SKYWARD BOUND

Advanced Aerial
Innovation in Ireland

FUTURE MOBILITY CAMPUS IRELAND

Skyward Bound:
Advanced Aerial Innovation in Ireland

Future Mobility Campus Ireland

June 2025

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FOREWORD:
A VISION FOR AAM IN IRELAND

The vision of flying cars seamlessly travelling from location to location has been on nearly every futurist's list since the early 1950s, but each decade since has been a false dawn. During this time and particularly in the last 20 years, advancements in battery technology and autonomy, primarily driven by the automotive industry, have seeded the opportunity to electrify the skies for both crewed and autonomous aircraft.

Today, we are witnessing the dawn of this new era, with many new flight concepts in the design and test phase, regulations still under definition and business cases yet to be proven. Time will tell what concepts ultimately succeed, but it is clear that the frontier of lower airspace is about to be electrified and become a highway for us all.

Ireland is already preparing for this shift. Irelandia's recently published strategic document *A Pathfinder for Irish Aviation* is a macro call to action to strengthen the Irish aviation industry—including Advanced Aerial Mobility and its role in sustainable aviation.

The era of Innovative Air Mobility is upon us. Let's get ready.

Russell Vickers, Co-Founder and CEO of Future Mobility Campus Ireland

SECTION ONE
INTRODUCTION TO ADVANCED AIR MOBILITY

1. THE RISE OF ADVANCED AIR MOBILITY

In 2016, Uber released its seminal *Elevate* white paper, proposing a bold vision for the future of urban transportation. They conceived a world where short-range, electric vertical take-off and landing (eVTOL) aircraft seamlessly connect cities and suburbs through the sky. What seemed like speculative fiction at the time sparked a wave of innovation, investment, and public sector engagement that helped crystallise a new domain in aerospace and mobility: Advanced Air Mobility.

Uber Elevate's vision for future mobility catalysed the rapid evolution in AAM.

Dozens of eVTOL manufacturers, from startups to aerospace giants, have emerged. Regulatory frameworks are beginning to take shape. Pilot projects are testing vehicle performance, vertiport design, and public acceptance. Meanwhile, cities and regions around the world are exploring how to integrate this new dimension of mobility into their transport and planning strategies.

As we stand on the cusp of commercial deployment, understanding the trajectory from vision to reality is essential. This paper traces the evolution of AAM and highlights its transformative potential for societies around the globe.

1.1 What is AAM?

Advanced Air Mobility (AAM) represents a paradigm shift in how we move people and goods. It is a rapidly evolving field that combines emerging technologies in electric propulsion, autonomous systems, and digital air traffic management (ATM) with novel operational concepts like urban air taxis, regional air networks, and drone-based logistics.

At its core, AAM envisions a more efficient, sustainable, and connected transportation ecosystem, relieving pressure on ground infrastructure and offering new mobility options for communities underserved by current modes of transport.

The promise of AAM extends far beyond technological novelty. It has the potential to reshape how we live and work by dramatically reducing travel times, expanding access to jobs and services, and unlocking new economic corridors. It could connect rural areas to urban centres, deliver medical supplies during emergencies, and reimagine the role of airspace as a public good.

1.2 The Case for AAM in Ireland

For a country like Ireland, AAM offers particularly compelling opportunities. With a dispersed population, limited rail infrastructure, and a strong commitment to climate action, Ireland stands to

benefit from regional air mobility solutions that bridge urban-rural divides, reduce road congestion, and support sustainable transport. Furthermore, Ireland's existing aerospace expertise, vibrant innovation ecosystem, and status as a testbed for next-generation mobility technologies position it well to lead in the development, deployment, and regulation of AAM systems across Europe.

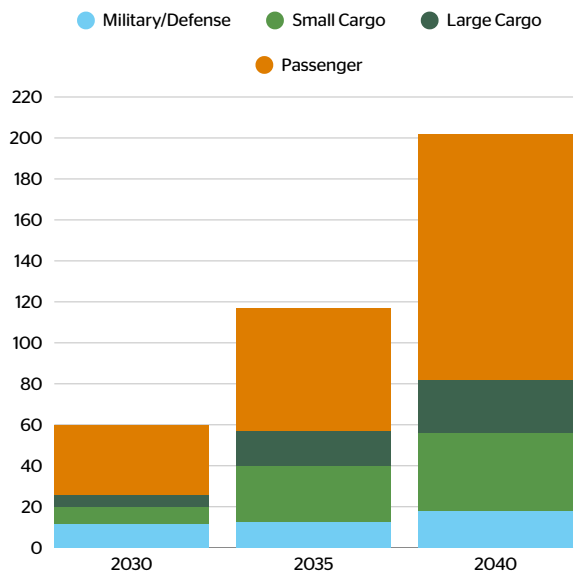
1.3 Opportunity Size: What's Happening Worldwide?

The Total Addressable Market (TAM) for AAM is projected to experience significant growth over the next decade, driven by advancements in eVTOL technologies, increasing urbanisation, and the demand for sustainable transportation solutions.

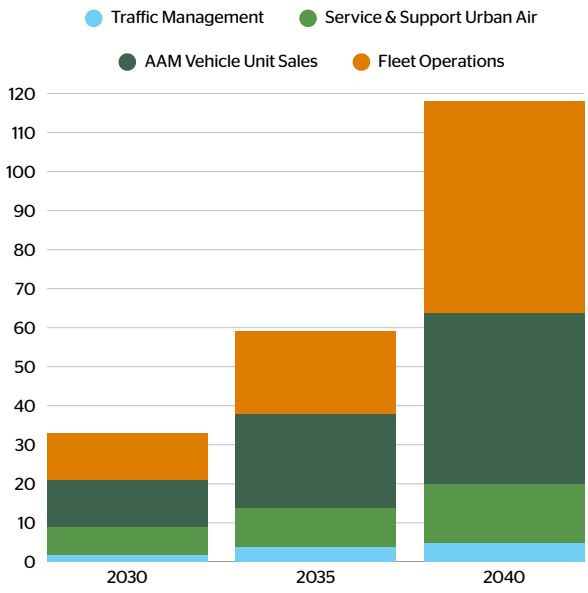
In 2024, the AAM market was valued at approximately $11.75 billion with the majority of that driven by drone technologies.

