

2014 Global Aerospace and Defense Industry outlook

Expect another record year for
commercial aerospace and continued
declines in defense



Summary

The global commercial aerospace sector is expected to sustain its significant revenue and earnings growth in 2014, underlined by extended record-setting production levels both at the platform and supplier base.¹ This is expected to be driven primarily by the accelerated replacement cycle of obsolete aircraft with next generation fuel-efficient aircraft, as well as the continued increases in passenger travel demand, especially in the Middle East and the Asia Pacific regions.

On the other hand, continued declines in revenue and earnings are expected for the global defense sector.² This is primarily due to the cessation of a prolonged period of armed conflict in Iraq and Afghanistan, leading to lower budgets for traditional purchasers of military equipment. However, with regional tensions continuing to simmer for example in the Middle East, North Korea, and the East and South China Seas, it is expected that affected governments will continue to increase purchases of next generation military equipment.

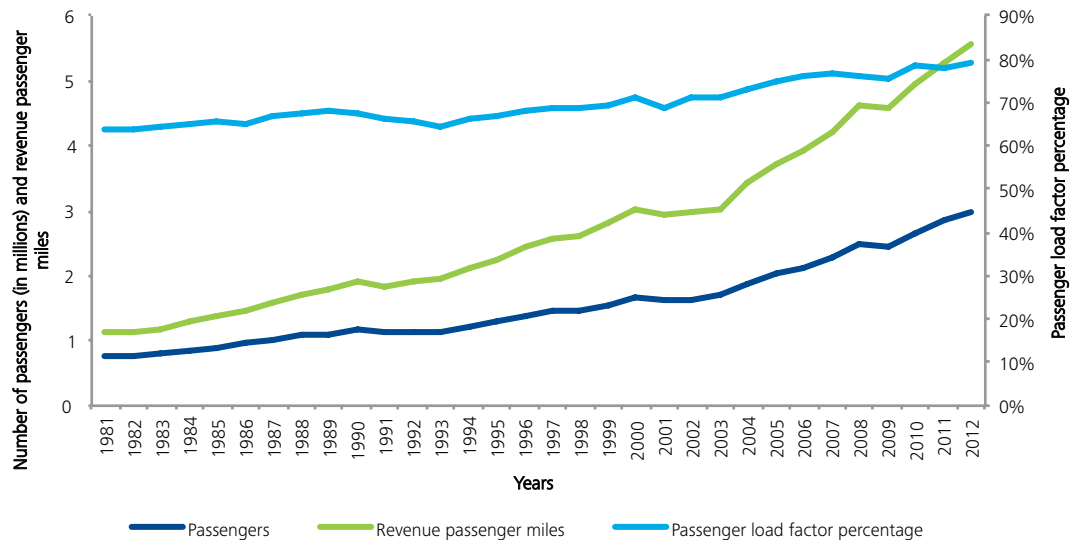
For the overall global aerospace and defense (A&D) industry, revenue growth in the 5 percent range is expected for 2014.³ This would be similar to the growth experienced in 2012 and likely in 2013, all of it and more due to the rising fortunes of the commercial aerospace sector.⁴

Commercial aerospace outlook

Passenger travel demand in countries experiencing continued wealth creation, primarily in India, China, the Middle East, and other Asia-Pacific region countries, are driving requirements for global passenger leisure and business travel growth, as well as increasing freight transportation requirements. Global revenue passenger kilometers have experienced significant growth over the last 30 plus years, resulting in greater utilization of aircrafts and more sold out flights. Passenger travel demand is expected to increase 5 percent every year over the next 20 years, contributing to increases in aircraft production.⁵

As illustrated in Figure 1, passenger travel demand increased 396 percent from 1981 to 2012, while load factors (utilization of aircraft) have risen 15.4 percent (from 63.7 percent to 79.1 percent⁶) during that same period. In addition, the number of people flying per year continues to increase, with a 298 percent increase over that time, which is enabled by more affordable ticket pricing and route availability.⁷

Figure 1: Global airline traffic (1981 to 2012)



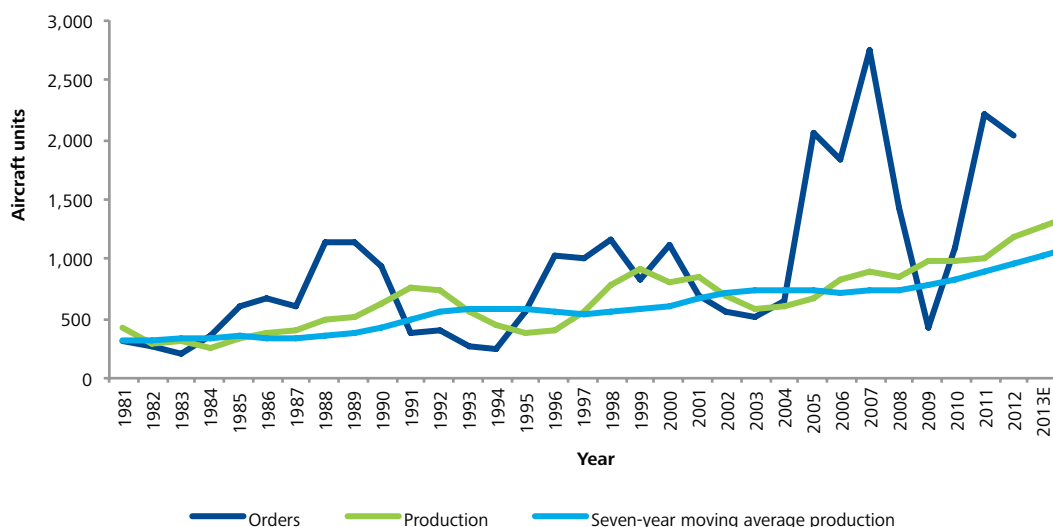
Source: Deloitte Touche Tohmatsu Limited's (DTTL) Global Manufacturing Industry group analysis of the following data: International Civil Aviation Organization (ICAO) data accessed in October 2013; Boeing, *Current Market Outlook* (2013–2032), September 2013, http://www.boeing.com/assets/pdf/commercial/cmo/pdf/Boeing_Current_Market_Outlook_2013.pdf; The International Air Transport Association (IATA), Press releases on 29 January 2009, <http://www.iata.org/pressroom/pr/Pages/2009-01-29-01.aspx>; IATA, "2009: Worst Demand Decline in History — Encouraging Year-end Improvements," 27 January 2010, <http://www.iata.org/pressroom/pr/Pages/2010-01-27-01.aspx>; ATA, "Strong 2010 but Uncertainties in 2011—Severe Weather Dents Recovery," 2 February 2011, <http://www.iata.org/pressroom/pr/Pages/2011-02-02-01.aspx>; ATA, "2011 Ends on a Positive Note — Capacity, Economy Loom as Issues in 2012," 1 February 2012, <http://www.iata.org/pressroom/pr/Pages/2012-02-01-01.aspx>; and IATA, "Passenger Demand Grew as Air Cargo Declined in 2012," 31 January 2013, <http://www.iata.org/pressroom/pr/Pages/2013-01-31-01.aspx>.

