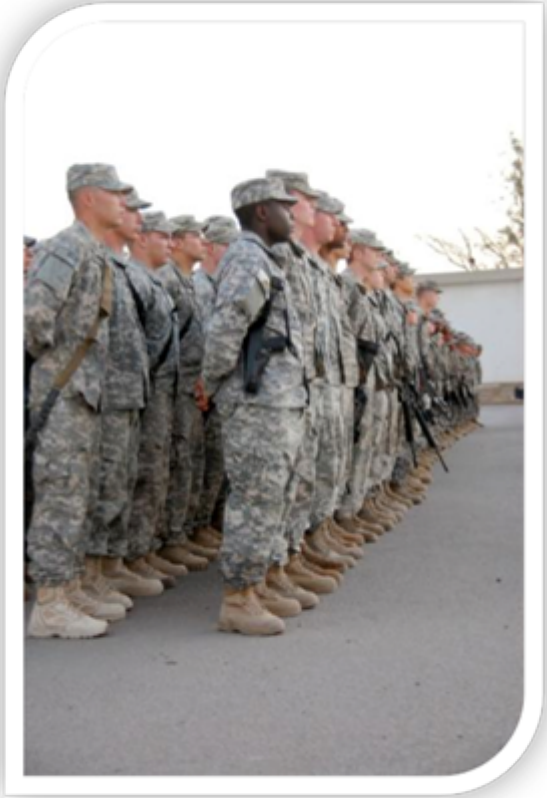
- *Centralized Management for All Assigned Army Aviation Programs*
- *Full Life-Cycle Management of Assigned Systems*
- *Improve Interoperability*
- *Enhance Reliability and Safety*
- *Maintain Combat Overmatch thru Recapitalization & Modernization*

What We Manage:

- *Seven Project Offices*
- *Two Major Initiatives: Support to OND/OEF and Fixing Army Aviation*

The Magnitude:

- *$37B over POM years FY 12-16*
- *FMS Total Case Value FY11 — $5.77B*
- *55 FMS Cases — 36 Countries*



Total Workforce:

~ 2250 on board
(Civilian, Military & Contractors)

Managing

Total FY11 Resources:
~$8.26B
(Base & Wartime Funding)

To

Support the Warfighter

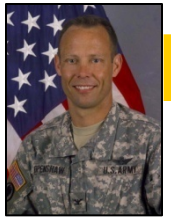
Providing the World's Finest Support to the Warfighter at Redstone Arsenal

PEO Aviation
Cradle to Grave Lethality!

