

CHALLENGES IN SOCIAL IMPLEMENTATION OF AAM

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Accident at the Pan Am Building

May 16, 1977 | 5 Killed in Helicopter Accident on Top of Pan Am Building

BY THE LEARNING NETWORK MAY 16, 2012 4:02 AM

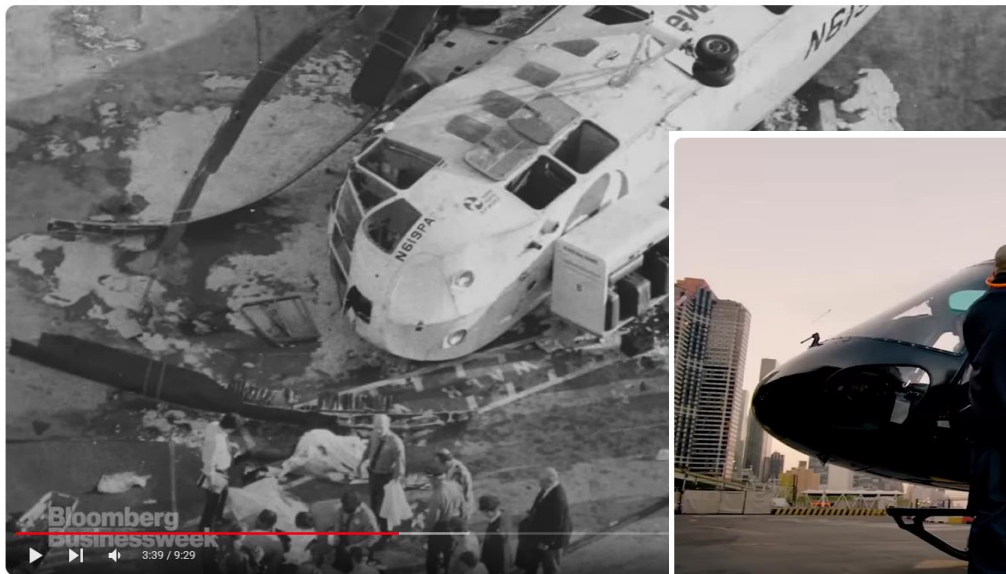


Neal Boenzi/The New York Times The wreckage of the helicopter on the Pan Am Building helipad, which left five people dead on May 16, 1977.

<https://archive.nytimes.com/learning.blogs.nytimes.com/2012/05/16/may-16-1977-helicopter-accident-on-top-of-pan-am-building-kills-five/>



The Death and Life of Helicopt



The Death and Life of Helicopter Commuting in NYC

Bloomberg Originals
チャンネル登録者数 362万人

メンバーになる

チャンネル登録

2.1万



The Death and Life of Helicopter Commuting in NYC

<https://www.youtube.com/watch?v=8nbz5VFilxY>

NYC plans to transform downtown Manhattan Heliport into a sustainable transport hub for local deliveries

- November 13, 2023
- NYC Mayor “Our vision will create the world’s first heliport with infrastructure for electric-powered aircraft and put this public asset to work for New Yorkers as a hub for sustainable transportation and local deliveries.”

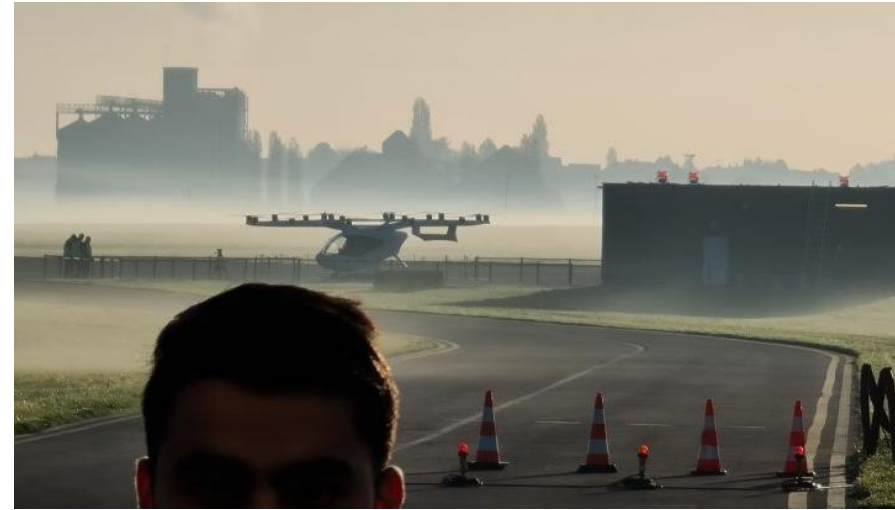
<https://www.ourtownny.com/news/city-plans-to-transform-downtown-manhattan-heliport-into-electric-transport-hub-MB2883952>