As air travel demand is increasing, aircraft equipment continues to improve, with enhancements powered by dramatic innovations in jet engine fuel efficiency, navigation technology, and materials science. These improvements, especially in fuel efficiency, are driving demand for aircraft replacement, thus advancing the obsolescence of certain previous generation aircraft. Fuel costs, as a percentage of total operating costs for airlines have risen from an average of 13.6 percent in 2001 to 31.0 percent expected in 2013.⁸ Therefore, the investments in next generation fuel efficient aircraft, which promises to deliver at least an estimated 15 percent better fuel burn rate, become very attractive for airline operators.⁹

Between increases in passenger demand, as well as the need for more fuel-efficient aircraft, the total demand for new aircraft production is expected to reach record highs for the foreseeable future. Indeed, aircraft production is expected to be between 29,000 and 34,000 (excluding regional jets) over the next 20 years.¹⁰

Figure 2 illustrates sales order and production history of commercial aircraft from 1981 through 2013E, showing a 198 percent increase in production between 1981 and 2013E.¹¹ Using a seven-year moving average, production levels over the last 20 years have increased 77 percent since 1993.¹²

Figure 2: History and forecast for large commercial aircraft orders and production (1981 to 2013E)



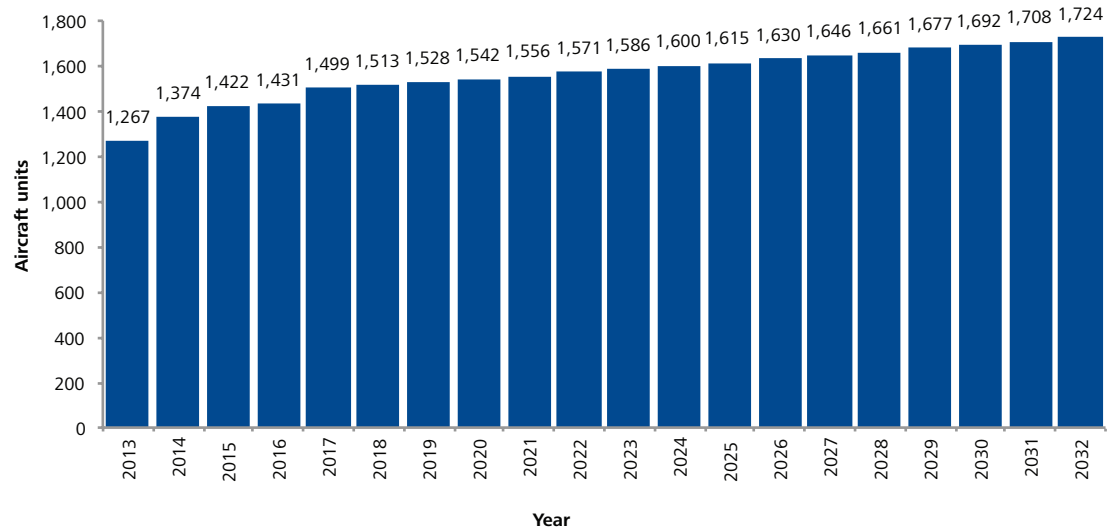
Source: DTL Global Manufacturing Industry group analysis of the following data: The Boeing Company, "Order and Deliveries," accessed in October 2013, <http://active.boeing.com/commercial/orders/index.cfm?content=timeperiodselection.cfm&pageid=m15523>; Airbus, "Orders & Deliveries," accessed in October 2013, <http://www.airbus.com/company/market/orders-deliveries/>; RBC Capital Markets, "Global Aerospace and Defense — 1Q13 Earnings Wrap," 20 May 2013; Credit Suisse, "Global Aerospace and Defense — Weekly Analysis," 23 August 2013; and Morgan Stanley, "Airlines & A&D," 9 September 2013.

It is expected that the next 20 years will see a dramatic increase in commercial aircraft production.¹³ Using a straight line method (except for the consensus forecasts for 2013 to 2016), averaging these two forecasts, Figure 3 illustrates expected production over the next 20 years, assuming no intervening global conflicts, airline operator challenges, or negative economic events that would disrupt the order and production pattern.¹⁴ However as shown in Figure 2 of actual historical sales order and production, it should be noted that a "straight line" pattern of aircraft production has not been demonstrated in the past, thus an irregular line is more likely to occur.

Over the next decade by 2023, commercial aircraft annual production levels are anticipated to increase significantly by an estimated 25 percent. With such growth expected, there are two significant trends and challenges to consider: the entrance of new global competitors to the existing duopoly, and the impact on the supply chain.

First, the industry has only been a duopoly since 1997. Prior to that, the industry was served by at least three if not four competitors. Going forward, it is expected that at least one additional competitor may successfully enter this burgeoning market in the next 20 years.¹⁵ This is expected

Figure 3: Aircraft delivery forecast (2013 to 2032)



Source: DTTL Global Manufacturing Industry group analysis of data from Boeing, *Current Market Outlook* (2013–2032), September 2013, http://www.boeing.com/assets/pdf/commercial/cmo/pdf/Boeing_Current_Market_Outlook_2013.pdf and Airbus, *Global Market Forecast* (2013–2032), September 2013, <http://www.airbus.com/company/market/gmf2013/>.

to impact the pace of technology innovation, replacement cycles, and aircraft pricing. In turn, airline operators may have more product choices, requiring original equipment manufacturers (OEMs) and their suppliers to meet new pricing expectations. Competition will likely increase and premium pricing for aircraft will likely also be impacted by technology innovation creating products which are less expensive to operate (e.g. fuel efficiency, maintenance, and repair), and possessing new and improved technologies that passengers prefer.

It is likely that new aircraft production programs may emerge from non-U.S and European countries, and that they will face challenges introducing new products due to a lack of a track record.¹⁶ This may result in expected new sales order challenges, possible delays in product development, and establishment of a record of reliable, safe, and trouble-free operating history, which takes time. In 1970, the leading European aircraft manufacturer was established and successfully broke into the marketplace, but only after a prolonged period of developing a successful track record.¹⁷ It is anticipated that new entrants into the market may experience some of these same challenges. But given the demand for new aircraft over the next 20 years, as illustrated above in Figure 1, new entrants are likely to eventually experience some level of sales and production success.

