

Introduction

According to Deloitte's study [Advanced air mobility: Can the United States afford to lose the race?](#), the advanced air mobility (AAM) industry could become mainstream in the 2030s. The industry has received substantial investments and today, there are over 200 companies worldwide that are developing electric vertical takeoff and landing (eVTOL) aircraft¹. These include traditional aerospace companies, established automotive players, and purely AAM-focused new entrants. While still evolving, the AAM industry could see growing adoption in less than a decade, and so, companies in the AAM ecosystem should work toward formulating a solid business strategy for successful commercial operations now. This report examines operating business models for companies involved in AAM operations to consider for passenger mobility. It will also focus on the various consumer segments that are likely to evolve and determine where the most significant opportunities lie. Furthermore, the report recommends critical strategies AAM companies should focus on to build successful business models for the long-term.

Inter-city and intra-city transportation to fuel long-term growth

AAM has a multitude of passenger mobility applications, which can be broadly classified into four categories:

- **Inter-city and intra-city transportation:** Transporting people between and within cities, either scheduled or on-demand, is the key application where the largest market is likely to exist. This is primarily because the AAM ecosystem's ultimate objective is to become a transportation system for mass transit, operating between urban, suburban, and rural areas.
- **Airport shuttle:** This application involves using eVTOL aircraft as an airport shuttle to transport people from pre-specified points in the city to the nearest airport. This



service is expected to help commercialize large-scale operations by showcasing the utility of eVTOLs. Since airports are usually located outside the city, these vehicles could significantly reduce transit time to airports. Moreover, these operations would require smaller infrastructure investments as the existing airport infrastructure could be leveraged.

- **Medical and other emergency services:** As timing is critical in medical or other emergency response services such as fire, AAM could play a vital role in transporting or evacuating people in such situations. With the success of such operations, both the safety and utility of AAM vehicles could be validated, thereby improving the consumer perception.

- **Private mobility:** eVTOLs could be used as personal aerial vehicles, being an alternate to helicopters. Though the market for this application is likely to be relatively small, it would help popularize eVTOLs as an advanced mode of transportation and may lead to increased consumer adoption.

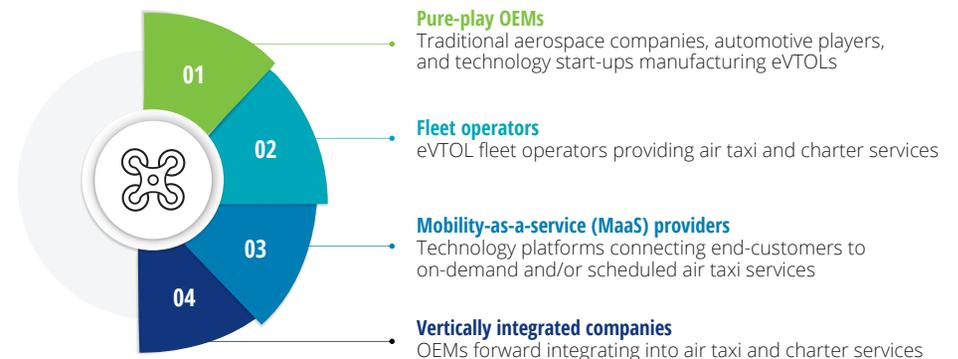
During the early years of commercialization, only scheduled intra-city and inter-city mobility is expected to be more feasible than on-demand services. According to Deloitte’s study, [Advanced air mobility: Can the United States afford to lose the race?](#), more than one-third of surveyed executives believed scheduled intra-city and inter-city operations to be relatively more viable in the early period of AAM operations. Other applications such as airport shuttle, medical and other emergency services, and private mobility are expected to have a smaller market share, but they would play a significant role in paving the way for commercializing large-scale operations. However, in the long-term, inter-city and intra-city transportation—both scheduled and on-demand—is expected to be the key growth driver for AAM.

Diverse mobility needs to drive the emergence of multiple business models

The AAM ecosystem includes many companies that would enable eVTOL operations – pure-play original equipment manufacturers (OEMs), companies focusing solely on vehicle operations, service providers, and OEMs that plan to develop as well as operate eVTOLs. While hundreds of companies in the AAM ecosystem are working to capture the diverse mobility needs, they are likely to operate primarily through four types of business models.

