ACMT: gallery walk and station materials

Federal Aviation Administration

November, 2015

ACMT supporting materials

- **Gallery walk**
  - ODA experience
  - Industry viewpoints
  - Internal pressures
  - Organization
- Discussion stations

AIR diagnostic: ACMT gallery walk

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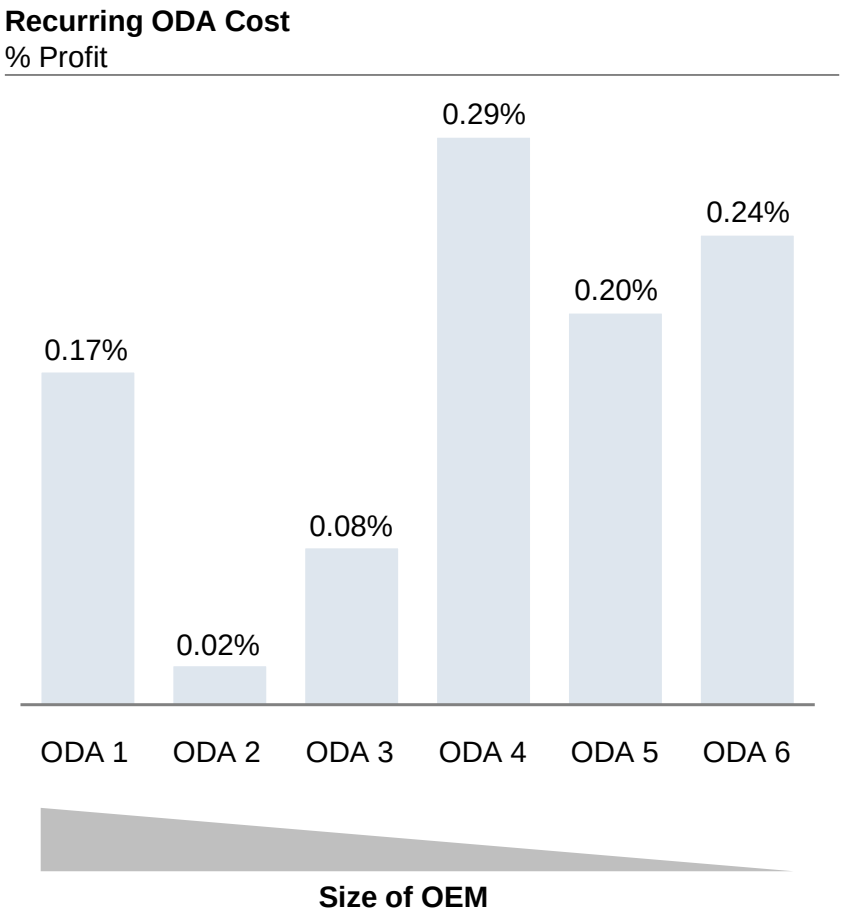
1 ODA implementation has not met expectations – while it has not been materially costly, it has not consistently delivered industry-wide benefits

The recurring cost of ODA ranges from $1-11 million/ year, or less than 0.5% of profit for all OEMs…



…However, OEMs feel a larger administrative burden without corresponding benefits

Administrative burden has increased substantially

> "I never expected the level of administrative burden ODA entails. I have three people working full time for me just to handle the admin."

> "Our certification plans have increased 400% in size since introducing ODA."

Industry feels that ODA hasn't yielded the increase in delegation, prioritization and flexibility they expected

> "What we need is more flexibility and autonomy. ODA has actually had the opposite effect. Relationships with the FAA have been replaced by a formal, rigid process."

> "Overall, not only did delegation not increase as intended, but we have less delegation now than we did before."

SOURCE: OEM interviews, company financial reports

1 Size of certification plans has increased dramatically post-ODA transition at some OEMs

Additional requirement

	Project[1]	Year	Type	Cert plan size pages	Description pages
Pre-ODA	525B-CJ3	2004	DOA	336	90
	680 – Sovereign	2004	Standard cert	24	12
	510 – Mustang	2006	DOA	347	106
ODA	510 – Mustang	2010	DOA then ODA	4600	339
	680A – Latitude	2015	ODA	5896	1321
Impact			Average pre-ODA	236	69
			Average ODA	5,248	830
			% change	2124%	1103%

1 Based on selected certification plans of similar complexity level from Cessna

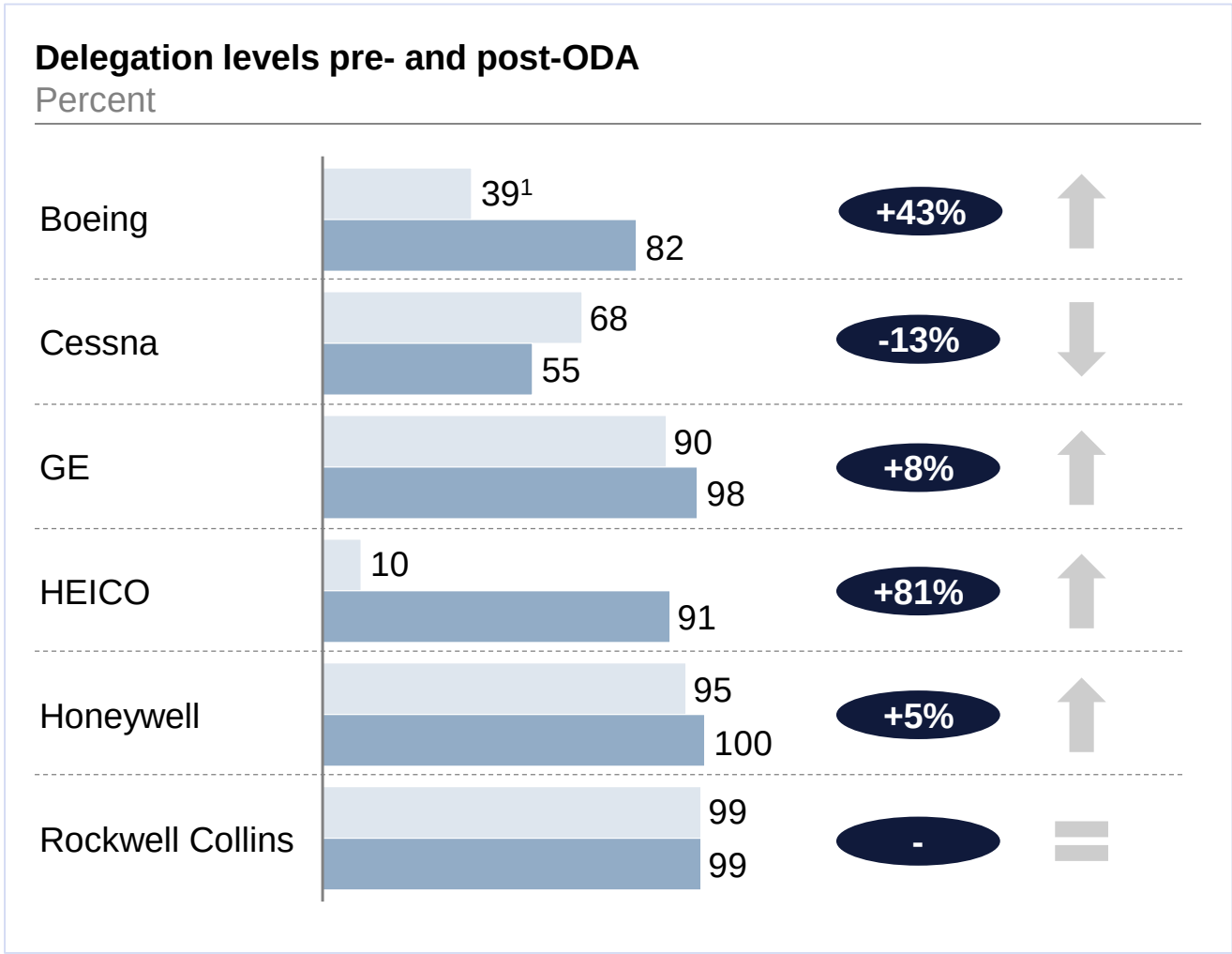
SOURCE: OEM interviews

2 Industry feels that ODA has not yielded the increase in delegation, prioritization and flexibility they expected

Value driver	Description	OEM and FAA viewpoints
Delegation	▪ There has not been a universal increase in delegation across all OEMs	**"We had hoped that ODA would increase our level of delegation, but in reality, there was very little change for us."**
Prioritization	▪ OEMs feel that under ODA the FAA has become more process-oriented rather than risk-based	**"We [the FAA] have DOIP audit discrepancies as requiring a recall or not requiring a recall and there is no further prioritization. We recognize that there should be."**
Flexibility	▪ Because ODA is very process-driven, OEMs feel that their flexibility and autonomy have decreased	**"ODAs have less flexibility than DERs or traditional FAA systems. It seems like the ODA is more stringent than DERs everywhere."**

SOURCE: OEM interviews

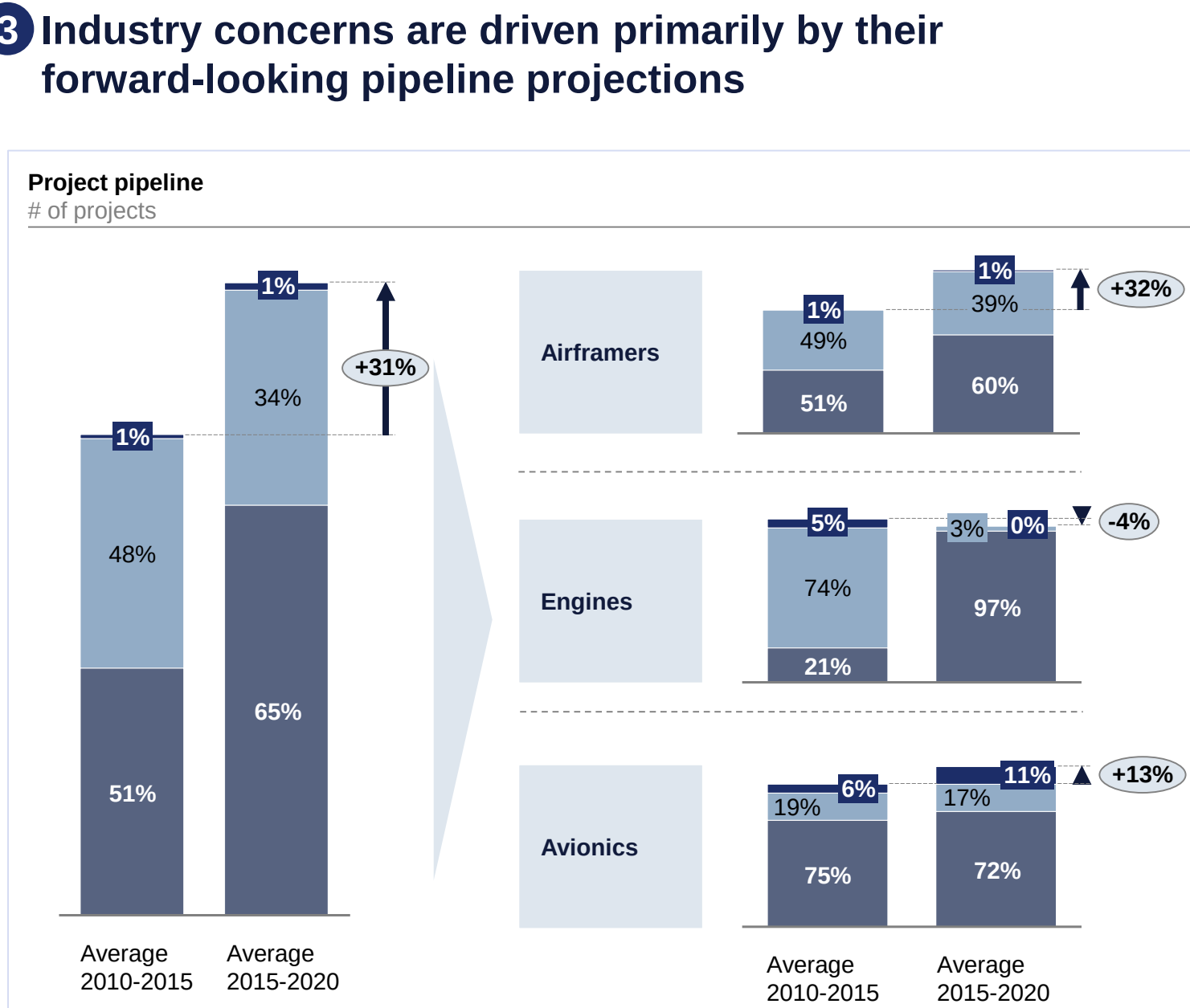
2 Many companies have seen an increase in delegation, but the trend has not been consistent across the board



1 Represents pre-DOA delegation level (~2006); Boeing delegation levels calculated on a by-project basis.

SOURCE: OEM interviews

3 Industry concerns are driven primarily by their forward-looking pipeline projections

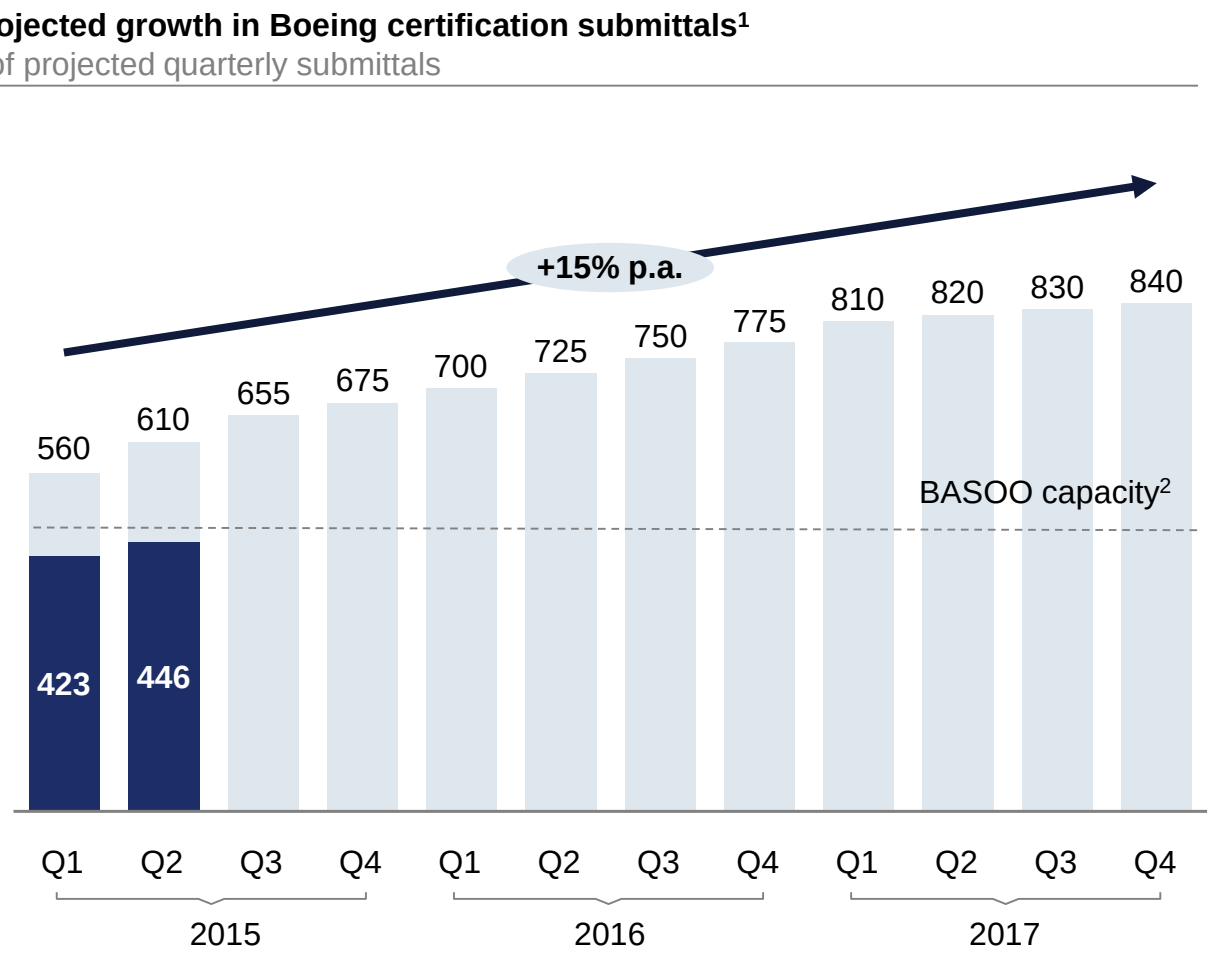


- **There are four major drivers for OEM development pipelines**
  - Increases in project development
  - Accelerating globalization
  - Increased demand for customization
  - New, innovative technologies
- **We can solve a portion of the pipeline problem by finding a system solution for what industry considers low complexity projects**

SOURCE: OEM internal data

3 OEM concerns reflected in Boeing's 15% projected annual growth in certificate submissions compared to current BASOO capacity

Projected growth in Boeing certification submittals[1]
# of projected quarterly submittals



If Boeing's projections of significant and sustained growth in certification submittals are realized, this may put additional pressure on already constrained FAA resources

1 Includes all certification submittals that require an FAA response (e.g., retained deliverable reviews, PNLs, EASA/FCAA, AMOC, flight test plans, issue papers); does not include oversight and procedures correspondence or submittals

2 Calculated based on 2013-2014 average completed submittals per quarter

SOURCE: Boeing Quarterly Certification Projections

3 There are three main areas in which certification activity can impact OEMs; industry is worried that these will be affected going forward

OEM value driver	Impact on OEMs
Setting of ambitious schedules	▪ "First movers" have the upper-hand in gaining market share for new products ▪ **Releasing a product a year later will mean delaying if not entirely forfeiting that revenue,** as new products from other suppliers will create obsolescence for your product at the same speed, simply **cutting a year out of peak revenue-generation for your product**
Adherence to set schedules	▪ Industry will often face customer penalties if they miss a deadline they set for EIS and subsequent deliveries ▪ **Although certification is rarely the cause of EIS delays, it's positioning at the end of the product development cycle means speed improvements can deliver cost avoidance** when critical path situations arise
Ability to bring innovative products to market	▪ Ability to innovate rapidly is a competitive advantage, especially as international players become more important

In the context of the growing pipeline, **industry is concerned that if nothing changes in the current certification structure** regarding delegation, prioritization and flexibility, **these three overarching goals will suffer**

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4 OEMs identified consistent pain points across five areas that they feel ODA has not yet overcome

Issue	Frequency, # of OEMs	Industry viewpoints	
Difficulty building certification talent	7	"We have a tough time getting talent into the ODA. We can't recruit easily, and the training is different from a DER even though the job is the same."	"We have a guy who has been doing test set-up conformity for 30 years, and he isn't allowed to be qualified as a UM due to a different two-year requirement."
Long turnarounds on PNLs, issue papers and retained findings	6	"Issue paper resolution is slow and the turnaround times for PNLs and UM appointments are too long. These have the potential to be critical path."	"One of our PNLs took over 200 days to turnaround, and when it was, there were no retained findings. How can they explain it taking that long?"
Low level of risk-based prioritization	6	"It's a check-the-box exercise. There is no process for prioritizing safety within the ACOs or between the OMT and the ODA leads."	"We have to do a full root-cause analysis for an LOI on using sticky notes. That's the same process as for a safety-related LOI. It's insane."
Adversarial mindsets and lack of trust	6	"It's a cultural thing. The FAA frontline wants to make findings, and people find it hard to transition to an auditor role."	"It often feels like the FAA frontline won't delegate more because they are afraid they won't have enough interesting work otherwise."
ODAs feel lack of flexibility and discretion	5	"The lack of ODA flexibility compared to the traditional FAA discretionary authority represents one of the most significant pain points for the company."	"Our customers are going to places down the road for aftermarket work because they use DERs instead of an ODA and can get the job done faster."

