





# Executive summary

Since our inaugural 2013 study on aerospace and defense (A&D) cross-border joint ventures (JVs),<sup>1</sup> global security threats have continued to persist and the geopolitical landscape is transforming. These and other related factors have an impact on the complexity of cross-border transactions in aspects such as attractive markets to pursue, the manner in which to pursue them, transaction structure, the negotiations of offsets, and the protection of sensitive technologies.

Growth of the commercial aerospace backlog has decelerated, and investments in science and technology are increasingly allowing countries to tout their aerospace and defense progress. In an effort to better navigate this complex terrain, A&D companies are focusing on developing precise objectives for their JVs to successfully execute value creation strategies.

With the US and European A&D sectors maturing, companies from these regions are increasing their focus on international growth opportunities in markets such as India, China, and the Middle East. Over the last 10 years, the commercial and military aerospace businesses in India remained the leading segments for establishing cross-border JVs, representing a majority of JV formation activities. Similarly, China has seen cross-border JVs since 2007 in the commercial aerospace segment, followed by commercial avionics. The Middle East has witnessed high volumes in commercial aerospace, as well as weapons-related JV formations.<sup>2</sup> Going forward, India, China, and the Middle East will likely continue to lead the way in attracting JV activity, with other geographical regions following (Eastern Europe, Southeast Asia, etc.).

With India relaxing its defense subsector foreign direct investment (FDI) rules, entering into its A&D market is now easier for foreign investors. This change in policy positions the world's biggest defense importer to become a key aerospace and defense manufacturing hub. In the Middle East, oil price volatility, regional tensions, and the recognition of the multiplier effect of an A&D sector base are collectively expected to drive JV formation activities. China continues to make impressive progress in building a formidable A&D industrial base.

However, A&D companies and their executives need to keep key issues in mind while entering into international JVs, including geopolitical alliances, end markets, supply chains, and regulatory compliance and structure. Business planning for A&D JVs demands executives understand a level of complexity that is often higher than other industries. This study highlights major trends in cross-border JVs in the global A&D sector over the past 10 years, issues particular to active regions, and concludes with notable considerations that impact JV value creation.

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# Cross-border A&D JVs continue to be an important vehicle for international expansion

US A&D companies currently operate within a market environment characterized by flat to low growth in domestic defense budgets and a record high commercial aircraft order backlog. While we wait to see the US presidential administration's impact on the US defense budget, emerging market defense budgets continue to rise and commercial airline travel demand is experiencing strong growth.

Military expenditures in the Americas declined four percent on a compound annual rate basis over the 2010–2015 period, while Europe's defense spending remained flat. On the other hand, the Middle East, Asia, and Oceania region increased military expenditures 5 percent on a compound annual rate basis during the same period. Consequently, the share of global military expenditures from the Asia and Oceania grew from 20.1 percent in 2010 to 25.6 percent in 2015. In contrast, the Americas' contribution to global military spending declined from 47.8 percent in 2010 to 39.1 percent in 2015.<sup>3</sup> This trend highlights the undercurrents driving A&D companies to expand into regions such as India, China, and the Middle East through strategic alliances and cross-border JVs.

Although M&A is popular, regulations and competition levels impact the business combinations that A&D companies can pursue. Governments can deny merger approval if a local entity is seen as critical to a country's aerospace and defense supply chain and should not be controlled by a foreign entity.

Similarly, a certain degree of competition may be necessary to maintain the effectiveness of the supply chain, which too can preclude certain business combinations. In contrast, cross-border JVs create a new third entity that combines certain assets of two partners, while maintaining the ownership profile of the original entities. JVs are also more easily achievable because risk is shared between the JV partners and the outlay of investment is less than an outright acquisition.

Technology transfer, manufacturing best practices, marketing excellence, prime-contractor relationships, and local market knowledge collectively fuel JV growth.

The US and European A&D industries are generally comprised of well-established companies that are funding innovation through cash flows from operations, as well as cheaper debt financing. Alternatively, in the developing world, increases in defense budgets, reforms to defense-industrial policies, and improvements in research and development (R&D) as well as production methods, are accelerating expansion of the local A&D market. In turn, opportunities are being created for global A&D players. Specifically, the differences in the risk-reward proposition in emerging markets are attracting foreign know-how, resources, and capital. However, foreign players may have to carefully plan their hold and exit strategies, given differences in governance, regulations, and political risks.

