

# Aerospace and Defense: Business at the Speed of Sound





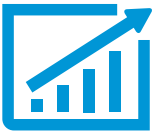
## Understand the key drivers of change in aerospace and defense - Page 3

Newer technologies, a changing landscape and the challenge to reduce costs and be efficient are changing the aerospace and defense markets like never before. Business leaders need to understand how to take advantage of these drivers and push change at the speed of sound to grow and win. **See how to leverage these changes and plot a course to take advantage of the opportunities that lie ahead.**



## See what the future holds for the industry - Page 19

By 2034, the aerospace and defense industry will have undergone significant changes. **See how the industry is trending towards change and what's in store in the future.**



## Figure out the trade-offs you are willing to make as you grow - Page 22

The A&D industry is faced with a number of dilemmas as systems grow and prepare for the next century. **Take the aerospace and defense audit to help identify which trade-offs you are going to be making.**



## Find out how to get real value and insights for your firm - Page 25

HP is delivering significant gains in efficiency, cost management and performance for aerospace and defense institutions across the globe. **See how HP is turning insights into actionable and quantifiable gains for aviation and defense.**



## See the right questions to ask to deliver better results - Page 29

From our extensive A&D experience, asking the right questions is the key to getting the best results. **Find out what questions you should be asking your organization to get the best results as you prepare for future growth.**

## The Drivers of Change in Aerospace and Defense

We are at a very critical time in the aviation and defense industry. The market's needs and possibilities are at an inflection point with newer technologies set to transform how we travel, transport and secure almost everything in our society. However, in many ways, it is a tale of two distinct markets.

**\$352.5 billion**


will be the estimated global aerospace market by 2023. Major drivers for growth are a high replacement rate, change in technologies, increased aircraft size and high networth population increase.



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For commercial aviation, growth continues. Developing markets, increased passenger loads and operating efficiencies are driving continued growth at [4.7 percent annually with 3.3 billion passengers in 2014 and show no sign of slowing down](#). This is enabling airlines to keep upgrading their fleets with more fuel efficient designs leading to sales records and long backlogs for aerospace OEMs.

On the defense side of the industry, spending is being cut and shifting toward more cost-effective solutions that use a mix of new as well as existing commercial designs. While the outlook is certainly going to be slightly lower than 2014, disruptive innovations have the capacity to open up budgets and markets worldwide. In just the past few years, next generation defense-based aeronautic services have started their growth curve. Unmanned vehicles, commercial space cargo and a significant widening of the term “security” to include traditional as well as cyber security are just the beginning

A blurred background image of an industrial robotic arm in a factory setting.

**“The next five years will be all about increasing automation and decreasing labor cost.”**

— Maurice J. Gallagher, CEO Allegiant Travel Co.

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# 6 in 10



A&D executives say **innovation is a competitive necessity for future success**. Yet, almost 4 in 10 do not have a well-defined innovation strategy.

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of the innovations that will reshape the industry for years to come.

There are three statistics that illustrate the potential magnitude of these changes in the aerospace and defense markets:

1. It is estimated that the number of **commercial airplanes in service between 2013 and 2034 will double** to 42,180. Single aisle aircraft will be six times higher than any other aircraft type.
2. **Asia Pacific will account for over 30 percent** of the \$5.2 trillion spent on new aircraft by 2034, with nearly twice as many as the United States.
3. **Cyberattacks are skyrocketing and grew by more than 48% in 2014**. This year it is estimated that

there will be roughly 117,339 attacks each day reaching 94% of the businesses and governments worldwide.

4. **Many US military aircraft and ships average 27 years old** with many systems continuing on far beyond their designed service lives.

## New Economics and the New Workforce

All of these market changes are occurring at a time when the industry is moving to reduce costs, increase efficiency and ramp up production to meet demands in commercial markets, as well as turbo charge innovation in defense. This is forcing increased opposing pressures on the industry at a time of great technological change and a growing



**“We (the aerospace and defense industry) may never be Google, but we need to find a way to attract the same talent.”**

— **Linda Hudson**, Former BAE CEO

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workforce shortage.

The [three most pressing barriers](#) to continuing US leadership are:


1. Globalization
2. Talent shortfalls
3. Innovation challenges

Doing more in a more efficient way is the new mantra. Aircraft and systems will be built in a far more complex manner using state-of-the-art materials that will reduce costs, increase efficiency, ramp up production to meet demand in commercial markets, and drive innovation in defense techniques. To keep up, the industry needs far more qualified workers who can leverage the technology needed to develop, build and run next generation systems and technology.

