Aircraft Certification Service

FY17 YEAR IN REVIEW

Safety
People
Organizational Excellence
Globalization

> **“Together, we provide the safest, most efficient aerospace system in the world.”**
>
> - Dorenda D. Baker

CONTENTS

Pg. 3 Message from AIR’s Executive Director

Pg. 4 FAA Strategic Initiatives and AIR’s Key Focus Areas

Pg. 5 Safety

Pg. 10 People

Pg. 12 Organizational Excellence

Pg. 16 Globalization

Pg. 18 AIR Transformation and the Way Forward

FY2017: A BRIDGE TO TRANSFORMATION

Aircraft Certification Service

A Message from AIR Executive Director, Dorenda D. Baker

The Aircraft Certification Service (AIR) is confronted with new challenges every day: a finite number of resources, new technologies, new entrants to the marketplace, and the expanding globalization of aviation. This rapid pace of change within an expanding industry creates a dynamic and challenging environment.

AIR has taken a proactive approach to respond to these changes and prepare for the future. AIR's *FY2017 Year in Review* highlights some of the activities undertaken during the last year to implement the vision of AIR:2018.

As you read this report, you'll see that 2017 was an impressive year for AIR. We realigned into a functionally-based organization. We overhauled airworthiness standards for general aviation airplanes and implemented flexible, performance-based standards that foster innovation, facilitate the approval of safety-enhancing technology, and reduce costs for industry. We incorporated risk-based approaches into our domestic and international work that streamline certification and increase the acceptance of approvals by our international regulatory partners.

In collaboration with industry, we completed an analysis of our Organization Designation Authorization (ODA) Scorecard effort to measure progress and identify areas for improvement. We also released a new Certification Process Guide to establish a clear, up-front understanding of needs and expectations, improve accountability, and facilitate the ability to manage, measure, and improve both FAA and industry performance.

In addition to sharing these accomplishments, this report also delivers insight into our collaborative efforts to capitalize on existing momentum, institutionalize improvements, and bridge ongoing initiatives with the AIR Blueprint. In March, we published *A Blueprint for AIR Transformation*, which details our strategic vision for AIR's future in a dynamic, global aviation industry. This high-level document makes the case for changing the way we approach our work – balancing the needs of industry and the public's expectations for safety – and maps our strategic direction moving forward.

Consistent with our long history of continuous improvement, AIR is adapting to the changing aviation environment by reexamining how we do business and working collaboratively with stakeholders to ensure that we are successful. In FY2018, we remain focused on becoming more effective and efficient and fully committed to providing the safest, most efficient aerospace system in the world.

The Vision for a Transformed System

The Federal Aviation Administration's (FAA) vision is "to strive to reach the next level of safety, efficiency, environmental responsibility and global leadership." AIR:2018 communicates AIR's role in supporting that vision and key areas in which to build the foundation for tomorrow. That foundation is based on four key focus areas associated with the agency's vision.

Safety - AIR applies safety management principles to achieve the next level of product safety consistent with the safety continuum.

People - AIR fosters a culture where the people are dedicated to the success of the organization.

Organizational Excellence - AIR is an agile and responsive organization that optimizes our effectiveness in achieving our mission.

Globalization - AIR provides leadership to achieve a consistent level of product safety across geopolitical boundaries.

Here is a look at how FY17 AIR initiatives align with those endeavors.

AIR Transformation

Refresh certification strategy

- Part 23 Rewrite
- Streamlined Installation of NORSEE
- Certification Process Guide
- Regulatory Operations
- Risk-Based Safety Agreements
- Risk-Based Approach to Production Oversight

Invest in management systems to improve performance

- *A Blueprint for AIR Transformation*
- ODA Scorecard
- Organizational Performance Division (AIR-300)
- AIR Information Technology (IT) Agility Order

Improve organization and invest in our people

- AIR's FY17 Workforce
- Functional Organizational Structure

Change management	Established AIR-320 Change Management Branch, adopted Prosci framework, and began offering basic change management support across AIR
Industry commitment	Encouraged Industry to embrace systems safety with a compliance culture, engage early on innovation, and work with the FAA on performance management

Safety

AIR applied safety management principles to achieve the next level of product safety consistent with the safety continuum.

- Compliance and conformance is achieved through a clear framework of accountability.
- Safety data is shared and used among key stakeholders and international partners.
- Surveillance is conducted using a single model.

Implemented Part 23 Airworthiness Standards for Normal Category Airplanes

AIR's new Part 23 rule, which overhauled the airworthiness standards for small general aviation airplanes, went into effect in August 2017. In addition to revitalizing the industry by encouraging new aircraft, AIR expects this rule to enable faster installation of innovative, safety-enhancing technologies into small airplanes while reducing the costs for industry.

With Part 23, AIR delivered on a promise to implement forward-looking, flexible rules that encourage innovation. Specifically, the new Part 23 revolutionizes standards for airplanes weighing 19,000 pounds or less and with 19 or fewer passenger seats by replacing prescriptive requirements with performance-based standards coupled with consensus-based compliance methods for specific designs and technologies. The rule also adds new certification standards to address GA loss of control accidents and in-flight icing conditions.

