FAA AVS certification: Final Recommendations

Federal Aviation Administration

October 23, 2015

Contents

Four external factors are increasingly challenging the current AIR system

		Description	Implications
Industry growth		▪ Industry expands and contracts much faster than the FAA in its current structure can manage ▪ ODA implementation has not met expectations	Stress on traditional AIR structure and processes creating a need for agility
Globalization of aviation		▪ Industry is made up of an international web of networks and complex business arrangements that are challenging our traditional regulatory model	Need for international collaboration
Heightened expectations		▪ The public, industry and government entities continue to increase their expectations of us to do things faster and without error	Pressure on AIR to become efficient and agile
Velocity of change		▪ Technological advances and business model changes are precipitating higher rates of change and increasing the need for organizational agility and adaptability as our environment changes	Complexity and volume of standards needs

AIR also recognizes several internal pressures that drive a need for transformational change

Internal pressures

Certification strategy

Need for more clarity on tactical plan for AIR

- Need for alignment and clear linkage between AIR strategy and tactical initiatives – there is a need to communicate a vision and get frontline feedback and buy-in

Management systems

Insufficient management systems

- Our management systems have not kept pace with the increase in volume and complexity of work – making it harder for frontline employees to be efficient and effective in their roles

Organization and skills

Sub-optimal organization and investment in skills that support old model

- External challenges require AIR to invest in new skills and training to empower our frontline
- Organizational model has redundancies, and needs to adapt address external challenges

Change management

Poor change management infrastructure

- Historical AIR efforts to implement transformational change have not consistently taken hold due to a lack of holistic change management infrastructure
- AIR needs clear communication of the changes ahead and how individual initiatives will bring about the broader certification strategy

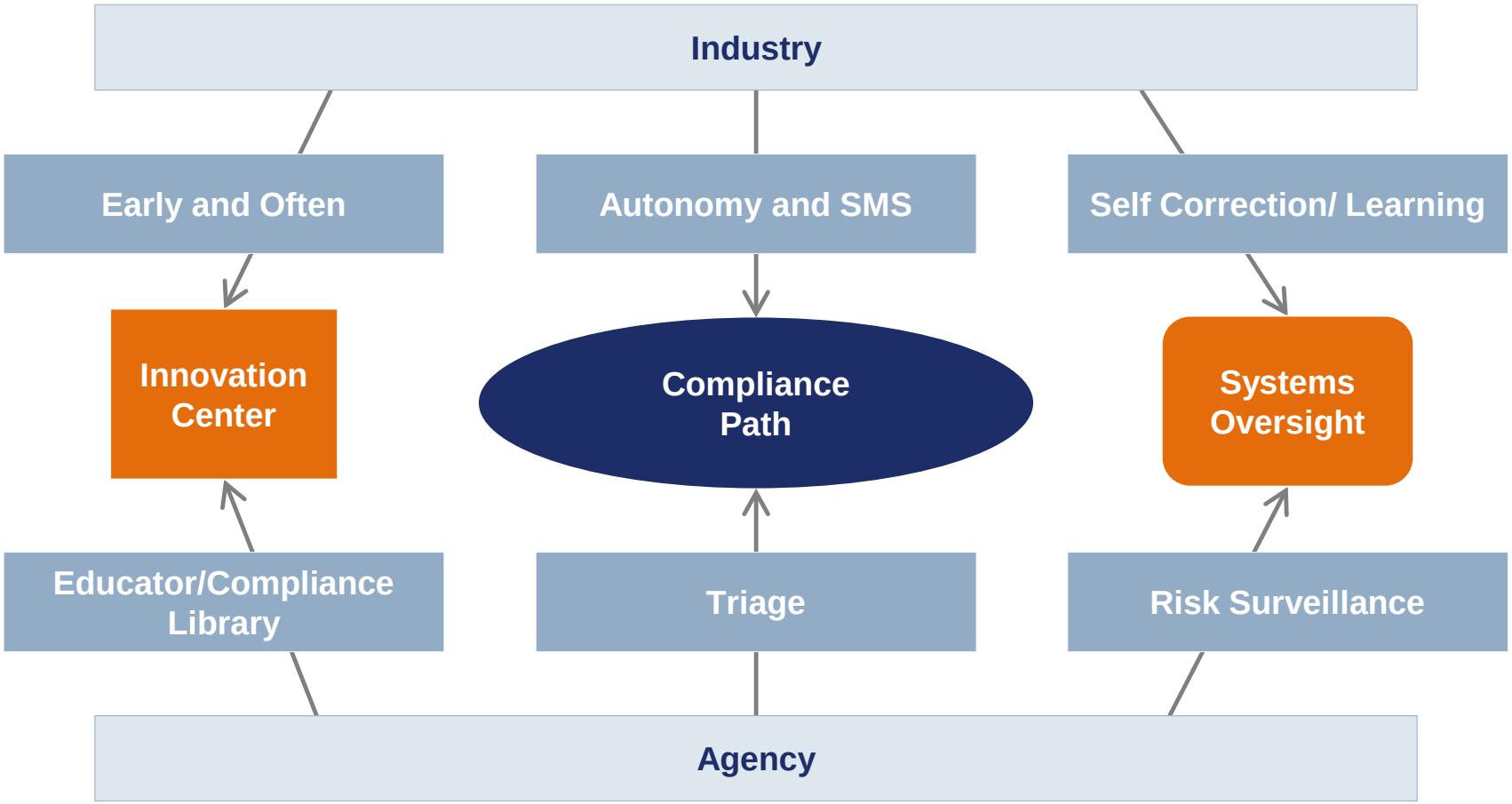
The future state of AIR needs to embody 8 characteristics to meet the external and internal challenges the organization faces

To meet the challenges ahead, AIR needs to…

1. Be agile and be effective at responding to change
2. Enable the application of the safety continuum in all functions
3. Be fiscally responsible and enable efficient use of resources based on corporate need
4. Standardize risk-based decision-making regarding technical operations
5. Resolve conflict quickly and effectively
6. Promote technical competency
7. Transition to oversight as primary function
8. Be a global leader

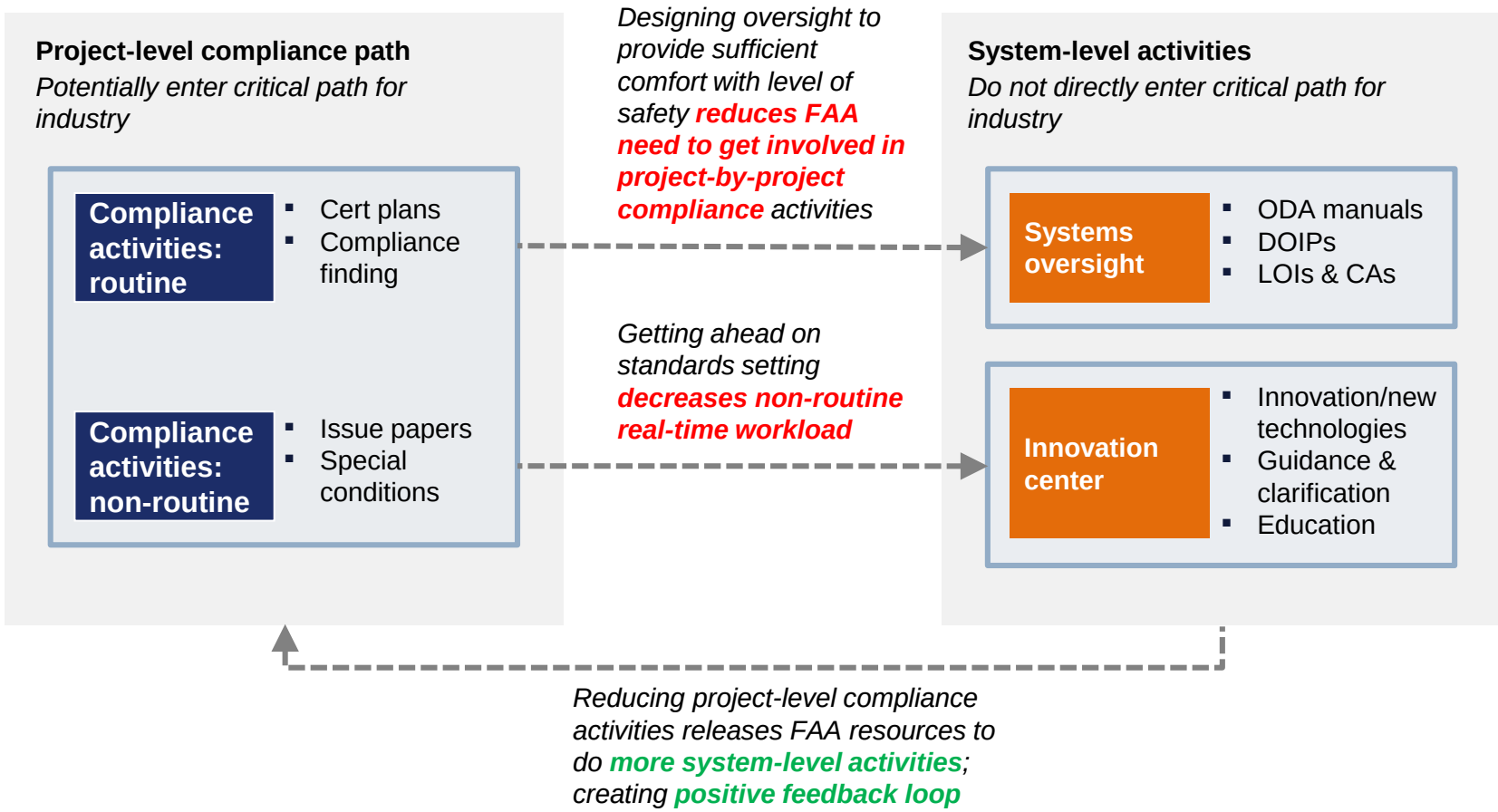
SOURCE: “AODC Phase 1 Framework,” August 2015

The transformation of AIR will enable a more efficient and effective model of aircraft certification



The future state of AIR will shift out of the project-level compliance path, towards systems oversight and an "innovation center" for standards

The systems shift can be accomplished through immediate short term improvements to oversight/surveillance and standard setting functions, which will drive a positive feedback loop that increases system safety and decreases need for project-level compliance involvement in the long run.