As almost any hiring manager knows, there is an ongoing shortage of engineers. This is due in large part to a reduced number of aerospace or advanced major graduates (in the US especially) combined with more young technical employees choosing high-tech firms like Google and Apple

for lifestyle or benefits reasons. Add in an aging workforce retiring in greater numbers over the next ten years, and it is apparent that this will continue to strain the industry.

This vital workforce relies on advanced technology and information. Aerospace and defense is a highly-connected ecosystem across departments, systems and suppliers. Each connection makes the whole network and the information more valuable. As the leaders have seen, new ways of delivering and developing applications and thinking about business processes become vital to growth and profitability. This will put extreme pressure on the IT function to keep pace.

The average age of aerospace engineers in the U.S. is **47**  and by 2019, **18.5 percent** of the industry workforce will be eligible for retirement.

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**22% of A&D executives say the shortage of scientists and design engineers is the most significant factor affecting their organization's ability to expand operations or deliver to customers.**

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**“Almost every part of the business is having another look at costs, searching for efficiencies and struggling to stay ahead of the changing environments. With the huge number of changes happening all at once – whether in defense or commercial aviation – identifying and keeping ahead of trends is what will generate long-term success.”**

– Eric Bernardini,

Managing Director at AlixPartners

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This super high-tech workforce is changing not only businesses, but also what they do and deliver. The technology, systems and capabilities need to be matched with the speed and complexity of the tasks employees are given on a macro-level. The increasing complexity of the market combined with production and the constant stream of insights makes the economics and realities of the new workforce far more difficult to manage.

## The New Competitive Landscape is Working for and Against You

From economic to market to workforce shifts, the global environment is far more complex than before and is likely to get even more complex moving forward. Think of the matrix this creates. There are unique regional needs in aircraft, systems, integration services, cyber security and even governance. This is on top of budget/cost issues, workforce shortages, new growth opportunities and supply chain realities. This can open up many possibilities, but it also brings in plenty of competition at every level.

Over the last  
**10 years**

hiring in the industry has skyrocketed as growth has doubled.



**6,300**

more jobs are expected to be added to the A&D Industry in 2015.

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**“Of my nearly 35 years in this business, I can’t think of a time when we’ve had this much opportunity ahead.”**



– **John-Paul Besong**,  
Senior VP and CIO of Rockwell Collins

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On top of this is the complexity of the projects and systems within the industry. For example, the [Boeing 787 has approximately 6 million individual parts and subsystems per plane that are provided by 550 suppliers in nearly 30 countries](#). A delay in any part may delay the entire production run, as Boeing is currently on a 9-year backlog of orders. While being one of the most complex and global examples in the industry, it is by no means atypical.

[With new product and innovation investments like the Airbus a380, costing in excess of \\$25 billion to develop](#), having the lens to see these factors evolve and interact is a vital

part of identifying your organization’s competitive advantage. Keep in mind that global competition is increasing. Now, traditional A&D leaders, mid-market players (Brazil and Canada), government-backed competitors (Russia and China) and newer manufacturing players (Japan) are all going after their share of the bids and contracts available. In fact, [China has now passed Germany to become the third largest exporter of defense technology rising 143 percent from 2010 to 2014](#).

**93%**

**of defense industry experts expect more competition in 2015.**

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**“Airbus and Boeing will have the capacity to assemble planes, but their suppliers may struggle to deliver the parts.”**

– **Steven Udvar-Hazy**, CEO of AirLease Corp.

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Globalization, the world economy, and shrinking defense budgets conspire to disrupt the aerospace and defense landscape. Leading aerospace and defense **firms must rise to meet these challenges, streamlining their operations while continuing to innovate.**

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As this competition increases, the critical element is to use the data and technology available to predict market needs and changes in the forthcoming decades. Successful firms, in both their civil and defense modalities, are going to win and grow on their ability to turn information into insights and stay ahead of the market and competition.

In aerospace, it is all about information and how that information flows between the various elements of the company and the ecosystem to support product development. **This information flow relies on four major trends: cloud, big data, security and mobility.**

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### **Competition, Compress and Capitalize**

– The Three “C”s to Drive Growth. With changing competition, market conditions, cost pressures and new innovations all hitting the industry at once, many are recognizing the need to create new business plans to maintain or sustain growth and/or margins. Commercial, defense and supplier firms are all following the basic formula for success:

- **Competition** and budgets require cost control across the board
- **Compress** the supply chain to shorten delivery time and improve efficiency
- **Capitalize** on insights to identify opportunities and innovations that will propel the organization through the next decade and beyond



More than  
**50%**  
of



**A&D executives said reducing costs is their top priority.**

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## **Cost Control and Budget Shifts Create a New Normal**

Even casual observers of the industry are aware that the time to design and build new systems and aircraft is being compressed and streamlined like never before. This is increasing the need to meet cost and delivery schedules. Many have found the combination of spiral development and high performance computing (HPC) to be the key. This provides the ability to deliver efficiency, productivity and performance without adding scarce engineering talent. But more importantly, it helps better optimize schedules and costs while enabling

the ability to rapidly innovate and add new technology.