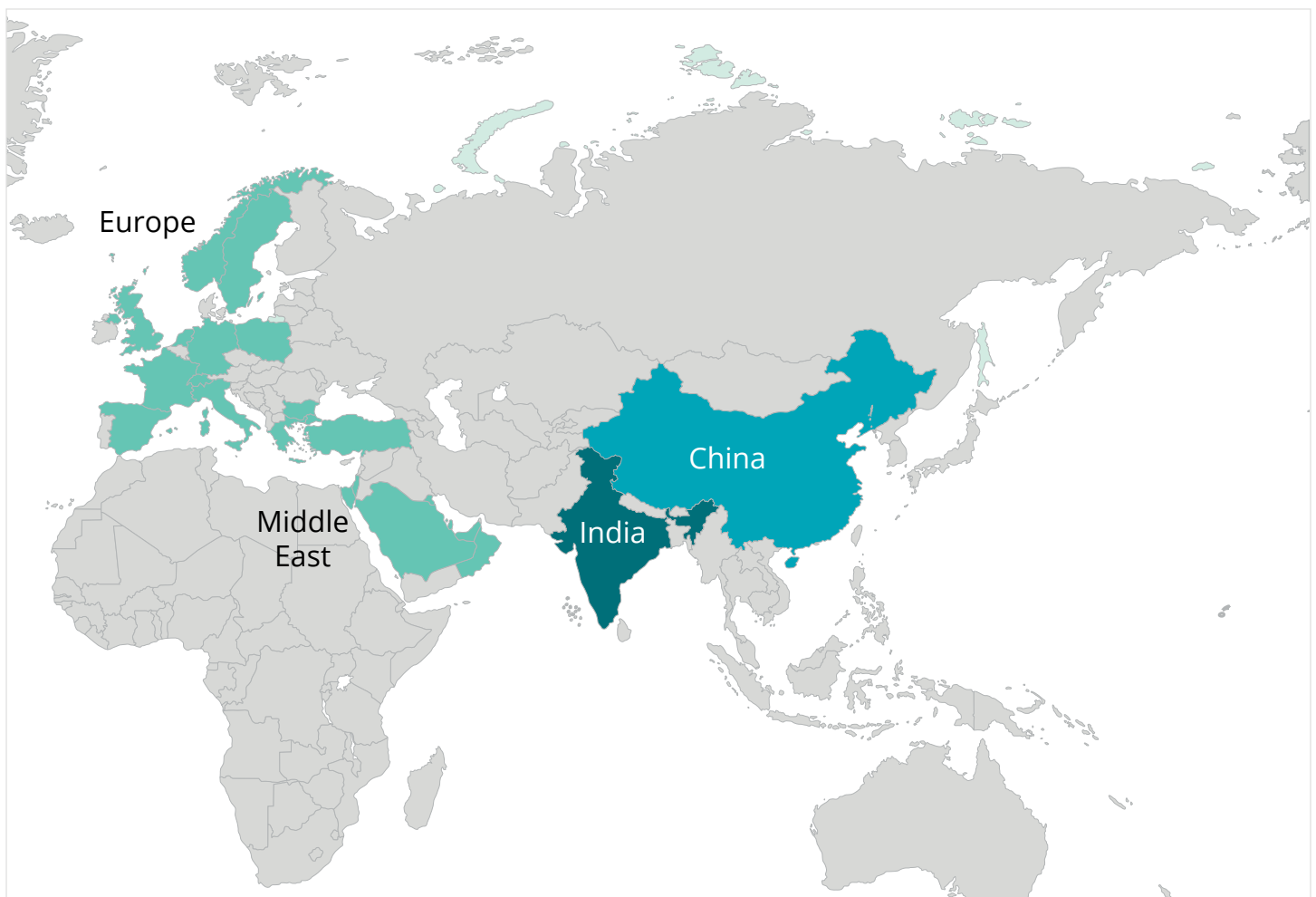


# Cross-border JV policy developments and emerging trends

An analysis of global JV formation activity in the last 10 years reveals that China, India, and the Middle East have been central to international growth planning for A&D companies. As shown in figure 1, these three regions have led JV formation among publicly announced cross-border A&D JVs. This trend also reflects the relative maturity of A&D industries in Europe,

Australia, Japan, and Israel, where A&D manufacturing hubs are well established. As a result, changes in regulations, access to new technologies, the need for local partners, and a fast growing A&D industrial base are making China, India, and the Middle East the “hot spots” for cross-border JVs.

**Figure 1. Cross-border aerospace and defense joint ventures by region: 2007–2016**



Note: Darker shades represent higher JV deal volume

Source: Deloitte analysis based on data from SDC Platinum, accessed February 8, 2017

## India

In June 2016, the Indian government eased foreign direct investment (FDI) norms for the defense sector, permitting foreign companies to own 100 percent of domestic ventures with the approval of the government when access is provided to modern technology. The term “modern technology” is not specifically defined in the policy and could be subject to interpretation by various Indian regulatory agencies.<sup>4</sup> Coupled with progress that India has made in space technology and commercial aerospace manufacturing, incentives under the government’s Make in India initiative, as well as recent escalation in security concerns, are creating ripe conditions for significant progress in the A&D sector in India.

Global A&D sector companies have been directing capital to India to benefit from strong long-term growth prospects. There have been various JV announcements in the sector during 2015–2016, prior to the relaxation of FDI norms. After the relaxation of FDI regulation, the Indian A&D sector is likely to record an increase in JVs, as well as a rise in foreign firms establishing manufacturing facilities in India.

Major A&D companies such as Airbus, Boeing, Lockheed Martin, and Safran already have a footprint in the Indian market, and some of them are planning further investments. For example, Airbus announced a JV with Mahindra Defence Systems last year to manufacture helicopters for the Indian military.<sup>5</sup> Similarly, Boeing entered into a JV with Tata Advanced Systems in 2015 focused on manufacturing the fuselage of Apache Helicopters in India.<sup>6</sup> In 2016, Lockheed Martin announced interest in moving its entire production of F-16 fighter jets to India to reap the benefits of lower cost of production, enabling them to lower the selling price and increase the global demand for F-16s.<sup>7</sup> As the sector opens up further, there will likely be an increase in global A&D companies entering the Indian market, either through JVs or independently, with 100 percent FDI now allowed in the A&D sector.

