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DATA SECURITY IN A CLOUD ENVIRONMENT[1]

"How do you balance critical business needs with securing some of the most sensitive data in the world?"

In a tension filled conference room, one of Honeywell Aerospace's (Aero) government customers took a breath, visibly gathered his composure, and asked a simple question: "This data tells me you are already behind schedule, so why am I only finding out about this now? Why don't I ever know if you will be behind schedule before you actually are? Aren't you a planner?" This was becoming a common theme within the business unit. Aero was great at engineering and manufacturing complex products, but managing the vast array of project data available to them in a way that met customer's needs still eluded them.

Honeywell was an industry leader in the aerospace market for both government and commercial needs, and had a proud history of making best-in-class products for a wide range of customers. Mike Brutsman, senior project manager, thought, "We have great data, great analysts, and great products. Why can't we provide better and timelier project data to all our customers?" To address these issues, Aero had decided to test Microsoft Project Online (MSPO), a cloud-based planning and scheduling tool as replacement for the desktop versions that were currently in use. If adopted there would be many obstacles to rolling this software out. On top of the obvious challenge of rolling out a new software platform in a huge division was the fact that approximately 30% of the Honeywell Aero portfolio contained restricted government projects. MSPO was a cloud environment and thus could create many issues for data security. The business craved the interconnectivity for their data but, security of data was of the utmost importance. Contracts would be at risk and hundreds of millions in revenue – maybe more - would be lost if sensitive information tied to government projects was lost or breached. See Exhibit 1.

Brutsman knew that they could be better and something had to be done. He sat across from his upset customer and thought through the multiple options: Should Aero adopt and rollout MSPO for all segments? Do they adopt and rollout to only the unrestricted segments? And does Aero acquire the very costly data visualization tools that the internal business is clamoring for with either of these options? Or, was the risk simply too great – does he decide to stick with what they do well and make the decision to stay with their current desktop PC versions? How does he balance the cloud security risk with the customer need for better and timelier project data? Potentially billions of dollars' worth of current and future business were resting on his ability to sort through the noise and make the best decision.

Matthew T. Mullarkey, Ph.D.

Aerospace Industry

The term aerospace is defined as "the branch of technology and industry concerned with both aviation and space flight" (Oxford Dictionary, 2018) "Aerospace industry, (is the) assemblage of manufacturing concerns that deal with vehicular flight within and beyond Earth's atmosphere. The aerospace industry is engaged in the research, development, and manufacture of flight vehicles, including unpowered gliders and sailplanes, lighter-than-air craft, heavier-than-air craft, missiles, space launch vehicles, spacecraft, propulsion, avionics, and key support systems necessary for the testing, operation and maintenance of flight vehicles" (Weiss & Amir, n.d.).

U.S. Economics

The U.S. had the majority market share at 51% of the global aerospace production as displayed in Exhibit 2. A distant second in global production was Japan with 8% of the pie. Although impressive, the 51% share was down considerably from about 70% in the 1980's and 1990's before the introduction and expansion of the Airbus A320, which was produced in Europe (Leonard, 2017).

According to David Melcher, President & CEO of Aerospace Industries Association, in 2016 the U.S. aerospace industry supported 2.4 million American jobs, $872 billion in sales with $146 billion in exports resulting in a $90.3 billion positive trade balance which is the highest of any industry (see Exhibit 3, Exhibit 4 and Exhibit 5). Aerospace Spotlight explained, "Foreign firms are attracted to the U.S. aerospace market because it is the largest in the world and has a skilled and educated workforce, extensive distribution systems, diverse offerings, and strong support at the local and national level for policy and promotion" (Aerospace Spotlight, 2017).

Emerging and Evolving Trends

The Aerospace Industry had several forces that were driving change. The key trends were related to advanced technology, green technology, and demand. Doug Gates (2016) of Industry Week outlined 5 key trends of the aerospace industry:

- Continued Technological Advancement
  - Increased customer demand for operating efficiencies & impressive interior designs
  - Advanced technology requirements including new electrical systems
  - Keeping up with A320 neo and Boeing 787
- Strong Replacement Demand
  - A high customer focus on replacing their older fleet with more fuel-efficient, technologically advanced aircraft. "Over the next 20 years, it is estimated that around 40% of all new aircraft deliveries will be for replacement purposes".
- Tilting Supply and Demand
  - Supply and demand where balanced but due to efficiency improvements, an oversupply of 1% to 2% was expected.
- Lower Oil Prices
  - Although lower oil prices may have seemed to have an adverse effect on the drive for a more fuel efficient fleet, it was offset by the growth in air traffic due to fuel savings translated into lower fares. "There have been few signs of airlines engaging in higher utilization of older generation aircraft, nor any reduction in aircraft retirements".
- U.S. Dollar Appreciation
  - "The recent strength of the U.S. dollar will continue to create challenges for non-U.S. players and even small changes in short term rates may dampen demand".

Competition

Honeywell ranked #14 in the world's top revenue producing aerospace companies at $12.28 billion annual sales with The Boeing Company topping the charts at $96.11 billion (Dhiraj, 2016; see Exhibit 6).

Adam Kasi (2017) conducted an industry analysis titled "Porter's Five Forces of Aerospace Industry" that characterized the industry as follows:

- Threat of New Entrants: Low due to high capital investments and the presence of large scale companies.
- Threat of Substitutes: Low due to the need for high quality products that meet the requirements and criteria per the government and aviation administration.
- Bargaining Power of Buyer: Medium - "The airline companies have few suppliers to choose from, however, their purchase decisions are made with a long-term perspective" (Kasi, 2017)
- Bargaining Power of Supplier- Medium "The companies buying aircrafts make the purchase deals by analyzing the technological competence and adaptability of the supplier with company needs. The focus of selecting a supplier that fulfills these needs makes the suppliers more open to price negotiation as they seek long term supply contract" (Kasi, 2017)
- Competitive Rivalry- Moderate due to few large-scale manufacturers in the industry, leaving many smaller companies to compete for short term contracts.

Future

The future of aerospace lay in flying cars, triple decker jets, extreme armored fighter planes, precision guided missiles and Jupiter bound spaceships. Customers wanted bigger and were racing to uncover the next great innovation. The aerospace industry continued to thrive while employing a highly technical workforce and nurturing the next generation of rocket scientists and Mars-bound astronauts.

Financial firm Deloitte (2017) expected total sector revenues to grow by 2% in 2017.

Deloitte attributed the expected growth to several factors:

- Lower commodity prices in crude oil
- Increased passenger travel demand
- President Trump's focus on strengthening the US military
- Rising global tensions leading to increased demand for military defense products

Challenges were expected in the U.S. industry as they struggled "in attracting, retaining and encouraging workers to remain innovative and inspired" (Hyland, 2017). A panel of experts at the 2017 American Institute of Aeronautics and Astronautics (AIAA) SciTech Forum agreed that losing talent to other nations was a very large concern and that they had to "make working in the U.S. attractive to foreign students" (Hyland, 2017).

Honeywell

Honeywell invented and manufactured technologies that addressed some of the world's most critical challenges around energy, safety, security, productivity and global urbanization. The company was uniquely positioned to blend physical products with software to support connected systems that improved homes, buildings, factories, utilities, vehicles and aircraft, to enable a safer, more comfortable and

productive world. Honeywell's solutions enhanced the quality of life of people around the globe and created new markets and industries.

