In 2016, ASD Member Associations were spread across 19 European countries: 16 of them in the EU plus Norway, Switzerland and Turkey.

The data published in this industrial overview takes into account the following factors: exchange rate fluctuations, different statistical accounting in the UK, unconsolidated data for aeronautics and defence and consolidated data for space.

A very limited number of figures relate to available sources for the purpose of cross-check. The perimeter is different from that of the European Union, the European Defence Agency or the North Atlantic Treaty Organisation.

The ASD Facts and Figures do not include the suppliers which are not members of ASD, neither specify information on dual use nor the security sector whose perimeter has not yet been fully defined.

The definition of aeronautics includes civil and military aeronautics. The definition of defence, in the meaning of European Defence Industry, as defined by ASD, combines all sectors, i.e. military aeronautics, space, land and naval.

The analysis was conducted using a consolidated process based on cross-checks. Data for the defence sector were separated from the civil sector for both aeronautics and space fields.
Words from the President

The European aerospace, security and defence industry, represented by ASD, is the lifeline of a unique, diverse and buoyant ecosystem fully committed to answer the expectations of the European citizens and of its customers.

More than 800,000 people in Europe have been the source of over €220bn worth of cutting edge products and services, which generated €20bn in Research & Development (R&D) in 2016. Thus the aerospace, security and defence industry is a major contributor to the economic welfare of Europe.

Innovation is key to competitiveness in this sector which can integrate emerging technologies and digital tools into long-term development cycles through cooperation, innovative supply chains and SMEs. Sustained efforts in R&D are key to maintain our position as global leaders. Building up the future is at the heart of ASD’s commitment.

Sustained efforts in R&D are key to maintain our position as global leaders

In the defence sector, the increasingly uncertain international environment and growing threats call for an urgent build-up of defence capabilities and associate funding. Industry strongly supports the EU Defence Action Plan and the European Defence Fund. The European strategic autonomy and the competitiveness of its defence technological and industrial base require effective support, notably in R&D, of European capabilities.

The 2017 facts and figures set out the strength of our sectors, their contribution to European growth and how industry, government and the EU – working together – can deliver the jobs and exports we need to secure a prosperous future.

ASD President
Eric Trappier
The European Aerospace and Defence Industry as assessed by ASD, confirmed in 2016 its solid fundamentals and competitiveness in the global market despite continued economic and political uncertainties.

The aerospace and defence sectors’ output was stable in terms of revenues posted at the level of €220bn, and direct employment at the level of 844,000. This final result reflects an overall balance among a variety of situations and company sizes of 26 National Associations in 19 European countries, some of which performed annual increases of 10%.

It should be noted that without the negative effect of the British pound/Euro exchange rate devaluation, the value of ASD revenues would have shown an increase of 2%.

The European aerospace and defence industry is concentrated around a number of large prime contractors and a great variety of small and medium-sized companies. The EU 2016 R&D Scoreboard (1000 companies) includes 24 European companies covering 80% of all European aerospace and defence revenues and two thirds of the workforce.
The European industrial capacities in aerospace and defence cover a broad spectrum of technologies and products with System Design Responsibility. They are supported by a supply chain composed of large, intermediate, small and medium enterprises.

The main highlights in 2016 include record deliveries of civil aircraft and a very high level of backlogs allowing long-term workloads, a positive trend of military exports providing a solid basis and perspective for legacy programs, improvements and developments of aircraft and systems, achievements of significant industrial rationalization processes and cost-efficient measures by several suppliers.

This positive picture is largely the result of high investments in R&D and industries in the past, reflecting the launch of several programs and thereby, sustaining technological innovation.

The investment gap with the US, if not recovered, could change the landscape by creating a technological gap and dependence in Europe at a time when the European industries have a leadership position in many Hi-Tech domains.

In comparison to the US, the European industry has a lower turnover which is mainly a result of the significance of the US defence budget.

Taking together Europe’s defence and civil aeronautics, exports are at the same order of magnitude as the US.

At the same time, Europe is more export-oriented: €123bn in Europe and €146bn in the US.