## China

In 2015, China revised its Catalogue of Industries for Guiding Foreign Investment in order to expand the range of approved investment activities of foreign entities into the aerospace subsector. Foreign investors are now permitted to manufacture small-scale aircraft parts, including aircraft motors and bearings, which is likely to further aid in the creation of JVs in China. As a result, China offers aerospace companies JV opportunities in commercial aircraft part manufacturing and repair, including commercial helicopters. Defense subsector foreign investments continue to remain restricted.

The Civil Aviation Administration of China does not permit foreign investors to manufacture aircraft in China except through co-ventures with Aviation Industry Corporation of China (AVIC) and

Commercial Aircraft Corporation of China, Ltd. (COMAC), China’s state-owned A&D enterprises. Moreover, in China, where a majority of the A&D companies are backed by the government, contract bids by Western partners with a JV in China are often preferred over those that do not have a domestic partnership.

## The Middle East

### United Arab Emirates

Home to the world’s busiest airport by international passenger traffic, and as one of the top 15 countries in the world in terms of military spending,<sup>8</sup> the United Arab Emirates (UAE) is building a strong architecture across segments of the A&D sector, including commercial aerospace, business jets, weapons manufacturing, shipbuilding, and space. In 2014, the UAE government combined several defense and aerospace companies owned by Mubadala Development, Tawazun Holding, and Emirates Advanced Investment Group (EAIG) into an entity called Emirates Defense Industries Company (EDIC). EDIC’s role is to drive the UAE’s defense subsector by providing manufacturing, training, mapping, logistics, technology development, and communications, as well as maintenance, repair, and operations services for air, land, and sea platforms. Offset rules set forth in 2010 have boosted the creation of JVs, especially to support technology transfer and domestic economic development.

A number of sectors offer attractive opportunities, including: maintenance, repair, and operations (MRO) services, aircraft parts manufacturing, business jet operations, autonomous aircraft, and weapons manufacturing.

### Saudi Arabia

While the Kingdom of Saudi Arabia spends the highest percentage of GDP on defense,<sup>9</sup> the defense sector remains on the “negative” or restricted list to foreign investment. However, Saudi Arabia does offer burgeoning JV opportunities in the commercial aircraft domains of MRO, aircraft assembly, and composites. The country has put forth plans to create a US\$1 billion MRO facility and intends to become self-sufficient in the assembly and maintenance of certain aircraft components over the next 15 years.<sup>10</sup> Given that Saudi Arabia recently unveiled Vision 2030 in 2016, which among other areas focuses on creating a more diversified and open economy, companies should monitor closely the opportunities for A&D investment in the future.

# Offset frameworks and intellectual property rights protection rules vary across markets

Figure 2 compares the defense offset frameworks and intellectual property rights (IPR) protection rules in the aforementioned countries and in more mature A&D manufacturing countries. Defense offsets are agreements which require international suppliers to fulfill certain obligations in exchange for a

defense contract. These offset obligations may include purchasing a certain amount of goods locally, transferring relevant technological knowledge, assisting in exporting the country's goods, and investing in local industries.

**Figure 2. Regulatory framework in select aerospace and defense markets<sup>11</sup>**

Country	Offset framework	IPR protection
<b>India</b>	<p>Offset needs to be 30 percent of the estimated cost of purchase in the Buy (Global) category and 30 percent of the foreign exchange component in the Buy and Make category.</p> <p>Offsets are effective in contracts over a threshold amount.</p> <p>The Buy (Global) category refers to purchases from a foreign/Indian vendor. The Buy and Make category refers to purchasing from a foreign vendor with production in India using licensed technology.<sup>12</sup></p>	IPR framework in India is well established; however, India ranks low in the US Chamber of Commerce's International IP index
<b>China</b>	Offsets are applied on a case by case basis	IPR framework steadily improving, but areas of weakness highlighted by US Chamber of Commerce are notable
<b>United Kingdom</b>	No offsets, but uses the UK's Defense and Security Industrial Engagement Policy (DSIEP) framework	Strong IP regime in place and rated high in US Chamber International IP index
<b>France</b>	No offset policy	Strong IP regime in place and rated high in US Chamber International IP index
<b>Germany</b>	No offset policy	Strong IP regime in place and rated high in US Chamber International IP index
<b>Italy</b>	Offsets are applied on a case by case basis	Italy's IPR protection lags slightly as compared to UK, Germany, and France
<b>UAE</b>	UAE's defense offset program requires that any contract exceeding a value of US\$10 million in a consecutive five-year period has an offset obligation equal to 60 percent of the contract value	Difference from IPR framework observed in western countries
<b>Saudi Arabia</b>	Requires offsetting 35 percent of the contract value for defense contracts exceeding US\$107 million	Difference from IPR framework observed in western countries