Looking further ahead, some analysts suggest that the broader AAM ecosystem, encompassing passenger transport, cargo delivery, emergency services, and military applications, could see the TAM reach $120 billion by 2040. Notably, vehicle unit sales may constitute around 40% of this market, with fleet operations, service and support, and urban air traffic management making up the remainder.

Global AAM Economy (in USDbn)



AAM Passenger TAM (in USDbn)



Source: KPMG

700 AAM AIRCRAFT CONCEPTS ANNOUNCED WORLDWIDE TO DATE

IN ASIA

Heavy investments in infrastructure, regulation, and public acceptance for commercial air taxis

IN NORTH AMERICA

Leading AAM OEMs collectively raised over $5 billion between 2018 and 2023

IN EUROPE

Strong government-industry collaboration and national strategies for AAM integration. Public funding available.

SECTION TWO
WHY IRELAND?

2. WHY IRELAND? STRATEGIC BENEFITS OF THE WEST

With AAM taking flight across the globe, one might wonder "why Ireland?" when larger global players are increasing their investments in AAM—but Ireland has long been a pivotal player in global aviation.

From pioneering transatlantic flight paths in the 20th century to today's leadership in aviation leasing, regulation, and air traffic management, Ireland has carved out a role as an aviation leader that far outweighs its size.

As the global aviation sector undergoes a transformative shift toward greener, more sustainable modes of transport, Ireland is again poised to lead—this time in electric aviation and Advanced Air Mobility.

2.1 Ireland: a Global Aviation Leader

For over a century, Ireland has carved its identity as a critical player in air mobility innovation. Today, that legacy manifests as an active and established aviation sector, particularly in the west.

Ireland is home to over 50% of the world's leased aircraft, a global aviation finance hub, and a key node in transatlantic air travel. With Dublin and Shannon serving as strategic gateways between North America and Europe, Ireland's geo-political position enables extensive connectivity. The nation's aviation eco-system includes major players in aircraft maintenance, repair and overhaul (MRO), air traffic management (ATM), and aerospace R&D.

Ireland's aviation industry has expe-rienced notable growth, driven by Irish-owned companies such as Atlantic Aviation Group in Shannon and Dublin Aerospace, which recently launched its new Centre for Landing Gear Repair. Ryanair has also established and expanded a major MRO base in Shannon. Beyond the airports, the country is now home to a range of manufacturing and aftermarket operations from global leaders like Airbus, Boeing, Honeywell, Panasonic, and Collins Aerospace—serving aviation clients worldwide.

Ireland's strong commitment to climate action and innovation make it a receptive host for air mobility electrification initiatives. The country's national stra-tegies such as the *Climate Action Plan 2024*, *CAP23*, and *Innovation 2023* promote green mobility, digitalisation, and decarbonisation, aligning with core benefits of an integrated AAM ecosystem. Ireland also leads on the European front through its active role in Clean Aviation, SESAR JU, and Horizon Europe, further amplifying its potential to spearhead sustainable aviation.

Ireland offers an ideal environment for testing AAM due to its mild, temperate climate and compact geography. The country's consistent weather—with moderate rainfall and wind—provides realistic conditions to validate AAM technologies for reliability and safety without the disruption of extreme events. Its small size allows for diverse use case testing across urban, rural, and coastal areas within short flight ranges, while relatively low air traffic and centralised aviation regulation support safe and flexible test operations. Combined with growing AAM infrastructure and innovation support, Ireland serves as a practical and scalable testbed for next-generation air mobility solutions.

"AAM, and our aircraft specifically, is practically purpose-built for the distributed geography and weather conditions of Ireland and the rest of Europe. With its spirit of innovation and growing leadership in future transportation solutions, we see Ireland as a strategic partner and gateway to the broader European aviation market."

Kyle Clark, Founder and CEO of BETA Technologies

2.2 The Shannon Region: A Strategic Advantage

Within Ireland, Shannon stands out as a prime leader for this new age of aviation. Geographically, the Shannon Region occupies a unique position on Ireland's west coast, directly adjacent to the North Atlantic corridor. This makes Shannon an ideal testbed for AAM applications, including drone operations, eVTOL aircraft, and regional electric flights.

With low population density, diverse weather patterns, and open airspace access, Shannon offers a safe and scalable environment for testing and deployment. From a demographic and economic standpoint, the region is home to a well-educated workforce, high-tech manufacturing clusters, and strong academic institutions.

The region is also bolstered by national entities such as the Irish Aviation Authority (IAA), AirNAV Ireland, Enterprise Ireland, and IDA Ireland, all of which support innovation through funding, policy development, and industry coordination. Importantly, the region has been actively engaged in European projects under SESAR JU, U-space, and Clean Aviation, demonstrating a track record in collaborative, cross-border innovation in aviation and AAM.

Flying boat in Foynes, an example of the Shannon region's leadership in air mobility in the 1930s and '40s.

KEY ADVANTAGES OF THE SHANNON REGION

Geographic position near the North Atlantic corridor
Low population density
Open airspace access
Skilled aviation workforce
Diverse weather patterns
Cluster of aerospace and aviation firms
Regulatory agility
Purpose-built infrastructure
Proximity to international markets

"Ireland is one of the leading States in embracing AAM. Examples include Wing and Apian in South Dublin, who specialise in transporting blood, medication and small medical devices. Manna Aero also deliver goods in minutes in and over Dublin's suburbs, avoiding traffic jams and saving the city from CO_2 emissions. The IAA provides examples of good regulatory practices to make the above list of innovations and applications even longer but, most importantly, safe."

Jim Gavin, Chief Operations Officer of the Irish Aviation Authority (IAA)

2.3 An Active AAM Sector: How Ireland's Regulations Enable Industry Growth

Through its recognised aviation leadership and fertile opportunity, Ireland has drawn many heavy-weight innovators in the AAM industry to its shores. Their presence in Ireland stands as a testament to the country's favourable attitude towards aerospace innovation and ample opportunity.

