Chandrawat & Partners

AEROSPACE AND DEFENCE GUIDE

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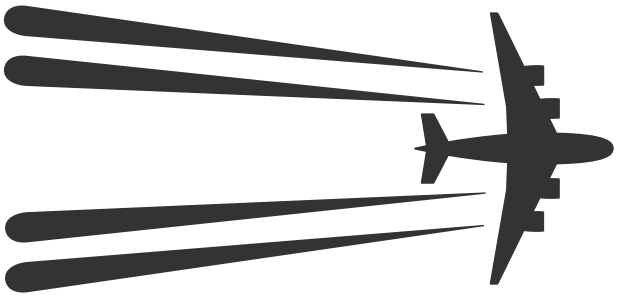
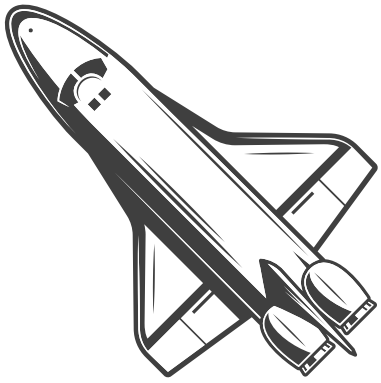


OVERVIEW



Aerospace is the design and production of space-operating objects like aircraft, rockets, missiles, and spacecraft. Weapons, armour, and other items used in defence are military hardware.

The two primary categories are aerospace and defence. The companies involved in creating prototypes and producing or assembling finished aircraft and aircraft parts for commercial use make up the aerospace sector. Both automatic and manual modes of operation are used to fly the aircraft. Weapon systems, fire control systems, command and control systems, and other things are some of its various components.

In terms of the number of people employed and the amount of output, the aerospace industry is one of the major manufacturing sectors in the world. Even yet, the aerospace sector was one of the 20th century's defining sectors, despite its sheer scale. As a socio-political phenomenon, aerospace has sparked the imaginations of young people all over the world, given rise to new industrial design schools, significantly increased the nation state's power and self-image, and reduced the effective size of the planet.

The aerospace and defence industries have long used composites. However, there were only a few applications for them in the business. Aerospace composites were initially notably used in the structures of military aircraft to significantly reduce weight. Wide-body airplane model 787 Dreamliner, which is said to be built of 80% composites by volume, was presented by Boeing in 2011 (entered commercial service). Since then, it has been a major success for Boeing, with over 1510 orders confirmed as of March 2020.

Airbus Group SERaytheon Technologies Corporation, The Boeing Company, Lockheed Martin Corporation, Raytheon Co, Northrop Grumman Corp, Bae Systems plc, General Dynamics, General Electric Company, and Safran SA are significant players in the aerospace and military market.

ECONOMIC OVERVIEW

Aerospace has been a major consumer of research and development funds across many fields, supported technological innovation in a wide range of component technologies, stimulated the development of new production methods, prompted the building of massive manufacturing facilities, stimulated the use of technology-sensitive management strategies, supported reliant regional economies, and justified the deeper penetration of national governments into their economies. No other sector has interacted with the nation state's bureaucracy so consistently and closely.

The global aerospace & defence market grew from $795.92 billion in 2022 to $855.62 billion in 2023 at a compound annual growth rate (“CAGR”) of 7.5%. The aerospace & defence market is expected to grow to $1076.56 billion in 2027 at a “CAGR” of 5.9%

The market value is defined as the income that businesses receive in terms of the currency (in USD unless otherwise indicated) from the sale of goods and/or services within the specified market and area through sales, grants, or contributions.

GOVERNING RULES AND LAWS

International Civil Aviation Organization

As signatory states to the Chicago Convention (1944), “(ICAO)[RB1] ” is sponsored and run by 193 national governments to assist their collaboration and diplomacy in the aviation industry.

Its primary duties include conducting research into new developments in air transport policy and standardization as instructed and approved by governments through (ICAO) Assembly or by the (ICAO) Council, which the assembly elects. The (ICAO) Council serves as the organization's executive body.

The requirements contained in (ICAO) standards never take precedence over national regulatory obligations. Air operators using the relevant airspace and airports are required by law to abide by local and national restrictions, which are always implemented in and by sovereign governments.

