A Quick Look at *Air Force 2025*

The Chief of Staff of the United States Air Force, General Ronald R. Fogleman, tasked the Air University at Maxwell AFB, AL to look 30 years into the future to identify the concepts, capabilities and technologies the United States will require to remain the dominant air and space force in the 21st century.

The Air University commander led a team of students and faculty from the Air University's Air War College and Air Command and Staff College; scientists and technologists from the Air Force Institute of Technology, located at Wright-Patterson AFB, OH; Air Force Academy and AFROTC cadets from around the country; and selected academic and business leaders in the civilian community across the nation in the 10-month effort to meet General Fogleman's tasking.

The resulting study is called ***Air Force 2025*** or ***2025*** for short. The team's findings were briefed to General Fogleman in June 1996 and to the Secretary of the Air Force, Dr. Sheila Widnall, in July 1996. The ***2025*** study was subsequently published in a collection of "white papers" consisting of an executive summary and 41 individual papers, totaling more than 3,300 pages of text.

An artist's depiction of the Virtual Interaction Center of the Global Information Management System.

ALTERNATE FUTURES

Study participants used a forecasting technique known as "alternate futures" to help them envision an array of future worlds in which the U.S. must be able to survive and prosper in the year 2025. The ***2025*** team studied the works of respected futurists, then identified their own factors or "drivers" of change in the future. More than 100 individual drivers were considered. Ultimately the three drivers most relevant in terms of structuring the environment affecting U.S. security in the next century were chosen.

American World View. The U.S. perspective of the world which determines its willingness and capability to interact with the rest of the world, and ranges from domestic to global.

Δ TeK. The differential rate of growth, proliferation, leverage, and vitality of scientific knowledge and technical applications and their consequences. This driver ranges from constrained to exponential. When "constrained," evolutionary changes are occurring and it is possible for nations or groups to preserve technological monopolies and advantages. When change is "exponential," revolutionary technological changes are possible and nations or groups are unable to preserve technological leverage, monopolies and advantages.

World Power Grid. The generation (sources -- social, political, economic, military, etc.), transmission (directions, resistance, speed), distribution (number and types of actors) and control (influence, leverage) of power throughout the world. This driver ranges from concentrated to dispersed. The world power grid is "concentrated" when a few actors have the means or will to influence others and "dispersed" when many actors can effectively influence world events.

The ***2025*** team used the creative but disciplined alternate futures procedure to describe various plausible future worlds, each separate and distinct, and each offering different security and planning challenges. In the first world, the U.S.'s military might is constrained by many world players with other forms of power. A second world depicts the extreme impacts of a future dominated by multinational corporate giants. A third world is a scary future in which information and biogenetic technology is dispersed, giving individuals and small groups untold power. In a fourth world, the U.S. loses its status as a superpower to an Asian colossus. A fifth future envisions a world marked by fundamental changes in the social structure, environment, and the international security system, making it difficult for the United States to determine how best to exert its power and influence. The final world depicts how a major conflict in 2015 could shape events in 2025.

CONCEPT GENERATION

The ***2025*** team sought ideas worldwide via the internet about future military capabilities. The group synthesized the best ideas into white papers focusing on specific military tasks. Using the six alternate futures as a backdrop, the team then evaluated these concepts to determine which of the 25 emerging technologies and 40 separate systems envisioned by the ***2025*** team had the most merit. Each of these capabilities and technologies was evaluated in the context of categories airmen are familiar with today -- awareness, reach, and power -- to draw conclusions about their usefulness to airmen in the world envisioned in 2025. The ten capabilities and six high-leverage technologies listed below emerged from this analysis as the best investments to ensure the United States' continued air and space dominance in the future.

TOP SYSTEMS

- Global Information Management System
- Sanctuary Base
- Global Surveillance, Reconnaissance, Target System
- Global Area Strike System
- Uninhabited Combat Air Vehicle
- Space High Energy Laser
- Solar High Energy Laser
- Reconnaissance Unmanned Air Vehicle
- Attack Microbots
- Piloted Single Stage Space Plane

A montage depicting some of the technologies and systems envisoned in the 2025 study.

HIGH LEVERAGE TECHNOLOGIES

- Data Fusion
- Power Systems
- Micromechanical Devices
- Advanced Materials
- High Energy Propellants
- High Performance Computing

TRENDS

The ***2025*** study also highlighted five trends, listed below:

- **Humans** will move from being more "in the cockpit" to being more "in the loop."
- The **medium** for air force operations will move from the air and space toward space and air.
- **Development** responsibilities for critical technologies and capabilities will move from government toward industry.
- **Influence** will increasingly be exerted by information more than bombs.
- **Military education** will move from being rigid to responsive.

CONCLUSIONS

Preparing now for the military challenges of the 21st century is central to our national security. The keys to preserving the military security of the United States are the integration of information technologies with air and space capabilities, and the connectivity for distributed, demand-driven systems. Having these capabilities produces what the ***2025*** team termed ***"Vigilant Edge."*** Investments in technologies which enhance vigilance, decision making capabilities and communication architectures will help ensure a future, full-service Air Force capable of providing a true ***"Vigilant Edge"*** for America.

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