Ireland's flourishing AAM industry is owed in part to regulatory bodies like the Department of Transport and the Irish Aviation Authority, who frequently collaborate with industry players. Together, these policymakers and industry leaders can better design the regulatory frameworks necessary for the unhampered development of safe, effective, and innovative mobility in Ireland. The accessibility and responsiveness of the regulator—in this case, the IAA—is a key attractor to the AAM industry, however continued resourcing is necessary to maintain this position.

This favourable and collaborative attitude towards responsible innovation has attracted leading AAM innovators—like BETA Technologies, Manna Aero, A-TechSYN, and IONA Logistics—further positioning Ireland at the forefront of European AAM innovation. It has also encouraged the development of Future Mobility Campus Ireland (FMCI), a testing and development centre on Ireland's west coast dedicated to enabling the smarter, safer, and more sustainable mobility promised by AAM.

MANNA SCALES UP

Founded in 2018, Manna Aero has completed over 200,000 delivery flights, primarily in suburban areas of Dublin such as Blanchardstown, and expanded its services to international locations, including Helsinki, Finland, and parts of North Texas, USA. The company's drones have been integrated into platforms like Just Eat and DoorDash, facilitating seamless food and retail deliveries.

Manna's success is underpinned by its commitment to safety and regulatory compliance. It was the first operator in Ireland to receive the Light UAS Operator Certificate (LUC) from the Irish Aviation Authority, allowing it to conduct higher-risk drone operations and paving the way for expansion across the European Union.

BETA'S ELECTRIC FLIGHTS

May 23, 2025, marked a milestone moment in Irish aviation. BETA Technologies, a U.S.-based electric aviation pioneer, took the very first fully electric-powered flights in Ireland. The ALIA CTOL aircraft they debuted can transport up to five passengers or 570kg of cargo. BETA is also rolling out a network of proprietary charging infrastructure compatible with other air taxi manufacturers and ground vehicles, making electric aviation a firm reality for Ireland.

BETA chose Shannon as the starting point of their European tour, citing support from FMCI and other Irish institutions like the IAA, AirNAV, and the Shannon Airport Group as determining factors.

SECTION THREE
KEY COMPONENTS FOR A SUCCESSFUL AAM ECOSYSTEM

3. KEY COMPONENTS OF A SUCCESSFUL AAM ECOSYSTEM

To unlock the full potential of AAM in Ireland, a comprehensive national ecosystem must be established—one that extends well beyond flight technology. This section explores the critical enablers required to drive AAM adoption across the country, including regulatory frameworks, digital airspace management, physical infrastructure, resilient supply chains, research and innovation ecosystems, workforce development, testbed capabilities, and strategic route planning.

Across Ireland, progress is being made in each of these areas, with Shannon playing a leading role through its controlled airspace, institutional support, and innovation hub anchored by FMCI. Together with efforts in other regions—such as Dublin's urban drone delivery trials led by Manna Aero and regional airport engagement—Ireland is well-positioned to build a safe, scalable, and socially valuable AAM network that can serve as a model for global adoption.

3.1 Establishing a Regulatory Framework for AAM

To successfully integrate AAM into Ireland's transport system, it is essential to establish a flexible and future-ready regulatory framework. These regulations, set by governing bodies such as the IAA and the European Union Aviation Safety Agency (EASA), define where AAM operations can take place, who is authorised to operate them, and under what conditions. They encompass everything from air-worthiness certification and pilot licensing to airspace access and operational procedures, thus ensuring that AAM services are deployed safely, legally and responsibly.

DEFINITION

In this context, regulations refer to the rules and standards that govern how AAM technologies are certified, operated and supervised to ensure safety, accountability and public trust in the use of new aerial vehicles.

Robust regulatory frameworks not only enable the safe and efficient integration of AAM but are also crucial for public confidence and social acceptance.

Across Ireland, the IAA plays a central role in shaping these frameworks, engaging closely with industry, government, and research stakeholders to support innovation while maintaining the highest safety standards. While Shannon remains a key location for testing and refining AAM regulations—thanks to its controlled airspace and its status as a Digital Sky Demonstrator under the SESAR JU—these efforts are increasingly supported by activities nationwide, including urban trials, rural route planning, and national

policy development. Together, these efforts are positioning Ireland as a proactive and trusted leader in the regulation of next-generation air mobility.

"Manna has been successful and become a global industry leader in drone delivery precisely because of our strong regulator and pro-business government. We need now to double down and invest in this area immediately to avoid falling behind in the race for the low altitude airspace industrial revolution."

Bobby Healy, Founder and Chief Executive of Manna Aero

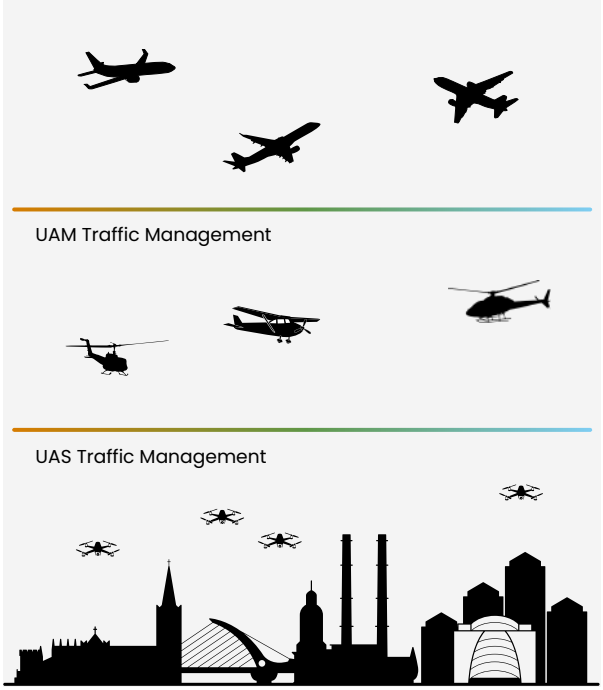
3.2 Advancing Airspace Management through U-Space/UTM – Digital Skies

As the skies become increasingly populated with both manned and unmanned aircraft, effective airspace management is essential. U-Space and Unmanned Traffic Management (UTM) systems are key to this transition—enabling the safe and efficient integration of drones and AAM aircraft into shared airspace. These systems provide real-time coordination, conflict resolution, and communication among diverse airspace users.