Secondly, the aerospace supply chain is challenged to keep pace with their OEM customers to dramatically increase the rate of production of components, systems, and services. Over the past decade, many aerospace suppliers have successfully met customers' challenges by changing their business model. Examples include investing in non-recurring research and development costs in new aircraft production programs, hiring design engineering staff to produce detailed designs for parts, investing in tooling for manufacturing, and managing a cadre of lower tier suppliers themselves. However, many aerospace suppliers have struggled to meet the new expectations and investment requirements.

It is expected that the aerospace supply chain will continue to transform, and will likely consolidate further, while some smaller companies may simply not be able to afford to invest in the industry going forward. The trend to consolidate by part family (i.e., components, aero-structures, electronics, interiors, etc.) may continue for the next few years, in order to gain economies of scale, and to provide the required investment in people and tooling. As the continued demand of the flying public for lower airfares ripples through the value chain, from OEM's to tier-one suppliers and on down, competitive pricing in the supply chain will likely be an ongoing challenge in 2014.

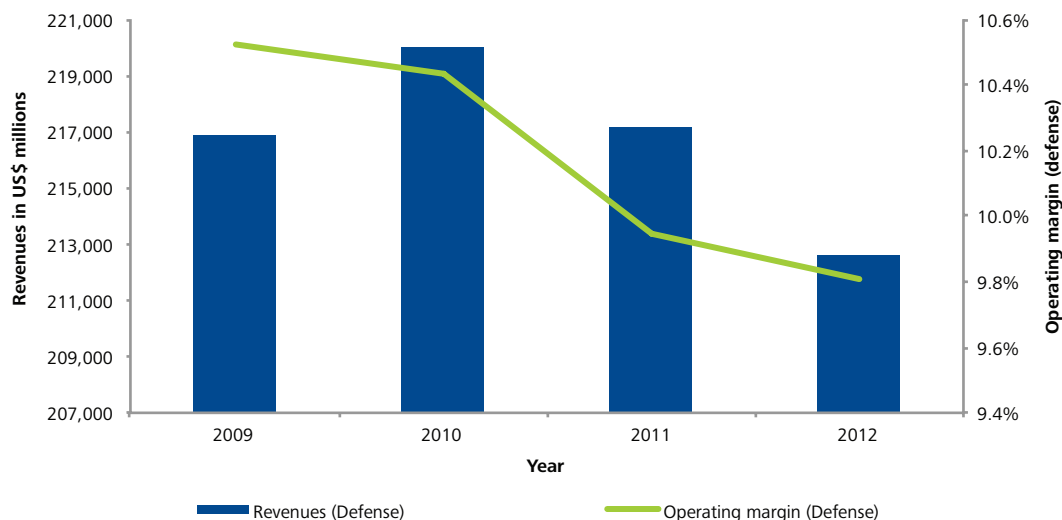
It is likely that 2014 will bring high single to double-digit levels of growth in the commercial aerospace sub-sector, as experienced in 2012 and expected in 2013, given the dramatic production forecasts of the aircraft manufacturers.¹⁸

Defense outlook

Global defense spending is declining, resulting mainly from reduced armed conflict in Iraq and Afghanistan and affordability concerns in many traditional militarily active governments. However, defense spending is increasing in several areas of the globe, especially in the Middle East, India, China, Russia, South Korea, Brazil, and Japan.¹⁹ Many of these countries have produced the incremental wealth necessary to equip their militaries with modern defense platforms and technologies. Some of these same countries have threats on their borders or in their geographies, all of which is contributing to an expectation of increased defense spending. However, these opportunities for sector growth are likely to be diminished with the overall downward trend in global revenues for defense companies, which declined 1.3 percent in 2012 and 1.9 percent in 2011.²⁰ Although the final numbers are not yet reported for 2013, it is anticipated that global revenues for defense companies will track to similar levels as in the past two years, around an estimated minus 2.5 percent.²¹

The U.S. spends by far the most on defense, with approximately 39.1 percent of the total global spend.²² Thus, any reduction in the U.S. defense budget will have a disproportionately higher impact on the global spend. On 1 March 2013 in the U.S., the Budget Control Act sequestration took effect including a US\$37 billion reduction in defense spend, and US\$52 billion of expected reductions annually for the next nine years.²³ As of this writing, the the U.S. House and Senate budget negotiators reached agreement on a budget deal that would mitigate sequestration impacts on military and domestic spending over the next two years, eliminating US\$63 billion in across the board domestic and military cuts through 30 September 30 2015. Notwithstanding, defense contractors have already begun to experience the impact of sequestration. Indeed in 2012, the top 20 U.S. defense contractors experienced a 3.3 percent reduction in revenues.²⁴ Through the first nine months of 2013, the top 20 U.S. defense contractors have experienced a revenue decline of 2.5 percent, a trend expected to continue through the end of 2013.²⁵ With a signed National Defense Authorization Act of 2014, it is expected an estimated US\$22 billion of defense budget cuts in 2014, which is likely to translate into additional U.S defense contractor revenue declines, slightly lower than that experienced in 2013.²⁶ Figure 4 shows the four-year history of revenues and earnings for the top 20 U.S. defense firms, as an illustration of the challenges the sub-sector faces in the coming years.

Figure 4: Defense revenue and operating margin (2009 to 2012)