# Cross-border JV activity: India and China lead the pack

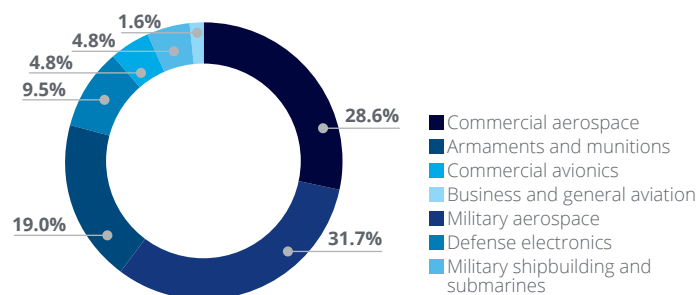




## India

From a count-based perspective, during the last 10 years, 31.7 percent of all A&D JVs in India took place in the military aerospace segment, followed by 28.6 percent in commercial aerospace, likely leveraging the country's profitable low-cost manufacturing capabilities. Business and general aviation segments experienced the fewest JVs, accounting for only 1.6 percent of the total.<sup>13</sup>

Figure 3. A&D cross-border JVs in India by segment: 2007–2016



Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017

Figure 4. Key cross-border JVs in the Indian A&D sector: 2014–2016

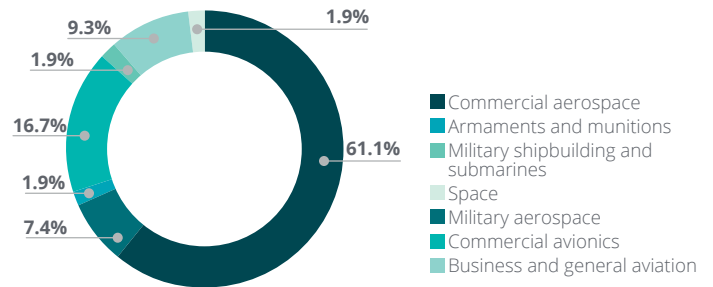
Announcement or completion date	Indian entity	Foreign partner	Foreign partner country	Focus of joint venture
July 2016	Hindustan Aeronautics Limited	Safran	France	Domestic and global helicopter engine support
May 2016	Reliance Defence and Engineering Limited	Antonov	Ukraine	Manufacturing of dual-version transport aircraft for military and commercial use
April 2016	OIS Advanced Technology	Safran (Sagem)	France	Manufacturing of Sagem's AASM Hammer Bomb Guidance and Glide Kit
March 2016	Bharat Electronics Limited (BEL)	Thales	France	Thales and BTSI to jointly develop PHAROS, a fire control radar for gun and missile systems
March 2016	Reliance Defence	Rafael Advanced Defense Systems	Israel	Manufacturing of air-to-air missiles, air defense systems, and surveillance balloons or aerostats for the Indian military
February 2016	Kalyani Strategic Systems Ltd	Saab	Sweden	Handle production and delivery of air defense systems SRSAM and VSHORAD to India
December 2015	Tata Advanced Systems	Boeing	US	Manufacture fuselage of Apache helicopters
August 2015	Astra Microwave Products	Rafael Advanced Defense Systems	Israel	Manufacture and supply of tactical radio communication systems, electronic warfare systems and signal intelligence systems
July 2015	Mahindra Defence Systems	Airbus Helicopters	France	India military helicopter tenders and to become the first private Indian helicopter manufacturer
October 2014	Max Aerospace and Aviation Ltd	Snecma	France	Provide maintenance and support services for Indian military aircraft engines
September 2014	Bharat Electronics Limited	Thales	France	Design, develop, supply, and support of civilian and select defense radars for India and the global markets
June 2014	Ashok Leyland and L&T	Nexter Systems	France	Produce heavy war machines and weapons for Indian army

Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017, media reports, and company press releases

## China

Since 2007, China has seen various cross-border JVs; greater than 50 percent were announced during the period 2011–2013. The commercial aerospace segment accounted for more than half of the total A&D JVs in China (61.1 percent), followed by commercial avionics (16.7 percent) and business and general aviation (9.3 percent).<sup>14</sup>

Figure 5. A&D cross-border JVs in China by segment: 2007–2016



Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017

Figure 6. Key cross-border joint ventures in the Chinese A&D sector: 2014–2016

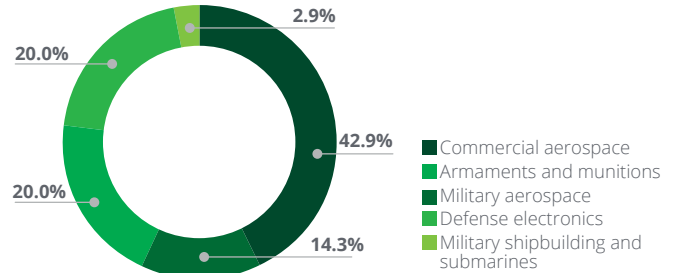
Announcement or completion date	Chinese entity	Foreign partner	Foreign partner country	Focus of joint venture
June 2016	Commercial Aircraft Corp. of China (COMAC)	United Aircraft Corp.	Russia	Design and develop new wide-body aircraft
April 2016	China Eastern Air Holding Co.	MTU Aero Engines AG	Germany	Provide a high-tech machine pool and modern test cell accommodating engines up to 150,000 pounds of thrust
January 2016	Lingyun Group Co. Ltd.	Israel Aerospace Industries Ltd. (IAI)	Israel	Expand civil maintenance services and cargo conversion; laying groundwork for additional business
July 2014	Aviation Industry Corp. of China (AVIC)	Safran	France	Research, design, and manufacture core components of turbine engines for civil service in China
July 2014	Aviation Industry Corp. of China (AVIC)	Parker Aerospace Group	US	Develop fuel, inerting, and hydraulic systems for COMAC C919s; assembling and testing MA700's hydraulic systems
April 2014	CETCA	Rockwell Collins	US	Develop communication and navigation solutions for C919

Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017, media reports, and company press releases

## The Middle East

Within the Middle East market, 42.9 percent of the total A&D JVs were in the commercial aerospace segment, followed by armaments and munitions, and defense electronics, which were each 20.0 percent.