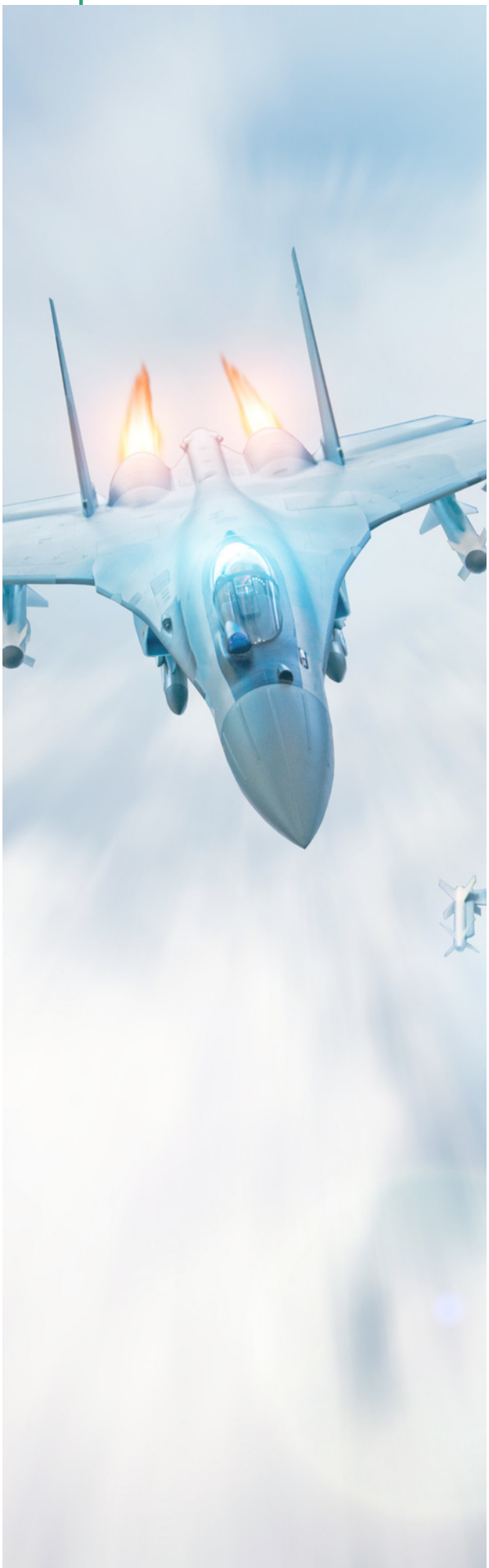
The Convention on International Civil Aviation (Chicago Convention) and a key component of (ICAO's) goal and responsibility are the development and upkeep of international Standards and Recommended Practices (“SARPs”) and Procedures for Air Navigation (“PANS”).

The global standardization of functional and performance requirements of air navigation facilities and servicest he orderly development of air transport, “SARPs” and “PANS” are essential to “ICAO” Member States and other stakeholders.

The International Space Station is a co-operative programme between Europe, the United States, Russia, Canada, and Japan for the joint development, operation, and utilisation of a permanently inhabited Space Station in low Earth orbit.

The International Space Station Intergovernmental Agreement, often referred to as 'the IGA', is an international treaty signed on 29 January 1998 by the fifteen governments involved in the Space Station project. This key government-level document establishes a long term international co-operative framework on the basis of genuine partnership, for the detailed design, development, operation, and utilisation of a permanently inhabited civil Space Station for peaceful purposes, in accordance with international law.

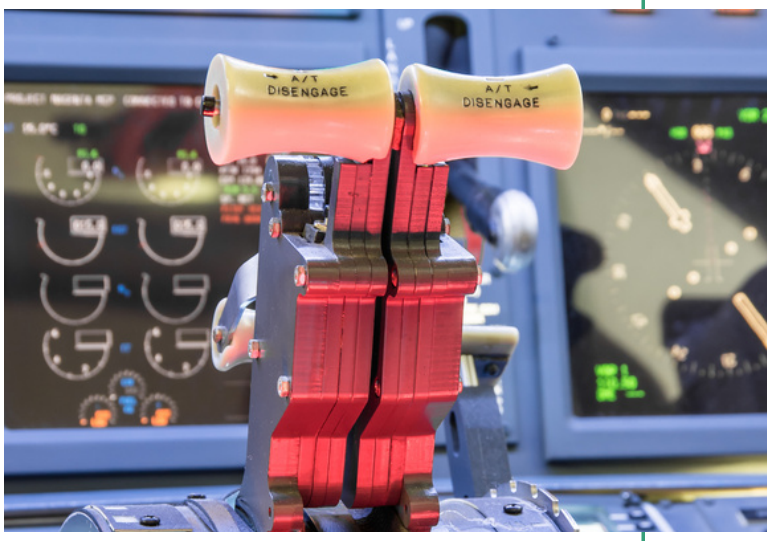
Four Memoranda of Understandings (MoUs) between the National Aeronautics and Space Administration (NASA) and each co-operating Space Agency: European Space Agency (ESA), Canadian Space Agency (CSA), Russian Federal Space Agency (Roscosmos), and Japan Aerospace Exploration Agency (JAXA).