More than 50% of Honeywell engineers were focused on software and all of the company's global software divisions had achieved Capability Maturity Model Integration (CMMI®) Maturity Level 5, which enabled continuous improvement and innovation for products that were intuitive, reliable, and met customer needs. As a Fortune 100 company with approximately $40B in sales in 2015 and 118% total shareowner return over a five-year period, Honeywell had established a track record of strong financial performance over time. Furthermore, the company routinely established and achieved challenging five-year financial targets that distinguished them from their peers. ("Our Company," n.d.)

Honeywell Growth Strategy

Honeywell had a disciplined, focused growth strategy that enabled the company to outpace its competitors and grow faster than the industry average year after year. The company focused its five-year plan on high growth regions that outpaced domestic growth in actual results and was anticipated to make up 50% of the world economy by 2030. Equipped with $5.4 billion in liquid cash and a whopping 11% of its total assets, the company set out to make acquisitions to the tune of $10 billion through the end of 2018. Honeywell Ventures had a strong reputation and proven record of many successful acquisitions and integrations. Likely acquisition targets were companies with the ability to scale rapidly due to Honeywell's global presence, extensive customer base, channels, intellectual property and advanced manufacturing capabilities. Honeywell invested in a wide variety of sectors, including those that aligned with their strategic business units (SBUs): Aerospace, Home & Buildings Technologies, Performance Materials & Technologies, and Safety & Productivity Solutions.

Honeywell Aerospace

Honeywell Aerospace was a leading global provider of integrated avionics, engines, systems and service solutions for aircraft manufacturers, airlines, business and general aviation, military, space and airport operations.

Honeywell Aerospace's primary focus was to enhance customer value by making flight safer, more reliable and more cost-effective through their unique capabilities in sophisticated avionics, flight safety products & systems, propulsion engines, auxiliary power units, wheels & brakes, and their strong aftermarket service & support. This included managing the associated projects with accuracy, speed, and the agility to adapt in an ever-changing business environment. The Aero SBU placed a heavy emphasis on quality & continuous improvement and had a commitment to redefine customer-supplier relationships across a broad array of core competencies, which included power, guidance, navigation, safety, communication and services - all through a spirit of partnership. (Industry Expertise, n.d.)

HOS Gold: Building a Best Practice Enterprise

Ten years prior, Honeywell had made a promise to its shareholders: to utilize the same engineering excellence that had helped them create some of the best products in the world, and apply it to the business side (organization, structure, standardization, etc.) of Honeywell's different divisions. The goal was to standardize the very best of company and industry practices across business units, and to recognize and reward those that accomplished that goal. This applied very heavily to the Aero SBU and its project management techniques and capabilities. Becoming more interconnected was so sought after the new company logo contained the phrase, "The Power of Connected."

HOS Gold brought together all of Honeywell's business management processes to create a best practice enterprise that was continuously developing better products and better experiences, improving productivity and efficiency while reducing costs. They created more than 60 HOS Gold business enterprises globally throughout their strategic business groups to marry small company speed and customer responsiveness with the cost effectiveness and technical excellence of a big company to achieve breakthrough performance. See Exhibit 7 HOS GOLD. There were 6 key elements of HOS GOLD:

- **Honeywell User Experience (HUE) -** developed solutions for users, maintainers, installers, consumers and employees that were easier to use, install, and maintain.
- **Software -** Through software-enabled products, connected offerings, and simulation tools, Honeywell was committed to meeting the highest standards of excellence. As of 2015, 100% of Honeywell's global software divisions where compatible with Capability Maturity Model Integration (CMMI®) Maturity Level 5, the highest level attainable in an appraisal. This achievement took them into a higher level of capability, sharpened the competitive edge of their software teams, and verified that their operations and customer satisfaction were the 'best of the best' in the industry.
- **Velocity Product Development (VPD) -** brought together all the functions that were necessary to a successful and rapid launch of new technologies – R&D, Manufacturing, Marketing and Sales – to ensure they delivered the right products, at the right price, faster than their competitors.
- **The Honeywell Operating System (HOS)** - drove sustainable safety, quality, delivery, cost and inventory improvements that were expected to give Honeywell a 20-year competitive advantage over their peers. Continuous improvement was at the core of HOS, and employees were empowered to identify opportunities and develop leading practices in order to ensure that the world continued to advance and ultimately provide for a better tomorrow.
- **Six Sigma** - was in place within Honeywell for more than 25 years. Through its emphasis on designing quality into products and continuously improving operations, Six Sigma helped Honeywell drive significant improvements in quality, delivery and overall productivity.
- **Lean Initiatives** - were used to simplify and streamline operations continuously, which yielded a reduced cycle time and improved the customer experience.

HOS Gold attempted to codify and formalize the very best of both internal-focused and customer-focused practices and deliverables. The idea was to keep what they do great, formalize those processes, and be able to deliver it to their customers in an efficient and easy-to-understand way. One of the key cogs to the HOS Gold initiative was Integrated Business Planning (IBP). It was within IBP, as well as the user experience (HUE), where the adoption of a cloud-based project management environment such as Microsoft Project Online made the most sense. Honeywell quality, manufacturing capabilities, and history was expected to continue to win them business into the future. Additionally, streamlining and improving their project management processes was expected to prepare them for future growth that was anticipated from high growth regions, while simultaneously improving the product they supplied to their existing customers. The question then became: Could Aero bring the same amount of focus and engineering expertise to the business management side of their unit that they did to their products? Could they integrate its world class capabilities into a new cloud-based platform while meeting data security requirements from the most demanding customers in the world? And was it worth the risk?

Microsoft Project Online

To understand how Microsoft Project Online could add value we need to understand what a project is. Per the Project Management Institute (PMI, n.d.), which maintained the Project Management Body of Knowledge (PMBOK), a project is a temporary endeavor undertaken to create a unique product, service, or result. Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management processes fall into five groups: Initiating, Planning, Executing, Monitoring & Controlling, and Closing. It draws from ten areas of knowledge: Integration Management, Scope Management, Schedule Management, Cost Management, Quality Management, Resource Management, Communications Management, Risk Management, Procurement Management, and Stakeholder Management

In the early days of project management analysts would use graph paper and rulers to plot out project plans. Fortunately, as the industry grew so did the offering for software to increase efficiency. Major improvements in decentralization of project teams had taken place over the last 10 years. For example, it was commonplace for project teams to be located globally and utilize software as a means of communication. In Brutsman's personal experience he had been part of several software improvements and adoptions in his career. He noted that while some software tools were not ideal, the clear majority dramatically improved speed and efficiency of data analysis. He further noticed that the most successful software adoptions provided visual data that could be easily interpreted and data at management decision levels. Brutsman learned that more granular data was not better for making decisions but, having easy to understand, accurate, and timely data reported at the proper level led to more effective management decisions.

Microsoft Project Online was a project and portfolio management software that allowed users to view all their projects and resources. Project Online was for project managers, team members, and decision makers in businesses that needed project and portfolio management software accessible through the internet. It was ideal for organizations, such as Honeywell, that subscribed to Office 365 and other Microsoft web applications. It came with SharePoint, so collaboration, content and document management features were included. It was delivered as software-as-a-service (SaaS) through Office 365.

Some of Honeywell's customers and competitors were already utilizing a cloud-based technology. Although Honeywell was a large company, cost control on software acquisition was still heavily scrutinized. The core MSPO would already be expensive for the organization; additional capabilities and encryption features would then more than double the cost. Another option available was Microsoft Project Server. This option would provide the necessary connectivity of data, but would also require IT infrastructure, administrators, and maintenance. MSPO was the more scalable option and could be used to across business units and different types of government and commercial contracts.

