

GE AVIATION: PLAYING THE LONG GAME

First View: Rapid analysis of breaking news, providing perspective

THE FACTS

GE Aviation has been the global leader in commercial aircraft engine deliveries for many years. On 18-21 February 2019, it hosted a conference in Dallas, under the name “Waypoint”. The purpose was to bring together GE customers and partners to exchange ideas on leading-edge projects. This was just the second year for the conference which GE intends to continue running annually. There were about 675 total registered attendees, from the following demographic groups:

- GE Aviation personnel 40%
- Partner firms 22%
- Airlines 33%
- Media/Industry Analysts 5%

The conference was organised around the theme of using data that is already available to generate insights that help airline customers operate more effectively and efficiently.

THE ANALYSIS

Every company in every industry seeks to grow by leveraging its strengths in the marketplace, while simultaneously addressing its weaknesses in a meaningful way. Ideally, this leads to a pattern of continuous improvement, with growth in both revenue and profitability. GE Aviation, a \$26 billion subsidiary of the \$122 billion General Electric Company, certainly has the same aspiration for growth and profitability as any other firm. However, its chosen path to achieving business success is noticeably different from that of most of its competitors and is worth a closer look.

GE Aviation is the worldwide leader in aircraft engine deliveries, and it has already made significant investments in analysing operating data generated by those engines. The potential benefits of those analyses include predictive maintenance (i.e., identifying an imminent component failure before it actually fails, thereby preventing a maintenance event), operating cost savings, and better dependability. Boeing and Airbus also have made significant efforts to extract insights from sensors around the aircraft, but GE is investing more in the process—and in a more focused way—than any other firm. So far, no one has uncovered any insights that could be considered game-changers but GE Aviation is more likely to find them than any of the other firms trying to do basically the same thing, mainly because of its organised approach.

In the various technical sessions of the conference, it became clear that GE Aviation has little or no interest in the basic systems that have run airline operations for the last several decades. More specifically, it doesn't have, and doesn't aspire to have, basic systems for Movement Control, Crew Planning and Scheduling, or Flight Planning and Following. These are areas that have matured sufficiently that there are only incremental improvements available to firms already well-established in those markets. Instead, GE intends to leverage its strength in collecting and using data, including not only engine and aircraft data, but also data on operational performance and maintenance status.

GE intends to grow its business by adding value from insights obtained from data, whether or not it originated from GE. It already markets a suite of Irregular Operations (IROPS) recovery tools that it obtained a decade ago through acquisition. Those tools are based solely on the customer airline's operating data. The aspiration now is a higher level of success for the airlines it serves through intelligent use of their data. If it can deliver clear benefits to airlines in a cost-effective way, it will have many enthusiastic new customers in short order.

Acquiring the data is the necessary first step, but it doesn't go very far. Even the most sophisticated airlines are not (yet) very good at gaining insights from the flight performance data they routinely collect from their aircraft and use in their operation. Nor has the IROPS recovery problem been fully solved. Certainly GE knows how to pull operating data off the aircraft, but the data then has to be organised and "mined." That requires "Big Data" skills, including modern large databases, statistical segmentation, and clustering. Analysing such a vast quantity of data also requires skills in Artificial Intelligence and Machine Learning, which have the capability of finding insights from reviewing operational data by the terabyte.

GE has some of those skills in-house but most of the people with them are committed to projects needed to support ongoing activities. Instead, it is acquiring skills through a network of partnerships, affiliates, and joint ventures. Partners and affiliates come in all shapes and sizes, from startups to Fortune 500 companies. GE Aviation has also been known to buy companies that have skills that it thinks it needs to own. Many of the attendees at the Conference retained their own corporate name but volunteered that they were now owned by GE. However, it does not seem to have done this excessively. It did not seem to be trying to build a conglomerate with little or no relationship between the component companies.

The other large manufacturers in aviation do not seem to be taking a similar approach. Boeing and Airbus have aircraft data mining programs going as traditional R&D efforts, without as much involvement from partner firms. The same is true for Pratt & Whitney and Rolls-Royce, GE's main competitors in aircraft engines. GE is ahead and is putting significant investment into its go-forward plan. It is playing a long-term game, fully expecting that it will take several years before its investments turn into major revenue and growth.



THE SPECULATION

GE Aviation is nicely profitable overall, but it's doubtful that these data-centric R&D initiatives have paid off yet in any meaningful way. GE is holding a good hand, and it's raising the stakes, but it doesn't so far have a "killer app" that suddenly and convincingly will attract the market's leading edge. In the meantime, airline customers are looking for cost-saving initiatives that will pay back in 1-2 years at most, which means that most of the burden of finding those initiatives and proving their value to the airline is on GE. It has found a few such initiatives already, but not enough to affect a meaningful reduction in airline operating costs or an improvement in customer satisfaction. The GE executives at the conference seemed quite willing to take on the responsibility of finding enough gold nuggets to justify their investment in the gold mine.

It's still remotely possible that some firm somewhere in the world will come up with a "killer app" that suddenly and convincingly will draw the market toward its solution and away from GE Aviation—after all, that's how Microsoft and Google became global giants. More likely, however, is the scenario where GE Aviation controls the data analytics *platform* that airlines use while providing a way for third party methodologies, external engines, or independent data sources to plug in. This would be similar to the Microsoft or Oracle environments from the 1990s and 2000s, where the platform owner provided the basic ecosystem that supported its own applications as well as the value-added products and services of others. Owning the platform that becomes an industry standard is another path to success for GE. Partners would own most of the value-added applications but GE could recoup its investment by providing the environment that allows those applications to deliver their promised value.

The quest for more modern, sophisticated, analytical solutions to everyday airline operational problems has just begun. We are still very early in the life cycle for this type of technology, with nearly all of the potential benefits yet to be realised. GE Aviation is leading the field at the moment, with its focused investments in many aspects of the Big Data world. That is no guarantee of success, but it is certainly a good start.



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