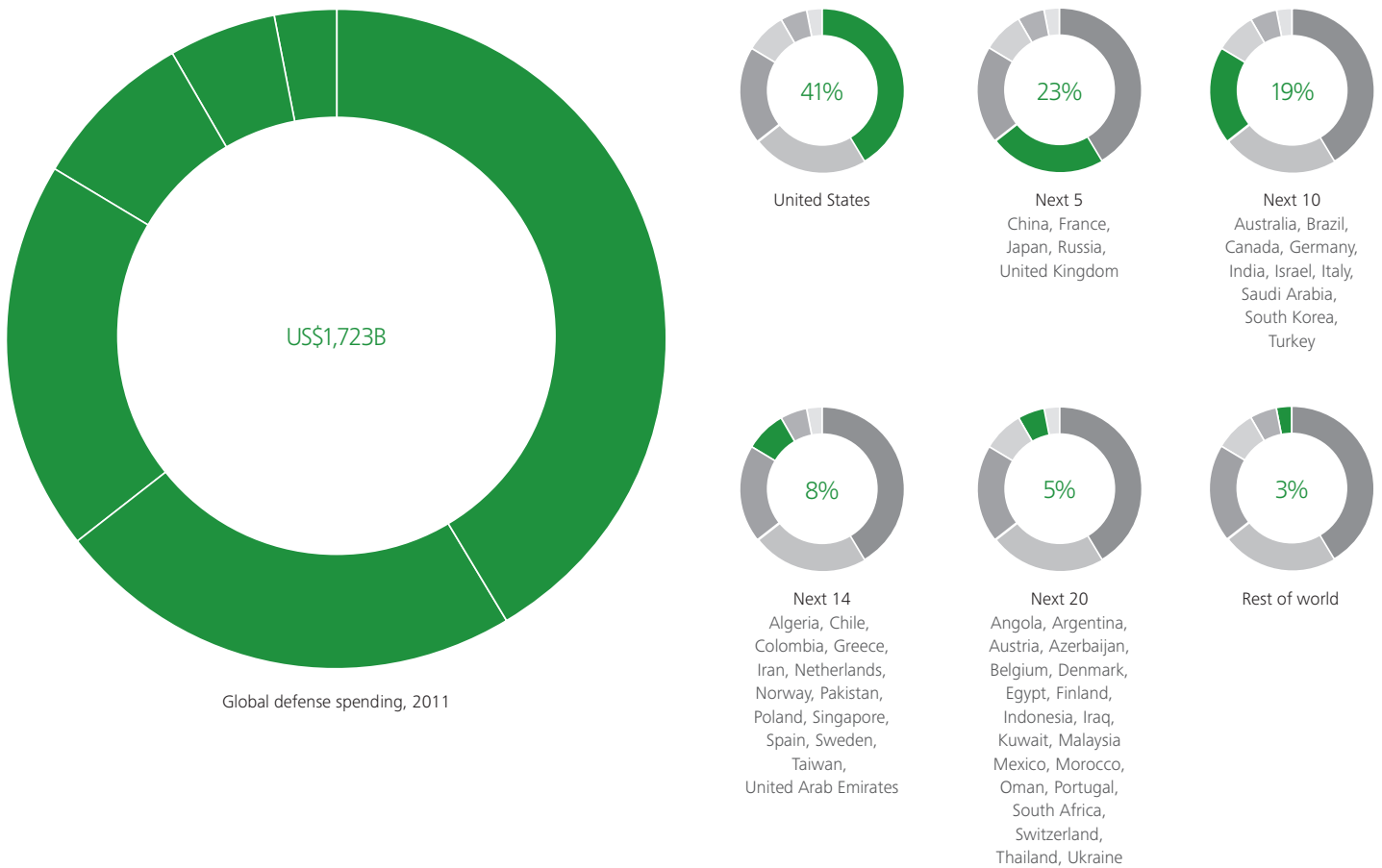


Source: DTL Global Manufacturing Industry group analysis of the following companies annual reports for 2009, 2010, 2011, and 2012 all accessed in September 2013: Lockheed Martin, The Boeing Company, Northrop Grumman, Raytheon, United Technologies Corporation, L3 Communications, SAIC, Huntington Ingalls, Honeywell Aerospace, URS Federal Sector, GE Aviation, Exelis, Textron, Oskkosh Defense, Delta Tucker Holdings, CSC, Harris, CACI, and Alliant TechSystems.

The government customers of global defense companies continue to be challenged with affordability and competing domestic priorities. Thus, global defense spending is expected to continue to decline.²⁷

Figure 5 illustrates global government defense spending by country. As shown, the U.S. government is by far the largest spender, approximately equal to the spending of the next 15 countries combined.

Figure 5: Top 50 defense spenders



Source: Deloitte United States (Deloitte Development LLC) analysis of Stockholm International Peace Research Institute (SIPRI), Yearbook 2012: Armaments, Disarmament and International Security, accessed on 24 October 2013.



The global defense industry in 2014 and beyond will be challenged in two major ways: how to grow profitably in a declining market and what actions are necessary to cut costs to maintain acceptable financial performance.

Firstly, with declining budgets, there likely will not be sufficient work to sustain current levels of revenues and earnings, requiring global defense companies to find other sources of revenue. Governments are expected to continue to spend on programs of significant value, such as the next generation intelligence, surveillance, and reconnaissance (ISR) technologies. The ability to know, process, and react in real time to events on the ground, in the air, and at sea will continue to be a strategic competitive advantage in armed conflict. The ability to process megabillions of data bits provided by high resolution optics, communication sensing, and other multispectral sensors, is key to differentiating friend from foe, or tactical threat versus benign events for example. The use of advanced data analytics to sift through the data and make sense of it will be another strategic advantage in armed conflict. Innovations in these areas represent a source of potential growth for defense companies.

Defense companies will increasingly be required to invest their own funds in potential growth areas, including next generation ISR as indicated above. Other areas of growth that may help fill the revenue gap are foreign military sales to countries that are spending more on defense. Other promising areas of growth are in cyber-security, adjacent markets, and application of military technology innovations for civilian markets. Lastly, growth is expected to come from inorganic sources via acquisitions. Acquisitions into new markets or consolidation of weaker companies to create economies of scale are expected to accelerate in 2014.

Secondly, in order to maintain margins in a declining revenue environment, costs need to decrease. Successful defense companies have already been anticipating defense budget cuts and have been reducing staff, cutting overhead costs, and getting lean. They are accelerating the substitution of process automation over more expensive labor, resulting in higher operating earnings per employee. Digital product development and computer aided design have been a game changer by creating significant efficiencies in the product development process. Lean manufacturing and six sigma initiatives have significantly cut waste and inefficiency in the production process. It is expected these initiatives and programs will accelerate in 2014 as companies manage their margins and profitability in a declining revenue environment.

Is the seven-year backlog of commercial aircraft production at risk of cancellation in the case of a potential global recession?

This is a realistic question given impacts of past recessions on the aircraft production subsector. However, as demonstrated in the great recession of 2009 to 2011, aircraft production did not experience a dramatic decrease, as may have been the case in the previous recessions of 1995 and 1997 and 2002 and 2004 (see Figure 2). This is likely because airline operators have exhibited greater capacity discipline by limiting market saturation with more airplane seats during good times. Indeed, several hundred aircrafts have been taken out of service over the last several years to significantly eliminate excess airline operating system capacity, partly resulting in higher load factors for the industry (see Figure 1).

On the other hand, aircraft sales orders did decrease dramatically during the great recession, but these declines had little impact on production rates, given the high backlog in the industry, and the regional diversification of customers included in the backlog.²⁸ Indeed, as seen in Figure 2, the production levels increased from 858 in 2008, to 1,189 in 2012, a record level, which is expected to be surpassed in 2013 and in 2014.²⁹

The 16.1 percent increase in revenues for the commercial aerospace sector in 2012 is evidence to consider for this question, as it appears the sales orders of the past few years are starting to make their way into revenue on the income statements of OEMs and suppliers in a sustainable fashion.³⁰ It appears any potential future recession may indeed affect sales orders. However, because of the sizable industry backlog and the time it takes between order and delivery, that aircraft production and therefore revenues for the commercial aircraft sub-sector, may not be affected materially, if the recent past is any indication.



Can suppliers to the commercial aerospace industry keep up the significant demand for new aircraft over the next 20 years?

