



5 MUST-HAVES TO TAKE OFF IN THE ADVANCED AIR MOBILITY MARKET

Overcome the key challenges to bring eVTOLs and UAVs
to market faster

ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF
UNCERTAINTY
3. BE COMPLIANT AND EXCEED
QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT
FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

BUILD FOR GROWTH

ADVANCED AIR MOBILITY IS TAKING OFF.

Designers and engineers around the world are unlocking the future of flight. Stronger lightweight materials, smaller mechanical assemblies, more powerful batteries, as well as environmental and safety regulations are favoring a change in how we use our airspace.

“ Advanced air mobility offers the potential to increase the efficiency of current transportation networks by reducing travel time and popularizing sustainable flights with zero carbon emissions. Additionally, advanced air mobility offerings go beyond urban air mobility, presenting options for cargo transport and regional air mobility.”

Deloitte Research Center for Energy & Industrials*

Our collective goals include more sustainable transportation options, less traffic congestion, and less noise pollution. As a result, the number of creative minds turning their energy toward unmanned aircraft systems (UAS), electric vertical take-off and landing (eVTOL) aircraft, and other aerial vehicles is skyrocketing. Advanced Air Mobility (AAM) is reshaping the aviation landscape with electric propulsion systems, autonomous technologies and urban integration, aiming to offer cleaner and quieter flight solutions.

Certification is a critical priority in this nascent industry. Regulatory bodies are working closely with manufacturers to establish safety standards and certification processes, ensuring that new aircraft meet rigorous safety and performance benchmarks. Achieving certification is essential for public trust and the commercial viability of these innovative transportation solutions.

ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH

* Source: Advanced air mobility: Achieving scale for value realization

BUT THE RUNWAY IS CROWDED.

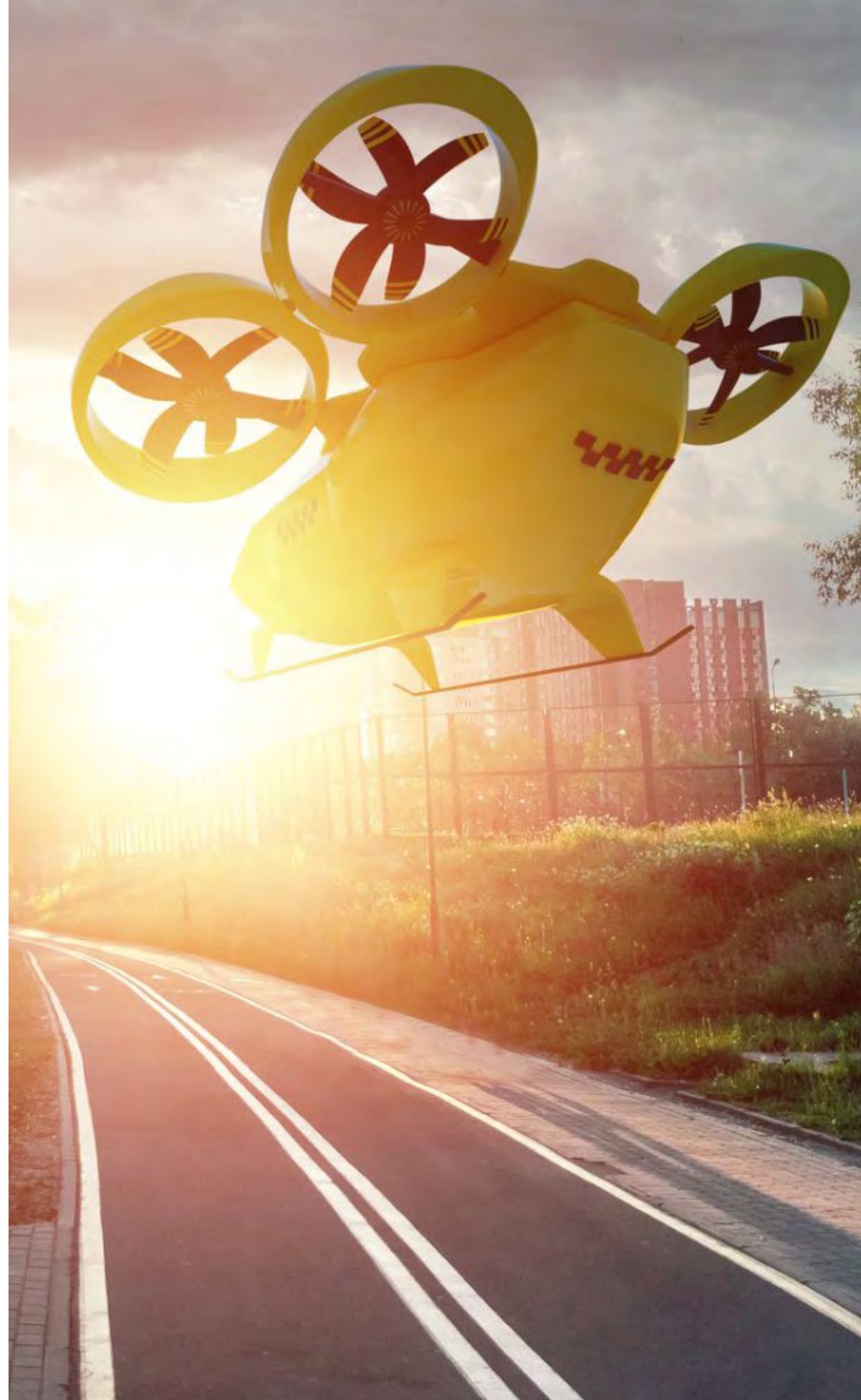
As exciting as the opportunity may be, engineers face a dicey journey — one as risky as the experiments attempted by 19th- and 20th-century flight pioneers. Today, survival of the business is on the line rather than the pilots themselves. Competition is growing daily and standing out is tough. By 2030, the AAM market could reach US\$33.5 billion, up from US\$5.3 billion in 2022, with a CAGR of about 33%. The global mature market for AAM could eventually exceed US\$1 trillion.*

