UAM Noise Working Group Meeting
Subgroup 2: Ground & Flight Testing

15 April 2021
Virtual Meeting

Group Leads:
Devin Boyle (NASA, GRC), Juliet Page (Volpe, US DOT), Kyle Pascioni (NASA, LaRC)

SG2 Activities

- Co-Leadership:
  - Devin Boyle (NASA, GRC)
  - Juliet Page (Volpe, US DOT)
  - Kyle Pascioni (NASA, LaRC)
- Monthly Team meetings:
  - Third Thursday of the month, 12-1pm ET
  - Appx. 20-30 in attendance at meetings
  - Appx. 45 on distribution
- Actively developing a working document identifying measurement guidelines
- File sharing of documents via OneDrive
  - Eric Greenwood (PSU) provided a collection of empirical noise model literature
  - PSU is hosting the shared drive

We have an active subgroup!

- The following topics were briefed:
  - Anthony Martinez, Rory Nicholls, University of Salford (UK) – Data exchange / measurements for human response testing
  - David Read (Volpe) – Unconventional Aircraft Measurements - Chocktaw Nation
- Upcoming Discussions *(@Breakout)*:
  - Robert Downs (Volpe) – Measurement Data analysis using FFP vs. DSP

Goal: Ground & Flight Testing Subgroup Goal

Develop a research measurement standard or set of guidelines which can be used to adequately quantify community noise impact

Approach: *Define measurements suitable for the creation of acoustic spheres*

- Ensure sufficient data gathered to support quantifying community noise impacts
- Activities coupled with all the other SGs: Tools/Technologies, Metrics, Regulation & Policy

- Taking steps toward a standard or set of guidelines
  - Define a prioritized list of all possible measurements that would fully define the acoustic environment for the community – potentially perform an extensive test (possibly multiple tests)
  - Define a subset of measurements and requirements for a standard – this will likely require analysis (from multiple groups) of the data from an extensive measurement campaign
  - Starting small and developing group input on specifying best practices/requirements

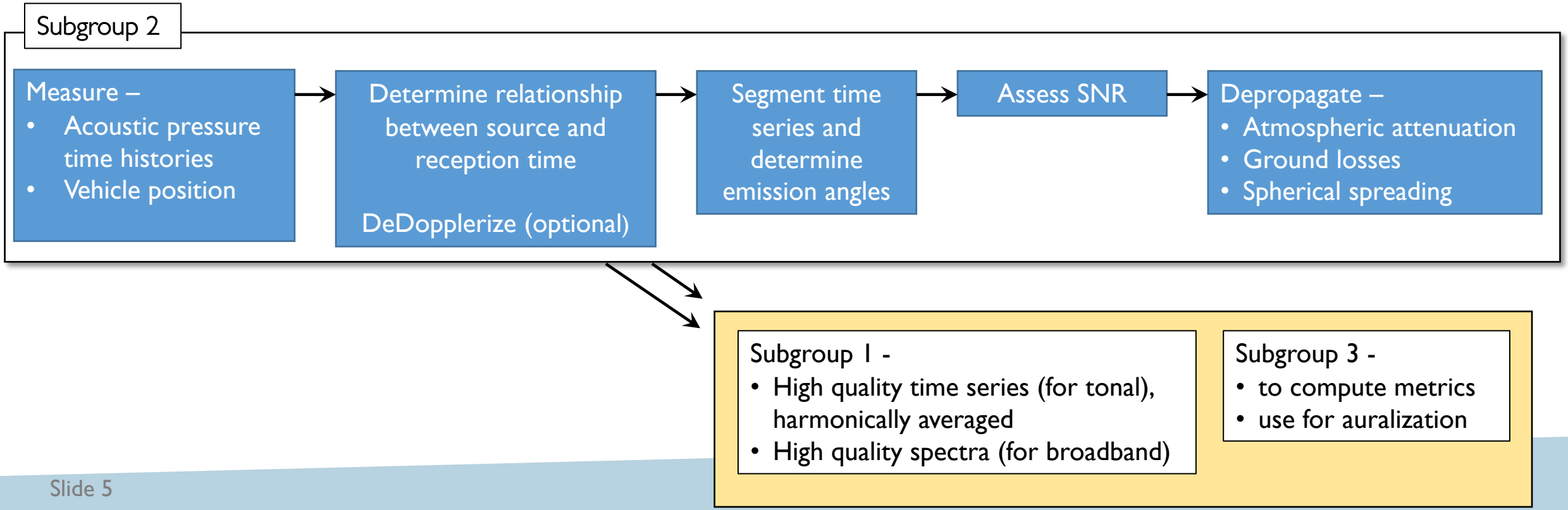
SG2 Discussion Topics

Review current research, existing standards, certification procedures and guidelines. Discuss interrelated items and develop SG consensus on testing topics, including confidence level needs.

- Environment:
  - Temperature Profiles
  - Wind Profiles
  - Humidity
  - Ground Impedance
  - Terrain / Obstructions
  - Background Noise
- Time Synchronization:
  - Acoustics & Flight Vehicle
- Signal Acquisition and Processing:
  - Frequency Range
  - Dynamic Range
  - Spectral Resolution
- Acoustic Measurements:
  - Microphone Orientation
  - Ground Board Material / Geometry
  - Microphone Location / Array Layout

Empirical Data Processing

- Connection with other Subgroups
- Process ground-based acoustic measurements of steady flight conditions to provide input to Subgroups 1 and 3



Ground and Flight Testing SG Data Status and Requests

- Datasets with sharing *potential* for advancing procedure development via analysis:
  - FAA UAS National Airspace Integration Pilot Program – Measurements of Unconventional Aircraft - Chocktaw Nation of Oklahoma, Daisy Ranch
    - 4 UAVs: three multicopters (5-45 lbs) and one fixed-wing vehicle (span ~7 ft)
  - PSU/FAA multirotor UAS, Beta Technologies vehicle (to be acquired soon)
  - NASA/FAA civil helicopter data (limited set of R44 flyovers)
- Request to the UAM community:
  - Vehicles for acoustic measurements
    - Would provide crucial data!
    - Would provide you with quality acoustic measurements and a better understanding of potential community impact
- Request to other UNWG subgroups:
  - Input from tools group on what outcomes from measurements may be useful
  - Input from metrics group on any specific attributes of importance

Ground & Flight Testing Subgroup Info

- Please reach out to Leadership to join our Group
  - Devin Boyle devin.k.boyle@nasa.gov
  - Juliet Page juliet.page@dot.gov
  - Kyle Pascioni kyle.a.pascioni@nasa.gov
- We have several interesting topics for the SG2 Breakout Session
  - Robert Downs (Volpe) – Measurement Data analysis using FFP vs. DSP
  - Natasha Schatzman (NASA Ames) – Wind tunnel (40x80) measurement methods