Air Platforms Science & Technology Sub Areas

The Air Platforms CoI serves as a standing forum within the DoD S&T Reliance 21 Program for developing consensus and identifying S&T issues related to air platforms, including fixed and rotary wing vehicles, high-speed/hypersonics systems, and aircraft propulsion, power and thermal management systems.

Fixed Wing Vehicle Challenge:
Get to the fight and support the fight

Restricted airspace and limited basing drive the need for significant increase in range and access for both tactical and mobility aircraft

Technology area goal:
Develop next generation vehicle technologies that significantly increase range and capability for the next generation aircraft systems

Technology Gaps:
- Efficient Propulsion Integration
- Revolutionary Configurations
- Lightweight Composite Structures
- Efficient Aerodynamics
- Weapons Integration

Rotary Wing Vehicle Challenge:
Over the next 40 years, the DoD will transform the Department-wide vertical lift fleet through the development and fielding of families of next generation, Joint, vertical lift aircraft that provide the advanced capabilities …..

A Strategic Plan for the United States Department of Defense Vertical Lift Aircraft, October 1, 2011

Technology area goal:
Develop vehicle concepts and technologies that significantly increase speed, range and lifting capability

Technology Gaps:
- Advanced Concept Studies & Design
- Lightweight, & Damage Tolerant Structures
- Advanced Flight Control Systems
- Improved Reliability and Durability
- Improved Mission Readiness

Aircraft Propulsion, Power, and Thermal Challenge:
Mission systems need more power, power is increasingly flight critical, and more power equals more heat; adaptive cycle engines provide great promise but require maturation

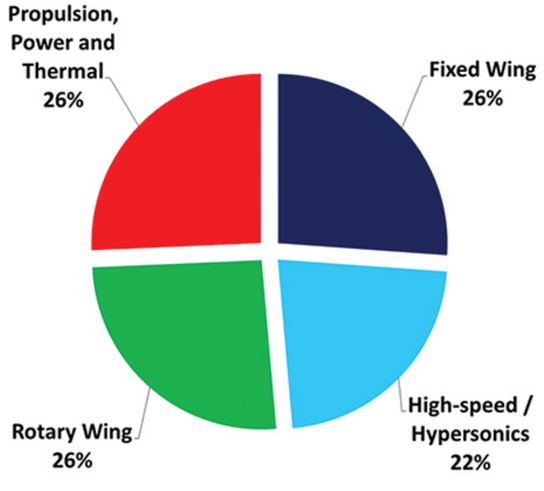
Technology area goal:
Develop efficient, intelligent, reliable, maintainable, affordable aircraft propulsion; and energy optimized power and thermal management systems

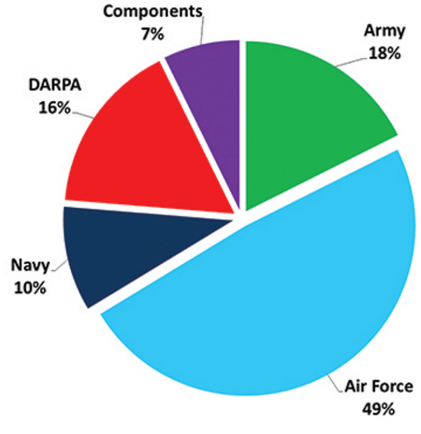
Technology Gaps:
- Variable cycle, adaptive core
- High temperature materials and electronics
- Advanced manufacturing
- - Hybrid/high power & thermal management
- - Safe, reliable energy storage

Hypersonic Challenge:
High-speed and hypersonic flight have the potential to provide the capability to strike time-critical targets at long distances, rapidly deliver sensor payloads at long distances to improve ISR, and nearly on-demand access to space through the development of reusable, highly responsive launch vehicles

Technology area goal:
Management of aerodynamic heating, designs to adapt for changing aerodynamics due to shape change effects, and maintaining combustion in supersonic flow in scramjet combustors

Technology Gaps
- Scramjet ignition and Cold-Start
- Advanced computational methods
- Aero-propulsion Integration
- Combined loads/structural lifing
- Shock/boundary layer interaction





PBR FY15 - $853M, 9% of DoD S&T

Figures based on President's FY15 Budget Request
* Includes hypersonic weapons-related S&T