PEO Aviation Organization

PEO
MG William T. Crosby

DPEO
Mr. Rusty Weiger



PM Apache

COL Shane Openshaw

- Block III
- Sensors
- Longbow

Chief of Staff
Mr. Randy Harkins

APEO, Engr & Tech
Mr. Layne Merritt

PM ASH

COL Robert Grigsby

- Armed Aerial Scout
- OH-58D Kiowa Warrior
- Iraqi Armed 407

APEO, Business Mgmt
Mr. John Mull

APEO, Life Cycle Mgmt
Mr. John Beck

PM Cargo

COL Robert Marion

- CH-47F
- CH-47 Modernization

PM NSRWA

COL Bert Vergez

- Mi-17
- MD-530F
- MD-500

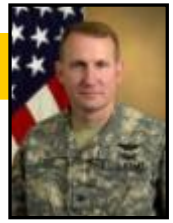
APEO, Operations
Mr. Dennis Williamson

APEO, Administration
Ms. Marsha Jeffers

PM AS

COL Anthony Potts

- AGSE
- AME
- ANMP
- ATC



PM UH

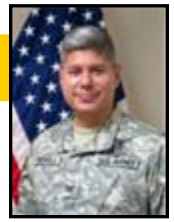
COL Thomas Todd

- UH-60 A/L/M
- UH-60 Modernization
- LUH
- Common Engine

PM UAS

COL Tim Baxter

- Raven
- Shadow
- OSRVT/OSGCS
- Gray Eagle (ERMP)
- CSI

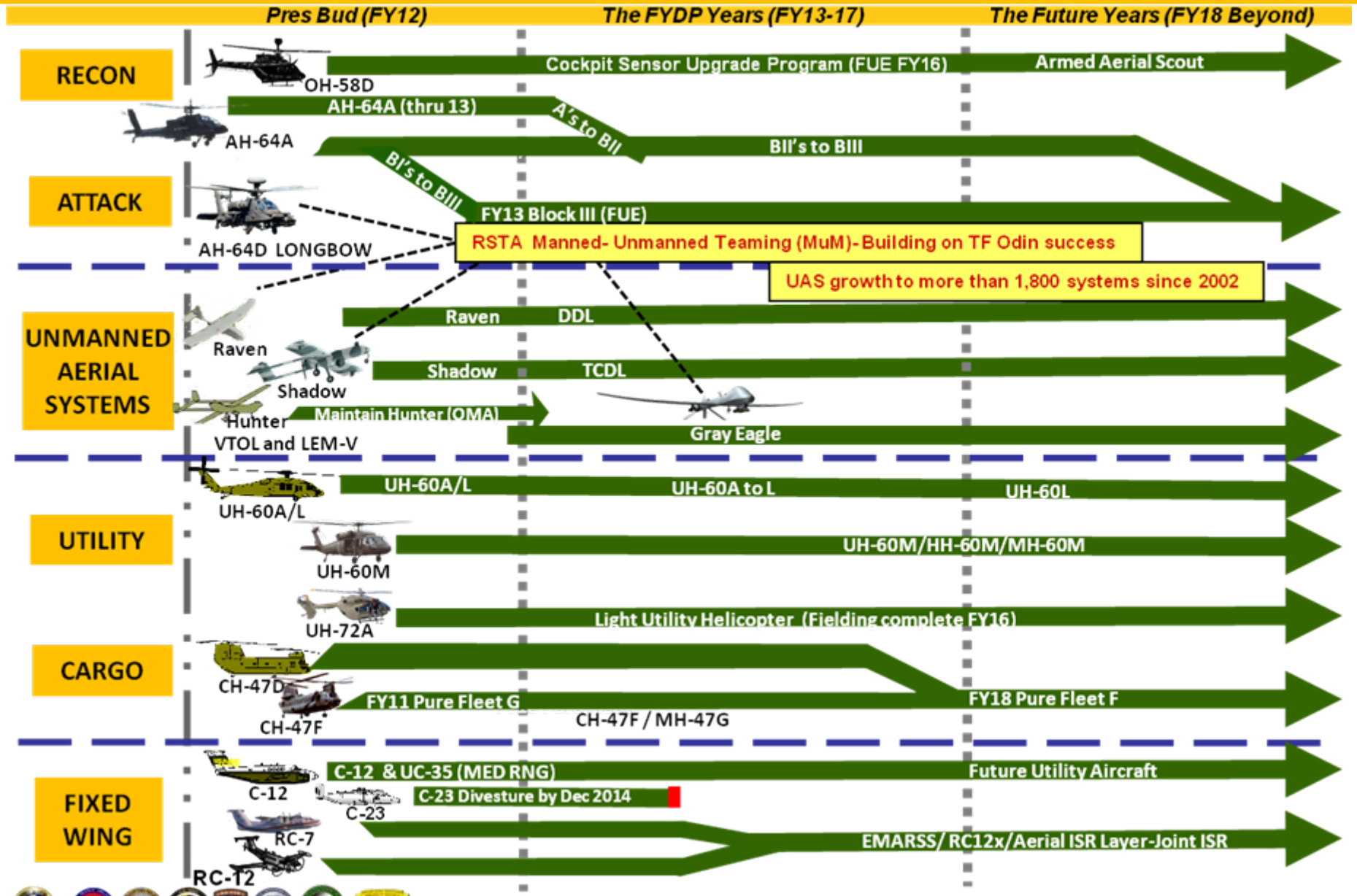


PM FW

COL Brian Tachias

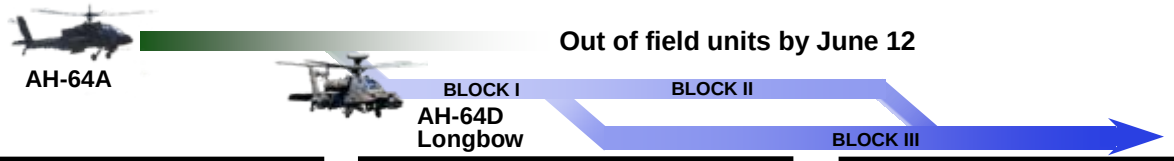
- RC-12
- ARMS
- C-12
- C-23
- C-37
- C-26
- C-20
- EO-5
- UC-35

Aviation Modernization Plan



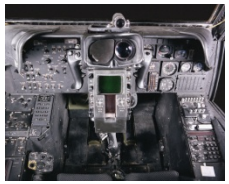
AH-64D
APACHE
LONGBOW

Apache Program Evolution



AH-64A (1984-1994)

- FLIR sensors
  - Targeting & Pilotage
- Improved fire control
- HELLFIRE missile
  - Laser Seeker
- 30 MM gun
- Improved survivability
  - Redundant design
  - Ballistic tolerance
  - Backup Control System
  - Crashworthy fuel system



Analog cockpit

AH-64D (Block I) (1995-2000)

- Longbow Fire Control Radar
- Radar Frequency Interferometer (RFI)
- HELLFIRE missile
  - Radio Frequency Seeker
- Glass cockpit

Digital cockpit

AH-64D (Block II) (2001-2011)

- Digital Interoperability
- Digital Map
- Integrated Communications Suite

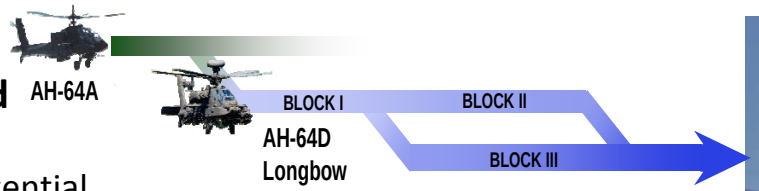
AH-64D (Block III) (2011-20XX)

- Improved Situational Awareness
- UAS Interoperability
- Improved Drive System
- Improved Propulsion
- Improved Targeting and Navigation
- Upgraded Communications
- Improved Diagnostics
- Improved Maintainability
- Open Systems Architecture
- Joint Interoperability

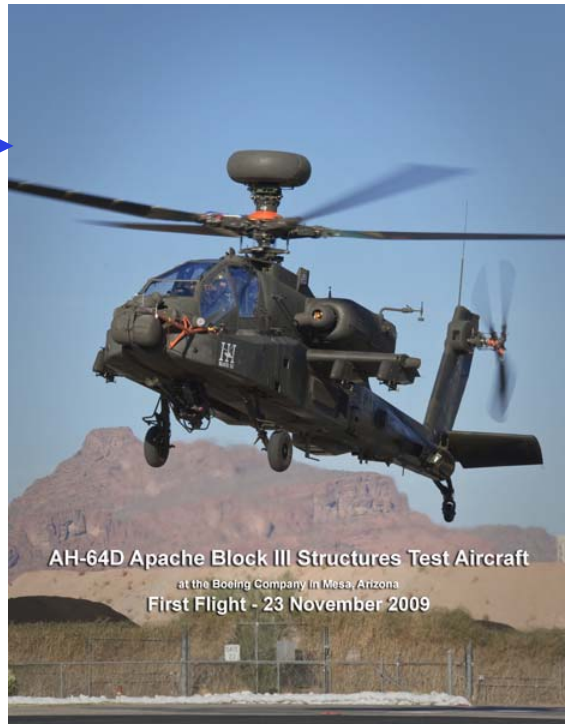
Apache Block III (AB3)

Current Capability Gaps:

- **Computer processing maximized**
  - Limited network interoperability
  - Manned/Unmanned teaming potential
  - Software not open-architecture
- **Power limited drive system**
  - High/hot capability
  - Std day payload limitations
- **No integrated IFR/IMC solution**



Block III is the best value sustainment plan for Apache that overcomes capability gaps and satisfies user requirements!



