Abstract

Today's air transportation system is an integral part of the U.S. and global economies. It is the primary mechanism for connecting countries across the world through mobility of populations and mobility of goods and services.

Aviation accounts for more than $1.5 trillion annually of total US economic activity and is one of the few industries that generates a positive trade balance; $75.1 billion in 2013, alone. The aviation industry supports more than 11.8 million direct and indirect jobs, including more than one million high-quality manufacturing jobs.

The overarching impacts of aviation and the air transportation system can be felt right down to the individual; just about every product produced and purchased today has been touched by aviation in some way. Air transportation of freight, valued at more than $1.6 trillion, occurs every year. U.S. airlines carried more than 741 million passengers in 2013 for both domestic and international flights. Air travelers spend more than $670.8 billion per year for business and personal travel. In short, the U.S. aviation industry is critical to both the health of the economy and the functioning of our global society.

NASA aeronautics developed a strategic vision in 2014 to continue its tradition of technical excellence in the 21st century. The strategic vision identifies six research thrusts:

- Thrust 1: Safe, efficient growth in global operations;
- Thrust 2: Innovation in commercial supersonic aircraft;
- Thrust 3: Ultra-efficient commercial vehicles;
- Thrust 4: Transition to low-carbon propulsion;
- Thrust 5: Real-time, system-wide safety assurance; and
- Thrust 6: Assured autonomy for aviation transformation

NASA designed each strategic thrust to address an important area of research and technology development that will further U.S. leadership in the aviation industry and enhance safe, sustainable global mobility.

Bio

Dr. Jaewon Shin is the associate administrator for the Aeronautics Research Mission Directorate (ARMD), a position which he has held since 2008. Shin manages the agency's aeronautics research portfolio and guides its strategic direction, including research in advanced air vehicle concepts, airspace operations and safety, integrated aviation systems, and the nurturing and development of transformative concepts for aviation.

He is the current chair of the International Forum for Aviation Research, the world's only aviation research establishment network, with 26 member countries that seeks to connect research organizations and enable information exchange on aviation challenges of common interest.

His honors include the 2008 Presidential Rank Award for Meritorious Senior Executive, NASA's Outstanding Leadership Medal, NASA's Exceptional Service Medal, a NASA Group Achievement Award, Lewis Superior Accomplishment Award, three Lewis Group Achievement Awards, and an Air Force Team Award. He has extensive experience in high speed research and aircraft icing, and has authored or co-authored more than 20 technical and journal papers.