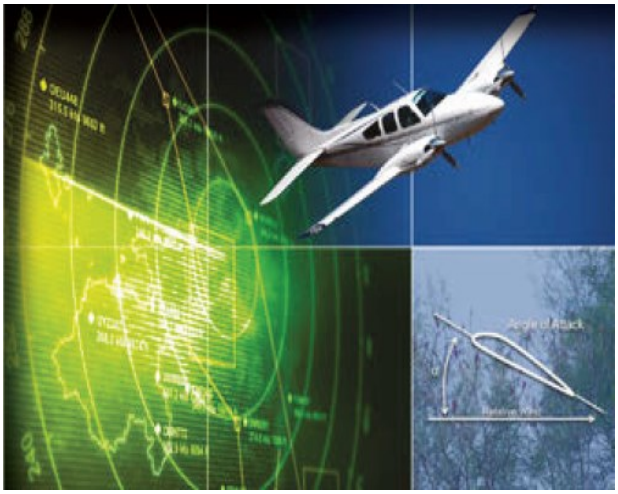
Safety

The new rule moves certification from a top-down regulatory approach to a bottom-up approach to standards, with the certification and technology specialists working on the standards and moving towards an overarching safety goal. This approach recognizes there is more than one way to deliver on safety, and offers a way for industry and the FAA to collaborate on new technologies to keep pace with evolving aviation designs and concepts.

The new rule responds to Congressional mandates that direct the FAA to streamline approval of safety advancements for small, general aviation airplanes. It also addresses recommendations from the FAA's 2013 Part 23 Reorganization Aviation Rulemaking Committee, which suggested a more streamlined approval process for safety equipment on those airplanes.

Part 23 also promotes regulatory harmonization among the FAA's foreign partners, including the European Aviation Safety Agency (EASA), Transport Canada Civil Aviation (TCCA), and Brazil's National Civil Aviation Authority (ANAC). Harmonization helps minimize certification costs for airplane and engine manufacturers and operators of affected equipment, who want to certify their products for the global market.

Furthered Efforts to Modernize the General Aviation Fleet



In FY 17, AIR made significant progress on a number of initiatives aimed at modernizing the existing general aviation (GA) fleet. Streamlined Part 23 certification and risk-based Parts Manufacturer Approval (PMA) efforts facilitated the installation of safety enhancing equipment on GA airplanes. These safety features have the ability to prevent the leading causes of general aviation accidents, loss of control and controlled flight into terrain.

Safety

The following initiatives demonstrate a combination of risk-based decision making, innovative thinking, and significant engagement and collaboration with industry stakeholders to bring modern technology to market – safely and efficiently.

- The Experimental Aircraft Association (EAA)/ Dynon Attitude Indicator Supplemental Type Certificate (STC) enables the installation of the Dynon EFIS-D10A attitude indicator as a replacement for vacuum powered attitude indicators in Cessna 152, 172 and Piper PA-28 / PA-38 aircraft.

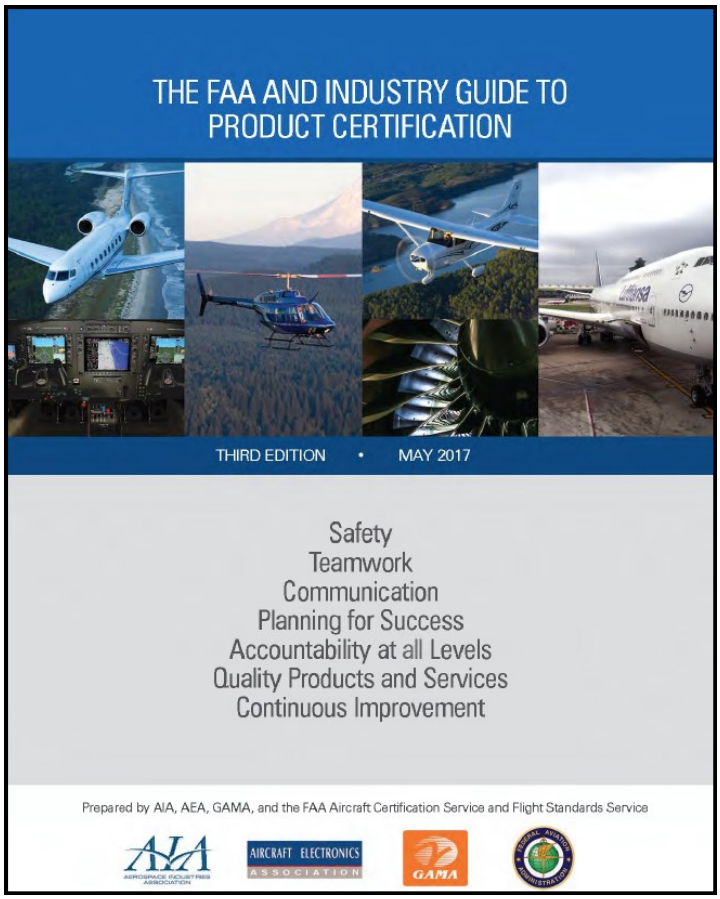
- The Vizion, TruTrak's Flight Systems Autopilot with Automatic Envelope Protection (AEP) has the standard autopilot features of heading, track, and altitude hold and a GPS navigation mode as well as AEP.