Features, Benefits, Product Strengths

- Project Management – Project Online used the new Project Web App (PWA) to help users create, update and manage their projects. This was made through visual tiles similar to Windows 10. It had templates available from Office.com, so users could begin faster and also create their own workflows with Visio to improve control. It came with the familiar Gantt chart and a new Task Path that highlighted the most critical tasks. It also had readily available reports, such as Burndown and Resource Overview, and allowed users to create reports using an Excel-like interface. The Team Planner tool helped with managing risks in schedules.

- Project Portfolio Management – The software had features that allowed for a high-level view of projects and portfolio investment. It also included the Business Intelligence Center, which enabled users to measure data and prioritize projects that provided the greatest business value. Users could also create views and dashboards in real-time, through SharePoint Designer and Visio, to measure resource utilization, so people could be assigned and allocated strategically to projects that were of higher priority. Project managers could get updated with the team activities and ideas by syncing Project with SharePoint Online task lists.
- Power Business Intelligence – Power BI was a suite of business analytics tools that delivered insights throughout an organization. It enabled users to connect to hundreds of data sources, simplify data prep, and drive ad hoc analysis, produce visually appealing reports, then publish them for an organization to consume on the web and across mobile devices. Users could create personalized dashboards with a unique, 360-degree view of their business and scale across the enterprise with governance and security already built-in. Power BI was a tool that management was clamoring for, since most managers had a very heavy workload and simultaneously managed several government and non-government projects. A standardized, easy to use dashboard would allow them to monitor progress and compliance for each project in a simplified, streamlined way (see Exhibit 8).
- Extended capabilities with SharePoint integration and other applications – Users could create a project site either through SharePoint or Office 365. Project documents could be centralized in one place and vital correspondence captured via OneNote. Team members could receive and update their assigned tasks via SharePoint's Newsfeed Hub. Online meetings could be held using Lync. The project site could be accessed with Windows Phone or iOS mobile devices. Additional, features could also be extended with other Office applications that were available at the Office online store.

Product Liabilities

MSPO had many benefits but also carried an inherent risk. As a cloud-based platform the project web app environment was more susceptible to breaches. "For companies that did experience a data breach in the last year (31%), 48% say it was the user who exposed data intentionally or accidentally from a cloud service. However, a quarter don't have any idea how the breach occurred, and 30% could not determine what data was lost or stolen." (Seals, 2016). Per TCS Cyber Security, a community of cyber security subject matter experts, there were 10 major security threats in cloud computing (see Exhibit 9).

Within the aerospace industry, compliance was not a choice. Department of defense contracts contained Defense Federal Acquisition and Regulations (DFARS) clauses which stated that prime government contractors (and ultimately their subcontracts, such as Honeywell), were obligated to comply with International Traffic in Arms Regulations (ITAR) requirements. If Honeywell were to commit an ITAR violation, such as mishandling ITAR-controlled technical data or failing to obtain a Trade Agreements Act (TAA) authorization, then their customer could also be held liable. Thus, contractors had become extremely sensitive to the compliance capabilities of their subcontractors. Simply put, subcontractors with demonstrated capabilities in ITAR compliance were safer and more desirable for the primes – those without this capability presented greater risk. This would greatly affect the contracts that Honeywell could win in an ultra-competitive market. Aside from the potential hacking of US defense and space technical information, the cloud posed the risk of compromising company financials. There was no foolproof solution to ensure the cloud environment would not be breached. However, there were some opportunities to mitigate the potential risk; such as, (1) Not place DFARS contract data in the cloud, (2) Task the contracts team with determining project suitability for the cloud, or (3) Purchase the upgraded

.gov domain for the cloud environment that would provide constant encryption—but would cost three times the price of the non-encrypted licenses.

Project Management at Honeywell

The purpose of project management in the Aero division was to optimize performance and production during design, construction, and maintenance. It was expected to help distribute products at a lower cost, increase accuracy & efficiency, and remain at the highest level of compliance with respect to safety and standards for its customers. Most importantly, it needed to increase the visibility of the timeline and costs to Honeywell, the production and design team, and the customer. As a company grows and becomes as large as Honeywell Aerospace, processes must constantly be reviewed for ultimate efficiency and accuracy. According to Anantatmula (2008):

> Technology can efficiently and effectively help project stakeholders accomplish five project management functions:
>
> - document the defined project roles and implement related processes;
> - establish formal and consistent processes;
> - communicate expectations of processes and roles;
> - communicate openly among all the project team members, including virtual teams; and
> - monitor and manage project outcomes

For the past few years, programs had been using a desktop version of Microsoft Project to build their timelines in order to keep track of time, resources, manpower, and costs. Most of the business was maintained in portfolios of similar products. Without a way to combine individual MS Project data into a portfolio, managers only had visibility for a single project at a time. Program managers had to gather information from each project and analyze at the project level, instead of the portfolio level. Additionally, the program planners had to get status for these projects from the stakeholders individually on the team and combine several customized data trackers into one. These planners produced status sheets that were sent to the stakeholders called Control Account Managers (CAM) on a periodic basis, usually bi-weekly. The Planner would combine the data from each CAM in the MS Project Schedule and provide updates to their Program Manager. This process took considerable time, resources, and did not allow for a quick real time snapshots of ongoing projects throughout the company. And though each team controlled its project individually, they had the same needs, summarized as follows:

1. Access to project data at all times
2. Real time Data Analytics
3. Data Visualization – to relay the new real-time data

To accomplish this, stakeholders had full control of the design of the Microsoft Project's custom reports and tracking system for their section of the project. However, it was stored on a stand-alone desktop that only that respective team could access, eliminating many security risks and the danger of corruption of data by external users. The team could also put project timelines and reports on a dedicated server with limited permission applicable during the lifecycle of the project. The downside was that each team developed their own set of standards – for everything from basic dashboards to timelines to how data was collected and/or presented internally and externally.

Brutsman felt that Honeywell Aerospace was missing out by not establishing channels of open communication between different projects and formalizing processes. Microsoft office online could

organize knowledge of past projects, historical data, and track current projects, allowing employees to share experiences. This sharing of data could breed trust among employees and help them work together across projects if similar situations were encountered (see Exhibit 10).

The additional option on the table was to pair Microsoft Business Intelligence (BI) with MSPO. This function supported data analytical tool add-ons that displayed interactive visuals with self-service BI capabilities. BI opened the collaboration even further; with this function employees would be able to track projects by location, type, stage, costs, and more. Right now, "there's only a handful of people that know what is really going on" per Brutsman. This visual representation would make it easier for more employees to see the movement of projects in Aero along with costs, manpower, and upcoming deadlines for their current projects along with all the other projects in the division. However, along with a big price tag, cloud-based data and information could pose security problems. Because Power BI was so powerful, it could consolidate data from desktops, MSPO, and other data sources to create dynamic, visual dashboards for managers to use. However, that access into multiple feeds was also a vulnerability point. Power BI could create a "backdoor" for anyone (internal or external) wishing to gain access to sensitive data.

In Brutsman's opinion, the Aero division needed help with many basic limitations within their current set-up. Brutsman noted how the current system led to mistakes in customer-facing information, stating "The customer really notices when the invoices don't match." On any given project, there could be up to 5 separate stand-alone schedules and one person to manually roll that data up into a report for the customer. Microsoft Project Online could make this entire process simpler and yet more powerful – it would force all managers to follow the same report process with current, accurate data. It would eliminate the need and time for the Master Scheduler to roll up the final Integrated Master Schedule using subprojects. The potential savings in labor hours would be significant across many functions due to standardization and automation. However, employees were known to be resistant to change. How much time and money would be spent retraining the managers and converting existing projects to the new standard? Would it put current projects behind timeline? And would the final product really be that much different for the end customer? Could this create a push button culture with no emphasis on analysis?

