

Urban Air Mobility Implications for Intelligent Transportation Systems

IETF 104 – ipwave Working Group

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Urban Air Mobility

- Urban Air Mobility concerns the introduction of manned and unmanned aircraft within urban environments
- NASA has initiated an “Urban Air Mobility Grand Challenge” and seeks industry participation: <https://www.nasa.gov/uamgc>
- We anticipate future introduction of low-altitude aircraft within urban environments operating in harmony with ground transportation

Autonomy and Communications

- As for Intelligent Transportation Systems, the key enablers for Urban Air Mobility are Autonomy and Communications
- Fine balance between advancement of autonomy and public safety and acceptance - industry and regulators must work together
- Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communications become more important as Personal Air Vehicles and Unmanned Air Systems enter the urban landscape
- The urban mobility landscape will evolve from a 2D to a 3D coordinated environment with safety as the first priority

Common Situation Awareness

- Personal air vehicles will employ vertical takeoff and landing (VTOL) and operate at low altitudes
- De-conflicting both terrestrial and airborne congestion becomes a 3D consideration
- Urban air vehicles should employ V2V / V2I communications using wireless networking gear such as DSRC, C-V2X, etc.

Emphasis on Safety

- Public safety and confidence are the first priority
- Autonomy in the urban environment is a certainty - but how we get there safely is the challenge for industry and regulators
- Plan now for the future urban mobility landscape:
 - Scaling in terms of numbers of vehicles in three dimensions
 - Scaling in terms of communications, navigation and surveillance capabilities
 - Safe separations and situation awareness for all autonomous vehicle classes