Aerospace startups and product innovation teams within established organizations are competing on creativity and speed to market. And the obstacles are daunting. Universal challenges include:

- Learning (and anticipating) as much as possible before physical prototypes are built
- Communicating and collaborating seamlessly across disciplines
- Responding with agility to market conditions and customer demands
- Selecting the right tech to match design challenges
- Laying the groundwork for a design-for-manufacturing process that scales
- Achieving compliance and industry certifications
- Persuading investors to back the project

Because of these obstacles, only a few will arrive at their final destination: a dominant position in the market.

*Source: How can sustainability take flight in aerospace and defense?



ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

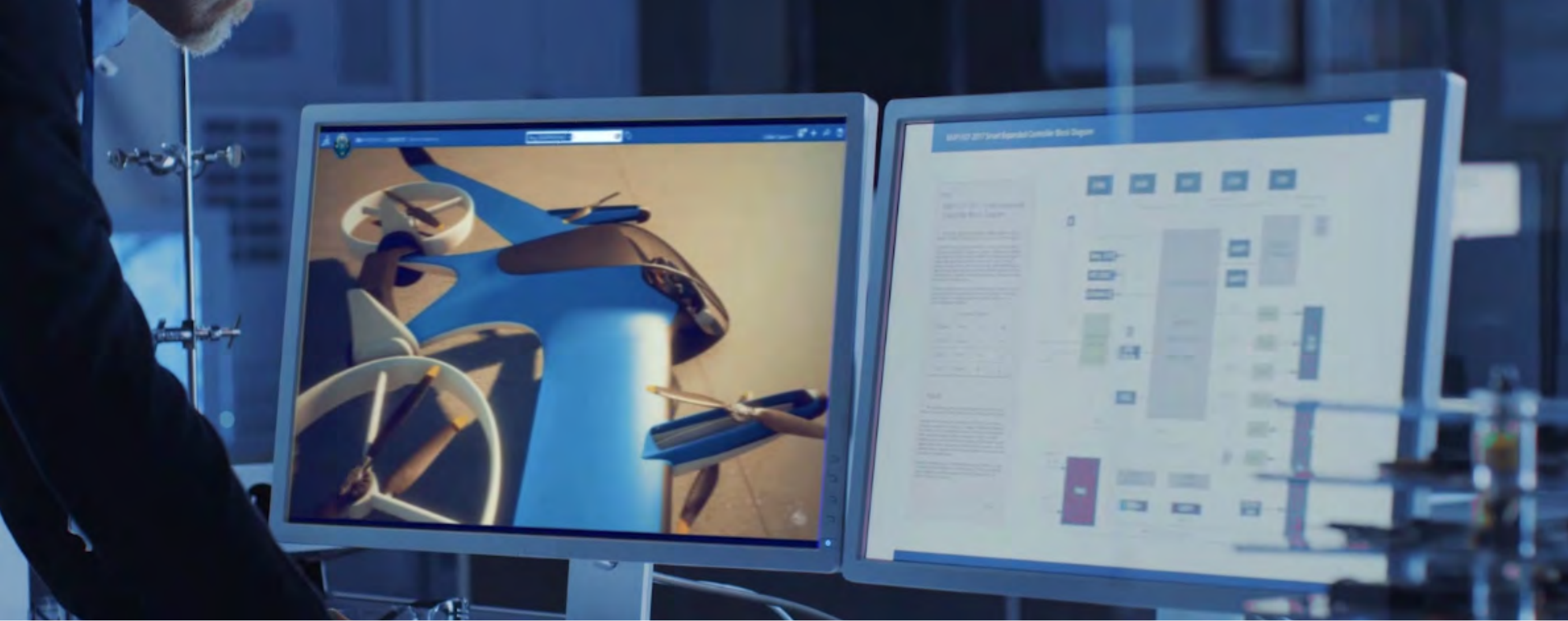
PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF
UNCERTAINTY
3. BE COMPLIANT AND EXCEED
QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT
FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

BUILD FOR GROWTH



PICK YOUR PLATFORM WISELY.

For design teams focused on UAVs, eVTOLs and other air mobility solutions, the project lifecycle management platform you choose is critical to the success of your vision.

This decision will determine the efficiency of your processes, the quality of your product and your ability to grow.

Your chosen system should propel your team to:

1. **Be first**
2. **Be agile**
3. **Be compliant**
4. **Be unique**
5. **Be able to scale**

The **3DEXPERIENCE**[®] platform on the cloud is a robust, scalable solution designed to help startups and innovative OEMs develop new mobility experiences. It offers digital continuity and controlled execution to design teams who are taking aviation to new heights.

ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF
UNCERTAINTY
3. BE COMPLIANT AND EXCEED
QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT
FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

BUILD FOR GROWTH

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

➔ 1. Be first to market.

A unified digital platform reduces rework and eliminates the need to convert data between systems. Shorter release cycles enable quicker development of viable prototypes, while a turnkey engineering experience helps team members ramp up swiftly. Additionally, a secure, cloud-based platform facilitates productive collaboration among stakeholders across the value network.

Functional generative design on the **3DEXPERIENCE** platform is backed by the well-known Tosca solver and provides a topology optimization technique that identifies and removes areas of a design space not contributing to the stiffness of the part. This determines an optimum material distribution in a defined design area, while accounting for existing constraints to the design space such as boundary conditions, connections and pre-tensions, loads, and frozen regions. Perform validations on the optimized design and confidently select an ideal design variant using trade-off study tools.