Current Sustainment Challenges:

- **Airframe life extension**
- **Obsolescence (mechanical and electrical)**
- **Aircraft bus architecture**
- **Closed, proprietary software**
- **Not CBM / CLOE capable**

How Block III Changes the Fight:

- 6K/95 OGE hover performance with a full mission load (threshold)
- Restores A-Model performance lost due to D-Model weight increases
- Manned/Unmanned (MUM) Teaming via Level IV UAS control
- Joint interoperability – Link 16 via JTRS
- New fuselages will extend serviceable life and reduce O&S costs

Operational Enhancements:

- Increased Performance
- Increased Computer Processing
- Improved Situational Awareness
- Targeting/Fratricide Prevention
- Joint Interoperability
- Improved Survivability
- Increased Lethality
- Improved Sustainability

Acronyms:

IMC/IFR: Instrument Flight Rules / Instrument Meteorological Conditions
UAS: Unmanned Aircraft System
JTRS: Joint Tactical Radio System
CBM/CLOE: Condition Based Maintenance / Common Logistics Operating Environment
O&S: Operating and Sustainment

the AMAZING
CARGO
HELICOPTER
Celebrating 50 Years
1961-2011
ARMY

CH-47F Baseline Configuration

- Integrated HUD

- RECAP All Major Dynamic Components….Zero / Near-Zero Hour Parts
- All New Components for New Build Aircraft
- New Machined Frames
- Corrosion Protection
- Airframe Tuning

- Passive survivability
- FED-STD-34201 paint scheme

- Common Missile Warning System/ Improved Countermeasures Dispenser (CMWS/ICMD)

- Air Warrior A-kit

Engineering Improvements
- Enhanced Air Transportability
- Redesigned Aft Pylon
- Redesigned 46 Section
- Redesigned Ramp

- Improved CAAS Console

- Electric Pump Utility System Hydraulic Accumulator (EPUSHA)

- Improved Jettisonable Doors

- Digital AFCS
- TACAN
- Stormscope
- Integrated BFT
- IDM 8.0/304
- Improved Avionics
- Improved Flight Controls

- Flight Data Recorder/ Cockpit Voice Recorder (FDR/CVR)

Logistics Initiatives
- Soldier Focused Logistics
- Interactive Electronic Technical Maintenance Management System
- 400 Hour Phase Maintenance

