

AFFRL

THE AIR FORCE RESEARCH LABORATORY
LEAD | DISCOVER | DEVELOP | DELIVER



Air Force Future S&T Challenges Overview

***Mr. Les McFawn
Executive Director
Air Force Research Laboratory***





Outline



- **AFRL Overview**
- S&T Investment Development Challenges
- Focused Long Term Challenges (FLTCs)
- Strategic Technologies
- Industry Initiatives



AFRL Mission



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

It's not just about the science...
...it's about leadership in S&T



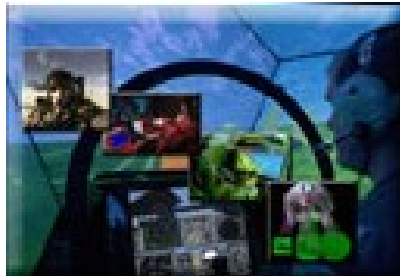
AFRL Organization



AFOSR



Human Effectiveness



Information



Air Vehicles



Sensors



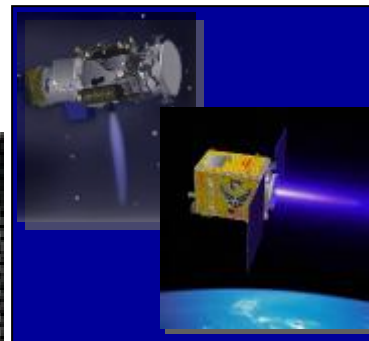
Directed Energy



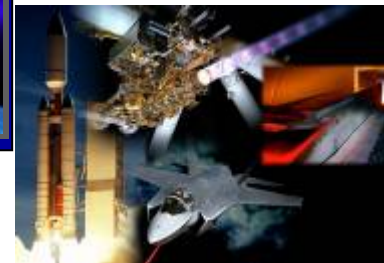
Materials & Manufacturing



Space Vehicles



Propulsion & Power



Munitions

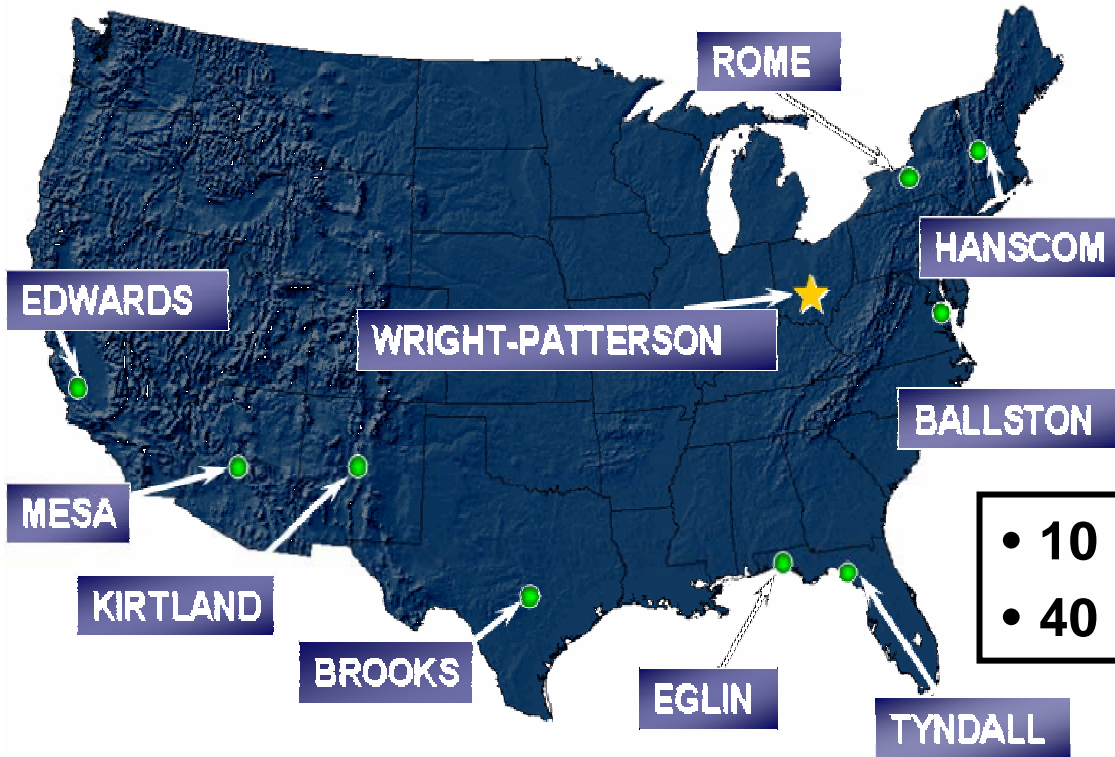




AFRL People & Facilities



- **AFRL Workforce:
9608 Government / Contractor**



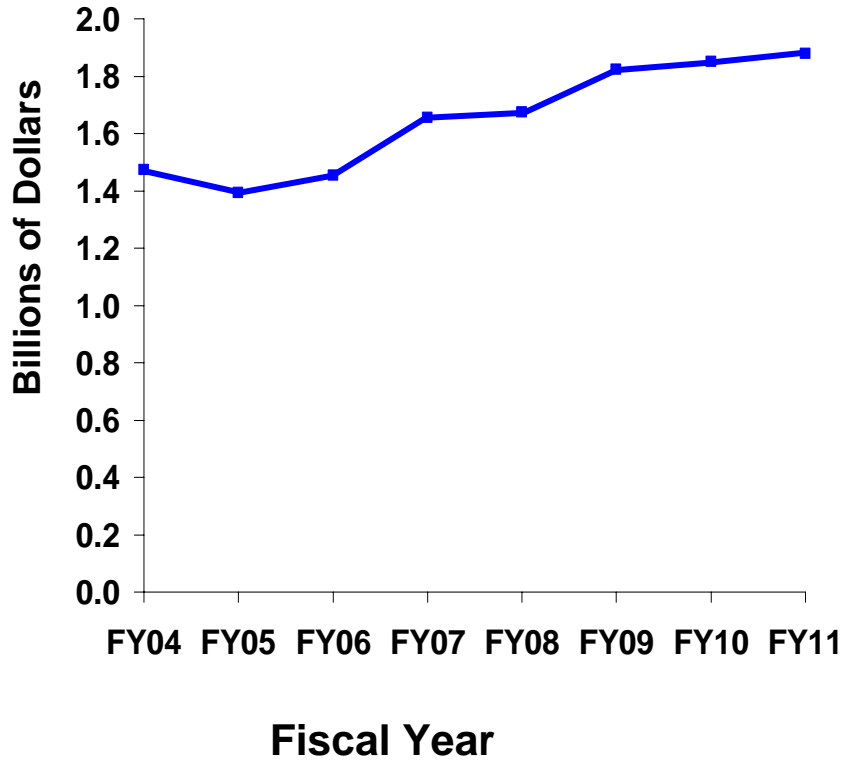
- **10 Major R&D Sites across US**
- **40 Sites World-Wide**