**Figure 7. A&D cross-border JVs in the Middle East by segment: 2007–2016**



Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017

**Figure 8. Key cross-border A&D sector JVs in the Middle East: 2014–2016**

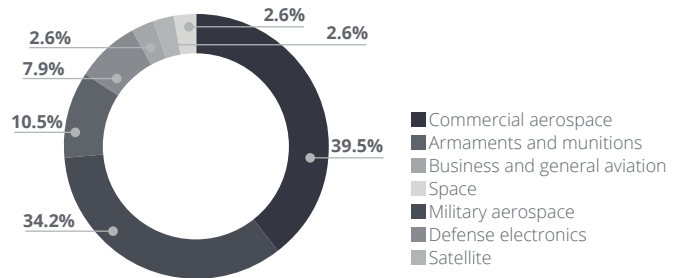
Announcement or completion date	Local entity	Local country	Foreign partner	Foreign partner country	Focus of joint venture
March 2016	Al Marakeb	UAE	Raytheon	US	Provide unmanned surface vehicles for use in marine defense and security
November 2015	Mubadala Development Company	UAE	GE	US	GENx engine MRO facility and enhance current GENx MRO relationship
September 2015	Emirates Defence Industries	UAE	Reliance Infrastructure Ltd.	India	Manufacture and provide defense technologies and services
August 2015	Saudi Arabian Airlines	Saudi Arabia	Boeing	US	Provide MRO services
May 2014	SABIC	Saudi Arabia	Lockheed Martin	US	Develop carbon nanostructure materials
February 2014	flydubai	UAE	Boeing	US	Provide aircraft maintenance services and mobile maintenance solutions

Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017, media reports, and company press releases

## Europe

The most popular segment for A&D JVs in Europe was commercial aerospace, which were 39.5 percent of total deals, followed by military aerospace, and armaments and munitions, which accounted for 34.2 percent and 10.5 percent respectively.<sup>16</sup>

Figure 9. A&D cross-border JVs in Europe by segment: 2007–2016



Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017

Figure 10. Key cross-border A&D sector JVs in Europe: 2014–2016

Announcement or completion date	European entity	European entity country	Foreign partner	Foreign partner country	Focus of joint venture
December 2015	UMS Aero Group	Switzerland	Saab	Sweden	Strengthen Saab's products in the tactical UAS market
December 2015	Krauss-Maffei Wegmann (KMW)	Germany	Nexter Systems	France	Develop military vehicle and weapon sector in the Netherlands
June 2015	Liebherr-Aerospace	Germany	Rolls-Royce	UK	Develop manufacturing for Rolls-Royce UltraFan engine's new power gearbox
July 2014	Safran	France	GE	US	Manufacture engines for A320 and A320neo aircrafts
May 2014	BAE Systems	UK	EADS Deutschland	Germany	Produce, market, and sell geospatial intelligence products
May 2014	DLR	Germany	Allegheny Technologies	US	Use International Space Station for Earth observation

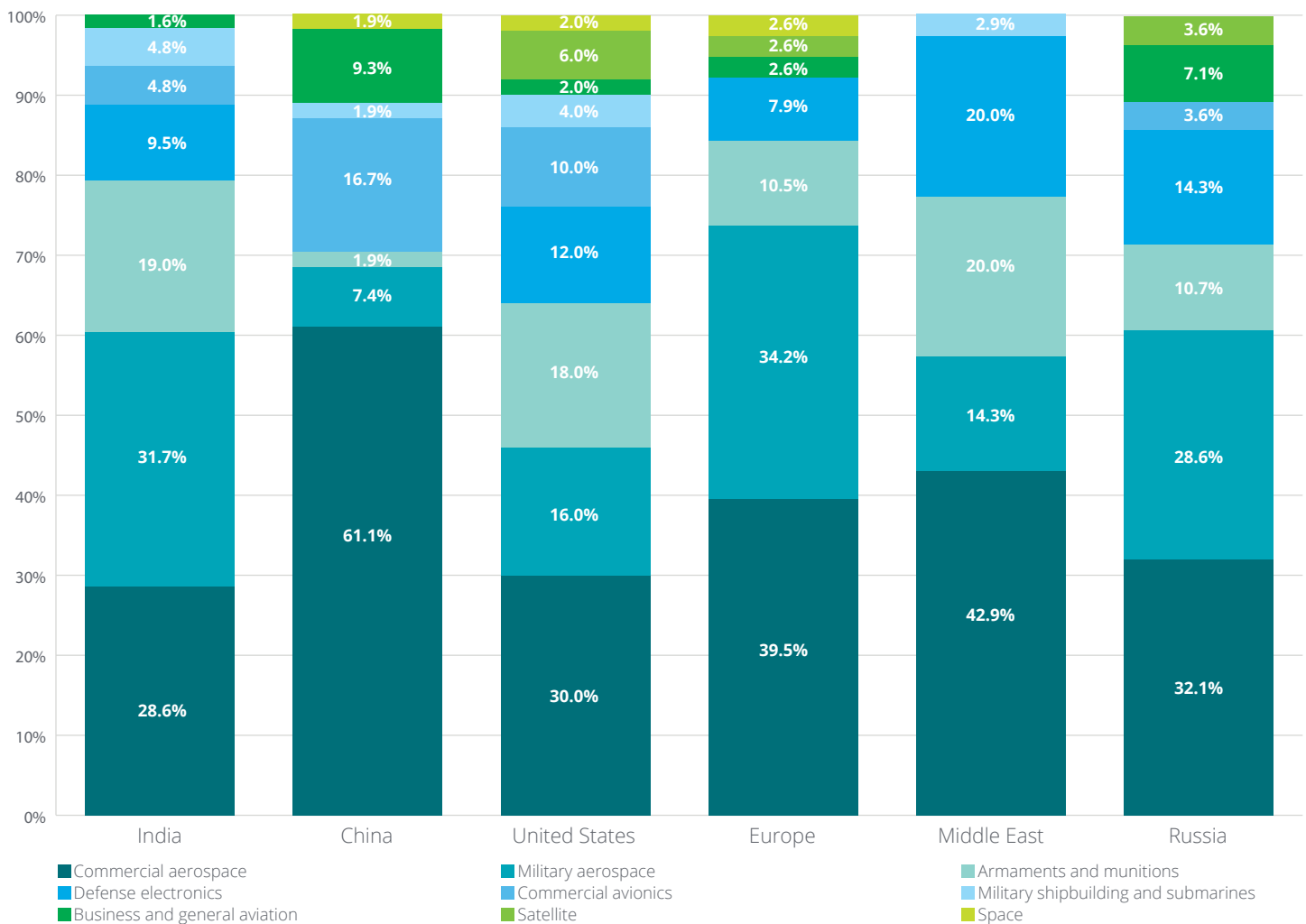
Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017, media reports, and company press releases