Yes, but there may be challenges. Strong suppliers who possess economies of scale in their cost structure and have the balance sheet strength to invest in risk sharing programs will likely succeed and step up the production rate. Weaker competitors may not have the financial resources, human capital strength, or the capacity and experience base to compete. It is expected that OEM's will react to their customers demand for more competitive pricing, by asking for concessions and price reductions from suppliers and from their suppliers. Thus, expect a consolidation period in the commercial supply chain as this process unfolds over the next few years. This is likely to result in fewer but stronger competitors in the supply chain.

Several recent commercial aerospace product introductions have been plagued with cost and schedule overruns caused in part by weak performance in the supply chain. The industry has generally learned from recent history and is instituting risk reduction and mitigation measures for the most part. These include supplier development programs, supplier surveillance programs, and co-investments for example. Some OEM's are taking control of their suppliers, especially for those that are on the critical path and represent a strategic dependency. Expect these trends to continue in 2014.

What is expected to happen with global defense budgets in reaction to the shift towards "air-sea power" and the "pivot" to the Asia-Pacific theater?

The end of the Iraq and Afghanistan conflicts and the shift to air-sea power is founded on the requirement to conduct operations over a vast area of the globe without direct access to land bases and airfields, a large part of it over the Pacific Ocean. Much of this is in response to the increasing spending for sophisticated military hardware and software in China and their interests in the East and South China Sea. For defense contractors, this signals a shift in requirements from land vehicles and armaments to aircraft carriers, littoral combat ships, and long-endurance unmanned aerial vehicles equipped with sophisticated cameras and sensors.

For global defense companies, it offers the opportunity to develop, deploy, and maintain these technologies and will be a key aspect to business growth. It also means that absent another ground war, equipment that can be developed quickly and cheaply to upgrade existing platforms will be favored in a budget constrained environment.



What do defense companies need to do to return to growth?

In previous downturns, defense companies have merged with competitors, entered adjacent markets, entered entirely different markets, and concentrated on research and development to create next generation technologies. Selling more defense and military technologies to existing government customers will be difficult in a declining budget environment, thus competition for fewer programs is likely to be intensified during this period of contraction.

Therefore, a return to growth in a declining government spending environment will likely require the same kind of response as cited above, plus more. It might include more emphasis on developing new products and technologies that support military mission requirements to address the new threat environment (e.g., asymmetric, air-sea power, cyber, urban, non-governmental organizations, etc.). These technologies include next generation ISR, data analytics and cognition, unmanned combat vehicles on land, at sea and in the air, and enhanced precision strike, perhaps with more reliance on non-kinetic (lasers and directed energy) weapons.

It might include more emphasis on international sales to countries that have new found wealth and the need for more defense capabilities. However, it can be difficult to do business in certain foreign countries with the long decision cycles, investment requirements, and inadequate indigenous capabilities to perform offset work by foreign nationals, for example.

Two areas that defense companies can focus on to create demand in a declining budget environment is life cycle cost reduction and business model transformation. Firstly, defense programs have become extraordinarily expensive by historic standards and affordability has become a key requirement. It is incumbent on defense companies to address this need by developing next generation technologies that can be developed and maintained in service at a much lower cost. As former U.S. Department of Defense Secretary Gates stated, “we cannot afford exquisite solutions anymore when 80 percent functionality at 20 percent of the cost may be good enough.”³¹ Defense companies may have opportunities in the near future to create demand by assisting global defense departments with this.

Secondly, government customers are increasingly faced with large front end investments to develop and field weapons platforms, which in a budget constrained environment forces a conservation of resources. This inevitably means that not all requirements get funded. However, as has been demonstrated in the UK for example, industry has stepped in with a different business model to help fund the requirements with two key innovations including public private financing initiatives (PPFI), and performance based logistics (PBL).³² Although not new, nor exclusive to the UK, these business models can transform the acquisition process resulting in more affordability and lower life cycle costs.

PPFI provides funding from the private sector to finance acquisition programs. PBL provides an “outcome” for a fee, and gets the armed services and the government out of the business of owning and operating weapons platforms. What is achieved instead is a guaranteed service; e.g., one hour of airlift capacity, for a fee. This business model allows defense contractors to continuously improve the mission capability rate at a lower cost, in exchange for a long term contract.

With continued regional tensions in Iran, North Korea, Syria, and in the East and South China Sea, when should defense companies expect an upturn in business and in what product areas?

Unfortunately, regional conflicts and forces of tyranny continue to be a threat raising the potential for armed conflict from time to time. Despotic leaders can still create dangerous disruptions, demonstrated for example with the recent Syrian conflict³³, the continued saber rattling by the North Korean leadership³⁴, high tensions over the disputed ownership of islands in the East and South China Sea³⁵, and by Saddam Hussein’s invasion of Kuwait in 1991³⁶. Each regional danger zone has its own unique military characteristics: Iran and North Korea with its threat of nuclear strike capability and China with its claims in the East and South China Sea using long range fighter and sea power, for example.

The recent budget declines most acutely experienced by U.S.-based defense firms are expected to continue, assuming no major wars. However, as demonstrated over the last 50 years, armed conflict occurs on average every two and a half years, an increase from every four and a half years since the fall of the Berlin Wall. Should this trend continue, expect that defense spending will increase globally in the next two to three years, although this is highly dependent on the global defense environment, and how these potential threats described above play out.

Notwithstanding, global defense companies are expected to continue to produce innovations that can effectively address emerging threats and mission requirements with the continued evolution of defense technologies, specifically in the areas of next generation ISR, data analytics and cognition, unmanned combat vehicles, and precision strike, for example. While the global defense decline has had a muted effect on the industry’s capacity, financial resources, and capability, in the long term, the defense industry continues to produce the game changing technology innovations that help keep war fighters out of harm’s way.

Global defense companies are trying to improve their sales success internationally and will need to comply with changing export controls requirements under the U.S. export control system. How will these changing export control requirements affect companies and how can companies leverage these changes to their advantage?

The U.S. controls the exports, re-export, and re-transfer of dual-use and defense articles through regulations administered by the Departments of Commerce and State, respectively. The U.S. export control system is undergoing significant changes as a result of the Obama Administration’s Export Control Reform (ECR) initiative launched in August 2009.³⁷ This program will likely affect all commercial aerospace and global defense companies in the near future since U.S. export control requirements apply to American origin items and to U.S. persons extraterritorially.



Indeed, the scope of ECR includes a detailed analysis and rationalization of the United States Munitions List (USML), as well as the harmonization of export licensing processes, the establishment of an Export Enforcement Coordination Center, and information technology system modernizations. A stated goal of the detailed USML review is to “build higher walls around fewer items,” by shifting certain parts and components from the USML to the Commerce Control List.³⁸ The expected objective of the USML is to control only strategic and sensitive military items.

