



m:N WORKING GROUP

SPRING MEETING SUMMARY

MAY 2023



XPONENTIAL™

Co-hosted by:



m:N WORKING GROUP

A central goal of this working group is to bring together a broad collective of interested stakeholders from government, industry, and academia to identify and reduce barriers to m:N operations, an operational configuration that envisions a ratio of multiple operators (m) controlling multiple vehicles (N) between them. Barriers addressed by this working group are considered across a variety of multi-vehicle control contexts (e.g., Urban/Advanced Air Mobility, drone delivery, infrastructure inspection, disaster response and recovery, and high-altitude pseudo-satellite operations) and form the bases for future research to confront operational, technical, and regulatory gaps.

EXECUTIVE SUMMARY

On May 9th and 11th, 2023, the NASA-led Multi-Vehicle (m:N) Working Group and its subgroups [small Unmanned Aircraft Systems (sUAS), Large UAS, High Altitude Pseudo Satellite (HAPS), and Urban Air Mobility (UAM)] met in Denver, CO at XPONENTIAL 2023, co-hosted by the Association for Uncrewed Vehicle Systems International (AUVSI) and Messe Düsseldorf North America (MDNA), for an in-person meeting.

The subgroups meet multiple times throughout the year, virtually. Twice a year, however, participants from all the subgroups come together to brief each other on progress, challenges, and path forward ideas for incorporating UAS into the airspace.

The m:N working group is co-chaired by Jay Shively (Adaptive Aerospace) and Andy Thurling (Thurling Aero Consulting) and is comprised of members from government, industry, and academia in an effort to identify and reduce barriers to m:N operations. This effort also includes identifying requirements, use cases, and metrics to support organizations and groups,

including the FAA and RTCA's SC-228 Detect and Avoid.

sUAS Subgroup

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Large UAS Subgroup

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HAPS Subgroup

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UAM Subgroup

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CHALLENGE STATEMENT

How do we properly integrate UAS into the airspace knowing that we have such a variety of platforms, use cases, and potential operator types?

The topic of this year's spring meeting led to discussions on defining changing roles and terminology, interactions, and constraints associated with airspace operations or Air Traffic Management (including ATC), human responsibility vs. system responsibility, and the impact on safety, as well as how to determine operational safety. The subgroups also discussed requirements as they applied to all the subgroups, as well as which requirements might be specific to a particular subgroup.

At the culmination of the two-day meeting, each subgroup briefed the larger m:N Working Group on the status of the questions, path forward ideas, and what the meeting cadence was going to be of each subgroup moving forward.