<https://www.nyc.gov/office-of-the-mayor/news/861-23/mayor-adams-nycedc-move-transform-downtown-manhattan-heliport-first-of-its-kind-hub-for#/0>



Paris: Strong opposition to the launch of passenger eVTOL services

- November 17, 2023
- French media reports that plans to launch Volocopter air taxi services in time for the Olympic Games next year in Paris have met with almost unanimous opposition from the city's local authorities.
- Deputy Mayor of Paris: “A totally useless and hyper-polluting gadget for a few ultra-privileged people in a hurry”



<https://www.urbanairmobilitynews.com/air-taxis/paris-local-authorities-raise-strenuous-objections-to-launch-of-evtol-passengers-services-in-2024/>

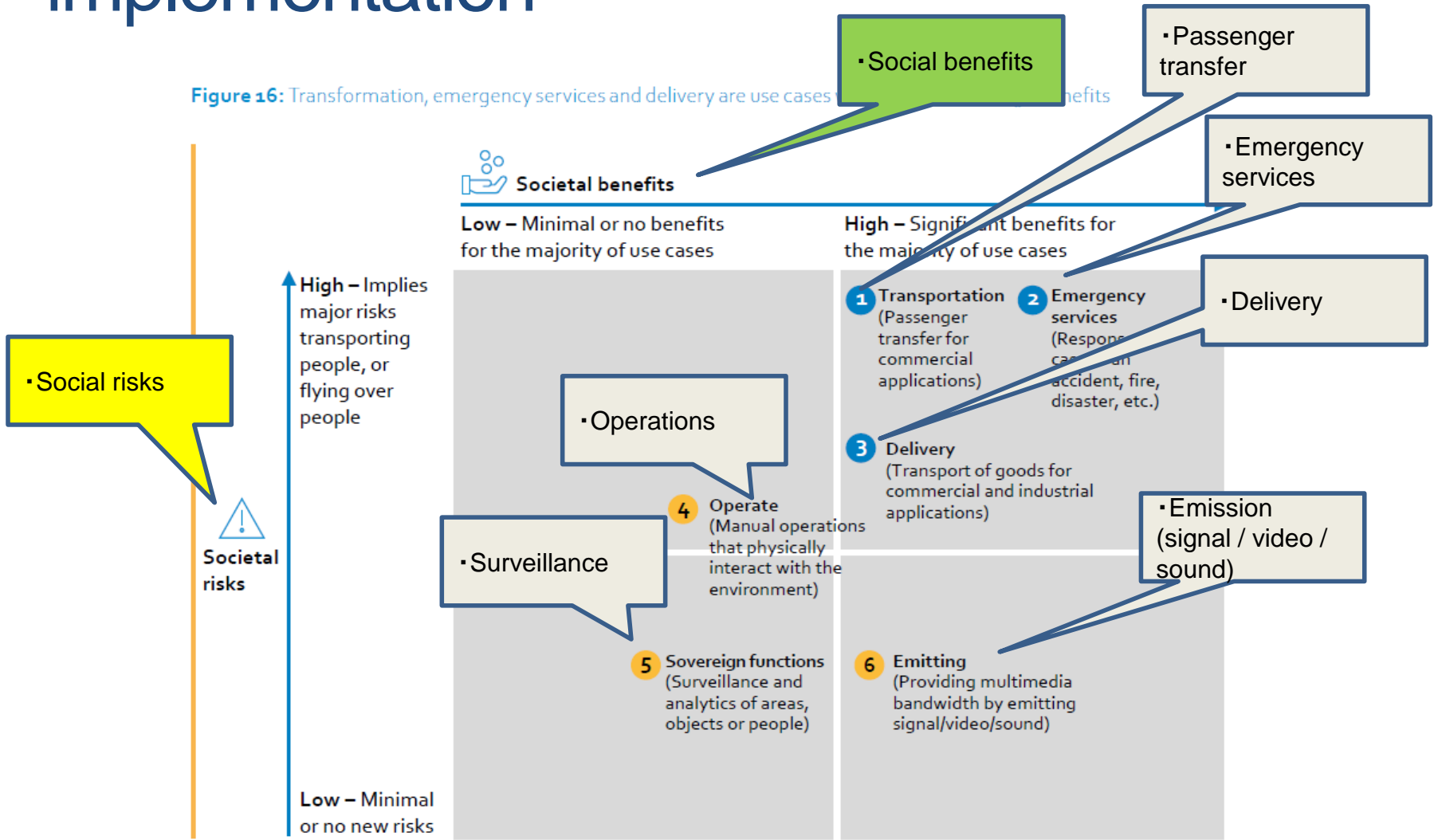
EASA Study on the Social Acceptance of UAM