SOURCE: OEM interviews

5 ODAs find that experience and training requirements, and concurrence turnarounds for UMs make talent acquisition difficult

There are stricter requirements for UMs

Additional requirement

DAR/DMIR
FAA Order 8100.8D

- Must have 60 months of experience in making conformity determinations specific to authorizations sought, or
- Applicant must show evidence of 60 months experience with Quality Control methods and techniques

ODA UM
FAA Order 8100.15B

- Must have 60 months of experience in making conformity determinations specific to authorizations sought, or
- Applicant must show evidence of 60 months experience with Quality Control methods and techniques
- Each ODA UM determining conformity of compliance test set-ups must have 2 years of experience performing conformity inspections of compliance test setups per FAA ODA Order 8100.15 Section 3-5c(5)[1]

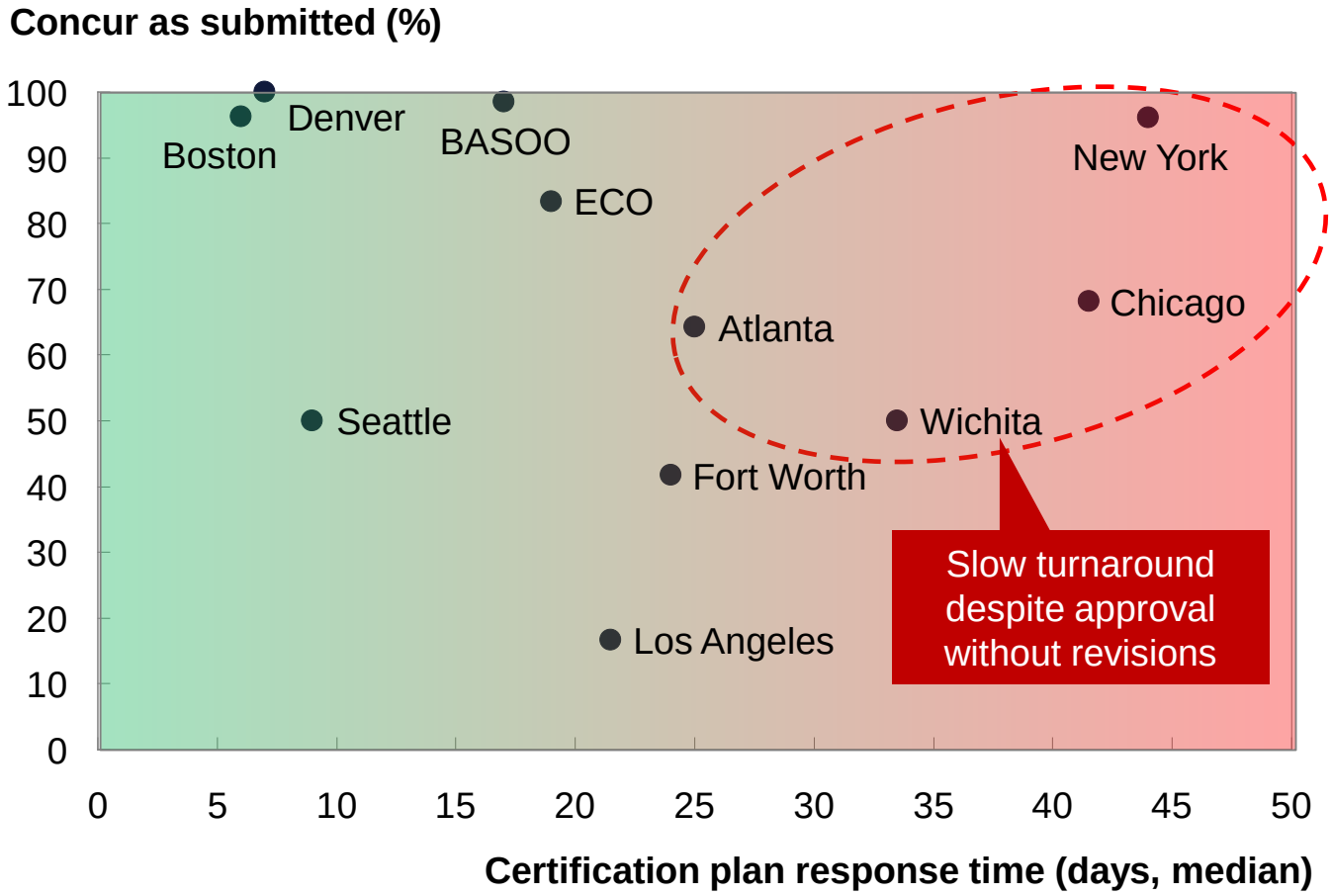
In addition to inconsistent and strict restrictions for UMs, OEMs highlight **two additional concerns for talent acquisition**:

- Redundant training and assessments
- Long turnaround times on UM concurrences

"We have a guy who has been doing test set-up conformity for 30 years, and he isn't allowed to be qualified as a UM due to the two-year requirement."

SOURCE: OEM interviews

6 Certification plan response time is often slow, despite a large portion of plans being approved without revisions



- At some ACOs, most certification plans are approved as submitted, without revisions
- However, there is no correlation between response time and concurrence as submitted
- Both small and large OEMs report a lack of transparency into the process

SOURCE: ACO Internal ODA Metrics from Q3 2014

7 OEMs and the FAA jointly identify issues with mindsets, but sometimes see different causes for the behavior

Perceived issue	OEM view	FAA view
"Finding" mindset	"Many in the FAA feel that they aren't adding any value unless they come up with findings. Otherwise they think they haven't played a role at all."	"Many of our engineers feel pressure to come up with findings. They believe they aren't doing their jobs well if they do not have findings."
Transitioning from "engineers" to "auditors"	"It often feels like FAA frontline workers just aren't implementing ODA in the form it was intended."	"Some on the frontline worry that the transition to ODA means transitioning from an engineer to an auditor role, so they retain more to avoid losing touch with the technical details."
Adversarial mindset	"It's hard to collaborate with the FAA sometimes. For example, when we brought a continuous improvement idea to them, they told us it was simply proof they should delegate less to us because we had found possible improvements."	"We often have trouble finding people with the right mindset for this job. We need people who want to work with OEMs, but many see the process as fundamentally adversarial."
Lack of trust	"It often feels like the FAA frontline doesn't trust us, and in return we tend not to trust them to delegate everything they should to us."	"The truth is, some of our people don't trust OEMs to put safety first, and that makes it difficult to feel comfortable fully delegating everything we can to the ODAs."
Lack of proactivity	"We keep waiting for the FAA to set the standards so we can follow them."	"We have the wrong people talking to Boeing…The standards staff waits for a PNL to come in instead of being the first point of interaction with the OEM on new technology."

SOURCE: Interviews, June & July 2015

8 While international authorities feel similar pain, they feel FAA digs into too many non-safety-critical details

Theme	International authority and OEM viewpoints
There are consistent pain points across aviation authorities	"EASA is highly involved in our projects… it is unnecessary and takes a significant amount of time for us to work with them"
	"For small players, the projects often get lost in the shuffle because there are other, more important matters from the big players"
The FAA is more involved in validation & compliance finding than its international counterparts	"When we need concurrence from FAA and EASA, by comparison the FAA is unnecessarily more demanding … they look at this because they've always looked at this"
	"The FAA process is very, very heavy from a tracking management, 'check the box' place."
Rule application is inconsistent across ACOs	"When somebody says I'm having trouble with the FAA, I always say: which FAA?"
	"In the U.S. there is not a harmonized system in place... The ACOs are like different cultural interpretations"

SOURCE: Interviews, June & July 2015

9 Boeing voiced five concerns with the current certification processes; some consistent with other industry players, others unique

Theme	Description	Representative quote
1 **Growing certification workload not matched by increase in FAA headcount**	▪ Major programs are increasing in scope and annual deliveries are expected to grow (from 700 to ~1,100/year) ▪ FAA headcount is forecasted as flat	**"We are looking at a tsunami of work over the next 5 years… given that we already have a backlog of work, the bottleneck is only going to get worse unless something changes"**
2 **Adversarial relationship and lack of trust**	▪ Both parties don't feel they are in a safety and compliance partnership ▪ Delegation is extremely low at project outset (e.g., 30%) and increases over life of project with little explanation	**"Our relationship has deteriorated to the point where every non-compliance finding is viewed as a systemic problem… as if we don't have a commitment to safety…"**
3 **FAA is not meeting agreed-upon turnaround targets**	▪ Timelines for receiving FAA feedback/approval are too long and unpredictable ▪ Between 50-60% of deliverables are completed after agreed-upon targets	**"We measure FAA and Boeing performance to standard flow; over 50% of FAA deliverables are completed after the standards we agreed upon"**
4 **Late breaking news/ issue papers**	▪ FAA interpretations of requirements are perceived as "coming late" – Pain is acute for cabin interiors ▪ Perception of new interpretations of standards or "moving goal posts"	**"We find out late in the process that there is a problem which was not raised by the FAA earlier… this causes us to involve more senior FAA leadership to get an answer"**
5 **Need for American competitiveness and a "level playing field"**	▪ EASA perceived as promoting Airbus more than FAA promotes Boeing ▪ EASA recognizes int'l standards which make for quicker/easier interactions ▪ International harmonization is lagging	**"The FAA is more reactive than EASA… EASA supports Airbus in a way that isn't mirrored by the FAA with us"**

SOURCE: Interviews, July and August 2015

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10 Performance data is not tracked comprehensively, and can be inconsistent with data tracked by industry

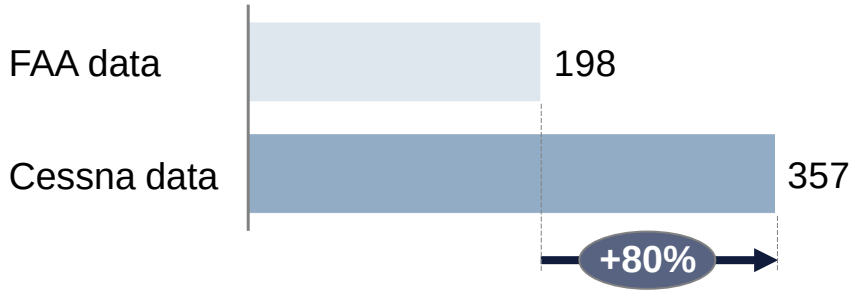
Gaps in performance data tracking

Some data is not tracked at all	▪ End-to-end issue paper resolution time ▪ End-to-end certification process time
Some data is not central or standardized	▪ PNL response time ▪ Issue paper tracking outside TAD
Data quality is often poor	▪ Less than 50% of records in the CPN database are complete ▪ Completion dates often entered incorrectly

Data inconsistency: Cessna example

Project code: ST5401WI-T, submitted 6/23/2010

Issue paper resolution time, days



Data inconsistency: HEICO example

Project code: PM14478AT-T, submitted 3/11/2014

Issue paper resolution time, days

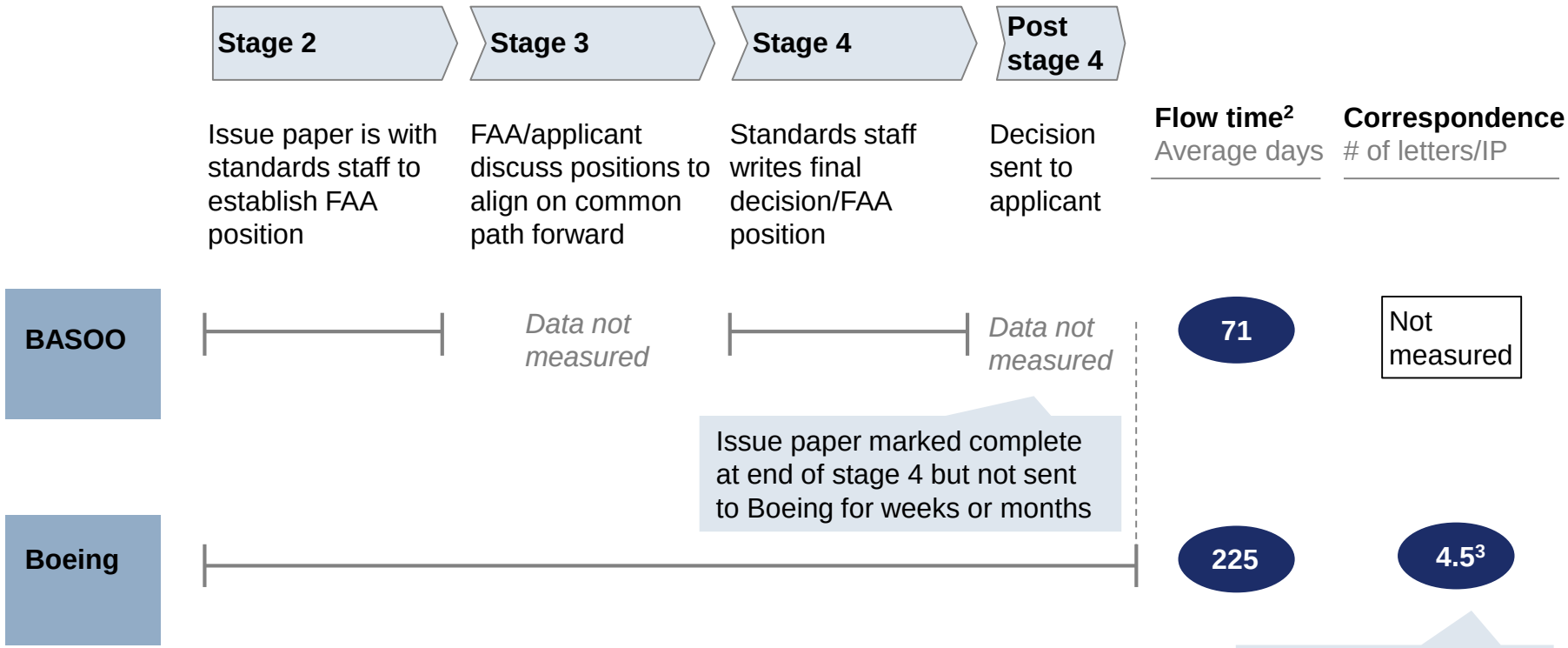
SOURCE: FAA TAD Issue papers database, Cessna certification project tracking data, HEICO certification project tracking data as of July 2015

10 Inconsistencies in measured metrics and conclusions between BASOO and Boeing demonstrate inconsistencies

Indicates data is recorded

Issue Paper process, stages 2-4[1]

Not drawn to scale



1 Stage 1 includes a description of the issue by the applicant; not shown here

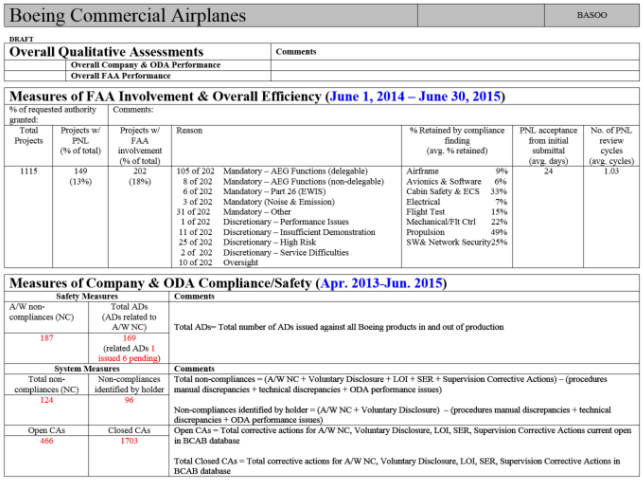
2 Flow times measured from March 2013 – March 2015

2 Average number of correspondence per issue paper for 787-9 program

SOURCE: TAD Issue Paper Database, Boeing Open Items List Metrics, Issue Papers from 787-9 program

11 Performance management tools and metrics vary widely across different ACOs

The ODA scorecard has improved national tracking of important metrics…



Boeing Commercial Airplanes — BASOO

DRAFT

Overall Qualitative Assessments — Comments

- Overall Company & ODA Performance
- Overall FAA Performance

Measures of FAA Involvement & Overall Efficiency (June 1, 2014 – June 30, 2015)

% of requested authority granted: Comments:

Total Projects	Projects w/ PNL (% of total)	Projects w/ FAA involvement (% of total)	Reason	% Retained by compliance finding (avg. % retained)	PNL acceptance from initial submittal (avg. days)	No. of PNL review cycles (avg. cycles)
1115	149 (13%)	202 (18%)	105 of 202 Mandatory – AEG Functions (delegable) 8 of 202 Mandatory – AEG Functions (non-delegable) 6 of 202 Mandatory – Part 26 (EWIS) 3 of 202 Mandatory (Noise & Emission) 31 of 202 Mandatory – Other 1 of 202 Discretionary – Performance Issues 11 of 202 Discretionary – Insufficient Demonstration 25 of 202 Discretionary – High Risk 2 of 202 Discretionary – Service Difficulties 10 of 202 Oversight	Airframe 9% Avionics & Software 6% Cabin Safety & ECS 33% Electrical 7% Flight Test 15% Mechanical/Flt Ctrl 22% Propulsion 49% SW& Network Security25%	24	1.03

Measures of Company & ODA Compliance/Safety (Apr. 2013-Jun. 2015)

Safety Measures		Comments
A/W non-compliances (NC)	Total ADs (ADs related to A/W NC)	Total ADs= Total number of ADs issued against all Boeing products in and out of production
187	169 (related ADs 1 issued 6 pending)	
System Measures		**Comments**
Total non-compliances (NC)	Non-compliances identified by holder	Total non-compliances = (A/W NC + Voluntary Disclosure + LOI + SER + Supervision Corrective Actions) – (procedures manual discrepancies + technical discrepancies + ODA performance issues) Non-compliances identified by holder = (A/W NC + Voluntary Disclosure) – (procedures manual discrepancies + technical discrepancies + ODA performance issues)
124	96	
Open CAs	Closed CAs	Open CAs = Total corrective actions for A/W NC, Voluntary Disclosure, LOI, SER, Supervision Corrective Actions current open in BCAB database Total Closed CAs = Total corrective actions for A/W NC, Voluntary Disclosure, LOI, SER, Supervision Corrective Actions in BCAB database
466	1703	

- Metrics include:
  - Number of projects with PNL
  - PNL turnaround speed (days)
  - % of requested authority granted
  - % projects with FAA involvement
- Industry sees ODA scorecard very positively, as a step in the right direction

…but there is still a lot of variation between ACOs in management tools and metrics, with some better off than others

	BASOO	ECO	LA	Wichita	Atlanta
Primary project tracking system	BTS[1]	CAWC[2]	LA-specific	WATS[3]	Share-Point
System owner	BASOO	GE	ACO	ACO	FAA
Accessible by OEM	✗	✓	✗	✗	✗
Target response time (days)	10-20	30	30+	45	30
Prioritization process	Email-based	Online system	OEM not in loop	Email-based	Email-based
Productivity or quality metrics	✗	✗	✗	✗	✗

1 Boeing Tracking System
2 Certification Airworthiness Web Center
3 Wichita Activity Tracking System

SOURCE: ACO manager interviews, July 2015

12 Frontline workers are recruited based on outdated skills needs: job descriptions contain less than 10 words on delegation and auditing

Job title: Aerospace Engineer (Propulsion) March 2015

Duties and Responsibilities: Incumbent serves as an Aerospace Engineer with responsibility for regulatory oversight of aircraft or rotorcraft certification programs and continuing operational safety in the propulsion technical discipline. Incumbent is responsible for applying safety management principles using engineering knowledge and risk management techniques. Responsibilities include review and evaluation of regulatory compliance for aircraft or rotorcraft certification projects and initiation of safety determinations for continuing airworthiness. Incumbent supervises and audits delegated organizations, individual products, and processes for compliance with applicable requirements. Incumbent also performs other duties as assigned.

Knowledge, Skills and Abilities (KSAs): (List each item)

1. **KNOWLEDGE OF FAA AIRCRAFT PROPULSION SYSTEMS.** Incumbent requires expert technical knowledge of Aircraft or Rotorcraft Propulsion systems in order to evaluate compliance with applicable requirements. Please provide information demonstrating your knowledge of Aircraft/Rotorcraft Propulsion Systems, level of involvement, and disciplines represented.
2. **KNOWLEDGE OF FAA CERTIFICATION REGULATIONS, POLICIES AND PROCEDURES FOR AIRCRAFT PROPULSION SYTEMS.** Incumbent must have a working knowledge of certification of Propulsion Systems of civil or military aircraft. Describe your experience which would indicate knowledge of Propulsion Systems and certification procedures for aircraft propulsion systems.
3. **ABILITY TO PLAN AND CARRY OUT THE IMPLEMENTATION OF NEW OR REVISED POLICIES, PROCEDURES AND PROCESSES IN AN ORGANIZATION.** Describe your experience in planning, scheduling, directing or fostering cooperation among project team members including yourself, to satisfactorily complete complex projects in a timely manner, or implement policies, procedures and processes. Be specific in terms of project management experience, including the project complexity, team member qualifications, and the degree of successful completion.
4. **ABILITY TO PREPARE CLEAR AND CONCISE WRITTEN DOCUMENTS.** Incumbent must prepare clear and concise documents to compel others to take a course of action, instruct others in carrying activities, or explaining the purpose, goals, and objectives of a policy or regulations. Please describe your experience in this area.
5. **ABILITY TO EXPLAIN, ADVOCATE AND NEGOTIATE WITH INDIVIDUALS AND GROUPS.** Incumbent must be able to explain, advocate and negotiate with individuals and groups internally and externally to resolve problems and achieve understanding of issues. Describe your experience in coaching, mentoring, supervising and collaborating with individuals and designated organizations. Give an example of a situation where you cooperated with co-workers, supervisors, managers, and/or customers to enhance a product or service or the success of the organization.