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

Contents

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

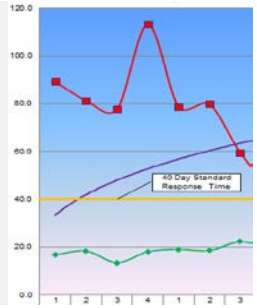
Ensure appropriate support of standards activities	1. Partner with applicants to prioritize and implement policies for emerging technologies 2. Reduce issue paper workload through timely generation of policy and guidance (e.g., MOC for existing technologies) 3. Update priority regulations for Transport, 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

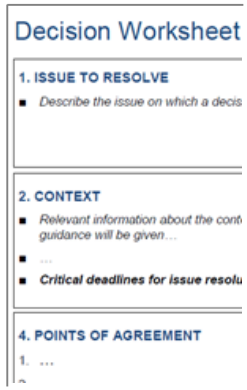
- Adopt a standard set of **performance metrics** to be tracked to improve efficiency, quality, involvement, relations, and effectiveness
- Adopt **national targets** for all metrics, with a process for **local refinement**
- Adopt refinements to the **ODA scorecard**



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

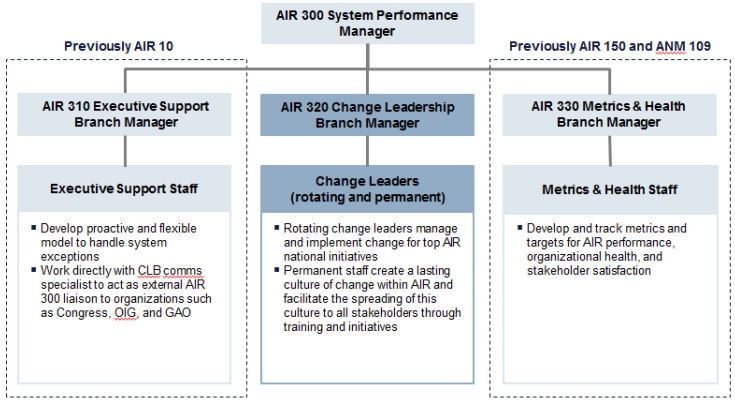
14 Help organization embrace holistic transformation by creating clear communication channels with our people

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



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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.

Initiative owner: TBD | **Year 1 Investment:** 5-6 FTE: 1 change leader FTE + 1-2 staff + 3 standards staff FTE

	Key activities	Date
A Work year 1 technology areas	▪ Identify 3 technologies from industry list[1] as 2016 priorities ▪ Hold semi-annual working sessions with relevant industry players to develop FAA expertise and understand most likely technology applications ▪ Assign specific standards staff to work guidance and implications for selected areas (number of FTE TBD based on product timeline and degree of novelty)	▪ 2015 ▪ 2016 ▪ 2016
B Stand up innovation and technology organization (can lead 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 ▪ Use CSTAs to partner with industry on priority emerging technology areas and proactively advise and drive standards	▪ 2016 ▪ 2016
C Develop process for industry to engage FAA on emerging technology in advance of project	▪ 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 ▪ Prototype module with 2-3 key applicants ▪ Incorporate lessons learned and rollout module nationally	▪ 2016 ▪ 2017 ▪ 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

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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.

Initiative owner: TBD | **Year 1 Investment:** 0.5 change leader FTE + 11 standards FTE[1]

	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

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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.

Initiative owner: TBD | **Year 1 Investment:** None

	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 ▼

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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.

Initiative owner: TBD | **Year 1 Investment:** 0.5 change leader FTE + senior leadership involvement

	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

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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.

Initiative owner: TBD | **Year 1 Investment:** (20 FTE): 1 change leader FTE + 4 FTE – ~25 FTE saved (NoPNL)

	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	▲	Fly Once	▲
NoPNL	▬	Noise & Emissions	▲	ICA	▲		

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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.

Initiative owner: TBD | **Year 1 Investment:** None

	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

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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.

Initiative owner: TBD | **Year 1 Investment:** 0.5 change leader FTE + 2 staff FTE for ODA manual

	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

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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.

Initiative owner: TBD | **Year 1 Investment:** None

	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 ▲

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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.

Initiative owner: Metrics/Health AIR-330 | **Investment required:** 60 duty days (L-band) + 120 days (support)

	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 ▲

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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.

Initiative owner: Metrics/Health AIR-330 | **Investment required:** 60 duty days (L-band) + 240 (technical)

	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▲

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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.

Initiative owner: Metrics/Health AIR-330 | **Investment required:** 240 duty days

	Key activities	Date
A Roll out new tools to all ACOs	▪ Provide SACO IT team with FAA-approved server and development tools	▪ Oct 2015
	▪ Roll-out current SACO tools to Fort Worth & LA; begin user feedback	▪ Oct 2015
	▪ Complete roll-out to remaining ACOs in sequence: Denver, BASOO, Small Airplane Directorate offices, ECO, Rotorcraft Directorate offices	▪ Nov 2016
	▪ Incorporating lessons learned, build and roll out enterprise-level national IT system leveraging common IT infrastructure (e.g. SQL server)	▪ 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)	▪ Oct 2015
	▪ Select and train IT support personnel at each ACO, with training led by AIR-330 Metrics/Health unit	▪ 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	▪ Oct 2015
	▪ Circulate draft guidance / job aids on new processes	▪ Nov 2015
	▪ Prototype new processes at the BASOO and Fort Worth during prototype program, including test of central accessibility of ACO data by AIR HQ	▪ Nov 2015 – Mar 2016
	▪ Finalize new processes through written guidance / job aids to all ACOs	▪ Sep 2016

Building on existing initiatives: Sharepoint ▲ OSP ▲ EDPA ▲

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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.

Initiative owner: Dave Hempe | **Year 1 Investment:** 12-16 FTEs

	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

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Industry must embrace systems safety with a compliance culture, and make corresponding commitments to support FAA actions

	Industry commitments required
Systems safety & compliance culture	▪ Strengthen compliance culture ▪ Implement engineering system that appropriately balances business, customer, and compliance requirements ▪ Work with FAA to set common goals and targets to move towards new system with greater applicant responsibility ▪ Change engineering mindsets and behaviors through rigorous change management
Early engagement on innovation	▪ Commit to engage with FAA on new technologies before project start – Participate in annual FAA review and prioritization of new technologies for standards acceleration – Participate in “innovation-box” pilot
Joint performance management	▪ Work with local FAA team to share common data and ensure data integrity ▪ Jointly set targets and hold joint performance reviews ▪ Define and adhere to issue resolution process
Support FAA organizational transformation	▪ Participate in industry challenge sessions to: – Provide input on FAA organizational transformation – Provide input on AIR vision and strategic initiatives

Contents

FAA actions can be prioritized by considering anticipated impact and time to implementation

Recommendation areas

Certification strategy

1. Partner with applicants on emerging technology
2. Reduce IP workload through timely generation of policy
3. Update priority regs and guidance to be perf-based
4. Pursue international reciprocity and harmonization
5. Accelerate delegation with key existing initiatives
6. Take functional approach to increasing delegation
7. Develop systems-level oversight
8. Adapt oversight to be risk- and performance-based

Management systems

9. Clarify metrics and set targets across ACOs
10. Adopt new governance processes to drive performance
11. Adopt IT systems and infrastructure

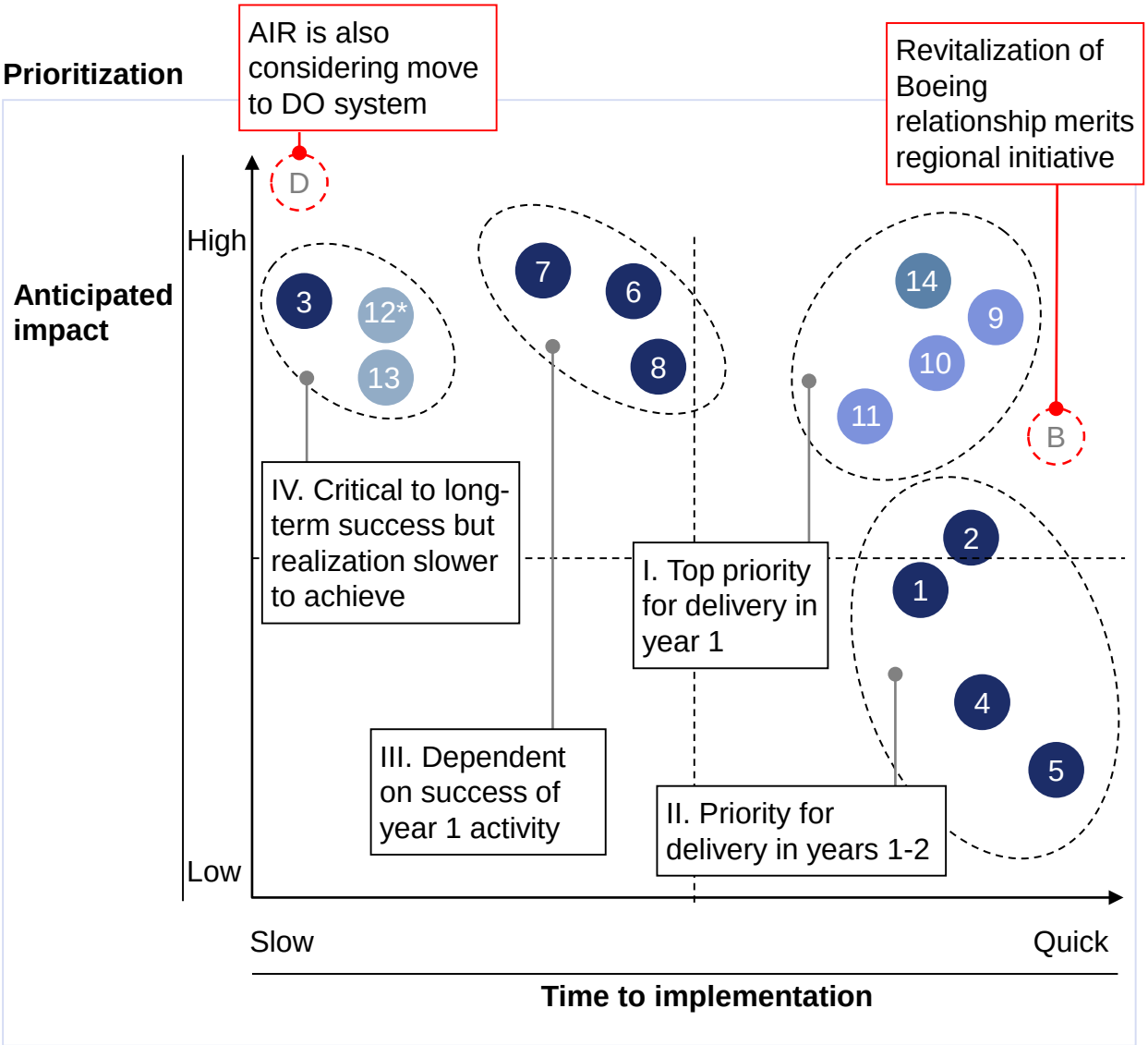
Org

12 13. Improve organization (AODC) and invest in people

Change

14. Rollout change management comms & build change leaders

Prioritization



*Organizational changes are embedded in and enable other recommendation areas; Roman numerals 1-4 correspond to 4 stages of change outlined on next page