As the mid- to long-term economic outlook remains unstable, firms will continue to identify cost control and reduction measures. In addition, needs and budgets are changing. While custom projects continue, there is a new trend towards using existing commercial technology to innovate and deliver faster. This more conservative approach to innovation is helping A&D firms balance the speed to risk to payoff equation required in this challenging landscape.

**Only 47%**

**of A&D executives say they are somewhat effective at determining their profitability, while just 12% say they are very effective.**

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**57%**

**of A&D executives say they are facing challenges with supplier performance today, which is**



**up from  
35%  
in 2013**

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**“In today’s data-driven business environment, you simply can’t manage a complex global supply chain without leveraging technology.”**

– Rob Barrett, Managing Director of Supply Chain & Operations at KPMG Advisory in the US

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## Compressing the Supply Chain While Managing Risks

To meet these time and cost pressures, the supply chain becomes critical. Tighter integration, rapid prototyping, digital links to and from partners as well as continual improvements are the new normal going forward. This digital transformation leverages automation of real-time insights, creating a profound effect on almost every aspect of the business. CAD, big data, HPC and analytics have enabled aircraft and systems to be prototyped and built at record rates. This in turn places new demands on the supply chain and logistics managers to keep pace and even accelerate well beyond what was extraordinarily fast only a few years ago. Many firms and suppliers are late or not completely set up to either innovate or keep up. This has led to a consolidation within the

industry that is set to continue in the near future.

The suppliers (as well as their sub-component manufacturers) are under intense pressure to invest and innovate while bringing down costs as directed by OEMs and tier-ones. This not only requires the capital, tooling and technology to keep up, but also that the systems of record the firms have invested heavily in be augmented by new technologies such as cloud and mobility.

Those that don’t bring the right mix together in an almost simultaneous fashion will be forced by the wayside. OEMs recognize this and are scrutinizing the firms and their ability to deliver with the same intensity as the parts they produce. In addition, organizations are managing the associated risks and implications for supplier failure and consolidation. It is a delicate dance: demand too much and the supply chain buckles; don’t push hard enough and you risk delays and not being cost competitive.

21%

**of A&D suppliers are not financially ready to support the high ramp-up ahead of them**

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[The Top Four Challenges Faced by Aerospace and Defense Supply Chains:](#)

1. Operational alignment to real-time fluctuations in customer demand
2. Supplier performance of risk, reliability and quality
3. Sufficient supplier capacity to meet demand
4. Lack of information and material visibility across the extended supply chain

**Insights are Driving the Way**

The ability to collect and turn data into insights that can be translated into product improvements and new innovations cannot be overstated in this speed-of-sound environment. From fuel-efficiency gains in commercial aircraft to intelligent service and predictability to next generation security and weapon systems that can instantly identify friend or foe, insights are providing real competitive advantages.

The ability to process this data in almost real-time, analyze it and make use of it with literally petabytes of information coming in every day is critical. With every part of the ecosystem becoming increasingly connected, components and systems are now delivering information faster and in more detail across overall and individual performance, customer feedback and other key data points.



**Nearly 60% of A&D firms have started to use big data, but only 3% consider themselves mature.**

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**94% of C-level executives see better insights as the leading driver of cost reduction and**




**84% see it as the key element in margin growth.**

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To visualize the vast amounts of data available, [a modern jet engine with an array of sensors generates over 2.5 terabytes of data every day](#). All of this data is stored and downloaded after landing, giving only a historical view of the information. From there, it still must be evaluated and turned into actionable insights that may affect several departments and/or suppliers as well as the end customer. This time lag, as well as the time for action to be taken, is shortening and becoming a key element that separates high and low margin players.

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**5,000**  planes, each with 8,000 sensors recording 8,000 data points per second, are optimizing and providing near real-time optimization, providing a huge benefit for our customers. But it is also a **great opportunity for our company as far as a revenue generation standpoint.**

– Harish Rao,  
Director of Business Analytics at Boeing

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**45%** 

of aerospace and defense firms say **lack of operational collaboration across different departments is their top challenge.**

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## The Challenge on IT

All of this data places completely different demands on the IT function. The infrastructure and systems have to support enormously accessible storage, very fast and complex data management and a wide variety of applications (including in the field, in central command, in analytics arenas and increasingly in mobile). Firms now have to work with petabytes of information and deliver actionable insights from it in near real-time while delivering to an array of employees and suppliers. This is only going to increase exponentially. As it does, the act of turning insights into real actions that deliver value requires a deep capability in existing systems of record, new tools (like mobility) and business or process design to get it right.