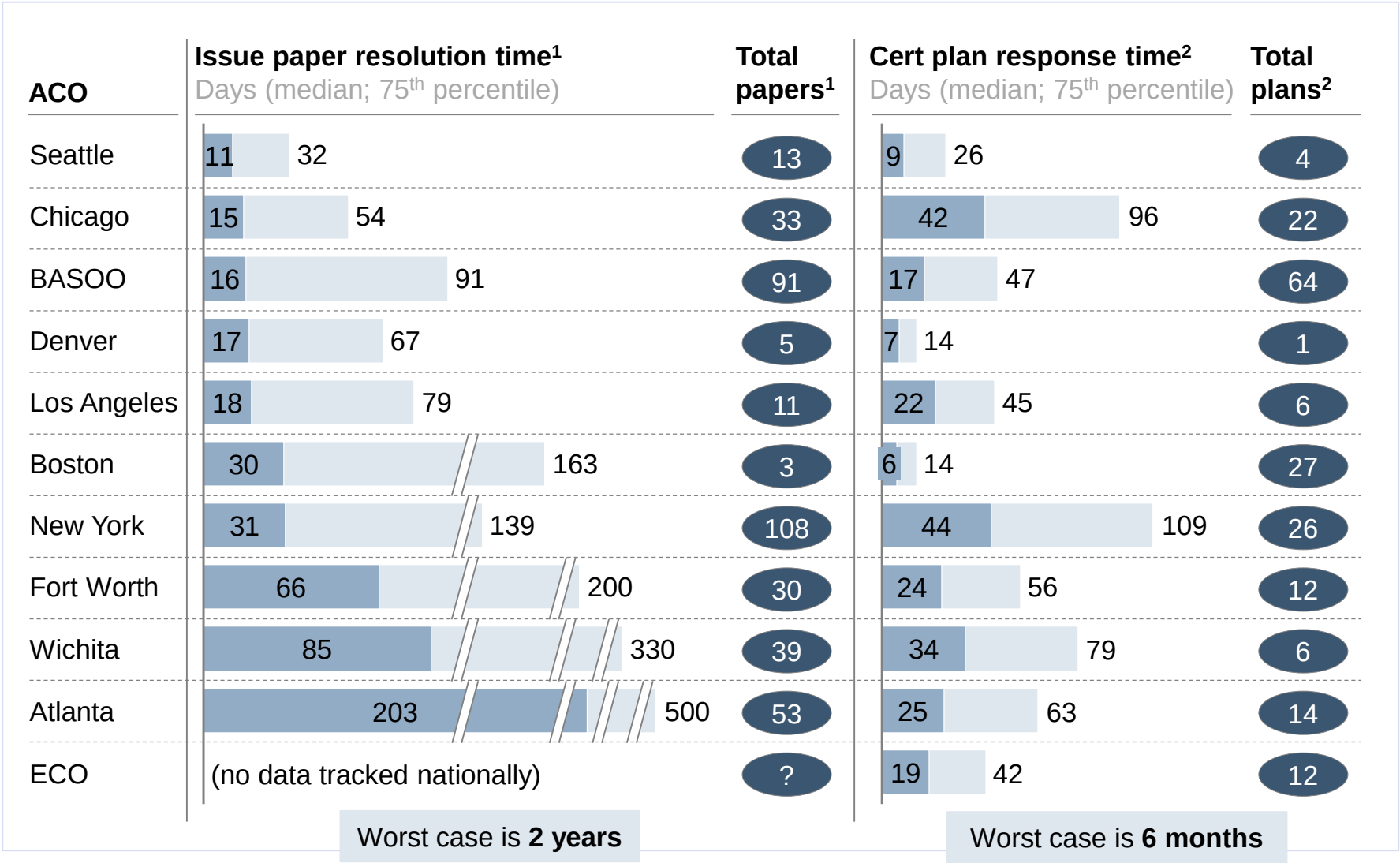
New skills added since ODA

“Supervises and audits delegated organizations”

“…Collaborating with… designated organizations”

SOURCE: FAA job description, Aerospace Engineer (Propulsion), Series 0861, Level 3, Pay Band I, March 2015

13 Certification process flow times vary widely across different ACOs



1 Transport Airplane issue papers resolved from 3/1/2013 to 3/1/2015; no data tracked nationally for other Directorates
2 Certification plans responded to during Q3 2014; no reliable data is available nationally for any other quarter

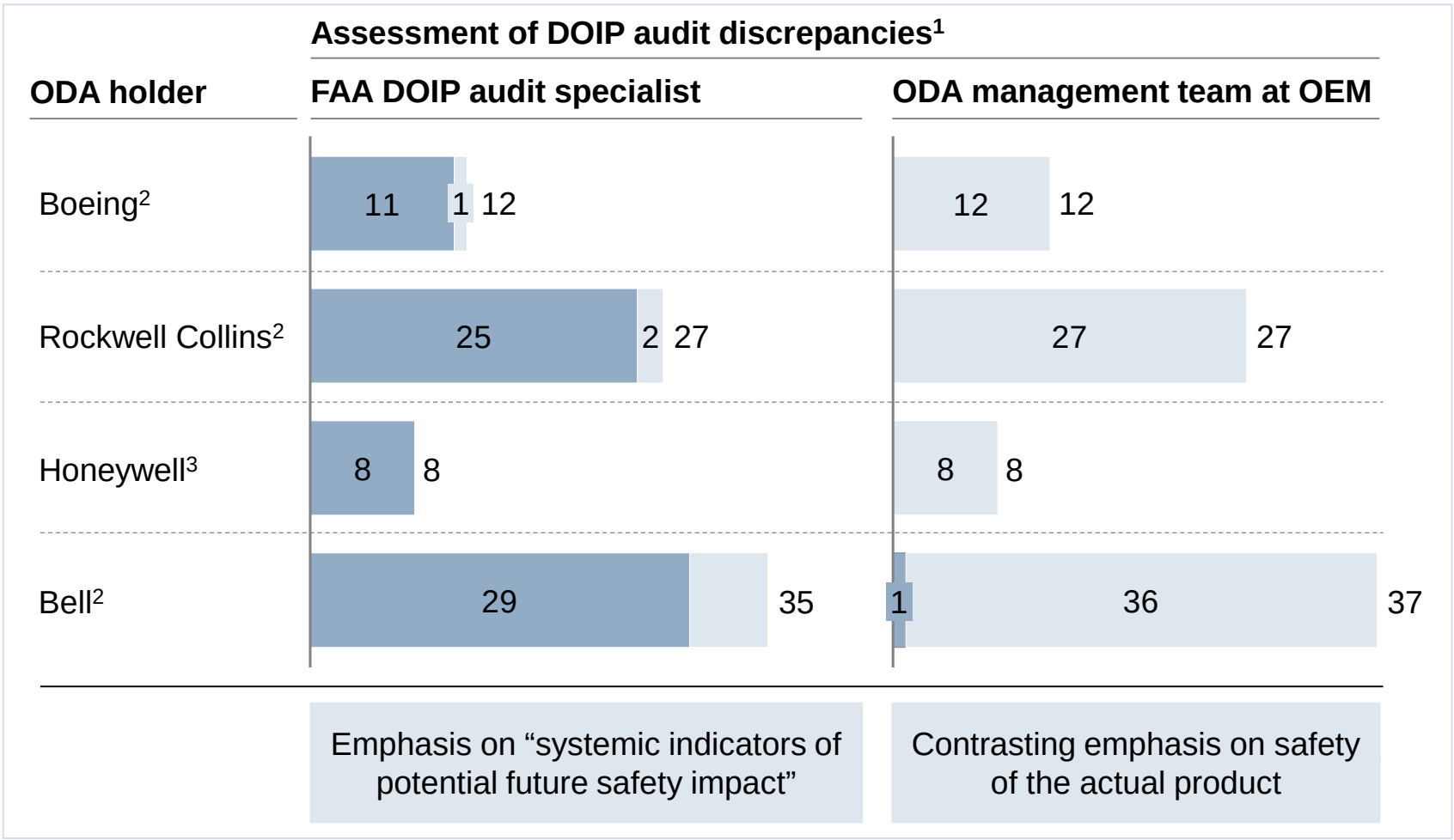
SOURCE: ACO Internal ODA Metrics from Q3 2014; TAD Issue Paper Database

14 ACOs apply regulatory standards inconsistently, according to examples cited by industry

Case study	Context	Description	Impact
Inconsistent uses of issue papers	▪ STC for a standby flight display ▪ STC was to be applied to a part 27 helicopter	▪ Three months after the STC was submitted, the FAA informed the applicant that there would be **an additional issue paper required** for the lithium ion battery in the display ▪ **Three years earlier, another company that obtained a part 27 STC** for the same standby flight display through a different ACO, **did not have to meet the requirements of the issue paper** ▪ In the intervening three years **there had been no change in the regulatory requirements**	▪ Certification **delay of ~3 weeks** ▪ **$19,000 in additional testing and qualification**
Inconsistent standards application between individuals	▪ STC for a GPS navigation unit ▪ STC was to be applied to a part 29 helicopter	▪ The GPS unit, with integral waypoint display, was installed on the center console of the helicopter, **in accordance with AC 20-138, in a "location readily accessible to the pilot"** ▪ **The FAA test pilot stated that the display had to be in the pilot's primary field of view, and that the AC guidance would not be permitted** to be used in this case ▪ The applicant viewed this as the **FAA test pilot applying a personal airworthiness standard that did not go through the regulatory process** prescribed by the Administrative Procedures Act, and denied use of FAA approved guidance	▪ The **GPS unit had to be removed and the helicopter was delivered to the customer without it** because there was no room for the display in the primary field of view ▪ The applicant views the GPS as a safety enhancing feature and therefore sees its removal as a **denial of safety-enhancing technology**

SOURCE: Industry interviews, July 2015

15 FAA and industry disagree on what "good compliance" looks like, and the safety-relevance of DOIP audit findings



1 Based on an ex post qualitative assessment of discrepancy records; not part of mandatory DOIP audit procedures
2 DOIP audit in FY 2014
3 DOIP audit in FY 2015

SOURCE: DOIP audit data; internal FAA analysis

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- **Discussion stations**
  - Strategy
  - Management systems
  - Organization
  - Change management

AIR vision:
group discussion stations

Federal Aviation Administration

November 3, 2015

AIR is undertaking a transformation to achieve safer and more efficient aircraft certification

Aircraft certification transformation

Refresh certification strategy

- 1-4 Ensure appropriate support of standards activities
- 5-6 Minimize unnecessary involvement in critical path
- 7-8 Implement risk-based systems oversight

Invest in management systems to improve performance

- 9 Measure performance with goals and targets
- 10 Improve governance and operating norms
- 11 Invest in new tools and infrastructure

Improve organization and invest in our people

- 12 Adapt organization to execute on certification strategy
- 13 Invest in people and build skills to empower the workforce of the future

Change management

- 14 Help organization embrace holistic transformation by creating clear communication channels with our people

Industry commitments

Embrace systems safety with a compliance culture, engage FAA early on innovation, and work with FAA on performance management

Improving safety and efficiency will require shifts in certification strategy across three functions

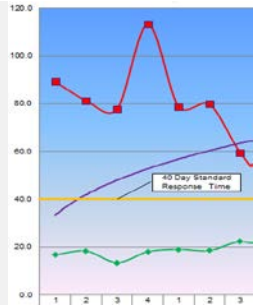
Ensure appropriate support of standards activities	1. Partner with applicants to prioritize and implement policies for emerging technologies 2. Reduce issue paper workload through timely generation of policy and guidance (e.g., MOC for existing technologies) 3. Update priority regulations for Transport, Engine, and Rotorcraft, ensuring standards are performance based and update associated directives, orders, and guidance 4. Pursue international reciprocity and harmonization by involving senior leadership, executing on existing initiatives, and communicate results to industry and the FAA
Minimize unnecessary involvement in the certification critical path	5. Pursue key existing initiatives to accelerate delegation based on regulatory area and organizational maturity (e.g., Applicant Showing, NoPNL, ICA, EWIS, Noise) 6. Take a functional approach to increasing delegation where warranted on low-risk functional disciplines that create the most friction; begin with assessing FAA involvement in cabin interiors
Implement risk- and performance-based systems oversight	7. Develop systems-level oversight at FAA by building and leveraging applicant and ODA capabilities and responsibilities 8. Adapt FAA oversight program to fully incorporate risk and applicant performance

Initiatives to improve management systems across three areas will support a more efficient and effective governance approach to certification

Measure performance and health

9 Measure performance and health with clear goals and targets

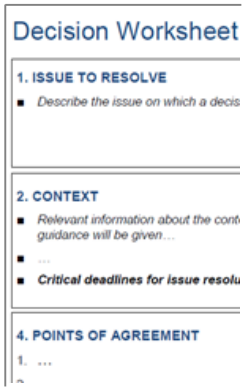
- Adopt a standard set of **performance metrics** to be tracked to improve efficiency, quality, involvement, relations, and effectiveness
- Adopt **national targets** for all metrics, with a process for **local refinement**
- Adopt refinements to the **ODA scorecard**



Improve governance processes and operating norms

10 Improve governance processes and operating norms

- Adopt protocols for **internal performance review** meetings, to drive improvements in efficiency, quality, involvement, relations & effectiveness
- Adopt protocols for **joint performance review** meetings with applicants
- Adopt new process for **issue resolution** with applicants, supported by a practical set of templates
- Establish **national leadership** for performance management (AIR-330)



Invest in tools and infrastructure

11 Invest in new tools and infrastructure to professionalize operations

- Leverage proven local IT tools for performance management: spread nationally, ensure central accessibility of data, and empower local agile IT
- Invest in dedicated local IT support roles, processes & skills development

The change management program should help the organization embrace holistic transformation from HQ to the frontline

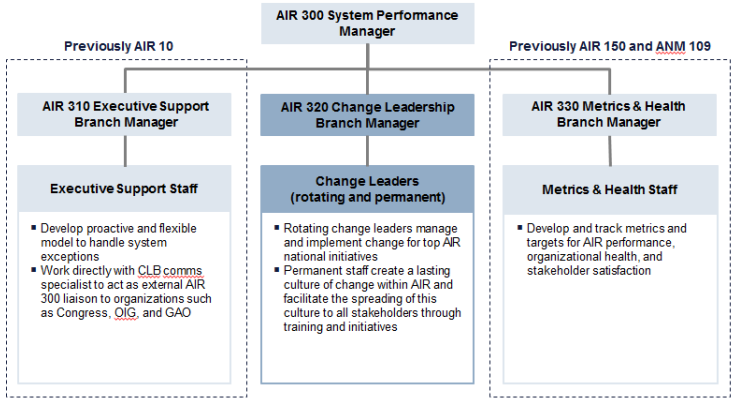
14 Help organization embrace holistic transformation by creating clear communication channels with our people

AVS and AIR leaders communicate an integrated vision

- FAA Administrator and senior AVS and AIR leaders serve as direct champions of the program
- Develop personal change stories and communicate the importance of the program to internal FAA management and industry colleagues
  - Will assist in the communication of AIR's new operating model to Congress
  - Will also help secure buy-in from AIR employees
- Cascade the message throughout the entire organization and to industry stakeholders

New Change Leaders organization drives change management associated with initiatives to realize vision

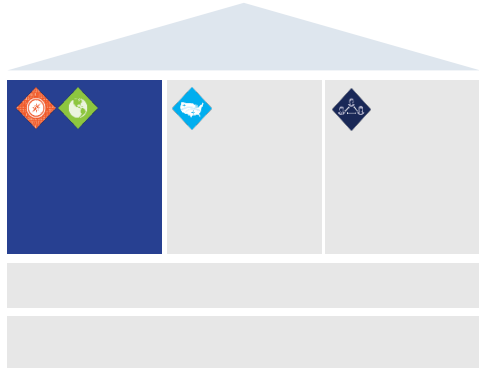
- Stand-up innovative and action-oriented group, motivated to proactively solve problems
- Focus on selecting, managing, and implementing change for AIR strategic initiatives
- Develop exceptional leaders who work with and through FAA and industry stakeholders, and effectively communicate the change plan



ACMT supporting materials

- **Gallery walk**
  - ODA experience
  - Industry viewpoints
  - Internal pressures
  - Organization
- **Discussion stations**
  - **Strategy**
    - Strategy appendix
  - Management systems
  - Organization
  - Change management

Section A: Ensure appropriate support of standards activities



1 Partner with applicants to prioritize and implement policies for emerging technologies

Industry and FAA often engage late on new technologies, leading to lagging standards issues during project timelines. FAA is not consistently perceived as the ‘gold standard’ for innovation. Recommendation is to partner with applicants to prioritize and implement policies for emerging technologies.

2 Reduce issue paper workload through timely generation of policy and guidance (e.g., MOC for existing technologies)

The issue paper process is a significant industry pain point and is too heavily relied on to establish compliance to regulations. Recommendation is to clarify and update guidance on areas which contribute – in the past or present – to confusion or over-reliance on issue papers in order to make establishing MOC faster and more efficient.

3 Update priority regulations for Transport, Engine, and Rotorcraft, ensuring standards are performance based and update associated directives, orders, and guidance

A relatively small number of regulations drive an outsized amount of FAA work and friction with industry. In most cases, these regulations are considered too prescriptive and cannot keep pace with changing technology. Recommendation is to identify and amend key regulations for Transport, Engines, and Rotorcraft that would have significant positive economic or safety impact.

4 Pursue international reciprocity and harmonization by involving senior leadership, executing on existing initiatives, and communicate results to industry and the FAA

Industry cites the lack of regulatory harmonization and reciprocity (particularly with emerging regulatory authorities) as a major certification pain point which impacts cost and schedule. Recommendation is to pursue international reciprocity and harmonization through senior leadership, by following through on initiatives in progress, and with a communication briefing.

1 Partner with applicants to implement policies for emerging technology

Industry and FAA often engage late on new technologies, leading to lagging standards issues during project timelines. FAA is not consistently perceived as the 'gold standard' for innovation. Recommendation is to partner with applicants to prioritize and implement policies for emerging technologies.

	Key activities	Date
A Work year 1 technology areas	▪ Identify 3 technologies from industry list[1] as 2016 priorities	▪ 2015
	▪ Hold semi-annual working sessions with relevant industry players to develop FAA expertise and understand most likely technology applications	▪ 2016
	▪ Assign specific standards staff to work guidance and implications for selected areas (number of FTE TBD based on product timeline and degree of novelty)	▪ 2016
B Stand up innovation and technology organization (leads to new innovation function in AODC)	▪ Establish processes to institutionalize – Includes developing processes for working session cadence (>semiannual), knowledge management, coordination with standards function, and performance management	▪ 2016
	▪ Use CSTAs to partner with industry on priority emerging technology areas and proactively advise and drive standards	▪ 2016
C Develop process for industry to engage FAA on emerging technologies	▪ Develop simple process which does not require a project number to engage in dialogue with FAA on emerging technology for upcoming project – Emerging Means of Compliance (EMOC) procedures used with GE should be considered as a way to standardize the interaction to Industry and FAA benefit	▪ 2016
	▪ Prototype module with 2-3 key applicants	▪ 2017
	▪ Incorporate lessons learned and rollout module nationally	▪ 2017

1 Top 6 emerging technology areas identified by industry: Software and integrated systems, electric and hybrid propulsion, structures/new materials, security (onboard network systems), batteries/power storage, and UAV. Need to expand list to include truly emerging technologies.

No existing initiatives underway

2 Reduce issue paper workload through timely generation of policy

The issue paper process is a significant industry pain point and is too heavily relied on to establish compliance to regulations. Recommendation is to clarify and update guidance on areas which contribute – in the past or present – to confusion or over-reliance on issue papers in order to make establishing MOC faster and more efficient.

	Key activities	Date
A Standardize use of issue lists across directorates	▪ Convene standards staff managers to discuss wide variance in how issue lists are managed across directorates[2], and decide on a common approach (purpose, taxonomy, publishing permissions, frequency, other approaches) ▪ Formalize and agree on common approach across directorates ▪ Implement standardized approach & top-down guidance for existing MOCs	▪ 2015
B Establish targets and determine necessary resources	▪ Determine status of MOC issues (i.e. stable, unique, currently refining, or unnecessary) to establish number of addressable topics, by discipline ▪ Evaluate number and timeline of existing policy in process, by discipline ▪ Set overall 12 month targets by discipline using average work rates[3] ▪ Determine FTE implication and ensure adequate and appropriate roles/staff	▪ 2016
C Create dedicated tiger teams to meet year 1 targets	▪ Commission small team at each directorate to work addressable topics ▪ Publish guidance to meet year 1 targets by discipline – Establish monthly forums to review progress against targets – Re-allocate resources and management support as necessary	▪ 2016 ▪ 2016
D Institutionalize process for budgeting/ planning in future years	▪ Confirm that issue lists are managed across directorates in standard way ▪ Share best practices across directorates ▪ Conduct analysis of issue papers by status to identify priority policy gaps ▪ Set targets for updating policy and work through mindset/behavior change management to overcome reliance on existing issue paper processes	▪ 2016

1 5-6 Transport, 2 Engines, 2 Rotorcraft, 1-2 Small airplane
2 See page for initial inventory of differences in how issue lists are managed across directorates
3 See page for Transport estimates of work rates which could be adapted for each directorate

No existing initiatives underway

3 Update priority regulations and guidance to ensure they are performance-based

A relatively small number of regulations drive an outsized amount of FAA work and friction with industry. In most cases, these regulations are considered too prescriptive and cannot keep pace with changing technology. Recommendation is to identify and amend key regulations for Transport, Engines, and Rotorcraft that would have significant positive economic or safety impact.

	Key activities	Date
A Prototype joint effort between TAD and Boeing to identify top candidates for amendment	▪ Develop initial set of regulatory candidates for amendment – Examine the histogram of non-compliances by regulatory area[1] and other oversight or self-audit data; conduct FAA and industry interviews ▪ Develop recommendations for necessary changes to supporting policy ▪ Develop integrated outline of proposed changes	▪ 2016
B Replicate process for Rotorcraft and Engines with key applicants	▪ Incorporate lessons learned from TAD/Boeing and conduct similar exercise with Rotorcraft and Engines with key applicants ▪ Develop cross-directorate list of prioritized regulations with broad outline of proposed changes to rules and policy/guidance ▪ Include in FAA-wide rulemaking priorities	▪ 2017
C Convene broader industry-FAA stakeholders to develop recommendations	▪ Vet set of recommended regulation amendments and make adjustments to list or proposed amendments as necessary (e.g., through ARAC, ARC) – Identify appropriate list of invitees from FAA, OEMs, and industry groups – Set up small teams to conduct deep dives on proposed changes	▪ 2018
D Make necessary changes to supporting policy and frontline behavior	▪ Convene task force to examine implications of rule changes to complete set of policies, orders, and guidance and make necessary adjustments ▪ Conduct management review of frontline decision-making after new regulations/policy are established, particularly for new MOC ▪ Rollout any necessary change management	▪ 2018

1 25.1301, 25.1309, 25.853, 25.863, 25.561, 25.601, and 25.305 should be examined as a starting place, per Boeing non-compliance data

NORSEE ▬ Avionics Certification & 1788 ▼
Part 23 rewrite ▲ Part 27/29 Rewrite ▼

4 Pursue international reciprocity and harmonization

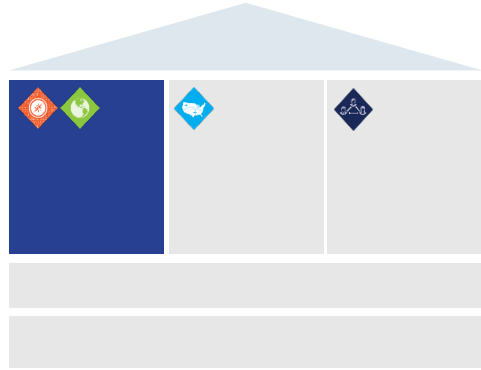
Industry cites the lack of regulatory harmonization and reciprocity (particularly with emerging regulatory authorities) as a major certification pain point which impacts cost and schedule. Recommendation is to pursue international reciprocity and harmonization through senior leadership, by following through on initiatives in progress, and with a communication briefing.

