



# Space S&T COI



## COI Purpose

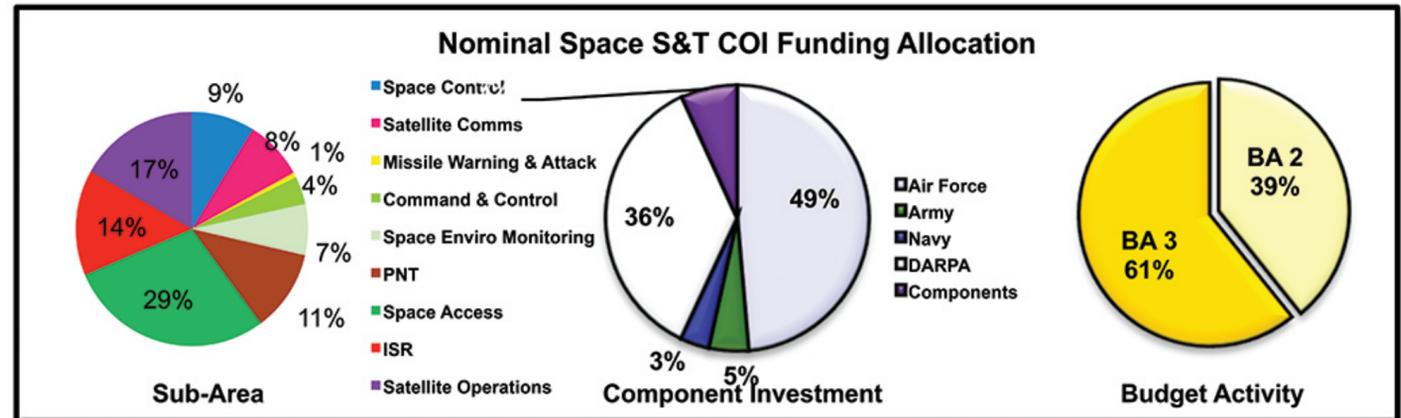
The Space S&T COI is a forum for sharing new ideas, technical directions and technology opportunities, jointly planning programs, measuring technical progress, and exchanging advances in space S&T

## Portfolio Focus

DoD S&T investments in space-unique technologies that are essential to maintain and advance existing U.S. conventional and asymmetric military advantages enabled by space systems at the strategic, operational, and tactical levels

## Steering Group

John Stubstad (ASD(R&E)); Tom Webber (USASMDC/ARSTRAT); Col David Goldstein (AFRL); TBD (USN)



### Satellite Communications

Provide seamless, end-to-end, space-based communications that are integrated and interoperable

#### Technical Challenges

- Reduce SWaP-C and improve thermal management
- Develop V/W band RF and laser comms

### Missile Warning, Missile Defense, and Attack Assessment

Provide timely and unambiguous detection of ballistic missile launches and nuclear detonations from space

#### Technical Challenges

- Improve sensors for whole-Earth staring
- Improve data fusion algorithms

### Positioning, Navigation and Timing

Generate and use signals to enable determination of precise location, movement and time

#### Technical Challenges

- Improve anti-jam capability
- Improve atomic clocks
- Enhance orbital navigation technology

### Intelligence Surveillance and Reconnaissance

Space-based systems for SSA and GEOINT& SIGINT; includes National Technical Means, Commercial/Foreign Family of Systems, and small, rapid-response opportunities

#### Technical Challenges

- Increase persistence of ISR
- Improve data compression
- Integrate space, air and ground based ISR

### Space Control and Space Situational Awareness

Provide freedom of action in space to ensure: resilience to threats, ability to perform in a degraded environment, and deny an adversary's use of space against our forces in conflict

#### Technical Challenges

- Improve space object detection and monitoring of potential threats

### Space Access

Provide delivery, maneuvering, and recovery of payloads to and from space in a responsive, reliable, flexible manner, ensuring assured access to space in peace, crisis, and through the spectrum of conflict

#### Technical Challenges

- Reduce cost and time cycle
- Higher performance on-orbit propulsion
- Enable fully reusable launch systems

### Space and Terrestrial Environmental Monitoring

Provide remote sensing and monitoring of the operational Space environment and Earth weathercasting

#### Technical Challenges

- Improve awareness of Earth/Sun environment
- Enable real-time threat warning due to weather
- Enable marine Meteorology and ocean conditions

### Command and Control; and Satellite Operations

Provide the ability to operate over space forces and resources to monitor, assess, plan, and execute space operations at all echelons of command

#### Technical Challenges

- Increase autonomy to reduce manning
- Space robotic capabilities for servicing/repair

### Space Enablers

Development of pervasive technologies that facilitates the technical ability to perform successfully in the Space Arena

#### Technical Challenges

- Standardized and miniature components and interfaces
- Carbon-based nanotechnology
- Ultra-high efficiency power systems

### Space Resilience

Provide the ability to support the functions necessary for mission success in spite of hostile action or adverse conditions

#### Technical Challenges

- On-board adaptive planning
- Local area imaging sensors
- Laser survivability