# Cross-border joint ventures by segment: Commercial and military aerospace remain dominant

The primary sector for A&D JV deals across the globe remained commercial aerospace, except for India, which recorded the majority in the military aerospace sector. For India and Europe, commercial and military aerospace sectors were the

top contributors to total JVs in the last 10 years, whereas the Middle East recorded majority of the JVs in the commercial aerospace and armaments and munitions segments.<sup>17</sup>

**Figure 11. Cross-border JVs by region and segment: 2007–2016**



Source: Deloitte analysis based on data from SDC Platinum, accessed on February 8, 2017

# How can aerospace and defense companies plan for complexity and success?

A&D companies are looking beyond traditional M&A toward JVs as a way to enter new markets and capture opportunities that exist in the global aerospace and defense industry. The defense budgets of some countries may not allow for sufficient investment to capture these opportunities, and a cross-border joint venture can supplement that investment.

By entering into JVs to access new markets and networks, businesses can have the ability to reduce competition, spread risk and cost, and gain access to new customers, production capabilities, and technology.

JVs can enable companies to grow without raising funds from the debt or equity capital markets. Moreover, when entering into cross-border JVs, businesses often target regions with low manufacturing costs, high domestic demand, and a strategic location for international trade.

However, companies should also be aware that JVs pose certain risks that if not mitigated or addressed up front could lead to failure and reputational harm. These include, but are not limited to, cultural differences, protection of sensitive technologies and know-how, managerial control, and exit strategies. Success accrues over a patient time horizon.

As such, companies should perform rigorous due diligence in connection with the formation of a JV in a foreign country so that management can properly plan for the complexities that exist.

## Complexities to consider

**1. Nation-state geopolitical alliances.** The level of cooperation between nation-states and the long-term stability of these alliances may have an impact on the growth trajectory of A&D industrial bases and JVs established in various nation-states. This key factor should be considered in business planning for A&D cross-border JVs.

**2. End-markets that can be targeted successfully.** A&D products and services developed and originated from certain geographies may find some natural markets that quickly feed growth, given the overall level of import-export activity. Other markets offer obstacles that can be challenging to overcome. Early planning can prove helpful in subsequently crafting targeting strategies.

**3. Supply chains.** A&D supply chains are complex and crucial for achieving business goals. Cost leadership can be key to long-term success. Cross-border JVs offer a new set of challenges, requiring seasoned supply chain professionals to design, develop, and sustain strong and secure supply chains. In forming a cross-border JV it is imperative that companies ensure a resilient supply chain that mitigates or prevents dynamic and simultaneous risk-related disruptions.

**4. Regulatory compliance and structure.** Given the high complexity and regulation that A&D companies operate in, it is imperative that companies properly plan for and address the myriad of regulatory rules that JVs face, including, but not limited to, export controls/ITAR, domestic regulations, anti-corruption rules, Sarbanes-Oxley, and other related reporting requirements. In addition, international and domestic tax laws play an important role in determining how a JV should be structured to maximize success and support potential exit strategies. Simple steps, such as having a local presence to demonstrate commitment and local advisors to navigate the regional regulatory rules, are important.

**5. Ability to change control.** Cross-border JVs often are entered into with complex exit mechanisms. Business executives should carefully consider options that are available and exercisable to change ownership, as well as the resulting risk-reward equation. Such planning should consider local regulations, the feasibility of pursuing liquidity events in both countries, and potentially interested parties in other geographies.