In all aerospace and defense markets, there are huge gains and advantages to be made. Digital transformation is enabling many firms to become leaner, but automation is only part of the story. To be truly successful in this new market era, the products and workforce need to be re-examined.




**“We intend to change the game and plan to be the first to leverage Big Data across the full scope of military operations in new and unconventional ways.”**

**– Zachary Lemnios,**  
U.S. Assistant Secretary of Defense  
for Research and Engineering

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## **Innovation – Aerospace and Defense in the Next Decade and Beyond**

Aerospace has survived and prospered for over 100 years through huge peaks and valleys. Success has often been sustained and perpetuated by taking enormous risks backed by leading-edge design and world-class manufacturing. Tens of millions of parts working together in almost perfect synchronicity is extremely difficult to engineer. The future, however, is set to be radically different in nature. In the next decade, it will involve a much wider portfolio of products, systems and services interacting across the whole planet.



**“One of the very clear lessons is move early to win, and the opposite of that is hunker down ... You can’t just say, ‘I’m just going to last this out.’ The companies working to push their margins up and start cleaning up their portfolio are the ones who are going to come out the other side.”**

**– John Dowdy,** Director of McKinsey & Co.’s Global Aerospace and Defense Practice

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# Companies need a **more effective and more “live overview”** of where the biggest risks lie.



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With growth from China and India, as well as smaller but growing markets across the globe, suppliers will also be stretched to deliver quality and performance levels only dreamt of in other industries. Doing so will require a set of highly flexible but scalable capabilities. This covers as much the engineering and supply chain approach as it does the data and cyber security that will accompany the effort. The critical component in this complex equation is technology. Across every employee, department, supplier system, sub-system and sensor, IT and technology need to bridge the gaps and help deliver the insights to do infinitely more in many new directions.

Scaling resources in new and flexible ways will be the key for success in the industry for the near and possibly distant future. Technology and engineering become even more critical partners in empowering and enabling success in everything from commercial flights to unmanned vehicles to an increasing range of vital integration services (supply chain, insights and big data) for commercial, aerospace and defense purposes. Almost all experts agree that success in the future will be as much defined by how we work and collaborate to innovate using technology, as it will be in the application of new materials and ideas.



“One thing is clear - future **supply chains must seamlessly integrate the digital and physical worlds of customers to be competitive.**”

—“The Gartner Supply Chain Top 25 for 2014,” May 21, 2014.

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Smart aerospace companies are not sitting idly. They're **developing new business models and new strategies extending to adjacent markets and meeting the needs of emerging economies** as the traditional markets contract – all while driving efficiency efforts.

-Carole Rickard Hedden, Editorial Director at Aviation Week & Space Technology

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## A Ripple Effect Means a New Lens for Innovation

The next 10 to 20 years will see a very different world for aerospace and defense. We are seeing major ripple effects as technologies and market needs shift simultaneously. Unmanned vehicles, intelligent and proactive cyber security, new aircraft and systems proliferation and market growth outside the US are changing not only the requirements, but also the speed at which the industry must operate.

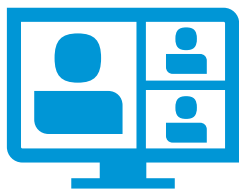
Firms must know how their technology and intellectual property could and should play in these markets and other emerging ones. While doing so, it is important to consider the rapid speed and growth of these markets and other opportunities as firms plot courses to take advantage.

Consider how quickly just a few of these markets are developing and growing:

- Drones and unmanned vehicles are predicted to grow [12% plus a year to an estimated \\$98 billion](#) in cumulative global spending over the next decade for commercial purposes alone.
- The worldwide cyber security market will [grow from \\$71 billion in 2014 to over \\$155 billion by 2019.](#)
- The world's passenger and freighter fleet will add [36,770 new airplanes by 2034.](#)

## Technology is Crucial to Driving Innovation and Value

- Identify technology and design partners that can accelerate your innovation process through co-innovation
- Leverage insights to identify efficiencies and innovation opportunities as well as enhance productivity
- Improve access and data sharing to drive cost advantages within your supply chain
- Leverage high performance computing to increase productivity of your engineering teams
- Provide the technology needed for your teams to maximize productivity



**For defense contractors, success depends on doing well at several things simultaneously.**

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**“Leaders believe their companies must change the way they do business; the question is how to do it.”**



- **John Dowdy**, Director of McKinsey & Co.'s Global Aerospace and Defense and **Melanie Taylor**, Senior Practice Manager at McKinsey & Co.

