NASA SBIR 2010 Phase I Solicitation

A4.02 Flight Test Techniques and Measurement Technology

Lead Center: AFRC

Participating Center(s): ARC, GRC

NASA’s aeronautical flight test capabilities are reliant on a combination of both ground and flight research facilities. By using state-of-the-art test techniques, measurement technologies, and data acquisition systems to enhance and modernize these test facilities, NASA will be able to meet the needs of cutting-edge flight research and development programs for the nation.

Proposals submitted to this subtopic should address innovative methods and advanced technologies that would improve the health and test capabilities of NASA’s ground and flight facilities. Flight regimes of interest range from atmospheric low-speed, to high-altitude long-endurance to supersonic, to hypersonic and access-to-space. Ground support facilities include: the Western Aeronautical Test Range (WATR), Flight Loads Laboratory (FLL), and laboratories that conduct simulation and verification & validation (V&V) of flight systems including hardware-in-the-loop testing. Flight facilities include both piloted and unmanned test aircraft with various ranges of flight performance and capable of operating over a broad span of flight regimes.

NASA is committed to improve the ATP facility effectiveness to support and conduct flight research. This includes developing test techniques that improve the control of both ground-based and in-flight test conditions, expanding measurement and analysis methodologies, and improving test data acquisition and management with sensors and systems that have fast response, low volume, minimal intrusion, and high accuracy and reliability.

NASA requires improved measurement and analysis techniques for acquisition of real-time, in-flight data used to determine aerodynamic, structural, flight control, and propulsion system performance characteristics. These data will also be used to provide test conductors the information to safely expand the flight and test envelopes of aerospace vehicles and components. This requirement includes the development of sensors to enhance the monitoring of test aircraft safety and atmospheric conditions during flight testing.

Also of interest to NASA are innovative methods and analysis techniques to improve the correlation of data from ground test to flight test.