**6. Offset policies and requirements.** Offset policies and requirements vary considerably across countries and are one of the principal drivers of JV activity. Offsets also offer a rich source of catalysts for a variety of other business arrangements such as technology transfer, cooperation agreements, and M&A. However, negotiating and agreeing on offsets can be complex and have an effect on the ultimate success of the JV.

**7. Partner contributions.** The value of A&D cross-border JVs is built on the complementary asset contributions of each partner and the ability to tap into each other's technology/know-how, manufacturing base, workforce, and customers. If the contribution of assets is valued properly at the formation of the JV, based on ownership level, offsets, etc., then companies stand a higher chance of achieving their stated strategic objectives.



**8. Technology transfer and protection.** The new markets offered by cross-border JVs provide new uses for technology, which should be factored into the overall objectives of the JV during business planning. In addition, these new markets will also likely operate in a different legal system that affects the nature of legal remedies available to address any new risks.

**9. Lack of familiarity with competition.** Competitive dynamics in current markets are often well understood and planned for. However, new markets open up sources of competition and disruption that may not be apparent at the onset. Measuring and navigating these competitive and disruptive elements while maintaining the strength of certain core competencies is key to successful cross-border JVs.

**10. Marketing collaborations.** Cross-border JVs offer parties opportunities to explore a number of new known and unknown markets by collaborating effectively to identify adjacent or new market opportunities.

**11. Dispute remediation.** A key element for cross-border JVs is planning for avenues and approaches to dispute remediation. Understanding the approaches that can be taken and the level of remedies available can smooth out the dispute process if appropriately addressed and agreed upfront.

**12. Product mix.** Understanding the right “features” mix can be important for market success. A solution with a majority of desired features but greater market demand may offer a higher value creation path than a solution with all desired features.

# Factors influencing long-term value creation

Companies should address the factors listed below when considering a JV with a foreign country. However, looking across our experience with cross-border A&D JVs, three factors emerge that will likely play a critical role in long-term value creation. Detailed business planning regarding these factors can help address many of the complexities noted above.

## **1. Footprint of end-markets that can be successfully pursued.**

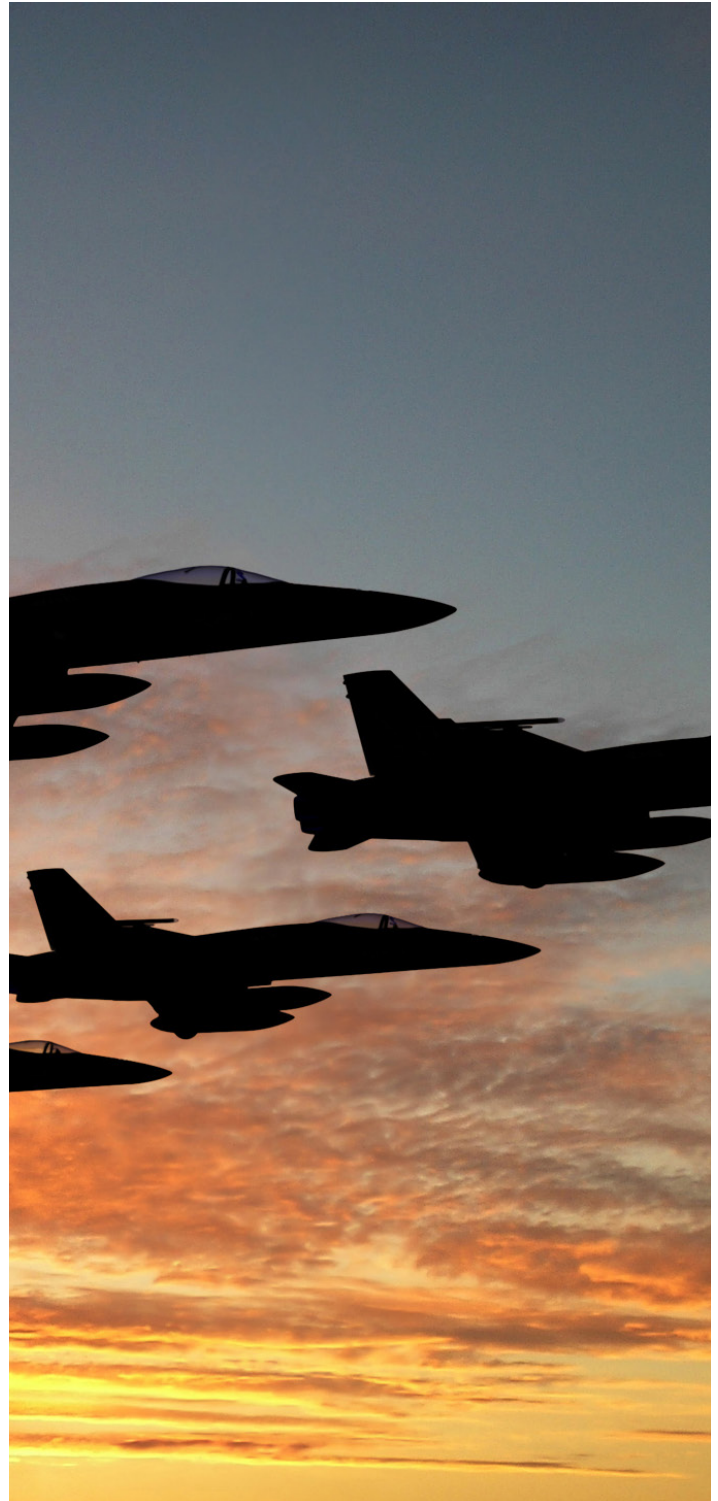
- a. Will the JV be successful only in the country of its incorporation?
- b. Will it be able to successfully expand its footprint by targeting multiple national markets?