SOURCE: Team Analysis

FAA change will be enabled by organization and industry commitments

	Key FAA changes	Organizational enablers	Industry commitments
I. Plant the enablers for change	9 Clarify metrics and set targets across ACOs	▪ AIR-330	▪ Work with local FAA team to share common data and ensure data integrity ▪ Jointly set targets and hold joint performance reviews ▪ Define and adhere to issue resolution process
	10 Adopt new governance processes to drive performance	▪ AIR-330	
	11 Adopt IT systems and infrastructure	▪ AIR-330	
	14 Rollout change management comms & build change leaders	▪ AIR-320	▪ Change engineering mindsets and behaviors through rigorous change management
II. Drive forward innovation and follow through on current initiatives	1 Partner with applicants on emerging technology	▪ Innovation	▪ Commit to engage with FAA on new technologies before project start ▪ Participate in annual FAA review and prioritization of new technologies for standards acceleration
	2 Reduce IP workload through timely generation of policy	▪ Innovation	
	4 Pursue international reciprocity and harmonization		
	5 Accelerate delegation with key existing initiatives		
III. Transition to systems oversight	6 Take functional approach to increasing delegation	▪ Surveillance	▪ Strengthen compliance culture ▪ Implement eng. system that balances business, customer, and compliance requirements ▪ Work with FAA to set common goals and targets to move towards new system with greater applicant responsibility
	7 Develop systems-level oversight	▪ Surveillance	
	8 Adapt oversight to be risk- and performance-based	▪ Surveillance	
IV. Shift policy & organization to new model	12 13 Improve org (AODC) and invest in people	▪ Operations	
	3 Update priority regs and guidance to be perf-based		

Initial change leaders organization could consist of four change leaders, with AIR 100 and AIR 400 leading remaining activities

	Recommendation areas
Certification strategy	1 Partner with applicants on emerging technology
	2 Reduce IP workload through timely generation of policy
	3 Update priority regs and guidance to be perf-based
	4 Pursue international reciprocity and harmonization
	5 Accelerate delegation with key existing initiatives
	6 Take functional approach to increasing delegation
	7 Develop systems-level oversight
	8 Adapt oversight to be risk- and performance-based
Management systems	9 Clarify metrics and set targets across ACOs
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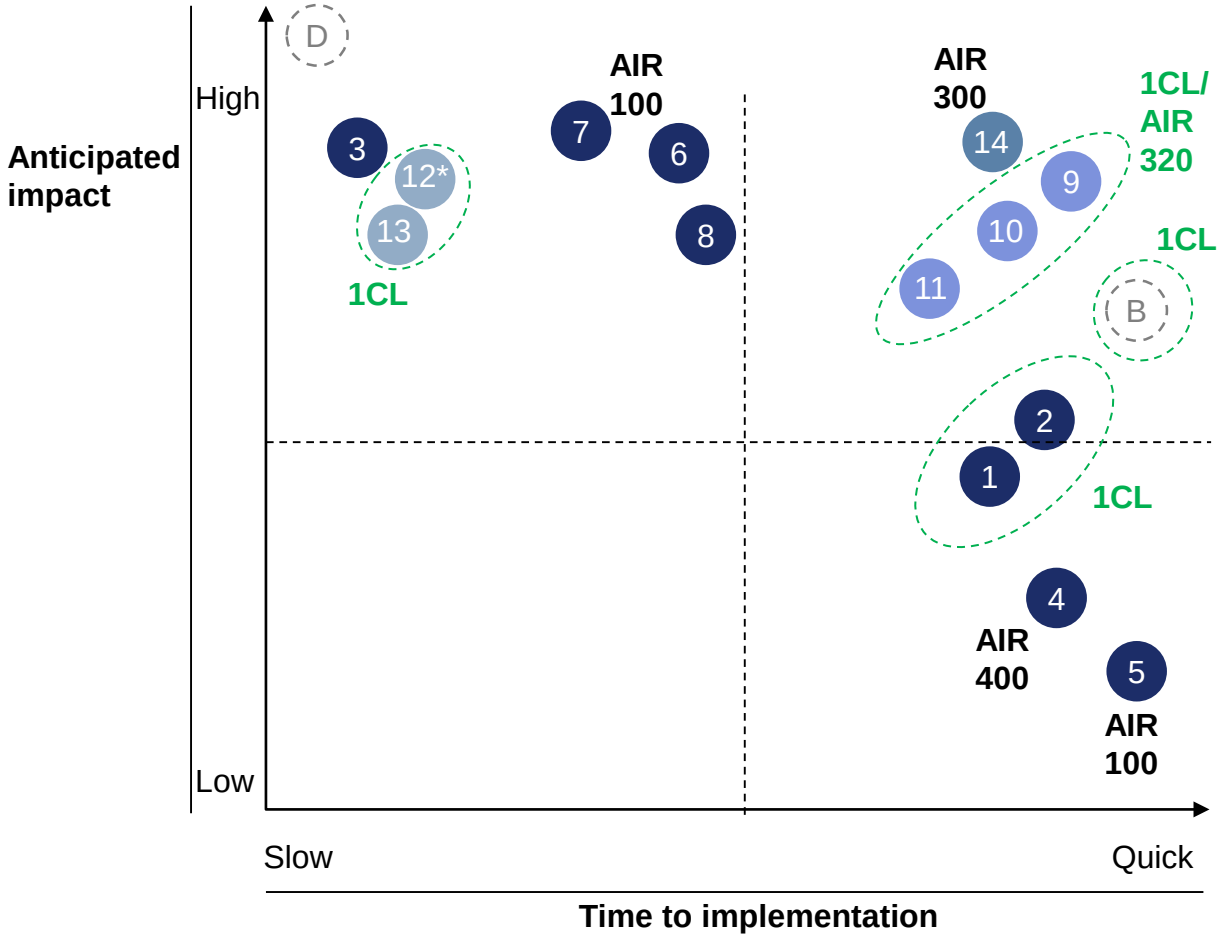
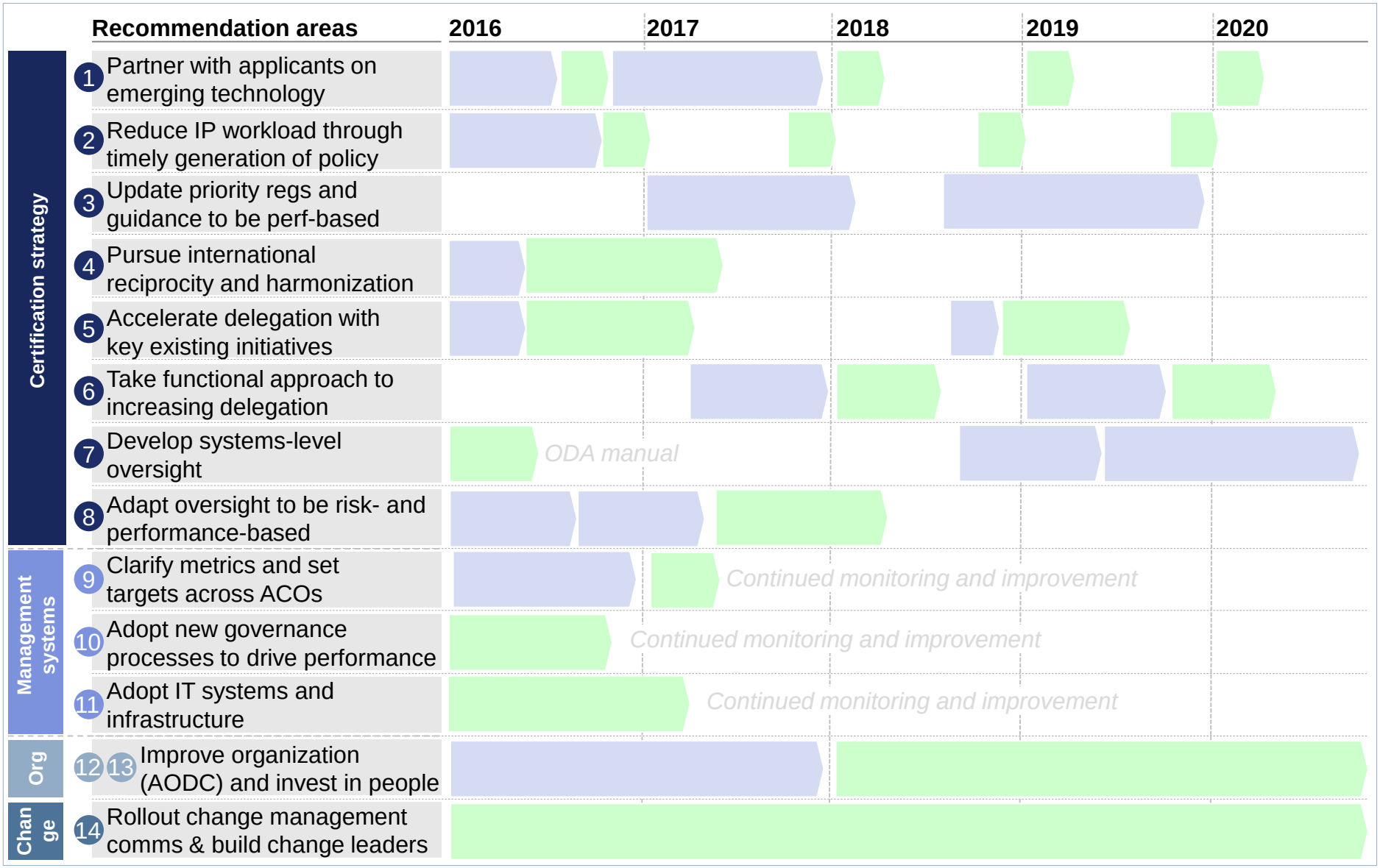


*Organizational changes are embedded in and enable other recommendation areas

SOURCE: Team Analysis

Proposed FAA five-year plan



SOURCE: Team Analysis

Contents

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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

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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