FUTURE OF AEROSPACE AND DEFENCE

- Global defence spending has been on a clear upswing for almost a decade and is at a historic high now, having breached the $2 trillion threshold in 2021, led by the whittling down of traditional, rule-based world order and the return of great power competition among leading geopolitical powers marked by sustained geopolitical instability, rising political tensions and conflict.
- As a result of significant and persistent pent-up demand for travel as well as persistent increase in air cargo traffic across most key markets and regions, commercial aviation, on the other hand, has been making a roaring recovery from the pandemic with strong passenger demand levels. The opening up of China in late 2022 following the abandonment of the zero-tolerance COVID policy has further benefited the global airline passenger traffic in reaching the pre-pandemic levels currently in quarter one of 2023.
- Low interest rates spurred investment and borrowing and fuelled consumption. For instance, as a form of protest COVID-19 in March 2020, the Bank of England, a central bank with headquarters in the UK, lowered interest rates to the lowest level ever of 0.1%. The USA, Germany, and Japan were among the major nations with low interest rates at the time. The aerospace and military markets will grow faster than expected during the projected period due to low interest rates.

TRENDS IN THE AEROSPACE AND DEFENCE INDUSTRY



The common objectives for the aerospace and defence (A&D) sector for 2023 centre on flexibility, productivity, expansion, and sustainability. But the sector needs to put digitization front and centre if it wants to achieve these objectives. To put this into perspective, digitalization is now a must for original electronic manufacturers (OEMs) to continue competing in the A&D market today and well into the future.

Welcome to a reimagined 2023 where technological innovation and digital developments drive economic growth, boost productivity, and aid in safeguarding present-day global citizens as well as our shared environment for future generations. Here are Benchmark's top three A&D trends that we believe will continue to develop through 2023 and beyond.

- **Digital Defense Twinning**

Digital twinning is hardly a new idea in the business world. In truth, the technology to digitally twin devices in the commercial sector have existed for at least 20 years, giving OEMs the chance to test, debug, and improve their products long before they are put into production. Digital twinning is gaining traction in the defense sector, despite the challenges it faces.

- **Digitization of Training**

Specialized robots used to train soldiers will only become more prevalent and powerful in the coming years. One glaring instance is the use of robotics to operate target dummies without the need for a train system and related infrastructure. This cutting-edge technology offers soldiers realistic combat training experiences where they are exposed to hostile human and robotic targets that are aggressive in nature.

The training sessions are less repetitious and unpredictable because the training robots are not restricted to a rail system, which improves a soldier's readiness. Sensors are one of the numerous complex parts that these training robots need,

- **Reliability and Sustainability**

Green restrictions will spread and become stricter as more people become aware of the impending repercussions of climate change. The Federal Government's involvement in resilience measures has increased since the White House's publication of "The National Security Implications of a Changing Climate" in 2015.

DISPUTE RESOLUTION

which went live in November 2016, the Shanghai International Aviation Court of Arbitration ("SIACA"), which was founded in June 2014, and the Hague Court of Arbitration for Aviation ("Hague CAA"), which opened in July 2022.

The World Trade Organization creates guidelines and offers a venue for settling trade disagreements between its member nations. Conflict resolution is the responsibility of the WTO Dispute Settlement Body.

Aircraft and airport building issues have frequently been resolved through the WTO dispute resolution mechanism.

The most significant of these disputes' causes are

(a) restrictions on airline marketing, ticket sales, and currency remittance.

(b) the dumping of air transportation services ("ATS").

(c) limited access to travel agents and computer reservation systems ("CRS").

(d) discrimination regarding frequency and capacity and other operating restrictions.

(e) discriminatory charges for air traffic control ("ATC") and air traffic navigation ("ATN").

(f) restrictions on the use of travel agents and computer reservation systems ("CR").

A method for resolving disputes between two or more international parties, including sovereign parties and non-state, internationally active parties like major businesses. International conflict resolution uses a wide range of strategies, such as negotiation, mediation, arbitration, and adjudication.

The Mavrommatis Case's Permanent Court of International Justice ("PCIJ") definition of dispute is "disagreement on a point of law or fact. a conflict of legal views or interests between two persons." As a result, for a disagreement to be considered a dispute, it must be clear and explicit, and it must have a clearly defined issue that involves a fact, a legal principle, or a policy. A claim or assertion of a claim by one party and a rejection or denial by the other constitute another element. Based on the parties involved, including the governments, institutions, jurists, or private citizens from various states, one can differentiate between numerous international disputes.