## **2. Size and maturity of the supporting “ecosystem” in which the JV will operate.**

- a. Is the sector where the JV operates supported by a strong, resilient, and secure supply chain base? Are higher levels of efficiency and success achievable?
- b. Are there readily available sources of supplies and labor?

## **3. Strength of technology development.**

- a. Will the JV be able to reach or create next-generation technology to surpass the level of R&D capabilities and product strength achieved by the market leaders?
- b. How will the interests of the government in the country where the JV is domiciled impact technology development?
- c. Will the government and local scientific community accelerate technology development?





## Conclusion

The A&D sector today stands in front of powerful growth trends in technology development, manufacturing processes, global competition, complex security patterns, and cross-industry innovation, all while facing a geopolitical landscape that is ever-changing and uncertain. Various corporate vehicles for value creation continue their progress to navigate through these trends, including cross-border JVs. Cross-border JVs stand to offer impressive channels to create new markets, products, and services. Success with cross-border JVs will demonstrate the efforts of various contributors, limited to not just the JV partners but potentially government bodies and policies, and financing and technology development institutions.

Cross-border JVs stand to offer impressive channels to create new markets, products, and services.



## Sources

1. Deloitte, "Aerospace and Defense Cross-Border Joint Ventures: Managing high complexity, driving remarkable growth," 2013.
2. Deloitte analysis based on data from SDC Platinum, accessed February 8, 2017
3. Deloitte analysis based on data from Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database, accessed in September 2016, [www.sipri.org/research/armaments/milex/research/armaments/milex/research/armaments/milex/milex\\_database](http://www.sipri.org/research/armaments/milex/research/armaments/milex/research/armaments/milex/milex_database)
4. Dinakar Peri, "100% FDI in defence: What does it mean?" *Hindu*, June 2016, [www.thehindu.com/news/national/100-FDI-in-defence-What-does-it-mean/article14433877.ece](http://www.thehindu.com/news/national/100-FDI-in-defence-What-does-it-mean/article14433877.ece)
5. Anirban Chowdhury, "Airbus Helicopters signs contract with Mahindra to make parts of Panther helicopters," *Economic Times*, July 13, 2016 [economictimes.indiatimes.com/news/defence/airbus-helicopters-signs-contract-with-mahindra-to-make-parts-of-panther-helicopters/articleshow/53177244.cms](http://economictimes.indiatimes.com/news/defence/airbus-helicopters-signs-contract-with-mahindra-to-make-parts-of-panther-helicopters/articleshow/53177244.cms)
6. Boeing Company, "Boeing, TATA Joint Venture Establishes Aerospace Facility in Hyderabad," June 18, 2016 [www.boeing.co.in/news-and-media-room/news-releases/2016/june/boeing-tata-joint-venture-establishes-aerospacefacility.page](http://www.boeing.co.in/news-and-media-room/news-releases/2016/june/boeing-tata-joint-venture-establishes-aerospacefacility.page)
7. "Lockheed Martin Plans to Manufacture 30 F-16 Jets A Year In Proposed Indian Facility," *Defenseworld.net*, November 2016, [www.defenseworld.net/news/17594/Lockheed\\_Martin\\_Plans\\_to\\_Manufacture\\_30\\_F\\_16\\_Jets\\_A\\_Year\\_In\\_Proposed\\_Indian\\_Facility](http://www.defenseworld.net/news/17594/Lockheed_Martin_Plans_to_Manufacture_30_F_16_Jets_A_Year_In_Proposed_Indian_Facility)
8. Deloitte analysis based on data from Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database, accessed in September 2016, [www.sipri.org/research/armaments/milex/research/armaments/milex/research/armaments/milex/milex\\_database](http://www.sipri.org/research/armaments/milex/research/armaments/milex/research/armaments/milex/milex_database)
9. Ibid.
10. Guy Norris, "SAEI unveils progress on giant Saudi MRO facility," *Aviation Week*, November 2015 [aviationweek.com/mro/saei-unveils-progress-giant-saudi-mro-facility](http://aviationweek.com/mro/saei-unveils-progress-giant-saudi-mro-facility)
11. Deloitte analysis based on data from Department of Industrial Policy and Promotion (DIPP), India, [dipp.nic.in](http://dipp.nic.in); Ministry of Commerce (MOFCOM), China, [english.mofcom.gov.cn](http://english.mofcom.gov.cn); InvestinEU.com; [www.gov.uk](http://www.gov.uk); US Department of State; US Department of Commerce, accessed September 16, 2016
12. Make in India, Defence Offsets [www.makeinindiadefence.com/DefenceOffsetGuidelines.pdf](http://www.makeinindiadefence.com/DefenceOffsetGuidelines.pdf)
13. Deloitte analysis based on data from SDC Platinum, accessed February 8, 2017
14. Ibid.
15. Ibid.
16. Ibid.
17. Ibid.

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