Future Improvements

Improved Vibration Control System

Electrical System Upgrade

Advanced Chinook Rotor Blade

Engine Upgrade
- High/Hot Performance

Engine Electrical Control Unit Improvements

Hydraulics and Actuator Upgrade

Rotor Hub & Drive Shaft Upgrades

Redesigned Transmissions
- Reduced Weight
- Improved Efficiency

Composite Tunnel Cover

Improved CAAS Software

Cargo On/Off Load System

Improved Fuel Cell Design

Adjustable Pitch Change Links

Avionics Cooling

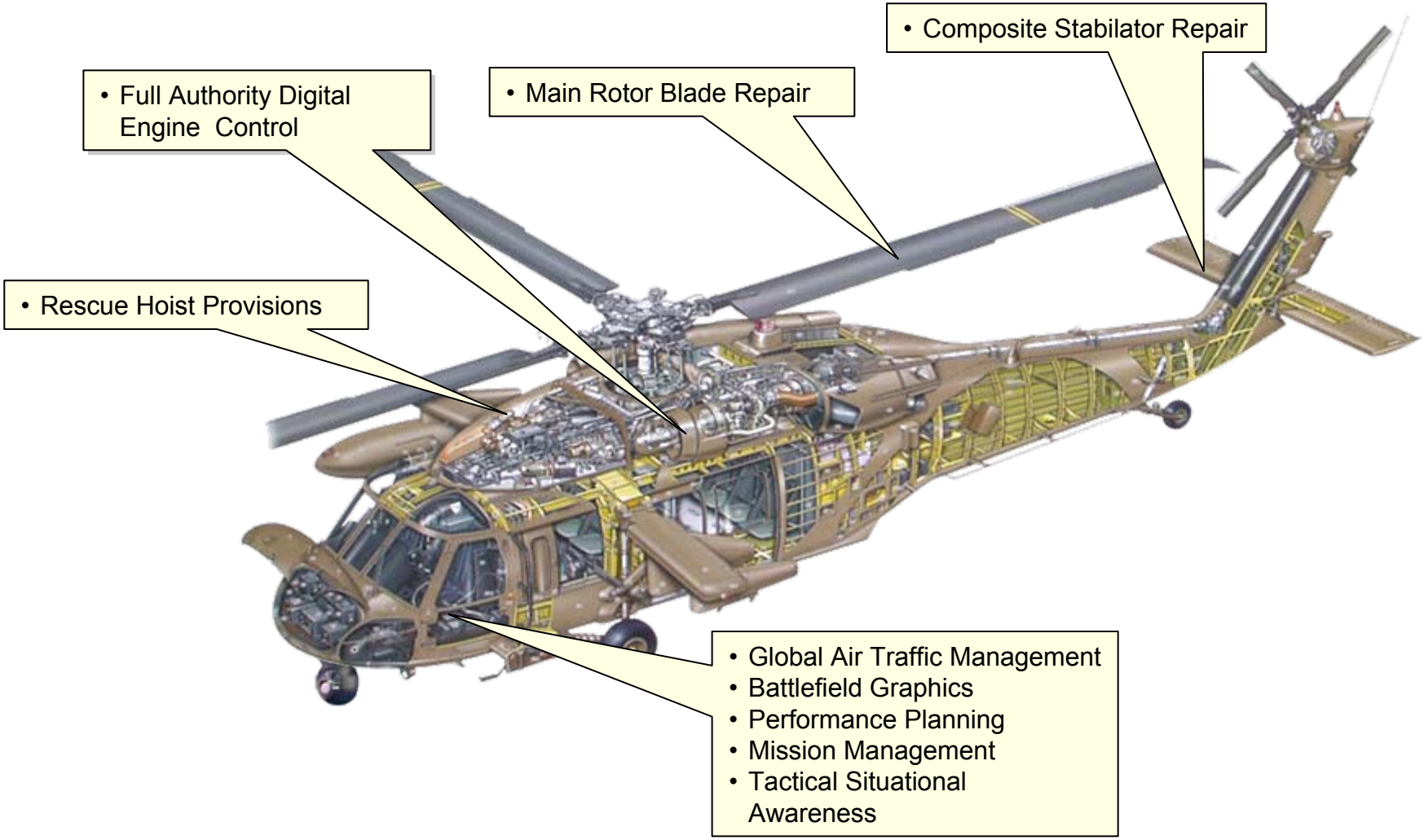
DAFCS Upgrade

Test Set Development

Chinook Platform Health Environment
- Mass Memory Server Upgrade

Utility Helicopters

UH-60M Enhancements



UH-72A Lakota

Cockpit
- Glass Cockpit
- Wide Field of View
- LCD Displays
- 3 Axis Autopilot

Performance
- Low-noise Rotor Blades
- Twin Engine Reliability
- Speed up to 144 kts
- Endurance up to 3.2 hrs
- Engine Inlet Barrier Filter (Selected Units)

Capacity
- 1107 lbs Payload
- Up to 6 Passengers
- Unobstructed Cabin/Cargo Flat Floor
- 1500 lbs Cargo Hook

Communications
- ARC-231 (GFE)
- Interagency VHF/UHF
- Intercom System

Navigation
- IFR/VFR
- Night Vision Goggles
- Dual GPS
- Mode S Transponder
- Radar Altimeter

PROGRAM EXECUTIVE OFFICE

AVIATION

Unmanned Aircraft Systems

The UAS Fleet (1 of 3)

MQ-1C Gray Eagle

Capabilities

- Integrated with Combat Aviation Brigade (CAB)
- Immediately responsive Reconnaissance Surveillance Target Acquisition (RSTA)
- 18-24 hour endurance
- Target acquisition, designation, attack, & BDA
- Manned-Unmanned Teaming (MUM-T)
- Electro Optical (EO)/Infrared (IR)/Laser Designator (LD), communications relay, weapons (Hellfire), Synthetic Aperture Radar (SAR)/Ground Moving Target Indicator (GMTI) payloads
- Tactical Common Data Link (TCDL) & SATCOM
- Automatic take-off/landing

The UAS Fleet (2 of 3)

MQ-5B Hunter

Capabilities

- Corps, Division.
  and Brigade Users
- 18 hour endurance
- Versatile payload
  platform (Signals Intelligence (SIGINT)
- EO/IR/LD/Laser Pointer (LP)
- Multi mission configurations
- Extended Range/Endurance UAS
- Attack capable (Viper Strike)
- Voice over transmission (VOX) capability

RQ-7B Shadow®

Capabilities

- Brigade Combat Team Asset
- Six hour endurance (nine with rewing)
- Automatic take-off/landing
- System transportable on six C-130s
- Compatible with Advanced Field Artillery Target Designation System (AFATDS), All Source Analysis System (ASAS) and Joint Surveillance Target Attack Radar System (JSTARS)
- EO/IR/LD payloads
- SINCGARS communications relay

The UAS Fleet (3 of 3)

RQ-11B Raven

Capabilities

- Small Unit (CO/PLT/TM)
- 90 minute endurance
- Hand-launched, battery operated
- Selective Availability Anti-Spoofing Module (SAASM) GPS
- EO and IR (with Laser Illuminator - 25 ft spot marking at 300 ft AGL/500 ft slant range) Payloads
- In-flight retasking
- Commanded auto-loiter
- Executes lost link recovery procedures
- Flight termination to pre-planned point
- Max range 10 km radio LOS
- Operational altitude 300-500 ft AGL
- Gimbaled EO/IR/Laser Illuminator in FY12

Puma-AECV

Capabilities

- Small Unit (CO/PLT/TM)
- 120 minute endurance
- Hand-launched, battery operated
- Selective Availability Anti-Spoofing Module (SAASM) GPS
- InfiniSpin (Dual mounted/fully gimbaled):
  - Electro-optical day camera (side and front: 2592x1944 pixels); 3X Zoom; 5 Megapixel
  - EO and IR (with Laser Illuminator - 25 ft spot marking at 300 ft AGL/500 ft slant range) Payloads
- In-flight retasking
- Executes lost link recovery procedures
- Max range 10-20 km radio LOS
- Operational altitude 300-500 ft AGL

Armed Scout Helicopter

Product Lines

	Aircraft	Mission	
PD Fielded Systems	OH-58D Kiowa Warrior	Armed Recon/Light Attack	
	OH-58A/C Kiowa	Unarmed Recon, Initial Pilot Training	
	TH-67 Creek	Initial Pilot Training	
	UH-1 Huey	Medevac, General Support	
PM KW	OH-58F Kiowa Warrior	Armed Recon/Light Attack	
PM ARH	Armed Aerial Scout (AAS)	Armed Recon/Light Attack	

as of 15 September 2011

Mission: Manage the Life Cycle of the Army's ASH Fleet to Include Development, Production, Fielding, Sustainment, and