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This new world for the industry comes with its own set of trade-offs. You have to work effectively today while preparing for the business of tomorrow and beyond. The key is to start knocking down a few issues en route to setting the whole system up for the challenges to come. This is exactly what HP has found through working with numerous aerospace and defense clients across the globe, as well as in our research with C-level executives via Forbes. A series of quick wins are the key to driving short and long-term success.

## The Connected World Needs Connected Security with Shared Responsibility

Think of the connected world that aerospace and defense partners and customers live and operate in. More aircraft systems and infrastructures are being deployed in more diverse usage models, while everyone is attempting to integrate all the parts and experiences between manufacturers and customers in the



## The trend to increase the connectivity and interdependence of aviation systems is beneficial from a commercial standpoint, but **it can present a target for those seeking to disrupt the industry.**

Ross Anderson, *Why Information Security is Hard – An Economic Perspective*

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shop and in the field. This is creating an exponentially larger and more complex network that needs to be secured from cyber threats at every level of the ecosystem. This world has always been inherently complex and integrated. But, as we increase the size and complexity as well as the systems and entities involved, the stakes for getting it right every time also increase exponentially.

Phishing, botnet, jamming attacks, remote hijacking and other cyber attacks occur in the non-aviation world. However, in the aerospace and defense industry, when these occur, the repercussions are far greater than credit fraud or personal information leaks. In the opinion of the AIAA, “everything now becomes a critical asset in the networked world.” This illustrates the importance of vulnerabilities exposed both accidentally by employees (including all the ecosystem partner employees) as much as by deliberate attacks.

These cyber attacks are estimated to cost \$400 million per company in 2015, with the cost rising each year. This makes it a serious issue that everyone from the CEO down to employees to suppliers need to be concerned about. Firms must be concerned about both intelligent and physical cyber attacks to combat the growing threats and possible loss of trade secrets from cyber spies from Russia, China and other countries. This imperative is based on the fundamental reality that it is a shared responsibility to protect sensitive information and intellectual property. The reality in this new connected world is that no one can be too secure. A single mistake or breach could have enormous consequences for governments, customers and the industry as a whole, not to mention have a dramatic impact on our national security.

# “2014

was the year that the hack went viral. As a result, **more companies are realizing that they need to become more proactive than reactive in their cyber defenses.**”

– Lillian Ablon,  
Cyber Security Analyst, Rand. Corp

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## New Challenges Require New Frameworks

To get these wins, successful clients in your industry, as well as complementary industries, have identified new frameworks for making the best decisions and understanding the trade-offs.

The key to this approach is identifying the right questions to ask. There are quick outcome-based wins across the changing landscape, technology, cost and supply chain issues facing the industry. The

problem is figuring out which one provides the best benefits and is least disruptive to the organization. Having the right framework and asking the right questions will make these decisions and trade-offs easier to see and will help in identifying the quick wins needed to move forward.

The questions and self-audit on the next few pages are designed to start an internal dialogue to help identify and focus on the quick wins and long-term options that are best for your organization. They will also provide a look at others in the industry to help benchmark your organization against competitors and gain additional perspectives. This framework gives you the tools needed for the challenges and disruptions ahead. Along with HP's expertise in aerospace and defense, you can find proven answers to the complex issues you face from commercial, civil, defense and related suppliers worldwide.



**“We are seeing increased awareness of the seriousness and pervasiveness of cyber threats across executive committees and boards of directors.”**

– Rich Mahler, Director of Commercial Cyber Solutions at Lockheed Martin Corp.

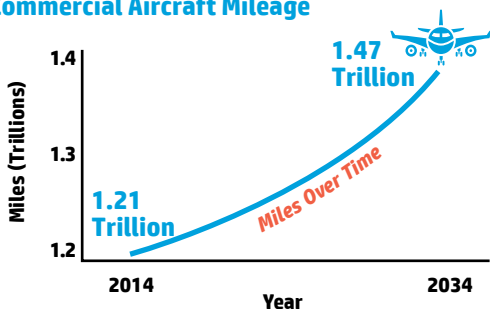
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# The World of Aerospace and Defense is Changing at the Speed of Sound