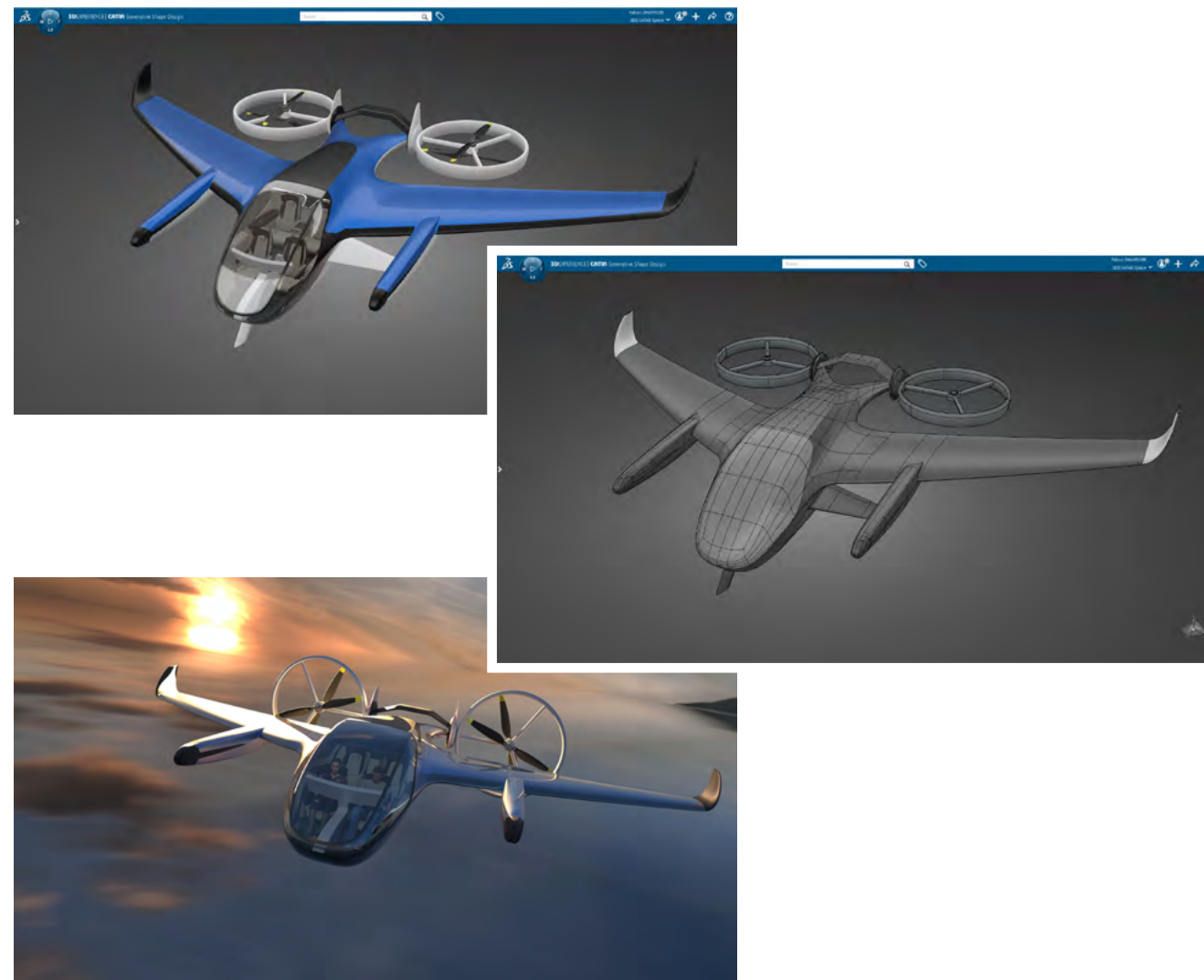
Unified modeling and simulation (MODSIM) allows engineers to fully experience the product and its behavior in the early design phases. This enables the delivery of complex, sophisticated products that meet performance requirements and time-to-market deadlines. MODSIM combines the capabilities of CATIA® and SIMULIA® on the **3DEXPERIENCE** platform, providing a data-driven approach that integrates simulation from the start. This increases efficiency, reduces error risks, and prevents delays and budget overruns.

Learn more about how MODSIM can optimize your product development process and maximize your return on investment in our e-book: [Maximize Your Return on Investment with MODSIM](#).

Startups and SMBs can benefit from MODSIM to:

- Optimize products to their full potential
- Reduce physical prototyping costs
- Gain better insights and improve decision-making
- Enable a collaborative design approach within teams
- Accelerate innovation with high-performance cloud computing solutions

With a system that supports an accelerated concept-to-certification process, you'll have a first-mover advantage.



ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET

2. BE AGILE IN THE FACE OF UNCERTAINTY

3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS

4. BE UNIQUE AND STAND OUT FROM THE CROWD

5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH



ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET

2. BE AGILE IN THE FACE OF
UNCERTAINTY

3. BE COMPLIANT AND EXCEED
QUALITY EXPECTATIONS

4. BE UNIQUE AND STAND OUT
FROM THE CROWD

5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

BUILD FOR GROWTH

2. Be agile in the face of uncertainty.

Agility is critical for startup success. Changing market conditions, engineering requirements and competitive pressures are just some of the variables this nascent industry must contend with. To face them head on, teams of all sizes must stay nimble. That means building on processes and systems that can grow with your team to meet current and future needs.

The **3DEXPERIENCE** platform on the cloud makes it possible to deploy within hours, building scalable computing resources that don't rely on heavy IT investment. Set up and start using the platform with minimal

configuration and shift resources to a rapidly scalable cloud computing infrastructure.

For organizations looking to start their cloud adoption journey, our latest blog article outlines three easy steps to make the transition smooth and effective. Read more here: [Three Easy Steps to Start your Cloud Adoption Journey](#).

Reduce your IT expenditure by switching licenses on and off through the stages of your product development process. Choosing a subscription model lets you pay only for what you need, quickly adding or removing capabilities like simulation and electrical engineering.

3. Be compliant and exceed quality expectations.

Address quality, compliance and safety challenges with an integrated set of tools for Model-Based Systems Engineering (MBSE), product design, simulation, validation & verification and governance. Tools and solutions work together in a single cloud-based platform so systems architects, design and engineering teams can collaborate in real time to leverage the best ideas from all contributors and disciplines.

It's essential to build for safety early on in the design process and ensure certifications are achieved. Use the **3DEXPERIENCE** platform on the cloud to perform high-fidelity aerodynamic analysis and virtually test many different iterations to develop leading edge technologies.

Accurately plan, predict, compare and simulate multiple product behaviors to reduce reliance on physical testing, with a model-based validation and verification approach, bringing products to market faster while preventing risks and delays.

Multi-scale, multiphysics simulation helps you meet the highest safety and quality standards, for instance to design a quieter flight experience. Model-based engineering, validation & verification, and governance provide full traceability and allow you to achieve compliance to certification earlier by demonstrating the safety of novel architectures to regulatory authorities.

Dassault Systèmes' proprietary knowledgeware ensures that all models are legible across disciplines, and integrated PLM provides visibility on the product development process from beginning to end.



ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET

2. BE AGILE IN THE FACE OF
UNCERTAINTY

3. BE COMPLIANT AND EXCEED
QUALITY EXPECTATIONS

4. BE UNIQUE AND STAND OUT
FROM THE CROWD

5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

BUILD FOR GROWTH



4. Be unique and stand out from the crowd.

A human-centric design approach is essential to standing out in the competitive eVTOL market. This means putting the final customer at the heart of the experience. Beyond design innovation, it's about considering the human experience and showcasing the uniqueness of your design. Key factors include:

■ **Human factors and ergonomics:** Utilize advanced tools like manikin and RAMSIS to ensure optimal ergonomics and comfort for passengers. These tools help designers simulate and analyze the interaction between humans and vehicles, ensuring that all aspects of the interior layout, seating, controls, and accessibility are tailored to provide the best possible comfort and usability. This approach not only enhances passenger comfort but also contributes to safety and overall satisfaction.

■ **Passenger experience:** Focus on the entire end-to-end passenger experience, including vertiport design and integration within existing infrastructure. The journey begins from the moment passengers arrive at the vertiport. Considerations include efficient check-in processes, comfortable waiting areas, and seamless boarding procedures. The design of the vertiport itself should facilitate quick turnarounds and

provide amenities that enhance the passenger experience. Inside the eVTOL, attention to detail in seating, lighting, and in-flight services can create a memorable and positive experience.

■ **Noise and vibration management:** Work on minimizing noise and vibrations perceived both on the ground and in the cabin to enhance comfort and reduce environmental impact. This involves using advanced simulation tools to analyze and mitigate sources of noise and vibration throughout the vehicle. Strategies include optimizing rotor design, using sound-dampening materials, and incorporating active noise control technologies. Reducing noise not only improves passenger comfort but also addresses community concerns about urban air mobility, making eVTOLs more acceptable in urban environments.

