**Big Data Strategy: Aerospace Bets on Big Data**

**Ref** <http://www.businessinsider.com/airplanes-and-big-data-sensors-2015-6>

http://www.geekwire.com/2015/why-big-data-matters-to-boeing-and-what-it-may-mean-for-your-next-flight/

Summary

This article shows the use of the Big Data in aerospace industry to avoid losses and minimize the consumption of the fuel, also minimizes the risks of turbulence and planes to get delayed. Not only manufactures giants like Boeing uses Big data to develop new planes which are quite safe and technologically advance than their predecessors, but also service industry like Southwest, American airlines and other industry uses the data to get the run time status of engines and other parts of the planes to correctly predict the problem caused , also how often the problem is created, weather the problem is created by design, or the problem is caused by the External factors like wind , moisture , temperature , etc. The collection of the Data provided by the single air plane can be so vast that in every second engine of the plane provide 5000 elements of data that need to be monitored. This shows the amount of the Data every service airline is collecting from planes. As a single flight take off and time it will be in air and the time till it lands the amount of the Data collected will be of terabytes which is huge in size and the Data is very complex to understand.

Big data is helping the aero industry to keep growing providing service industry data to the manufacturing giants like Boeing to advancing the avionics of the plane and helps to train the auto pilot mode, As the collection of the Data gets increasing tremendously it helps the industry to get prepared for all the adversities.

The most important aspect of the article is how Big data is transforming aviation and aircraft manufacturing sector by minimizing the risks by analyzing the data been provided by aviation sector. Also, relying on real time Data helps manufactures to provide quality product. “Rao” (Business analyst at Boeing), the analysis of data — along with a “lean” development process — is becoming an important component of Boeing.

Analysis

Think of the time when Wright brothers has made their first flight in 1903 how many times do they failed before they made their first flight I guess many times. At that time, also they need the failed experience data to make first successful flight. Every failure they have faced they have collected some data some information that makes their next model more accurate than the previous one. Similar things are happening in the current scenarios also. In today’s world, we rely mostly on data for our knowledge, In today’s world we make decision based on the Data.

Boeing probably the best company to manufacture airlines, also, depends upon the Data to enhance their previous version of planes, like Boeing 777 is better than that of Boeing 747 how they enhance the Boeing 777 than that of the 747? Data is the key for the development, Boeing collects the Data from all the airlines which uses Boeing planes and uses that data to further enhance their in-flight capability, collision detection, extreme weather communication and other technological key areas. As manufacturer gets the better collection of real time data they keep on increasing the features and functionality of the planes.

Apart from the manufacturing units Big Data is also helping the aviation industry to save lot of money. Rough estimate of the late flights cost around $1 billion loss each year which is very big loss. Every flight is now connected or Integrated. There are hundreds of flights in the sky at the same time and that is producing tera bytes of Data every minute. Each flight has 8000-10000 sensors which collects the data on air-flow, moisture, carbon percentage etc. all the data which is produced by each flight is useful for every other flight. By getting such a huge amount of Data now the they can take the other route if any tornedo is there. Big data is helping aviation industry by keeping the flights safe. Big Data is enabling improvements across all stages of the product lifecycle, from very early conceptualization, to design, production, after-market support as well as in-flight operations. As products and production systems become more complex, Industry become more efficient and robust in dealing with all this data.

As Data gets increased the challenges also gets increased, for each flight it generates tera bytes of Data, in which some of the Data is useful and Some of the Data which is not meaningful. For example, Boeing 777 generate terabytes of Data per trip and that’s a lot of data. There is also a challenge in handling not meaningful data because inferring the right decisions from regions of data that have few observations is an issue. Both extremes are challenging.

Some of the major research is going that can the flights can be automated like google cars, can that “not meaningful” data can be used to train autopilot system. Currently autopilot system is incapable of performing the actions like takeoff and landing for that it must currently rely on human efforts that can be minimized by training and making the journey more secure and reliable. It also helps to optimize fuel consumption and adjustment in flight path instantaneously. Several algorithms been developed for anti-flight collision, development of new algorithms which are more fast and reliable been the motivation for the industry.

As [aerospace](https://www.asme.org/engineering-topics/media/aerospace-defense/podcast-innovation-the-aerospace-industry) becomes more automated, we need to harness Big Data and do it more efficiently and more of it in real time .