

Putting services at the heart of aerospace strategy

Services are playing an increasingly important role in the aerospace industry. Market leadership here means understanding and mastering major success drivers.



People matter, results count.

Why services should be central to your strategy



Capgemini understands the evolving trends within the sector and the supporting technologies, and can help you implement the right service-focused business model.

Global aerospace companies are at a crossroads. Shorter development cycles, ever more complex technology and rapidly changing client demands mean that companies need innovative ways to reduce operational and maintenance costs, increase product quality and decrease time to market.

These challenges exist both in the new product development and aftermarket. However, largely owing to an expanded fleet, higher utilisation of assets and longer life, airline operators' maintenance costs are expected to increase dramatically. According to *Aviation Week*, the civil MRO market is forecast to grow from \$56bn in 2012 to \$68.5bn by 2022 – a growth rate of 3.2% – with engine maintenance work alone accounting for 41% of spend.

Meeting these challenges will solve the industry's longstanding problem of falling margins, and help it to grow consistently. Companies should at the same time seize the opportunity to generate value from new business models. Given that the aftermarket represents an increasing proportion of the industry's activity, these models are likely to emphasise service.

Over the last decade, some companies have already moved away from their traditional focus on products to transform themselves into service-centric organisations. As Capgemini's 2010 study "Services as a Strategy" shows, early adopters of this shift reaped higher profits and enjoyed more sustained customer loyalty than their competitors, emerging as leaders in their niche – whether they were OEMs, MRO service providers, or part or system manufacturers. Other companies took only half-hearted steps to integrate services into their regular operations, positioning them instead as part of a short-term profit strategy: these companies achieved only limited success and lost out on the long-term benefits.

To be true leaders therefore, aerospace companies must re-focus to make service the centrepiece of their strategy.

Three key success drivers

Contact



As they adopt new service-centric business models, aerospace companies need to address the three major success drivers shown in Figure 1.

These drivers are relevant to both new product development and the aftermarket, though to a varying degree. Services are performed both when a product is initially developed and manufactured and then when it is repaired, so that in services terms new product development and MRO are two sides of the same coin.

However, the drivers affect the two areas differently. As most companies have already addressed the potential for optimisation in their new product business, efficient operations and maintenance are now especially important to the aftermarket. Enhancement of customer experience is particularly relevant to new product offerings from OEMs. Advanced data analytics is valuable both in designing new products and in MRO; it will be a key to product lifecycle management.

To master these three drivers, companies may have to collaborate with one another. For example, aerospace OEMs can forge strategic partnerships with OES (Original Equipment Supplier) or MRO companies to develop and service new products, sharing the risk. The OEMs can also partner with vendors of cutting-edge technology, and with tier 2 and tier 3 suppliers, to cut costs in overall product lifecycle management. Through these strategic partnerships, aerospace OEMs are increasingly becoming aftermarket value chain integrators. These collaborative operating models can scale to meet the needs of different customers.

Below, we examine the three drivers in more detail.