Startups are leveraging the **3DEXPERIENCE** platform's photorealistic rendering capabilities to create immersive experiences from concept to reality. This includes everything from detailed digital mock-ups to interactive 360° views, helping to convey the unique aspects of their designs effectively. By focusing on the holistic passenger experience and leveraging advanced design tools, eVTOL developers can create innovative and appealing products that stand out in a crowded market.

ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

BUILD FOR GROWTH

➔ 5. Be able to scale.

Scaling manufacturing operations in the Advanced Air Mobility (AAM) sector presents significant challenges. An AAM service within a region will require a fleet of thousands of aircraft, and the Aerospace & Defense (A&D) industry is not accustomed to producing such a high number of vehicles in a short amount of time. This is where digital manufacturing and design for manufacturing become critical.

Digital manufacturing methods enable small organizations to scale up quickly. By planning, simulating, and modeling global production processes, you'll find efficiencies in the manufacturing phases of the product lifecycle. These efficiencies are vital to meeting the demands of large-scale production and ensuring the timely delivery of high-quality aircraft.

Imagine how fast and far you and your team could go with integrated unified modeling and simulation processes on a scalable platform available anytime, anywhere. Cloud computing easily handles very large assemblies for instant visualization.

Leverage the tools and techniques used by industry giants like Boeing and Airbus with an IT-friendly offer tailored for startups and innovation labs:

- **Add new users and roles** as projects mature and business grows, as and when you need them.
- **Add simulation or computing power on-demand** with cloud credits.
- Enjoy **ultra-fast deployment**, automatic updates, and included maintenance.

Startups often experience a high rate of hiring and turnover, making it crucial to quickly onboard new engineers onto enterprise systems. Only a collaborative platform approach with a single authoritative

source of truth can achieve that. The **3DEXPERIENCE** platform on the cloud offers this collaborative environment, ensuring that everyone on the team is working with the most up-to-date information.

Adopt a solution that grows with you. The **3DEXPERIENCE** platform on the cloud is a complete product development solution that scales with your business through any stage of development. From initial concept to mass production, the platform supports your growth and helps you manage the complexities of scaling manufacturing operations.



ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

The 3DEXPERIENCE platform enables engineering teams working on UAS, VTOLs, and other aerial vehicles to:

- Generate parametric designs using automation.
- Facilitate rapid learning cycles.
- Quickly transform an idea into a virtual flight experience.
- Digitally build and simulate a virtual prototype.

Start strong out of the gate — right when you're building a case for investors. Create mock-ups and renderings in the very early stages and get to a prototype in no time.

ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

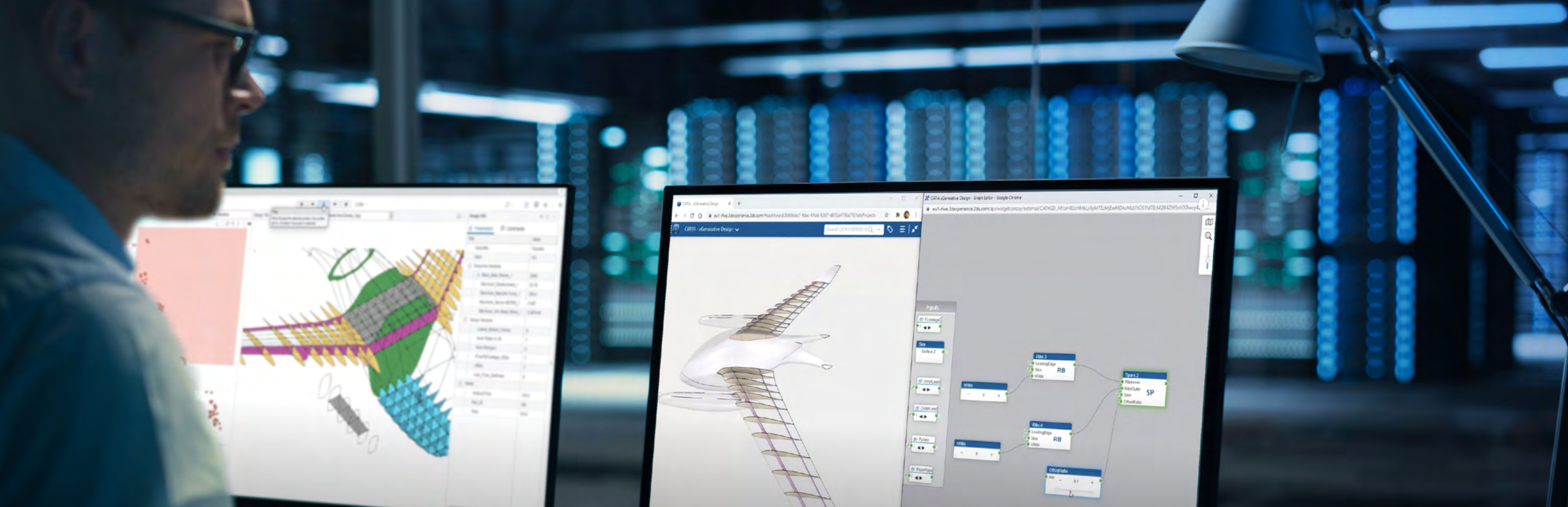
PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH



Collaborate Seamlessly

Enjoy seamless, secure collaboration with all disciplines, engineering domains, and stakeholders wherever they are in the world. Centralize all project information in a single source of truth. Establish traceability for certification.

Security is a top priority on the **3DEXPERIENCE** platform. Our state-of-the-art cybersecurity measures ensure that your data and intellectual property are safeguarded at all times. Dassault Systèmes' commitment to security, privacy, and quality is demonstrated through our ISO-certified management systems, which power our reliable and scalable cloud platform.

For more details on our security practices and certifications, visit our **3DEXPERIENCE Trust Center**.

Gain End-to-End Visibility

Engineer a product while understanding the whole product development lifecycle, from cradle to grave. The full perspective from concept to manufacturing improves quality and speed of the end product.

Follow the electric flow from battery tests to wiring to battery integration. Implement aero-acoustics solutions. Ensure ultimate endurance and performance. Gain insights into optimizing drone/eVTOL range, speed, and overall performance through innovative engineering practices.

To dive deeper into mastering battery evolution and integration, check out our comprehensive whitepaper: **Revolutionizing eVTOL Battery Innovation**

Execute with Precision

Control the design and engineering processes. Develop a multidisciplinary digital mock-up (DMU) combining structural technologies, sheet metal and additive manufacturing. Run multiphysics and mechatronics engineering.

ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH



SEAMLESS VTOL PROTOTYPING AT ASCENDANCE

Founded in 2018 by four former Airbus engineers, Ascendance is dedicated to helping aviation meet its environmental objectives. The company's unique hybrid VTOL aircraft aims to make air mobility quieter and more sustainable, reflecting their commitment to durable sustainable innovation. Ascendance leverages cutting-edge technologies such as computer-aided design (CAD), computer-aided engineering (CAE), simulation, and model-based system engineering (MBSE) roles on the **3DEXPERIENCE** platform on the cloud.

*"Coming from Airbus, we were familiar with Dassault Systèmes and the **3DEXPERIENCE** platform. They help us to connect all facets of our product development and manage the innate complexities that come with being a fast-growing business. It has been a huge accelerator for us."*

Benoit Ferran, Cofounder and CTO of Ascendance

Ascendance's use of the **3DEXPERIENCE** platform enables seamless integration of design, engineering, and simulation, allowing its team to iterate rapidly and optimize its aircraft for performance and sustainability. This approach not only accelerates development but also ensures that every aspect of the aircraft meets stringent environmental standards.

For more details on Ascendance's journey and the role of the **3DEXPERIENCE** platform in their success, [read the full case study](#).

ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH

BUILD FOR GROWTH

Simulate and understand the manufacturing processes. Provide a clear view of the next investment step. Be manufacturer agnostic; share readable product definitions with the best manufacturing partners in the world no matter where they are.

"Now, when you consider how we work on the 3DEXPERIENCE platform and how we first started out, there's no comparison. We plan to recruit more people over the next few months and we're confident that no matter how large our organization becomes, we have the right technology to keep us on track."