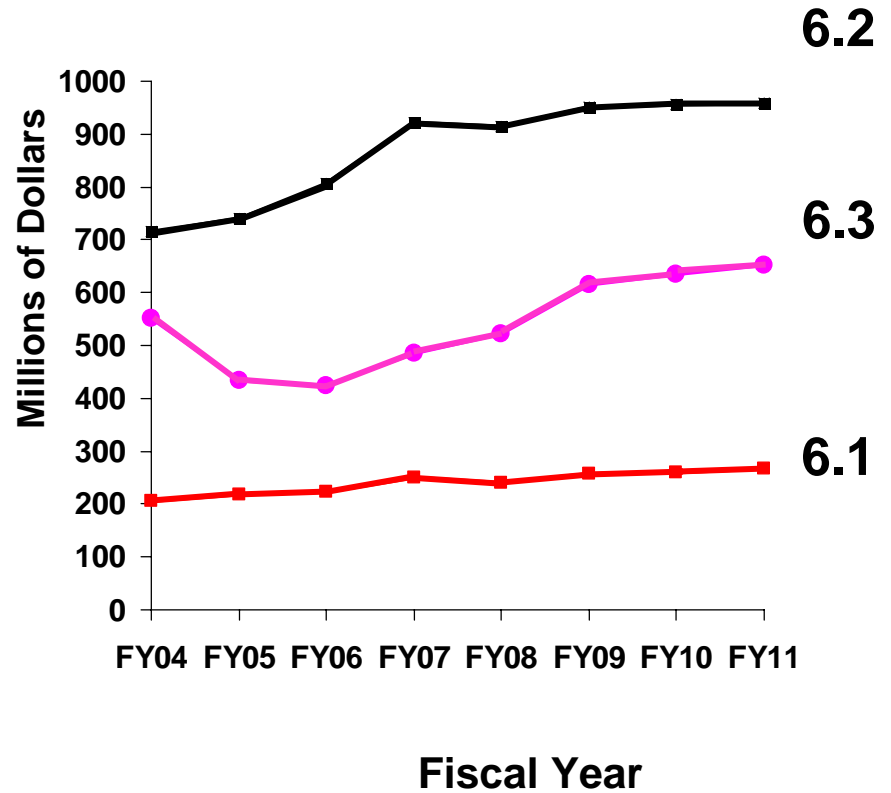
Funding Outlook FY07 President's Budget



Core S&T Funds Total



Core S&T By Budget Authority





Funding Leverage



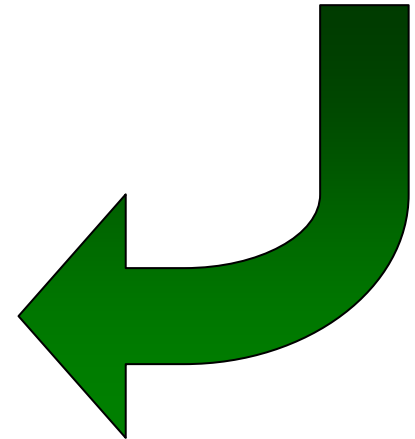
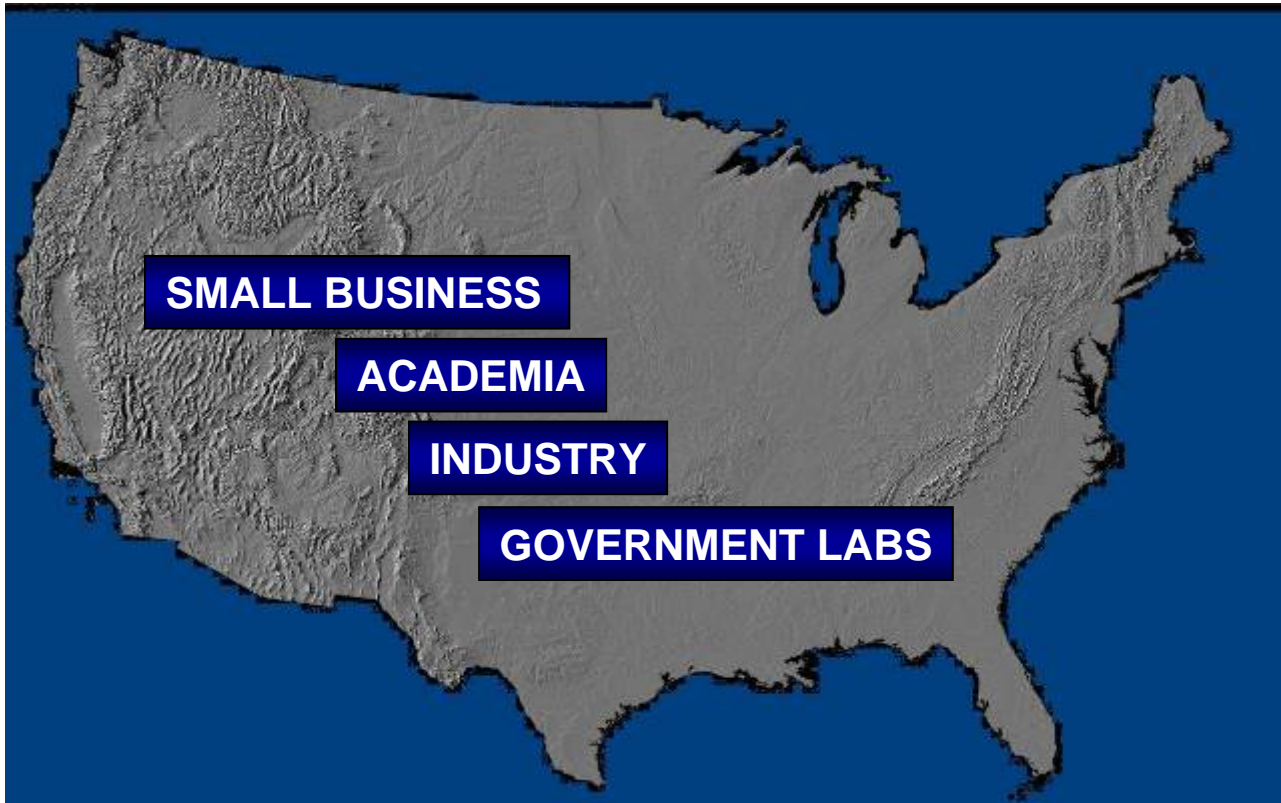
AFRL
\$1.9 Billion
3,488 S&Es