In the long term, ECR may ease companies’ licensing burden for less sensitive U.S. origin parts and components and may simplify export compliance requirements, allowing companies to penetrate new foreign markets and facilitate global trade with U.S. allied countries. However in 2014, commercial aerospace and global defense companies should expect to face challenges as they operationalize the changes resulting from ECR. Some of these issues include performing focused export re-classification exercises for items affected by ECR, training employees the interpretation of this new set of regulations, and adapting internal control programs to comply with new export regulations. Nevertheless, companies that proactively and effectively allocate resources to adapt to these new set of regulations will likely be able to take advantage of new international business opportunities.

How will the UK address the mounting defense budget challenges, especially with the initiative to outsource the acquisition process?

The UK Government’s Spending Review of the Ministry of Defence (MoD) budget was conducted recently, resulting in the MoD receiving an equivalent to a near flat cash settlement comparable to the 2010 spending round.³⁹ This decrease in budget reflects the crux of the UK defense conundrum — how to deliver more from the acquisition process in terms of equipment and support, while managing reductions in overall budgets, particularly among non-combat personnel.

In response, the UK government is introducing a package of strategic measures that will fundamentally impact how it delivers front line capability and in so doing help reduce the estimated £1.5 billion of inefficiencies across the UK’s annual equipment and support budget of £15 billion.⁴⁰

Firstly, to improve its procurement performance, the MoD is assessing two options: Government Owned Contractor Operated (GOCO) and Defence Equipment and Support (DE&S). For the GOCO model, the department in effect outsources equipment acquisitions through life support

processes to a qualified defense contractor. Under this program, the MoD retains ownership of defense assets while the contractor acts as agent. Secondly, DE&S examines how far the benefits of the GOCO model could be delivered by retaining DE&S wholly in the public sector (e.g. through changes in compensation to attract and retain specialist skills and streamlining procurement teams). At the time of writing, it has been widely reported that the competition to find a contractor to run the GOCO program was challenged and consequently greater consideration of the DE&S option was underway.⁴¹

Secondly, an update to the UK’s single source procurement framework will be implemented to drive greater consistency and transparency across future sole source contracts. This is the result of Lord Currie’s 2011 review and will address the method used to charge overhead rates.⁴² Thirdly, expect to see headcount reductions of civilians, while increasing the use of military reserves and government contractors in front line operations. Specific initiatives include “Future Force 2020” that aims to reduce the size of the Army from 102,000 to 82,000 by 2017; “Total Support Force” that is geared to establish an end-to-end support force derived from a mix of military, civilian, and contractor staff; and the introduction of the “Whole Force Concept” driving greater use of reservists.⁴³

Additionally, the successor program to Trident, the largest procurement program over the next two decades accounting for up to 10 percent of equipment spend, will heavily influence future defense spending rounds and the level of commercial flexibility that will likely be required in future contracts.⁴⁴



In India, what is the situation having passed the revised Defense Procurement Procedure (DPP) 2013, and specifically does this represent an opportunity for U.S. and European defense companies?

Defense Procurement Procedures (DPP) 2013, is an initiative aimed at giving impetus to indigenization of defense product development and manufacturing in India. It also attempts to create a level playing field between the private and public sector, brings clarity, and expedites the procurement process as a whole. In order to strengthen the Indian private defense industry, Indian companies have priority in DPP 2013 for procuring defense equipment by the Government. Additionally, payment terms for Indian vendors are now at par with foreign bidders. This includes the use of international commercial terms, especially in stages and methods of payment, and removal of excise duty in determination of the lowest bidder.⁴⁵

While new bids under DPP 2013 are forthcoming, the Indian government continues to deliberate on its ongoing agenda. Focus areas include the rationalization of taxes for private suppliers who are part of the supply chain to create an equal advantage in the procurement, the introduction of a list of priority defense items, and clarity on licensing requirement for dual use items.⁴⁶

The Indian government has introduced standards that categorize purchases of military equipment.⁴⁷ As a result, foreign vendors are considered only as a last priority. This selection process incentivizes the Indian private sector to collaborate with global firms to compete for contracts.

The indigenization process is indeed not an easy proposition, especially given the challenges associated with existing foreign supplier's unwillingness to transfer/share key technologies. Furthermore, these suppliers are not likely to move their operations to India. Their decision is contingent upon the existing limit of 26 percent for foreign direct investment; unfriendly tax policy to private suppliers; prolonged process of allotting industrial licenses, export licenses, and joint ventures approvals in awarding contracts and pending clarifications on offset eligibility for some of the potential transactions.

What role does profitability and efficiency play in the vitality of the industry?

The global A&D sector profitability is lower in comparison to many industries such as information technology and health care. In 2012, in the U.S. for example, operating profits margin was 10.4 percent for the A&D sector, while operating profit margins for information technology and healthcare were 16.3 percent and 12.0 percent, respectively.⁴⁸ The A&D sector profit margins were also lower compared to other manufacturing sectors such as chemicals and machinery, whose 2012 operating profit margins stood at 17.7 percent and 14.4 percent, respectively.⁴⁹

Although profitability and margins are not the driving factors, they are significant indicators of the ability to price products at premium levels, reflecting the dynamics of competition and the cost structure of the industry. Well-known innovations in the industry have brought significant

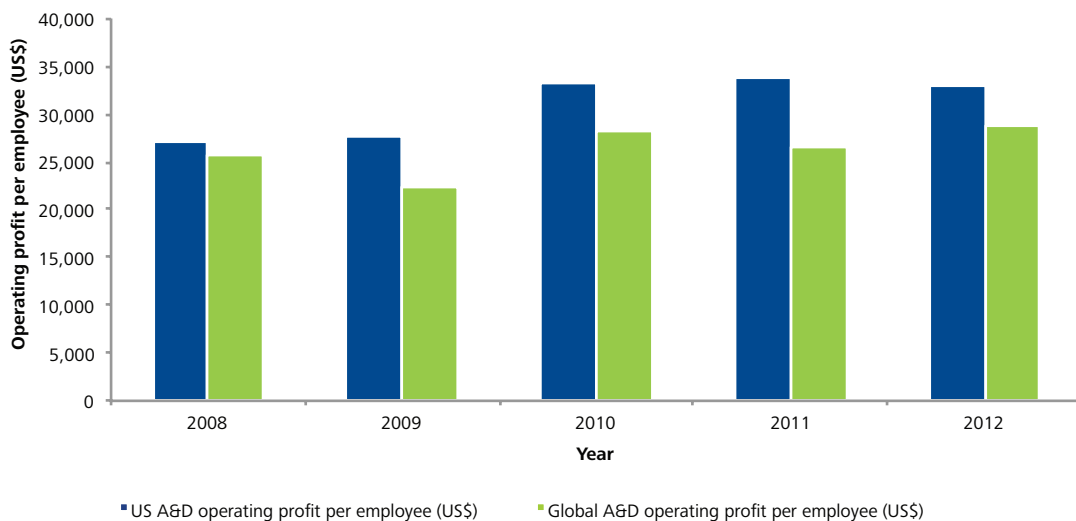


improvements in the functionality, safety, reliability, and pricing of products. For defense sector companies, it is probably not reasonable to expect that profit margins would reach the levels seen in the software industry for example, because of the preferences and expectations of the industry's main customers, global defense ministries, and departments, as well as the taxpaying public. However, profitability does play a role in the ability for companies to attract capital and to increase and maintain financial strength. This in turn allows companies to invest in the research, product development, and innovations that society has come to expect from the sector.

