

F R O S T & S U L L I V A N

# 2024 ENABLING TECHNOLOGY LEADER

*IN THE GLOBAL URBAN  
AIR MOBILITY INDUSTRY*

F R O S T & S U L L I V A N

BEST  
2024 PRACTICES  
AWARD



## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. The ePlane Company excels in many of the criteria in the urban air mobility space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Customer Impact</i>
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

### Urban Air Mobility Market Overview

The urban air mobility (UAM) sector is transforming significantly. Rapid urbanization and migration from rural to urban areas exert tremendous pressure on current transportation systems. There is a rising demand for alternative and efficient transportation solutions, exemplified by the increasing interest in UAM and hyperloop technologies prioritizing environmental sustainability. Substantial investments and robust research and development (R&D) efforts boost advancements in alternate propulsion, autonomous technologies, and air traffic management. Consequently, several UAM platforms are now in prototype or operational phases. Yet, formidable challenges persist, particularly in technological complexities.

Electric vertical take-off and landing (eVTOL) aircraft, the primary vehicle type adopted in UAM, is still in the prototype phase, requiring considerable R&D and manufacturing investments for a seamless transition to large-scale operations. The absence of supporting infrastructure, with existing airline and airport facilities offering only temporary support for limited fleet sizes, underscores the need for a comprehensive UAM ecosystem. This ecosystem includes essential elements like vertiports, charging stations, maintenance facilities, and advanced air traffic management systems, all pivotal for sustained industry growth.

Furthermore, the UAM sector contends with safety and regulatory complexities as regulators navigate uncharted territory to formulate policies ensuring efficient and safe airspace utilization. Achieving scalability requires significant time and financial investments to comply with these evolving regulations.

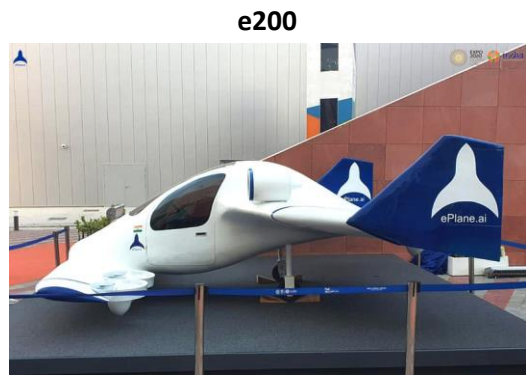
Despite potentially over-optimistic estimations influencing timelines, the focus remains on getting manufacturing and regulatory fundamentals right at an early stage. In navigating this dynamic landscape, a delicate balance between innovation, collaboration, and strategic foresight is essential for the sustained growth and success of the UAM space. Frost & Sullivan believes that The ePlane Company (ePlane) uniquely leverages its technology to meet market gaps. It is well-positioned to capitalize on emerging growth opportunities, revolutionizing the UAM space.

### *Flying into the Future: ePlane's Breakthroughs in UAM Technology*

Founded in 2019 and headquartered in Chennai, India, ePlane is a UAM start-up developing eVTOL aircraft to alleviate urban congestion through accessible, affordable, and sustainable flying options. In May 2023, it became the first company to receive Design Organisation Approval (DOA) from the Directorate General of Civil Aviation (DGCA).

ePlane currently offers four prototypes:

- **e200** is the flagship product and India's first eVTOL transportation system. A two-seater flying electric taxi measuring five meters in length and width, e200 offers the potential to transport people from their doorstep to their end destination ten times faster than vehicles on-road.
- **e6 (Atva)** is a sustainable logistics solution with a quiet electric motor and a payload capacity of up to six kilograms (kgs), providing breakthrough cost-effectiveness.
- **e50** is India's largest drone, successfully flight-tested and capable of carrying up to 50 kg payload.
- **e100** is a passenger-flying electric taxi (e200) cargo variant, ferrying up to 100 kg payload per trip.



*Courtesy of ePlane*

ePlane's core intellectual property (IP), "Synergistic Lift," is a patented technology filed in about 30 countries. Inspired by National Aeronautics and Space Administration's Distributed Electric Propulsion, it strategically places vertical rotors and wings to achieve substantial lift with a compact wing at low speeds. Tailored for urban environments where the aircraft must perform multiple short hops on a single charge, the design balances long-range capabilities, slow speed for short hops, and compactness (small wings) for taxi and delivery in constrained spaces.

Overcoming the typical challenges of small wings and slow flight, ePlane has identified key locations for vertical rotors, optimizing their operating conditions to synergistically generate the necessary aerodynamic lift with a compact wing at low speeds. This IP positions the company as a leader in efficient and versatile urban air transportation solutions.

## Infrastructure

ePlane's cutting-edge infrastructure, highlighted by a 10,000-square-foot carbon fiber composite prototyping facility at the Indian Institute of Technology Madras' Discovery Campus, features specialized carbon composite layups, mold preparation, trimming, assembly, and testing areas. This facility enables precise fabrication of airframes and propellers. Such manufacturing capabilities are vital in UAM adoption.