- EAA in partnership with Trio announced the development of the ProPilot Autopilot, a 2-axis autopilot with heading, track, altitude hold, and navigation modes for installation in part 23 class I airplanes.

- Garmin completed an STC for the replacement of vacuum attitude indicators with electronic attitude indicator and an STC to replace the vacuum directional indicator with an electronic horizontal situation indicator (HSI). Vacuum systems historically have a significantly higher failure rate than electronic replacements.

Safety

Released the 3rd edition of the FAA & Industry Certification Process Guide



Certification processes have changed significantly over the last 10-15 years, to improve the efficiency and effectiveness of the certification and design approval processes to enhance product safety. In May 2017, AIR released the 3rd edition of the FAA and Industry Certification Process Guide (CPG) to address the impact of those changes and assist stakeholders in taking full advantage of the benefits they offer.

Specifically, the revised CPG:

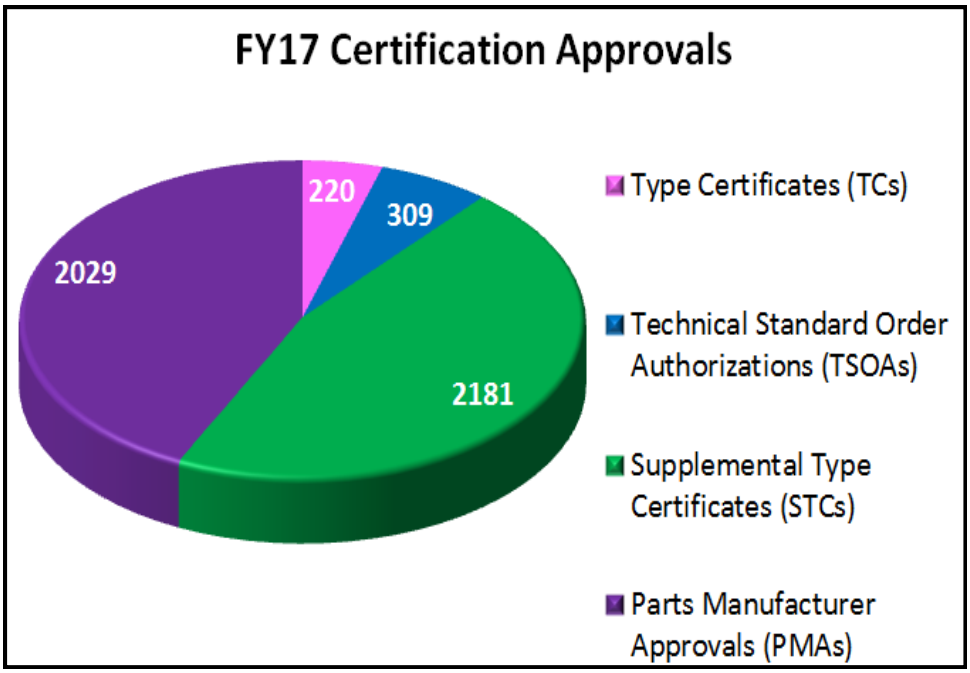
- Evolves Partnership for Safety Plans (PSPs) as repositories capturing high-level agreements about how the FAA and Applicant will conduct business.
- Incorporates changes based on lessons learned and the most recent policy and guidance published by FAA.
- Encourages the broader and more consistent use of the principles and expected operating norms for efficient design approval processes.

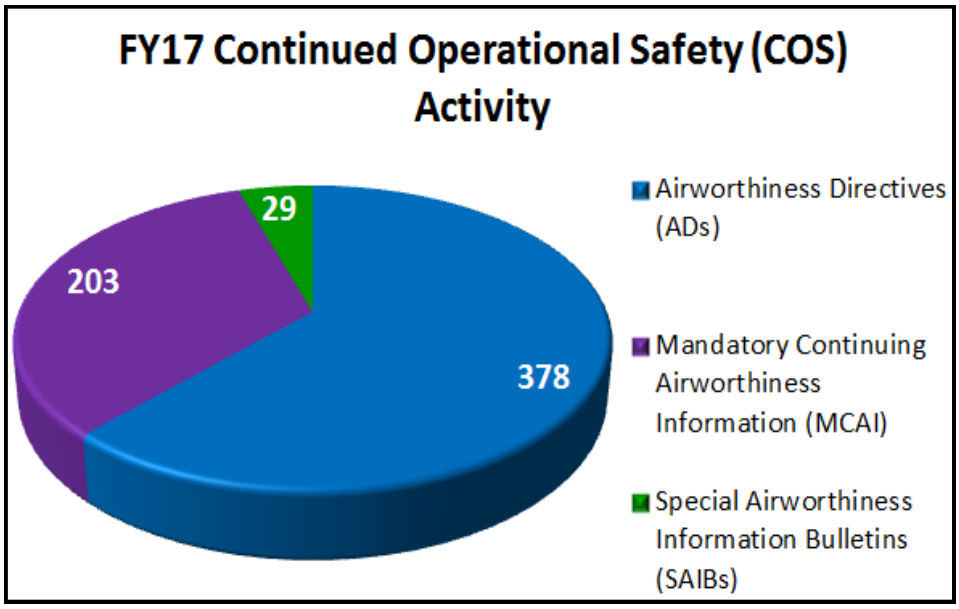
Developed in collaboration with industry, the revised CPG will benefit all stakeholders involved in the certification of aviation products by establishing a clear, up-front understanding of the needs and expectations of all stakeholders in the product certification process. In other words, the CPG helps improve accountability as well as the ability to manage, measure, and improve both FAA and company performance.