OH-58F Cockpit and Sensor Upgrade Program

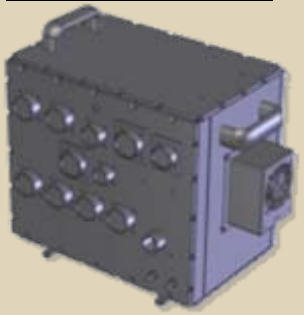
Program Description

- ACAT-II
- MS B DEC 2010
- FUE FY15
- Modification to OH-58D
- Not a SLEP

Cockpit Upgrade

CDS5

New IMCPU



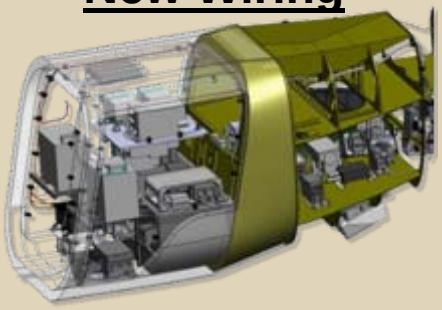
AN/AAS-53 CSP

Turret Unit

Electronics Unit

L2MUM

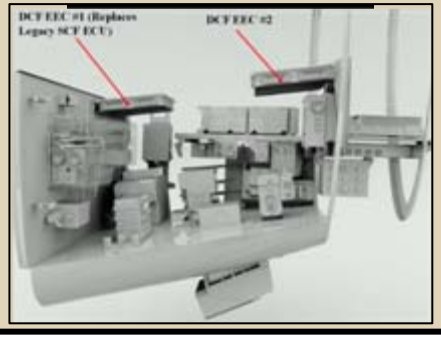
New Wiring



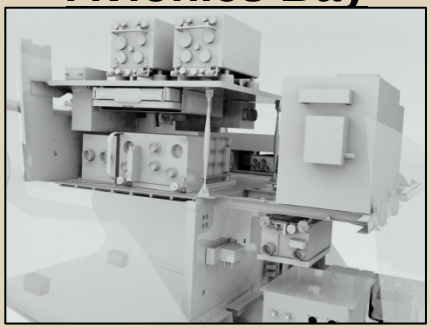
Integrated ASE

New Side Beams / Transverse Beams

Dual Channel



Avionics Bay



PROGRAM EXECUTIVE OFFICE

AVIATION

PM Fixed Wing

PM Fixed Wing Fleet

UC-35

Cost effective solution for flights between 600-1800NM. UC-35 provides high-speed transport for personnel and high priority cargo.

C-12

C-12 King Air is the workhorse for flights less than 600 NM. It is an efficient all weather transport for cargo and commanders/staff in conducting operations, liaison, administration, and inspection.

RC-12

The RC-12 Guardrail Common Sensor system provides standoff Electronics Intelligence (Elint) intercept and location capability.

C-23

The C-23 Sherpa provides troop and equipment transport, airdrop, and medical evacuation. It is capable of operating from short, unpaved airfields.

PM Fixed Wing Fleet (cont'd)

C-26

The C-26 Fairchild Metro-Liner was produced as a cost effective carrier for high volume travel routes. The aircraft can carry up to 20 passengers or be utilized for cargo movement.

EO-5

The EO-5 provides low altitude low airborne reconnaissance. It integrates imagery sensors, communications intercept and direction finding capabilities to support field commanders.

C-20

The C-20 provides global command and control air support to the Army's senior leadership. Voice and data communication capability and security are provided to allow uninterrupted command.

C-37

The C-37 Gulfstream furnishes support to senior executives from the Department of the Army Staff, CINCs and other high ranking government officials for flights up to 5,500 NM.

What's the Aviation Vision for 2025?

CH-47 Basic Design Will Be 70+ Years Old

UH-60 Basic Design Will Be Nearly 50 Years Old

AH-64 Basic Design Will Be Nearly 50 Years Old

OH-58 Basic Design Will Be Nearly 50 Years Old

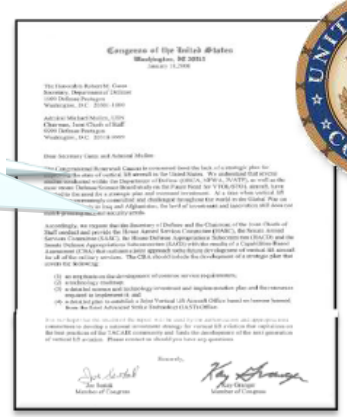
However…

Do Not Expect Any New Aircraft PORs in the FY12 POM

How Did the FVL Initiative Get Started?

(1) Congressional Request:

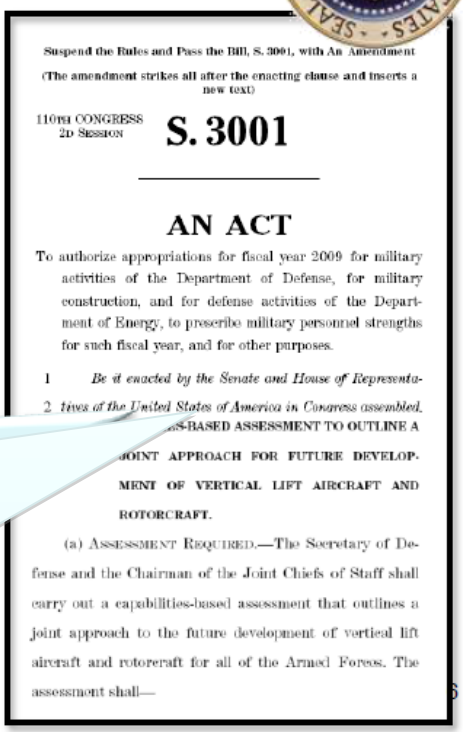
"The Congressional Rotorcraft Caucus is concerned about the lack of a strategic plan for improving the state of vertical lift aircraft in the United States."



(2) SecDef Direction:

"I have directed AT&L…to lead the development….."

(3) 2009 National Defense Authorization Act:



Suspend the Rules and Pass the Bill, S. 3001, with An Amendment

(The amendment strikes all after the enacting clause and inserts a new text)

110TH CONGRESS
2D SESSION

S. 3001

AN ACT

To authorize appropriations for fiscal year 2009 for military activities of the Department of Defense, for military construction, and for defense activities of the Department of Energy, to prescribe military personnel strengths for such fiscal year, and for other purposes.