The greatest concern was security. The parent company of Honeywell Aerospace, Honeywell International, had a revenue of 39.3 Billion US Dollars in 2016. Nearly one third of those contracts were in the government sector. One loss of data on a government contract could potentially shut down future contracts costing the company billions in revenue. Microsoft Office Online was exactly what the name says, a program online, in the cloud. What type of security problems could occur? How much money should be spent on cyber programs to protect the data? Was the constant availability of current data worth the risk?

Brutsman had received approval to test Microsoft Project Online if he decided the benefit was worth the risk along with time and money spent. Was he willing to say no after all the time and money spent to get approval to purchase? Conversely, was he willing to risk 1/3 of Aero's revenue – billions of dollars - on a potential security breach? Should he take on the risk to align with what other industry giants were already doing? Or risk being undercut by more efficient cloud early adopters within in the aerospace industry?

The Options

1. **Do Nothing:** Honeywell Aerospace was a large successful company. Why risk changing a process that was currently working? Employees were notoriously resistant to change. There was a low security and file corruption risk by using stand-alone desktops. They could develop in-house solutions to help mediate the customer demands. This also entailed the least costly initial outlay.

2. **Microsoft Project Online for non-government contracts only:** Two-thirds of the contracts were civilian contracts that followed less stringent rules on security. There were different rules and processes depending on the type of contract. Was it worth spending the money and time for a partial solution? Could this be a trial to see if the cloud had enough security for future government contracts? How would government contractors respond to receiving less current data than civilian contactors? Would contractors that worked both government and civilian contracts expect the same service for both? This option would partially satisfy access to project data at all times and real time data analytics.

3. **Microsoft Project Online for all Aero contracts:** All processes and reports would become standardized and data would be current. Reports to customers would be more easily managed. However, there remained a high security risk saving project data in the cloud. There would be expensive and time-consuming training involved with the roll out. In addition to general security considerations, the classified data sometimes associated with government contracts was of further concern. If Honeywell chose the .gov approach, it would cost triple the non-encrypted option.

4. **Microsoft Project Online with Power BI:** Was the large price tag for the BI worth the interactive data visuals? Was this something an internal developer could duplicate? Was it necessary for everyone to have access to these tools? Was the additional security risk worth it? Was it worth having visuals in only the commercial sector if the Government cannot use the cloud? This option would accomplish all three needs concerning project management access, real time data analytics, data visualization.

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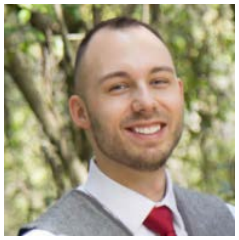
Biographies



Mike Brutsman graduated Cum Laude in Finance from the University of South Florida and is currently pursuing his Executive MBA at the same University. Mike served in the US Navy including a tour in Mosul Iraq during Operation Iraqi Freedom. He currently leads the Earned Value Management and Integrated Master Scheduling for Honeywell's Canada and UK sites. Mike has proposed, planned, and managed hundreds of millions of dollars worth of business for Honeywell Aerospace Space and Defense business segments.

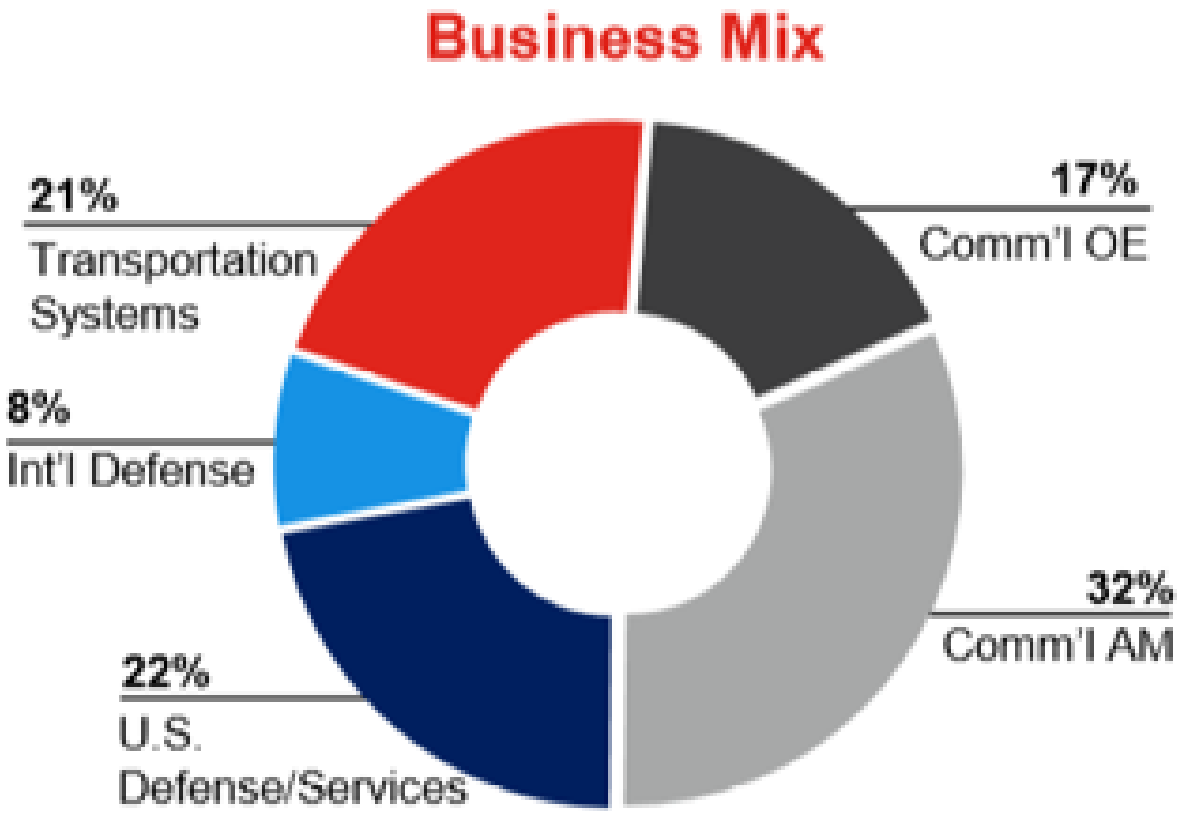
Tami Calleia graduated from The University of South Florida with a Bachelor's Degree in Accounting and is currently pursuing her Executive MBA from The University of South Florida's Muma College of Business. Tami has 17 years of professional experience in consumer products manufacturing, marketing, planning, forecasting, and accounting.

Chris Crace, as a PwC Veterans Advocacy Leader and Ex-Marine Captain, Chris leads PwC's ongoing commitment to investing in diverse talent, which includes the implementation of an enhanced strategic roadmap and operational model for attracting, hiring, onboarding and retaining veterans, service members and military spouses. In this role, Chris also collaborates with leaders of the firm's Veterans Affinity Network (VAN) to mentor new and existing veteran team members, and increase their opportunities for personal and professional development

Nicole Flores is a student in the Executive MBA program at the University of South Florida. She is a former United States Air Forces Officer and pilot in the KC-135R. She holds 5 Air Medals for flights during the wars in Iraq and Afghanistan and a General Engineering degree from the US Air Force Academy. She is currently enjoying working part time at Raymond James Stadium, home of the Tampa Bay Buccaneers.