+

DoD Funds
\$1.7 Billion



Thousands of
Knowledge
Providers





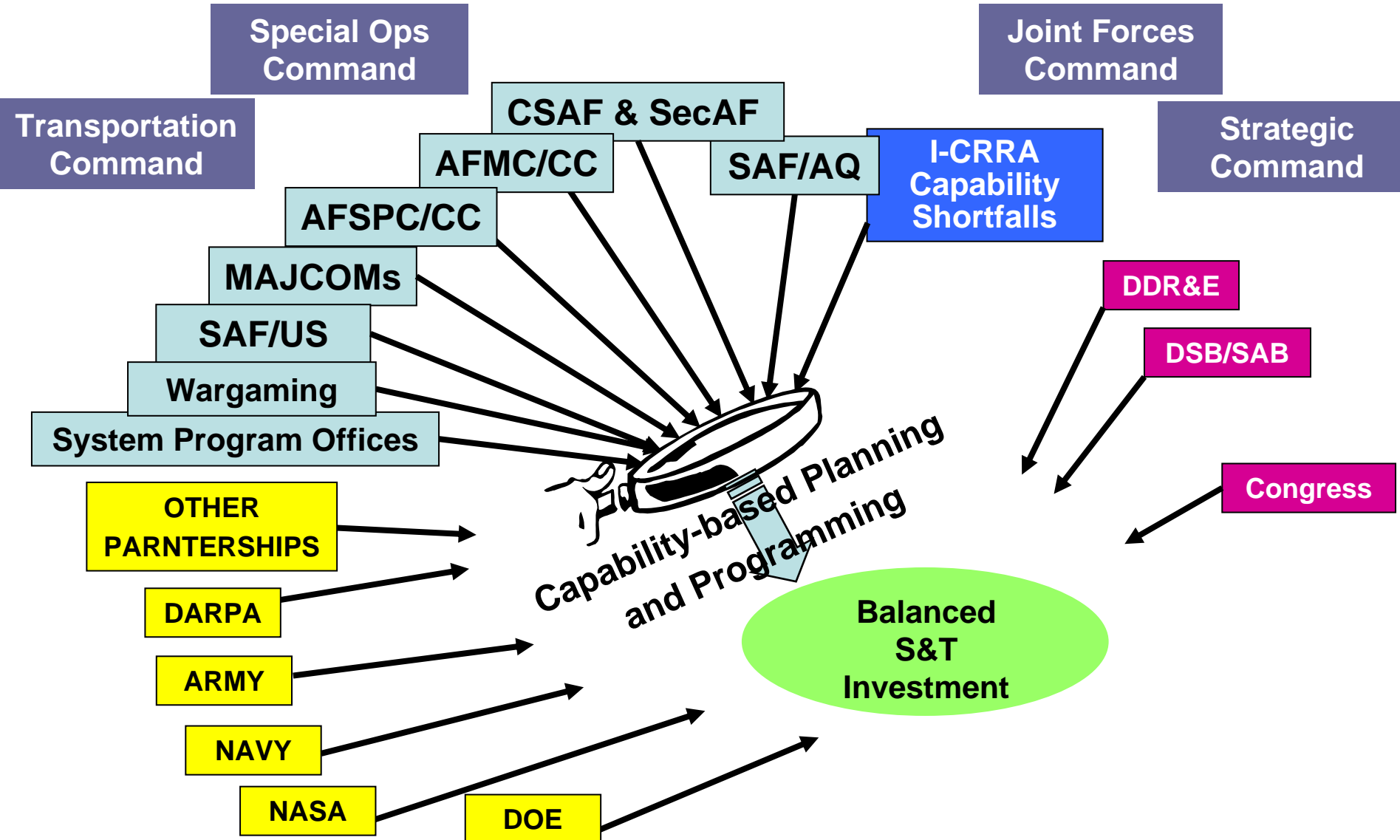
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S&T Investment Development is A Challenge!