While the Shannon region has been at the forefront of U-Space innovation—with projects like ÉALÚ-AER led by FMCI under the European Digital Sky Demonstrator programme—other regions across Ireland are also playing important roles. In Dublin, live urban drone delivery trials by companies such as Manna Aero are generating valuable data on UTM requirements in densely populated areas. Meanwhile, regional airports in locations such as Cork and Waterford are exploring how UTM integration can support future AAM services, from cargo logistics to air taxi operations.

By leveraging these diverse environments—controlled airspace in Shannon, suburban drone corridors in Dublin, and emerging regional use cases—Ireland is building a scalable, interoperable UTM ecosystem that supports safe AAM integration nationwide and positions the country as a leader in digital airspace innovation.

Traffic Management at Varying Altitude Levels



3.3 Building AAM Infrastructure

The deployment of AAM services requires a comprehensive infrastructure network, beginning with vertiports, drone ports, charging stations, and maintenance facilities. These components are essential for supporting the operation, turnaround, and upkeep of electric aircraft—including drones.

"Realising the full potential of AAM requires a coordinated build-out of supporting infrastructure, from vertiports and charging systems to integrated transport corridors."

Wassim Derguech, Co-Founder and COO of Future Mobility Campus Ireland

The following examples highlight how key elements of Ireland's existing and emerging infrastructure would support the rollout of AAM services, with Shannon playing a central role.

3.3.1 Regional Airports

Regional airports serve as critical nodes in any AAM network, providing access points for passengers and cargo. From an Irish perspective, Shannon Airport, with its existing facilities and strategic location, is well-positioned to become a central hub for AAM operations. Its integration into the AAM ecosystem enhances regional connectivity and supports economic development.

Regional airports play a vital role in the development of a national AAM network, serving as key hubs for passenger transport, logistics, and emergency services. Across Ireland, airports such as Shannon, Cork, Galway, Knock, and Waterford each offer unique assets—ranging from con-trolled airspace and existing aviation infrastructure to strong regional con-nectivity—that position them as strategic enablers of AAM deployment.

Shannon Airport, in particular, stands out as a potential central hub, given its robust facilities and leadership in aviation innovation. However, a coordinated, multi-regional approach is essential to ensure AAM services can scale efficiently and equitably across the country.

By activating a network of regional airports, Ireland can unlock the full potential of AAM to enhance national mobility, reduce congestion, and drive economic development in both urban and rural areas.

Currently, plans are in development to build Ireland's first vertiport in Shannon. This facility will initially act as a centre for research and development but then has the capacity to scale as the first node in the AAM network, with a particular focus on Regional Air Mobility (RAM). This facility will be operational by the end of 2026 and is expected to be the launch point for eCTOL and eVTOL services on the island of Ireland.

Ireland's Airports

FMCI IS SET TO OPEN IRELAND'S FIRST VERTIPORT IN 2026

3.3.2 Electrification and the Role of ESB

The transition to electric aviation requires a robust, future-ready energy infrastructure capable of supporting the unique demands of AAM. The Electricity Supply Board (ESB) will be instrumental in this transformation, ensuring the resilience and capacity of the national grid, developing high-capacity charging stations at key nodes such as vertiports and regional airports, and facilitating the broader electrification of aviation operations.

As electric aircraft—particularly eVTOLs and eCTOLs—become more prevalent, the integration of smart grid technologies, renewable energy sources, and rapid charging capabilities will be critical to ensure both operational efficiency and environmental sustainability.

Collaborations between ESB, FMCI, airport authorities, and local governments are already laying the groundwork for this transition. These partnerships are essential to aligning energy planning with transport innovation, ensuring that Ireland can meet the growing power demands of AAM while advancing national climate goals.

By taking a proactive approach to energy infrastructure, Ireland can position itself not only as an innovator in aviation but also as a leader in clean, connected transport systems.

3.3.3 Integration with the TEN-T Network

The Trans-European Transport Network (TEN-T) provides a strategic framework for integrating all major modes of transportation—road, rail, air, and maritime—into a cohesive, multimodal network across Europe. Designed to improve connectivity, efficiency, and sustainability, TEN-T supports the seamless movement of people and goods throughout the continent, while also promoting infrastructure harmonisation and innovation adoption.

Ireland's active participation in the TEN-T network ensures that its AAM developments are aligned with European transport priorities. By integrating vertiports, drone corridors, and supporting digital infrastructure into TEN-T nodes—such as airports and regional mobility hubs—Ireland is well-positioned to contribute to and benefit from Europe's transition to greener, smarter, and more resilient transport systems.

This alignment not only strengthens Ireland's credibility as a forward-looking aviation leader but also opens access to EU funding, technical guidance, and cross-border collaboration that can accelerate national AAM deployment and scalability.

AAM services could complement existing TEN-T corridors by connecting regional airports and rail hubs to more remote or underserved communities. An eVTOL flight could bridge the "last 50 kilometres" between a rural town and a major rail line, drastically reducing travel times and enhancing accessibility without the need for large-scale road construction. In the west of Ireland, a passenger travelling from a rural area near Ennis could take an eVTOL to Shannon Airport or to a nearby train station connected to the national rail network, facilitating fast, seamless multimodal journeys. Similarly, in more urban settings like Dublin, AAM could relieve pressure on congested roads by offering rapid, short-hop connections between transport nodes, such as Dublin Port, Heuston Station, and Dublin Airport—creating a truly integrated and efficient mobility system.