Our industry employs 844,000 people in Europe
Aeronautics is the leading sector in aerospace and defence, concentrating a full spectrum of technologies and integrated capabilities. This sector includes all certified flying objects, manned and unmanned, along the life-cycle, including Maintenance Repairs and Operations (MRO) and Air Traffic Management (ATM) ground systems. The activities of the air sector are concentrated in the large European countries while SMEs operate in all countries in niche markets and MRO.

**Aeronautics plays a leading role in exports, amounting to €106bn**

The total turnover (rounded figures) confirms the growing role of civil aeronautics. Revenues in Europe amount to €162bn, with 72% in the civil field and 28% in the military field.

**Employment in ASD Industries reached 543,000 direct units in 2016.**

Aeronautics plays a leading role in exports, amounting to €106bn. This figure includes 1/3 of intra-EU industrial flows, which shows the high level of cross-border cooperation across the European Union. Exports outside Europe correspond to 2/3 of the total amount, including both sales to final customers and supplies to original equipment manufacturers.

**A high level of cooperation and integration qualifies this sector in Europe**

Revenues in Europe amount to €162bn, with 72% in the civil field and 28% in the military field.

Military aeronautics revenues reach €45bn, of which around half are exported in and outside Europe.

Civil aeronautics exports are significant, at €81bn, which is 10% higher than the previous year. Exports provide an important net trade balance to the European economy which can be estimated at €30bn (according to third sources).
EMPLOYMENT 2016

Total Employment Aeronautics 543,000

CIVIL AERONAUTICS 66%

MILITARY AERONAUTICS 33%

EXPORTS AERONAUTICS 2016

Total Export Aeronautics €106bn

CIVIL AERONAUTICS 76.4%

MILITARY AERONAUTICS 23.6%

CIVIL AERONAUTICS €81bn

MILITARY AERONAUTICS €25bn
The defence sector comprises a small number of large industrial groups and many smaller and mid-sized suppliers.

The turnover in the defence sector shows a marginal slowdown from 101 to €96.5bn largely due to the negative impact of the devaluation of the British pound. Industries located in 6 Letter of Intent (LoI) countries (France, Germany, Italy, Spain, Sweden and UK) generate €80bn. €6.5bn is generated by non-EU industries (Switzerland, Norway and Turkey).

In 2016, employment in the defence sector is estimated at almost 450,000 jobs. This represents one of fourth of the global workforce of the Defence industry.

The Defense News’ Top100 survey lists 30 European-at-large companies representing 25% of the European defence industry turnover. For the past two years, the average exports have been estimated at €38bn, including around 40% intra-EU exports.

**MILITARY AERONAUTICS**
Military aeronautics comprises a small number of large industrial groups and many smaller and mid-sized suppliers.

Revenues reached €45bn, of which around half are exported in and outside Europe.

**LAND**
The industrial landscape is less concentrated in the land- than in the air sector. Although the main system integrators are located in the big Member States,
smaller platform builders, sub-suppliers and niche producers can be found across the European Union.  

**NAVAL**

The naval sector confirms its stability in a market characterised by annual fluctuations. European suppliers are concentrated around a dozen major naval companies, representing more than 80% of the output.

The naval sector combines ships, embedded systems such as electronics and armaments, and services. Nearly half of the sectors' output concerns shipbuilding, while electronics/armaments and services equally share the other half.
Research & Development (R&D) refers to innovative activities undertaken by corporations or governments in developing or improving new services or products. It includes the Research and Technology activities (R&T) which concern the design, feasibility studies, and maturation processes for technologies.

R&D = R&T + DEVELOPMENT

R&T activities are the life-blood of the aerospace and defence industries. It provides tomorrow’s answers to today’s challenges. They are crucial to keep our competitiveness to face a growing international competition threatening our global leadership and to foster the development of an innovative supply chain.

Total expenditure R&D

€20bn

14% IS DEDICATED TO R&T
R&D IN CIVIL AERONAUTICS

In aeronautics, cycles are significantly long and require capital intensive effort. For example, an aircraft’s journey from its conception to its commercialisation typically takes fifteen to twenty years.

The level of R&D spending in the European civil aeronautics amount to nearly €10bn:

As regards R&D, increased private financing by companies and customers is observed, amounting to 2/3 of the total R&D investment. Governments support the R&D of civil aeronautical programmes to 1/3 of the total investment*.

