

Analytical Methods for Expanding the AEDT Aircraft Fleet Database

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Cost Share Partner: Georgia Institute of Technology

Research Approach:

- Construct a superset database via the blending of existing robust public and proprietary aircraft datasets to collect config. and performance data for all AEDT aircraft. Working title of superset: "ANP_extension_DB"
- Formulate a statistical learning method – Mixture Models to develop ANP and noise data for a down selected list of representative aircraft types.
- Utilize high fidelity data to validate the developed methods on the representative aircraft types.
- Expand and validate approach for generalized aircraft fleets (commercial/GA/military airlift, etc.)

Objective:

Improve the accuracy of AEDT noise and emissions modeling for aircraft/engine combinations currently required to use "closest match" substitutions of aircraft/engine combinations fully supported by OEM data; i.e. Aircraft Noise and Performance (ANP) data.

Project Benefits:

Improvement of the noise and emissions modeling for the aircraft/engine combinations currently using "closest match" data by developing ANP data unique to those configurations. Overall improvement to AEDT's representation of the current operational conditions and fleet usage is anticipated.

Major Accomplishments (to date):

- Extensive literature review and inventory of available date sets. Access to Cirium is pending. Superset database formatting nearing completion.
- Proposed representative aircraft model portfolio and mixture model to develop ANP data for the aircraft

Future Work / Schedule:

- Investigate new methods or improve the proposed analytical methods
- Validate the developed methods against high fidelity data and develop ANP and noise data to expand the current FLEET database

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), P43 (NPD+C), P10
- Contributors
 - Georgia Tech Team: Prof. Dimitri Mavris (PI), Dr. Michelle R. Kirby, Mr. David Anvid, Dr. Dushhyanth “DR” Rajaram, Mr. Ameya Behere
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