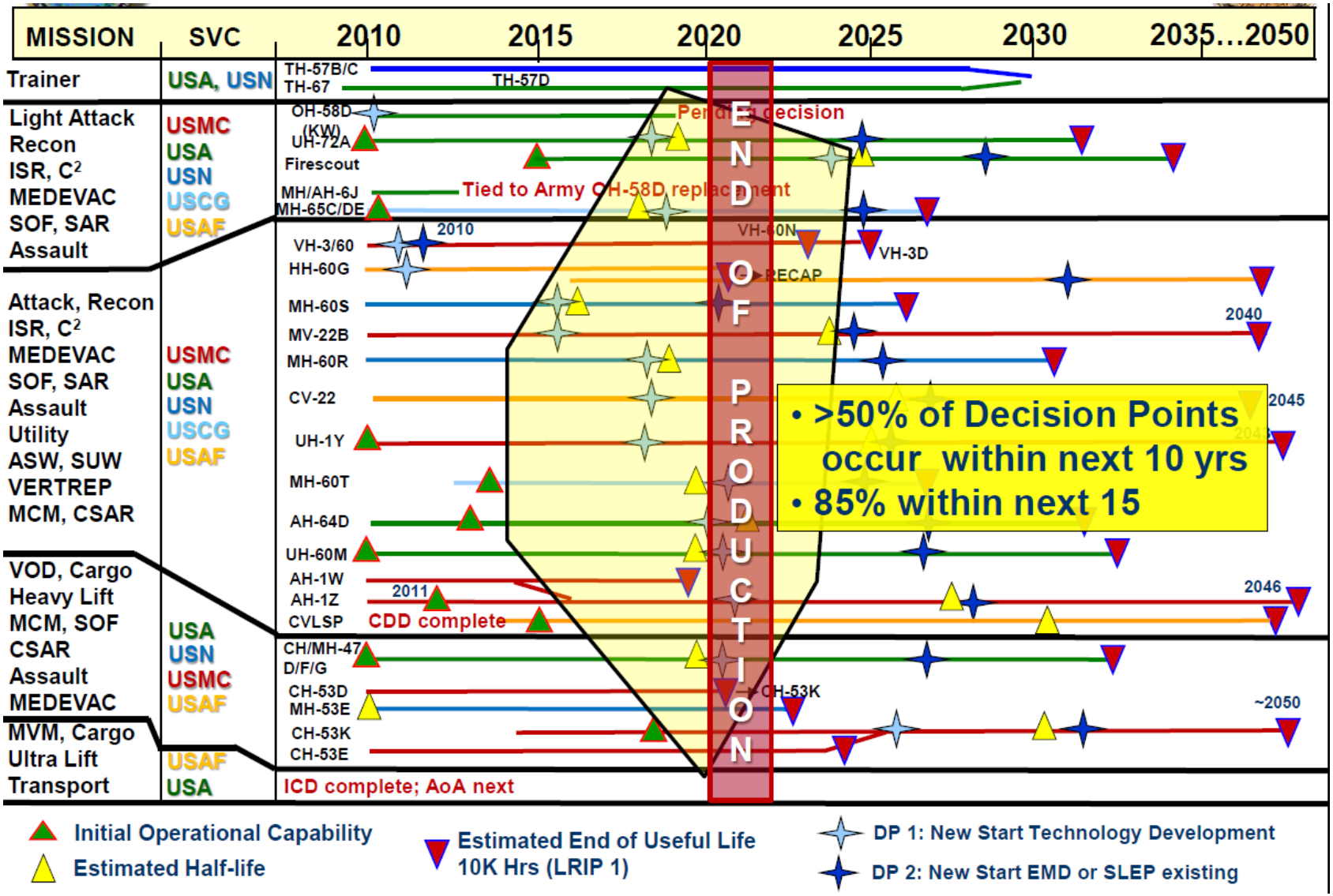
1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

…S-BASED ASSESSMENT TO OUTLINE A
…JOINT APPROACH FOR FUTURE DEVELOP-
…MENT OF VERTICAL LIFT AIRCRAFT AND
ROTORCRAFT.

(a) ASSESSMENT REQUIRED.—The Secretary of Defense and the Chairman of the Joint Chiefs of Staff shall carry out a capabilities-based assessment that outlines a joint approach to the future development of vertical lift aircraft and rotorcraft for all of the Armed Forces. The assessment shall—

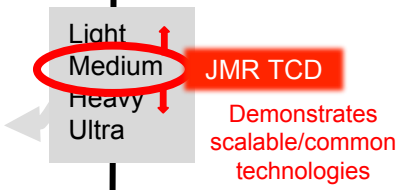
"Sec. 255. The SecDef… shall …. outlines a joint approach of the future development of vertical lift aircraft for all the military services."
Sec. 1043. The SecDef and JS …rotorcraft survivability….propose candidate technologies…