3.4 Strengthening the AAM Supply Chain

A resilient and responsive supply chain is essential to the success of the AAM industry. Ireland's aero-space sector, known for its innovation, adaptability, and collaborative culture, is well-positioned to play a central role in this emerging value chain.

The Emerald Aero Group, a dynamic cluster of Irish companies specialising in high-precision engineering, ranging from plastics moulding and tooling to 3D printing, demonstrates the depth of Ireland's advanced manufacturing capabilities. These companies are already contributing to the AAM ecosystem by developing cutting-edge solutions that drive economic growth and strengthen Ireland's position as a hub for next-generation aviation technologies.

Irish organisations are increasingly recognising the AAM market as a strategic opportunity to innovate, diversify, and access global export markets. FMCI's active collaboration with the Emerald Aero Group is fostering vital synergies between research, development, and manufacturing, accelerating the journey from prototype to market-ready solution.

This opportunity spans the entire island. By engaging companies across regions—including Northern Ireland—there is potential to create an integrated, all-island supply network that supports industrial growth, regional development, and the scalable delivery of AAM technologies throughout Ireland and Europe.

Archer

Joby

3.5 Driving AAM through Research and Development

Within the ever-evolving field of AAM, continuous research and innovation are essential to keep overcoming technical challenges and advancing AAM technologies. Ireland's robust R&D ecosystem, supported by government initiatives and funding programmes, provides an ideal R&D environment.

3.5.1 Funding Support

Access to funding is a critical enabler for researchers and companies to pursue ambitious projects, develop prototypes, and accelerate the commercialisation of innovative technologies. In Shannon, FMCI's state-of-the-art facilities and

collaborative ecosystem act as a catalyst for mobility-focused R&D across Ireland, attracting both public and private investment and fostering meaningful industry-academia partnerships.

3.5.2 National Funding Programmes

Irish national funding programmes, including the Sustainable Energy Authority of Ireland's *Research, Development & Demonstration* (SEAI RD&D) programme, Enterprise Ireland's various funding programmes, and the Disruptive Technologies Innovation Fund (DTIF), can be utilised to provide financial support for AAM-related projects. These programmes encourage collaboration between academia, industry, and government, driving innovation within the sector.

3.5.3 European Funding Programmes

Participation in major European research and innovation programmes has become a key enabler for scaling AAM innovation in Ireland and throughout Europe. Funding streams like Horizon Europe, INTERREG, and the Connecting Europe Facility (CEF) support transnational collaboration, large-scale demonstrations, and cross-border technology transfer—all crucial elements in building a globally competitive AAM sector.

Projects funded through European programmes enable collaborative R&D across leading players within the European Union—and in some programmes, internationally. They bring together industry experts, academic institutions, regulatory bodies, and other stakeholders to carry out joint research initiatives, pilot demonstrations, and skill-building activities. These efforts support infrastructure development, promote R&D through various technology readiness levels, and foster public acceptance—all of which assist with laying the groundwork for advancing air mobility and implementing forward-looking solutions.

Irish institutions, including FMCI, have successfully leveraged these opportunities to not only strengthen national capabilities but also align with broader EU aviation and sustainability strategies. FMCI's involvement in these projects ensures that the Shannon region continues to play a pivotal role in shaping the future of European aerial mobility.

3.6 Developing a Skilled Workforce for AAM

Developing a resilient talent pipeline is essential for Ireland to capitalise on the opportunities presented by AAM.

A future-ready workforce must be equipped to design, operate, maintain, and regulate emerging aerial technologies—ranging from electric aircraft to autonomous traffic management systems.

Achieving this pipeline necessitates a coordinated national approach that aligns industry demand with education and training provision.

The Shannon region offers a strong foundation for this effort, given its historic ties to aviation and its concentration of

relevant skills across aerospace engineering, digital systems, and transport operations. Irish institutions such as FMCI are actively working to bridge the gap between academia and the evolving needs of the AAM sector. In partnership with the Technological University of the Shannon (TUS), FMCI supports practical, skills-based learning pathways that provide students and trainees with direct access to advanced testbeds and real-world technologies.

This model of industry-academic collaboration aligns with the objectives outlined in Ireland's *National Skills Strategy 2025*, which emphasises lifelong learning, stronger employer engagement, and the need to future-proof skills across the economy. Furthermore, Ireland's involvement in the EU-funded AIRMOB project reinforces the country's position by helping to establish scalable, modular training frameworks adaptable across regions and sectors.

Complementing these efforts, the *Action Plan for Apprenticeship 2021–2025* aims to expand apprenticeship opportunities, targeting 10,000 new registrations annually by 2025. The plan seeks to modernise the apprenticeship system, making it more accessible and responsive to the evolving needs of industries, including emerging sectors like AAM.

By integrating apprenticeship pathways into the AAM talent development strategy, Ireland can ensure a diverse and skilled workforce ready to support the sector's growth.

By supporting such initiatives, national education and skills policies can play a pivotal role in ensuring Ireland not only keeps pace with global AAM developments but also leads in cultivating a workforce that is agile, inclusive, and equipped for the future of sustainable aviation.

3.7 Accelerating AAM through Live Testbeds and Controlled Airspace

Real-world testing is essential for any emerging technology—not just to validate performance, but to understand how these systems interact with people, environments and existing infrastructure. In AAM, testbeds serve as critical proving grounds for aircraft systems, airspace integration, and communications. Testbeds allow innovators to move beyond simulations and lab results to address the complex variables of actual operations.

Shannon's unique combination of controlled airspace, accessible regional airport facilities, and a supportive regulatory environment makes it one of the most strategically significant locations in Ireland—and within Europe—for AAM testing.

At the heart of this ecosystem is FMCI, a world-class facility that supports end-to-end testing of autonomous, electric aerial aircraft. The campus includes a dedicated vertiport, connectivity to advanced telecom networks, and seamless integration with road-based and digital

infrastructure, making it a one-of-a-kind environment for conducting multi-modal mobility trials.

