Dear aviation colleagues,

Last year, CAE released its first pilot demand outlook report amidst concerns over the impact of increased passenger air travel on the airline pilot pipeline. In 2018 we’ve built on that analysis, updating the 10-year forecast and expanding the model to include business jet pilots.

A positive environment persists within the civil aviation industry. All major market indicators – from passenger traffic to fleet growth to aircraft utilization – remain strong and are driving solid performances in both the business and commercial market aviation segments. The result, which is being felt by fleet operators around the world, is an unprecedented demand for professional pilots and a new urgency to develop better pilots, faster.

According to our analysis, by 2028 the active combined airline and business jet pilot population will exceed half a million pilots. Furthermore, 300,000 of those pilots will be new and 215,000 will have been upgraded to captain. In the business sector, the turnover of new jet pilots will reach almost 100%.

How will we, as an industry, manage this? By heeding the call to action.

Increased pilot demand is motivating fleet operators and training providers like CAE to work more closely together. Smarter pilot creation that helps cadets flourish earlier and improves the likelihood of success throughout a pilot’s career is a joint aspiration and mutual goal. Likewise, new training systems that make better use of real-time data and analytical insights are more than a showcase for innovation.

Today, soaring pilot demand is a reality that those of us in aviation must manage. With this update, we hope to arm you with the information needed to understand the next decade’s pilot training needs and to share the ideas we believe are helping to create and develop tomorrow’s professional pilots.

Nick Leontidis
CAE Group President
Civil Aviation Training Solutions

“The result of positive market drivers is an unprecedented demand for professional pilots and a new urgency to develop better pilots, faster.”

*Including a net 20K movement of business jet pilots to airlines

CAE analysis based on data from the following sources: FAA/Eurocontrol/Amstat/IATA/FlightGlobal/Rolland Vincent Associates
Table of contents

06 Part 1: Civil aviation market drivers
07 Part 2: What it means for pilot demand
08 New pilot demand resulting from replacements
09 New pilot demand resulting from growth
11 Part 3: Developing better pilots, faster
12 Smarter pilot creation
15 Better recruitment training systems
16 Tapping into a larger talent pool
Civil aviation market drivers

Underpinning the demand for professional pilots are business and commercial aviation market drivers. In 2018, the two segments are experiencing different realities.

**Business aviation**
Signs of improvement are evident in business aviation even though new jet deliveries have remained flat since 2012 at approximately 700 aircraft per year. Most significantly, 2018 marks a year of positive year-over-year aircraft utilization growth with its two largest markets, the US and Europe, up 3%.

Inventory for sale, another key business measure, has been falling steadily since 2012. This year it fell by 6% and is expected to bottom out a level below 10% of the active fleet, a healthy sign in the industry.

At the same time, new large jet platforms are getting ready to enter the market (Bombardier Global 7500; Gulfstream G500/600; Dassault Falcon 6X). Compared with small and medium platforms, the large jet segment is predicted to remain the fastest growing in business aviation.

**Commercial aviation**
Passenger traffic has increased steadily over the past decade, outperforming IATA’s expectations over the last three years and reaching a record 7% year-over-year (YOY) growth rate in 2018.

Doubling since before 2000, the number of unique city pairs exceeded 20,000 for the first time at the end of 2017. Significant YOY growth of 7% was mainly driven by new city pairs in Europe and in Asia. China, notably, added more new pairs than any other country, even more than all European countries combined.

Passenger load factor, a measure of an airline’s seat-filling efficiency, increased again this year by 1%, averaging just over 81% today.

What it means for pilot demand

Market drivers influence the key variables used to project pilot demand: attrition, fleet growth, and crew ratios.

Pilot demand is comprised of two groups of new pilots: those needed to replace the ones who leave and those needed as a result of growth.

In both business and commercial aviation, the pilot population is aging and replacements are needed to counter retirements. Furthermore, in the business sector, replacements due to retirement are exacerbated by a net loss of business jet pilots who leave their jobs to join airlines.

Fleet growth and changing crew ratios are also driving demand. In both sectors, the number of new pilots needed for growth is increasing with the size of the active fleet. At the same time, crew ratios, i.e. the average number of pilots per aircraft, is also projected to keep its increase over time.

---

**Business Aviation**

**Signs of Improvement**
- +3% YOY (Utilization strengthening)
- -6% YOY (Inventory for sale decreasing)
- NEW (Large jet programs coming)

**Commercial Aviation**

**All-Time High**
- +7% YOY (Passenger traffic rising)
- >20K (Direct city-pairs expanding)
- >81% (Average load factor increasing)
New pilot demand resulting from replacements

The number of professional pilots over the age of 50 is disproportionately high.

The pilot population age is disproportionately high across the civil aviation industry. Driven by a typical mandatory age of 65, commercial aviation attrition is forecasted to hold steady at approximately 3% per year, translating in a need for 110,000 new pilots over the next 10 years.

By contrast in business aviation, where there is no mandatory age requirement, the pilot population is even older and attrition is projected to sit at 4% per year, driving a need for 40,000 new business jet pilots over the next decade.

Furthermore, the current record-level of airline pilot demand is affecting business fleet operators who will continue to face an additional average loss of 4% of their pilots who will join airlines every year over the next decade.

New pilot demand resulting from growth

17,000 additional business and commercial aircraft will join the active fleet in the next ten years.