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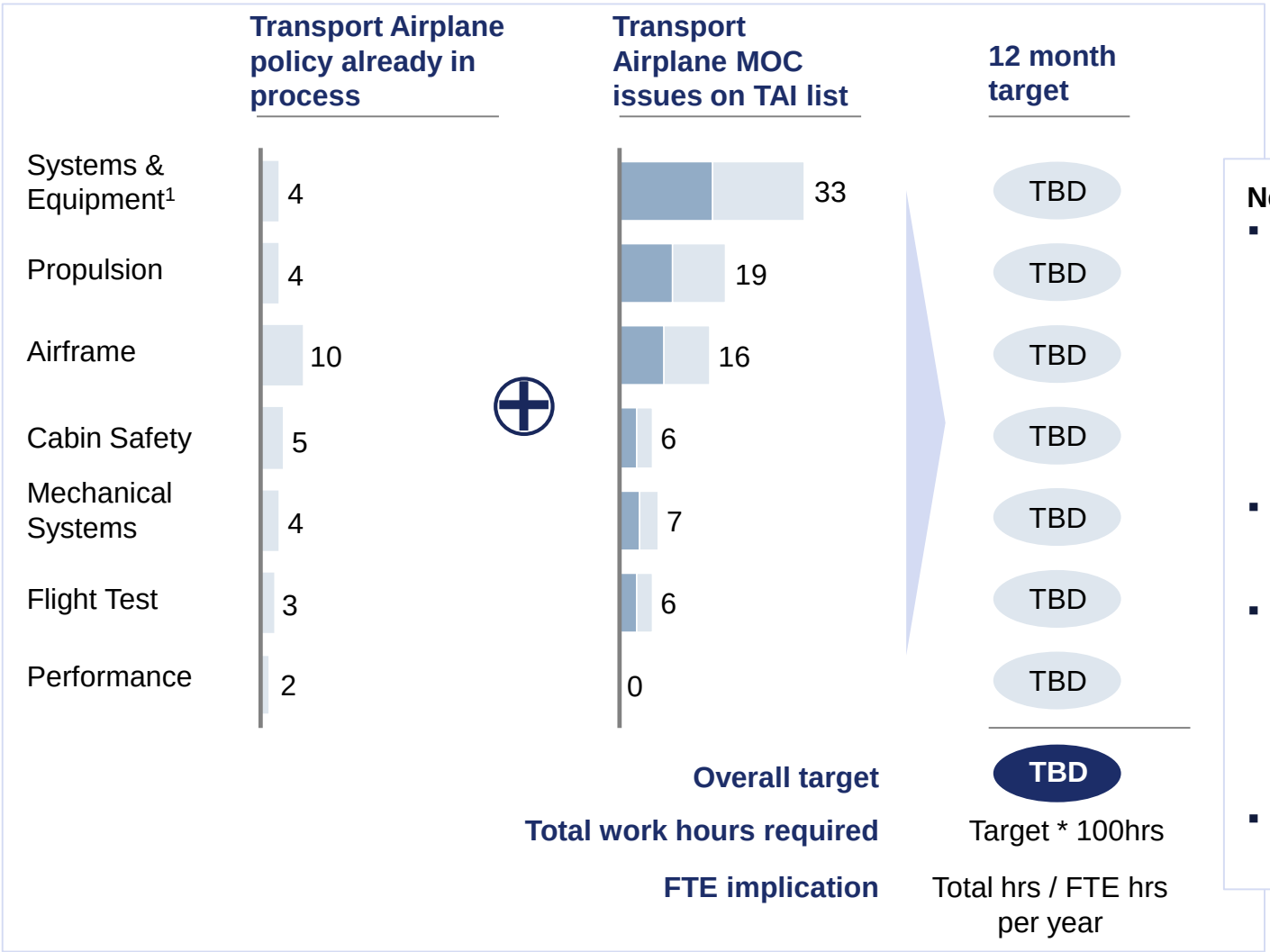
Once approaches are standardized, targets can be set by discipline which include policy already in process and addressable MOC issues



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

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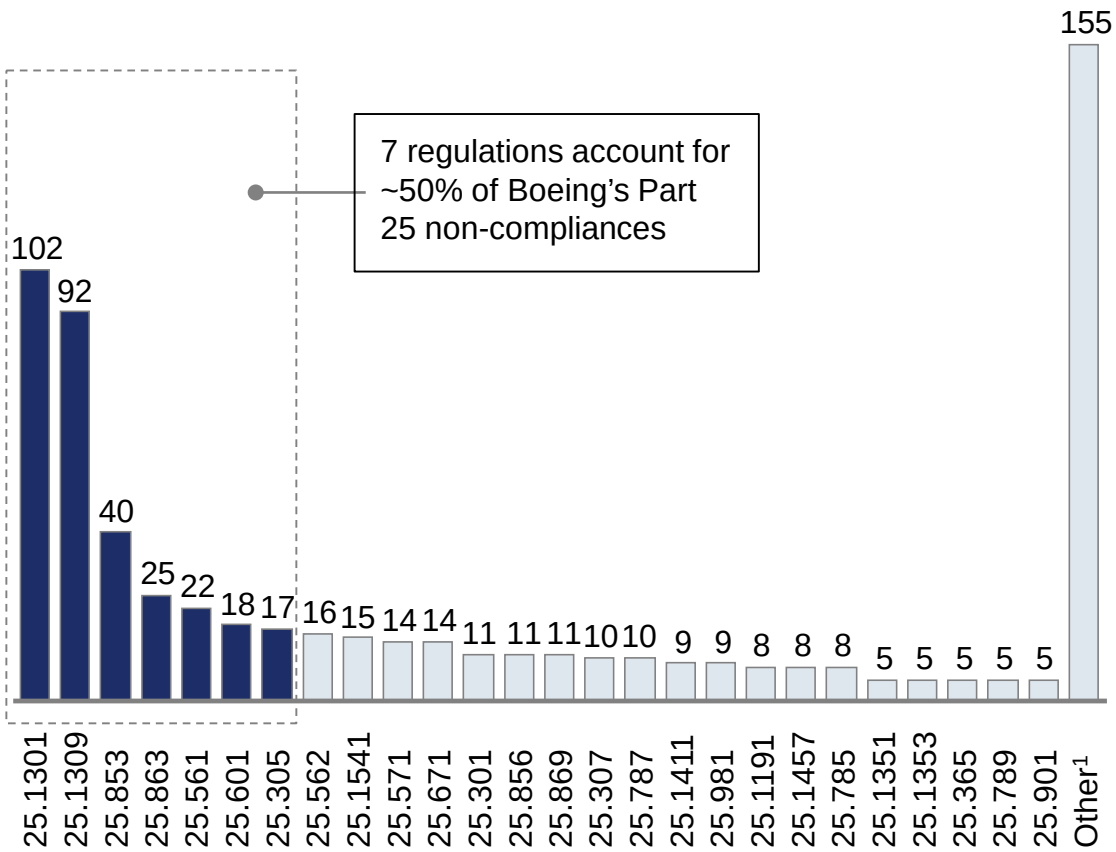
Identifying candidates for amendment can begin with data-driven approach between FAA and applicants

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

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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

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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

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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

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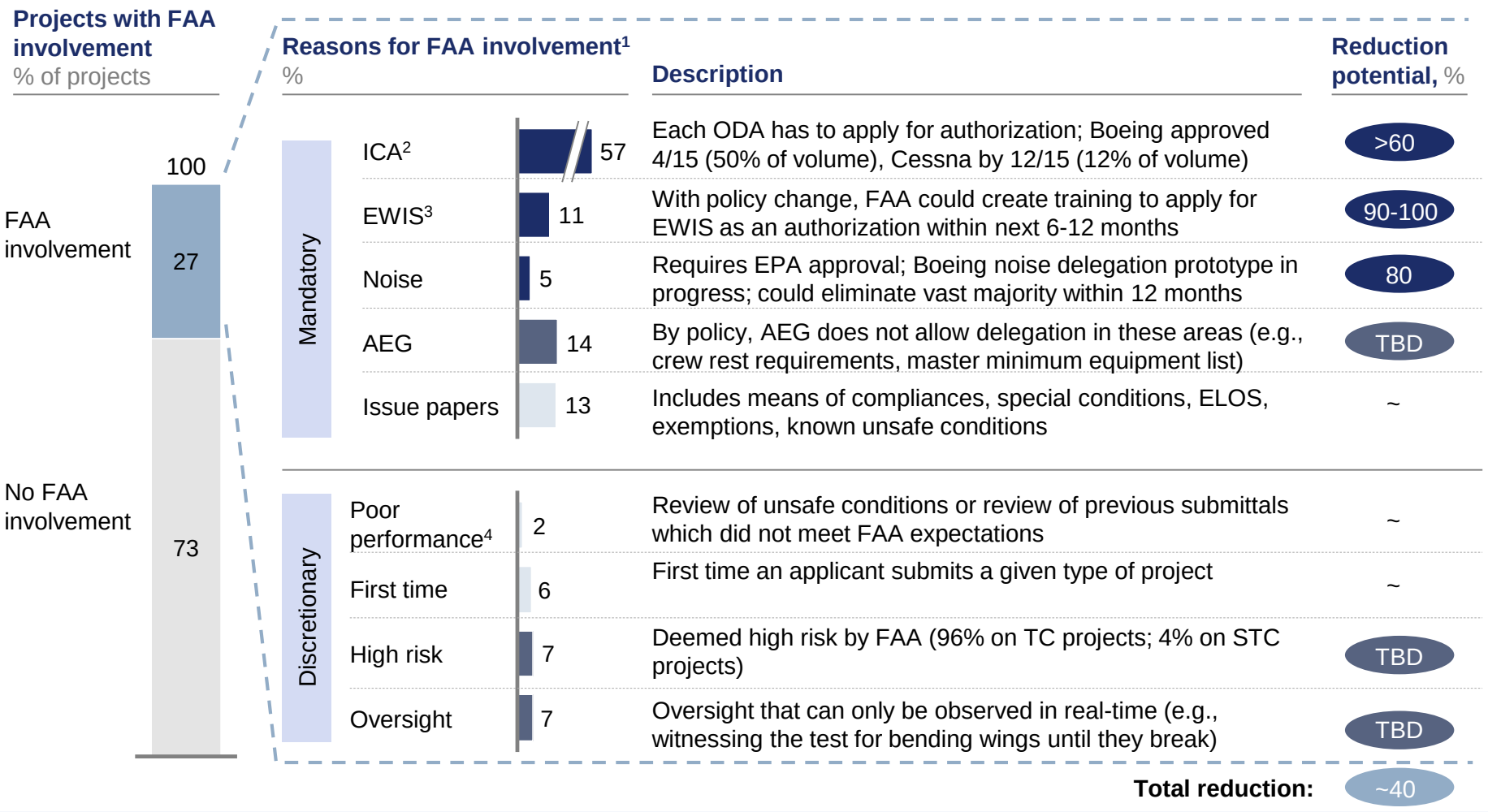
FAA can reduce real-time project involvement by 40% (from 27% to 16%) by taking action across key areas