Bryan Thomas currently leads the North Florida Branch of Stryker Orthopedics with 10+ years of medical device industry experience. He earned a degree in Biology from Pacific Lutheran University and is pursuing his Executive MBA at the University of South Florida. Bryan served in the US Army for 7 years, including tours in Korea and Iraq.

Exhibit 1: Honeywell Aero Product Business Mix



Source:
http://investor.honeywell.com/Cache/1500099953.PDFO=PDF&T=&Y=&D=&FID=1500099953&iid=4121346

Exhibit 2: Global Aerospace Segmentation

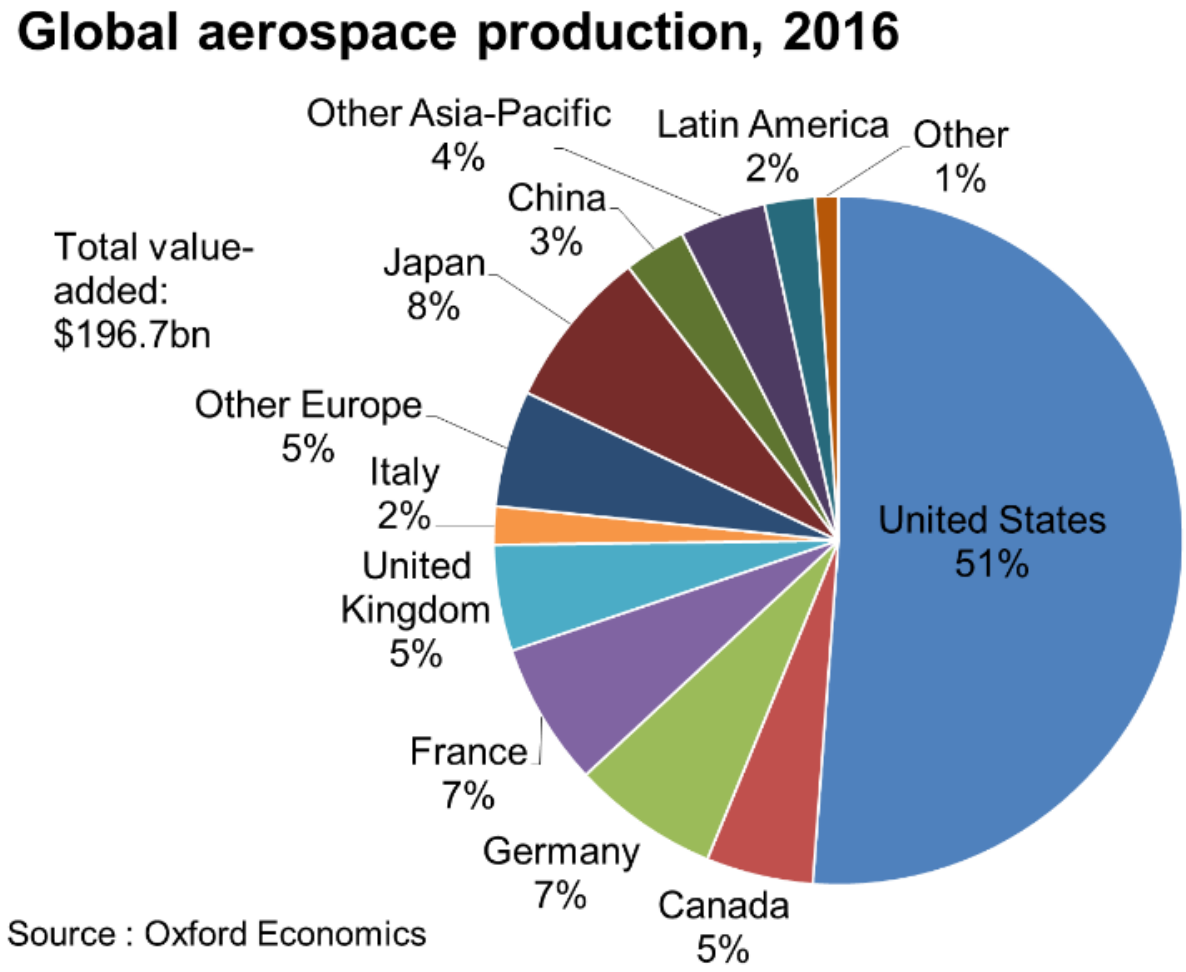
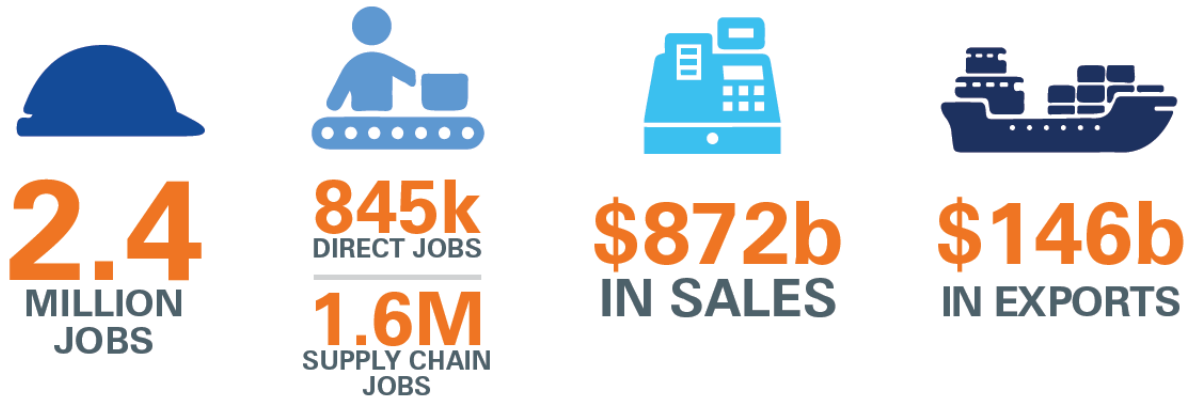
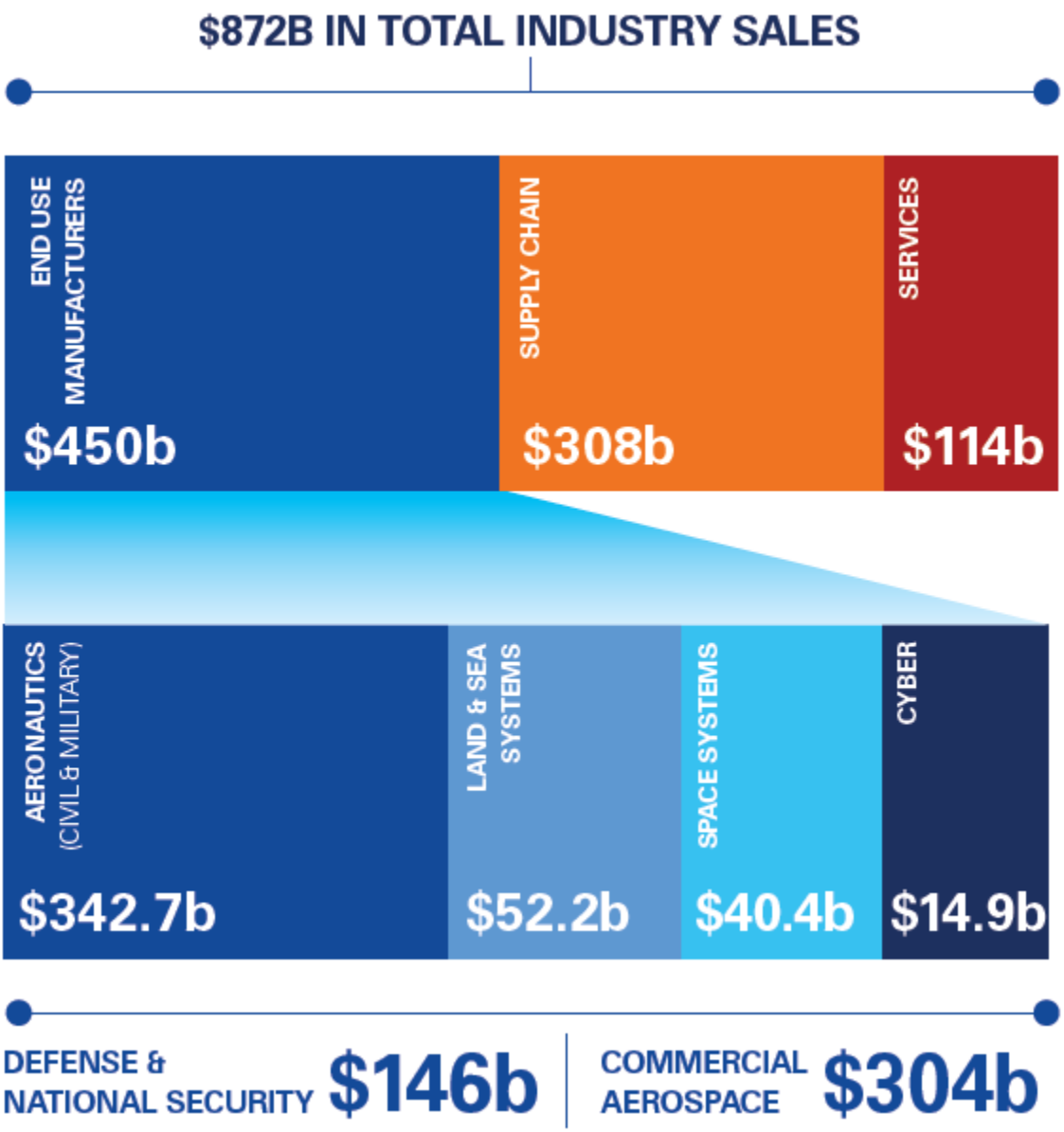


