# DEPARTMENT OF THE AIR FORCE
## HEADQUARTERS AIR FORCE
### WASHINGTON DC

## Air Force Communications in The Future Operating Environment
## Abstract

The Air Force Scientific Advisory Board (SAB) study on Air Force Communications in The Future Operating Environment provides an understanding of vulnerabilities and benefits of communication architectures to maximize future operational mission success.

The study panel assessed gaps in the ability of the Department of the Air Force (DAF) to meet mission needs with current communications solutions, then evaluated and proposed solutions available from industry, academia, the DAF and Department of Defense (DoD) to close the gaps. It also explored potential strategies for adapting commercial best practices. Finally, the study provided a roadmap for near, mid and far-term science and technology efforts to guide DAF research and investments as well as organizational recommendations for development and fielding. The panel used evidence gathered from multiple briefing sources across the DoD, private industry and academia to develop several recommendations.

The SAB recommends the DAF:

- Identify and empower an organizational structure to ensure consistent, enterprise-wide network implementation.

- Work closely with Office of the Secretary of Defense (OSD), the Services and coalition partners to define a joint, interoperable, enterprise-wide network architecture that incorporates platform perspectives. This architecture should incorporate modular open system constructs and leverage currently available commercial technologies.

- Design and integrate a flexible, resilient, heterogeneous space network architecture as part of the DAF enterprise-wide architecture. Accelerate on-going efforts to develop and demonstrate space communications standards. Include modernized, digital high frequency systems as a low cost and rapidly deployable backup to satellite communications.

- Develop and operate a flexible, man-on-the-loop (e.g., automated or autonomous) federated, enterprise-wide, hierarchical network management & control capability. Focus research efforts on the rapid development and demonstration of needed technologies for this capability.

- Investigate and incorporate commercial technologies, processes, and resources and extend their functionality to meet DoD-unique needs. Use commercial microelectronics technology to rapidly develop low size weight and power System on Chip implementations of DoD-unique software-defined multi-waveform radios and network devices.