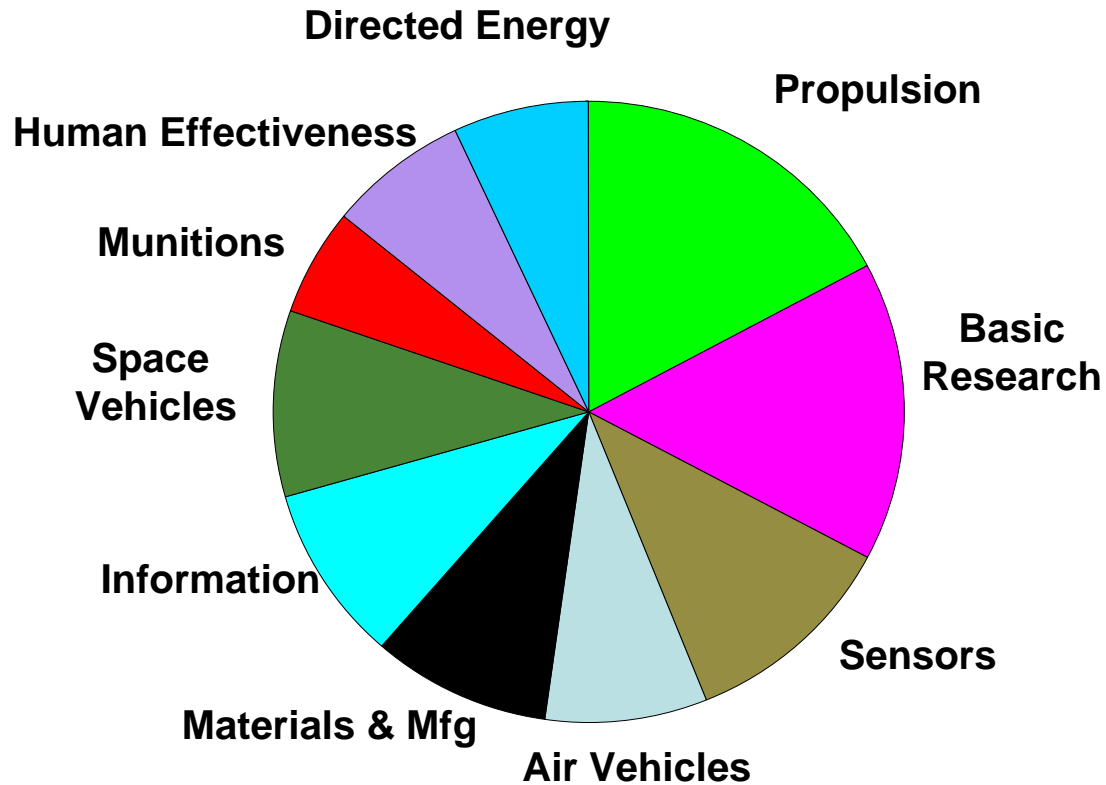




Balanced S&T Investment



Technology View



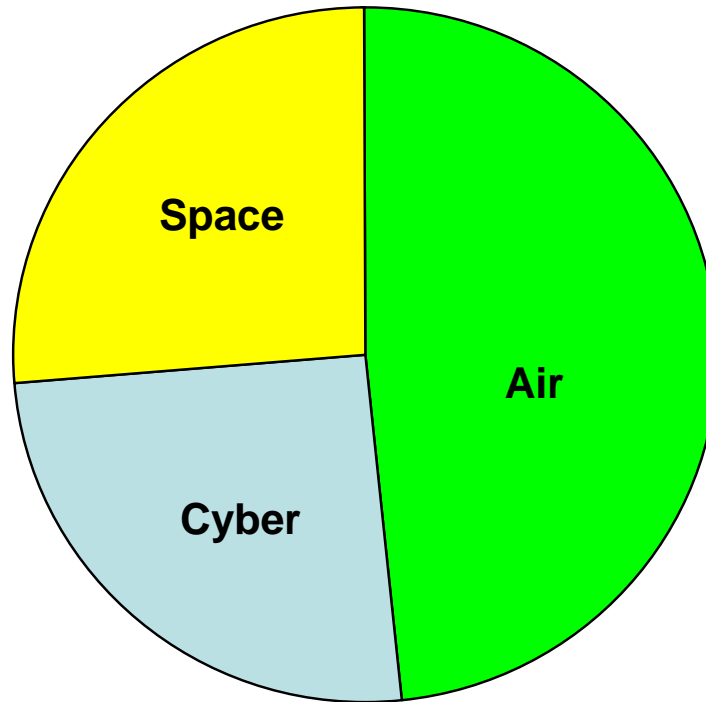
TOTAL FY06: \$1.454 Billion



Balanced S&T Investment



Domain View



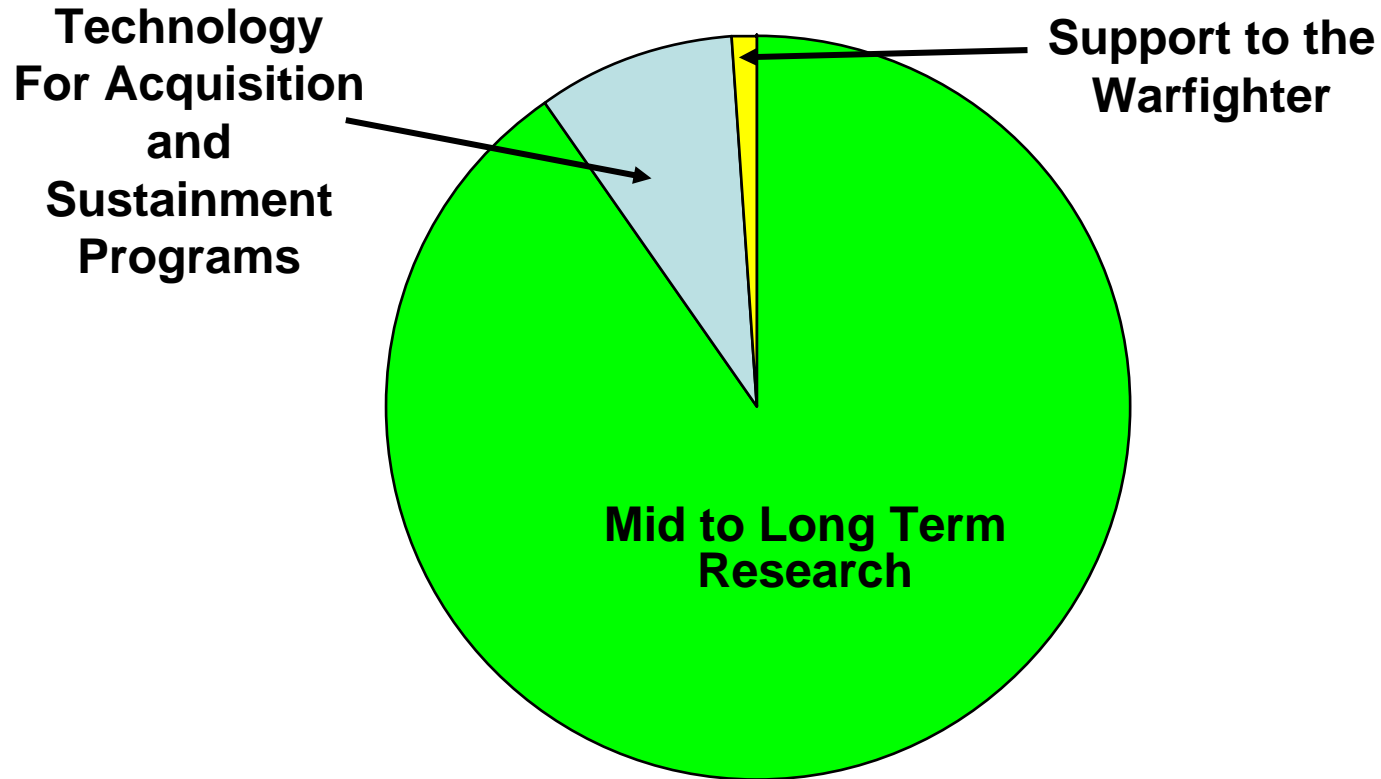
TOTAL FY06: \$1.454B



Balanced S&T Investment



Time Horizon View



TOTAL FY06: \$1.454 Billion



AFRL Support to Warfighter



Driven by Urgent Needs...



AFRL Advanced Technology Development



Advanced Concept Technology Demonstrations (ACTD)

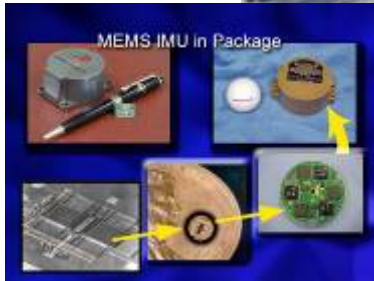


Advanced Technology Demonstrations (ATD)

External Customers



Direct Support

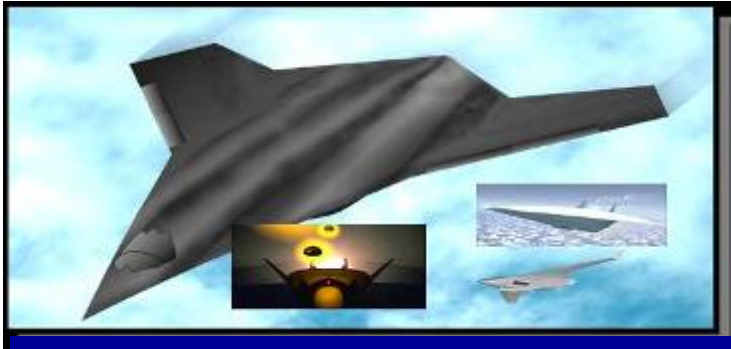


Manufacturing Technology

Driven by Acquisition and Sustainment Needs....



AFRL Basic & Applied Research



Long Range Strike



*Sensor Craft
Persistent ISR*



CAOC of the Future



*Reusable Launch Vehicle
Rapid Access to Space*

Enables Future Transformational Capabilities
Driven by Capability Planning & Technology Opportunities



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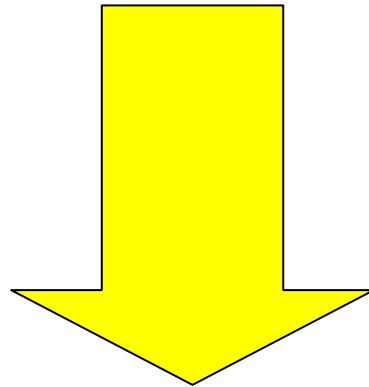
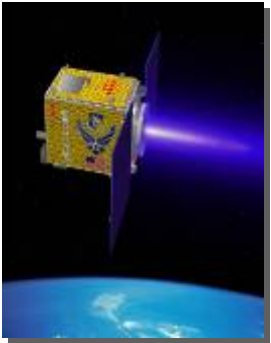


AF Technology Vision

CORONA Top, Jul 05



***Anticipate, Find, Fix, Track, Target,
Engage, Assess – Anything,
Anytime, Anywhere***



**Energized By Focused Long Term
Challenge (FLTC) Plans**



FLTC #1



Anticipate Enemy Actions and Respond with Synchronized Management of Battlespace Effects



Building

MIPT TERRORISM KNOWLEDGE BASE

Overview

The MIPT Terrorism Knowledge Base represents a significant effort to create a comprehensive and up-to-date system of knowledge, which is essential for the most effective and coordinated system of defense, and is essential for the most effective and coordinated system of defense. Rather than use to create a perfect test, we have opted to assist the operations of you, the user of the system, to help us improve the knowledge base. We encourage you to help us make it stronger by offering your suggestions and comments through our Feedback link.

