Integrity ★ Service ★ Excellence

AFRL Overview

Defense Health Board

06 November 2014

Commander
Air Force Research Laboratory

United States Air Force Mission

The Mission of the United States Air Force is to

Fly, Fight, and Win…In *Air, Space, and Cyberspace*

"The first essential of air power necessary for our national security is preeminence in Research."

- General Henry "Hap" Arnold

"…innovation – fueled by intelligent, creative Airmen – will remain a key part of who we are and what we value as a service." Gen Welsh, CSAF

AFRL Mission

LEADING the discovery, development, and integration of affordable warfighting technologies for our air, space, and cyberspace force.

AFRL at a Glance

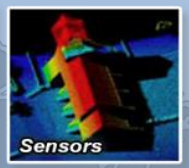
AFRL Headquarters

711th Human Performance Wing

Materials & Manufacturing

Aerospace Systems

Sensors



Information
Rome Research Site, NY

Rome Research Site, NY

Wright Patterson AFB, OH

Edwards AFB, CA

Arlington, VA

Kirtland AFB, NM

Arnold AFB, TN

Ft. Sam, TX

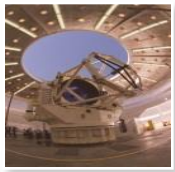
Eglin AFB, FL

AF Office of Scientific Research

Space Vehicles Directed Energy

Munitions
Eglin Air Force Base, FL

Maui Research Site, HI



International Sites

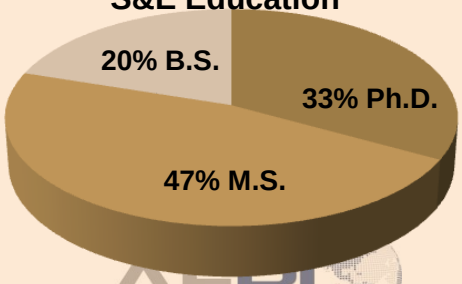
London, UK

Tokyo Japan

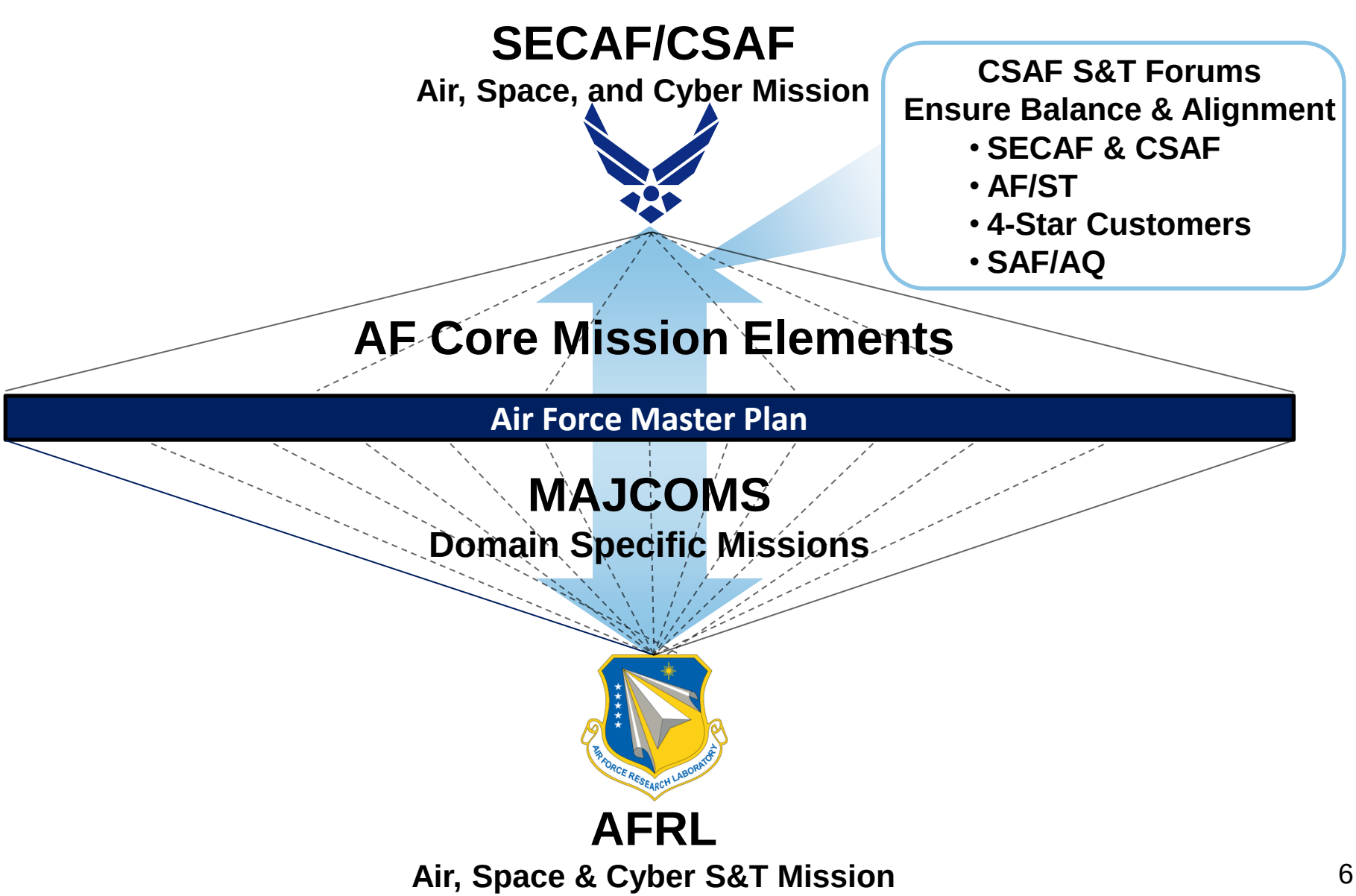
Santiago, Chile

	Employees	Civilian	Military
Total	5,827	79%	21%
S&Es	3,455	80%	20%

S&E Education



Warfighter Focused Innovation



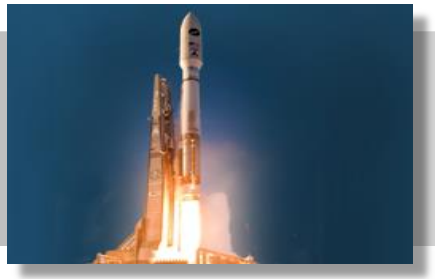
Strategic Context

Limited budgets
- "New Normal"

The U.S. is facing increasing global R&D competition
- Partnerships becoming even more important

Cyberspace (threat)
- Sophisticated, growing, and evolving