FVL Decision Points

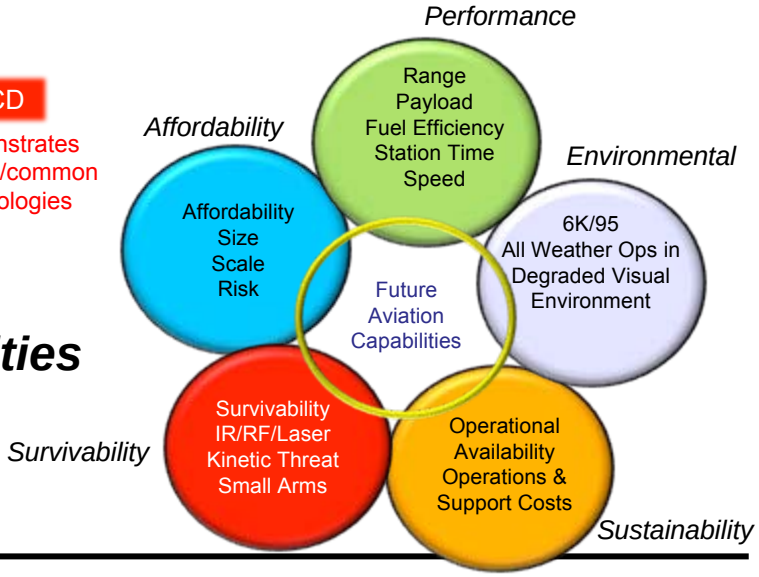


Operational View

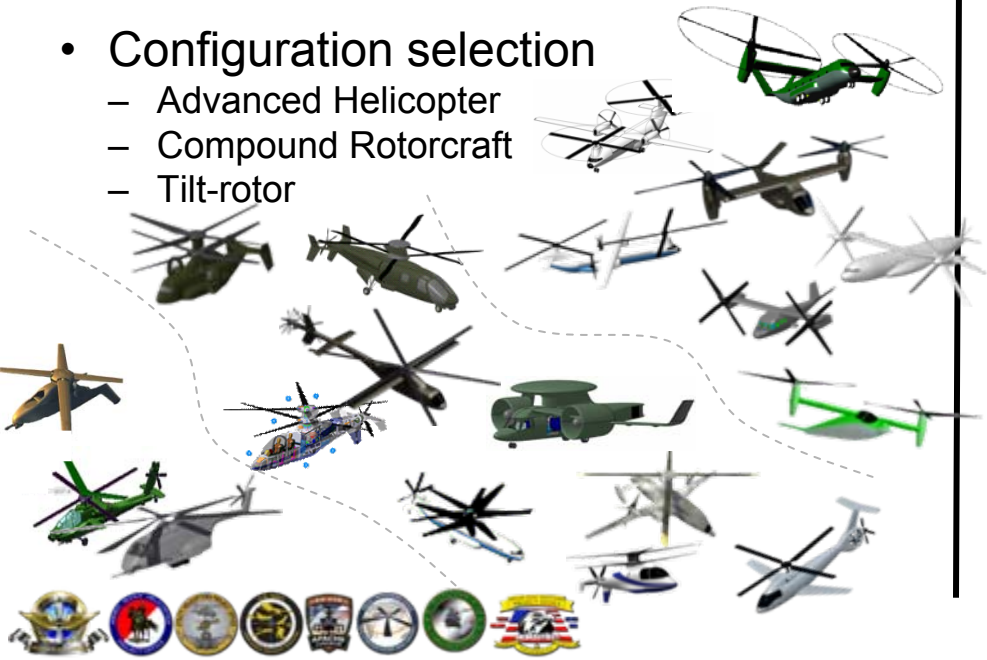
- JMR describes a family of vertical lift aircraft
  - Includes multiple sizes/classes of vehicles
  - Considers the vertical lift needs across the DoD
  - Achieves significant commonality between platforms
  - Addresses the capability gaps identified in the Aviation Operations CBA, the OSD-sponsored Future Vertical Lift CBA, and the 2010 Air SID gap analysis



Capabilities



- Configuration selection
  - Advanced Helicopter
  - Compound Rotorcraft
  - Tilt-rotor



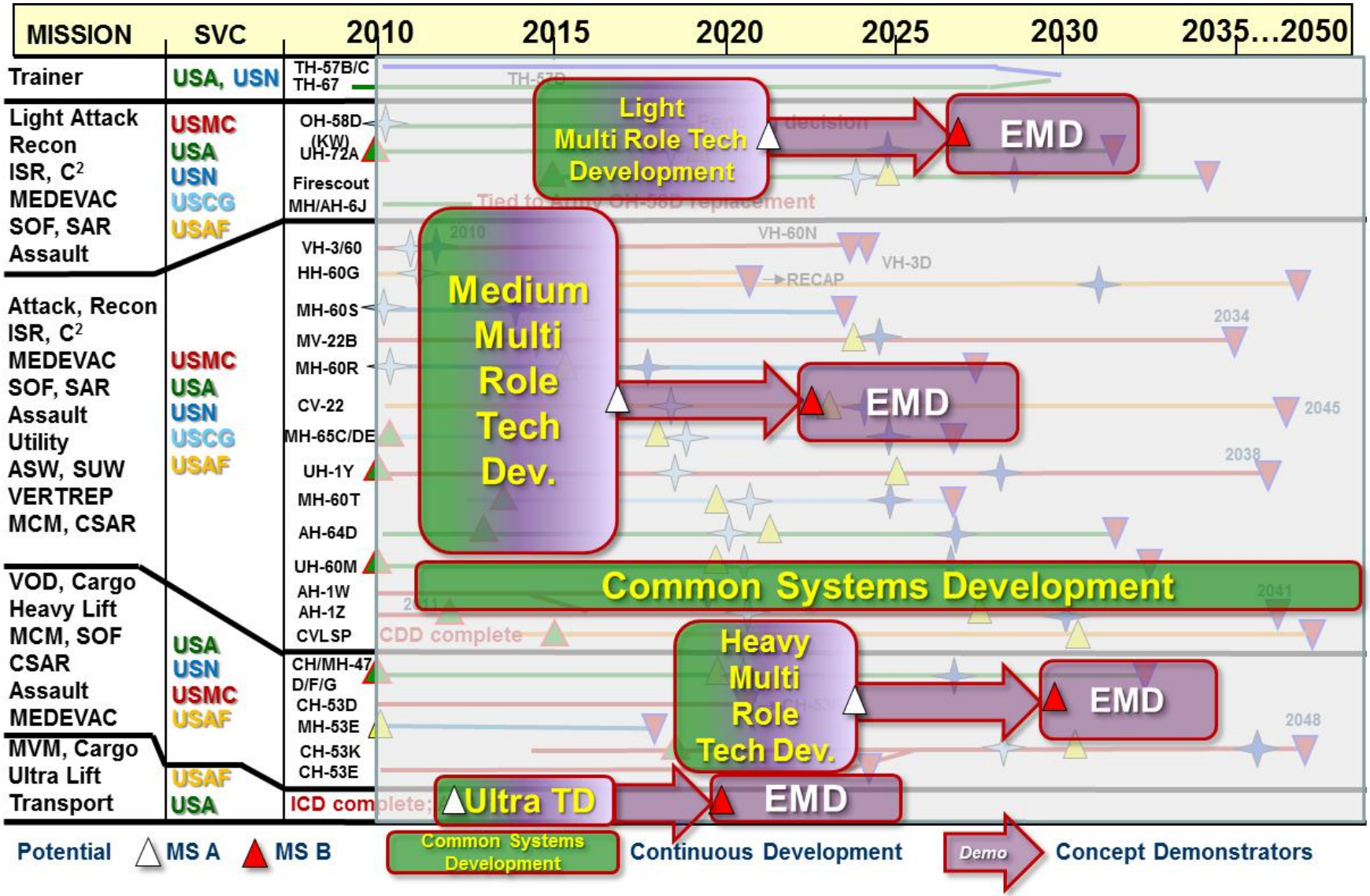
- Objective vehicle attributes
  - Scalable common core architecture
  - Integrated aircraft survivability
  - Speed 170+ kts
  - Range 424 km (combat radius)
  - Performance at 6,000 feet and 95□F (“6k/95”)
  - Shipboard Compatible
  - Fuel Efficient
  - Supportable
  - Affordability
  - Optionally Manned
  - Commonality