*This split reflects two kinds of R&D programmes: some are co-financed by industry and public funding while other programs are fully financed by industry.

ASD Members notably take part to flag-ship programs such as Clean Sky and SESAR Public-Private Partnerships (PPP).

- Clean Sky’s mission is to mitigate the environmental impact of aviation and to develop a strong and globally competitive European aeronautical industry and supply chain.
- SESAR’s mission is to develop, modernise, and harmonise Air Traffic Management (ATM) across Europe
R&D IN DEFENCE

Since there is no commercial market for defence equipment, defence research is usually 100% funded by national governments as the only customers. Private investments are very limited and concern only lower complexity or lower value research. When companies fund research themselves, in most Member States the rules for single source procurement allow them to recover these investments as “allowable costs”, in effect making even this research fully funded.

Defence research is 100% funded by national governments as the only customers

€10bn

INVESTED IN R&D ACTIVITIES BY GOVERNMENTS
R&D spending in Europe is highly concentrated in the six LoI countries (France, Germany, Italy, Spain, Sweden and UK), accounting for 95% of the investments. However, even among these countries some major differences exist. France and UK account for more than half of the total, followed by Germany, Italy, Spain and Sweden.
ASD is the voice of European aeronautics, space, defence and security industries, representing over 3,000 companies and actively supporting the competitive development of the sector in Europe and worldwide by advocating common positions towards European Institutions and international organisations.

ASD is located in the heart of Brussels. Our membership comprises 16 major European aerospace and defence companies and 24 National Associations from 18 countries.

ASD at a Glance in 2018

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<th>National Associations</th>
<th>Companies represented</th>
<th>Major European Industries</th>
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<tr>
<td>24</td>
<td>3,000</td>
<td>16</td>
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Our Company Members are:

Airbus  
BAE Systems  
Dassault Aviation  
Fincantieri  
GKN Aerospace  
Indra  
Leonardo  
Leonardo Helicopters  
Liebherr  
MBDA  
Naval Group  
Navantia  
Rolls-Royce  
SAAB  
Safran  
Thales

Our National Associations represent industries in: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Norway, Poland, Portugal, Spain, Sweden, The Netherlands, Turkey, and the United Kingdom.
Major European Industries
The year 2016 was marked by intense activity aimed at fulfilling ASD’s mission to actively support the competitive development of the sector and promote its image in Europe and internationally. Acting as a single voice promoting the best preconditions for a thriving industry, ASD is alert to its members’ needs and concerns. In an era of ever increasing global competition, European cooperation is needed more than ever to approach the challenges ahead of us.

In civil aviation, the reform of the EASA Basic Regulation was a focus area, safety being a high priority of the European aeronautics sector. An equally important focal point was the global standards for air navigation and environment through the International Civil Aviation Organization.

European cooperation is needed more than ever to approach the challenges ahead of us.

In defence, our focus was placed on the Defence Action Plan and the proposed Defence Fund. On these topics, ASD developed Position Papers and continued the dialogue with the EU Institutions.

The next Multiannual Financial Framework and the 9th Framework Programme also required special attention. ASD was active in promoting the best interests for the industry in view of the budget preparations.

A credible interlocutor on important EU policies and initiatives linked to its industry is vital for all stakeholders. It is therefore very pleasing to see the growing interest for our Association which continues to attract new members. Following a three-year profound organizational change, ASD staff with their varied profiles make an excellent interface between industrial strategies and institutional processes.

Cooperation is the core of our Association and its Industry representatives are essential in this effort, so I wish to thank all of those who have spent time on our common areas of interest!

ASD Secretary General
Jan Pie
Contributions

The ASD Facts & Figures 2016 result from the contribution of the National Associations that are members of ASD, with ASD as a coordinator. Process coordination and data analysis were performed by Fabrizio Braghini, Chairman of the ASD Data Analysis Committee (DAC). Pierre Lionnet, ASD-Eurospace Research Director provided space data and advice.

All photos used in this brochure belong to ASD members.

Editor: ASD Communication Manager, Marine D’Hollander.