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

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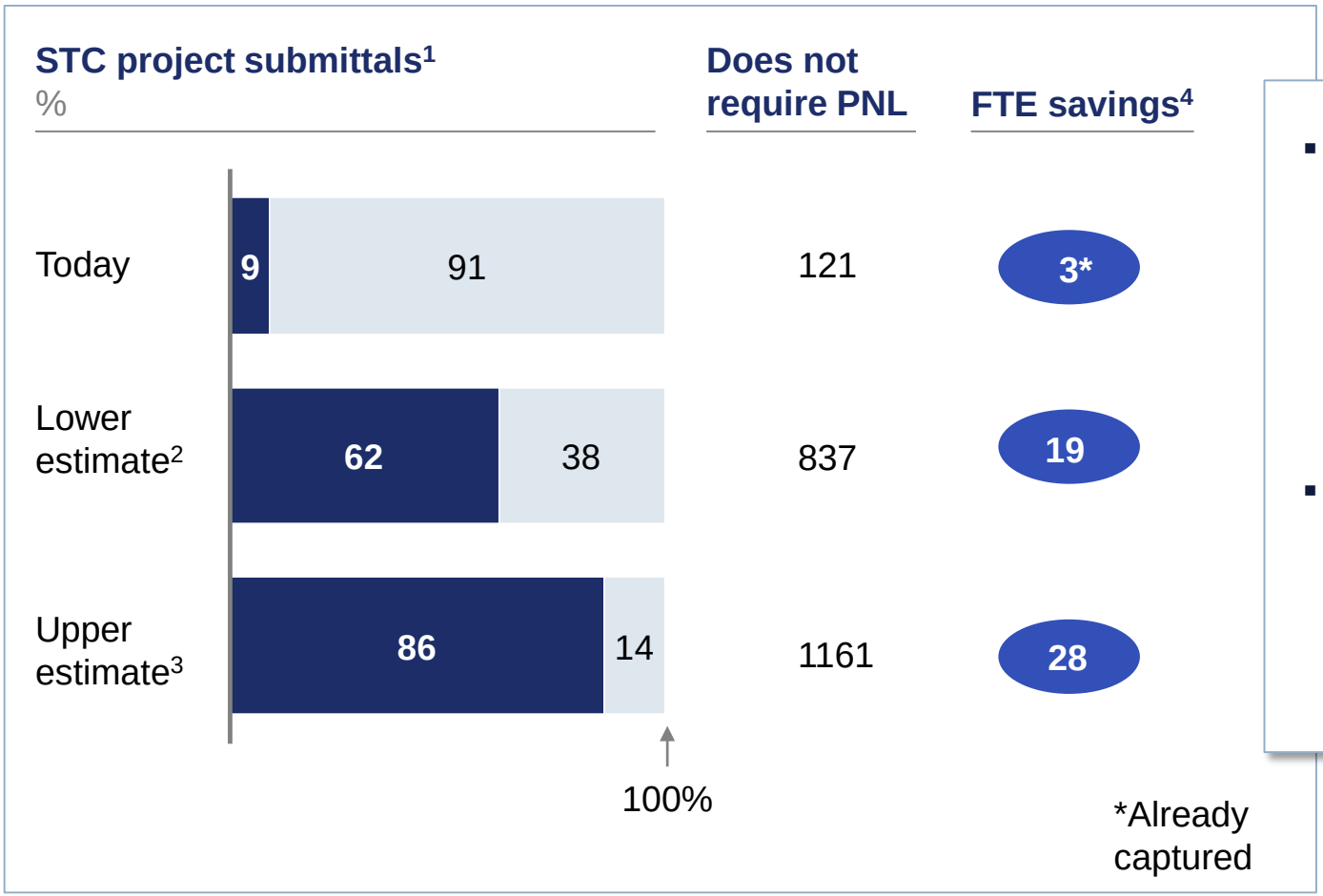
The NoPNL initiative pays for itself: projected to reduce FAA PNL workload by ~25 FTE



- 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

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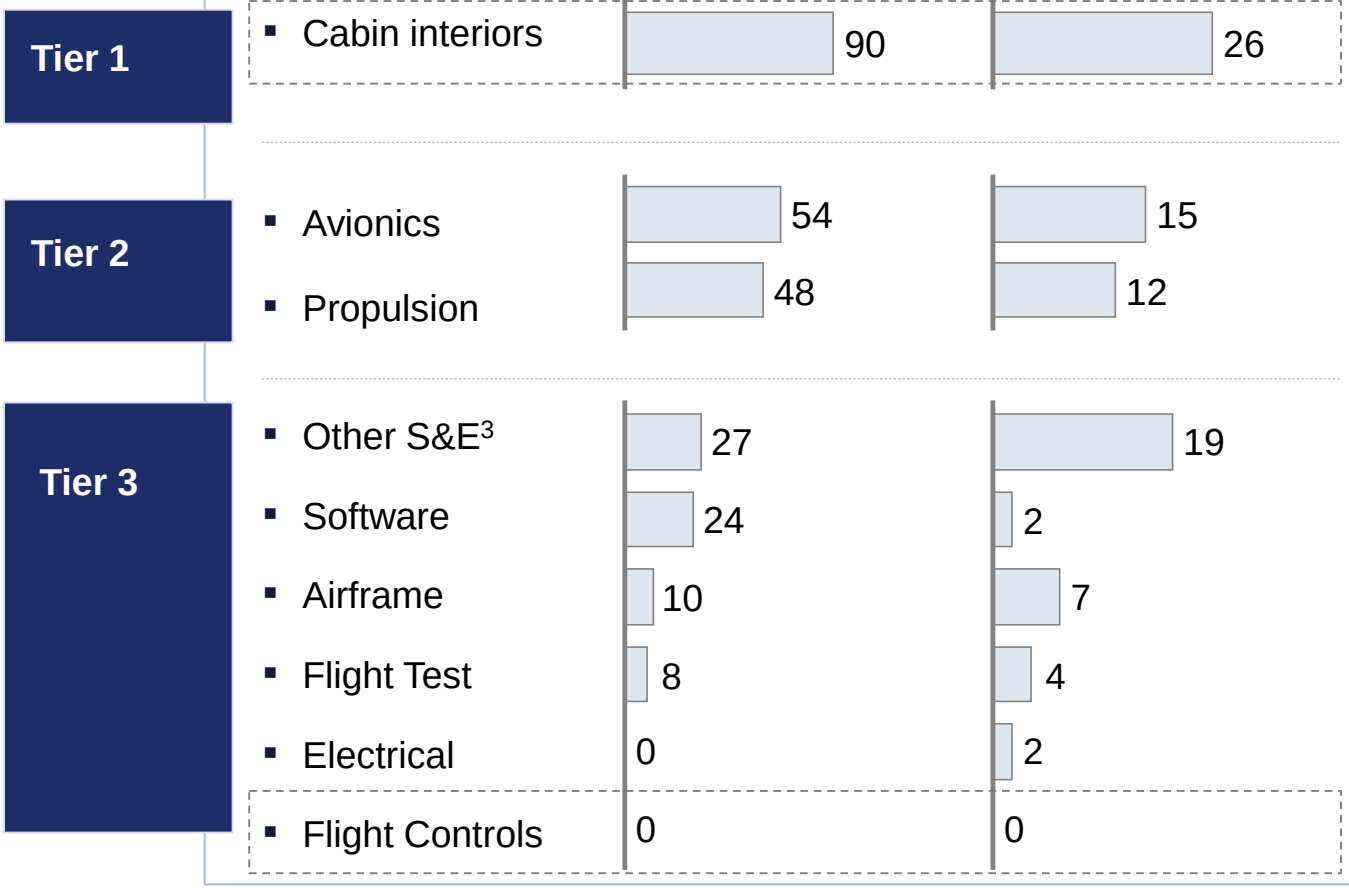
AIR should prioritize cabin interiors to make a top-down determination on level of FAA involvement

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

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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)	▪ There is no meaningful difference in safety between configurations or products under consideration ▪ 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

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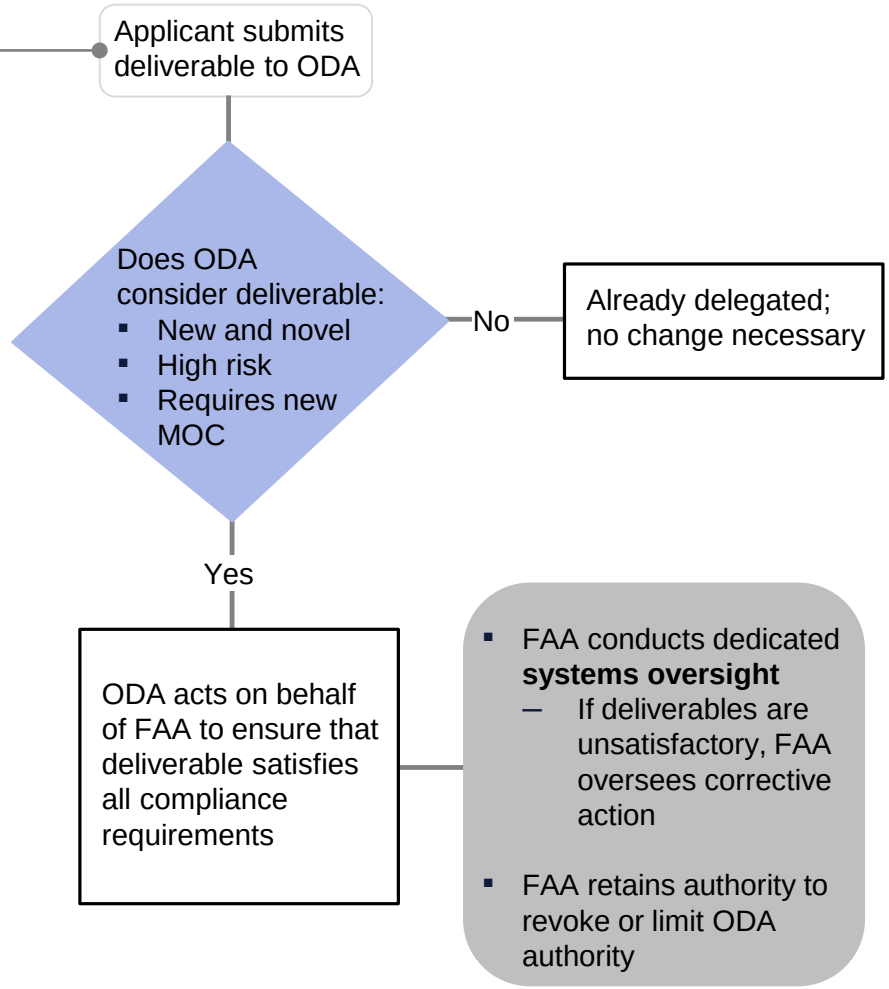
B If the FAA decided to delegate all project deliverables, the pathway could include two phases as follows

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

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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

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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