FMCI's work in Shannon, and that of the air mobility partners it attracts to the region, exemplifies Shannon's potential as a testbed for developing AAM. For instance, the European project ÉALÚ-AER, coordinated by FMCI, deploys real-time U-Space systems, autonomous navigation, and interactions between manned and unmanned aircraft from its strategic base beside Shannon Airport. This project demonstrates how Shannon can act as a living lab for AAM integration.

In addition, Shannon Airport's existing status as an international hub further supports test and training flights under commercial grade conditions. This real-world context is essential for transitioning from pilot projects to scaled, commercial deployment of AAM services.

3.8 Unlocking the Value of AAM Routes in Ireland

AAM is not solely a technological advancement; it represents a new mode of transport designed to deliver tangible benefits to people, communities, and regions. Route planning and development are therefore critical to its success, ensuring that AAM services address specific mobility needs and deliver measurable value. Identifying viable corridors for passenger transport, emergency response, medical deliveries, and logistics is central to demonstrating both the economic and social impact of AAM.

In Ireland, where rural and regional connectivity remains an ongoing challenge, AAM offers transformative potential. By linking remote communities with regional airports such as Shannon, Ireland West (Knock), Kerry, and Donegal, AAM can reduce travel times, enhance access to essential services, and stimulate local economies. Urban centres, meanwhile, could benefit from air-based commuter routes that relieve congestion, while logistics operators may leverage drone technology to optimise last-mile delivery services. This positions Ireland as an ideal environment for the growth of a scalable, people-centric AAM industry, where the ripple effects of electric aviation can be felt across communities nationwide.

To support this vision, FMCI partnered with EA Maven, a specialist in aerial mobility strategy, to analyse and model viable AAM routes across the country. This collaboration has yielded data-driven insights into potential network structures, demand clusters, and environmental benefits. The resulting evidence base supports informed policymaking, targeted investment, and broader public engagement, helping to align aerial mobility with national goals around sustainability, regional development, and technological leadership.

These route networks also hold cross-border significance.

As Ireland deepens its integration within the broader European mobility ecosystem, AAM corridors could eventually connect with counterparts in the UK and continental Europe, contributing to a new layer of transnational transport infrastructure. In this context, Ireland—particularly the west coast—stands out as a compelling case study for the real-world impact and scalability of AAM in both regional and international contexts.

When aligned effectively, these key components create the conditions necessary for AAM to thrive. As demonstrated throughout this paper, Ireland—and particularly the Shannon region—already possesses many of the essential resources and infrastructure needed to support a robust AAM ecosystem. Every stage of the development pipeline is represented in the region, from research and development to manufacturing, testing, deployment, and regulatory integration. This makes Shannon not only a natural hub for AAM activity but also a strategic launchpad for shaping the future of air mobility across Ireland and beyond.

224 POTENTIAL AAM ROUTES ACROSS IRELAND'S URBAN AND REGIONAL CENTRES

SECTION FOUR
A ROADMAP FOR IRELAND'S AERIAL FUTURE

4. SCALING ADVANCED AERIAL MOBILITY FROM VISION TO REALITY

Ireland, and particularly the Shannon region, exemplifies the kind of advanced aviation cluster that can drive the development and deployment of Advanced Air Mobility. As AAM moves from concept to commercial reality, Ireland stands at a strategic inflection point—one that offers significant opportunity for both the industry and the nation as a whole.

Shannon already possesses the core foundations of a strong AAM ecosystem: a rich aerospace heritage, proactive regulatory engagement, academic excellence, and cutting-edge innovation testbeds such as those at FMCI.

To position Ireland as a global leader and scale AAM services nationwide, a coordinated national effort is now essential.

This means translating ambition into action through focused investment in infrastructure, progressive regulation, supportive policy, and meaningful public engagement.

4.1 Building the Enablers for National Deployment

To support AAM at scale, Ireland must accelerate its investment in infrastructure and regulation. This effort requires the systematic integration of AAM into planning efforts, positioning AAM innovation as an integral part of infrastructure planning and industrial development.

At the airspace level, integrating AAM operations into national ATM requires the deployment of an interoperable, digital U-Space system. Projects like ÉALÚ-AER, led by FMCI, are already demonstrating how real-time coordination between manned and unmanned aircraft can be safely achieved within live, controlled airspace.

Meanwhile, Irish innovators such as Manna Aero are setting a global benchmark in drone delivery, having completed over 200,000 successful flights in the suburbs of Dublin and now expanding operations across Ireland and into the U.S. Manna's success underscores the readiness of Ireland's ecosystem to support further AAM advancements.

To capitalise on this momentum, it is critical to scale these efforts nationally—underpinned by clear regulatory pathways and robust digital infrastructure—to enable the safe, routine integration of AAM into Irish airspace.

On the ground, the development of strategically located vertiports complete with charging infrastructure, passenger handling capabilities, and multimodal connectivity will be crucial. Shannon is uniquely positioned to serve as a national hub for such infrastructure, given its access to controlled airspace, international airport, road and rail connections (via the TEN-T network), and growing innovation ecosystem. Investment in additional regional vertiports can serve to connect underserved areas, helping to deliver both economic and social equity goals.

4.2 Ensuring Public Trust and Policy Alignment

As with any novel or innovative mode of transport, public acceptance will determine the success or failure of AAM. Transparent communication, safety assurance, and demonstrable societal benefit must therefore underpin deployment strategies.

It is within this space that FMCI plays a significant role, not just in terms of testing and validation but also in convening stakeholders and communicating results to the public through data, case studies and engagement initiatives.

In the regulatory domain, close collaboration between EASA, the IAA, and domestic and international partners is essential to ensure that emerging policies are agile, harmonised, and innovation-friendly. FMCI plays a key role in this ecosystem byserving as a living lab where new regulatory approaches can be tested and validated prior to wider adoption. At the governmental level, it is vital that the Department of Transport provides the IAA with sufficient resources and support to meet the evolving regulatory demands of the AAM sector.

"AAM is a glimpse into a future of cleaner, quieter, and more efficient air transport. I fully support initiatives that help decarbonise our transport systems and position Ireland as a leader in sustainable mobility, and I look forward to seeing the opportunities this technology will bring for industry and infrastructure across our regions."