Exhibit 3: Aerospace Facts and Figures



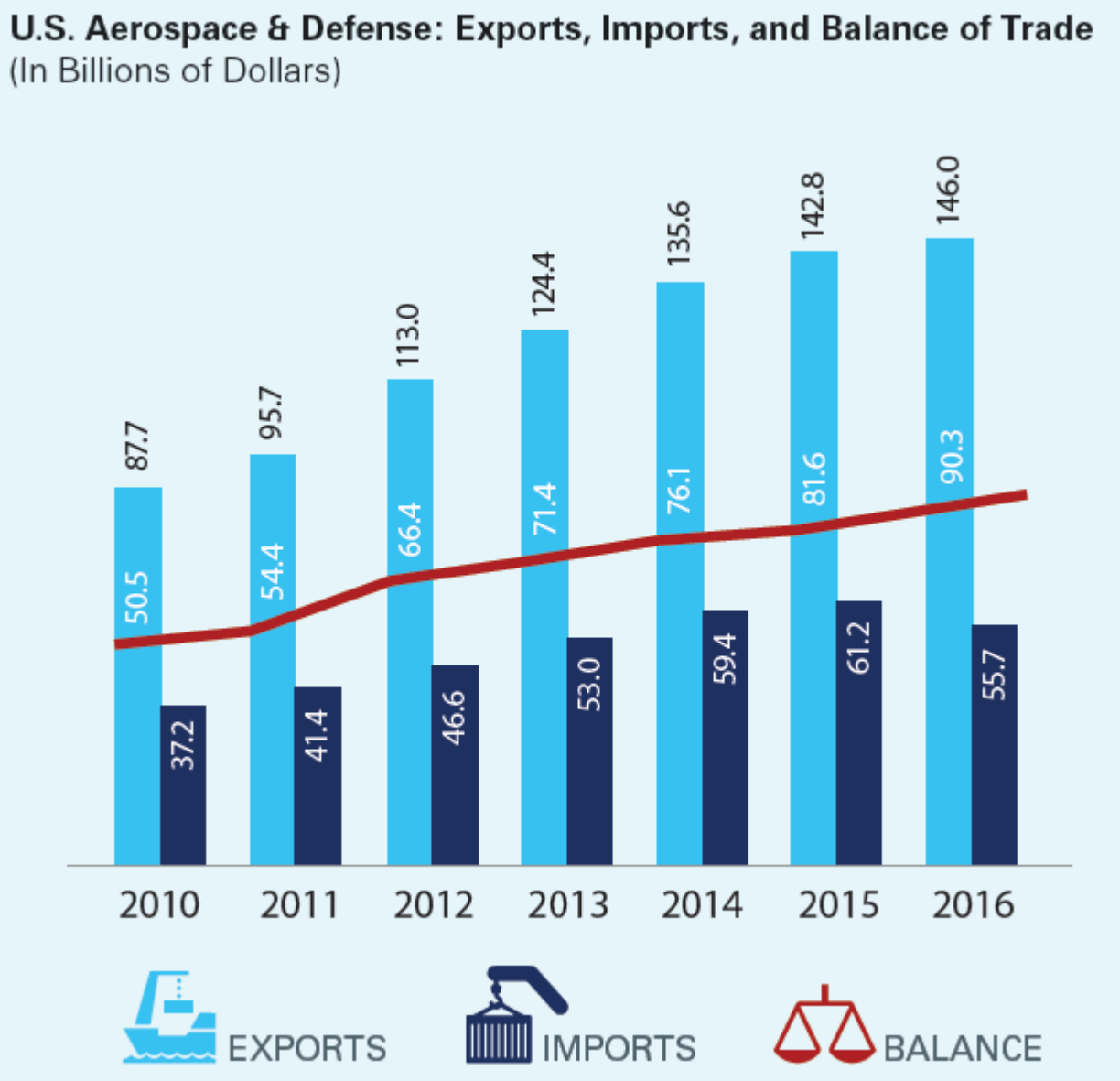
Source: 2017 Facts and Figures U.S. Aerospace and Defense by David Melcher

