



## NASA SBIR 2015 Phase I Solicitation

### A1.04 Quiet Performance

Lead Center: LaRC

Participating Center(s): GRC

Innovative technologies and methods are necessary for the design and development of efficient, environmentally acceptable aircraft. In support of the Advanced Air Vehicles, Integrated Aviation Systems and Transformative Aero Concepts Programs, improvements in noise prediction, acoustic and relevant flow field measurement methods, noise propagation and noise control are needed for subsonic, transonic and supersonic vehicles targeted specifically at airframe noise sources and the noise sources due to the aerodynamic and acoustic interaction of airframe and engines. Innovations in the following specific areas are solicited:

- Fundamental and applied computational fluid dynamics techniques for aeroacoustic analysis, which can be adapted for design purposes.
- Prediction of aerodynamic noise sources including those from the airframe and those that arise from significant interactions between airframe and propulsion systems including those relating to sonic boom.
- Prediction of sound propagation from the aircraft through a complex atmosphere to the ground. This should include interaction between noise sources and the airframe and its flow field.
- Propagation of sonic boom through realistic atmospheres, especially turbulence effects.
- Innovative source identification techniques for airframe (e.g., landing gear, high lift systems) noise sources, including turbulence details related to flow-induced noise typical of separated flow regions, vortices, shear layers, etc.
- Concepts for active and passive control of aeroacoustic noise sources for conventional and advanced aircraft configurations, including adaptive flow control technologies, and noise control technology and methods that are enabled by advanced aircraft configurations, including integrated airframe-propulsion control methodologies. Innovative acoustic liner and porous surface concepts for the reduction of airframe noise sources and/or propulsion/airframe interaction are solicited but engine nacelle liner applications are specifically excluded.
- Development of synthesis and auditory display technologies for subjective assessments of aircraft community noise, including sonic boom.