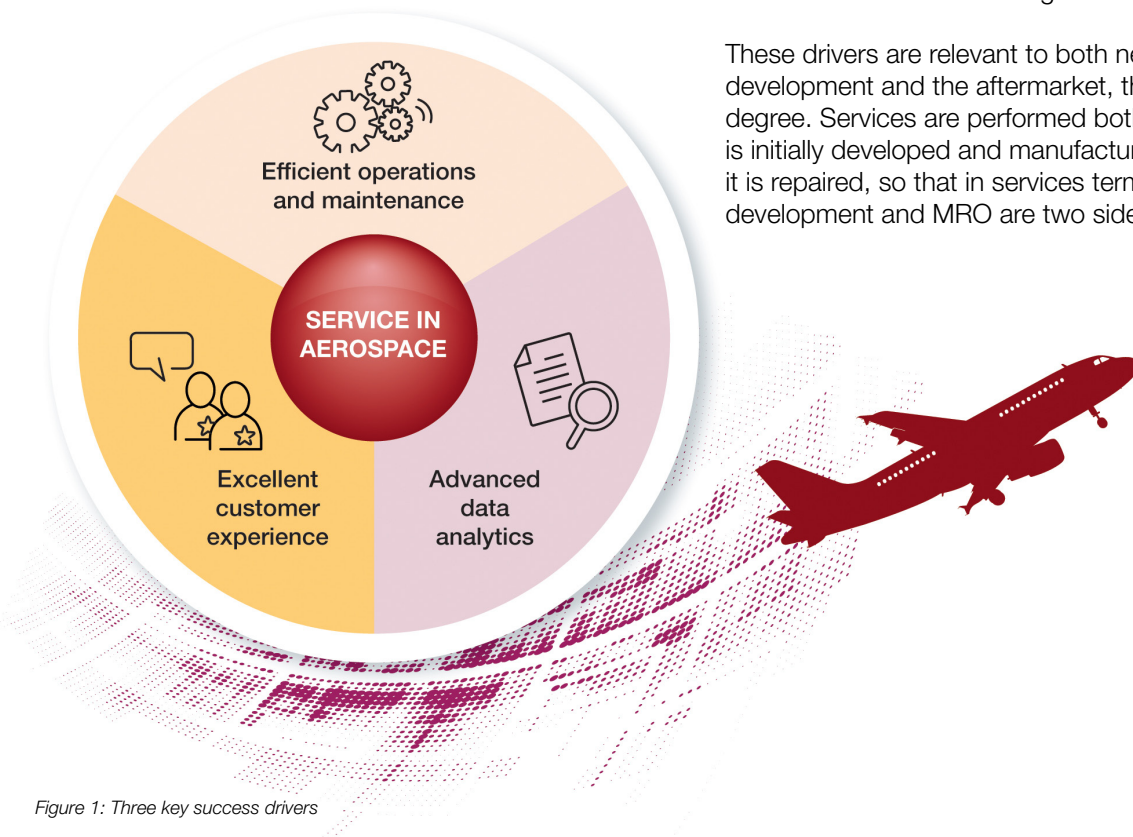


Figure 1: Three key success drivers



Availability as a Service: Airlines can acquire, operate and transition their fleets more efficiently at reduced costs by adopting comprehensive services offered by OEMs and MROs for spares, repair, maintenance, engineering and fleet management based on flight hours. Under this new model, OEMs, particularly aircraft engine manufacturers, sell airlines “services by the hour” – including extended services like acquiring, operating and transitioning the fleets.

Airbus has initiated a Flight Hour Services (FHS) support package for aircraft maintenance and engineering services. Boeing’s Gold Care offers a similarly innovative service programme.

Automated identification: With Automated Identification Technology (AIT) based on RFID and contact memory buttons or points, airlines and OEMs can store and retrieve information conveniently and accurately. OEMs, in partnership with tier 1 suppliers, will increasingly offer AIT packages for retrofit on commercial aircraft.

Airbus and Boeing are leveraging this technology to manage their operations and supply chain more efficiently. Their suppliers are gradually adopting the same approach.

Maintenance through smart devices: Aerospace companies are using smart devices to capture and disseminate high-quality, up-to-date information from the shop floor. In this way they can guarantee traceability and reduce lead times while improving governance of operations and maintenance. Supply chain and MRO software and solution providers are partnering with manufacturers to allow OEMs to monitor, analyse and take action on maintenance via smart devices.

GE’s myEngines suite includes health and maintenance applications offering better visibility of engines to fleet owners. PTC Servigistics has developed mobile applications for interactive visibility and diagnosis of field service problems.



Digital documentation and sign-off: Electronic signatures facilitate compliance with standards such as Spec 2000, ATA iSpec 2200 and S1000D. As well as sharing documents rapidly, OEMs can also enforce intellectual property (IP) rights by controlling the circulation of documents. Digital documentation optimises user efficiency through improved data capture and exchange and records traceability. This technology will become more affordable in the coming decade, and uptake will accelerate.