Safety

Continued the effective and efficient execution of regulatory operations

In FY17, AIR issued 220 Type Certificates (TCs), 309 Technical Standard Order Authorizations (TSOAs), 2,181 Supplemental Type Certificates (STCs), and 2,029 Parts Manufacturer Approvals (PMAs). AIR also issued two Production Certificates (PCs).





Advancing the continued operational safety (COS) of the existing fleet, AIR also issued 378 domestic Airworthiness Directives (ADs), 203 foreign Mandatory Continuing Airworthiness Information (MCAI), and 29 Special Airworthiness Information Bulletins.

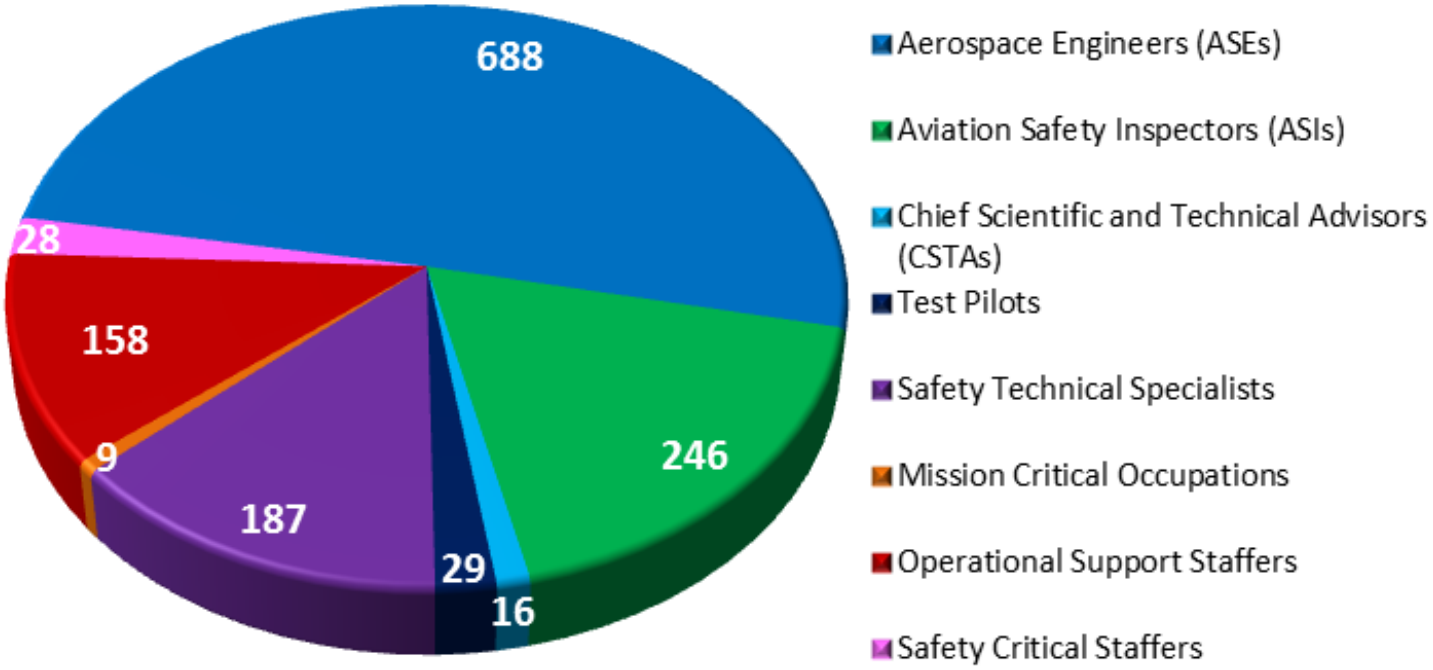
More detailed information on these activities can be found in the FY17 AIR Certification Activity and Delegation Summary Report.

People

AIR fosters a culture where the people are dedicated to the success of the organization.

- A professional collaborative work environment exists that enables AIR employees to pursue their full potential.
- Our mission is accomplished in a manner that considers the importance of personal well-being.