International arbitration is becoming more and more popular in general aviation. The establishment of aviation-specific arbitration institutions and arbitrator rosters in recent years, such as the American Arbitration Association "AAA", International Centre for Dispute Resolution "ICDR" Aerospace, Aviation, and National Security Panel,

Direct Negotiations: Negotiation is the political tactic that is most often used to resolve aviation problems. As suggested by the Chicago Convention, the first stage in the process of resolving a disagreement is negotiation. Unfortunately, there is a drawback to this approach. Negotiators constantly ask for far more than they need, which always delays finding a solution.

Good offices and mediation: The next approach to dispute resolution is to use the good offices of a non-biased third party. In that situation, the third party assists the parties in resolving the conflict and/or investigates, mediation, and/or conciliation. The parties to the disagreement are not put in danger by choices being forced upon them, which is one benefit of informal third-party dispute settlement.

Conciliation and Inquiry: The investigational process, also known as conciliation, is frequently paired with inquiry. The UN Charter's Article 33 recognizes the investigation or fact-finding process as an institution. The institution of an investigation in the case of an accident was included in Article 26 of the Chicago Convention. On the advice of ICAO, the state where an accident occurs will launch an investigation. As a result, the ICAO lacks the authority to conduct the investigation itself. The authority to conduct investigations is granted to the ICAO Council by Article 55(e).

Legal Methods: Political techniques are frequently used, backed up by diplomatic strategies, to settle problems with non-commercial aviation. But legal means must be used in cases of business conflicts resulting from BATAs. The three categories of legal procedures include arbitration, judicial decision-making, and ICJ advisory opinions.

Arbitration: The term "arbitration" typically refers to the process by which a conflict between states is resolved through a tribunal (a body other than a court) or a panel of individuals appointed as arbitrators who are freely chosen by the parties. The state shall be the final judge in its own litigation, which is basically a departure from the state's custom.

International Court of Justice Advisory Opinions: The court may have advisory jurisdiction. The Court may render an advisory opinion on any legal question at the request of any authority that may be permitted to do so under the UN Charter or in conformity with it, according to Article 65 of the law. According to Article 96 of the Charter, these bodies include the Security Council, General Assembly, and other UN specialized agencies that have been given permission by the General Assembly to request advisory opinions.

HOW CAN WE HELP?

There are several ways to help a firm providing aerospace and defense services. Here are some key areas where you can contribute:

- **Research and Development**: Aid in the development of cutting-edge technologies and solutions by conducting research, testing prototypes, and identifying areas for innovation. This can involve collaborating with engineers, scientists, and industry experts to push the boundaries of aerospace and defense capabilities.

- **Project Management**: Assist in managing projects effectively by coordinating timelines, resources, and budgets. This includes monitoring progress, identifying risks, and implementing strategies to ensure projects are completed on time and within scope.

- **Quality Assurance**: Contribute to maintaining high-quality standards by conducting thorough inspections, audits, and tests on aerospace and defense systems. Help implement quality control processes and ensure compliance with industry regulations and customer requirements.

- **Business Development**: Support the firm in expanding its client base and securing new contracts by conducting market research, identifying potential customers, and assisting with proposal development. This can involve attending industry conferences, networking events, and establishing strong relationships with key stakeholders.

- **Supply Chain Management**: Contribute to optimizing the firm's supply chain by identifying potential suppliers, negotiating contracts, and ensuring timely delivery of components and materials. This can help streamline operations and reduce costs.

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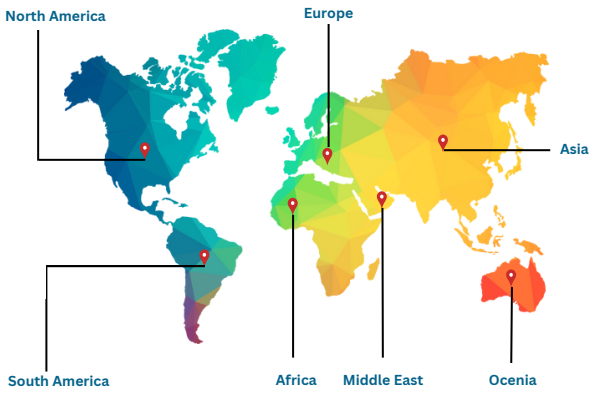
SERVING CLIENTS WORLDWIDE



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