

# Top 5 Tips: Using AI in aviation data

The Air Transport Industry (ATI), like most global businesses in the 21st century, is entirely dependent on data and connectivity. Services, solutions and processes right across the sector are now data-driven, relying on accurate, timely and secure information to function effectively. As well as a continuing need for quality data, we will increasingly see the rise of **artificial intelligence (AI) and machine learning (ML) technologies**. Static, historical data is already being augmented by forward-looking predictive analytics, and this is impacting almost every part of the industry.

Incredibly rich data sources are spread right across industry. Combining disparate data sources can not only deliver improved operations, but a better passenger experience too. Data connectivity and enhancement not only brings benefits to airports and airlines, but also to other stakeholders, from border agencies to off-airport entities such as hotels and public transport.

**So, what are the key things you need to know about using AI in aviation data?**



## Start with the business problem

**The best AI projects solve specific business problems.**

The rise of AI over the last few years has been astonishing. Processing improvements, cloud computing and new algorithms have seen it spread from research projects to everyday use. This rapid adoption is now moving into the ATI. A recent SITA survey found that 65% of Airport CIOs and 82% of Airline CIOs are planning investments in AI by 2024.

AI implementations provide valuable business insights and intelligence from raw data which help enable and drive better informed decisions. The most successful AI implementations start with a clear business problem that needs to be solved. Although the process of data science is often iterative, a clear goal helps focus teams on delivering real value.



## Save everything, well almost everything

**AI models are only as good as the data behind them.**

Up to 80% of a typical data scientist's valuable time is spent finding, cleaning and formatting data. This is time that could be spent refining models and improving predictions. Any aviation AI strategy needs to start with the sourcing, securing, storing and formatting of rich data. Whether you are a large airline or a small regional airport, it's important to store your historical data so that it can be used as a first step. This sounds obvious but pressure to ensure strong data privacy and security has seen a "delete by default" approach across many aviation companies. Successful data companies balance securing data and removing it.

Once you have rich datasets devote attention to topics such as data models and data access. Implement a strong structure across your datasets early in your strategy and you will be sure to reap the rewards over the longer term.



## Go for breadth as well as depth

**Integrated data from a wide range of sources can dramatically improve AI.**

The best AI models use data from a wide range of sources. Gartner characterizes this range of information as "small and wide" rather than "big data". Focusing on how to unlock data silos within your organization is a good first step. Moving data into a single data lake works well for highly regulated industries but it's not common in Air Transport. The diverse range of data in the ATI means more and more companies are looking at new technologies like Data Fabric. These platforms allow multiple sources of data to be accessed quickly and effectively – ready for AI applications.

As well as unlocking internal siloes, aviation companies should look at using external data to power AI models. Simple connections using standard APIs can be faster and cheaper than trying to consolidate, clean and codify fragmented internal systems. It's an irony of the Air Transport ecosystem that although airlines and airports do share information, it's often limited and last minute. By combining internal datasets with external information, airlines and airports can use AI and data management to make more accurate predictions. One example is airports that have the potential to combine historical data to predict the future. Linking data in the airport management system; aircraft configuration details; airline records and baggage statistics can forecast passenger volumes weeks in advance.



## Combine data scientists with AI engineers

### **Invest in a broad range of ai skills.**

Data science, using the power of AI, has the power to deliver business insights, help interpret complex data, and improve business predictions and decision making. It's complex and the development of AI models is a highly specialized skillset.

Maintaining models is also becoming more and more important as they are integrated into business as usual. To do this, aviation companies increasingly need to think about recruiting ML Engineers. This role takes the concepts and models created by a Data Science team and turns them into reality on the ground. To do this the role needs someone who can combine data architecture, data science and software engineering.

Many airports – including small airports – feel they do not have the extra resources to perform these roles or can't afford the necessary insights. If this is the case, they should leverage existing partner relationships that may be able to provide the expertise, often on a pay-per-use basis.



## Airlines need to think about AI at the edge

### **AI will evolve and decentralize.**

Airlines operate some of the most distributed businesses in the world. Their operations are already global, and their AI and data processing will follow. This trend will be driven by technological evolution and changes in the way we manage privacy. From a technological point of view, realtime data processing is on the rise – supported by new standards like 5G. These new low-latency systems will need AI as close to operations as possible.

At the same time, new Air Transport solutions need to have privacy and security built-in right at the very beginning of the process, not added as an afterthought. Increasingly, data sovereignty and rules concerning how data can be shared, managed, used or stored, are being formalized around the world. Laws similar to the European Union's General Data Protection Regulation (GDPR) are now being adopted by other countries. Transporting large amounts of data back to a centralized data center for AI processing will become increasingly difficult – driving the adoption of a more distributed approach.

Talk to SITA about using AI in aviation data:

[sita.aero](https://www.sita.aero)