AIR's FY17 Aviation Safety Team

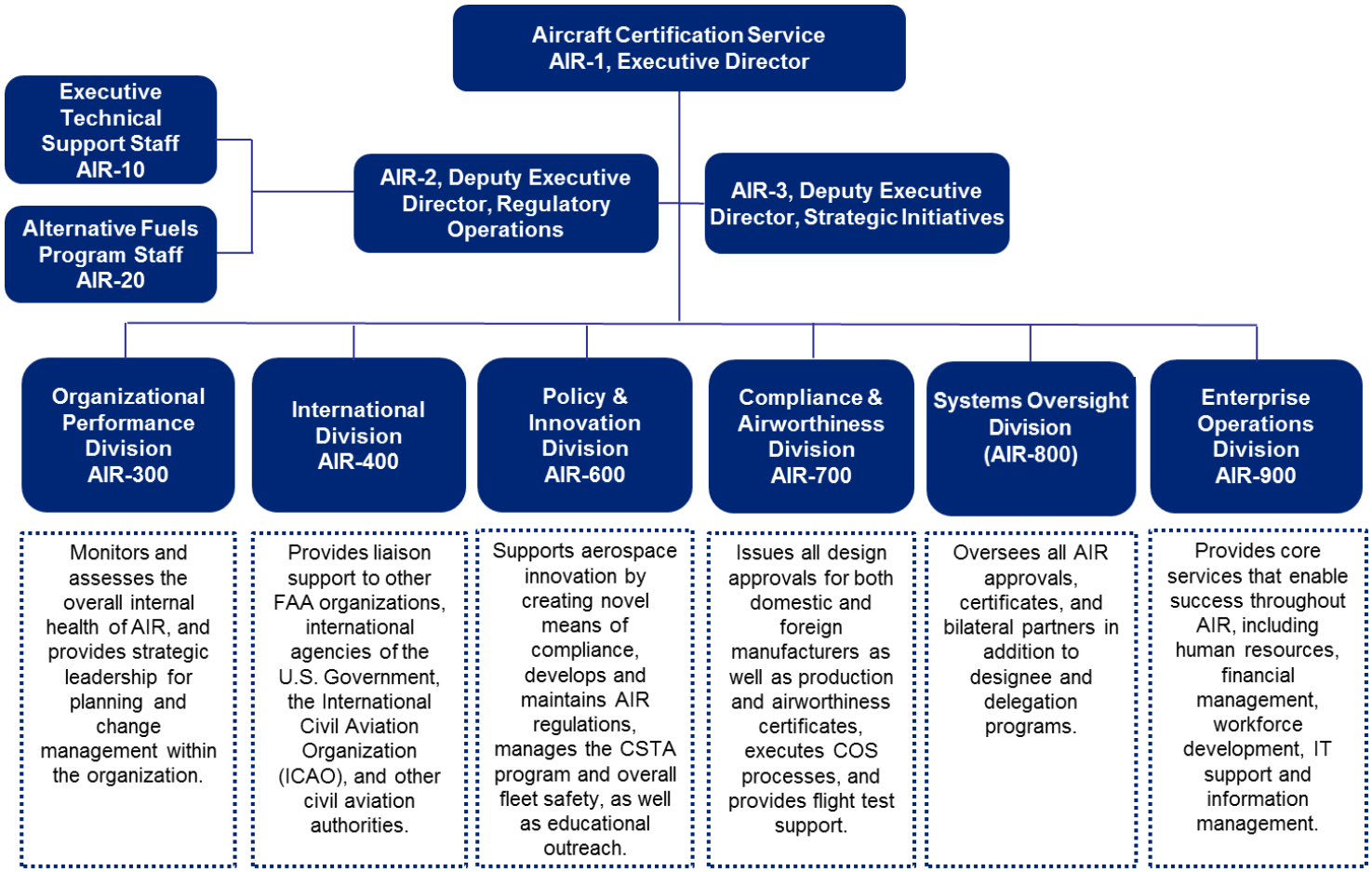


As of the end of FY17, AIR was working with a staff of 1,361. This number has remained relatively constant over the past five years, with the largest fluctuations occurring among the operational support staff. Also consistent with the last five years, the largest segment of AIR employees served as aerospace engineers (688 employees) and aviation safety inspectors (246 employees). In FY17, AIR also had 187 safety technical specialists, 28 safety critical staffers, 9 mission critical occupations, 158 Operational Support Staffers, 29 test pilots, and 16 Chief Scientific and Technical Advisors (CSTAs).

People

Realigned into a functionally-based organization

AIR successfully achieved a major milestone by realigning to the new functional organizational structure on July 23, 2017. This was the culmination of many critical activities and efforts over several years. The new functionally-organized structure promotes early industry engagement and risk-based decision making and deepens functional expertise to improve organizational efficiency and effectiveness.



AIR now has six functional divisions: Organizational Performance; International; Policy & Innovation; Compliance & Airworthiness; Systems Oversight; and Enterprise Operations. Building this functional infrastructure was an important step toward realizing our future strategic vision and full mission potential.