	Key activities	Date
A Pursue top-down international reciprocity through senior leadership involvement	▪ Communicate goal and roadmap for full reciprocity between FAA, EASA and, TCCA; minimize exceptions ▪ Build FAA leadership (including AOA-1 and congressional support if necessary) buy-in for reciprocity ▪ Repurpose CMT Harmonization Teams toward achieving reciprocity	▪ 2015
B Execute on eight international initiatives already in progress	▪ Secure full alignment between AIR-400 and AIR management team on suite of initiatives in progress to be completed within the next 12-15 months[1] ▪ Develop simple project management dashboard so that progress can be tracked against expected timeline ▪ Make adjustments to resources and priorities as necessary	▪ 2015 ▪ 2015
C Develop and publish communication briefing to Industry and FAA	▪ Decide on appropriate communication media ▪ Execute on communication briefing that tells story about the past, present, and future of FAA efforts to lead international reciprocity and harmonization	▪ 2016

Harmonization Teams	▲	IPSOE[2]	▼
FCAA Post-Validation Audit	▲	MCAI	▬
Standard IPA Template	▬	BMAV	▬
Int'l risk-based validation	▲	Training Academy	▼

1 See supporting page for full inventory of initiatives underway
2 International Production and Supplier Oversight Enhancements

Section B: Minimize unnecessary involvement in the certification critical path



5 Pursue key existing initiatives to accelerate delegation based on regulatory area and organizational maturity (e.g., Applicant Showing, NoPNL, ICA, EWIS, Noise)

Increasing delegation to industry while maintaining safety represents a critical opportunity to maximize the benefits of ODA. Recommendation is to pursue key initiatives that eliminate any unnecessary FAA involvement for low risk areas.

6 Take a functional approach to increasing delegation where warranted on low-risk functional disciplines that create the most friction; begin with assessing FAA involvement in cabin interiors

Relatively few functional disciplines account for most of the friction between industry and FAA in terms of different perceptions of safety. Recommendation is to take a functional approach to increasing delegation where warranted, beginning with cabin interiors.

5 Pursue key existing initiatives to accelerate delegation

Increasing delegation to industry while maintaining safety represents a critical opportunity to maximize the benefits of ODA. Recommendation is to pursue key initiatives that eliminate any unnecessary FAA involvement for low risk areas.

	Key activities	Date
A Deliver on current initiatives underway	▪ Deliver policies and procedures for the following initiatives: – **LOPI** – Incorporates criteria established in Applicant Showing Memo into policy and instructs workforce on making risk-based decisions – **NoPNL** – Policy change for STC ODAs with good performance to proceed without PNL for routine projects ▪ Prototype **Applicant Showing** (ASO) with 1-2 ODAs and conduct review to capture lessons learned ▪ Prioritize and approve ODA applications for **ICA** delegation (e.g., Cessna), working with AFS	▪ 2015 ▪ 2015 ▪ 2015 ▪ 2015
B Remove mandatory FAA involvement for additional low risk areas	▪ Develop and rollout national policies, training, and application material: – **EWIS** – Part 26 ageing wiring rules – **Noise and Emissions** – Emissions work complete – **Fly Once** – Currently in prototype with Gulfstream	▪ 2016
C Determine next opportunities to reduce unnecessary involvement	▪ Develop and rollout policies and procedures to address remaining opportunities: – Examine national ODA scorecard rollup to determine largest remaining sources of FAA engagement: PNL approval, project-level involvement for discretionary or mandatory reasons, and retained findings – Take a data-driven approach to identifying next largest opportunities for reduced involvement while maintaining safety	▪ 2016

LOPI	▬	EWIS	▲	Applicant Showing	▲
NoPNL	▬	Noise & Emissions	▲	ICA	▲

Fly Once	▲

6 Take functional approach to increasing delegation where warranted

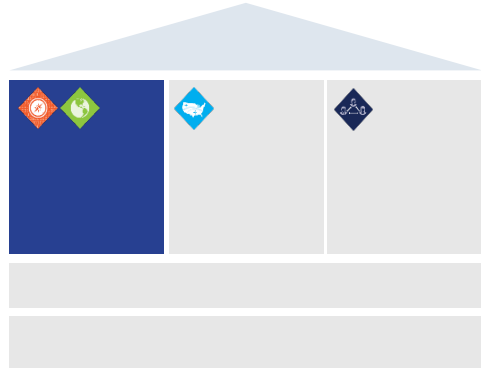
Relatively few functional disciplines account for most of the friction between industry and FAA in terms of different perceptions of safety. Recommendation is to take a functional approach to increasing delegation where warranted, beginning with cabin interiors.

	Key activities	Date
A Align as leadership team on scope and potential solution set	▪ Agree on range of available solutions for delegating cabin interiors – Establish conditions under which FAA is willing to delegate MOC function to some ODAs, if any – Establish conditions under which FAA is willing to expand MOC ranges ▪ Establish safety or performance thresholds in advance of recommendations (i.e. what is the bar that needs to be met?)	▪ 2015
B Conduct cabin interiors review to determine FAA level of involvement	▪ Commission joint committee on FAA involvement in cabin interiors with broad representation from industry, FAA, and potentially other mature aviation regulators (EASA, TCCA) – Conduct comprehensive safety risk assessment on cabin interiors, including historical accidents, CAST, in-service data, and COS data (where and how people have been injured) – Conduct probability analysis relative to other adverse events ▪ Develop recommendations for FAA involvement ▪ Provide top-down guidance/policy to FAA frontline and industry based on evaluation of recommendations	▪ 2017
C Prioritize second functional area	▪ Consider Avionics or Flight Controls as next priority functional discipline ▪ Incorporate lessons learned from cabin safety effort, commission joint working team, and provide top-down guidance to FAA frontline and industry based on evaluation of recommendations	▪ 2019

1 See page for inventory of initiatives underway

No existing initiatives underway

Section C: Implement risk- and performance-based systems oversight



7 Develop systems-level oversight at FAA by building and leveraging applicant and ODA capabilities and responsibilities

Applicants and ODAs have not developed the necessary systems and processes to enable effective FAA (3rd tier) systemic oversight. The FAA has an opportunity to transition responsibilities for ensuring compliance upstream and thus better enable safer and more effective FAA oversight.

8 Adapt FAA oversight program to fully incorporate risk and applicant performance

Diagnostic found that FAA systemic oversight activities were focused unproductively on aspects that have little impact on safety, at a level of detail that does not adequately account for the ODA's proven track record of performance. Recommendation is to target FAA oversight, based on quantitative assessments of: (a) safety risk to the NAS, and (b) ODA performance.

7 Develop systems oversight by building applicant and ODA capabilities

Applicants and ODAs have not developed the necessary systems and processes to enable effective FAA (3rd tier) systemic oversight. The FAA has an opportunity to transition responsibilities for ensuring compliance upstream and thus better enable safer and more effective FAA oversight.

	Key activities	Date
A Streamline key ODA manuals and improve revision processes	▪ Select 1-2 priority OEMs to participate in ODA manual revision process ▪ Establish dedicated FAA-OEM working team to work through backlog of change requests and remove additional unnecessary sections/language ▪ Prioritize 1-2 additional OEMs and repeat exercise, incorporating feedback ▪ Centralize group which handles revision requests and standardize process	▪ 2016
B Educate applicant on compliance management and verify system maturity	▪ Develop education materials that articulate expected 1st tier responsibilities ▪ Hold sessions with key applicants to introduce concepts and get feedback ▪ Prototype change management program with 1-2 key applicants ▪ Roll out program to applicants with sufficient organizational maturity ▪ Verify maturity using compliance culture survey and targeted interviews	▪ 2018
C Transition ODA role to conduct independent risk-based oversight of applicant	▪ Adapt risk- and performance-based oversight program developed by FAA (see recommendation #7) to program which can be administered by ODA ▪ Organize dedicated ODA “oversight” role and conduct prototype ▪ Develop policy and orders in support of change and make transition final	▪ 2018
D Transition FAA role to conduct systemic risk-based oversight of ODAs	▪ Prototype systemic oversight of single ODA – Validate ODA audits – Validate OEM self-audits – Conduct primary oversight as necessary ▪ Develop roadmap and criteria for transitioning all qualified ODAs	▪ 2019

No existing initiatives underway

8 Adapt FAA oversight to fully incorporate risk and applicant performance

Diagnostic found that FAA systemic oversight activities were focused unproductively on aspects that have little impact on safety, at a level of detail that does not adequately account for the ODA's proven track record of performance. Recommendation is to target FAA oversight, based on quantitative assessments of: (a) safety risk to the NAS, and (b) ODA performance.

	Key activities	Date
A Use safety risk to target FAA oversight	▪ Define the process for quantifying safety risk of each oversight area (subsystem) and criterion (list of 18 in the order) – sources will include portions of the RBRT questionnaire, the CPL, and FAA expert panels	▪ 2016
	▪ Define the process for adjusting the level of oversight in each area and criterion, based on safety risk assessment	▪ 2016
	▪ Test the new process in a prototype program at one ODA – Use RBRT and CPL as tactical proxies for safety risk	▪ 2016
	▪ Incorporate lessons learned and roll out process to all offices and ODAs, codifying it in the form of an IT tool (e.g. spreadsheet) and a policy memo	▪ 2017
B Use ODA performance to target FAA oversight	▪ Define the rubric for quantifying ODA performance in each oversight area (subsystem) and criterion (list of 18 in the order) – rubric will include past track record of "unsat" findings, design changes, self-audit findings, FAA audit findings, COS issues, and AD's	▪ 2016
	▪ Define the process for adjusting the level of oversight in each area and criterion, based on ODA performance assessment	▪ 2016
	▪ Test the new process in a prototype program at one ODA – Use history of noncompliances as a tactical proxy for ODA performance	▪ 2016
	▪ Incorporate lessons learned and roll out process to all offices and ODAs, codifying it in the form of an IT tool (e.g., ODA scorecard spreadsheet) and a policy memo	▪ 2017

ODA scorecard ▲ Risk-based ODA oversight ▲

ACMT supporting materials

- **Gallery walk**
  - ODA experience
  - Industry viewpoints
  - Internal pressures
  - Organization
- **Discussion stations**
  - **Strategy**
    - **Strategy appendix**
  - Management systems
  - Organization
  - Change management

OEMs indicated several areas of emerging technology which could serve as a starting point for initial collaboration

Priority areas (identified by several OEMs)

Emerging technology area	Representative industry quote
Software and integrated systems	"Airplanes are becoming increasingly integrated via software and this represents a critical innovation area for us."
Electric and hybrid propulsion	"Engines haven't seen very much innovation over the past 25 years but we are on the eve of major step changes…"
Structures/new materials	"Advances in composites and other materials throughout the fuselage are demonstrating improved efficiency and safety."
Security (onboard network systems)	"Given new and heightened security requirements we need better standards and guidance from the FAA."
Batteries and power storage	"Advances in power storage are making old definitions of batteries obsolete – we need better guidance."
Unmanned Aerial Vehicles (UAV)	"We know that UAV technology has arrived in the commercial market… we need to know how this affects us."
Safety-enhancing tech: avionics, traffic and weather avoidance systems	"Bread and butter advances to promote safety should be a regular area of collaboration in terms of new technology…"
Communication, navigation, and surveillance equipment	"There haven't been major advances but it would be good to have conversations before submitting a project…"
Rotary wing fly-by-wire and integration of flight control via computer system	"Emerging technologies are always prioritized for fixed wing aircraft… we always feel 10 years behind on guidance."

Next steps:

- Identify 2-3 technologies as 2016 priorities with input from CSTAs and industry
- Hold working sessions to develop better understanding of technology and applications
- Assign standards staff to develop FAA guidance and policy

Clarifying regulatory 'gray areas' can begin with standardizing how lists of known issues are managed, shared, and updated

	Repository name	Permissions	Publishing Frequency	Number of issues[1]
Transport Airplane	TAI List	▪ Public ▪ Private	▪ Quarterly ▪ As needed	181
Small Airplane	Significant Project Lists (SPL)	Private only (desire to make public but facing technical barriers)	As necessary	52
Engine Propeller	Policy List Memo	N/A – memo sent to ACOs that collects 'policy' for awareness	▪ Semi-annual	Not tracked
Rotorcraft	Significant Project Lists (SPL)	Private only	Has not been updated for some time – to be updated by September 2015	50

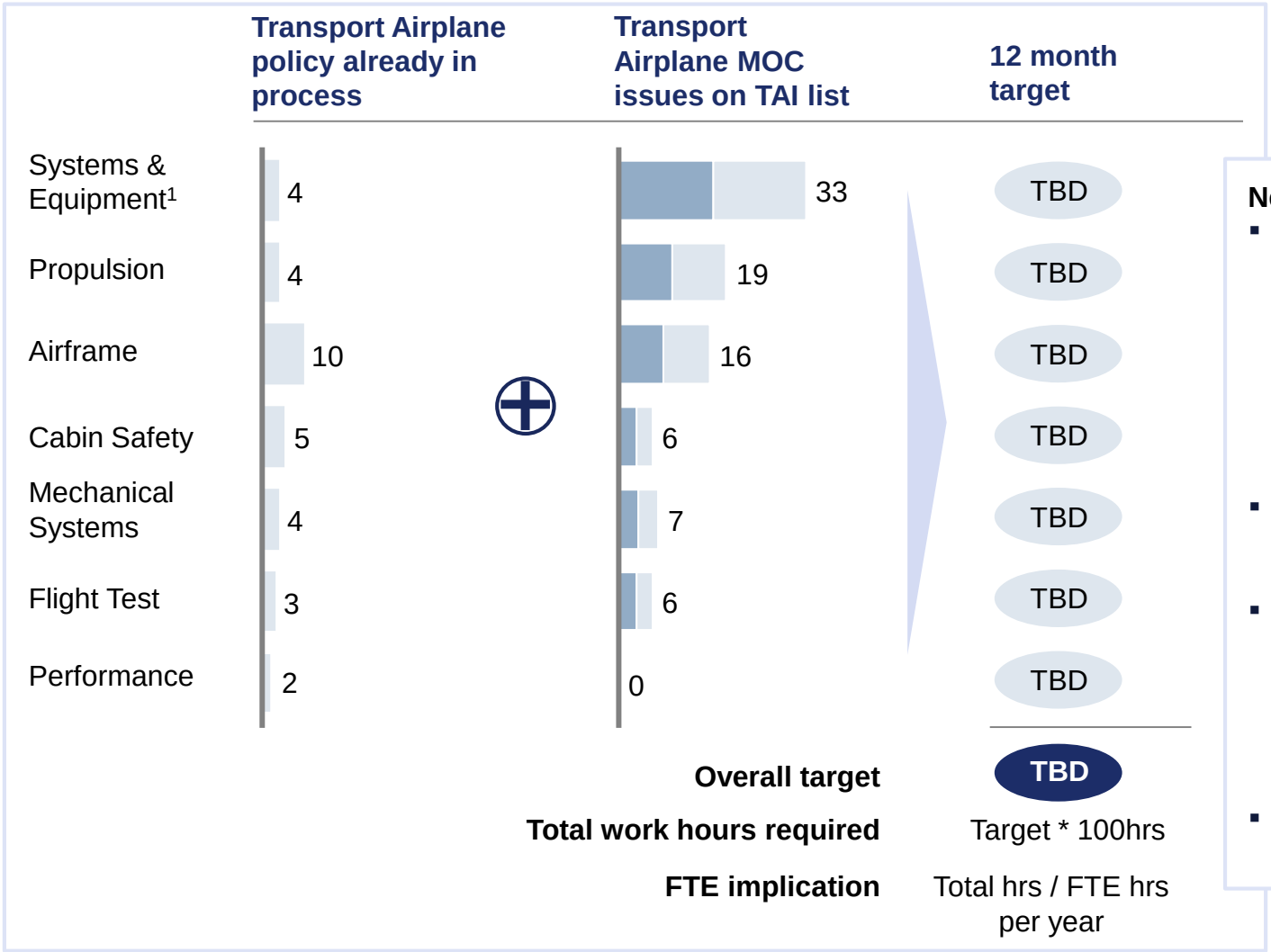
Next steps:
- Convene standards staff managers to formalize and agree on common approach to issue lists
- Implement standardized approach

There is significant variation across directorates in permissions, publishing frequency, and how issues are managed

1 As of most recent published list

SOURCE: Interviews, August 2015

Once approaches are standardized, targets can be set by discipline which include policy already in process and addressable MOC issues



Next steps

- Determine status of MOC issues on TAI list (i.e. stable, unique, refining, or unnecessary) to establish number of addressable MOC issues
- Evaluate timeline of existing policy in process
- Set overall 12 month targets by discipline and determine FTE implication and ensure adequate staff
- Manage performance to meet target

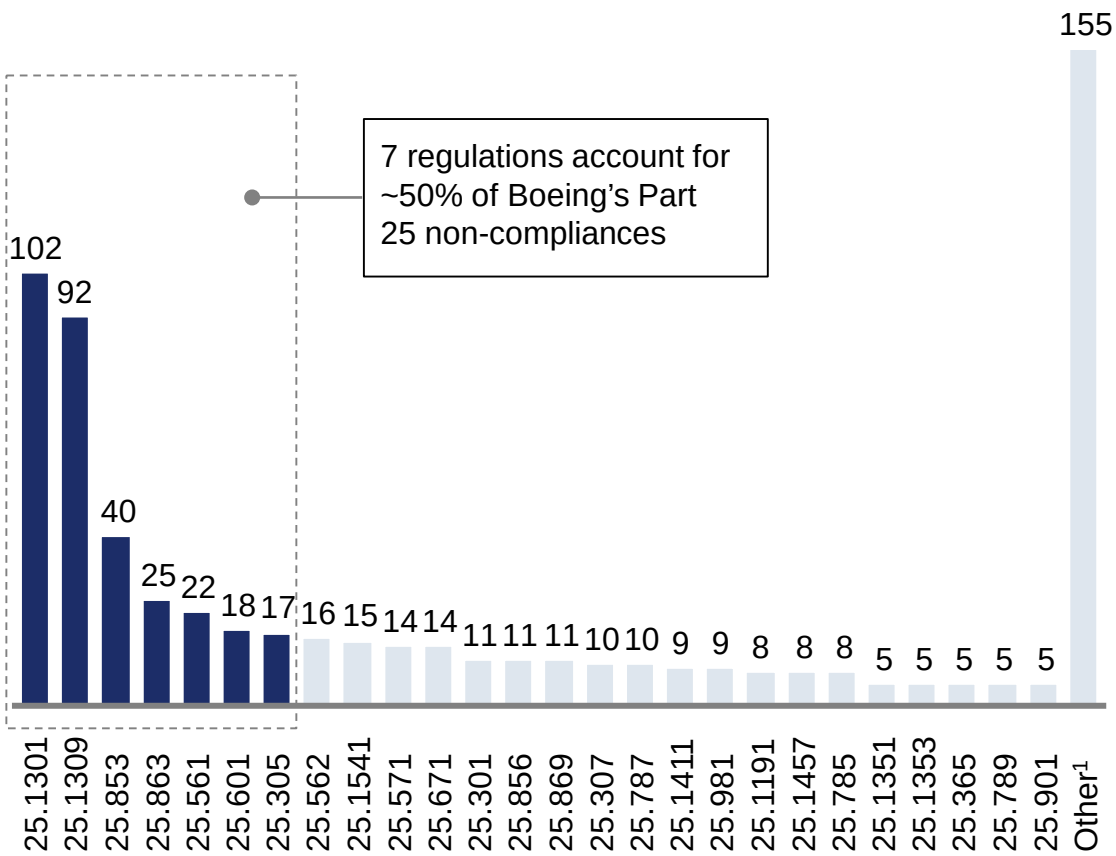
1 Includes Avionics, Electrical, Software, Flight controls, and other systems and equipment
2 Not candidates for policy because issue is not “stable” – exact proportion TBD by Standards Staff
3 Good candidates for new policy because issue is stable – exact proportion TBD by Standards staff

SOURCE: TAI List

Identifying candidates for amendment can begin with data-driven approach between FAA and applicants

Boeing Part 25 non-compliances by regulatory area

Count of Part 25 non-compliances; 2009-2015



Reg	Description
1301	Part must meet intended function and function properly when installed
1309	Part must perform function under any foreseeable operating condition
853	Flammability testing regulation for heat and smoke release
863	Flammable leakage zones must provide protection in leakage area
561	Dynamic testing for seats regulation
601	Design features may not have any features shown to be hazardous or unreliable
305	Load limit for structures

Additional data (e.g., self-audits, LOIs, LOAs, issue papers, written/verbal notifications) can also be examined to develop initial set of candidates

1 Other includes all regulations with fewer than 5 non-compliances per regulatory area

SOURCE: Top 50 Boeing BCAB Database by base CFR

Prescriptive and performance-based regulations present tradeoffs; performance-based provide most flexibility for innovation

Example only; not a current regulation

	Prescriptive-based regulations	Performance-based regulations
Cabin interior example	"There must be no more than 60 feet between exits"[1]	"There must be enough exits to vacate all passengers in x minutes or less"
Propulsion example	"The engine casing must be at least ½" thick"	"Minimize the hazard of rotor burst"[2] "The probability of rotor burst must be reduced to x% or less"[3]
Advantages	More straightforward to demonstrate means of compliance	Provides flexibility for innovation and emerging technology
Disadvantages	▪ More likely to require special conditions ▪ Does not keep pace with technology change	▪ Means of compliance relies on discretion which can create room for disagreement ▪ Can require more FAA guidance ▪ Can be more costly to develop tests that demonstrate compliance

1 Paraphrase from 25.807F
2 Paraphrase from 25.903D1
3 Example of performance-based regulation that may be an improvement over current regulation due to ambiguity of "minimize"

SOURCE: Interviews, Team Analysis

FAA is already pursuing eight initiatives designed to increase regulatory reciprocity, standardization, and resource efficiency