- **Pure-play OEMs:** These include traditional aerospace companies, automotive players, and technology start-ups. Their primary business includes the design, development, and manufacturing of eVTOLs.
- **Fleet operators:** These comprise eVTOL fleet operators, providing air taxi and charter services. Several airlines could operate such a business model for AAM, wherein they may lease and operate a fleet of eVTOLs. This business model could see new entrants and give existing airlines a platform to diversify into the AAM ecosystem.
- **Mobility-as-a-service (MaaS) providers:** Under the MaaS business model, companies would primarily develop technology platforms to connect end-customers to on-demand and scheduled air taxi services. This could be similar to the on-demand ground taxi model being currently operated by companies such as Uber, where these technology platforms are only aggregators.
- **Vertically integrated companies:** The vertically integrated business model includes eVTOL OEMs forward integrating into air taxi and charter services. This business model aims to capture the complete AAM value chain. However, the capital investment required for such businesses could be substantially high.

FIGURE 1
The four AAM business models that are expected to drive passenger mobility



Source: Deloitte analysis

Choosing the right AAM business model could be critical for long-term success

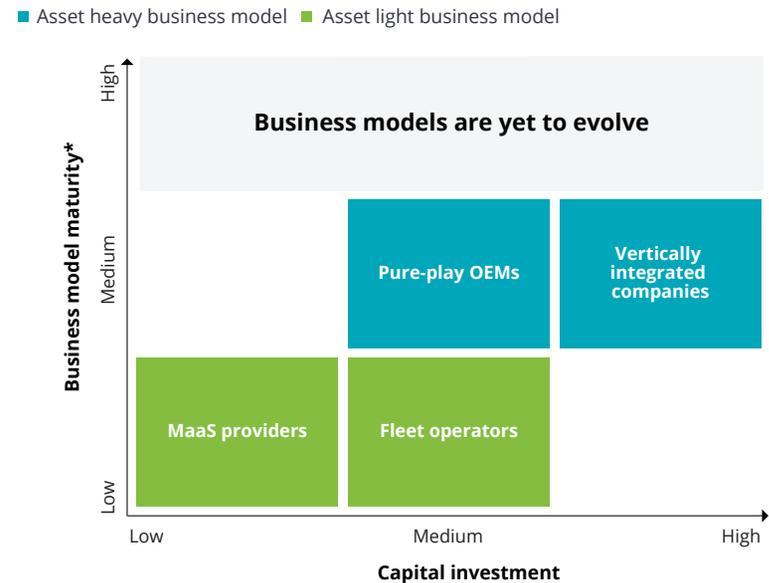
The AAM ecosystem is experiencing the emergence of many pure-play OEMs, which comprise a mix of traditional aerospace companies, automotive players, and AAM-focused start-ups. While most of these companies are primarily focused on the design, development, and manufacturing of eVTOL aircraft, some are considering forward integration as they see opportunities in the MaaS or fleet operator space, which is a relatively less mature business model (figure 2) and faces lower competition at present.

Some OEMs are taking the acquisition route to forward integration whereas others are developing these capabilities in-house. For example, Joby Aviation, a US-based eVTOL aircraft developer, acquired Uber Elevate, Uber’s flying taxi unit, to expand into mobility services.² Both Lilium and Volocopter, German eVTOL OEMs operate vertically integrated business models and provide air taxi services, apart from manufacturing eVTOLs, to mark their presence across the value chain.³

However, the strategy of vertical integration comes with substantial capital requirements and the task of building expertise across the value chain. This may primarily be possible by AAM companies that have deep pockets and the ability to build capabilities, either in-house or through acquisitions.

A ‘one-size-fits-all’ approach is unlikely to work in the AAM industry. In addition to financial competence or propensity to make the needed capital investment, AAM companies should adopt business models that align with their strategic vision, core expertise, and organizational capabilities. For example, traditional aerospace companies that are financially sound and have deep manufacturing expertise could choose to operate asset-heavy business models. Whereas new entrants that have disruptive technology platforms, but may not have deep pockets, could consider asset-light business models. Similarly, airlines looking to diversify their portfolio could evaluate entering the AAM market by providing on-demand or scheduled aerial mobility services using a fleet of eVTOLs. For instance, in February 2021, United Airlines ordered \$1 billion worth eVTOLs from Archer, a US-based eVTOL developer, primarily to operate airport shuttles within its major hubs by 2024. The airline also invested in Archer as part of its efforts to collaborate with technology companies to decarbonize air travel.⁴

FIGURE 2
Capital investment decisions expected to play a key role in the evolution of AAM business models



Source: Deloitte analysis

Note: *Business model maturity indicates the adoption level and period of existence of various types of business models in the AAM ecosystem.