Exhibit 4: Aerospace Industry Sales



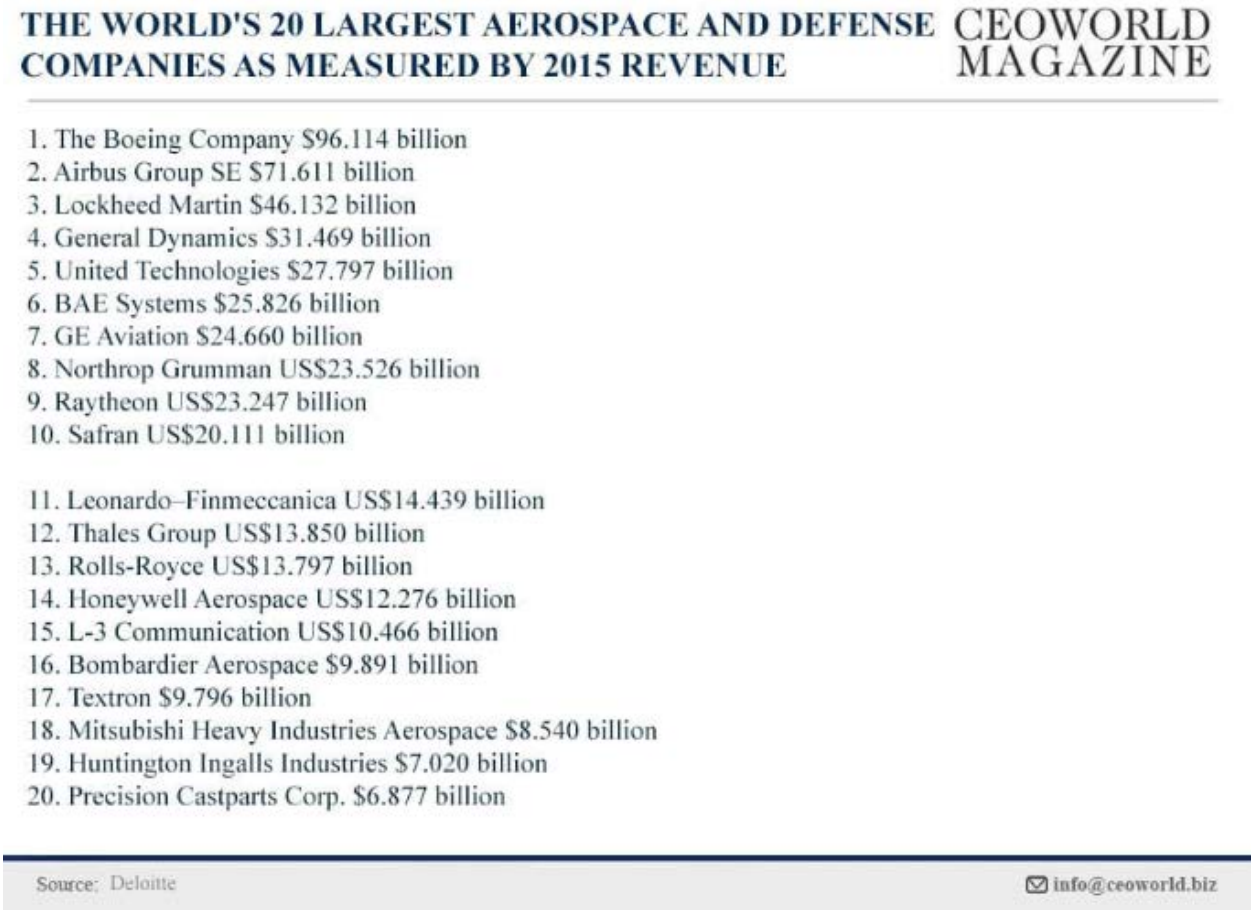
Source: 2017 Facts and Figures U.S. Aerospace and Defense by David Melcher

Exhibit 5: Aerospace and Defense Trade Balance



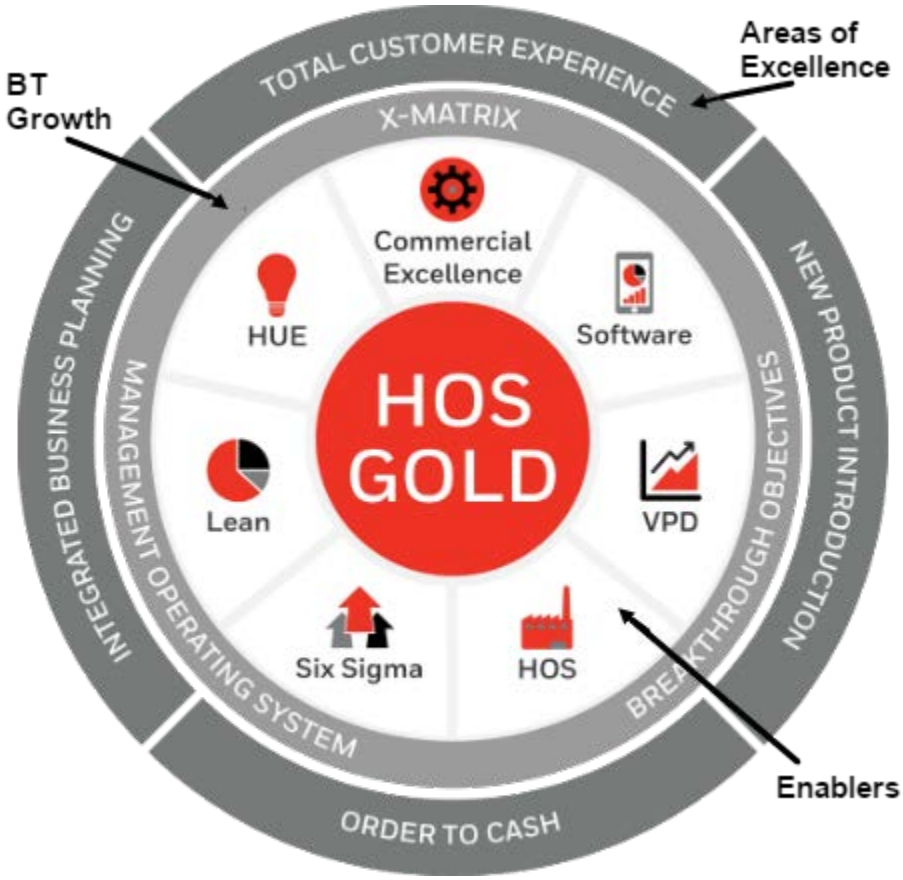
Source: 2017 Facts and Figures U.S. Aerospace and Defense by David Melcher

Exhibit 6: 20 Largest Aerospace and Defense Companies



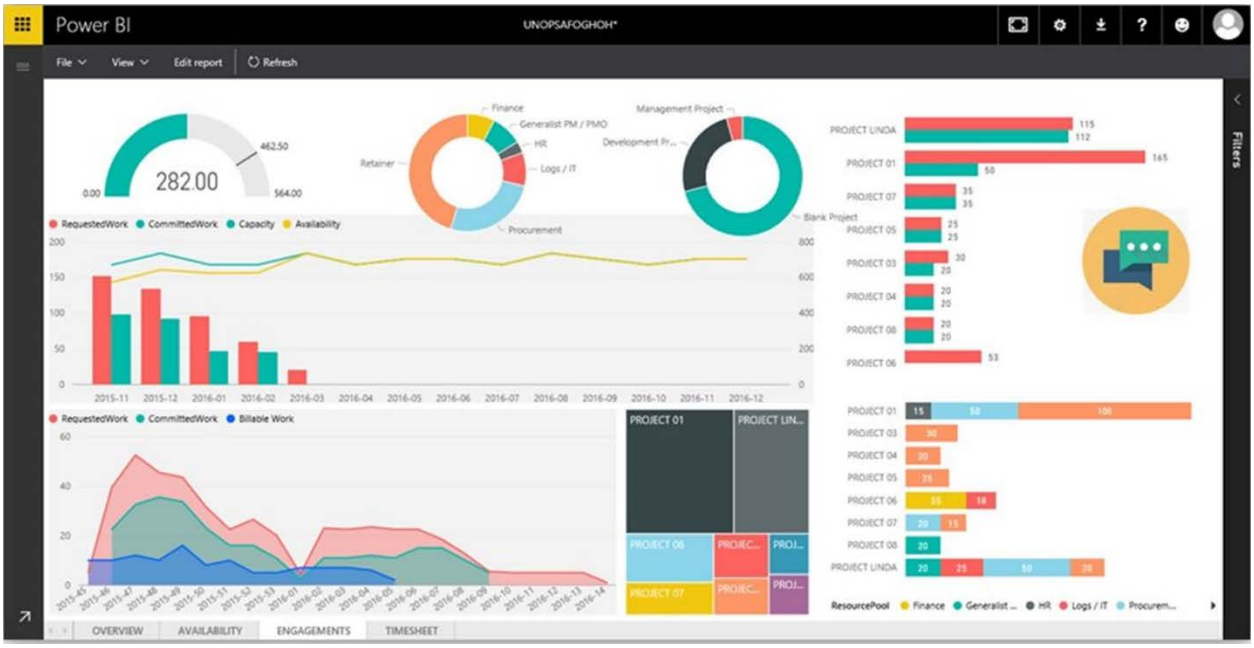
Source: CEOWorld Magazine by Dr. Amarendra Bhushan Dhiraj