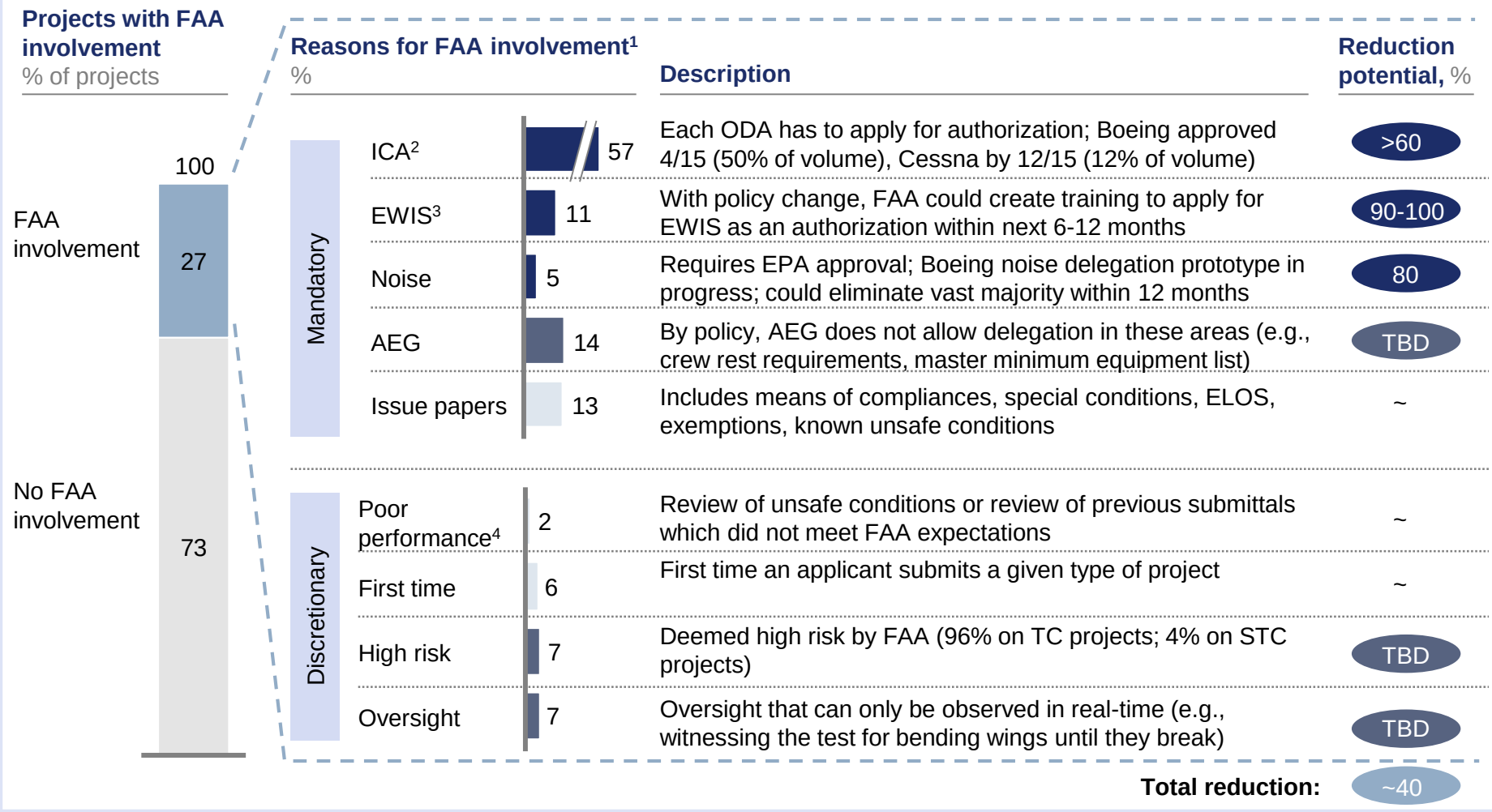
	Challenge	Initiative	Description	Timeline	Anticipated impact to industry
Regulatory reciprocity and standardization	International authorities either have different rules or have different interpretations of the same rules	1 CMT Harmonization Teams for each product type and Part 21	Representatives from FAA, EASA, TCCA, and ANAC join teams to harmonize rules; policy; guidance	2016	Significant
	Risk-based validation requires a robust post-cert audit process to assure integrity of validations	2 FCAA Post-Validation Audit	Create audit function to surveil validation activities	2016	Significant
	Bilateral agreements are varied and do not account for newer globalized business models	3 Standard IPA Template	Create Implementation Procedures for Airworthiness template to streamline interactions; address business models	Complete	Low
	Methodology for determining FAA level of involvement in validations is not data driven.	4 International risk-based validation process	Create risk-based approach to validation of TCs (to be presented to and adopted by the Asia Pacific partners and CMT)	2016	Significant
Resource efficiency	FAA is resource and travel constrained but has to perform surveillance and compliance findings for global business models	5 International Production and Supplier Oversight Enhancements	Develop methodology and enhance bilateral agreements which allow FAA to outsource surveillance and compliance findings to other authorities	2016	Moderate
	FAA must issue its own ADs to validate those issued by international authorities	6 Proposal to accept MCAI issued by the State of Design	Accept ADs issued by foreign authorities rather than re-issuing (can reduce up to 1 year from the process)	2016 (with congress)	Significant
	Validation and familiarization of US products are resource intensive and are performed one foreign authority at a time	7 Boeing Multi-Authority Validation (BMAV)	Pilot to bring multiple authorities together to validate US products simultaneously	2016	Moderate
	Other authorities are not trained in FAA rules and methods of compliance	8 Training academy	Regional training concept optimizes use of FAA training resources by training Asia Pacific partners in Singapore	Ongoing	Low

Upon completion of international initiatives, communication briefing to industry and the FAA should address five critical areas

	Potential communication points
Global leadership	▪ Describe how the FAA is a global leader on the world stage with evidence from AIR-400 and others on tackling tough issues or setting standards
Reciprocity	▪ Highlight successful effort to agree to accept the MCAI issued by the State of Design ▪ Describe other efforts to improve regulatory reciprocity ▪ Be candid about constraints and articulate why reciprocity is critical
Harmonization	▪ Describe key regulatory areas addressed by CMT Harmonization Teams, including which specific rules are now harmonized and how this impacts global manufacturers
Standardization	▪ Describe efforts to standardize the IPA Template and why this is an improvement over previous processes or what the net effect has been ▪ Describe international risk-based validation process, adopted by Asia Pacific Partners (TBC)
Resource efficiency	▪ Highlight the Boeing Multi Validation Authorization effort by asking Boeing to describe the net benefit in terms of time or cost

FAA can reduce real-time project involvement by 40% (from 27% to 16%) by taking action across key areas

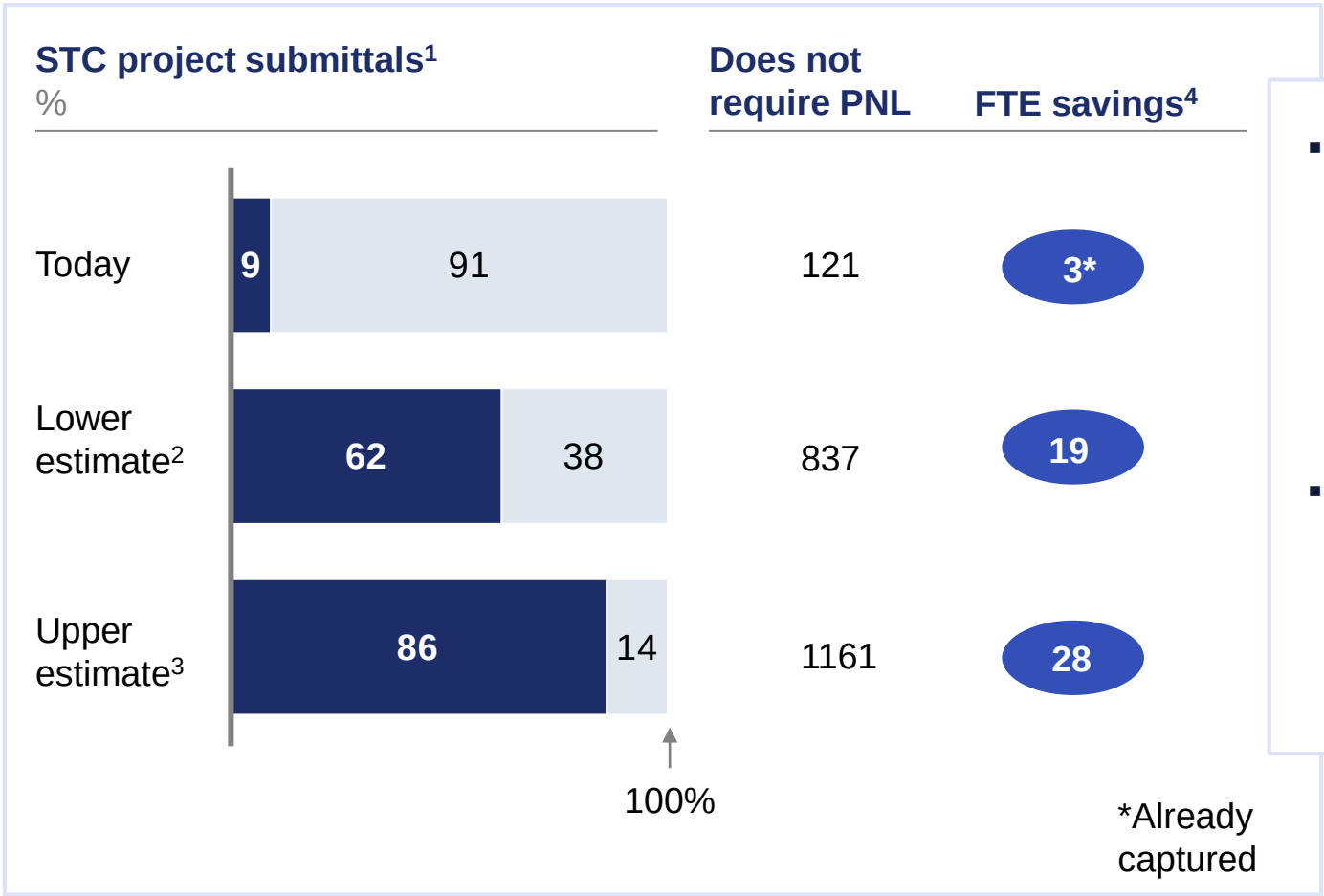
Reduction opportunity
- Significant / key area
- Less significant



1 Does not sum to 100% because projects can have many reasons for involvement; total reduction opportunity uses average reasons-to-projects ratio of 1.24
2 Instructions for Continued Airworthiness (AEG delegable)
3 Electrical Wiring Interconnect System (Part 26 ageing wiring rules)
4 Includes “Service Difficulty” which resulted in unsafe condition and “Performance” with unsatisfactory performance on previous submittal

SOURCE: 7-22-15 ODA scorecard TC and STC rollup, Team analysis

The NoPNL initiative pays for itself: projected to reduce FAA PNL workload by ~25 FTE



- NoPNL initiative saves between **19-28 FTE** depending on estimates of number of routine projects, ODA performance, and FAA work rates
- Additional capacity can be redirected to standards setting or oversight activities in support of broader certification strategy

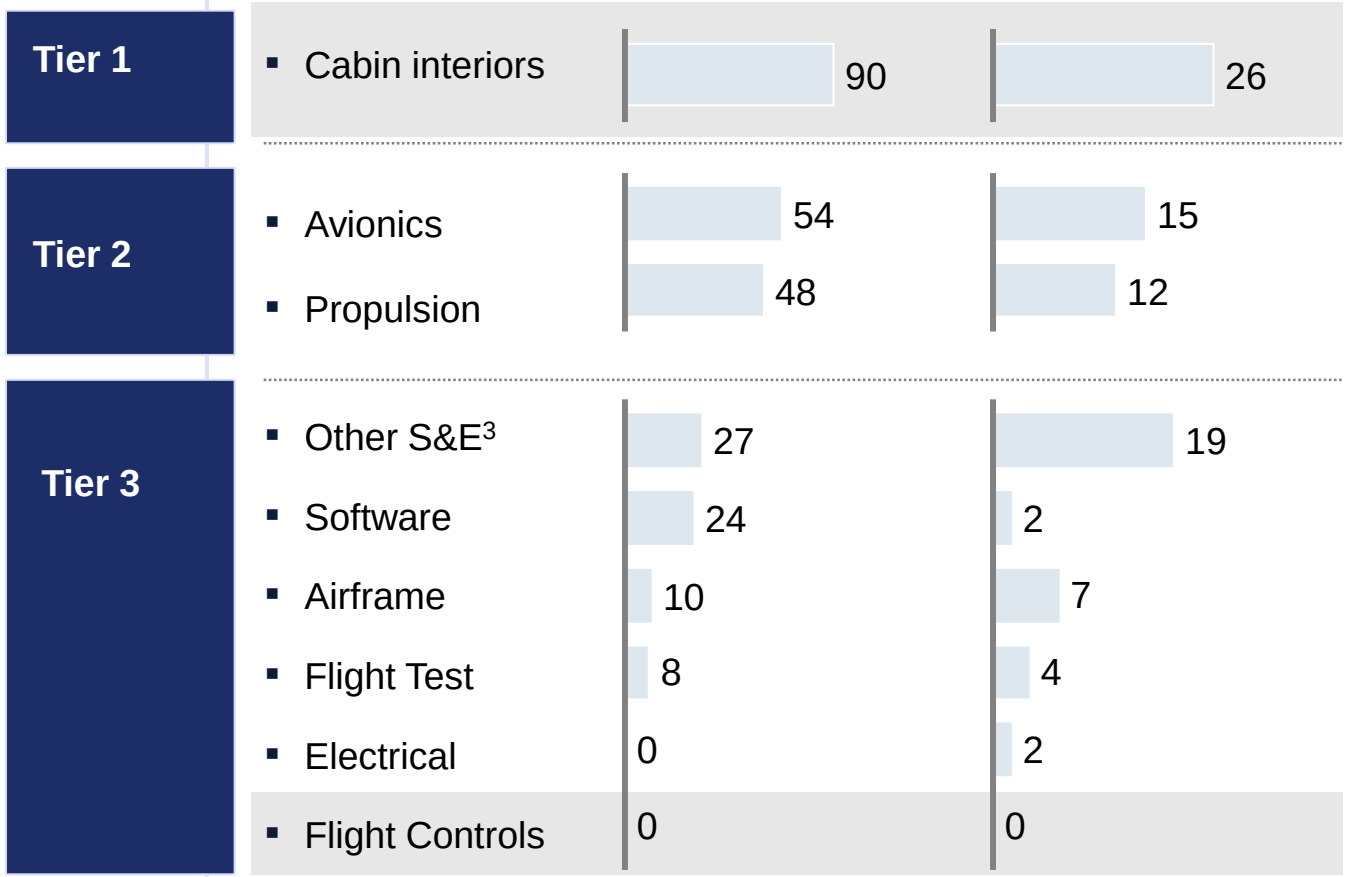
1 Percentages based on National STC rollup; Total STC projects = 1,350 based on CPN database average from 2012-2014
2 Lower estimate assumes 80% of STC projects are routine and 85% of STC ODAs demonstrate good performance
3 Upper estimate assumes 100% of STC projects are routine and 95% of STC ODAs demonstrate good performance
4 Assumes current rates of 50 hours per project and 153 FTE hours/month based on SACO STC ODA holders

SOURCE: 7-22-15 National STC rollup, CPN database, Team Analysis

AIR should prioritize cabin interiors to make a top-down determination on level of FAA involvement

Areas of most and least friction

Example Boeing benchmarking



- **Cabin interiors** has the most friction between industry and FAA and is the top candidate for top-down guidance
  - Examine historical and predictive safety data
  - Develop top-down recommendations for FAA involvement
- Next discipline to examine could either be **flight controls or avionics**, depending on lessons learned from cabin safety

1 October 2013 through July 2015, 2 January 2012 through July 2015
3 Other Systems & Equipment (not including Avionics, Electrical, Software, and Flight Controls)

SOURCE: TAD IP database, BASOO Open Items List, Team Analysis, Interviews

FAA can move the needle on cabin interiors delegation by considering a menu of three options

Details on next page

Cabin interior options	Description	What you have to believe
A Broaden critical/key means of compliance	▪ "Envelope" configurations or product ranges (e.g., do not require a separate MOC for each oblique seat angle)	▪ FAA has the ability to envelope a wider range in MOCs to significantly reduce the number of issue papers ▪ A significant number of cabin interior MOCs issue papers are redundant
B For ODAs with qualified maturity and performance, delegate all project deliverables	▪ FAA delegates responsibility to determine compliance with regulation, 'new and novel' and new MOCs to ODA ▪ Relies on ODA to meet regulations and follow prescribed test procedures	▪ FAA involvement in cabin safety has reached diminishing returns & resources are better used in higher risk areas ▪ FAA can assess industry maturity ▪ FAA systematic oversight can adequately address risk (and whether industry players retain delegation) ▪ ODA in question is qualified to determine acceptable MOC for 'new and novel' products or configurations
C Support development of industry standards	▪ Support and accept industry-developed standards (similar to ICAO or TSO standards) for cabin interiors	▪ Industry is sufficiently mature to develop and maintain standards ▪ FAA involvement in cabin safety has reached diminishing returns & resources are better used in higher risk areas ▪ FAA systematic oversight can adequately address risk

For discussion:

- What data, if any, is needed to make a determination, and what are the right decision thresholds?
  - Historical accident data
  - CAST data/analysis
  - In-service data
  - COS data
  - Probability analysis relative to other adverse events
- What is the appropriate next step? Options include:
  - Commission committee to develop recommendation
  - Prototype an option with an ODA and conduct oversight

Note: Options are not mutually exclusive

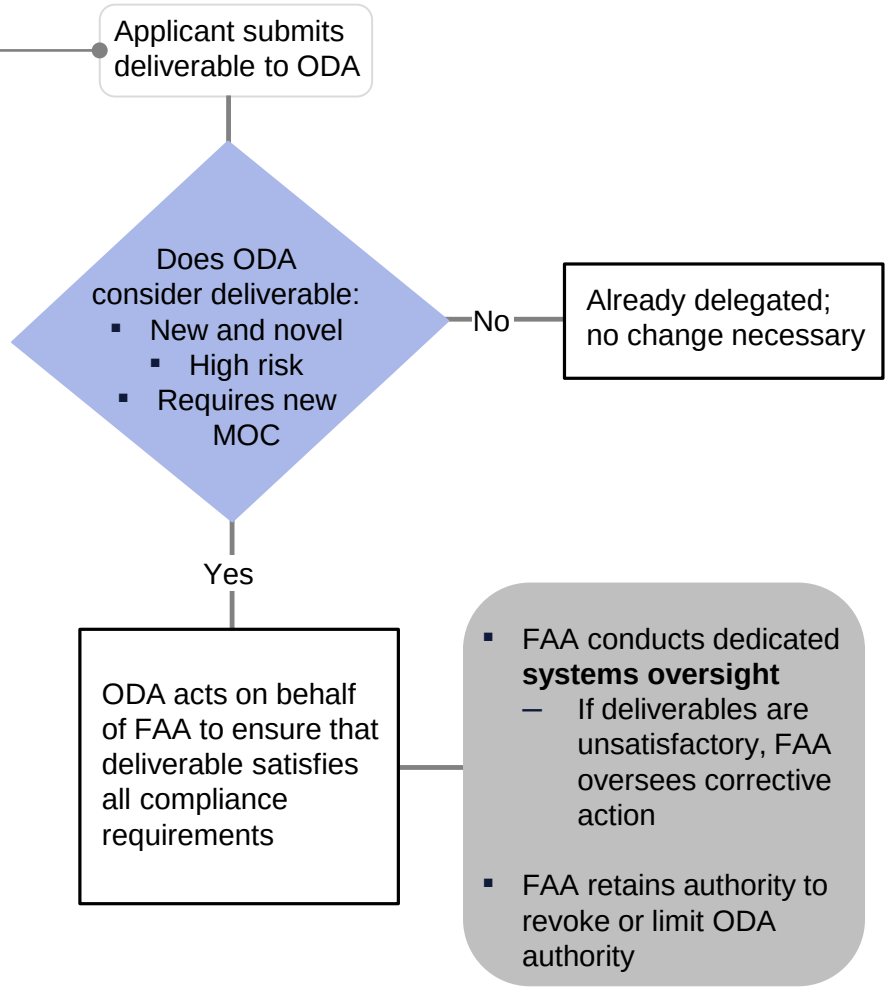
SOURCE: Team analysis

B If the FAA decided to delegate all project deliverables, the pathway could include two phases as follows

Phase I: Lay the foundation for a successful prototype

	Description
Align on functional discipline[1]	▪ Approach can be followed for any function ▪ Begin with areas of airplane that present lowest relative risk
Determine whether ODA qualifies for prototype	▪ Initial list of ODA candidates to be based on review of maturity and performance ▪ Eliminating ODAs who do not qualify is essential to maintaining safety
Gauge ODA interest and discuss whether they are willing to assume additional responsibility	▪ Participation in prototype will require 'step up' in responsibility from ODA – critical to discuss what this means from the outset
Develop detailed understanding of Applicant/ODA system to enable systems oversight	▪ FAA must understand in detail how oversight will be conducted to ensure safety before beginning prototype
Grant provisional authority to begin prototype	▪ Initiation and continuation in prototype is conditional on satisfactory performance

Phase II: Conduct prototype and ensure safe outcomes



1 Recommendation is to begin with cabin interiors based on diagnostic findings

SOURCE: Team analysis

Aviation certification operates with three lines of defense that could be strengthened to enable systemic 'third tier' FAA oversight

Line of defense	Aviation stakeholder	From	To
First	▪ **Applicant**	▪ Regulatory requirements are not consistently given equal weight to customer/business requirements during engineering processes ▪ "Compliance culture" is not held as deeply or widely as it could be	▪ Engineering processes which directly incorporate regulatory requirements in the design phase ▪ Comprehensive engineering system which can be audited
Second	▪ **ODA**	▪ Relationship between first and second lines of defense is blurry – ODA unit members and company engineers are often the same person ▪ Real-time project-level activities (little "s" and little "f")	▪ Clear division of responsibility between ODA unit members and company engineers ▪ Project-level activities *and* oversight activities (sampling and process analysis)
Third	▪ **FAA OMT**	▪ Performs the oversight function of the second line of defense ▪ Oversight is not based on risk, OEM performance, or the system – Approach not fully developed – OEMs historically not mature enough	▪ Systemic oversight program based on risk and performance – Checks OEM self-audits – Checks ODA audits – Conducts primary oversight only as necessary

SOURCE: McKinsey, Team Analysis

Risk- and performance-based oversight can incorporate relevant inputs which should inform oversight design and approach

	Description	Potential data input	How input would inform approach
Risk	▪ Assessment of safety risk minimizes hazard that a product presents to NAS based on the probability and severity of an adverse event	▪ RBRT score ▪ Category Parts List (CPL) ▪ SME panel recommendations	▪ Elements of SME-designated questionnaire score potential risk ▪ If a subsystem is on the CPL, it has a higher level of safety risk for the NAS ▪ May refine or augment safety
Performance	▪ Adjusts oversight approach depending on performance and maturity of applicant	▪ Self-audit findings ▪ FAA audit findings ▪ Airworthiness non-compliances ▪ COS issues ▪ Designee unsatisfactory findings	▪ Poor performance indicated by – Large number of findings – Repeated and related findings ▪ Findings to be given appropriate weight, depending on source and gravity (TBD)

SOURCE: Interviews, Team Analysis

ACMT supporting materials

- **Gallery walk**
  - ODA experience
  - Industry viewpoints
  - Internal pressures
  - Organization
- **Discussion stations**
  - Strategy
  - **Management systems**
    - Management systems appendix
  - Organization
  - Change management

Section D: Initiatives to improve management systems across three areas will support a more efficient and effective governance approach to certification

9 Measure performance and health with clear goals and targets

The diagnostic found that performance metrics and targets are inconsistent across ACOs, and many ACOs are not tracking key performance metrics. Recommendation is to adopt and clarify national baseline metrics & targets, standardized across offices, together with a process that allows each office to set stricter or more granular targets.