Regarding efficiency, the industry continues to improve on this metric due to several initiatives taking hold over the last several years. Two of these are lean-six sigma and digital product development. Companies are doing a good job of reducing inventories, rationalizing their asset footprint, managing their supply chain better, and increasingly replacing labor with process automation

on the factory floor. In addition, the transition of paper drawings to computer aided design has brought a significant leap in employee productivity. Digital product development allows for the entire product to be designed and tested in the computer, without the need for costly physical mockups. The modeling and simulation allowed by digital product development significantly reduces design flow time, tolerance buildup, and engineering errors, for example. The U.S. has experienced more recent success in improving employee productivity over the global industry due to its improved flexibility to rationalize factories, adjust employee levels, and manage their cost structure in a timely manner. Figure 6 shows the gap between the success in the U.S. productivity and the opportunity for improvement for the rest of the world. With the U.S. headquartered companies experiencing a 5.1 percent compound annual growth rate improvement in operating profits per employee from 2008 to 2012, over the 2.9 percent improvement for the global A&D industry during the same period.⁵⁰

Figure 6: Global and U.S. operating profit per employee in US\$ (2008 to 2012)



Source: DTL Global Manufacturing Industry group analysis of annual reports for 2008, 2009, 2010, 2011, and 2012 accessed in September 2013 for the following companies: AAR, Aeroflex, Alion Science & Technology Corp, Allegheny Technologies, Alliant TechSystems, Amphenol, B/E Aerospace, Babcock International, BAE Systems, Ball Aerospace, BBA Aviation, Boeing, Bombardier Aerospace, CACI, CAE, Chemring, Cobham, Crane Aerospace & Electronics, CSC, Cubic, Curtiss Wright, Dassault Aviation, Delta Tucker Holdings, Diehl Defence and Aerosystems, Ducommun, EADS, Eaton Aerospace, Elbit Systems, Embraer, Engility, Esterline, Exelis, Finmeccanica, FLIR Government Systems, Fluor Government Group, Fuji Aerospace, GE Aviation, GenCorp, General Dynamics, GKN Aerospace, Harris, HEICO Corporation, Hexcel, Honeywell Aerospace, Huntington Ingalls Industries, IHI Aero Engine & Space, Indra Sistemas, Industria De Turbo Propulsores Sociedad Anonima, Jacobs Engineering Group, JAMCO Corporation, Kaman Aerospace, Kawasaki Aerospace and Gas Turbines, KBR, Kongsberg Gruppen Defence & Protech Systems, Korea Aerospace Industries, Kratos Defense & Security Solutions, L-3 Communication, Latecoere, LSI Aerospace, Lockheed Martin, Loral Space & Communications Ltd., MacDonald, Dettwiler and Associates, Magellan Aerospace, Mantech, Meggitt, Mitsubishi Heavy Industries Aerospace, MOOG, MTU Aero Engines, Navistar, Northrop Grumman, OHB Technology AG, Orbital Sciences, Oshkosh Defense, Parker Hannifin Aerospace, Precision Castparts, QinetiQ, Raytheon, Rheinmetall Defence, Rockwell Collins, Rolls Royce, RTI International Metals, SAAB, Safran, SAIC, Samsung Techwin — Engine & Turbo Machinery and Defense Machinery, Senior Aerospace, Serco Defence, Science, Nuclear, Singapore Technologies Engineering Ltd., SKF, Smiths Detection, Spirit Aerosystems, Teledyne Tech, Textron, Thales, ThyssenKrupp Marine Systems, Titanium Metals, Transdigm Group, Triumph Group, Ultra Electronics, United Technologies, URS Federal Sector, Volvo Aero, Wesco Aircraft, Woodward Aerospace, and Zodiac SA.

What is expected in terms of mergers and acquisitions (M&A) globally and in the U.S.?

Public market valuations have increased on average by 21.3 percent for many A&D companies, particularly for companies focused on commercial aerospace from 1 January through 30 November 2013, which is in line with the rise in equity prices in the United States.⁵¹ This may seem at odds with the uncertainty in global governments and U.S. defense budgets, as well as continued concerns about the potential impact of sequestration and the government shutdown on defense companies doing business with the U.S. Department of Defense. However, investors expect defense companies to look for consolidation and diversification opportunities globally, to increase their efficiency and to improve their operating profit performance.

Beginning with the economic downturn in 2008, there has been a significant gap between bid and ask prices for many transactions. This has occurred when buyers seek to leverage perceived weakness among potential sellers, which in turn has led to a stalemate and a relative reduction in the number of transactions consummated. Private equity investors in particular have postponed exits from investments due to the recession and are now ready to sell. In addition, as mentioned earlier, the pricing pressure on suppliers by OEMs in the commercial aerospace sector during this unprecedented upswing in production will likely create an attractive environment for suppliers in certain segments of the value chain to sell

to competitors or other strategic buyers. As transaction multiples continue to return to historic norms, rising 17 percent on a last twelve months basis as of the third quarter of 2013 compared to the full year 2012, these factors are likely to contribute to an increase in M&A transactions in the sector in 2014 and beyond.⁵²

How has 2013 shaped up in terms of performance for major A&D companies?