Benoit Ferran, Co-founder and CTO, Ascendance



ADVANCED AIR MOBILITY IS
TAKING OFF

BUT THE RUNWAY IS
CROWDED

PICK YOUR PLATFORM
WISELY

THE 5 KEYS TO SUCCESS IN
THE ADVANCED AIR MOBILITY
INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR
CONCEPT RAPIDLY

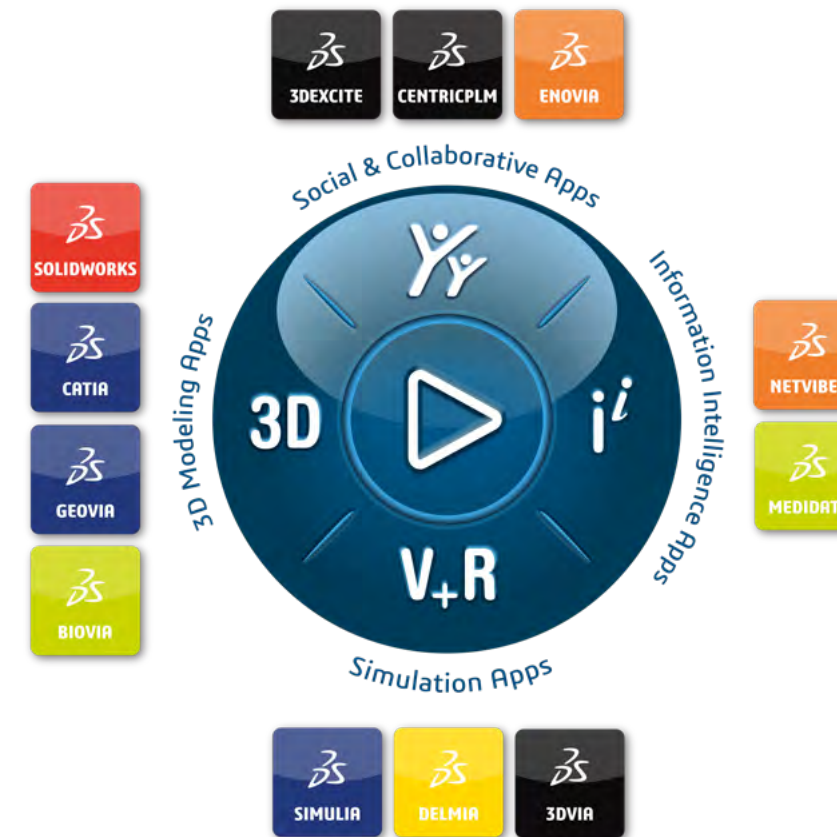
BUILD FOR GROWTH

The 3DEXPERIENCE platform on the cloud offers urban and advanced air mobility teams:

- Scalability to support a growing business.
- Continuity between design data and simulation data. No rework. No wasted time or materials.
- Integrated workflows across value streams and best-in-class design and simulation tools.
- Ease of use and peace of mind. Multidiscipline collaboration on the platform is simple and secure.
- Access to best-in-class product development solutions, training, co-marketing opportunities and a tailored onboarding program

Do you qualify for our complete product development solutions for startups starting at 474€?

[Learn more](#)



ADVANCED AIR MOBILITY IS TAKING OFF

BUT THE RUNWAY IS CROWDED

PICK YOUR PLATFORM WISELY

THE 5 KEYS TO SUCCESS IN THE ADVANCED AIR MOBILITY INDUSTRY

1. BE FIRST TO MARKET
2. BE AGILE IN THE FACE OF UNCERTAINTY
3. BE COMPLIANT AND EXCEED QUALITY EXPECTATIONS
4. BE UNIQUE AND STAND OUT FROM THE CROWD
5. BE ABLE TO SCALE

DEFINE AND VALIDATE YOUR CONCEPT RAPIDLY

BUILD FOR GROWTH

Europe/Middle East/Africa

Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific

Dassault Systèmes K.K. ThinkPark
Tower
2-1-1 Osaki, Shinagawa-ku, Tokyo 141-
6020
Japan

Americas

Dassault Systèmes
175 Wyman Street Waltham,
Massachusetts 02451-1223
USA