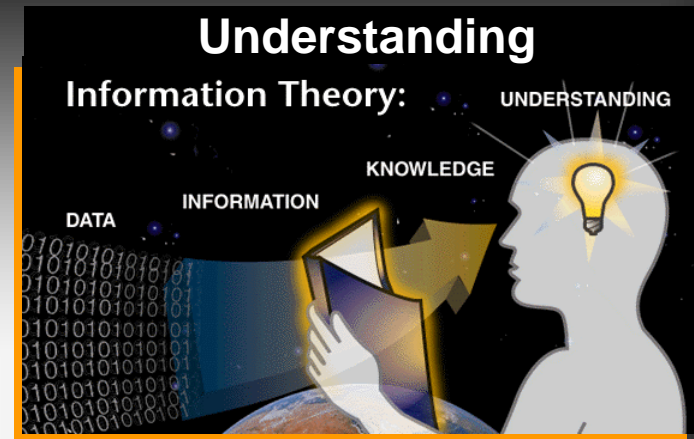
1 Search for groups and incidents in any region



2 Knowledge base directory

Groups	Incidents
Location, Settings	By Date, Geographical Location

Based on the FBI database

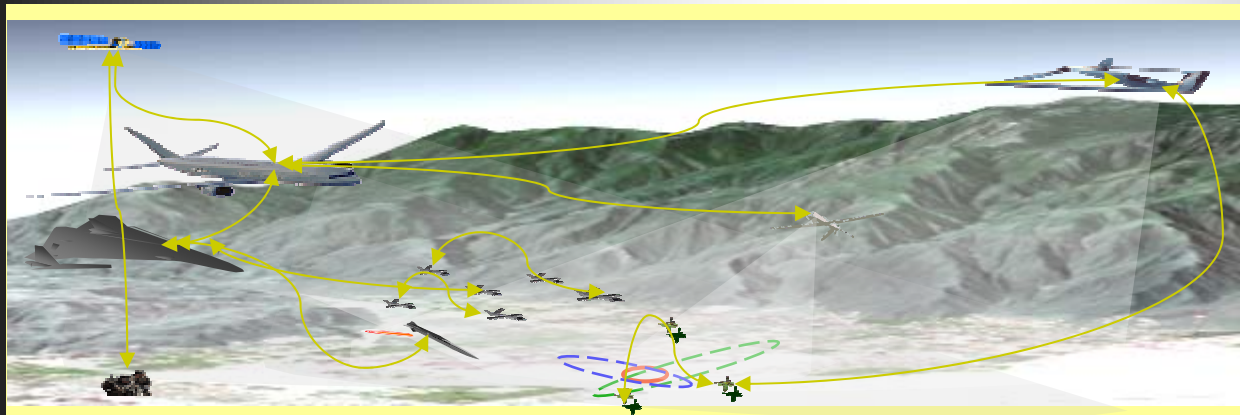
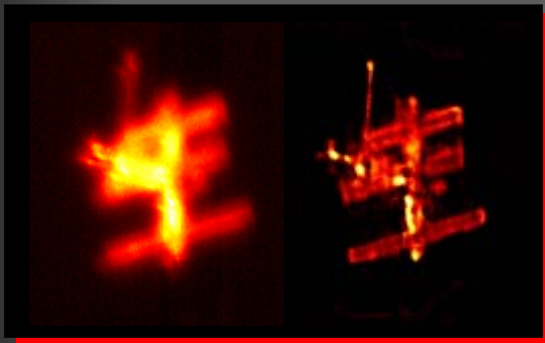




FLTC #2



**Proactively Find, Fix, and Track Anything,
Anytime, Anywhere with Agile and Immediate C4ISR**

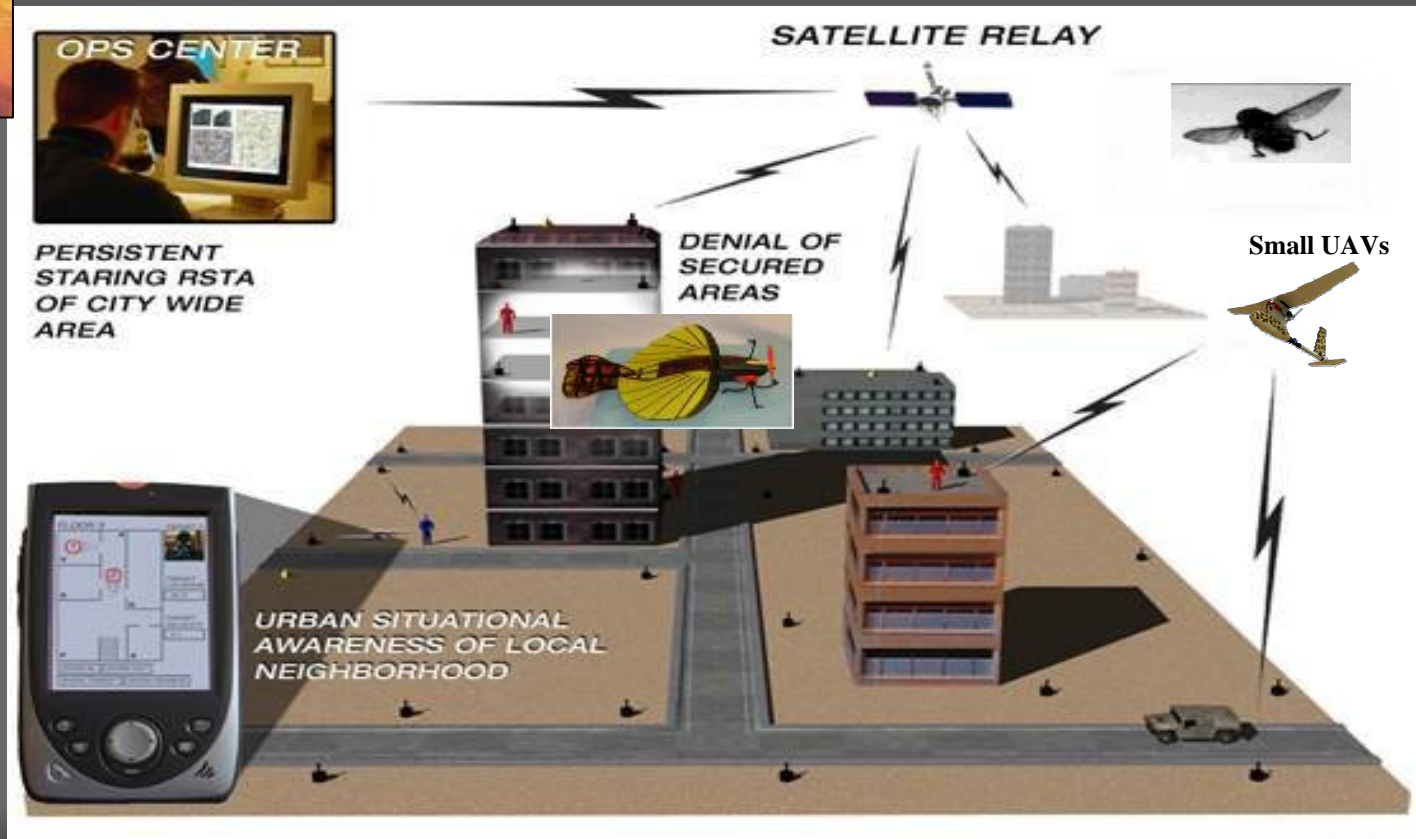




FLTC #3



Detect, Tag, Track, Identify, Target Adversaries, IEDs, CBRNE in Congested or Concealed Environments and Create Desired Effects