## How will the following trends impact your business?

Click on any statistic to learn more

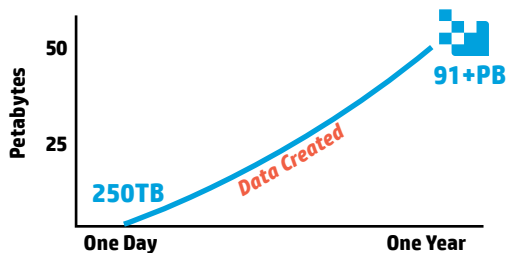
### Commercial Aircraft Mileage



The increase in miles is equal to flying around the earth

**10,441,117 times**

### Everyday Flights Generate Big Data

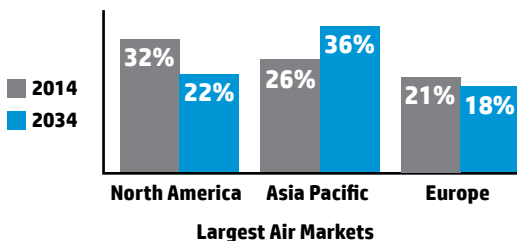


**2X**



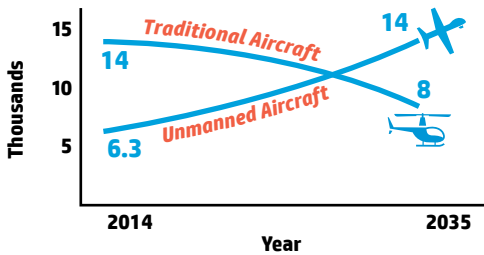
91+ petabytes of data is equal to the number of copies of all the written works ever from the beginning of recorded history

### Air Traffic and Fleets Shift



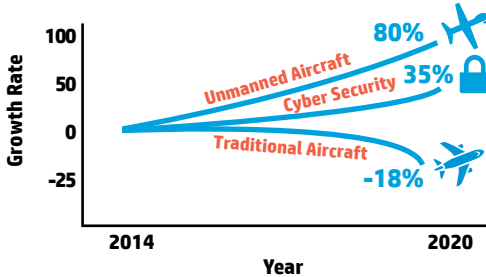
The Asia Pacific fleet in 2034 will be **larger than all the commercial planes flying in 2015**

## Pilot-less Future Developing



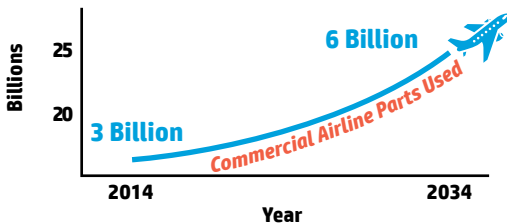
There will be **2.5x more** commercial and military drones than helicopters flying in 2035

## Growth Rates Markets Change Dynamics



By 2020, the unmanned and cyberspace market will **equal 25% of the total cost to develop and buy the F-35 fighter**

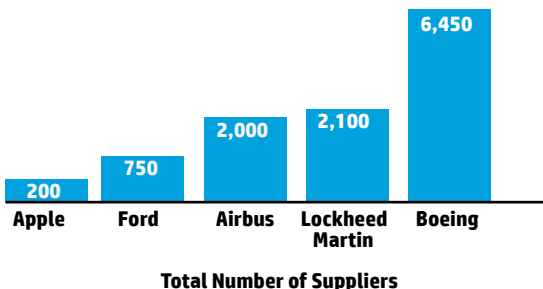
## More Parts and More Complex



By 2034, each plane will have **more than 6.5 parts for every resident of San Francisco**



## Complex Systems Require Complex Supply Chains

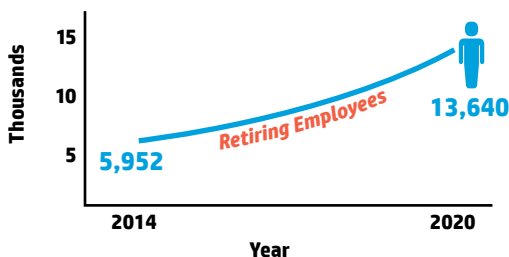


Average number of suppliers at US companies:

**28**



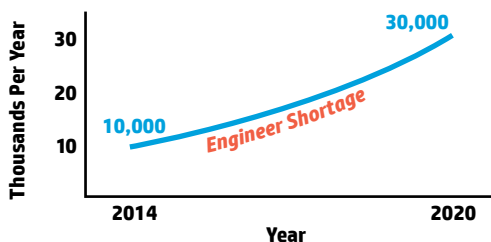
## A&D Workforce Set for Dramatic Change



**7,688** 

more employees retiring roughly equals the number of pilots flying for Southwest Airlines today

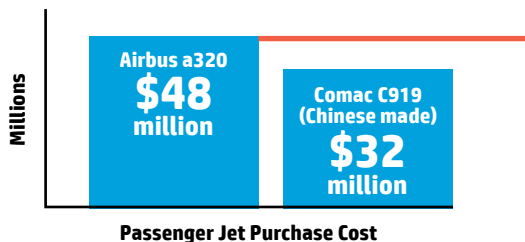
## Workforce Shortage is Increasingly Growing



**By 2020,** 

the industry will have an engineering shortage equal to the entire workforce of Rockwell Collins today

## China Challenges Cost Structures



**\$16M**

equals the cost of a midsized Embraer Legacy 450 jet business



**I've never seen such a fierce marketplace.** The realities of our business require us to constantly renew and refresh our focus to ensure we can compete and win. This is a harsh reality of aerospace today, and it's here to stay.