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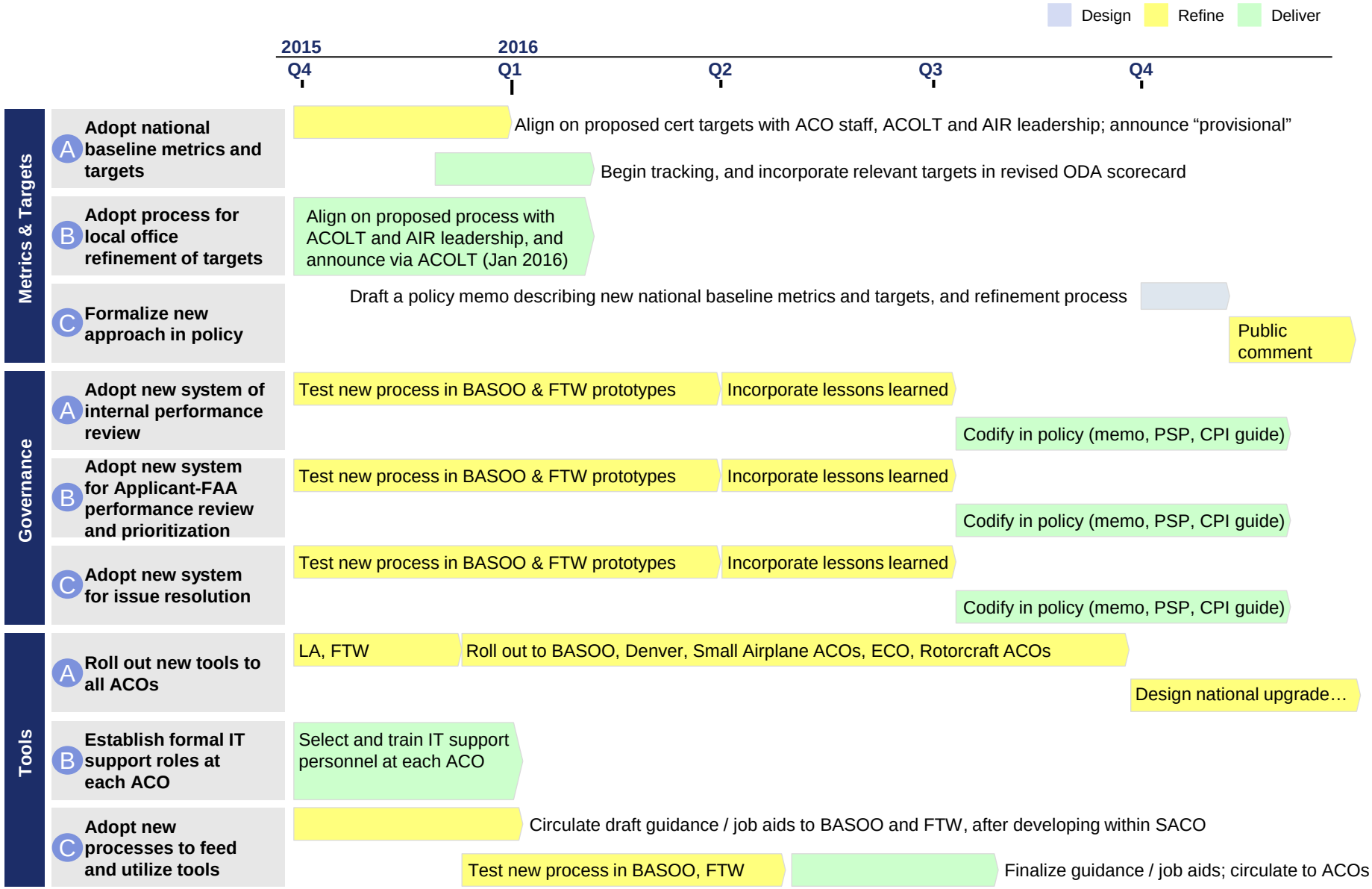
Management systems: 1-year plan



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Management systems across AVS are lacking in 3 key areas, contributing to current challenges in efficiency and effectiveness

	Current pain points observed	Desired future state
1 **Metrics & targets**	▪ Performance metrics and targets are not standardized across ACOs ▪ Some offices track very few metrics and targets, limiting accountability and ability to improve	▪ A comprehensive set of performance metrics and targets is established as a national standard ▪ There is a process for ACOs to tailor national targets for local needs
2 **Processes**	▪ Issue resolution is hampered by ineffective unstructured meetings ▪ Many offices do not meet regularly to review internal performance ▪ Many offices do not effectively review performance with applicants	▪ Issue resolution meetings are structured and decision-focused, guided by standard templates ▪ Offices have regular internal and applicant-facing meetings to review performance
3 **Tools**	▪ Many offices do not have the IT tools required to effective track and manage performance ▪ Many offices have IT infrastructure available, but lack the people and processes to effectively utilize it	▪ Each office has a performance dashboard which comprehensively tracks metrics (e.g. timeliness) ▪ People and processes are in place to develop, adapt, feed and utilize the tools

SOURCE: FAA office interviews, June – September 2015

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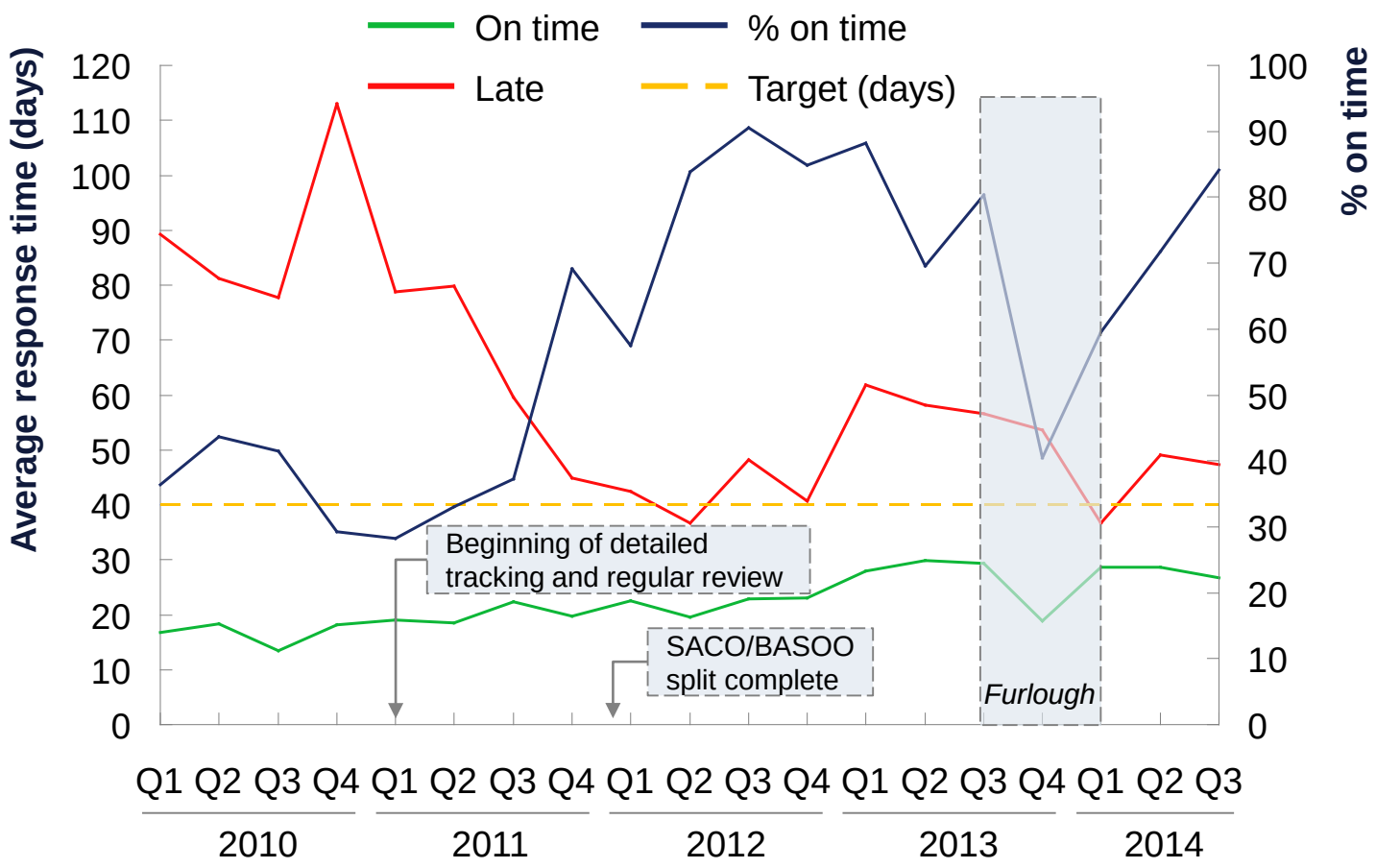
Effective management systems at SACO illustrate the potential to improve transparency, accountability, and performance

Observed improvement in performance at SACO, 2010-2014



- On-time response to service bulletins at SACO improved from **36%** to **84%** (2010-2014)
- Improve-ments are **correlated** with performance tracking activity

SOURCE: SACO performance tracking data on Service Bulletin response time; SACO staff

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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

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

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)

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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)

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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

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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

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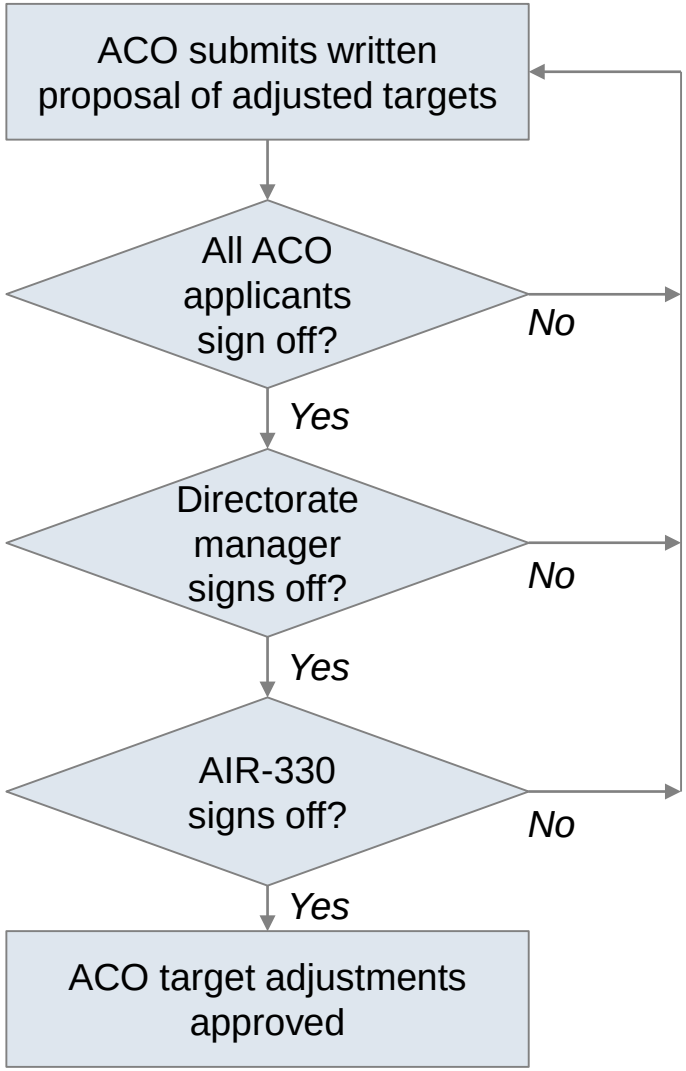
B Local office refinements to national baseline targets will only be approved through a rigorous process



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

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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

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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