Organizational Excellence

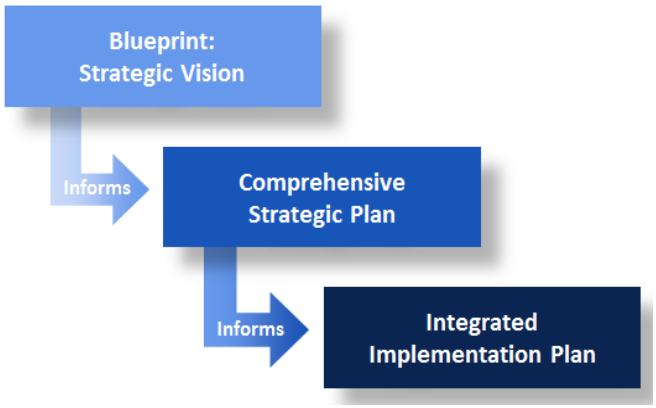
AIR is an agile and responsive organization that optimizes our effectiveness in achieving our mission.

- Resources are utilized efficiently and effectively.
- Quality management principles are fully integrated into our core business processes.
- All stakeholders are represented in the development of innovative solutions.

Issued the AIR Blueprint, capturing a long-term strategic vision for transforming the Aircraft Certification Safety System

FY17 was the safest year on record for U.S. aviation. However, the aviation system is rapidly changing, placing greater demands on its participants. It is more complex, more interconnected, and more reliant on new technologies.

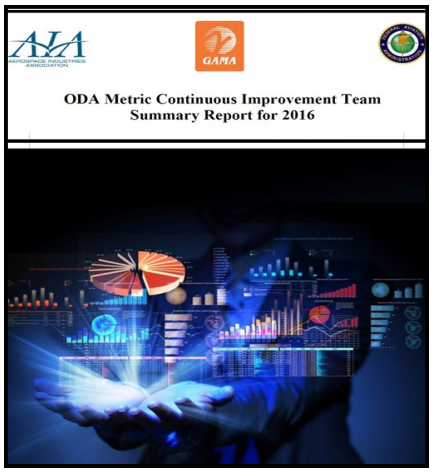
To enable greater agility in adapting to this dynamic aviation environment, a comprehensive transformation of the entire Aircraft Certification Safety System (ACSS) is needed. The ACSS includes all of the interconnected functions, processes, and entities - both public and private - that collectively ensure the safe design, production, and continued operational safety (COS) of aerospace products.



The transformed system will be defined by the Strategic Vision (Blueprint), a Comprehensive Strategic Plan (CSP) and an Integrated Implementation Plan (IIP). On March 1, 2017, AIR published *A Blueprint for AIR Transformation* —which captures the vision and high-level plan for the transformation of the ACSS. A living document, the AIR Blueprint incorporates the strengths of visionary efforts like AIR:2018 and builds on major initiatives that were already underway.

Organizational Excellence

Improved AIR and Industry performance using the ODA Scorecard



The Organization Designation Authorization (ODA) Scorecard is both a tool and a process to help AIR and industry institutionalize collaboration and improve relationships at the local and national level. The tool furthers AIR's effort to increase reliance on a systems-based approach built on close partnering, transparency and confidence in demonstrated competency.

During FY17, AIR fully implemented the ODA Scorecard with 40 companies, compiled a roll up of action plans, briefed stakeholders, and solicited feedback to inform the 2018 cycle. In collaboration with industry, AIR also completed an analysis of progress and identified areas for improvement. The ODA Scorecard Performance Report highlights data and trends that clearly demonstrate the progress made using this transformational tool to secure industry commitment and strengthen FAA-industry relationships. Some highlights of the report:

- Positive overall measure of success for company and FAA performance, with 72% of Scorecard rated pairs "meeting expectations;"
- 11 of 12 success measures that trended in the positive or neutral direction;
- Completion of 97% of the local joint FAA-industry action plans from the 2015 prototype, indicating successful partnering.

Signed by representatives of industry and AIR, the ODA Scorecard Performance Report demonstrates mutual agreement on the positive outcomes of the initiative. Based on the data, AIR has identified future improvements to make ODA even more effective for both industry and the FAA. The ODA Metric Continuous Improvement Team (CIT), comprised of AIR and industry stakeholders formed in FY17 will continue to advance ODA effectiveness through the use of reliable and accurate indicators.

Organizational Excellence

Established the Organizational Performance Division (AIR-300)

To be successful, AIR must conduct continuous self assessments and implement improvements. To this end, in early FY17, AIR established the Organizational Performance (OP) Division to monitor AIR's performance and promote continuous improvement. OP is dedicated to:

- Ensuring the achievement of long term priorities and goals through effective implementation of long-term strategic plans.
- Monitoring AIR's organizational health and measuring results against performance objectives.
- Providing data-driven analytical tools to support increased efficiency and effectiveness.
- Managing change resulting from strategic policy, and process improvements.
- Supporting stakeholders by responding to safety, inter-governmental, and industry issues.