To ensure the integrity of its designs, ePlane conducts extensive ground tests using a novel mobile test rig mounted on a ground vehicle. This rig enables the testing of airframes at near-flight speeds before embarking on actual flight tests, showcasing a commitment to thorough validation and safety protocols.

Technologically, the company demonstrates a forward-looking approach focusing on customer needs and operational efficiency. It has made early strides in autonomy for cargo unmanned aerial vehicles (UAVs), indicating a dedication to cutting-edge technology that aligns with ePlane's design philosophy. These

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**- Ojaswi Rana**  
**Best Practices Research Analyst**

capabilities collectively position the company as a leader in developing and testing advanced aerial systems.

Compared to other market participants, ePlane excels in the mid-mile commute segment, offering a unique combination of long-range capability and low speed, allowing for long and short-distance travel. With the ability to perform multiple short hops in a single charge, the company enables a taxi-like operation, setting it apart regarding trip profiles. Additionally, it boasts the lowest energy consumption for mid-mile trips, facilitating more hops, and is the most compact air taxi globally.

The company's mid-mile technology will effectively address urban congestion and traffic issues. This

positioning underscores ePlane's efficiency and versatility, making it a standout choice in the urban air transportation landscape.

Frost & Sullivan commends the company's innovative technology in urban air transportation. ePlane's excellence in the mid-mile commute segment, offering long-range capabilities and true taxi-like operations with low energy consumption, is indeed impressive.

## Unpacking ePlane's Journey from Certification to Global Expansion

With a paramount focus on customer satisfaction, ePlane adopts a deliberate and phased strategy to enhance the overall customer experience. The company strongly emphasizes clear and transparent communication, trust cultivation, and simplifying product messaging to bolster acceptance. Actively engaging in prominent events, including the prestigious Paris Air Show, offers a valuable platform for showcasing its innovative solutions. Additionally, open conversations addressing concerns related to autonomous flying boost customer confidence in ePlane's cutting-edge technology. Similarly, guided walkthroughs for visitors at the manufacturing unit and office provide a transparent

perspective on the intricacies of design, strategy, and safety measures. The company's collaborative ventures with industry experts and a dedicated focus on expense optimization underscore its unwavering commitment to ensuring affordability and accessibility. This approach reassures customers regarding the market potential and enduring growth prospects.

Furthermore, ePlane goes the extra mile to ensure customer satisfaction by meticulously attending to aspects like comfort and cabin design, integrating user-friendly interfaces. The progression from cargo variants to passenger taxis in its development process enables the company to glean valuable insights, elevating the credibility and safety of its passenger vehicles. This holistic strategy enhances the overall customer experience and delivers compelling price/performance value propositions, fortifying ePlane's brand equity in the dynamic urban air transportation landscape.

In March 2021, the company secured \$1 million in a seed round, followed by a noteworthy \$5 million in a pre-series A round in January 2022. It aims to raise \$20 million in a Series-A round, earmarked for prototype development, infrastructure expansion, and talent acquisition.

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ePlane's transformation from a modest team to a robust 70-person unit symbolizes a collective dedication to electrifying aviation. A collaborative ecosystem involving government backing, regulatory bodies, vendors, and competitors supports this growth trajectory, contributing to the company's journey.

With a global outlook, ePlane aspires to operate and manufacture in diverse countries, catering to varying aircraft capacities from two-seaters to larger configurations. As certification processes progress,

the company envisions people taking to the skies by 2026, firmly committing to reshaping the urban air transportation landscape.

Frost & Sullivan contends that ePlane is firmly positioned to advance the UAM market with its groundbreaking technology, particularly following its successful certification.

## Conclusion

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Technology is a critical success factor for the developing urban air mobility (UAM) industry. With many options available, market stakeholders need to leverage the most appropriate and best technology-based solutions to optimize their market impact. With its best-in-class electric vertical take-off and landing (eVTOL) aircraft, the first in the world to receive Design Organisation Approval (DOA) from the Directorate General of Civil Aviation (DGCA), The ePlane Company (ePlane) delivers low energy consumption in the mid-mile commute segment, a unique combination of long-range capability and low speed, long and short-distance travel, and a taxi-like operation.

ePlane stands out from competitors based on its commitment to innovation, creativity, and ability to launch new solutions with far-reaching impact and application. Its various prototypes showcase versatility in addressing diverse urban transportation needs. The company pairs its technology focus with customer-centric values, thus earning a solid reputation in the UAM market.

With its strong overall performance, The ePlane Company earns Frost & Sullivan's 2024 Global Enabling Technology Leadership Award in the UAM industry.

## What You Need to Know about the Enabling Technology Leadership Recognition

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Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

### Best Practices Award Analysis

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Technology Leverage*

**Commitment to Innovation:** Continuous emerging technology adoption and creation enables new product development and enhances product performance

**Commitment to Creativity:** Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

**Stage Gate Efficiency:** Technology adoption enhances the stage gate process for launching new products and solutions

**Commercialization Success:** Company displays a proven track record of taking new technologies to market with a high success rate

**Application Diversity:** Company develops and/or integrates technology that serves multiple applications and multiple environments

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

## About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

## The Growth Pipeline Engine™

Frost & Sullivan’s proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

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### Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



## The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

### Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