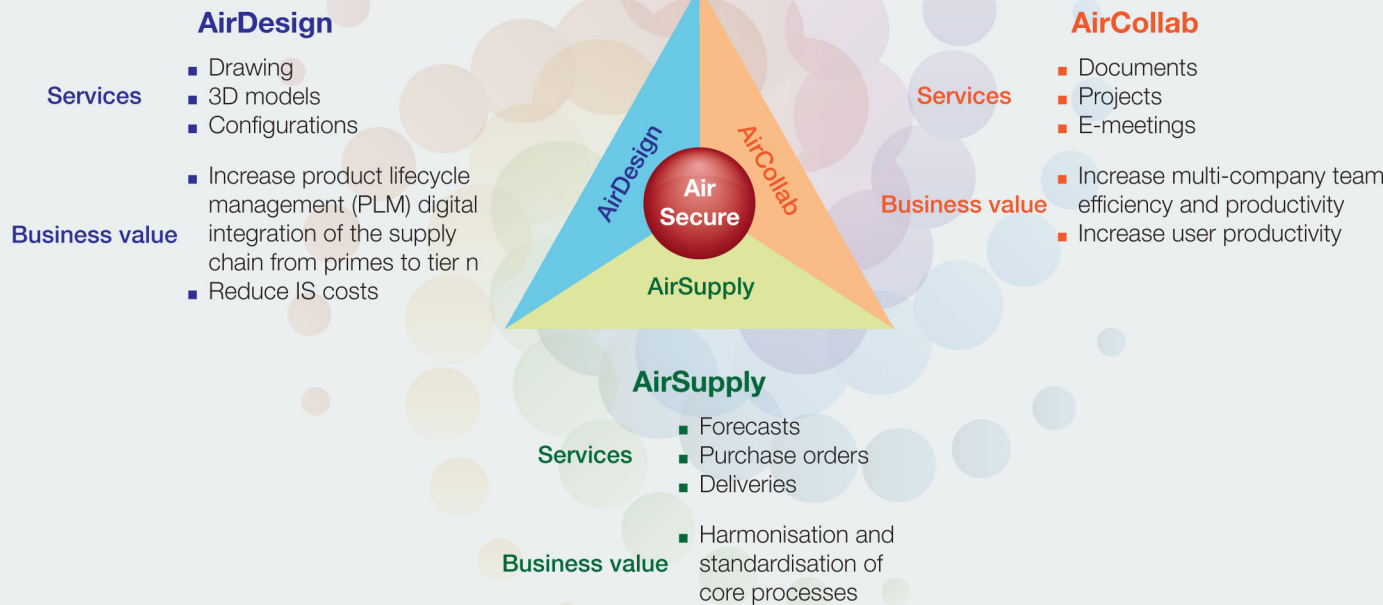
GKN Aerospace electronically signs and seals Microsoft Word reports and Adobe PDF documents.

Digital collaborative design: Leading aerospace companies are designing their new products using advanced IT systems to build virtual 3D models that can be walked through and tested. During the design phase, virtual reality tools allow OEMs to share the design with suppliers and partners so that they can test the feasibility of new configurations. After validation of the 3D model, the design is transferred to the Product Lifecycle Management (PLM) design tool. Virtual manufacturing combined with 3D printing gives manufacturers instant visibility of new ideas and the use of new materials.

Airbus Military has implemented industrial Digital Mock-Up (iDMU) to support industrialisation of a medium-size aerostructure and improve the industrial design process in a collaborative engineering environment.

Digital training: Traditional methods of learning and training are being replaced with 3D virtual training that allows engineers, technicians and support staff to keep pace with technology change. Major players are developing internet-based teaching systems for flight and maintenance training, along with training tools that allow real-time walkthroughs of virtual aircraft.

GE offers customers an online training module on how to operate, maintain and troubleshoot its engines.



Digital Collaborative Hub

Leading aerospace companies are creating ecosystems to address the operations and maintenance challenge. The Digital Collaborative Hub provides a complete package of services via an ecosystem, with services ranging from design to delivery and after-sales support. The hub (Figure 2) provides a collaborative environment allowing each partner within the value chain to optimise its function. As a result, the whole ecosystem becomes more agile and efficient in providing end-to-end services.

With greater visibility of each other's activities via the digital hub, the partners can harmonise operations, driving down cost. They can also develop more innovative products faster, and raise the levels of customer experience.

Airbus, Dassault Aviation, EADS, Safran and Thales have created a Digital Collaborative Hub to offer a wide range of services and increase global competitiveness.