Capability to Perform Worldwide Operations

Notional Attributes

Modified JMR Performance Ranges (Aug11 JMR WG)					
	Light	Med-L	Med-H	Heavy	Ultra
Speed	>170-300+ kts	> 170-300+ kts		>170-300+ kts	300+ kts
Combat Radius	424 km	424 km		424 km	~462 km
Payload (Int)	2.5k+lbs	5k lbs	Up to 20k lbs	20-30k lbs	~40-72k lbs
Payload (Ext)	2.5k+lbs	Up to12.5k lbs	Up to 23k lbs	30k lbs	~40-72k lbs
Passengers	6	13	18-24	33-52	~100-120

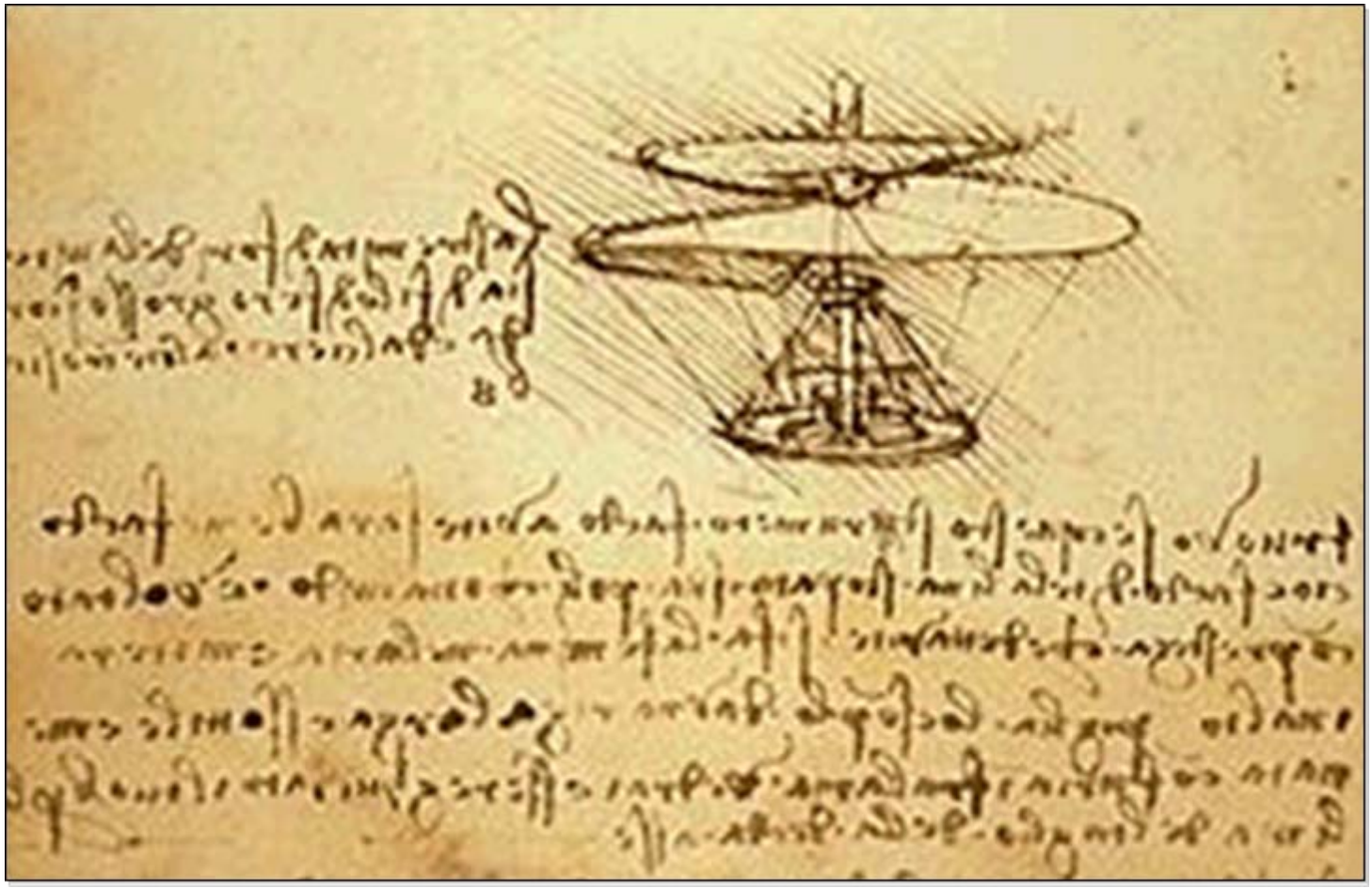
Strategic Plan-Time Phased, Fiscal Unconstrained



Summary

- Current Vertical Lift Platforms are a major player in today's conflicts
- Operations have exposed shortfalls in performance, survivability, and operating costs
- Recently completed analyses clearly indicate the need for a new generation of vertical lift platforms to start being fielded in the 2025 timeframe
- Major challenges ahead-last clean sheet design fielded was V-22
- Skill set for advanced configurations needs to be revitalized
- Major investment in science and technology is key for the future
- Bottom Line-Future needs will rely on platform concepts from the 1960's

Questions



Approved under Case # 09s0666