10 Improve governance processes and operating norms

The diagnostic found that governance processes for internal performance review, issue resolution, joint performance review and prioritization can be improved. Recommendation is to adopt a more structured approach across these areas, supported by materials such as meeting templates; and to establish a national leadership role for the Metrics/Health function.

11 Invest in new tools and infrastructure to professionalize operations

Diagnostic found that many offices are lacking basic IT tools required to support performance management, e.g., tracking performance and visually managing workflow. Recommendation is to adopt new IT tools to address this gap, across all offices, and establish the people and processes at ACOs to locally support effective use of the tools.

9 Measure performance and health with clear goals and targets

The diagnostic found that performance metrics and targets are inconsistent across ACOs, and many ACOs are not tracking key performance metrics. Recommendation is to adopt and clarify national baseline metrics & targets, standardized across offices, together with a process that allows each office to set stricter or more granular targets.

	Key activities	Date
A Adopt national baseline metrics and targets	▪ Propose performance metrics and targets for the national baseline	▪ Oct 2015
	▪ Refine proposed metrics and targets with selected applicants	▪ Nov 2015
	▪ Refine metrics and targets with selected ACO frontline, ACO leadership, and finalize with AIR-1	▪ Dec 2015
	▪ ACO prototypes begin tracking metrics (targets treated as "provisional")	▪ Nov 2015
	▪ Incorporate relevant targets in revised ODA scorecard	▪ Jan 2016
	▪ After ACOLT feedback/review, targets officially come into effect (policy)	▪ Dec 2016
B Adopt process for local office refinement of targets	▪ Propose process for local office refinement of targets, including how the office will submit proposed changes, and who is required to approve	▪ Oct 2015
	▪ Review proposed process with selected ACOs and AIR leadership, and make adjustments as necessary	▪ Dec 2015
	▪ Convene ACOLT to communicate new process to every ACO	▪ Jan 2016
C Formalize new approach in policy	▪ Allow all offices to prototype performance management tools	▪ By Nov 2016
	▪ Draft a policy memo describing the new national baseline metrics and targets, and the new process for local office refinement of targets	▪ Nov 2016
	▪ Collect and incorporate public comments	▪ Nov 2016
	▪ Finalize and circulate policy memo across AIR	▪ Dec 2016

Building on existing initiatives: ODA scorecard ▲

10 Adopt new governance processes and improve execution

The diagnostic found that governance processes for internal performance review, issue resolution, joint performance review and prioritization can be improved. Recommendation is to adopt a more structured approach across these areas, supported by materials such as meeting templates; and to establish a national leadership role for the Metrics/Health function.

	Key activities	Date
A Adopt new system of internal performance review	▪ Produce written guidance on the cadence, content, and participants for internal performance review meetings at ACOs, and circulate to ACOLT	▪ Nov 2015
	▪ Set up & execute review meetings in BASOO & Fort Worth prototypes	▪ Nov – Mar 2016
	▪ Incorporate lessons learned in written guidance, and circulate to ACOLT	▪ Sep 2016
	▪ Codify in formal AIR policy memo, PSPs, and CPI Guide	▪ Dec 2016
B Adopt new system for Applicant-FAA performance review and prioritization	▪ Produce written guidance on the cadence, content, and participants for joint performance review and prioritization, and circulate to ACOLT	▪ Oct 2015
	▪ Set up & execute review meetings in BASOO & Fort Worth prototype	▪ Nov – Mar 2016
	▪ Incorporate lessons learned in written guidance, and circulate to ACOLT	▪ Sep 2016
	▪ Codify in formal AIR policy memo, PSPs, and CPI Guide	▪ Dec 2016
C Adopt new system for issue resolution	▪ Define issue resolution process, including meeting agenda templates and decision worksheets, and review proposal with AIR leadership	▪ Oct 2015
	▪ Set up & execute review meetings in BASOO & Fort Worth prototypes	▪ Nov – Mar 2016
	▪ Incorporate lessons learned in written guidance, and circulate to ACOLT	▪ Sep 2016
	▪ Codify in formal AIR policy memo, PSP, and CPI Guide	▪ Dec 2016
D Establish national leadership role	▪ Establish new functional leadership role for Metrics/Health (AIR-330): a leader with field office experience, driving management systems initiatives across the FAA	▪ Oct 2015

Building on existing initiatives: PSP▲ CPI Guide▲

11 Adopt new IT systems and infrastructure for performance management

Diagnostic found that many offices are lacking basic IT tools required to support performance management, e.g., tracking performance and visually managing workflow. Recommendation is to adopt new IT tools to address this gap, across all offices, and establish the people and processes at ACOs to locally support effective use of the tools.

	Key activities	Date
A Roll out new tools to all ACOs	▪ Provide SACO IT team with FAA-approved server and development tools ▪ Roll-out current SACO tools to Fort Worth & LA; begin user feedback ▪ Complete roll-out to remaining ACOs in sequence: Denver, BASOO, Small Airplane Directorate offices, ECO, Rotorcraft Directorate offices ▪ Incorporating lessons learned, build and roll out enterprise-level national IT system leveraging common IT infrastructure (e.g. SQL server)	▪ Oct 2015 ▪ Oct 2015 ▪ Nov 2016 ▪ Sep 2017
B Establish formal IT support roles at each ACO	▪ Define IT support roles required at each office, and sharing of support resources across multiple offices where applicable (at least 1 FTE per office of 40+ engineers, and a proportional ratio for smaller offices) ▪ Select and train IT support personnel at each ACO, with training led by AIR-330 Metrics/Health unit	▪ Oct 2015 ▪ Jan 2016
C Adopt new processes to feed and utilize tools	▪ Define processes to feed and utilize current SACO IT tools, including how workflow data will be entered into the system, how it will be rolled up nationally for AIR-level visibility, and how users will interface with the tools ▪ Circulate draft guidance / job aids on new processes ▪ Prototype new processes at the BASOO and Fort Worth during prototype program, including test of central accessibility of ACO data by AIR HQ ▪ Finalize new processes through written guidance / job aids to all ACOs	▪ Oct 2015 ▪ Nov 2015 ▪ Nov 2015 – Mar 2016 ▪ Sep 2016

Building on existing initiatives: Sharepoint ▲ OSP ▲ EDPA ▲

ACMT supporting materials

- **Gallery walk**
  - ODA experience
  - Industry viewpoints
  - Internal pressures
  - Organization
- **Discussion stations**
  - Strategy
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    - **Management systems appendix**
  - Organization
  - Change management

A Performance metrics should provide insight into 5 key themes

Overall goal

FAA compliance is achieved in a timely manner, leveraging ODA appropriately

Metrics (themes)	Rationale for measuring
Efficiency	▪ Reduce delays in FAA processes which affect OEM timelines ▪ Encourage OEMs to have similar responsiveness
Quality	▪ Reduce rework: iterations required to correct errors or gaps in OEM work products ▪ Help quantify level of confidence in ODA performance
Involvement	▪ Make progress towards fully self-sufficient ODAs ▪ Give ODA more control over timelines for completion holders of certification projects
Relations	▪ Ensure OEMs have a strong working relationship with the FAA, and highlight any difficulties ▪ Vice versa, ensure the same for FAA with OEMs
Effectiveness	▪ Ensure that the FAA's safety mission is being accomplished to its full potential given the available resources

A For the FAA, AVS should adopt national baseline performance targets

PROPOSAL

Theme	FAA metric	FAA target	Existing targets (for reference)
Efficiency	▪ PNL response ▪ IP stage response (G-1) ▪ IP stage response (Non G-1) ▪ UM approval time ▪ Other correspondence ▪ Certification plan response ▪ Non-ODA application response ▪ Certification deliverable	▪ 30 days ▪ 60 days ▪ 70 days ▪ 7 days ▪ 30 days ▪ 30 days ▪ 30 days ▪ 30 days	▪ Old ODA Order (30 days); BASOO (10-20 days) ▪ BASOO (60 days); TSS (30 days) ▪ BASOO (70 days); TSS (60 days) ▪ WACO typical response (3 days) ▪ WACO (45 days) ▪ Standard office flowtime (30 days) ▪ Standard office flowtime (30 days) ▪ Standard office flowtime (30 days)
Quality	▪ Rework rate for unclear guidance	▪ <5% of submissions	▪ N/A
Involvement	▪ No-PNL project share agreement ▪ Project involvement rate agreement ▪ Finding retention rate agreement ▪ Number of new IPs driven by change in policy	▪ >90% ▪ >90% ▪ >90% ▪ <5% of total	▪ N/A ▪ N/A ▪ N/A ▪ N/A
Relations	▪ Applicant satisfaction ▪ FAA satisfaction ▪ Appeals to Directorate Mgr / above	▪ Green ▪ Green ▪ <1% projects	▪ ODA scorecard ▪ ODA scorecard ▪ N/A
Effectiveness	▪ Product-level noncompliances (on a per-product basis)	▪ Decreasing	▪ (none)

A For applicants, AVS should also adopt national baseline performance targets across the 5 key themes

PROPOSAL

Theme	Applicant metric	Applicant target	Existing targets (for reference)
Efficiency	▪ Corrective action plan submission ▪ Issue paper stage ▪ Request rate for standard flow	▪ 30 days ▪ 60 days ▪ >90%	▪ ODA Order 8100.15B (30 days) ▪ BASOO (120-140 days for 2 FAA stages) ▪ (none)
Quality	▪ NCs per project ▪ AD-relevant NCs ▪ PNL with errors ▪ Cert plan quality (1st pass) ▪ Cert deliverable quality (1st pass) ▪ Corrective action quality (1st pass)	▪ <0.01 ▪ <0.01 ▪ <5% ▪ >80% ▪ >80% ▪ >80%	▪ (none) ▪ (none) ▪ (none) ▪ Draft Boeing settlement agreement (80% in 2016) ▪ Draft Boeing settlement agreement (80% in 2016) ▪ Draft Boeing settlement agreement (80% in 2016)
Involvement	▪ Number of new MOCs driven by design or practice	▪ <10% of new MOCs	▪ N/A
Relations	▪ ODA UM satisfaction survey ▪ Appeals to Directorate Mgr / above	▪ Green ▪ <1% projects	▪ N/A ▪ N/A
Effectiveness	▪ Product-level noncompliances (on a per-product basis)	▪ Decreasing	▪ (none)

A Five key metrics and targets will be tested in the BASOO prototype program

	Metric	Target	Review method	Review cadence
Cert plan response time	▪ Time taken for BASOO to respond to PNL / cert plan submission (days)	▪ 20 days	▪ Online dashboard ▪ Team meetings ▪ Management review	▪ Daily ▪ Weekly ▪ Monthly
Cert plan quality	▪ Proportion of cert plans submitted with errors	▪ <25% (see Settlement agreement)	▪ Online dashboard ▪ Team meetings ▪ Management review	▪ Daily ▪ Weekly ▪ Monthly
Issue paper response time	▪ Time for BASOO/TSS to provide their response for a single stage of an issue paper process (days)	▪ 60 days per FAA response	▪ Online dashboard ▪ Team meetings ▪ Management review	▪ Daily ▪ Weekly ▪ Monthly
Other deliverable response time	▪ Time taken for BASOO to respond to other deliverables	▪ 20 days	▪ Online dashboard ▪ Team meetings ▪ Management review	▪ Daily ▪ Weekly ▪ Monthly
OEM feedback survey	▪ Survey rating overall OEM satisfaction with BASOO service, on a scale of 1-4	▪ > 3.0/4 average ▪ Green	▪ Direct review (via surveys ▪ Management review (via ODA scorecard)	▪ Project end ▪ Monthly

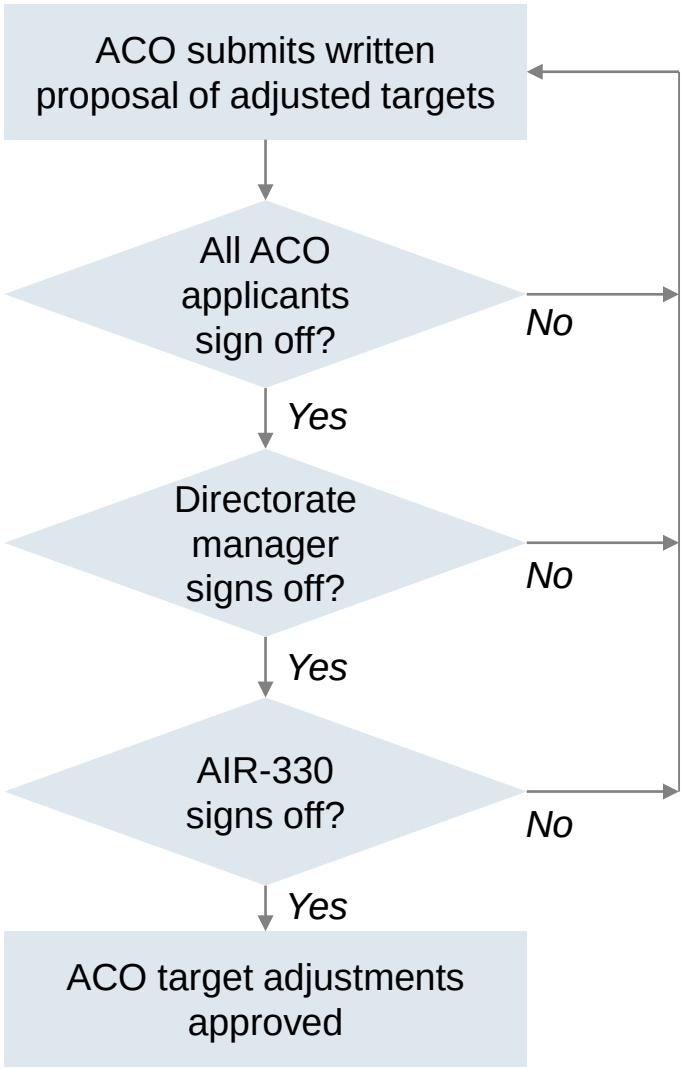
B In addition to a national baseline, offices should have a process for setting stricter and more granular targets for local conditions

	Description	Purpose
National baseline	▪ Minimum performance targets ▪ Every FAA office must track performance against these targets	▪ Establish a national minimum standard of performance (e.g. timeliness) ▪ Ensure that every office has performance targets in place
Local adjust-ments	▪ Adjustments that can be made to national baseline targets by each office ▪ Relaxations must be approved by HQ	▪ Allow offices the flexibility to tailor performance targets to suit local conditions ▪ e.g. a very fine level of detail and tighter targets may be appropriate for Boeing, but not required for smaller OEMs

Example: national and local targets

Target definition	PNL response time target
National baseline	30 days
Boeing OMT	10 days (simple) 20 days (complex)
HEICO OMT	30 days

B Local office refinements to national baseline targets will only be approved through a rigorous process



Process is designed to ensure all relevant stakeholders agree to revised targets before they are approved

Three types of meetings are key to performance management, and tactical improvements will be prototyped at the BASOO

	Purpose	Current challenges	Improvements to test at BASOO
A **Internal performance review**	▪ Internal ACO team meetings to review performance on timeliness, and re-balance resources if necessary	▪ There are no formal meetings with this purpose ▪ Informal frontline-led meetings are not well attended	▪ **Formalize** existing Wednesday meetings and have BASOO management lead them ▪ Focus on the top-level performance **dashboard** ▪ PM / TPM **accountability**
B **Issue resolution**	▪ Ad hoc meetings to resolve a dispute or disagreement between OEM and FAA staff ▪ e.g. as part of the issue paper process	▪ Key decision-makers are often missing from the room ▪ Meetings are not decision-focused	▪ **Agenda** must be circulated in advance, following template ▪ **Decision worksheet** provides structure to the meeting, and is a mandatory end-product, with decision-maker signatures
C **Joint performance review**	▪ Monthly leadership meeting between OEM and FAA ▪ Performance metrics should be reviewed and acted upon	▪ Metrics are not discussed at all ▪ No data-driven actions are taken ▪ Too reliant on Boeing data	▪ Actively **track** BASOO performance ▪ Performance data **review** to always be on the agenda ▪ Openly **share** BTS dashboard with Boeing

SOURCE: BASOO and other FAA interviews, July - September 2015

A Internal performance management meetings should be held daily, weekly, and monthly, and will be prototyped at the BASOO

	Cadence	Content	Participants	Test at BASOO
Frontline manager check-in	▪ Daily	▪ Frontline managers review status dashboard, and check in with any engineer who seems overloaded	▪ Frontline manager ▪ Any engineers who may need help	▪ PM/TPM[1] daily dashboard reviews
ACO team meeting	▪ Weekly	▪ Review focused on performance dashboard, trouble-shooting, and highlighting excellent performance	▪ ACO manager ▪ All frontline managers ▪ Relevant engineers	▪ Wednesday meetings with BASOO manager and all PMs/TPMs
Directorate review	▪ Monthly	▪ Review of office performance metrics against targets ▪ Corrective actions required	▪ Directorate manager ▪ ACO manager ▪ Relevant frontline managers	▪ Monthly meetings between TAD and BASOO management

1 PM = Program Manager; TPM = Technical Project Manager

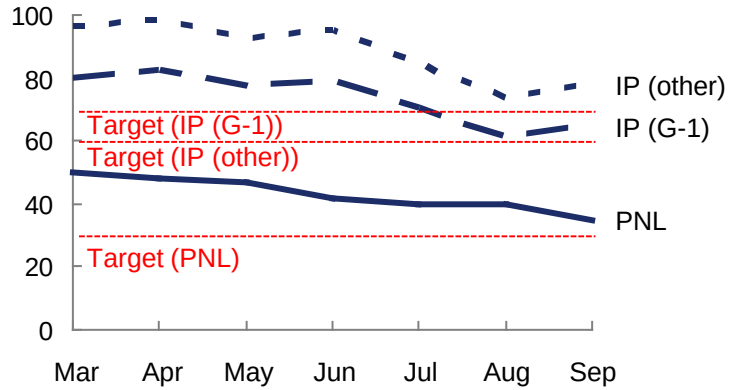
A A performance dashboard should be visible/accessible to all ACO staff, and clearly display important metrics and targets

ILLUSTRATIVE

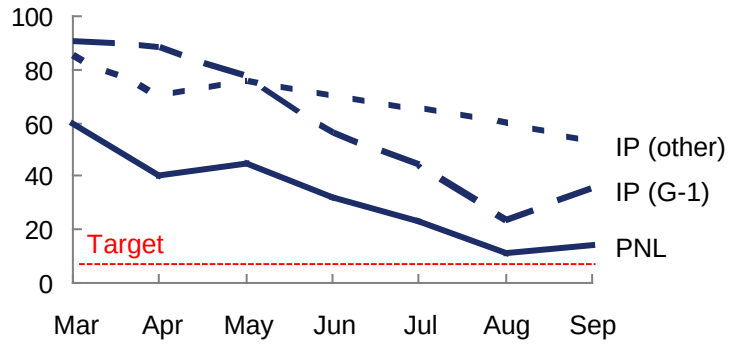
Dashboard concept (illustrative)

Process efficiency

Monthly average response time (days)

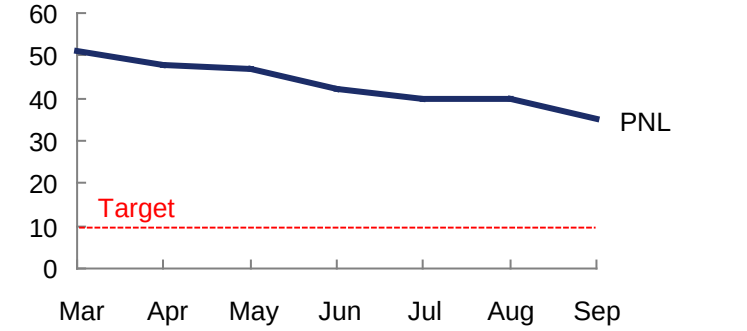


Monthly late responses (%)