Identifying the primary target consumer segments will likely be a critical strategic decision for AAM companies

The AAM ecosystem is likely to evolve to become a transportation system accessible to all over the next decade. However, during its evolution, companies are likely to target various consumer segments in phases. One key challenge faced by AAM companies is to identify their primary target market or consumer segment. Based on the multitude of transportation needs, six major consumer segments are likely to emerge in the future.

FIGURE 3
Major consumer segments that AAM companies could choose to serve

Consumer segment	Description	Persona
 The affluent	Individuals currently owning private aerial vehicles such as helicopters. These consumers may either own or lease eVTOLs purely for their private use.	<ul style="list-style-type: none"> • Ultra-high-net worth individuals • Focus on convenience
 The frequent flyer	Regular commercial flight travelers who will use eVTOLs for commuting from pre-specified points in the city to the nearest airport or vice versa.	<ul style="list-style-type: none"> • High-net worth individuals, business travelers as well as non-business travelers • Focus on convenience
 The business traveler	Inter-city travelers, currently using short-haul flights to commute between cities. Their priority is reducing the commute time.	<ul style="list-style-type: none"> • Domestic business travelers • Focus on convenience
 The recreationist	Travelers using eVTOLs, primarily for recreational activities, leisure, and tourism.	<ul style="list-style-type: none"> • Domestic non-business travelers • Focus on affordability and convenience
 The on-demand traveler	Users of on-demand air taxis and aerial ride-sharing services, primarily commuting intra-city for relatively shorter distances.	<ul style="list-style-type: none"> • Largely commute between urban and suburban areas • Focus on affordability and convenience
 The daily commuter	Everyday users who are looking for faster and inexpensive transportation to commute between urban, suburban, and rural areas.	<ul style="list-style-type: none"> • Primary mode of commute is public transportation • Focus on affordability

Source: Deloitte analysis

Though the largest market opportunity exists in penetrating ‘The On-Demand Traveler’ and ‘The Daily Commuter’, it will likely be the most difficult to serve. To ensure AAM is a mass transportation system, the regulatory, infrastructural, psychological, and technological requirements need to be in place.

Hence, the evolution is expected to be phased out, where we could first see eVTOLs being used as a more community-friendly alternative for private helicopters and airport shuttles—between 2025-2028 (figure 4). In the second phase, i.e., between 2028-2034, these vehicles could become popular amongst ‘The Frequent Flyer’, ‘The Business Traveler’, and ‘The Recreationist’. They may be used as airport shuttles, for recreational travel, and for short-haul domestic flights, largely for inter-city business travelers, given some of the existing airport infrastructures could be utilized for AAM operations in this phase.

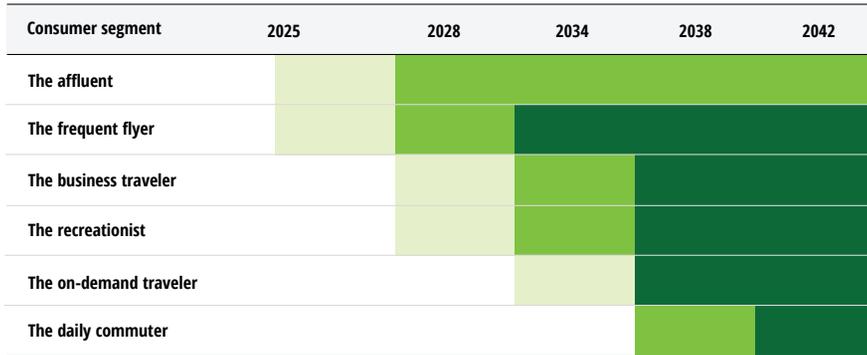
Moreover, while AAM is expected to be popular amongst ‘The Affluent’, ‘The Frequent Flyer’, ‘The Business Traveler’, and ‘The Recreationist’ between 2034-2038, the industry may move toward mass adoption beyond 2038, a period where it is likely to experience substantial growth.

To capture varying consumer demands over time, AAM companies should have a comprehensive and agile business approach. They should adapt to serving the ever-changing consumer segments that would emerge over time and accordingly develop or modify their go-to-market strategies.