— Ray Conner, CEO, Boeing Commercial Airplanes Chief Executive

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# Aerospace and Defense Management and Organizational Audit



Aerospace and defense executives and their organizations are faced with a number of dilemmas, both in the short- and long-term, as they work to handle industry-specific issues and maximize growth.

Everyday issues, such as cost pressures, legacy systems, modernization and technology shifts, all need to be addressed and balanced with your organization's management

philosophies. The audit below looks at key areas of technology, business practices, outcomes and future visions to gauge how your organization views the dilemmas facing the industry today.

Understanding how your company views itself on the sliding scale gives you insights into how your organization thinks and which trade-offs you are willing to make for the business.

# 7 Data Points for Successfully Navigating the Future

Technology sits at the heart of this industry, perhaps more than any other segment. Its sheer size, complexity and global reach, as well as the changing nature of its ecosystems (innovations, cyber security, supply chain and workforce) means that to be best prepared, executives need to answer some key questions. The

audit below will help you identify how prepared your organization is as well as the right ways to take advantages of these opportunities and avoid potential threats.

Take the following self-audit and talk to HP to see how your organization stacks up to your industry peers.

## 1. How prepared are you for the new workforce and their technology needs?



## 2. How much is your technology vision integrated into your whole supply and delivery chain?



## 3. Does your current business model include building a set of services as well as physical products?



#### 4. How integrated is your cyber security preparedness and delivery?

We sustain compliancy

We seek to go beyond compliancy and into our ecosystem

Cyber security is a top priority throughout the organization and ecosystem

#### 5. How do you see the application of big data impacting your organization?

Experimenting and/or developing some insights in select departments

Leveraging across key departments and using it to make key decisions

Seen as a top priority and potential competitive advantage for short- and long-term

#### 6. Five years from now, how different will your technology strategy be?

Very similar to now and with key focus on making organization more efficient

Driving far more data analytics/insights and pushing to increase workforce enablement

Technology will be an innovation and key business advantage for us

#### 7. Are IT and business functions aligned to maximize big data, analytics and cloud to meet new business needs?

Wait for business to define requirements for IT

There is push and pull leadership between IT, operations and engineering

IT function embedded into the business and seen as a co-innovation partner

Interested in seeing how other executives in your industry are answering these questions, finding best practices or benchmarking your organization against other aerospace and defense firms?

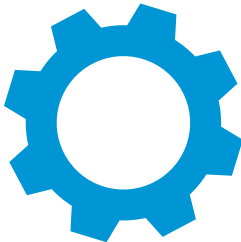
If so, please contact HP Enterprise Aerospace and Defense to see how your firm compares and discuss insights we have learned from over 40 years of helping organizations like yours use technology to build a competitive advantage.



# Why HP ?

We understand your business challenges and objectives.

HP has been a leading provider to the Aerospace and Defense industry for more than 30 years and has established a strong presence as a core IT infrastructure and services provider. In addition, HP's strong presence with Aerospace and Defense companies' end customers, such as militaries, governments, and airlines, positions HP as a reliable and preferred partner. By partnering with HP, Aerospace and Defense companies can expand their global reach, capitalize on growth markets, increase operational efficiencies, secure the enterprise, drive innovation and create value from big data analytics. HP helps Aerospace and Defense firms navigate these challenges and improve collaboration with suppliers around the globe.