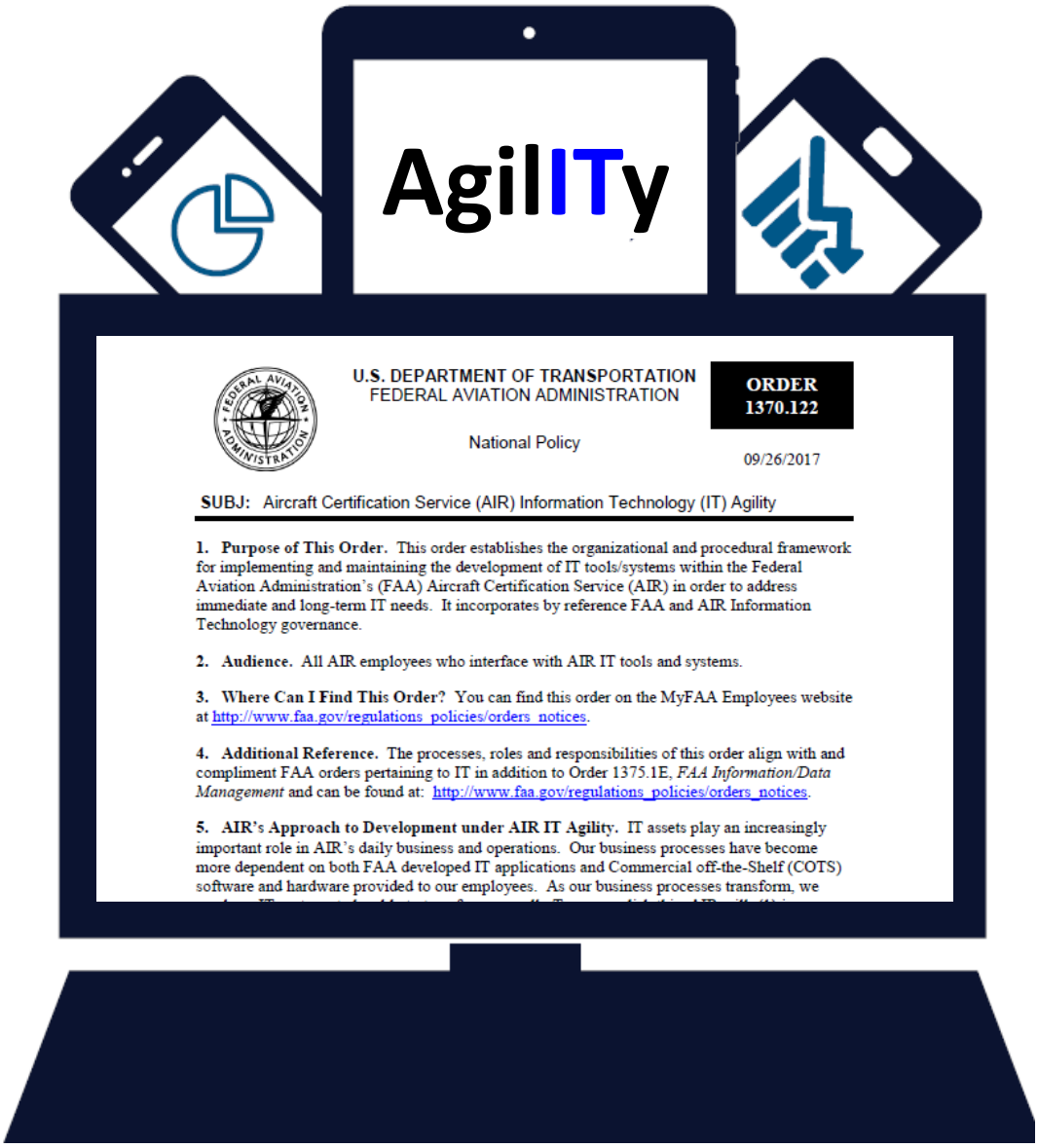
The standup of this new organization demonstrates AIR's commitment to improving the efficacy of the organization.

AIR's Organizational Performance (OP) Division monitors and assesses the overall internal health of AIR and provides strategic leadership for planning and change management within the organization.

Organizational Excellence

Issued the AIR Information Technology Agility Order to enhance data-driven decision making

Information Management plays increasingly important role in AIR's daily business and operations. In September 2017, AIR published FAA Order 1370.122 *AIR IT Agility* to establish a system for addressing information management needs at the local, national and enterprise levels. The Order facilitates AIR's development of more agile, innovative management solutions, which will ultimately enhance AIR's ability to make data-driven decisions.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ORDER 1370.122

National Policy

09/26/2017

SUBJ: Aircraft Certification Service (AIR) Information Technology (IT) Agility

1. Purpose of This Order. This order establishes the organizational and procedural framework for implementing and maintaining the development of IT tools/systems within the Federal Aviation Administration's (FAA) Aircraft Certification Service (AIR) in order to address immediate and long-term IT needs. It incorporates by reference FAA and AIR Information Technology governance.

2. Audience. All AIR employees who interface with AIR IT tools and systems.

3. Where Can I Find This Order? You can find this order on the MyFAA Employees website at http://www.faa.gov/regulations_policies/orders_notices.

4. Additional Reference. The processes, roles and responsibilities of this order align with and compliment FAA orders pertaining to IT in addition to Order 1375.1E, *FAA Information/Data Management* and can be found at: http://www.faa.gov/regulations_policies/orders_notices.