- Exploiting daily, increasing disruption and developing destruction capabilities

Electromagnetic spectrum
- Spectrum competition between commercial and DoD
- Technology proliferation has leveled the playing field



Less freedom of movement in space
- Other nations, private industry, all pushing forward in space
- Space situational awareness is key

Growing sophistication in A2/AD threats
- Access challenges require integrated technologies
- Longer distances require next gen rapid response capabilities

Technology Focus Areas

$457M — Next Gen Aerospace Systems


Air Vehicles


Turbine Engines


Hypersonics


Autonomy

$354M — Weapons


DE Counter Electronics


High Speed Strike


High Velocity Penetrating


Flexible Weapons

$327M — Space and Nuclear Deterrence


Space Access


Payloads


Space Platforms


Advanced Experiments

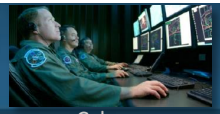
$263M — Intelligence, Surveillance, & Reconnaissance (ISR)


Human Centered ISR


Synchronized Operations

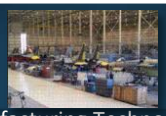
$225M — Command & Control, Cyber, Communications (C⁴)

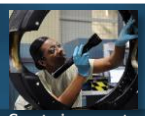

Processing, Exploitation, and Dissemination (PED)

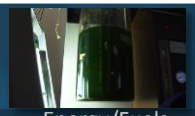

Cyber


Space Communications

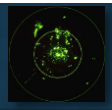
$153M — Affordability & Sustainment

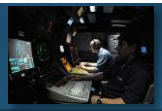

Manufacturing Technology

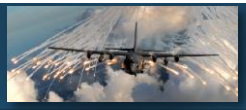

Sustainment


Energy/Fuels

$103M — Electronic Warfare / Electronic Protection (EW/EP)

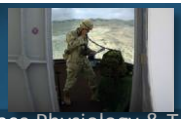

EW Plus


Distributed EW


Infrared countermeasures

$70M — Human Performance


Autonomy


Aerospace Physiology & Toxicology

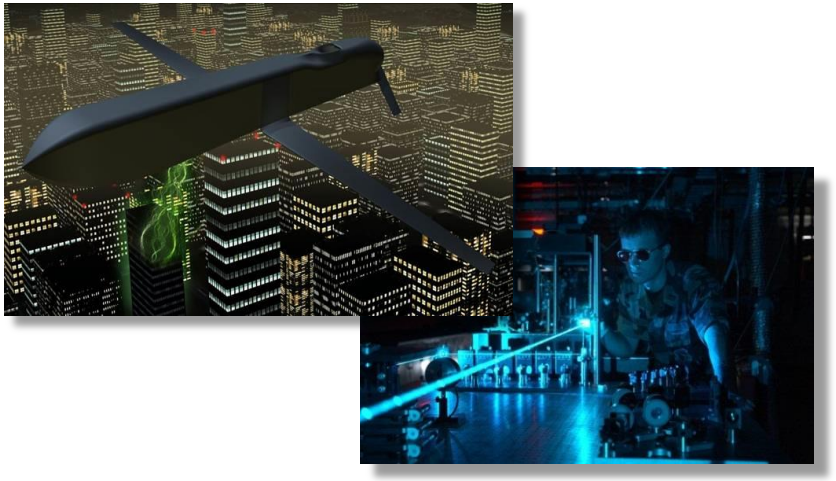

Training &

Total: ~$1.95B, FY15 PB (No Devolved $)