- EASA:STUDY ON THE SOCIETAL ACCEPTANCE OF URBAN AIR MOBILITY IN EUROPE (5.19.2021)
- A quantitative survey, with the participation of 3,690 citizens across six European cities, through a web-based questionnaire + A qualitative survey, consisting of interviews with more than 40 stakeholders at local, national and European level + A special noise perception survey with 20 participants
- Main findings
 - EU citizens see UAM as a new and attractive means of mobility.
 - Use cases for the benefit of the community, such as medical or emergency transport or those connecting remote areas, are better supported than use cases satisfying individual / private needs.
 - The main benefits expected from UAM are faster, cleaner and extended connectivity.
 - EU citizens are particularly concerned safety, noise, security and environmental impact.
 - Safety concerns come first, but the study also shows that citizens seem to trust the current aviation safety levels and would be reassured if these levels were applied to UAM.

- Main findings (continued)
 - Noise is the second main concern expressed; the study indicates that the level of annoyance varies with the familiarity of the sound, and confirms that the distance, duration and repetition of the sound impacts its acceptance.
 - UAM is seen as a good option to improve the local environmental footprint, through reduced urban traffic congestion and better local air quality; but at the same time citizens are concerned about UAM's impact on wildlife.
 - There is a limited trust in the security and cyber security of UAM.
 - The introduction of UAM must respect residents' quality of life and the cultural heritage of old European cities.

Social benefits and risks of UAM implementation

Figure 16: Transformation, emergency services and delivery are use cases



AAM's economic impact

- <https://www.pwc.co.uk/intelligent-digital/drones/uk-economic-aam-report-2023.pdf>
- PWC UK's report scaled viable use cases, i.e. urban private hire, rural private transport, rural rideshare, sub-regional shuttle replacing trains, cargo deliveries and air ambulance, to give an economic impact out to 2040 (in consideration of time, accident rates, CO2 emission and fare values).
- The report concludes that AAM provides no benefit over current modes of transfer in single-person private hire and cargo delivery. Economic benefits are observed when transporting multiple people for the distance of at least around 80km.
- The report points to the possibility that AAM fares may drop in around 2035 when AAM is predicted to become predominantly autonomous.
- Replacing the helicopter-based Flying Doctors services is confirmed to have a significant economic benefit.

Points to note:

- This analysis estimates costs by replacing a current mode of transport with AAM.
- In addition to standard movements, it is necessary to examine applications whose benefit outweighs cost disadvantage and niche use cases that bring social benefits (e.g. transport to an island).
- It does not consider the potential of AAM creating fresh needs.

AAM missions for public services

- NASA/CR–20230012505 (2023)
- What are public services?
 - Safety and security: Management of safety and security to protect individuals and organizations is applicable to our entire society, non-competitive and cannot be eliminated.
 - Emergency response: Services that reduces the impact of a hazardous event on general public are indispensable and have strong public needs.
 - Sustainability and conservation: Protecting and conserving the natural environment is non-competitive and indispensable.
 - Transport and logistics: Transport services for passengers and goods include dispensable ones but roads and public transport infrastructures represent public services.