Exhibit 7: HOS Gold



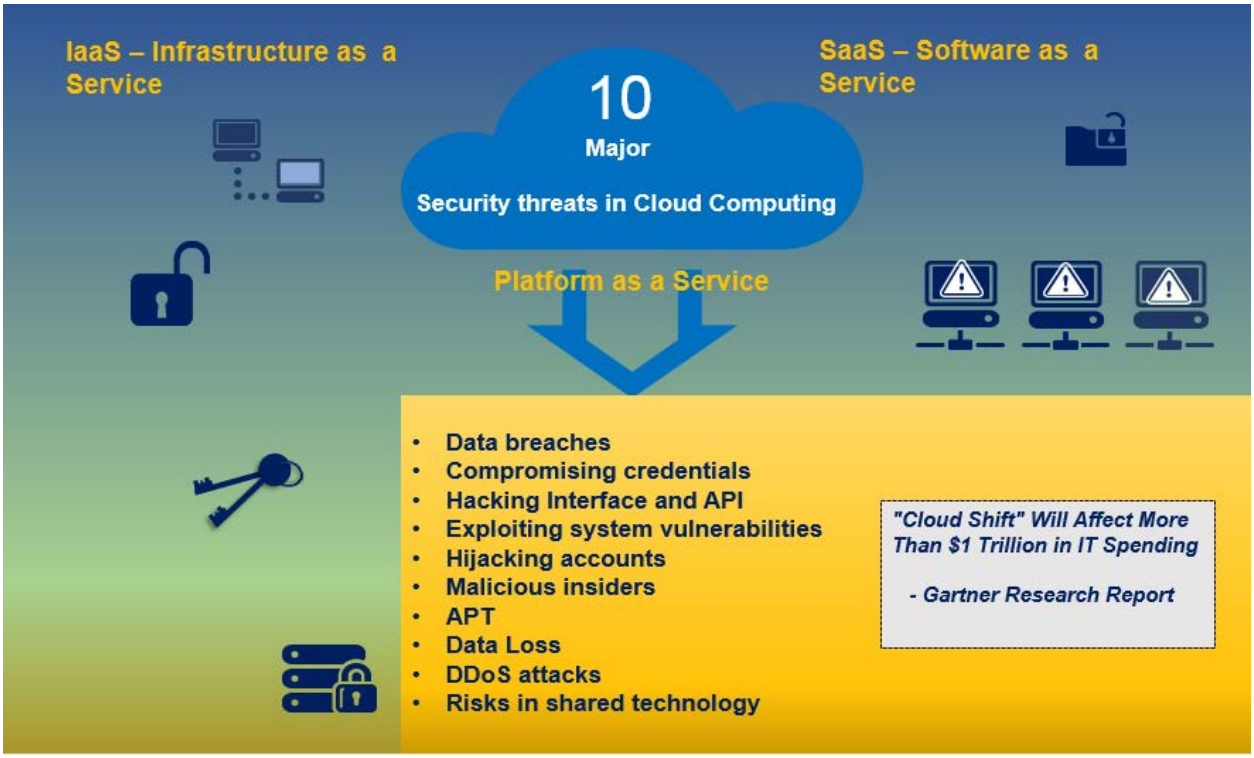
Source: https://www.honeywell.com/who-we-are/overview/hos-gold

Exhibit 8: Example Power BI Dashboard



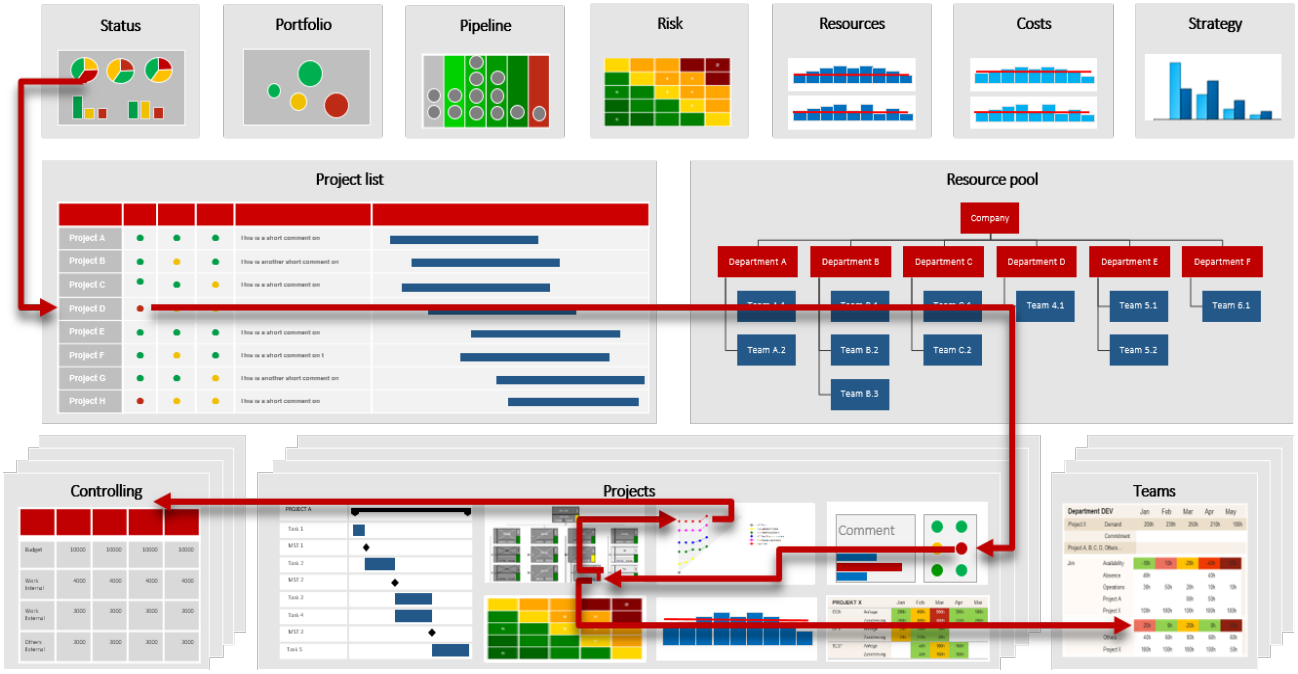
Source: "Business Intelligence"

Exhibit 9: Cloud Computing Threats



Source: TCS Cyber Security Community. Retrieved from https://securitycommunity.tcs.com/infosecsoapbox/articles/2017/02/14/10-major-security-threats-cloud-computing

Exhibit 10: Microsoft Project Online Connectivity



Source: The Project Group