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Refining the flight path: Seven priorities for commercial aerospace leaders through 2020

Axel Esque, Raman Ram, and Robin Riedel

The commercial aerospace industry is poised for continued growth. Air transport passenger demand is expected to grow at around 4 percent a year in the next ten years. In the business aviation segment, the declining inventory of used aircraft and increased utilization rates are both reassuring signs. To protect and enhance market positions and maximize value in the long term, industry players should focus on seven priorities.

- 1 **Manage the evolving industry structure**
- 2 **Navigate turbulent narrow-body skies**
- 3 **Break the development cost curve**
- 4 **Digitize the supply chain to improve efficiency**
- 5 **Prepare for the services war**
- 6 **Win the war for talent**
- 7 **Find your place in the future of mobility**

1 Manage the evolving industry structure

For more than two decades, concentrated structures in most major segments offered several advantages, including reduced exposure to cyclical, a large production backlog, and overall stability. Recently, however, we see indications of disruption. In large commercial aircraft, for example, new entrants China and Russia are challenging the current duopoly, despite the recent partnership announcements in the regional segment. Similar shifts are happening in small aircraft propulsion, business jet avionics, and in-flight entertainment, thanks to joint ventures and expansion by players from other segments or industries. In addition, organic and inorganic vertical integration by major incumbents will also gradually change the structure in some segments.

This disruption could potentially affect incumbents, ushering in increased vulnerability to cycles, lower backlogs, increased emphasis on R&D, faster product development cycles, pricing pressure, and a shift in value pools. While the market may take decades to evolve, industry players seeking leadership positions must take concerted strategic actions early.

2 Navigate turbulent narrow-body skies

In the past decade, the commercial aircraft market has experienced record orders, resulting in production backlogs equal to more than six years for narrow-body aircraft—an all-time-high. This demand and new market entrants have led OEMs to increase announced production rates to a combined 1,700 narrow-bodies a year by 2025. Making reasonable assumptions for the use of these aircraft and the retirement pattern of the installed base, narrow-body capacity (measured in available seat miles) could grow 7 percent a year over the next decade, but passenger demand (measured in revenue passenger miles) is expected to grow at only around 4 to 5 percent a year. Stakeholders will likely address this potential imbalance through some combination of lower-than-announced production rates, earlier retirements of the installed base, lower aircraft utilization, and stimulation of passenger demand. Each of these factors has implications for industry participants across the value chain. No matter how the market clears, some players will experience significant disruption.

Aerospace players need to assess how the evolving narrow-body market would affect their business, identify the natural owner of volatility risk, monitor early indicators of market shifts, and plan for likely outcomes. In many cases, this means creating flexibility to react to market changes, both in manufacturing and service capacity and in contracts with suppliers and customers. Further, the shifting market could highlight alternate opportunities for additional growth.

3 Break the development cost curve

Over the past 20 years, new aircraft and system development costs have doubled in real terms—from hundreds of millions for major components to \$5 billion for engines and \$25 billion or more for aircraft. Together, airframe engineering and design, manufacturing labor, and tooling account for roughly 70 percent of total development costs. The increasing system complexity has caused the growth in development costs to outstrip productivity gains from labor and technological advances. This misalignment could become a significant drag on innovation and slow the introduction of new products: high development costs make the business case for new programs considerably challenging, to the point where players will be “betting the company” every time they greenlight a clean-sheet project.

OEMs and suppliers can reduce development costs significantly by embracing agile. This approach involves structuring development in program increments of weeks instead of months and years, adopting a more modular approach by reusing existing parts and systems, lowering complexity, incorporating customer-backed design features, and revamping testing, evaluation, and certification processes.

4 Digitize the supply chain to improve efficiency

Supply chains, which account for the majority of total costs for OEMs and large suppliers, have become increasingly complex due to higher production rates, globally expanded networks, and numerous configurations, despite efforts to rationalize suppliers. A lack of real-time visibility can make supply chains inefficient, raising inventory levels and affecting service levels. Digitization can improve visibility, enhance performance management, and enable the proactive use of leading indicators to address issues before they emerge. There are three broad avenues to digitize the supply chain: links between discrete network nodes to increase visibility, asset intelligence to enable event recognition and translation to support more effective decision-making, and flexible automation to incorporate response mechanisms and remote movement. The optimal combination of these technologies will vary by company depending on the factors contributing to supply chain complexity and performance.