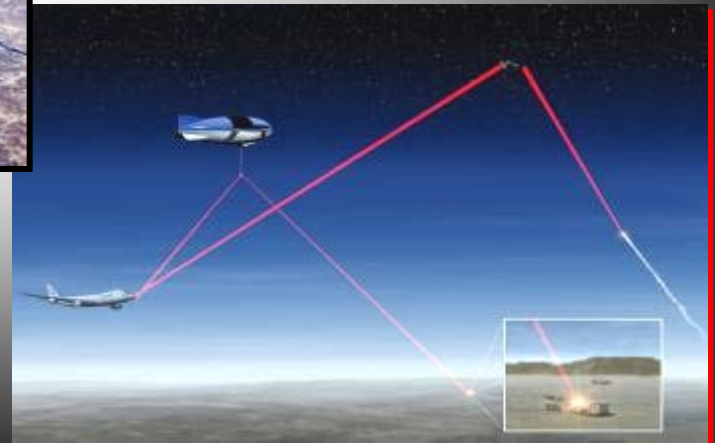
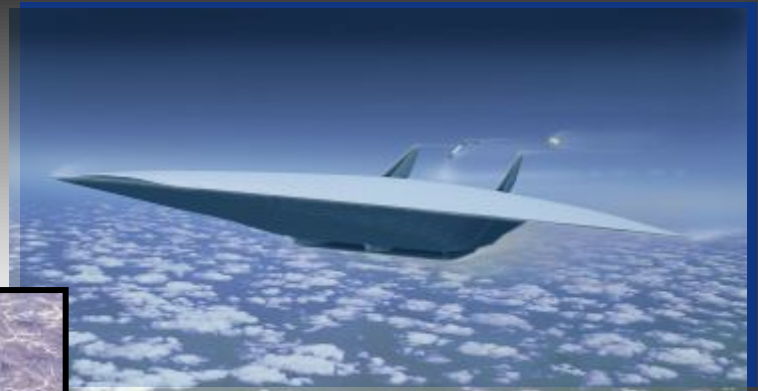




FLTC #4



Maneuver Through Anti-Access/Area Denied Environments to Deliver Effects Rapidly and/or Persistently

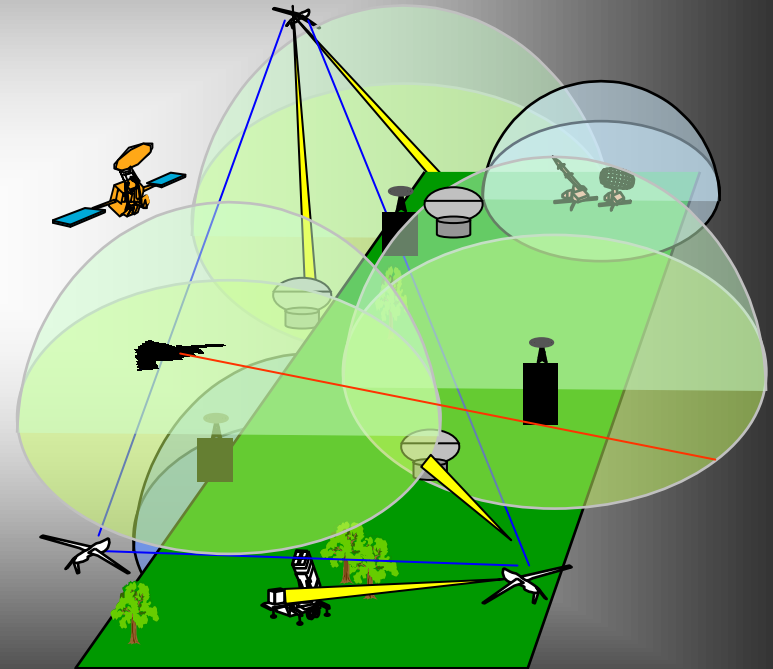
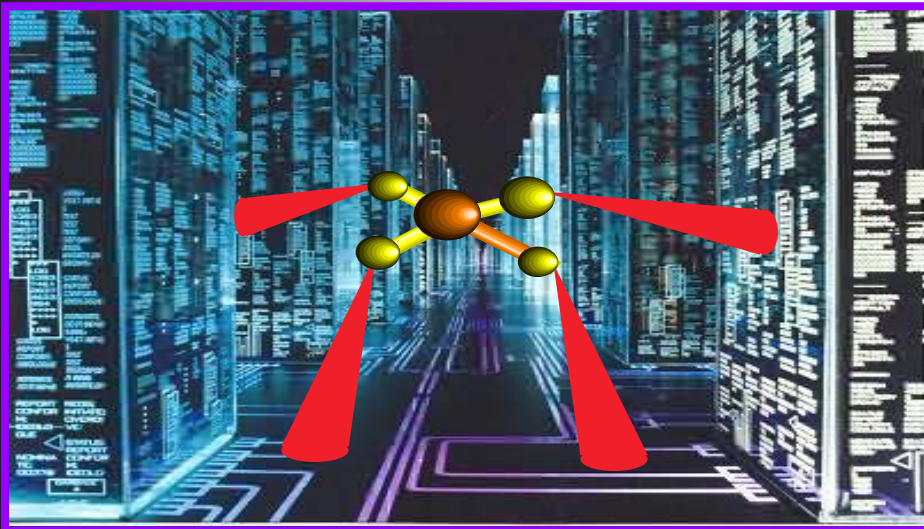
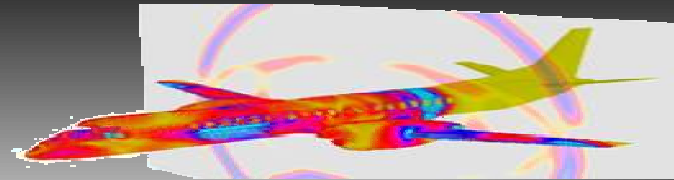
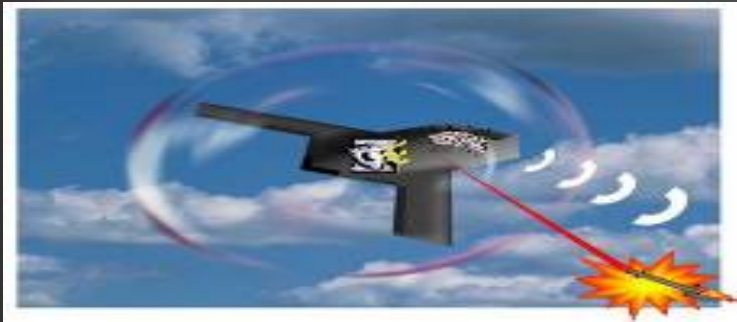




FLTC #5



Achieve Mission Objectives With Impunity Against Full Spectrum Threats, from Anti-Access IADS to Cyber





FLTC #6



Conduct Full Spectrum Offensive Cyber/Info Ops Against Military, Leadership, and Infrastructure

