



IMPLEMENTATION IMPLICATIONS FOR URBAN AIR MOBILITY/UNMANNED AERIAL SYSTEMS



10:30 AM – 12:00 PM

MODERATOR:

GENE REINDEL, VICE PRESIDENT, HMMH

SPEAKERS:

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NASA and UAM



- ➔ NASA is a forward-thinking organization:
 - “Aeronautical research [and technology development] aimed at the next 25 years and beyond.”
- ➔ Efforts in the emerging UAM space have begun across the agency, but not under a single heading or project.



NASA and UAM

→ Generally, work toward overcoming the barriers of UAM may be aligned in several different directions:

- Vehicle Development & Production
- Individual Vehicle Management & Operations
- Airspace System Design & Implementation
- Airspace & Fleet Operations Management
- **Community Integration**



NASA, Noise and UAM:

➔ Acoustics researchers/facilities across NASA are gearing up for the effort on UAM:

- Recording and field testing
- Prediction and modelling
- Optimization of operations (with ATM researchers)
- Interior noise and vibration
- **Psychoacoustics and annoyance**



ACI-NA/AAAE Airport
Noise Conference

NASA, Noise, UAM and Me: Psychoacoustics and Auralization

- I am involved with formulating and executing psychoacoustic tests.
 - Annoyance:
 - Drones/Electric aircraft
 - Helicopters
 - Conventional/future fixed-wing
 - Detection/Noticeability
- I also help in efforts to ‘auralize’ the sounds of future vehicles.
- These techniques will surely be applied to UAM.





UAM and Noise: Where We Are Going

→ What NASA doesn't know:

- What these vehicles actually sound like...
- This is not necessarily bad. OEMs use NASA knowledge in their designs.

→ What NASA does know:

- We have a lot of knowledge from similar vehicles and past tests. For example:
- Differences between sUAS and cars
- Rotor design for low noise



UAM and Noise: Where We Stand

- A comprehensive (and rather technical) white paper on the path forward for UAM noise research will be out soon.
- The NASA-centric UAM Noise Working Group has been meeting for 2 years now.
 - Other academic societies are ramping up for UAM as well.
- A series of 3-year “Grand Challenges” will soon start in order to encourage cooperation between NASA and industry.
 - The first is meant to culminate with a full field demonstration [of UAM] in an urban environment ca. 2022.