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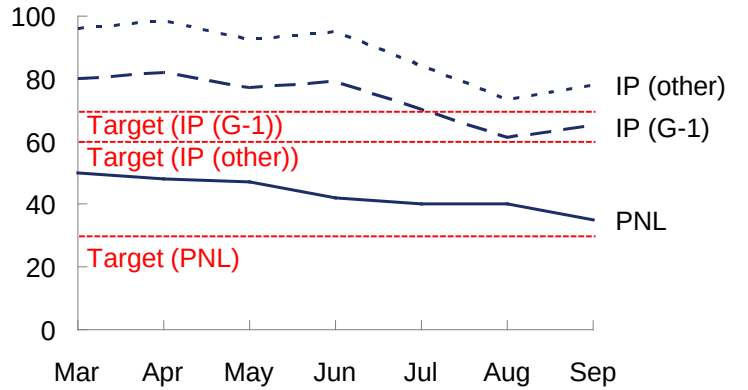
A A performance dashboard should be visible/accessible to all ACO staff, and clearly display important metrics and targets

ILLUSTRATIVE

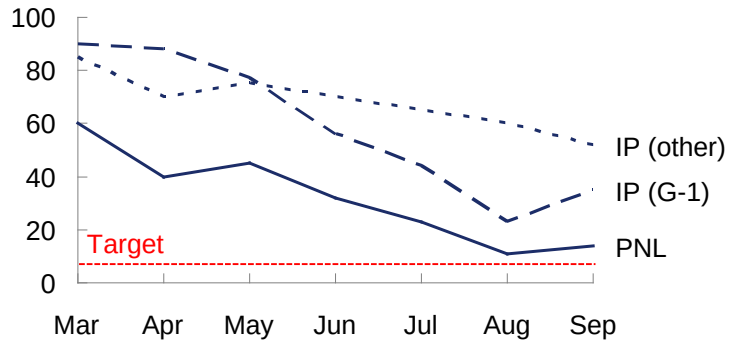
Dashboard concept (illustrative)

Process efficiency

Monthly average response time (days)

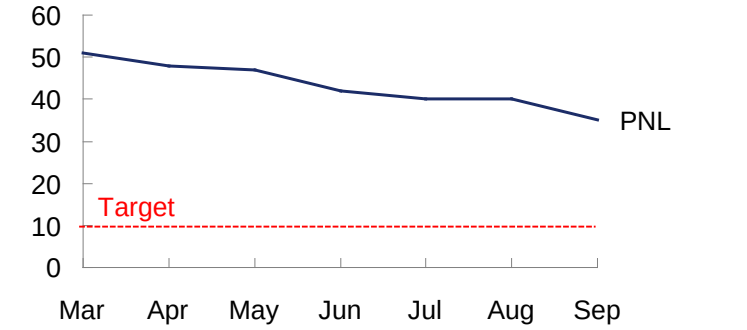


Monthly late responses (%)



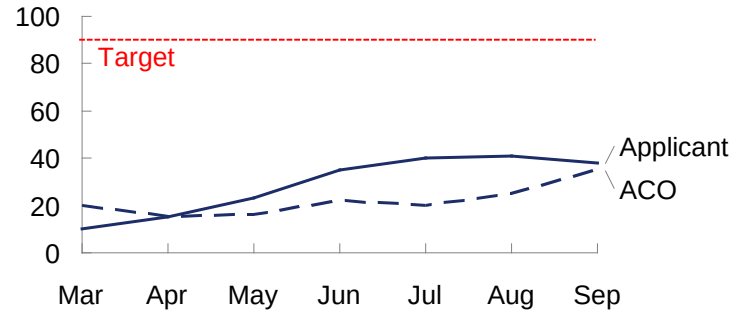
Applicant quality

Monthly PNLs submitted with errors, all applicants (%)



Working together

Monthly average satisfaction (% "Green")



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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)

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

Agenda template

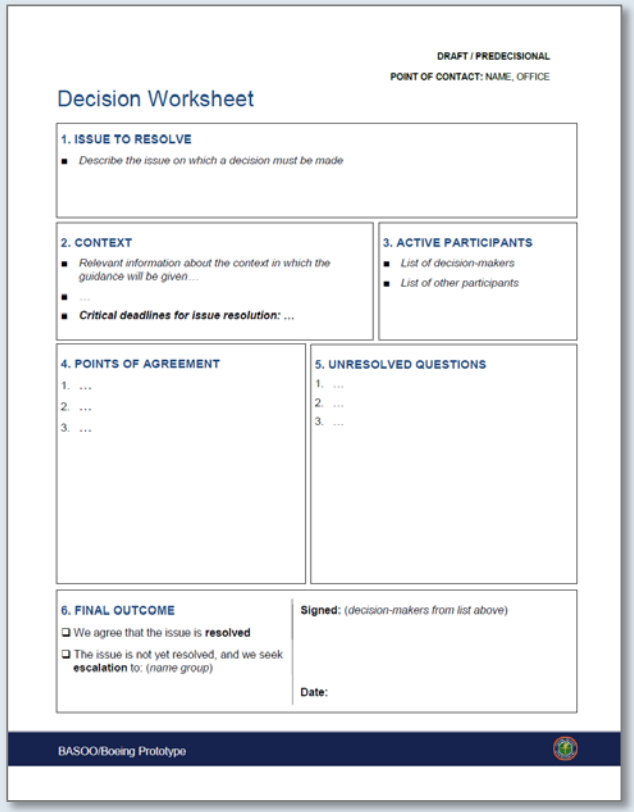
Decision worksheet

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



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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

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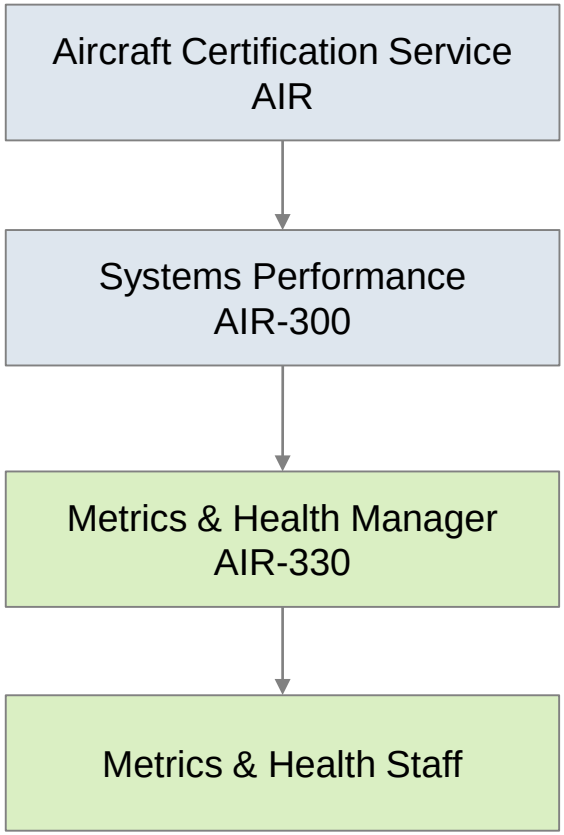
D A new national unit and a dedicated leadership role is needed for the "systems performance" function, to sustain continuous improvement

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



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

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

- 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

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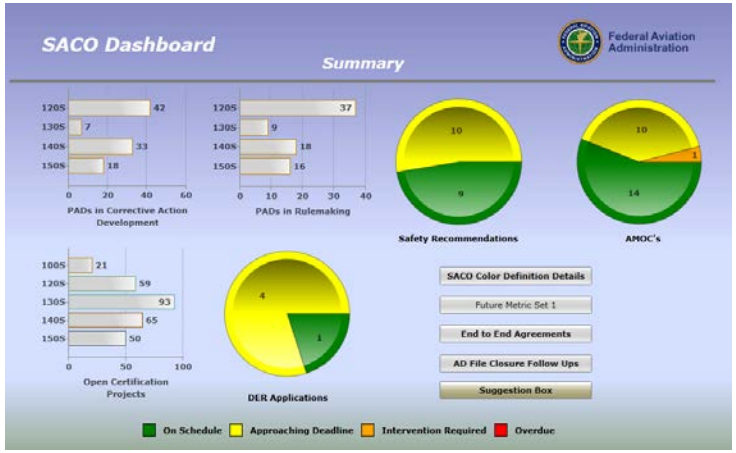
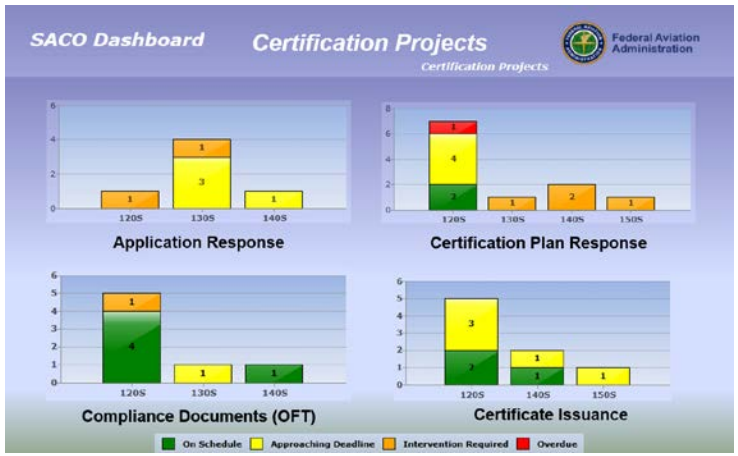
A The Seattle ACO system demonstrates a successful dashboard, review, and communication system that can be usefully applied at other ACOs