Seán Canney TD, Minister for International and Road Transport, Logistics, Rails and Ports

4.3 Strategic Recommendations for Scaling AAM in Ireland

To move from demonstration to deployment, Ireland should adopt a coordinated national roadmap for AAM.

KEY RECOMMENDATIONS

Establishing a National AAM Infrastructure Fund to help finance vertiport development, grid upgrades for charging infrastructure, and digital systems for U-Space.

Formalising a regulatory sandbox through the IAA to fast-track trials, refine standards, and support market entry.

Expanding public-private partnerships that bring together mobility operators, aerospace companies, utility providers, and academia to co-develop services and supply chains.

Launching a National AAM Communications Strategy to engage the public, address concerns, and highlight benefits such as sustainability, connectivity, and regional development.

Aligning national transport, innovation, and climate strategies to explicitly include AAM and ensure it receives appropriate funding, policy support, and integration within existing road, rail, and maritime systems.

Ireland can also lead in shaping EU-level frameworks by participating in Horizon Europe, INTERREG, and CEF-funded initiatives. FMCI's collaboration with TUS, Avtrain, and DeepBlue in the Horizon Europe AIRMOB project, focused on building skills and capabilities for innovative air mobility, illustrates how Irish institutions can influence the European direction of travel within this domain.

4.4 Who Must Act and How?

Realising the full potential of AAM in Ireland requires collaboration and commitment across sectors.

KEY ACTORS AND THEIR ROLES

Government must develop a national AAM strategy through funding and policy leadership that supports regulatory innovation, invest in infrastructure, and workforce development.

Industry partners must continue to innovate by piloting new technologies and investing in Ireland's AAM ecosystem. This includes participation in clusters such as the Emerald Aero Group or test environments like FMCI.

Academic institutions should expand their research, training, and upskilling offerings to meet the needs of a rapidly evolving sector, in partnership with testbeds like FMCI and research projects such as AIRMOB.

Communities and local authorities should engage with trial projects to test the impacts of AAM in the region and help shape the public discourse surrounding aerial mobility in daily life.

With its unique assets and strategic positioning, Ireland is exceptionally well placed to take a leading role in the future of AAM. However, that leadership must be actively built through targeted investment, visionary policy, and a shared commitment to innovation.

FMCI stands ready to support this journey, offering a unique platform where ideas can be tested, refined and launched into the real world.

The time to act is now.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CLOSING THOUGHTS

SEIZING IRELAND'S AERIAL OPPORTUNITY

Ireland stands on the cusp of a mobility revolution—one defined by cleaner, smarter, and more connected modes of transport. Nowhere is this transformation more tangible than in the Shannon region, where the foundations for Advanced Aerial Mobility are already being laid. With its uncongested yet controlled airspace, proximity to international transport networks, and a legacy of aviation leadership, Shannon offers an unrivalled launchpad for Ireland's ambitions in electric and autonomous flight.

Ireland makes a strong case, one of readiness, vision, and momentum. FMCI and its partners are actively shaping the technical, regulatory, and workforce dimensions of AAM through real-world demonstrations, European-funded R&D projects, and cross-sector collaboration. At the same time, Ireland's capacity to develop and trial scalable infrastructure—including vertiports, charging networks, and digital airspace systems—is reinforced by its strong national grid and integrated transport planning. Shannon is already showcasing how multimodal nodes can operate in sync with low-emissions goals, providing a living model of future mobility that is both practical and exportable.

Crucially, Ireland's size, agility, and policy cohesion make it an ideal testbed for Europe—small enough to pilot bold ideas, large enough to scale them, and sufficiently engaged to influence EU-wide strategy through Horizon Europe, CEF, and INTERREG.

As Europe defines its vision for Urban and Regional Air Mobility, Ireland is positioned not only to lead in implementation, but to help shape the very frameworks that will govern the skies of tomorrow.

The opportunity is clear, but the window is narrow. To lead in this fast-evolving sector, Ireland must act decisively—with coordinated national support, early investment in infrastructure, and a unified strategy to drive innovation, public acceptance, and global competitiveness.

The ecosystem is forming. The blueprint is emerging. Now is the time to build—and to lead.

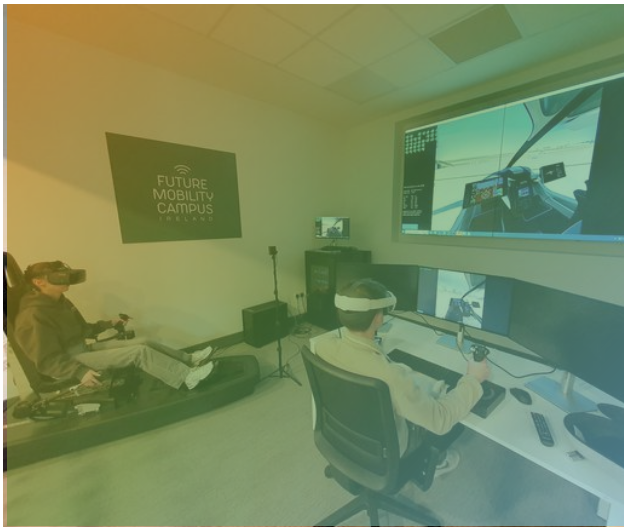
ABOUT FUTURE MOBILITY CAMPUS IRELAND

Future Mobility Campus Ireland (FMCI) is Ireland's first and only full-scale mobility research and development facility, spanning ground and air transport solutions. We act as an enabling platform to create a safer, smarter, and more sustainable mobility ecosystem.

Situated in the Shannon Free Zone and directly connected to Shannon Airport, we provide a state-of-the-art testbed for connected, autonomous and electric vehicle solutions (including drones and electric aircraft), across a controlled, real-world environment. At FMCI, industry, academia, and policymakers meet to design, test, and deploy future mobility solutions at scale.