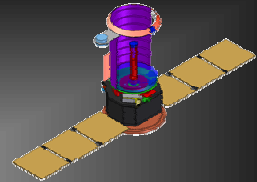




FLTC #7



Timely Deployment of Flexible Ground, Information & Space Capabilities for the Theater Commander

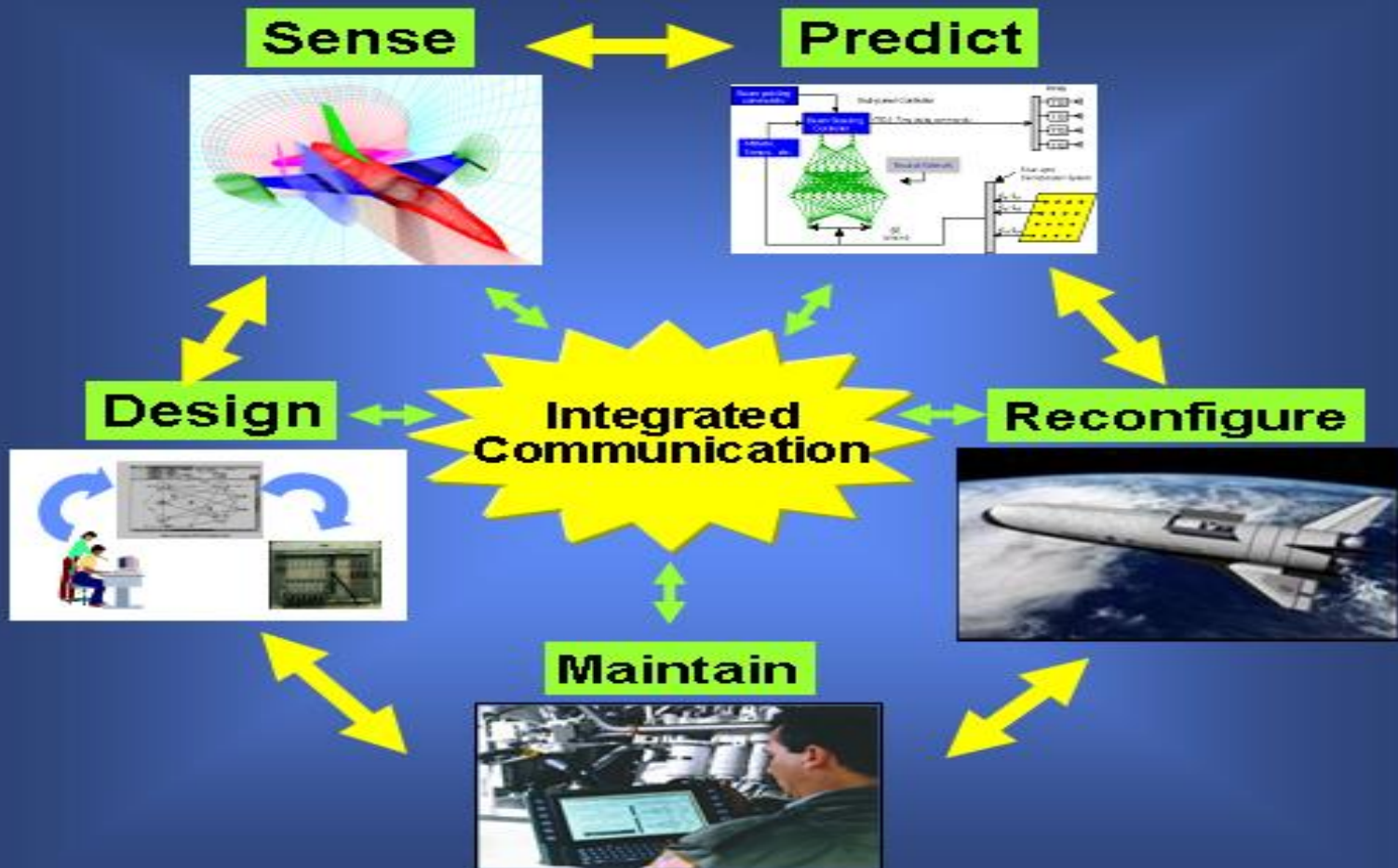




FLTC #8



Maximize Mission Capability and Attack O&S Costs by Embedding Robust Reliability and Predictable Readiness





Outline



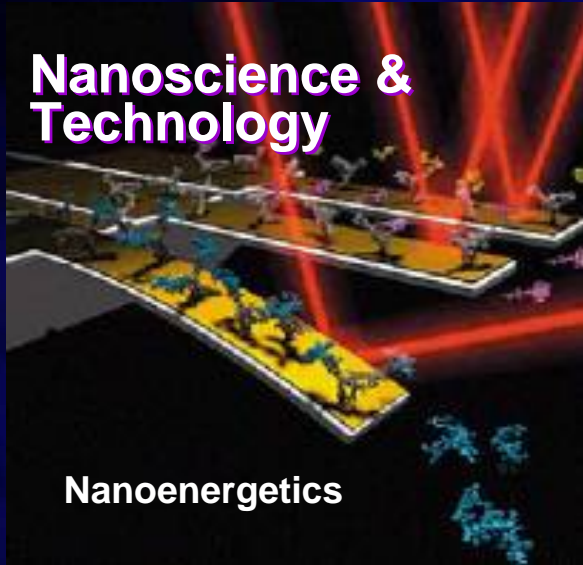
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Strategic Technologies

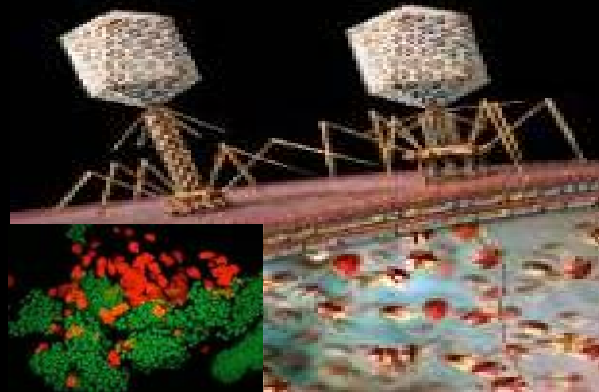


Nanoscience & Technology



Nanoenergetics

Biological Materials & Systems



Energy & Thermal Management



Airborne Laser

Hypersonic Systems & Technologies



Scramjet Engine Demonstration (SED)

Computational Science & Engineering



Modeling and Simulation

Manufacturing Technologies



Reconfigurable Tool



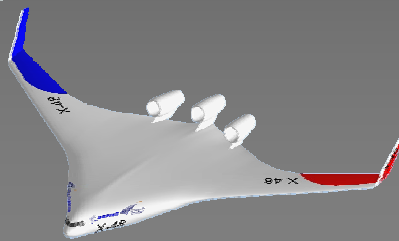
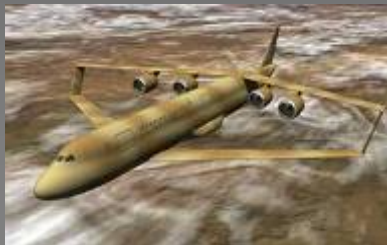
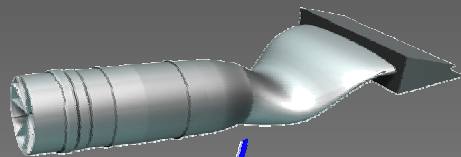
Fuel Initiatives