Game Changers

Hypersonics

- Survivable, fast-flying
- Defeat deep layered A2/AD strategies



Directed Energy

- High Power Microwave alternative to kitetic weapons
- Lasers with air & ground selectable effects & reduced collateral damage

Autonomy

- Facilitates decisions at speed of computing
- Self awareness & troubleshooting intelligence to aid mission performance

Priorities

Push Innovation

- Integrate existing technologies
- Create disruptive capabilities
- Strategic agility

Cost Imposing Strategy

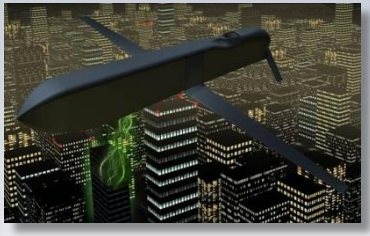
- Force costly adversary response
- $1 US → 10x adversary investment

Affordability

- "Baked in"
- Open architectures
- Adaptable & flexible
- Bending the cost curve

More Advanced Technology Demos

- Reduce acquisition risk
- Energize tech base
- Show warfighter impact
- Motivate S&Es

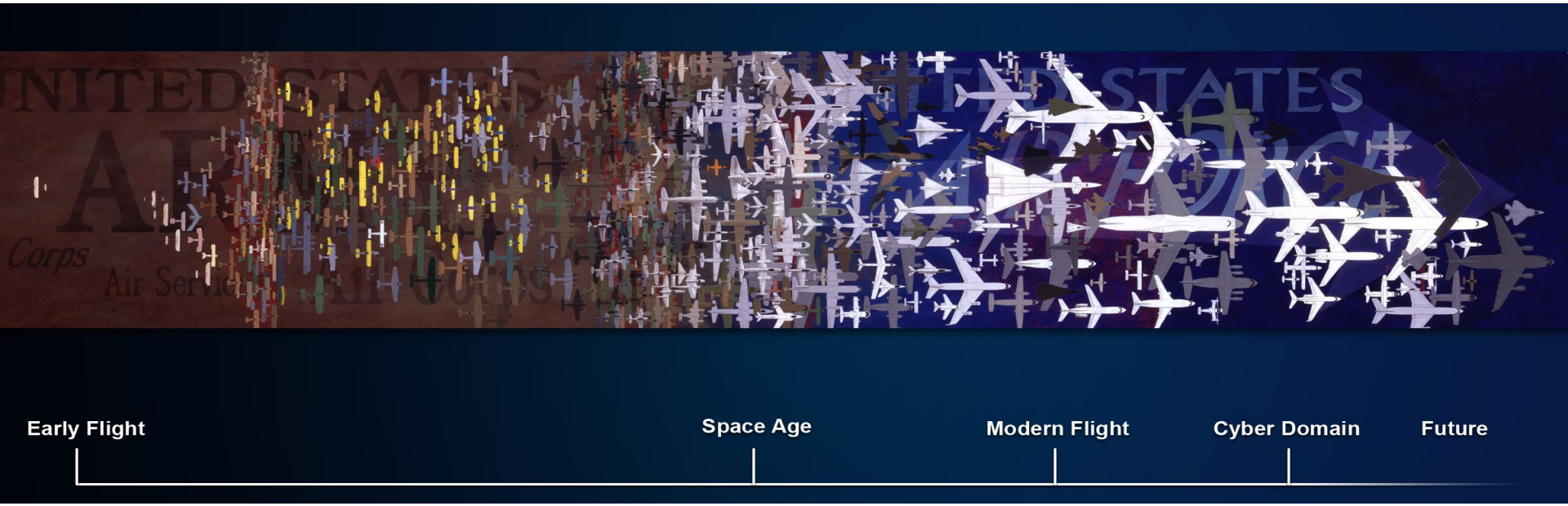


Engagement & Partnership

- Maintain global awareness
- Shape domestic tech base
- Leverage the best S&T

QUESTIONS?

REVOLUTIONARY · RELEVANT · RESPONSIVE



“The World’s Greatest Air Force - Powered by Airmen, Fueled by Innovation”
Air Force Vision 2013