Figure 2: Digital Collaborative Hub

Source: <http://www.boostaerospace.com>



Operators and MROs today have access to plentiful and frequent flows of data, particularly real-time in-flight data taken straight from aircraft. They need to use it to improve predictive maintenance and manage the maintenance supply chain.

Currently, they tend to analyse data using automated prognostics that use mathematical models to predict faults and suggest appropriate maintenance actions. More advanced prognostic tools such as predictive data analytics go beyond physical models, crunching data in order to detect the unexpected.

However, the data has to be collected from multiple players and consolidated into a consistent form. This step is not straightforward for airlines running operations at multiple locations, and is even more challenging for the OEMs who have to collect data from clients all over the world.

Data analytics is likely to evolve further, creating a multiplicative effect throughout the industry as more and more data is harmonised from multiple systems and more airline business processes are aligned.

Airframe OEMs have joined engine makers in monitoring aircraft performance. Airbus's AIRcraft Maintenance ANalysis (AIRMAN), used by more than 100 customers, constantly monitors health and transmits faults or warning messages to ground control. The tool offers rapid access to maintenance documents and proposes troubleshooting steps prioritised by likelihood of success. Airbus's new Real-Time Health Monitoring (AiRTHM) goes further, as systems on new aircraft yield more parameters. The Aircraft Communications Addressing and Reporting System (ACARS) enables Airbus to collect and analyse data from remote locations in real time.

Boeing supports its commercial and defence aircraft with health monitoring systems to optimise operations and collate crucial data for R&D and reliability. It uses this data to offer better services to fleet owners, improving MRO forecasting and management through vertically integrated supply chain visibility and defect management.

