



## TECHNOLOGY SOLUTION

**Aerospace**

# Vertiport Assessment and Mobility Operations System (VAMOS!)

## Advanced Air Mobility (AAM) Infrastructure Planning System

It is widely believed that Advanced Air Mobility (AAM) is poised to have a significant societal impact in the coming years to move people and cargo more rapidly and efficiently. The main goals of AAM vehicles are to reduce emissions, to increase connectivity and speed, while helping to reduce traffic congestion. These vehicles can take off and land vertically in designated urban locations called vertiports. The widespread adoption of AAM concept will necessitate vertiports to be located throughout a geographical region. There is a need to systematically evaluate and quantify which locations are better suited for vertiports and how these vertiports will work together in a network. NASA Ames Research Center has designed a novel technology called VAMOS! that evaluates a variety of factors, e.g., intermodal centers, environmental impact, zoning/land use, to determine the most suitable locations for vertiports in a desired city/region.

### BENEFITS

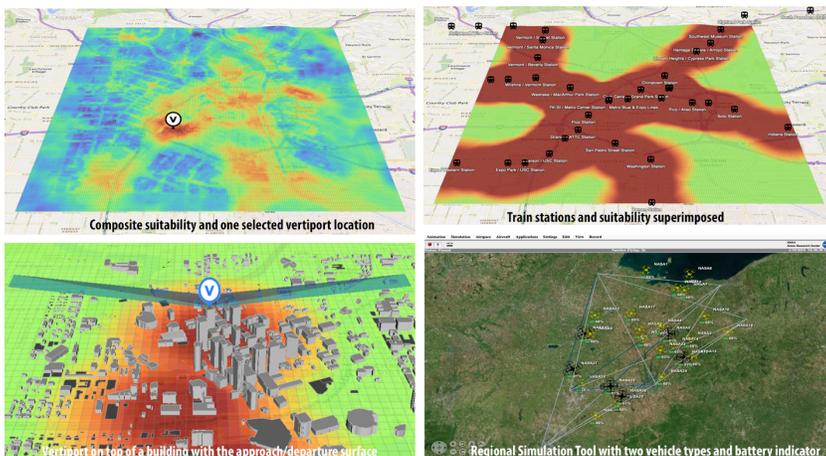
- Vertiports are a necessary part of Advanced Air Mobility as an emerging industry
- The technology enables customization of assessment factors for the local cities and communities
- Delivers a simple and optimized interface for city planners and communities to use
- Provides graphical location suggestions for vertiport selection, risk assessment, economic analysis, etc.
- Allows frequency and density impact assessment
- Offers flight route structure design (for avoidance of weather, noise, risk management, etc.)
- Open architecture



## THE TECHNOLOGY

The term Advanced Air Mobility (AAM) refers to a new mode of transportation utilizing highly automated airborne vehicles for transporting goods and/or people. The adoption of widespread use of AAM vehicles will necessitate a network of vertiports located throughout a geographical region. A vertiport refers to a physical structure for the departure, arrival, and parking/storage of AAM vehicles. NASA-developed Vertiport Assessment and Mobility Operations System (VAMOS!) enables identifying geographical locations suitable for locating a vertiport or assessing suitability of pre-selected locations. For example, suitability evaluation factors include zoning, land use, transit stations, fire stations, noise, and time-varying factors like congestion and demand.

The vertiport assessment system assigns suitability values to these factors based on user-input, and types, including location-based (e.g., proximity to mass transit stations), level-based (e.g., noise levels), characteristic-based (e.g., residential zoning), and time-based (e.g., demand). Based on user input, the system spreads a grid over the geographical area, specifies importance criteria and weights for scaling the impact of the suitability factors, and identifies specific sub-regions as candidate locations. The candidate sub-regions are shown on a user interface map overlay in a color-coded gradient that reflects the suitability strength for a sub-region. Vertiport locations are selected within these sub-regions. These candidate vertiport locations are refined by establishing feasibility of flight between them. VAMOS! includes a modeling component and a simulation component. The modeling component assists a user to identify one or more geographical locations at which a vertiport may be physically built. The simulation component of the technology displays, in real-time, the simulated operational behavior of AAM vehicles and in the context of their projected flight paths combined with data dynamically obtained from live sources. These data sources can be from the Federal Aviation Administration (FAA) or other private or public governing bodies, from one or more AAM vehicles in flight, and from weather sources.



## APPLICATIONS

The technology has several potential applications:

- Advanced Air Mobility (AAM) industry
- City planners/Departments of Transportation
- Vertiport developers
- Electric Vertical Take Off and Landing (eVTOL) vehicle manufacturers and designers
- Research institutions for research on:
  - Noise modeling
  - Surface mobility data
  - Ground congestion information
  - Vehicle flight route structure
  - Battery health assessment

## PUBLICATIONS

Patent Pending

[technology.nasa.gov](https://technology.nasa.gov)

More Information

National Aeronautics and Space Administration

**Agency Licensing Concierge**

**Ames Research Center**

MS 202A-3

Moffett Field, CA 94035

202-358-7432

Agency-Patent-Licensing@mail.nasa.gov

**www.nasa.gov**

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