FMCI focuses on four main pillars of mobility innovation: Advanced Air Mobility, Smart City networks, transport infrastructure, and skills development and training for the mobility sector. Our integrated facility enables end-to-end project execution in these four areas, providing resources, guidance, and partnerships to accelerate innovation.

Beyond our physical testbed, FMCI plays an active role in European research initiatives to address the evolving challenges of transport and infrastructure. We collaborate with local and international partners on enhancing autonomous and electric vehicle technologies, advanced air mobility solutions, sustainable transport systems, and skills development in mobility sectors.



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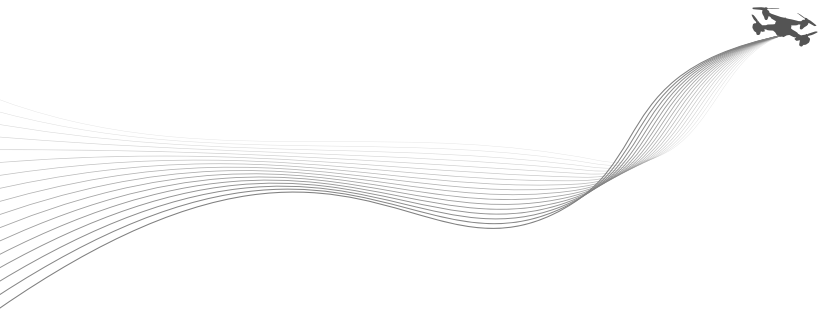
APPENDICES

GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS AND ACRONYMS

AAM	Advanced Air/Aerial Mobility
ATM	Air Traffic Management
CEF	Connecting Europe Facility
DTIF	Disruptive Technologies Innovation Fund
EASA	European Union Aviation Safety Agency
ESB	Electricity Supply Board
eCTOL	Electric Conventional Take-Off and Landing
eVTOL	Electric Vertical Take-Off and Landing
FMCI	Future Mobility Campus Ireland
IAA	Irish Aviation Authority
MRO	Maintenance, Repair, and Overhaul
OEM	Original Equipment Manufacturer
RAM	Regional Air Mobility
SEAI RD&D	Sustainable Energy Authority of Ireland's Research, Development & Demonstration
TAM	Total Addressable Market
TEN-T	Trans-European Transport Network
TUS	Technological University of the Shannon
UAM	Urban Air Mobility
UAS	Unmanned Aerial Systems
UTM	Unmanned Traffic Management



FURTHER READING

To complement the insights presented in this white paper, the following case studies and research projects offer deeper perspectives on how AAM is being explored and advanced in Ireland, with a strong focus on real-world application, regulatory readiness and regional impact.

i. ÉALÚ-AER

Led by FMCI, ÉALÚ-AER is Ireland's flagship project for real-world airspace integration. The initiative brings together public and private stakeholders to test and validate how Unmanned Traffic Management (UTM) systems can safely coordinate both crewed and uncrewed aircraft in controlled airspace. By enabling live testing in Shannon's uncongested but complex operational environment, ÉALÚ-AER lays the foundation for scalable, digital airspace management in Europe.

Further Reading: ÉALÚ-AER

ii. AIRMOB: Developing Skills and Capabilities for Innovative Air Mobility

This Horizon Europe-funded project, in which FMCI plays a key role, focuses on building the human capital required to support the growth of AAM. AIRMOB develops structured training, research, and upskilling pathways in collaboration with academic institutions, technical universities, and industry stakeholders across Europe. The project aims to ensure the emerging AAM workforce is well-prepared to meet operational, regulatory and technological demands.

Further Reading: AIRMOB

iii. EA Maven: Route Analysis for AAM in Ireland

In partnership with FMCI, EA Maven conducted an in-depth study to evaluate potential routes for passenger and logistics services using AAM technologies across Ireland. The study considered demand modelling, population centres, infrastructure availability and environmental factors. It identified key corridors, including those connecting Shannon to regional airports and underserved communities as high-potential areas for early deployment. The work provides a strategic blueprint for where AAM can deliver the most value, both commercially and socially.

Further Reading: Advanced and Regional Air Mobility in Ireland

iv. EASA Study on the Societal Acceptance of Urban Air Mobility in Europe

This comprehensive study by the European Union Aviation Safety Agency (EASA) examines public perception and acceptance of Urban Air Mobility (UAM) across various European cities. It provides valuable insights into societal concerns and expectations regarding the integration of UAM into urban environments.

Further Reading: EASA Study on the societal acceptance of Urban Air Mobility in Europe

v. EASA Urban Air Mobility Overview

This overview by EASA outlines the anticipated developments in Urban Air Mobility within Europe over the next few years. It discusses technological advancements, regulatory frameworks, and the expected timeline for the integration of UAM services.

Further Reading: EASA Urban Air Mobility Overview

vi. Integrating Air Mobility into Wider Infrastructure – KPMG Ireland

This report discusses how AAM can be integrated with multi-modal hubs to provide high-speed, user-oriented, and environmentally friendly transport, facilitating both urban and rural economic growth. It emphasises the importance of aligning AAM with existing infrastructure to enhance accessibility and reduce potential disruptions.

Further Reading: Integrating Air Mobility Into Wider Infrastructure

vii. Social Acceptance of Innovative Air Mobility in Ireland – SESAR Joint Undertaking

This qualitative study examines stakeholders' perspectives on the societal acceptance of Urban Air Mobility (UAM) and Innovative Air Mobility (IAM) in Ireland. It provides insights into public concerns and expectations, which are crucial for shaping the future of IAM in the country.

Further Reading: Social Acceptance of Innovative Air Mobility in Ireland

ACKNOWLEDGEMENTS

FMCI would like to acknowledge the valuable contributions of the many partners, collaborators, and stakeholders who have supported the development of this white paper.

Their shared expertise, feedback, and commitment to innovation have been instrumental in shaping the insights presented here. This work reflects a collective effort to advance Ireland's position in the emerging field of Advanced Aerial Mobility and to build a collaborative, future-ready ecosystem.

FUTURE MOBILITY

CAMPUS IRELAND

Driving the transformation of mobility

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