



White Paper

Aviation Game Changer: New Technology Aircraft

How E-enablement Will Disrupt Business as Usual

By Martin Harrison, ICF

A baseline definition of e-enablement:

"...the strategic connection and integration of business processes, people, airplanes, information, assets, and knowledge into a single focused business system..."

(Boeing, 2006)

The aviation industry is poised for a period of unprecedented technological change, providing significant opportunities and challenges for airlines and suppliers alike. E-enablement's connectivity solutions are able to transmit data between e-enabled aircraft and outside sources, but how is the aviation industry responding to the far-reaching implications of that connectivity?

Unprecedented Change

In this decade, the air transportation fleet will undergo rapid technological change as airlines introduce six new aircraft types with ramped up production. The rate of ramp-up and fleet rollover is important because the introduction of new technology aircraft provides airlines with the unique opportunity to reconsider the traditional way in which they previously managed their aircraft. A frequent theme heard from aircraft operators is that the e-enabled 787 and A350 can, are, and will be managed differently. Forward-thinking airlines are leveraging this opportunity to seek new and innovative maintenance, repair, and overhaul (MRO) sourcing strategies. For example, we now see airlines such as ANA, Qantas, Singapore



Commercial Air Transport Fleet Transformation

Over the next decade, the global fleet of new technology aircraft will grow by over 530% to nearly 19,000 aircraft.

Source: ICF (excludes turboprops)

Airlines, British Airways, and JAL outsourcing their 787, A380, or A350 component maintenance to companies like LH Technik, SR Technics, Air France Industries/KLM E&M, and now (another change happening in the MRO supply chain) Airbus.

The "accelerator" effect of incoming technologies and the resulting tsunami of available data and information that airlines and OEMs will have available to them is unprecedented. While the 767 offered up to 10,000 aircraft health management parameters, the 787 offers 100,000. Combine this dramatic increase in per aircraft data generation with the 45 percent per annum growth rate of the new technology fleet, and the MRO value chain will see a 1,100 percent increase in available data being generated. And put bluntly, the majority of operators utilize antiquated MRO IT systems that can no longer manage the data complexity. Nor do they have the skills—or necessarily the desire—to turn these data into beneficial information.

New technology aircraft will inevitably challenge the competitive landscape and balance of power in the aftermarket. As the MRO supply chain continues to become more OEM-centric, there will be a battle for access and control of operational and maintenance data. Those who have the capacity and capability (financially and technically) to leverage "Big Data" will likely benefit the most. Smaller and less sophisticated players will need to focus their energy and resources on core competencies where they can win and/or find new ways to access the opportunities available in this more e-enabled aircraft support environment.

New Technology Creates Opportunities

The data generation potential of the new technology fleet is not only limited to e-related technology impacting aircraft operations and support. Other related new developments include the cloud, Big Data analytics, Electronic Tech Log, xml, and greater electronic data interchange/automation. The impact to operators, suppliers, and investors will be profound.

First, these new technologies will drive greater operational efficiency and facilitate improved schedule reliability and passenger services. The interoperability of systems, Electronic Flight Bag, connectivity, and data analytics will impact air traffic management, fuel management, and day-to-day operations control (on the ground and in the air), providing utilization, cost, and service benefits.

Second, e-enabled-related technologies in the MRO supply chain will drive significant cost reduction. The integration of technologies such as mobile maintenance devices, xml, data analytics, and Aircraft Health Management prognostics offers the opportunity to reduce MRO supply chain costs by hundreds of millions of dollars. The day will come when aircraft and maintenance records are not stored in rooms full of paper, but rather in the cloud and accessible to those who need them—the operators, MRO suppliers, aircraft owners/lessors, and respective OEMs.

Third, new technology aircraft will provide numerous opportunities to enhance the passenger experience. Airlines and airports will undoubtedly seek to provide a seamless experience from ticketing to arrival. Onboard entertainment and cabin

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systems will be consistent with passengers' experiences elsewhere. Passengers' personal devices will likely become the onboard media and communications interface of choice. Airlines will no longer be required to provide the individual seat hardware embedded with In-Flight Entertainment (at least in coach class). Throughout a flight, passengers will seek to shop, converse, and watch personalized content with reliable, affordable Wi-Fi connectivity. Suppliers will be challenged to keep up with passenger expectations for constant engagement, faster and more reliable connection speeds, and of course the latest and greatest content.

All these opportunities will facilitate disruptive change in aircraft management, provided supply chain participants embrace, invest in, and manage the transition.

Bottom Line: The Time to Act Is Now

The arrival of thousands of new technology aircraft over the coming decade will disrupt business as usual for aviation stakeholders and will drive a myriad of opportunities for new value propositions and innovations. Companies across the whole airline and aircraft supply chain are recognizing that significant change is on the way. It is an uncertain world, however, with airlines and suppliers alike in only the very early stages of the learning curve for understanding the true potential of these new technologies. There are many risks to be managed. For example, will there be adequate standardization to facilitate leveraging and integrating the various technologies across aircraft and IT platforms?

What is very clear—to use an old adage—is that the train is leaving the station, or rather the aircraft is leaving the gate. Now is the time to act to determine the role your company will play in this new world, or it will be determined for you.

About the Author



Martin Harrison joined ICF in 2012. Mr. Harrison has more than 31 years of experience in the aviation industry. His expertise primarily lies in airline restructuring, network operations, maintenance, and crew resource planning.

Having held executive operational positions at Spirit Airlines in the United States and easyJet Airlines in Europe, he offers a deep understanding of the low-cost carrier business model as well as of regional and network operations. Prior to joining ICF, Martin was the chief operating officer at Pluna Airlines in Uruguay, working on a restructuring program for the South American carrier, which was under public/private ownership. Martin started his career at British Airways in hands-on maintenance and then engineering roles before moving on to Total Engine Support Ltd in the United Kingdom, providing consultancy services that were focused on engine asset management, fleet management, and off-wing overhaul control.

Mr. Harrison is a Registered Chartered Engineer, CEng, and a member of the Royal Aeronautical Society. Mr. Harrison has a Global Executive M.B.A. from IESE University in Spain and an M.Sc. with Commendation in Aerospace Design, Manufacture and Management from Bristol University UK.