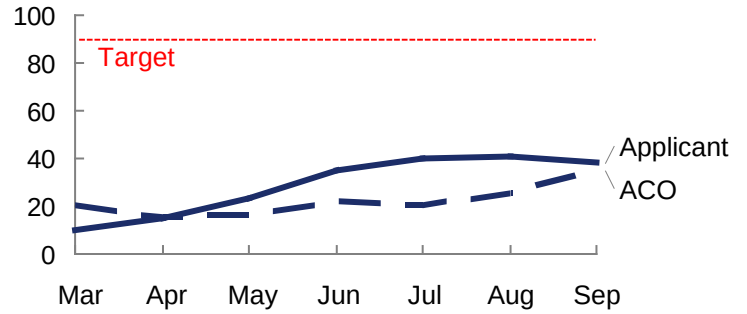
Applicant quality

Monthly PNLs submitted with errors, all applicants (%)



Working together

Monthly average satisfaction (% "Green")



B Applicant-FAA interactions for performance review and joint prioritization should take place daily, weekly, and monthly

	Cadence	Content	Participants	Test at BASOO
Dashboard check-in	▪ Daily	▪ Applicant program managers review status dashboard, and check in with ACO counterpart for any items of concern	▪ Applicant program manager ▪ ACO frontline manager	▪ Dashboard access for Boeing program managers
ODA-OMT leadership meetings	▪ Weekly	▪ Review focused on joint performance metrics ▪ Trouble-shooting ▪ Highlighting excellent performance	▪ OMT lead ▪ ODA manager ▪ Relevant frontline managers	▪ ODA / OMT leadership meeting ▪ Separate from weekly internal ACO meeting
Applicant-FAA leadership meetings	▪ Monthly	▪ Review of joint performance metrics against targets ▪ Corrective actions required	▪ Applicant ODA leadership ▪ BASOO leadership	▪ Boeing RA / BASOO leadership meetings (revamped)

C A new approach to issue resolution will be supported by template materials, providing structure and a focus on decisions

Agenda template

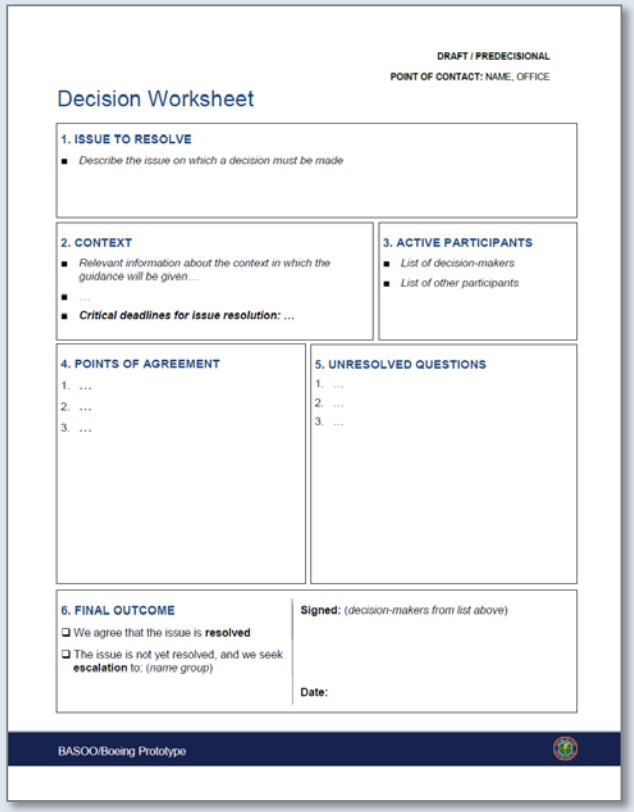
Decision worksheet

Description

- Template to ensure a clearly stated, **decision-focused** agenda is prepared for every meeting
- List **key decision-makers** required
- Required to be circulated **3 days in advance**

- **Key deliverable** and record of the meeting
- **Guides pre-work** required before the meeting: statement of the issue, context, and decision-makers required to participate
- **During the meeting**, used to capture points of agreement/disagreement, and the **final outcome**: resolution or escalation
- If escalation is needed, instructions are provided for the **escalation process**: specifying how and to whom the issue may be escalated
- **Signed** by key decision-makers in the meeting

Example: Decision worksheet



DRAFT / PREDECISIONAL

POINT OF CONTACT: NAME, OFFICE

Decision Worksheet

1. ISSUE TO RESOLVE

- *Describe the issue on which a decision must be made*

2. CONTEXT

- *Relevant information about the context in which the guidance will be given…*
- …
- ***Critical deadlines for issue resolution:** …*

3. ACTIVE PARTICIPANTS

- *List of decision-makers*
- *List of other participants*

4. POINTS OF AGREEMENT

1. …
2. …
3. …

5. UNRESOLVED QUESTIONS

1. …
2. …
3. …

6. FINAL OUTCOME

❑ We agree that the issue is **resolved**

❑ The issue is not yet resolved, and we seek **escalation** to: (*name group*)

Signed: (*decision-makers from list above*)

Date:

BASOO/Boeing Prototype

D A new national unit and a dedicated leadership role is needed for the "systems performance" function, to sustain continuous improvement

Metrics & Health will be a part of the new systems performance unit

Aircraft Certification Service
AIR

↓

Systems Performance
AIR-300

- New national unit for the change management and metrics & health functions
- Reports directly to AIR-1

↓

Metrics & Health Manager
AIR-330

- L-band national management role
- Positional authority to convene and advise ACO managers

↓

Metrics & Health Staff

- Staff to support AIR-330
- Shared with other FAA units, e.g. AIR-500

Systems Performance – Metrics & Health will be a new national functional unit, to:

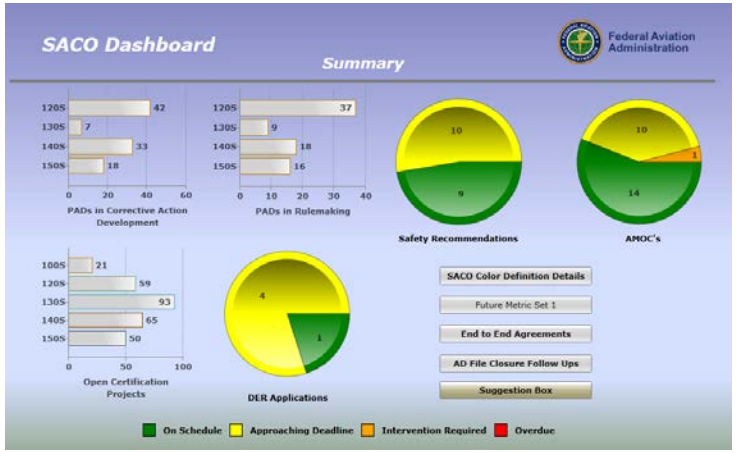
- Lead continuous improvement in management systems across all FAA offices
- Design, implement, and iteratively improve national IT infrastructure for performance management (e.g. national database)
- Gather, formalize, and spread innovative practices developed in local offices

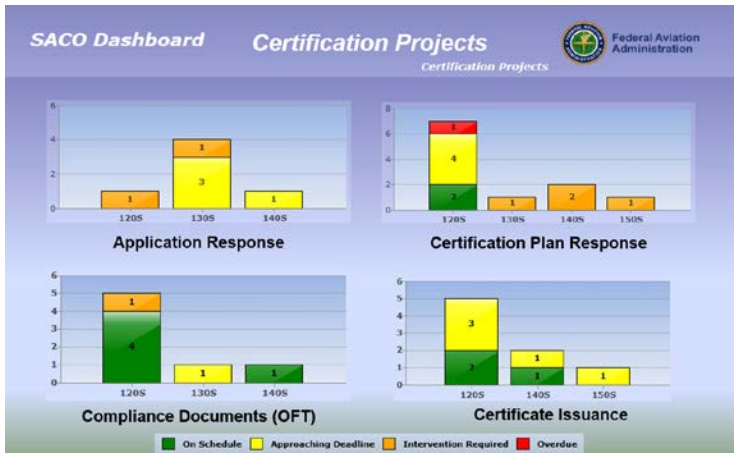
A The Seattle ACO system demonstrates a successful dashboard, review, and communication system that can be usefully applied at other ACOs

Strengths of SACO system, transferable to other ACOs

Feature	Description	Benefit at other ACOs
Dashboard (*see right*)	▪ Real-time workflow status of every cert work item in progress	▪ Improve accountability, individual and management
Red, yellow, orange, green	▪ Colors to indicate status of each task ▪ Clear definitions ▪ Orange = mgmt. intervention	▪ Complete visibility into status of pipeline, at any level ▪ Promotes operational efficiency, and load balancing
Regular team meetings	▪ Weekly cadence ▪ Dashboard used for status and load balancing	▪ "Makes the metrics matter" ▪ Promotes personal accountability (through dash) ▪ Facilitates troubleshooting
Local agile IT team	▪ System is developed within SACO by in-house agile IT team	▪ In-house IT team can better understand and incorporate ACO operations and needs ▪ Rapid response to new reqs
Joint data ownership with OEM	▪ Single data source for ACO & OEM ▪ Some metrics of OEM performance	▪ OEM and ACO agree on one "single source of truth" (COS) ▪ Encourages partnership and joint ownership of outcomes

Examples of SACO dashboard



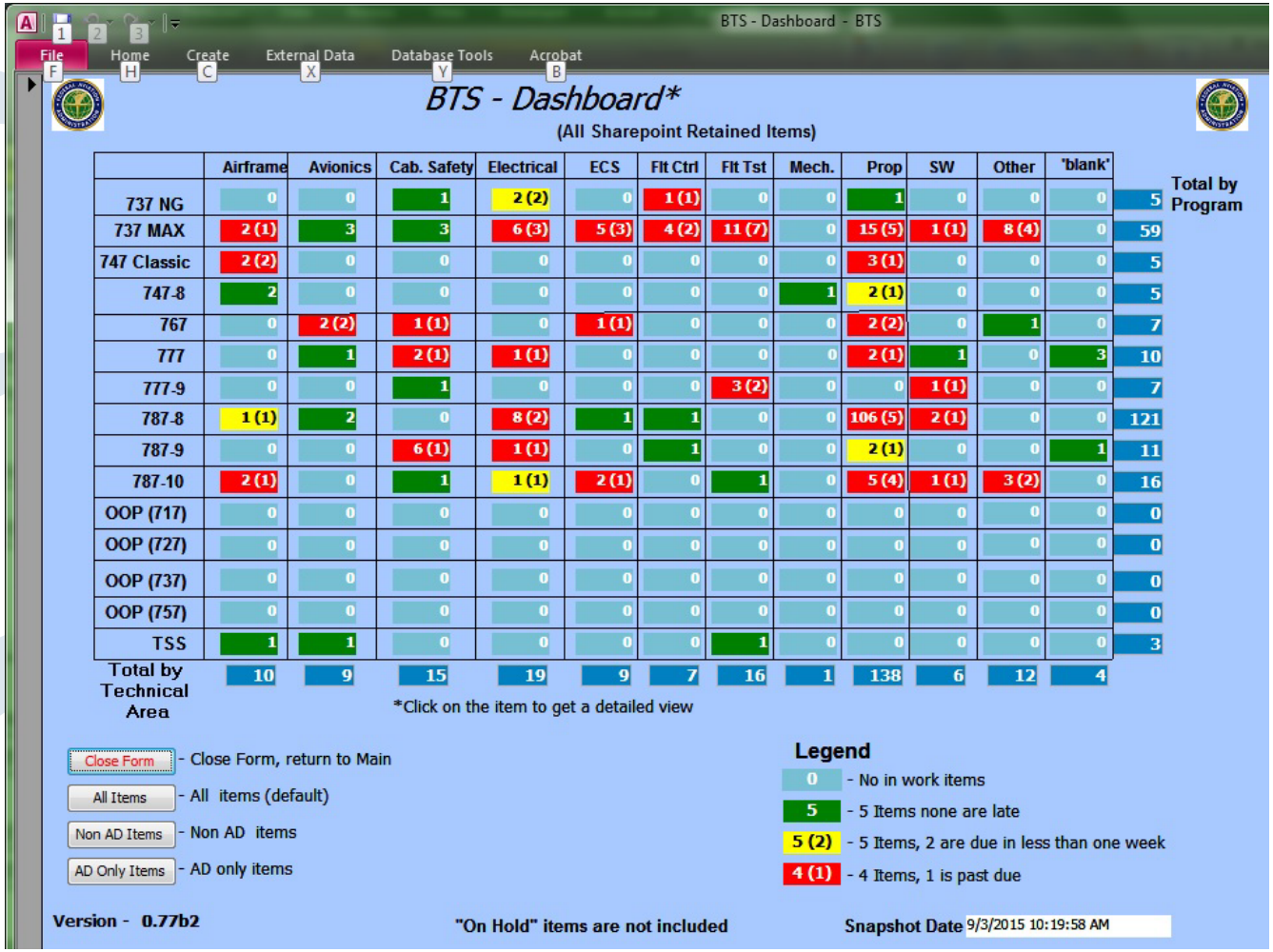


A For the BASOO prototype, the BTS dashboard can already be used for internal / external performance review

Each column in the grid is a different technical discipline, led by a single TPM

Each row in the grid is a different airplane program, led by a single PM

Red cells contain past-due items; yellow contain items due in less than 1 week; green only contain on-time items



	Airframe	Avionics	Cab. Safety	Electrical	ECS	Flt Ctrl	Flt Tst	Mech.	Prop	SW	Other	'blank'	Total by Program
737 NG	0	0	1	2 (2)	0	1 (1)	0	0	1	0	0	0	5
737 MAX	2 (1)	3	3	6 (3)	5 (3)	4 (2)	11 (7)	0	15 (5)	1 (1)	8 (4)	0	59
747 Classic	2 (2)	0	0	0	0	0	0	0	3 (1)	0	0	0	5
747-8	2	0	0	0	0	0	0	1	2 (1)	0	0	0	5
767	0	2 (2)	1 (1)	0	1 (1)	0	0	0	2 (2)	0	1	0	7
777	0	1	2 (1)	1 (1)	0	0	0	0	2 (1)	1	0	3	10
777-9	0	0	1	0	0	0	3 (2)	0	0	1 (1)	0	0	7
787-8	1 (1)	2	0	8 (2)	1	1	0	0	106 (5)	2 (1)	0	0	121
787-9	0	0	6 (1)	1 (1)	0	1	0	0	2 (1)	0	0	1	11
787-10	2 (1)	0	1	1 (1)	2 (1)	0	1	0	5 (4)	1 (1)	3 (2)	0	16
OOP (717)	0	0	0	0	0	0	0	0	0	0	0	0	0
OOP (727)	0	0	0	0	0	0	0	0	0	0	0	0	0
OOP (737)	0	0	0	0	0	0	0	0	0	0	0	0	0
OOP (757)	0	0	0	0	0	0	0	0	0	0	0	0	0
TSS	1	1	0	0	0	0	1	0	0	0	0	0	3
Total by Technical Area	10	9	15	19	9	7	16	1	138	6	12	4	

B Dedicated IT support roles will be required at each office, to ensure beneficial IT tools are established and useable

FAA offices currently struggle without local IT support staff…

- National IT infrastructure is only effective when useful tools are built on top of it (e.g., BASOO tracking tool built on top of SharePoint)
- Business requirements are rapidly evolving, and variable across offices
- Offices without local IT support are unable to leverage IT to manage performance
- E.g., BASOO's tracking tool was largely built by a staff member in spare time, not as a formal role

Establishing new local IT roles will empower offices to manage performance

- Each office needs **at least 1 FTE** in a performance management IT role
- Local IT support staff will:
  - Implement and manage tools, leveraging national IT infrastructure, to support performance management and collaboration
  - Adapt nationally-provided solutions to suit evolving local needs
  - Oversee proper use of IT tools and facilitate user training
- e.g. SACO has 2 FTEs dedicated to IT development; they produced the highly successful SACO dashboard and SACO Work Tracking System (WTS)

SOURCE: FAA interviews

C Processes for data input, integrity, and output must be established to ensure IT systems are used productively to manage performance

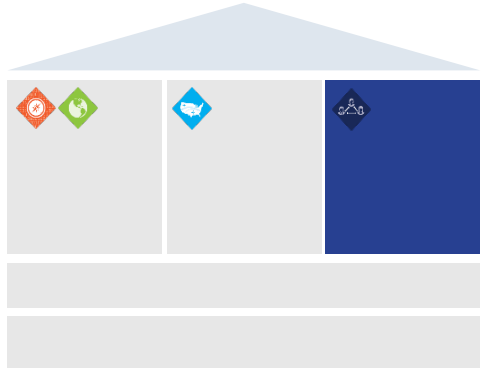
	Process description	Owner(s)	Trial in BASOO prototype program
Data input	▪ Every new work item received must be entered into the work tracking system ▪ Updates must be made to the tracking log when work is delayed and completed	▪ Technical support personnel, or Frontline engineer, or Program Manager	▪ Boeing work items will be entered into the Boeing Tracking System (BTS) by technical support, Program Manager or assigned engineer ▪ Updates will be the responsibility of the engineer
Data integrity	▪ Tracking data must be verified by applicants, making corrections where necessary, so applicant and FAA agree on a “single source of truth” ▪ Review regularly with applicant	▪ OMT lead, with ODA lead	▪ BASOO manager will review performance tracking data with Boeing during weekly and monthly performance review meetings ▪ Boeing will be requested to submit any amendments to the data
Data output	▪ Performance/status data must be actively shared internally, on a regular cadence, and in a digestible form ▪ Output must be actionable, e.g. for prioritization and load balancing	▪ Program Managers (PMs) ▪ Technical Program Managers (TPMs)	▪ Live BTS dashboard will be used to automatically visualize current status of all Boeing work items ▪ Only practically viewable within the BASOO – screenshots can be shared via email with Boeing

ACMT supporting materials

- **Gallery walk**
  - ODA experience
  - Industry viewpoints
  - Internal pressures
  - Organization
- **Discussion stations**
  - Strategy
  - Management systems
  - **Organization**
  - Change management