## Unmatched Aerospace and Defense Industry Expertise

- HP has more than 75 years of experience in the manufacturing industry and more than 30 years in Aerospace and Defense
- 24 - 25 of the top Aerospace and Defense firms are HP clients
- More than 1,150 engineering and manufacturing application professionals work for HP, averaging over a decade of hands-on experience
- Global reach, unlimited scale; HP maintains one of the largest supply chains in the world that provides unique business opportunities (off-set credits/ approvals) for companies to expand into international markets
- HP manages 290 mission-critical environments, more than 4 million plant production points and 2,500 monthly metrics
- HP manages approximately 5.6 million desktops for more than 550 clients in 135+ countries

- HP manages more than 400 million customer services interactions annually in 51 languages
- HP manages hundreds of thousands of servers for over 680 clients worldwide, including over 200 manufacturing plants
- HP is the top private cloud provider in the world, and 37% of the Fortune 100 rely on HP Helion cloud solutions
- HP provides managed cloud solutions for 250+ clients
- For over ten years, HP has been developing mobile applications and embedded sensors
- More than 1,000 mobile application development professionals with cross-platform experience work for HP
- HP has 600 security patents to date
- 5,000 experienced and credentialed security professionals work for HP around the globe
- HP helps secure more than 1 million applications and 2.6 billion lines of code
- HP has over 40 years experience delivering business intelligence, analytics and data management services
- Over 3,500 analytics and data management consultants with deep industry expertise work for HP
- HP manages 85,000+ Product Lifecycle Management (PLM) seats globally
- HP is a member of Aerospace Industries Association (AIA), the premier trade association representing the nation's major Aerospace and Defense manufacturers
- HP provides comprehensive IT services to the Navy and staffing support to the Marine Corps. The Navy and Marine Corps Internet (NMCI) is the foundation that underpins the DoN's enterprise IT capability, raising it to new levels of functionality, mobility, flexibility, adaptability, reliability and security.
- HP maintains network performance and security for more than 426,000 authorized users at more than 2,000 locations in the continental United States, Hawaii and Japan, making it one of the largest intranets in the world.
- HP manages more than 230,000 Navy devices including 22,000 mobile devices.

# HP Analytics and Data Management Practice:

Deep technical expertise and proven delivery methods.

**800+**

Clients supported globally

**1000+**

Projects completed annually

**9**

Analytics & Data Management  
Global Centers of Expertise

**200+**

Extensive library of business-driven use cases relevant to industries and functions

**3500+**

Data engineers and scientists

**40+**

Years supporting the Industry

**6500+**

Total Staff

## Airbus - HPCaaS

Airbus is a leading aircraft manufacturer whose customer focus, commercial know-how, technological leadership and manufacturing efficiency have propelled it to the forefront of the industry. Headquartered in Toulouse, France, it is a global enterprise of approximately 55,000 employees and has fully-owned subsidiaries and field offices in every part of the world.

<b>OBJECTIVE</b>	Provide a high-performance computing environment to boost supercomputing power for aircraft development and compliance testing
<b>APPROACH</b>	Launched an RFP with specific benchmarks for a scalable, efficient and high-performance computing solution to help double computing power and stabilize costs
<b>RESULTS</b>	Outsourcing data center operations frees IT Staff to service internal customers and ensures high uptime and fast response due to single point-of-contact for serving entire solutions

- Decreased operating expenses and power consumption of HPC environment by 40%
- Increased innovation by doubling usable supercomputing power for three years straight
- HP has been providing the HPC hardware & service to Airbus since 2008 over four iteration improvements
- Won the "Uptime" Award for EMEA



# Things to think about:



## Business practices

- What is your organization's plan to be prepared for strategic and technological demands to maintain growth and profitability against increased competition and continued cost cutting?
- Are you fully prepared for the next upturn or downturn and to manage that balance?
- How are you setting up the organization to support the supply chain and your partners while streamlining and strengthening your entire value chain?
- What information and insight do you have/should be looking for to help the organization make smarter bets for the future? How can you meet new and existing business demands in a capital constrained environment?
- What mergers, acquisitions and divestitures should you be thinking about to set up for long-term future success?
- How can you set up your organization to handle long-term goals beyond quarter-to-quarter metrics?



## IT and technology

- What role does IT play in your short- and long-term plans to improve overall optimization and drive greater operating efficiency?
- What type of support do you need to ensure that we have the real-time information that's available to us so that we can react quickly enough?
- Is your organization set up to fully leverage big data and new analytical capabilities to capture and understand structured and unstructured outcomes-based data?
- How deep is your visibility/IT connection into the supply chain and do you know where the points of failure might be as well as the potential areas of opportunity?
- How can you best secure your data while providing access to partners and keeping information flowing across the organization and ecosystem?



## Future vision

- What does your organization need to stop, start or do differently to be successful in the next three years with the technology, competition and workforce issues the industry is facing?
- What are your core competencies now and how or will those qualities have to change as markets shift priorities or focus?
- How long can current systems support the organization's expected growth, innovation and increased data needs and when must investments be made to stay on track?
- What are you doing to reduce your long-term risk profile and minimize business disruptions from legacy and stand-alone systems and applications as you increase data sharing/availability?

[\*\*Click here to contact HP for more information\*\*](#)

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