The 10-year average compound annual growth rate (CAGR) for commercial aircraft is 3.5%, and the active fleet is expected to grow by 12,000 aircraft to reach 39,000 aircraft by 2028. During the same period, crew ratios are also projected to increase to an average of more than 12 pilots per aircraft, an outcome of improved utilization.

Growth is more modest in the business aviation sector, though a sustained 2% CAGR will bring the active fleet to 27,000 aircraft by 2028. The relatively lower average crew ratio will also rise, mainly due to a continued evolution towards higher-utilization business models.

Overall, the fleet and crew ratios’ growth is driving the need for 10,000 new business jets pilots and 160,000 new airline pilots in the next decade.

*Including other attrition (pursuit of non-flying career, loss of medical fitness, etc.)
How will operators manage this unprecedented demand?

Developing better pilots, faster

New data sources, professional pilot competencies and training processes are more than ever central to the set of questions arising from fleet operators the world-over, faced with the need to develop better pilots faster.

Whether in the business jet or airline market, two key opportunities are emerging in responses to those questions: smarter pilot creation and better recurrent training systems.

New types of partnerships between fleet operators and training providers are also being formed to accelerate the deployment of a new training reality.

“Are we adjusting the training programs fast enough?”

“What’s in the DNA of a proficient professional pilot?”

“How can we accelerate the development of the most relevant skills?”

“How early do we get involved and steer the development to our own cultural and operational realities?”

“How can we equipping our instructors with the best available data?”

1. Smarter pilot creation

2. Better recurrent training systems
New cadet selection systems and more optimized training footprints are becoming the new norm for professional pilot creation programs.

Assessing and selecting the right candidates

Based on the most recent ICAO standards for professional pilot competencies, new assessment systems have emerged promising the selection of candidates that not only can become competent first officers, but have what it takes to be successful captains. More objective assessments as a pre-requisite for ab-initio training are being enabled. Complementing ICAO’s standard for pilot competencies, the industry is also moving towards the inclusion of the unique operators’ cultural reality as selection criteria, enabling candidates to be even more successful in their assigned environment.

In partnership with fleet operators, CAE has evolved its cadet selection system in the last five years, tuning the requirements for professional competencies in light of the operator’s unique profile. Through interviews, technical tests and psychological assessments, a more rigorous selection process performed at the very start of the training process is proving key to improve graduation rates, reduce remedial training and increase retention rates.

Optimizing the training footprint

Beyond selection, pilot training is also evolving and becoming more accessible and cost effective for cadets through an expanded footprint of training centers near operators’ bases. Early immersion in a professional training environment also means ab-initio cadets thrive earlier.

Over the last three years, CAE launched more than 10 new pilot creation programs in partnership with European, American, and Asian airlines increasing the proportion of training completed in training centers, complementing flying time in academies, and enabling mentorship from their future employer much earlier than before.
The unprecedented demand for captains are driving recurrent training programs to adapt to today’s realities, and evolve from the first prescriptive checklists to today’s competency-based assessments leveraging new sources of line and training data. The ability to enable future training frameworks and to support the migration to data-based programs is an imperative for all stakeholders in an industry where safety is the top priority.

New recurrent training systems, monitoring individual and group performance in real-time, are setting up operators with a renewed understanding of proficiency gaps, allowing targeted training program improvements and accelerated promotions to captains.

The recently launched CAE Rise™ training system is a great illustration of a technology innovation enabling the translation of simulator training data into valuable insights for instructors and training managers. This new system can arm instructors with the capability to provide objective assessments of pilot maneuvers in real-time and can equip training managers with a new level of insights of the performance of their entire pilot pool.
Tapping into a larger talent pool

Beyond provoking an overdue correction, tackling diversity is critical to the future of the aviation industry.

In 2018, the aviation industry remains startlingly masculine. Tackling gender diversity would address a historic imbalance while giving business jet operators and airlines access to a talent pool nearly twice its current size. Today, women make up only 5% of professional pilots worldwide. The same is true of cadets in training. Unlike many other traditionally male-dominated professions, the aviation industry is still not attracting enough women.

While troubling, this situation also gives us a clear opportunity to increase diversity while broadening the civil aviation talent pool. Fleet operators, influential organizations along with training providers such as CAE are taking action to achieve greater diversity and a better gender balance.

Through its recently launched CAE Women in Flight scholarship program, CAE will award up to five full scholarships to aspiring female pilots who are passionate about becoming professional pilots and interested in becoming role models, to inspire even more women to join the industry.

CAE will be awarding up to 5 full scholarships to aspiring female pilots every year to support greater diversity and a better gender balance in the aviation industry.

Women make up 5% of the 360,000+ active civil pilots worldwide.

Of the 120,000 professional pilots who train at CAE every year.

Of the 1,500+ cadets who graduate from CAE academies every year.
CAE is a global leader in training for the civil aviation, defence and security, and healthcare markets. Backed by a record of more than 70 years of industry firsts, we continue to help define global training standards with our innovative virtual-to-live training solutions to make flying safer, maintain defence force readiness and enhance patient safety. We have the broadest global presence in the industry, with over 9,000 employees, 160 sites and training locations in over 35 countries. Each year, we train more than 220,000 civil and defence crewmembers, including more than 135,000 pilots, and thousands of healthcare professionals worldwide.

www.cae.com
Follow us on twitter @CAE_Inc
Your worldwide training partner of choice