Current Investment Areas



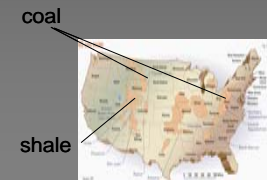
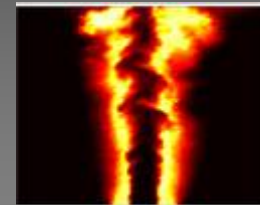
Platform fuel efficiency

- Lightweight, efficient aero structures
- Advanced, fuel efficient turbine engine technology
- Lightweight, high temperature (engine applications) materials



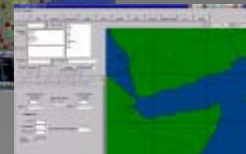
Alternative fuels

- Currently a small but critical effort in Fischer-Tropsch fuels



Conservation

- Improved simulator technology
- Improved mission/route planning





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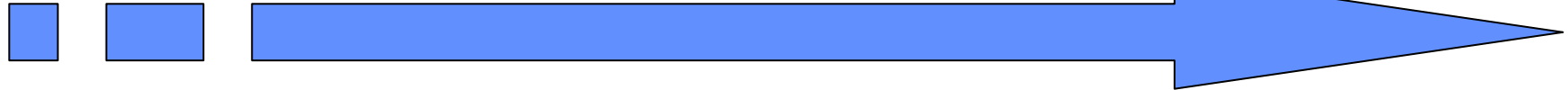
Linking to Industry IRAD Investments



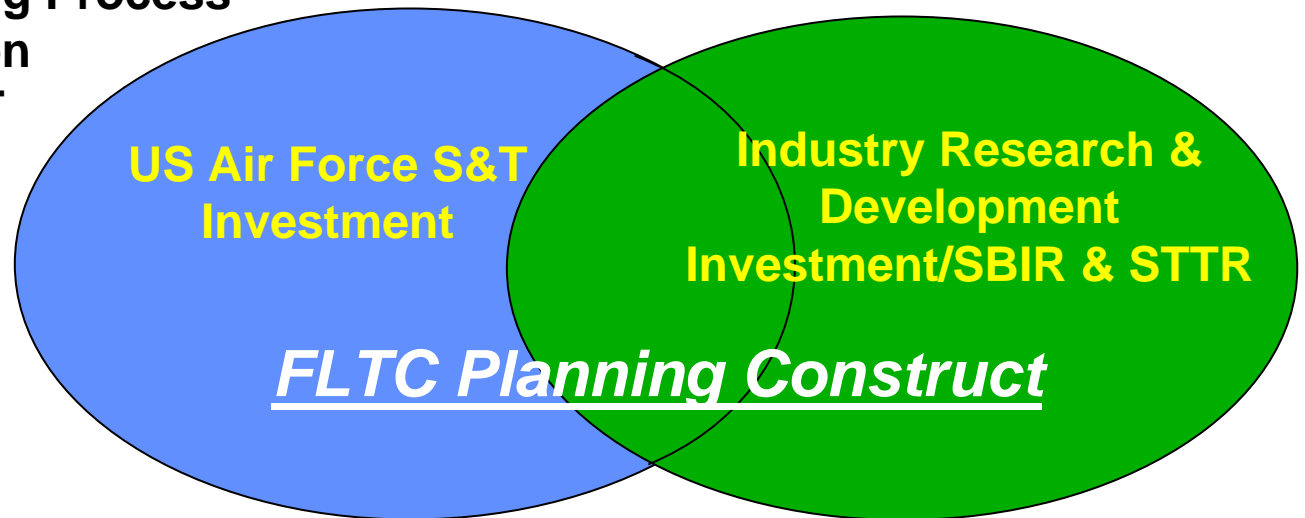
Past - 1990's

2008

Future



- IR&D Review Board
- Labor Intensive Scoring Process
- Limited Communication
- Limited Impact on S&T Investment



- **Shared Vision & Roadmaps**
- **Single Voice To Industry**
- **Strategic IR&D Alignment**
- **Open and Active Lines of Communication**
- **Spanning Space, Air, Cyber and Weapons**



SBIR/STTR

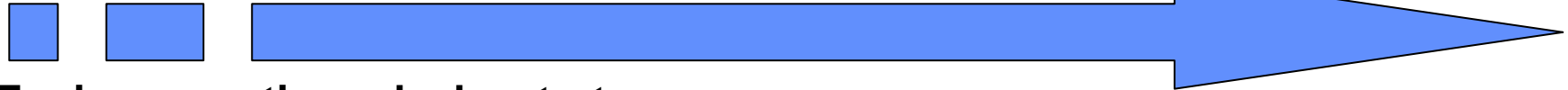


Infusing Small Business into the Acquisition Process

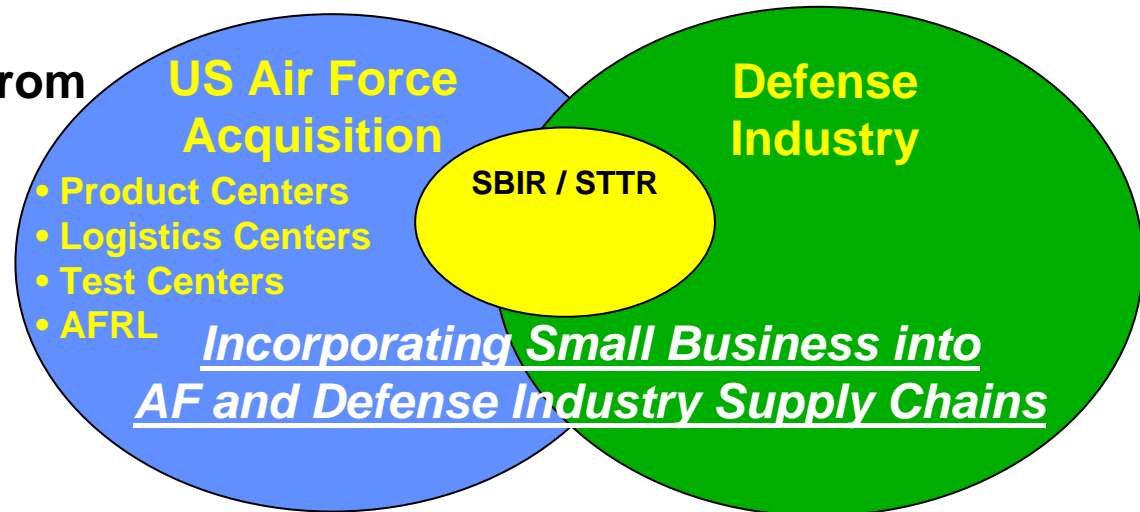
Past - 1990's

2008

Future



- Topic generation -- lacks strategy
- Commercialization -- prime / SB connection weak
- Cycle time long -- ~540 days from topic call to award



- Lean- out plan under way
- Developing commercialization pilot to facilitate phase 2 to phase 3 transitions to acquisition
- Topics focused around Acquisition Focused Long Term Challenges and Strategic Technologies



QUESTIONS?

Mr. Les McFawn
Executive Director

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www.afrl.af.mil