

Noise Power Distance Re-evaluation

Project 43

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Georgia Institute of Technology

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Noise Power Distance Re-Evaluation



Georgia Institute of Technology

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PM: Joe DiPardo

Cost Share Partner: Industry in-kind

Objective:

- Construct an NPD correction function for implementation in AEDT to account for changes in source noise due to flight configuration, speed from the baseline conditions
- Validation against available measurement data
- Provide a detailed plan for implementing the developed approach in AEDT

Project Benefits:

- Improved noise predictions due to changes in configuration and speed in AEDT further away from the airport
- Enhance the accuracy of AEDT through improved aircraft source noise prediction and modeling

Research Approach:

- ANOPP is used to capture configuration-related noise results for range of engine parameters across different aircraft classes
- Regression equations are trained to calculate difference between baseline NPD and specific aircraft configuration NPD
- Correction function is implemented with FOQA data in AEDT and validated against real-world noise monitor data

Major Accomplishments (to date):

- Designed correction functions for 50, 150, 210, and 300pax aircraft classes
- Created a process to validate 150pax correction function against real-world noise monitor data at SFO
- Engaged industry partner to validate correction function approach for high-fidelity NPD data for a 150 pax aircraft; received data for a currently operating 150 pax aircraft
- Developed initial draft of AEDT implementation plan

Future Work / Schedule:

- AEDT corrected NPDs will be compared against high-fidelity data from industry partner to ensure accuracy
- Provide more detailed implementation plan for AEDT to developers and refine based on feedback for all classes

Interfaces and Communications



- External
 - Weekly telecon with the AEDT development team
 - On-line communication via Team Foundation Server (TFS)
- Within ASCENT
 - Bi-weekly telecon with the FAA management
 - P54 (Takeoff/Climb Analysis), P60, P10
- Contributors
 - Georgia Tech Team: Prof. Dimitri Mavris (PI), Dr. Michelle R. Kirby, Dr. Dushhyanth “DR” Rajaram, Mr. Ameya Behere
 - Graduate Students:
 - FAA-AEE: Joseph DiPardo, Mohammed Majeed
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