Assessment metrics

Number	Metric	Metric type	Measure(s)
1	Safety risk to public	Quantitative	Number of near misses identified, number of incidents and number of hazards submitted
2	Safety risk to provider	Quantitative	Number of near misses, number of incidents and average time taken for management knowledge of hazard report
3	Operational time	Quantitative	Time of operation
4	Service accessibility	Quantitative	Number of services performed in rural communities
5	Data accuracy	Quantitative	Image resolution, ground sample distance, flight speed etc.
6	Operational cost	Quantitative	Total cost to complete mission
7	Operational personnel	Quantitative	Number of personnel required to perform operation
8	Carbon dioxide emissions	Quantitative	Net carbon emissions
9	Noise emissions	Quantitative	Net noise emissions (level, amount of time, frequency)
10	Number of people willing to participate	Quantitative	Applications per role, recruitment rate
11	Workforce equity	Quantitative	Number of job opportunities enabled by technology
12	Greater access to perform the operation	Quantitative	Number of missions carried out due to technology
13	Provides data to enhance or support tangential industries	Qualitative	Amount of data collected

Ten use cases selected for analysis

Category	Use cases
Monitoring and inspection	<ul style="list-style-type: none"> ▪ Inspecting critical infrastructures ▪ Monitoring natural resources ▪ Conducting surveillance of a wildland fire etc. ▪ Monitoring hurricanes or tornadoes
Delivery	<ul style="list-style-type: none"> ▪ Sampling seawater ▪ Transferring patients between medical facilities ▪ Delivering essential supplies during and after disasters ▪ Delivering emergency supplies to those in need
Emergency response	<ul style="list-style-type: none"> ▪ Assessing an emergency site during disasters to help inform responses ▪ Rescuing a person from a dangerous event such as fire and earthquake

Public good use cases strongly associated with AAM's commercial use (passenger transportation)

Use cases	Commercial synergy
Inspecting critical infrastructure, such as bridges or highways, to ensure safety for users	Inspection (68%)
Delivering essential supplies to persons in need that are not accessible except by air during and after disasters	Small package delivery (70%)
Delivering emergency supplies to an emergency scene	Cargo transport (91%)
Rescuing a person from a dangerous event, e.g., fire, earthquake	Passenger transport (97%)

Conclusion of the NASA's report

- AAM capabilities have the potential to enhance the services provided to the public even though the broader AAM industry may not pursue public service use cases.
- Benefits of adopting AAM could include improved safety, workforce equity and access to services for the public.
- To reach these benefits, a more thorough understanding of AAM for public good is required.

Institutional risks

- Aircraft certification
 - Safety-assured design and assessment of batteries and electric-drive systems
 - Crashworthiness
 - Maintaining safety during remote operation
- Pilot skills
 - Safety skills required for powered-lift aircraft, pilot skills specialized in individual models
 - Training technology (use of simulators)
 - Remote-operating skills
- AAM operation
 - Operating management (ATM、UTM)
 - Communications specifications, security assurance
 - Remote takeoff and landing facilities (vertiport requirements), noise standards, energy assurance
- Certification concerning computer-aided operation and AI use
- Strong need to maintain international consistency

Business risks

- AAM development in the absence of a certification system has risks in terms of development timeframe and cost.
- AAM development in the absence of an established market leaves manufacturing planning unclear and creates risk on securing the number of units to be sold after market introduction.
- Business deployment in the absence of established social acceptance has risks in terms of safety, noise and other environmental issues.
- Amidst social calls for CO2 reduction, there is a risk associated with securing green electricity, similarly to electric cars.

It is necessary to accurately analyze technological, systematic and business risks and explore mitigation measures.

Questions on Tsuru's presentation

- Would noise become an issue at and around AAM takeoff / landing sites with respect to AAM operation in urban areas? What is United States' awareness and regulatory status on noise generated by AAM?
- There are media reports that U.S. military is showing interest in AAM. In terms of security, what applications and how much demand are they envisaging?