Companies should digitize their supply chain through targeted pilot projects to achieve quick wins and demonstrate value. They should then expand proven projects and communicate success stories across the organization to build momentum to scale the impact.

5 Prepare for the services war

Commercial and business aircraft services (maintenance and engineering, flight operations, and ground operations, among other areas) is a more than \$300 billion market. It is forecast to grow at 4 percent a year over the next two decades, but most companies expect to aggressively expand their services business at two to three times that pace. Since not every company can gain share, what should industry leaders do to achieve their growth expectations? First, they need a clear understanding of “entitlement”—the annual and life-cycle value of aftermarket services and their addressable portion. Second, they need to determine their current and target share at the product, platform, segment, and customer levels. Third, to achieve the target share they must identify gaps in offerings, value proposition, pricing, and coverage. Last, companies should close these gaps through targeted initiatives, including identifying new sources of value beyond parts, repairs, and upgrades and improving operational performance (a chronic customer pain point). These actions need to be supported by the right operating model, incentive structure, and a robust performance management system.

Analytics and digital capabilities will differentiate winners from losers in this increasingly competitive services market. Successful companies will harness data and analytics to generate insights related to markets, customers, products, and processes in order to create a step change in commercial and operational performance and enable growth.

6 Win the war for talent

Talent is becoming an increasingly important battleground for aerospace players for three reasons: First, retirement rates combined with industry growth will require more than 25,000 new aerospace workers (including engineers, factory workers, and technicians) annually in the coming years. While automation could reduce this need—the McKinsey Global Institute estimates that more than two-thirds of maintenance and production activities in aerospace could eventually be automated¹—such a transformation will take many years to reach scale. Second, competition for talent is heating up, and legacy aerospace has lost some of its excitement for new graduates, especially compared with leading tech companies. Our analysis shows that today only about one of ten graduates from top aerospace engineering university programs chooses to work at major aerospace players. Last, the skills and capabilities required in aerospace in the coming years will be very different from previous decades. The shift in business models (for example,

increased focus on services) and technology is dramatically changing the profile of the aerospace workforce to include capabilities such as data analytics, automation, and software.

Aerospace players must make talent a top priority and update their strategy to reflect the current needs of the industry. Further, companies need to review—and likely adjust—their value proposition to compete more effectively for the next generation of talent, especially with internet, high-tech, and consumer electronics players.

7 Find your place in the future of mobility

For the first time in decades, multiple new aircraft segments are poised to disrupt the industry. For example, small, electric vertical takeoff and landing (eVTOL) passenger vehicles could be a \$100 billion market in the United States alone, with the potential to reach \$500 billion globally. Given the focus on autonomy and electric propulsion, the smaller size of vehicles compared with traditional aircraft, and the goal of mass adoption, the value chain in new aircraft markets will look very different from traditional aerospace. Vehicles might get commoditized, and infrastructure (such as skyports and charging stations), air-traffic management, and consumer interface will likely play a more pronounced role. This prospect has attracted new competitors and potential partners—from ride-sharing platforms to automotive OEMs to software start-ups—with different and potentially disruptive approaches, including mass-production capabilities, agile and rapid iteration development, and deep analytics.

Every aerospace player must understand the potential structures that these new markets can take as well as the technological, regulatory, and social advances that will unlock their potential. Identifying emerging value pools and staking a claim early on, either alone or through strategic partnerships, will not only open up these new markets but help protect existing ones.



External forces will continue to affect the aerospace industry, providing both challenges and opportunities. Success in the long run will depend on how players address these priorities and the strategic actions they take today. ■

¹ *Harnessing automation for a future that works*, McKinsey Global Institute, January 2017.

Axel Esque is a consultant in McKinsey's Paris office; **Raman Ram** is a partner in the Washington, DC, office; and **Robin Riedel** is a partner in the San Francisco office.

For further information, please contact:

Kevin Dehoff, senior partner and leader of Aerospace & Defense practice in Americas (kevin_dehoff@mckinsey.com)

Hugo del Campo, senior partner and leader of Aerospace & Defense practice in Europe (hugo_del_campo@mckinsey.com)

Alex Dichter, senior partner and leader of Airlines practice (alex_dichter@mckinsey.com)

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