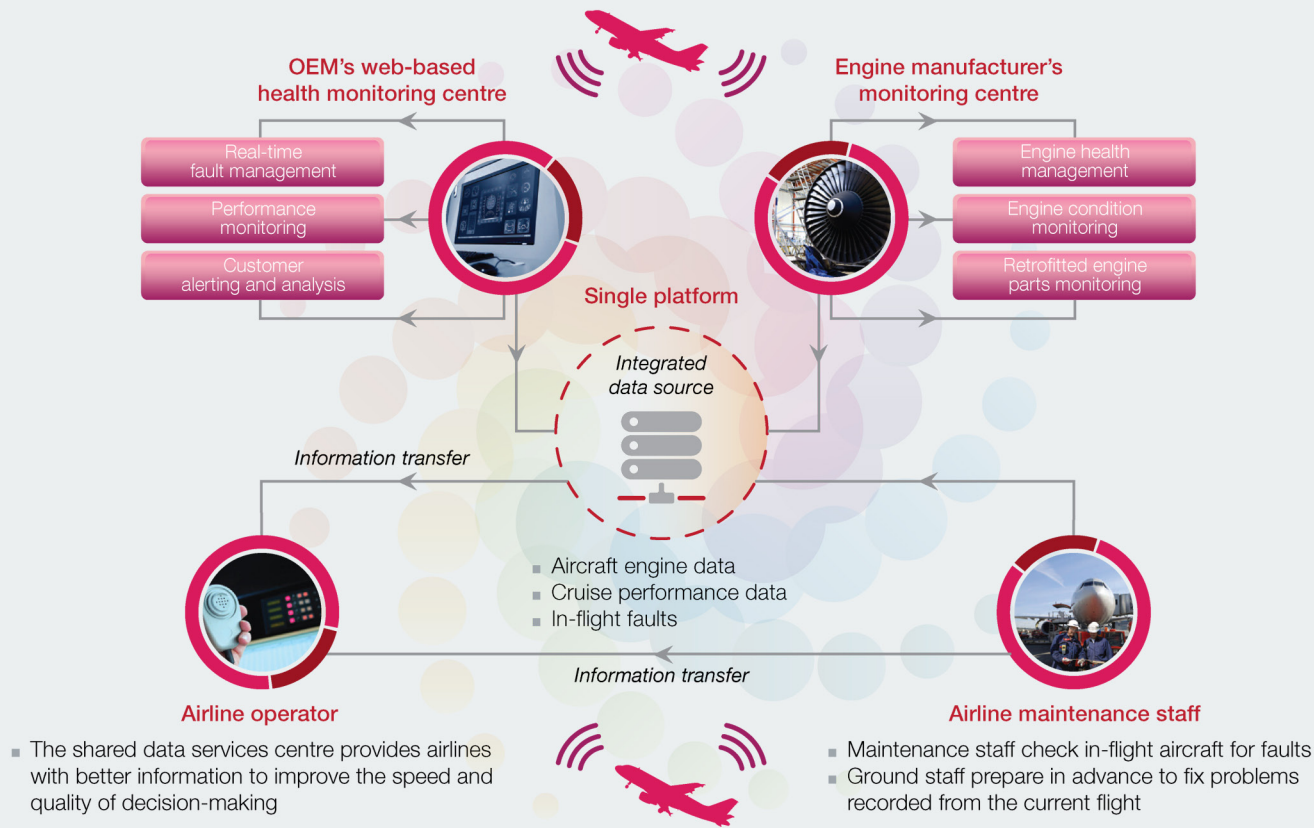


Figure 3: Shared Data Services

Shared Data Services

Once again, industry leaders are addressing analytics requirements through collaborative approaches. The Shared Data Services model delivers data support services efficiently and effectively within a service-oriented environment, enabling support functions to focus on value-added activities. Shared Data Services provides an ecosystem where data from the aircraft and the engine can be combined on a single system platform (Figure 3). This efficient, integrated data management system improves an airline's product health monitoring.

Rolls-Royce and Boeing have taken a lead here with a collaborative service offering that provides fast, well-informed advice to airlines. Data from Rolls-Royce engines and Boeing aircraft is integrated to provide comprehensive information and predictive capabilities. This helps airlines maximise aircraft utilisation while pre-empting maintenance operations and improving response times.

Shared Data Services can be configured to offer a range of facilities like real-time monitoring, automated identification, maintenance via smart devices and an optimised response to emergency situations like "Aircraft on Ground" (AOG).

In-flight experience: Leading airlines are collaborating with OEMs and MROs to develop cloud-based on-board infotainment solutions which can also share offers and membership rewards with customers.

Similarly, some OEMs are providing online services to aircraft operators and their flight crews, maintenance personnel and aviation professionals. A secure portal captures and tracks technical requests and shares information such as technical documentation, maintenance and fleet performance data, and training programmes with operators.

In the near future, more such mechanisms will emerge to enhance customer experience and share information with partners.

Lufthansa Technik has developed its CloudStream social content website in conjunction with Panasonic Avionics and Deutsche Telekom to launch FlyNet.

Airbus has launched the AirbusWorld portal to improve customer digital experience by providing a user-friendly platform with service integration, data aggregation and performance monitoring.

Social media tools: These help companies both to communicate with stakeholders about initiatives such as CSR, and also to listen to customers proactively in order to provide a personalised experience. While major players in aerospace have embraced social media to the extent of distributing marketing information via Facebook, Twitter, Google+ and blogs, the industry has yet to evolve applications or solutions on a par with (say) automotive and retail. This means there is a huge opportunity for airlines and their partners to innovate

products that capture customer behaviour patterns and insights.

Boeing's primary social media platform, boeing.com, carries stories about people within Boeing and highlights the company's customer-oriented environment. By contrast, the FAST (Flight, Airworthiness, Support and Technology) magazine for Airbus customers and partners focuses on technical aspects.



How Capgemini can help

Contact



The winners in tomorrow's aerospace industry will be those that understand the opportunities, have the right strategies and operating models, and use the right technologies to implement them. Customers are paying more and more attention to service, and leading companies are innovating through collaborative, service-centric business models. Can you afford to miss the plane?

For over two decades, Capgemini has partnered with leading aerospace operators, MROs, OEMs, suppliers and technology companies, enabling them to optimise operations and deliver services at the highest levels of excellence. We have a range of offerings to help aerospace companies increase service revenues and optimise service profits through innovative strategies, new operating models and customised solutions.

As a leader in the digital marketplace, with extensive client experience in both operations and maintenance, we are the partner of choice to help you put service at the heart of your business – right across the value chain to the consumer. Through our deep understanding of the three drivers outlined above, our unique customised offerings and our experience in developing solutions, we can help you excel in the service areas that are important to you. You will gain competitive advantage in a crowded market by setting new industry standards while others struggle to catch up.





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