5. AIR's Approach to Development under AIR IT Agility. IT assets play an increasingly important role in AIR's daily business and operations. Our business processes have become more dependent on both FAA developed IT applications and Commercial off-the-Shelf (COTS) software and hardware provided to our employees. As our business processes transform, we

Globalization

AIR provides leadership to achieve a consistent level of product safety across geopolitical boundaries.

- Strong international relationships are in place with a network of partners.
- The full benefits of global manufacturing and seamless transfer of products and approvals is achieved through collaboration with international partners and industry.
- Safety initiatives are shared among international partners and promoted globally.

Signed safety agreements that utilize a risk-based approach

AIR continued to adopt a risk-based approach to safety by signing international agreements with regulatory aviation counterparts in Europe (the European Aviation Safety Agency or EASA), Canada (the Transport Canada Civil Aviation or TCCA), and China (the Civil Aviation Administration of China or CAAC). These agreements help streamline airworthiness validation of products made or sold abroad and vice versa.

In September 2017, the FAA signed new Implementation Procedures for Airworthiness (IPA) with China (CAAC), which were later signed by the CAAC in October. The signing followed work completed by the FAA/CAAC Systems and Process Improvement Team to resolve system issues uncovered during a Part 25 shadow evaluation and resulted in a recommendation to expand the IPA. The risk-based, fully reciprocal scope of this new bilateral agreement allows the FAA to work with the CAAC to further develop their technical capabilities for the benefit of the FAA and U.S. Industry.

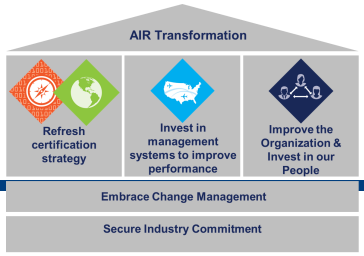
Globalization

The FAA/EASA Bilateral Airworthiness Safety Agreement Technical Implementation Procedures (TIP) Revision 6 was signed in September 2017 at the Certification Management Team (CMT) meeting. This revision introduces bilateral implementation procedures which apply a risk-based approach to reduce validating authority level of involvement.

The approach is based on mutual confidence between partners, coupled with the continued maintenance and expansion of such confidence based on performance improvements. TIP revision 6 institutes greater acceptance of each other's products, and reduces time and scope of involvement in the cases where validation of products must occur.

Increased reliance on bilateral partners using a risk-based approach to production oversight

AIR increased reliance on bilateral partners this year. Based on confidence in the competency of the foreign authority and manufacturers, foreign authorities can conduct work on behalf of the FAA. Brazil's National Civil Aviation Authority is conducting oversight on behalf of the Orlando and Vandalia Manufacturing Inspection District Office Sections and the Civil Aviation Administration of China is conducting oversight on behalf of the Wichita MIDO Section. AIR also conducted familiarization activities with Japan's Civil Aviation Bureau and Transport Canada Civil Aviation.



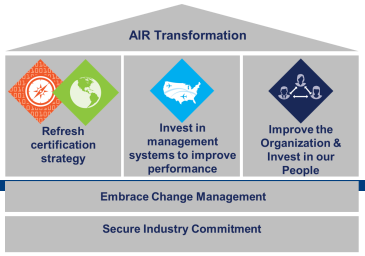
AIR Transformation

Consistent with a long history of continuous improvement, AIR is adapting to the changing aviation environment by transforming how we do business and working collaboratively with stakeholders to ensure that we are successful.

AIR bridged the gap between AIR:2018 and our new long-term, comprehensive strategy for increasing efficiency and effectiveness, known as AIR Transformation, during FY17. Our goal is an Aircraft Certification Safety System that is more responsive to stakeholder expectations and changes in the environment. Some significant changes to note in our strategy moving forward include:

- **Broader inclusiveness of stakeholders**: The Aircraft Certification Safety System refers to the set of interconnected functions, processes, and entities—both public and private— that collectively ensure the safe design, production, and continued operational safety (COS) of aerospace products. That means the system encompasses 1) **AIR's activities** related to design, manufacturing, airworthiness approvals and oversight, standards and policy development, and COS; 2) **Industry's role** in ensuring compliance to regulations; and 3) the **public's active participation** in the regulatory process. Each of these roles is significant and necessary in ensuring success.

- **Investing resources:** AIR is dedicating resources to build and equip our workforce with the tools needed to execute on our strategic vision. Realignment of the executive management structure has positioned AIR to do so efficiently and effectively.



AIR Transformation

- **Increased adaptability:** AIR recognizes the need to not only react to, but also *proactively anticipate* changes in the aerospace environment. By developing a robust capability to monitor, assess and respond to changes in organizational health and system performance, AIR is fostering this type of learning organization.

- **Collaborative, global engagement:** Addressing the interests and needs of U.S. stakeholders extends across geo-political boundaries. AIR is working collaboratively with a global network of partners to lead the advancement of aviation safety worldwide.

These changes are the drivers behind the refinement of our focus areas in *A Blueprint for AIR Transformation*. In FY18, AIR will execute on this strategy to become more effective and efficient while fulfilling our mission to provide the safest, most efficient aerospace system in the world.

FEDERAL AVIATION ADMINISTRATION