As illustrated in Figure 7, during the first nine months of 2013, the top 20 global A&D companies outperformed the top 20 U.S. A&D companies both in terms of revenue and operating income growth. During the trailing nine months ending September 2013, the top 20 global A&D companies accounted for almost 53 percent of the industry revenues of US\$692.4 billion reported in 2012.⁵³

The top 20 global A&D companies reported combined revenues of US\$365.8 billion during the trailing nine months period ending September 2013, which represents a year-over-year increase of 4.3 percent.⁵⁴ In contrast, the top 20 U.S. based A&D companies' revenues grew by 1.5 percent to US\$266.2 billion during the same time period.⁵⁵ Similarly, operating income for the top 20 global A&D companies grew by 8.1 percent to US\$33.7 billion during the trailing 9 months ending September 2013, while operating income for the top 20 U.S. A&D companies increased by 5.6 percent to US\$30.2 billion.⁵⁶



Figure 7: Top 20 Global and U.S. A&D companies financial performance⁵⁷

Top 20 global A&D companies	Nine months ending September 2013	Nine months ending September 2012	Percentage change
Revenues (US\$ billion)	\$365.8	\$350.6	4.3%
Operating income (US\$ billion)	\$33.7	\$31.2	8.1%
Operating margin	9.2%	8.9%	32 bps

Top 20 U.S. A&D companies	Nine months ending September 2013	Nine months ending September 2012	Percentage change
Revenues (US\$ billion)	\$266.2	\$262.3	1.5%
Operating income (US\$ billion)	\$30.2	\$28.6	5.6%
Operating margin	11.4%	10.9%	44 bps

Note: Basis points (bps)

Source: D TTL Global Manufacturing Industry group analysis of the following companies:

List of top 20 global A&D companies:

Boeing, EADS, Lockheed Martin, General Dynamics, United Technologies, Northrop Grumman, Raytheon, GE Aviation, Finmeccanica, Safran, BAE Systems, Thales, Rolls Royce, L3 Communications, Honeywell, Textron, SAIC, Precision Castparts, Bombardier, and Huntington Ingall Industries.

List of top 20 U.S. companies:

Boeing, Lockheed Martin, General Dynamics, United Technologies, Northrop Grumman, Raytheon, GE Aviation, L3 Communications, Honeywell, Textron, SAIC, Precision Castparts, BAE Systems (U.S.), Huntington Ingall Industries, Spirit Aerosystems, Harris Corporation, Rockwell Collins, Alliant Techsystems, URS Corporation, and Oshkosh Corporation.

Note: Numbers in Figure 7 may not add up due to rounding from US\$ millions to billions.



As illustrated in Figure 8, aggregate revenues for the top 20 global defense companies reported a 0.6 percent decline to US\$195.9 billion in the nine months ending September 2013, versus US\$197 billion during the same time period in 2012. The top 20 U.S. based defense companies reported a 2.5 percent decline in revenues during the nine months ending September 2013, indicating continued sluggishness in defense spending.⁵⁸ However, the top 20 U.S. defense companies outperformed their global peers with a 1.9 percent growth in operating profits versus 1.6 percent for their global peers.⁵⁹

Commercial aerospace continued to report stronger growth with both the top 20 global and the top 20 U.S. companies reporting 9.3 percent and 7.0 percent increase in revenues, respectively.⁶⁰ The top 20 global commercial aerospace companies outperformed their U.S. peers with a 13.7 percent increase in operating profits versus a 10.5 percent increase for the U.S. based top 20 commercial aerospace companies.⁶¹

Figure 8: Top 20 Global and U.S. A&D Companies — Commercial versus defense financial performance⁶²

Top 20 global and U.S. A&D companies		Nine months ending September 2013	Nine months ending September 2012	Percentage change
Revenues (US\$ billion)				
Top 20 global A&D companies	Commercial aerospace	\$185.5	\$169.7	9.3%
	Defense	\$195.9	\$197.0	-0.6%
Top 20 U.S. A&D companies	Commercial aerospace	\$114.2	\$106.7	7.0%
	Defense	\$162.9	\$167.1	-2.5%
Operating profit (US\$ billion)				
Top 20 global A&D companies	Commercial Aerospace	\$16.1	\$14.2	13.7%
	Defense	\$18.1	\$17.8	1.6%
Top 20 U.S. A&D Companies	Commercial Aerospace	\$13.5	\$12.2	10.5%
	Defense	\$17.9	\$17.5	1.9%

Source: DTTL Global Manufacturing Industry group analysis of the following companies:

List of top 20 global A&D companies:

Boeing, EADS, Lockheed Martin, General Dynamics, United Technologies, Northrop Grumman, Raytheon, GE Aviation, Finmeccanica, Safran, BAE Systems, Thales, Rolls Royce, L3 Communications, Honeywell, Textron, SAIC, Precision Castparts, Bombardier, and Huntington Ingall Industries.

List of top 20 U.S. companies:

Boeing, Lockheed Martin, General Dynamics, United Technologies, Northrop Grumman, Raytheon, GE Aviation, L3 Communications, Honeywell, Textron, SAIC, Precision Castparts, BAE Systems (U.S.), Huntington Ingall Industries, Spirit Aerosystems, Harris Corporation, Rockwell Collins, Alliant Techsystems, URS Corporation, and Oshkosh Corporation.

Note: Numbers in Figure 8 may not add up due to rounding from US\$ millions to billions.

Looking out into the future, what is expected from the global A&D industry, its products, and new markets?

The modern era of the A&D industry started only 110 years ago, with the Wright Brothers first flight on 17 December 1903.⁶³ Since then, the industry has landed a man on the moon, gone supersonic, developed aircraft that have transported over a billion people per year, and sent a spacecraft outside our solar system, just a few notable achievements to mention. The industry has changed the very nature of the ways consumers travel by commercial aircraft, communicate via satellites, shop over the internet, conduct armed conflict when necessary, and assist with humanitarian missions to far reaches of the globe. The A&D industry is expected to continue to develop game changing technologies that will offer improvements in these and other areas.

For commercial aerospace, there will continue to be a need over the long term to bring more people all over the globe closer together physically via safe, cost effective, and efficient air travel. For defense, there is a need to continue improvements to recognize, encounter, and contain aggression in a manner that increasingly keeps the war fighter out of harm's way. Technology innovation is the key to advancements in the industry, in order to address current markets and to create demand in markets that have yet to be discovered.



Contact

Tom Captain

Global Aerospace and Defense Sector Leader
Deloitte Touche Tohmatsu Limited (DTTL)
+1 206 716 6452
tcaptain@deloitte.com

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2013; MTU Aero Engines, *Nine month 2013 report*, 23 October 2013; Zodiac Aerospace, *Fiscal year 2012 and 2013 report*, 17 September 2013; Zodiac Aerospace, *First quarter 2012 and 2013 report*, 18 December 2012; Triumph Group, *First half of fiscal year 2014 report*, 30 May 2013; Triumph Group, *Fourth quarter of fiscal year 2013 report*, 1 May 2013; Fluor Corporation, *Third quarter 2013 report*, 31 October 2013; and S&P CompuStat used for industry operating margin comparison, accessed in November 2013.

54. Ibid.

55. Ibid.

56. Ibid.

57. Ibid.

58. Ibid.

59. Ibid.

60. Ibid.

61. Ibid.

62. Ibid.

63. Smithsonian, National Air and Space Museum, "Inventing a flying machine," accessed on 13 November 2013, <http://airandspace.si.edu/exhibitions/wright-brothers/online/fly/1903/>.

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