FIGURE 4

Mass adoption likely to happen at a gradual pace

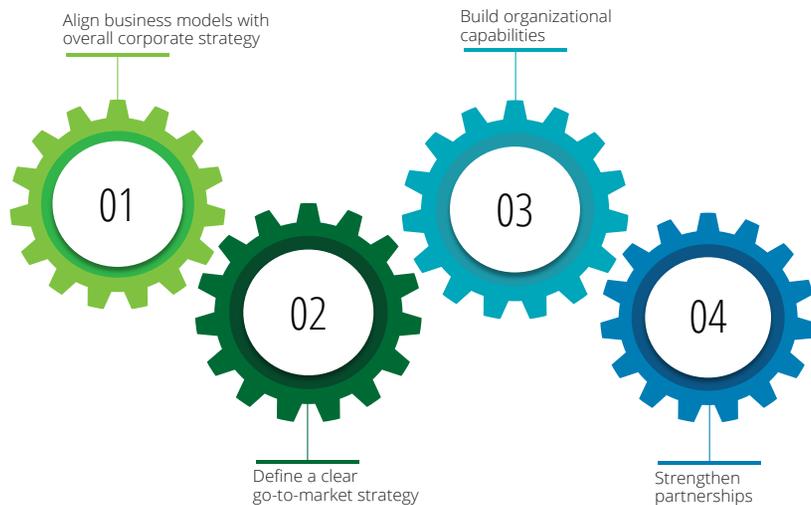
■ Low penetration ■ Medium penetration ■ High penetration



Source: Deloitte analysis

FIGURE 5

A four-pronged approach for AAM companies to build successful business models



Source: Deloitte analysis

Strategies to successfully operationalize AAM

Given the market opportunity—according to Deloitte’s study, [Advanced air mobility: Can the United States afford to lose the race?](#), the market for AAM in the United States alone is estimated to reach \$115 billion annually by 2035⁵, competition is likely to be intense, and companies will likely focus on gaining an edge by being a first mover. To be successful, companies operating in this market should determine whether existing capabilities allow them to deliver value to the major customer segments—and if not, how can they build the required capabilities. Moreover, to build a long-term business strategy for a successful foray into AAM, the industry players should prioritize four areas (figure 5)—aligning business models with overall corporate strategy; defining a clear go-to-market strategy; building organizational capabilities; and strengthening partnerships.

- 1. Align business models with overall corporate strategy:** AAM companies, especially traditional aerospace companies and automotive players entering the market, should align their AAM business model with their overall corporate strategy. They should ensure their AAM business model aligns and supports the overall mission. For example, Airbus’ all-electric four-seater eVTOL, CityAirbus, aims to make air commuting more sustainable, in line with its overall vision that targets a net-zero aviation ecosystem by 2050.⁶
- 2. Define a clear go-to-market strategy:** With most AAM companies eventually aiming to capture a meaningful share in the global market, they should clearly define their go-to-market strategy for regions and markets worldwide. This includes identifying the appropriate target consumer segment(s) and developing and positioning the right products and solutions for those customer segments. For instance, in November 2020, Lilium partnered with Tavistock Development Company, a US-based diversified real estate firm, to develop the first urban and regional mobility hub in the United States. The hub, located in Lake Nona, Orlando, Florida, will be Lilium’s first US network location and is part of its vision to make inroads into the US market.⁷
- 3. Build organizational capabilities:** Companies should also build and strengthen capabilities in three major areas—technical competencies such as advanced battery/

energy density and autonomy, advanced manufacturing to scale production capacities, and developing the right talent for the future. In August 2020, Bell announced a new manufacturing facility in Fort Worth, Texas. The company plans to utilize this facility primarily to test and refine advanced manufacturing technologies and processes for the next generation of aircraft, including its eVTOL, Nexus.⁸

- 4. Strengthen partnerships:** Companies operating in the AAM ecosystem should focus on strengthening partnerships within and outside the industry—partnerships between OEMs and MaaS providers; fleet operators and MaaS providers working together; OEMs collaborating with technology companies and infrastructure providers. For example, in October 2019, Porsche and Boeing announced a partnership for the development of a premium urban air mobility vehicle.⁹ More recently, in January 2021, Hyundai Motor Group partnered with Urban Air Port, a UK-based provider of infrastructure for advanced air mobility, to develop an eVTOL hub in the United Kingdom.¹⁰

AAM companies should develop clear ambitions—where to play and how to win

The evolving mobility needs in cities and the multitude of passenger mobility applications that AAM offers have resulted in the emergence of several business models and consumer segments in the AAM ecosystem. Choosing the right business model, identifying target consumer segments, and effectively operationalizing the AAM products and solutions remain very important for success in this market. To build long-term success, industry players should focus on aligning business models with overall corporate strategy, defining a clear go-to-market strategy, building organizational capabilities, and strengthening partnerships.

Endnotes

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