Section E: Improve organization and invest in our people

Deloitte to fill out with org details



12 Adapt organization to execute on certification strategy

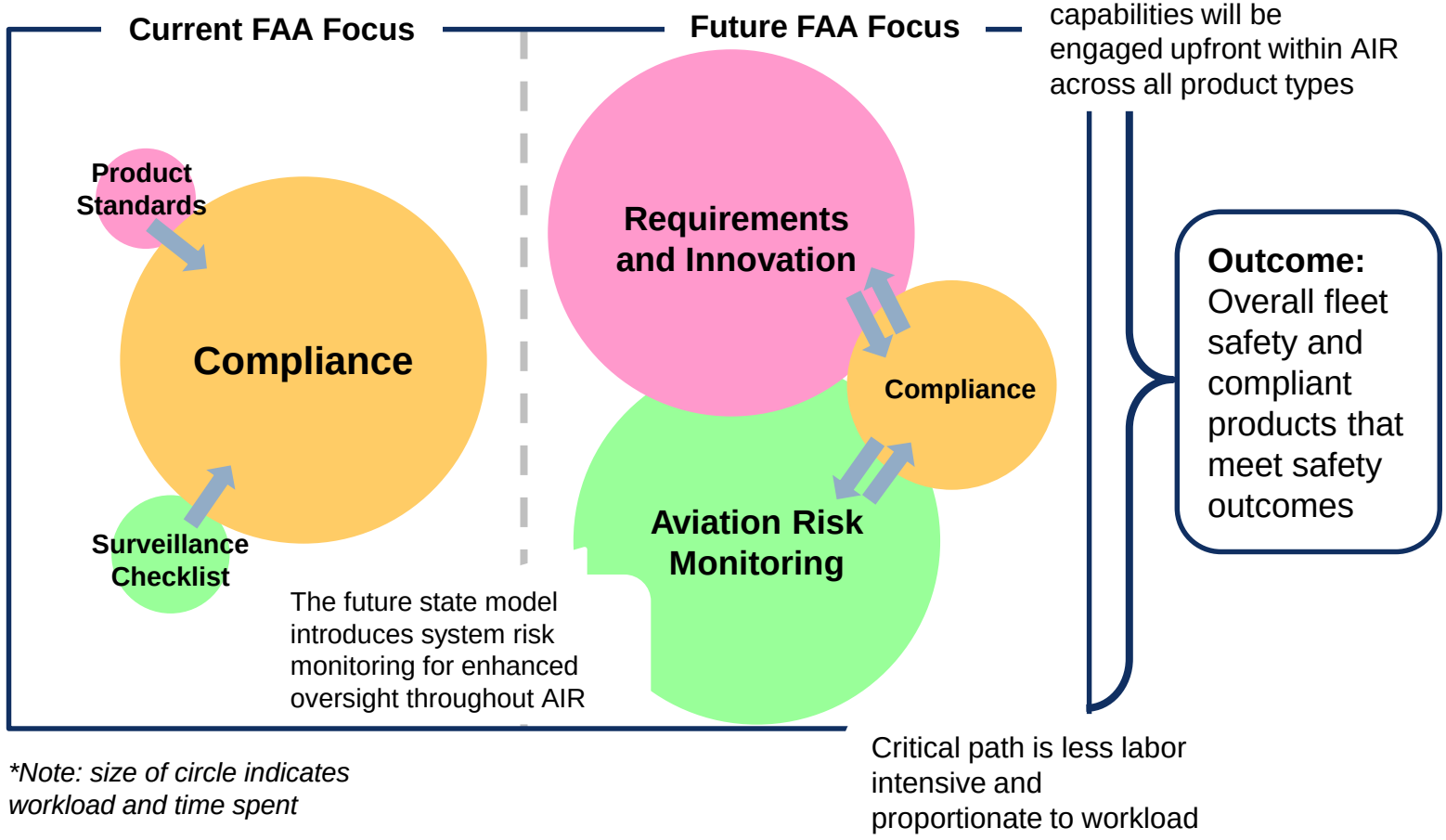
Text

13 Invest in people and build skills to empower the workforce of the future

Text

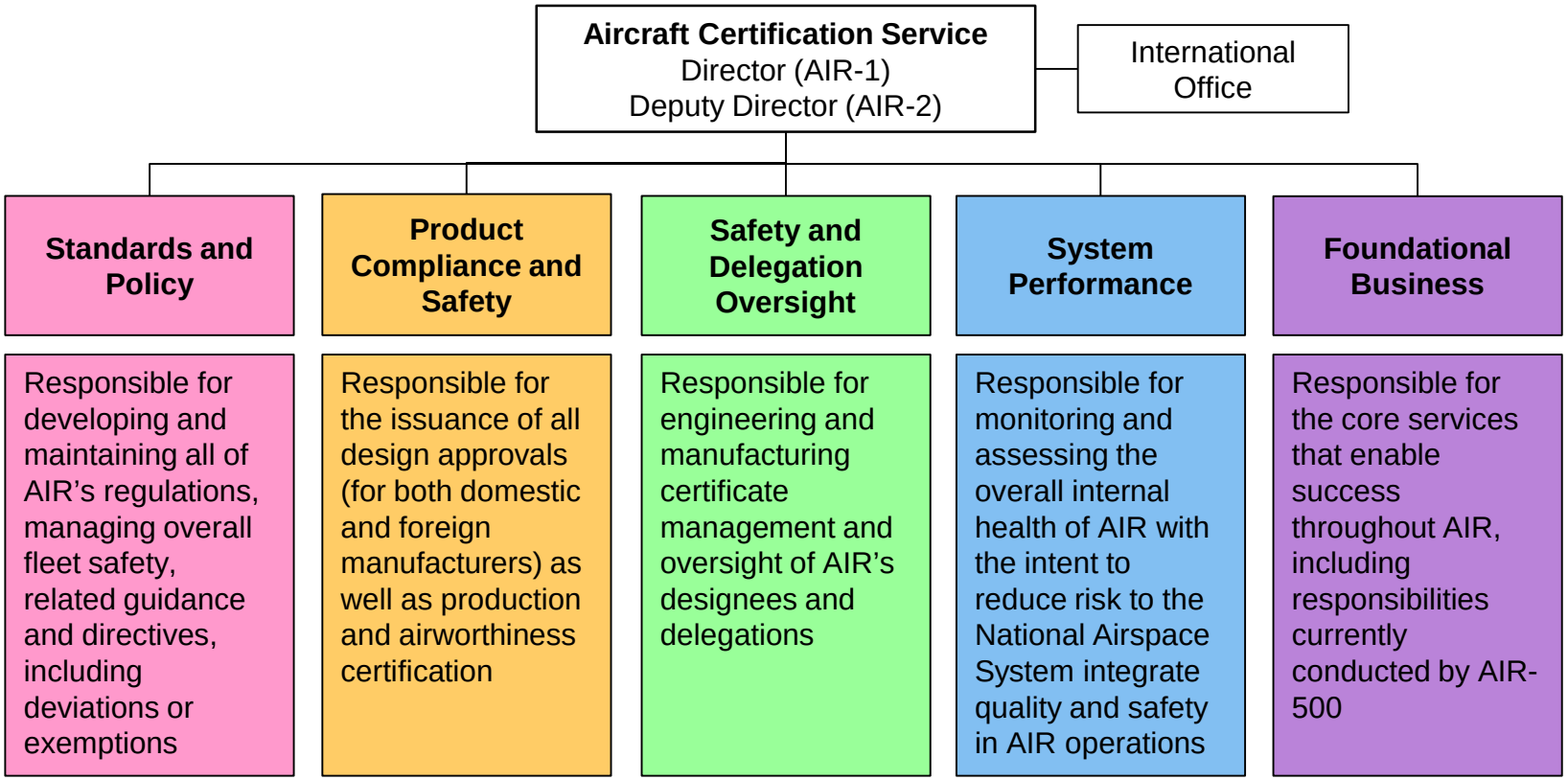
The Future State: Risk Based System with a Streamlined Critical Path for Industry

AIR's future state model will streamline compliance activities and promotes **early and iterative actions** between industry partners and AIR.



Future State AIR Overview

AIR has decided to move to a functional operating model and implement the new organization within the next three years. Michael Huerta, the FAA administrator, has asked AIR to stand up three elements of this organization by end of FY16. Below is a representation of the model.



Detailed Functional Activities

<table>
<tr><th colspan="2" rowspan="2">Standards and Policy</th><th colspan="2">Product Compliance and Safety</th></tr>
<tr><th>Product Compliance</th><th>Product Safety</th></tr>
<tr>
<td>Rulemaking
• Regulations
• Special Conditions
• Exemptions

Directives (Essential Requirements)
• Orders
• Notices
• Document essential requirements and critical communication/linkages/ interdependencies between functions; pull resources from other divisions to develop essential procedural requirements and linkages expectations

Technical Procedural Guidance
• Policy memos and letters
• ACs

Technical Standard Orders
• Requirements
• Deviations</td>
<td>Bilaterals
• BASAs
• IPAs
• BRM information

Research and Development

Chief Scientific Technical Advisors (CSTA)
New Technology
• Novel, NextGen, R&D

Risk Assessment Methodologies (RAMs)
• Creation
• Maintenance

Fleet Safety
• Data trending
• All NTSB/FAA Safety Recs coordination point
• Fleet wide SAIBs
• Maintenance Alerts</td>
<td>Design Approvals (incl. Amendments and Changes)
• Standard Cert and ODA: TC/STC/PMA
• TSO/LOA
• 337 support to FSDO
• CPNs
• LOD

Certificate Issuance and Inspection Functions for:
• Production (PC, PMA including licensing agreement, TSO)
• Airworthiness

Export Approvals

Validations (Import and Export)

SMS Approval

Flight Test

Conformity Aspects of Text Components and Aircraft</td>
<td>Quality Manuals (Initial Approval)

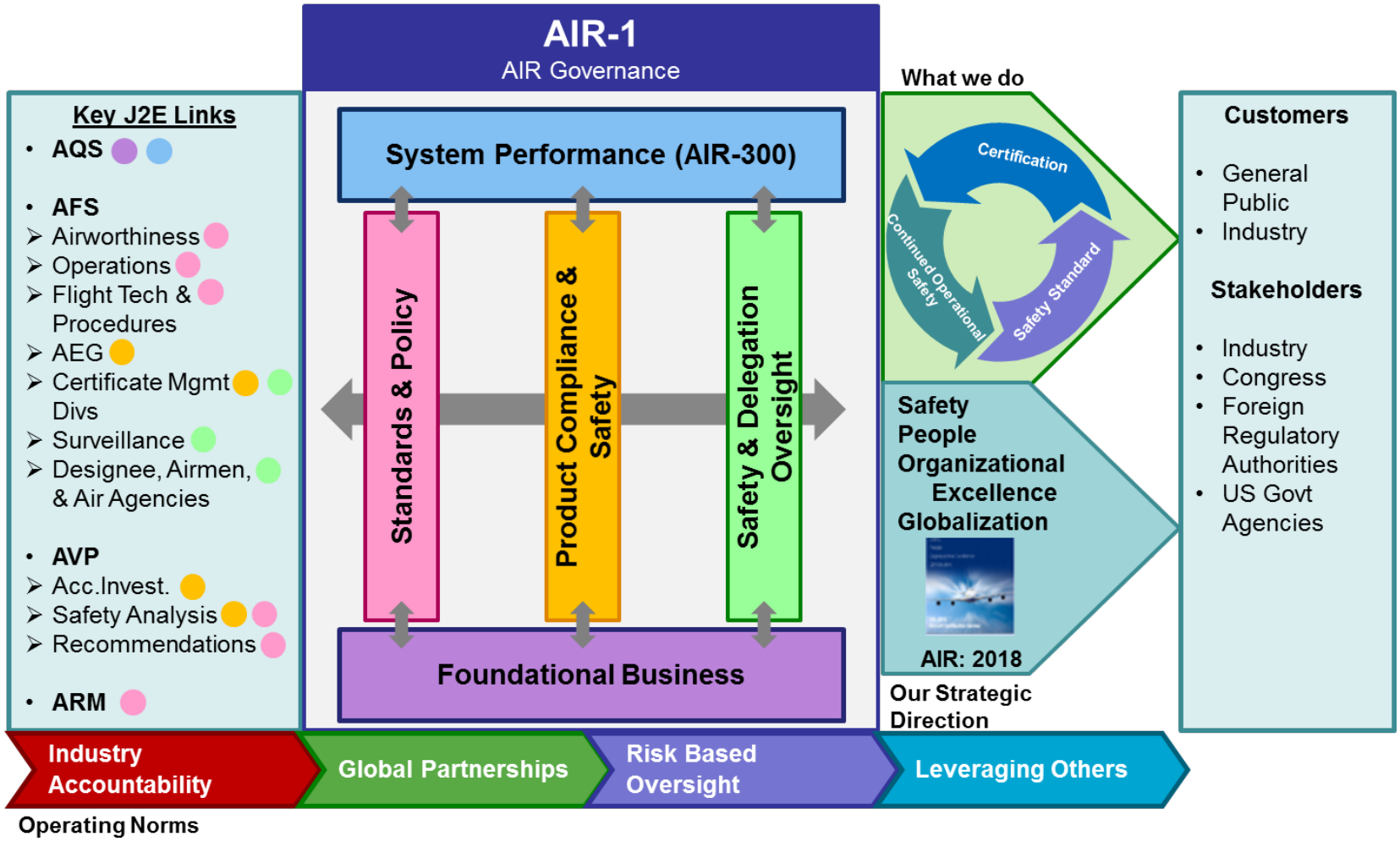
Undue Burden IPs

Applicant Only Appointment Privilege Product COS (use RAMS from S&P):
• MSAD/Service Difficulty Reports
• SOC/CARBs
• All ADs
• Product SAIBs
• Product Maintenance Alerts
• Product Safety Recs. (comes from OSO)
• AMOCs
• Accident/Incident Investigations (coordinates directly with AVP)
• MCAIs
• Make/Model specific COS</td>
</tr>
</table>

Detailed Functional Activities (continued)

Safety and Delegation Oversight	System Performance	Foundational Business	
Designee and Delegated Org Appointment Renewal and Oversight • DERS • ODAs – oversight, OMT & OMT Leads, OMT supervision, conduct planned supervision activities • DARs • DMIRs **Audit and Evaluation Results** **AFS Support Related to Delegation Performance** **ODA Procedural Manual** **Certificate Management and Surveillance (including Safety Management Systems)** • PI Audits • QSAs • SCAs • Product Audit • 21.20 Audits **Audit and Evaluation Results** **Enforcement Actions** **Quality Manual Revisions** **Production Under TC Only** **Suspect Unapproved Parts Investigation**	**Quality Management System (QMS)** • AODs • Dashboards • Audits **Oversee System Performance** • Does research and data gathering/analysis **Safety Issues Reporting System (SIRS)** **Includes ownership of unique service-level metrics** **Participate with other divisions to define performance measures for all business processes** **Leads special certification review teams** **Monitor responses to OIG, GAO, Congressional Inquiries and other sources to determine organizational risk**	**Budget, Planning and Acquisitions** **Admin. Support** • Building space • Budgets • Biz and Performance Plans • LDR • GovTrip • T&As • Filing and FRC • International Technical Assistance **Human Capital** **Training (working with other divisions to develop training and gather requirements)** **Development and ownership of AIR cross foundational system processes**	**IT Managing the process** **Define and maintain AIR's system definition, data architecture and governance** **Regional Office Interface** **AIR Websites** **OSHA** • Activities • Interface **FOIA, OIG, GAP response tracking (Hotline, EEO, Whistleblowing, Accountability Board)** **Organizational Communication**

Draft AIR Operating Model



ACMT supporting materials

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  - Management systems
  - Organization
  - **Change management**

Section F: Help organization embrace holistic transformation by creating clear communication channels with our people

14 Communicate an integrated vision across AIR and stand up an action-oriented group of change leaders to drive initiatives

In the face of shared FAA and industry strategic challenges, FAA has not consistently deployed change management processes to affect changes decided in HQ. This leads to a gap between industry and front-line expectations. Our recommendation is to communicate an integrated vision across AIR and stand up an action-oriented group of change leaders to drive initiatives.

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	Key activities	Date
A Sr leadership comm on AIR vision	▪ AVS and AIR leadership cascade AIR vision to AIR management, directorates, ACOs, frontline, and industry	▪ Oct-Nov 15
B Set up change leader function	▪ Codify roles and responsibilities for program positions, establish SF-50, and input into FPPS	▪ Sep 15
	▪ Establish organizational structure and governance procedures of the program, recruit exceptional change leaders and support staff	▪ Sep 15
	▪ Hire change leaders and staff, onboard personnel, conduct initial training	▪ Oct 15
C Implement first suite of initiatives	▪ Assign first initiatives to specific Change Leaders	▪ Oct 15
	▪ Change Leaders develop change story and vision	▪ Oct 15
	▪ Change Leaders build team and develop change plan	▪ Oct-Nov 15
	▪ Communicate and refine plan with all stakeholders	▪ Nov 15
	▪ Execute plan, work directly with metrics and health to analyze and refine	▪ Nov 15-TBD
D Activate recurring processes and structures	▪ Initiate three step training process: onboard, individual, and team training	▪ Oct 15
	▪ Activate defined governance procedures, including progress reviews and reports to appropriate people and committees	▪ Oct 15
	▪ Utilize established metrics and health targets to analyze progress and course correct change plans as needed	▪ Nov 15
	▪ Hold first semi-annual initiative review and new initiative selection workshops utilizing stakeholder input and recommendations	▪ Jul 16
	▪ Begin recruitment and selection of next rotating Change Leader cohort	▪ July 17

Part 23 Change management

The case for change management…

Why we need change management…

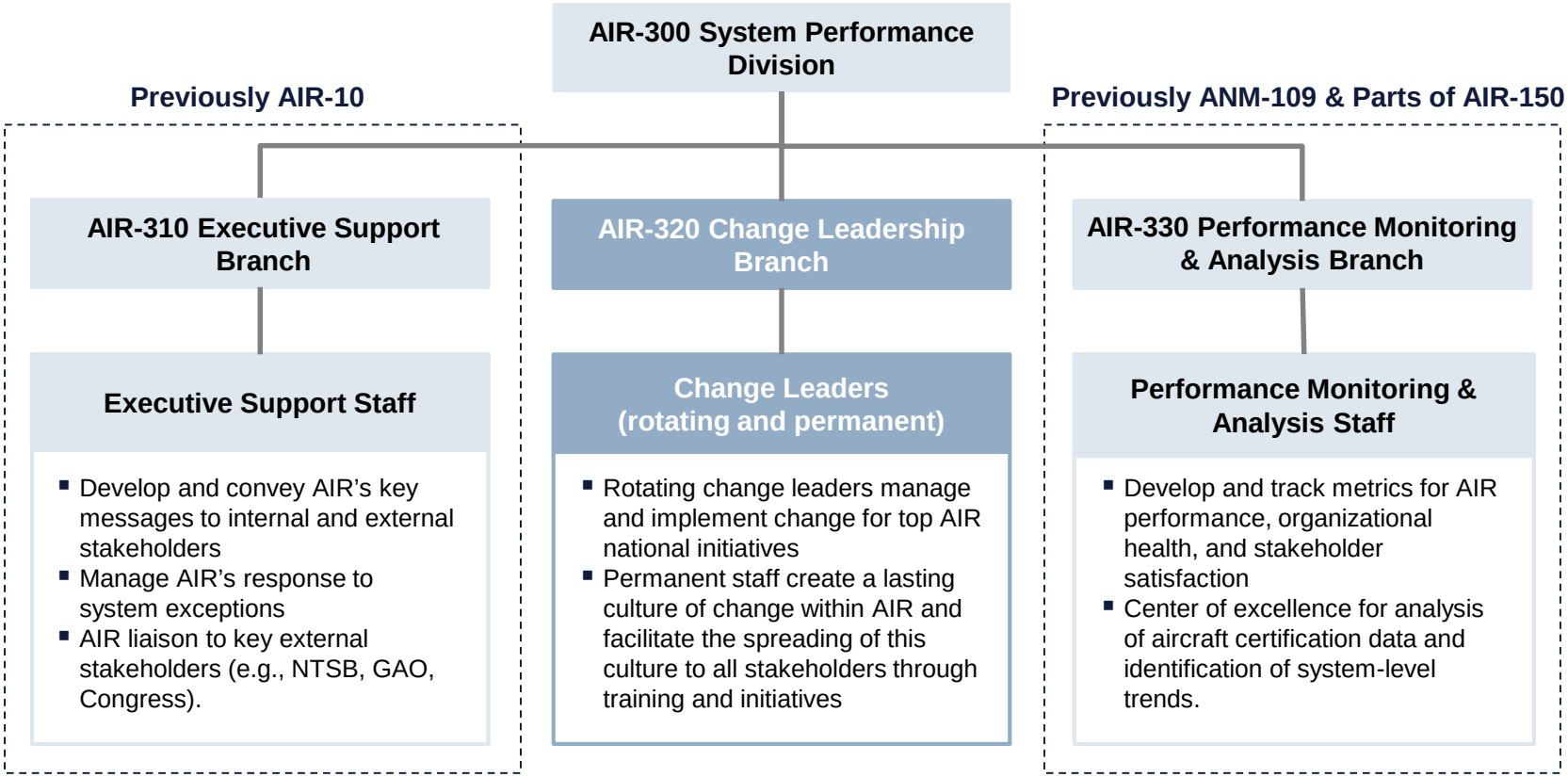
- Historically, **AIR has struggled to conduct successful nation-wide change management programs**
- Although AIR and the FAA have consistently identified initiatives to address problems in certification, the prioritization, planning, and **call to action in order to execute the implementation of initiatives has often fallen short**
- **Pressure on the certification system will continue to require AIR to change…**

Why the Change Leadership Branch (CLB)…

- The CLB is an **action-oriented and highly motivated group of respected leaders** from within the FAA
- Change Leaders are specifically selected to **work with both FAA personnel and industry stakeholders** to develop and implement impactful strategic-level changes
- The CLB process allows AIR to prioritize and tackle its most critical strategic problems to get ahead of issues while **spreading a culture of change management**

The Change Leadership Branch is at the core of a new three-pronged organization that will work in AIR 300 to ensure AIR systems performance

The Change Leadership Branch is at the core of a new three-pronged organization that will work in AIR-300 to ensure AIR's system performance



Key elements of change leadership…

Initiative selection: Process for generating, evaluating and prioritizing initiatives for the AIR organization

Change management: Definition of the overall change management process and how to develop an effective change management program for each initiative

Governance: Set of meetings, decisions, people and cadence that will provide oversight for the CLB

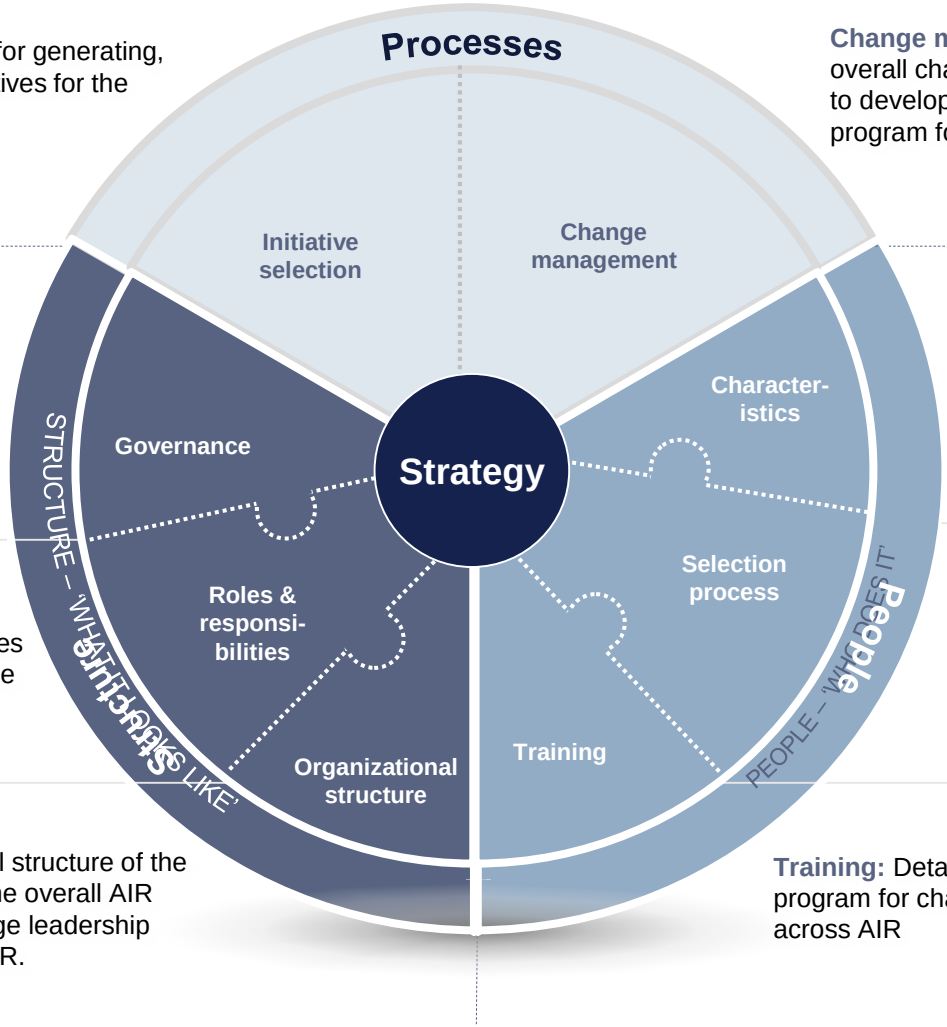
Characteristics: Skills, experience, mindsets and qualities of a strong change leader; details of who should be selected for the function

Roles and responsibilities: Definition of roles and responsibilities for each member of the CLB and the change leadership function across AIR.

Selection process: Definition of how to select the right change leaders for change initiatives

Organizational structure: Internal structure of the CLB, reporting lines and fit within the overall AIR organization. Location of the change leadership function and its members across AIR.

Training: Details of the capability-building program for change leaders in the CLB and across AIR



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