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





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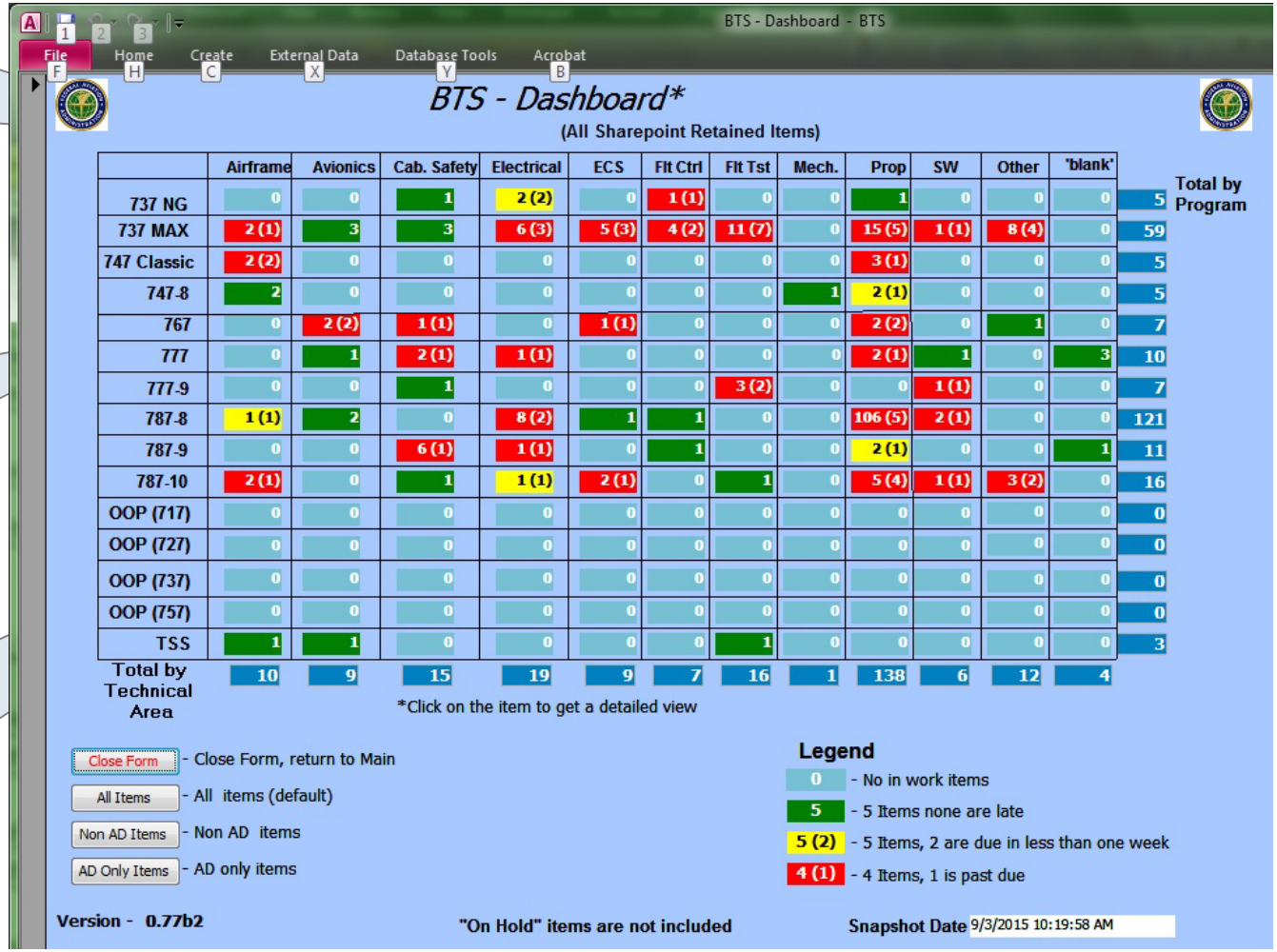
A For the BASOO prototype, the BTS dashboard can already be used for internal / external performance review

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'	
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	

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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

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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

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The change management program will be led by the CLB

Content		Description
Change Leadership Branch Mission		▪ The change leadership branch (CLB) is designed to ensure the **effective implementation of the identified initiatives** and **provide a sustaining infrastructure for change and innovation** in AIR ▪ The function will **identify and develop change leaders throughout the FAA, assign them initiatives to champion, and coach them on change management best practices to guide their implementation work** ▪ These **change leaders will champion the most important changes throughout the FAA** and run large-scale change management programs to ensure effective implementation
Change Leadership Branch	**Structure**	▪ **Organizational structure:** – The CLB sits within AIR 300 and is comprised of a set of permanent positions that provide continuous change management expertise, support, and knowledge sharing, and rotational positions for the change leaders who will be tasked with implementing strategic national initiatives – The CLB will forge partnerships in AIR and industry, and create embedded frontline change agents ▪ **Governance:** CLB members will adhere to a regular cadence of reporting to AIR 300, the Executive Committee (EC), and the FAA Administrator for strategic guidance and oversight
	Process	▪ **Initiative selection:** – Annual initiative selection and strategic review will occur through a three-pronged phase gate process tasked with generating, evaluating and prioritizing initiatives – The process is designed to allow for the broadest base of input and will encourage and incorporate initiative proposals from ACOs, industry, and central FAA functions ▪ **Leading change:** "how-to" guide on designing and implementing change management programs for initiatives will be used to support change leaders championing CLB initiatives as well change agents for local initiatives
	People	▪ **Change leader characteristics:** the CLB will identify and cultivate innovative and collaborative leaders that are (1) credible and adaptable; (2) passionate leaders; (3) FAA knowledgeable; and (4) technically competent ▪ **Selection process:** conducted annually to select rotational leaders and staff for strategic level initiatives, infusing innovation and passion into the program on a regular cadence ▪ **Training:** a core component of the CLB is training for CLs; the change leader training journey will be guided by three pillars of effective learning: (1) fieldwork; (2) forums; and (3) feedback and coaching

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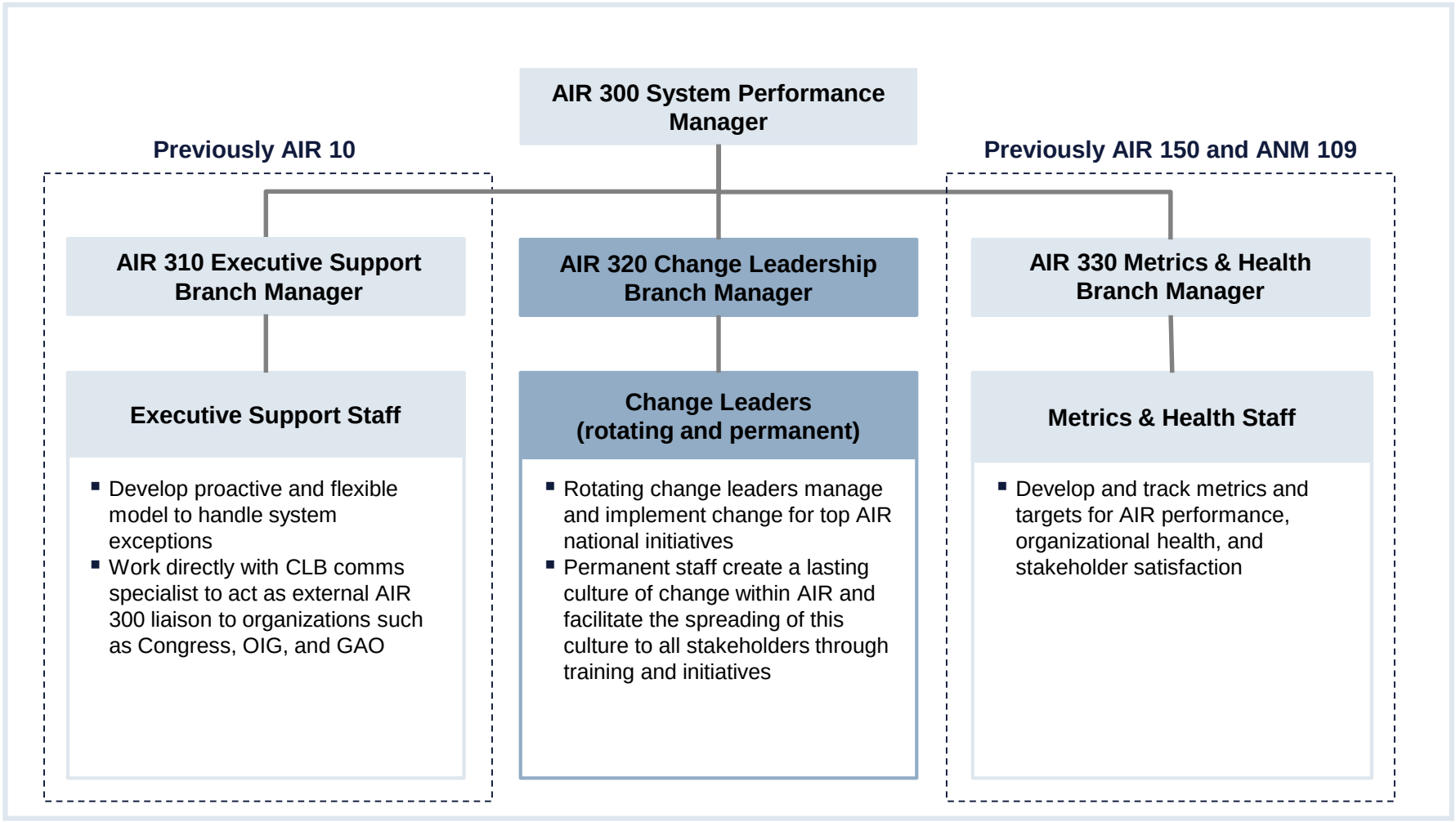
The Change Leadership Branch is at the core of a new three-pronged organization that will work in AIR 300 to ensure AIR systems performance



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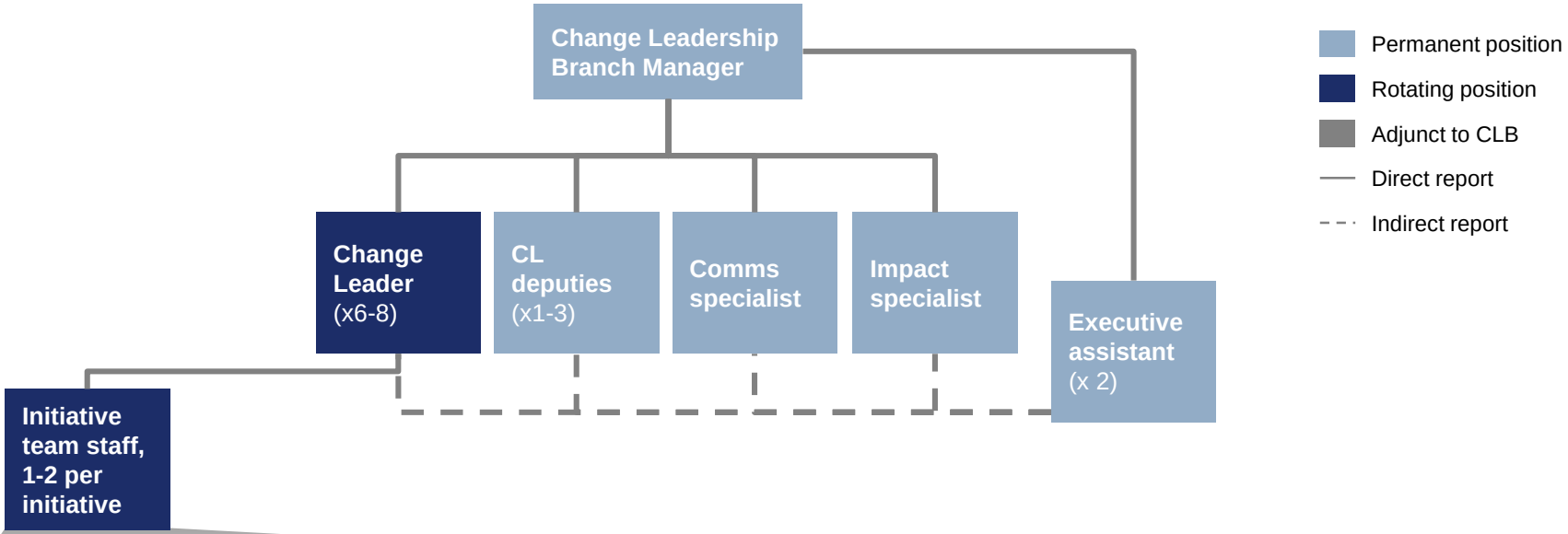
Proposed structure of the CLB function



Title	Description	Duration	Reporting	Utilization
CL Associate	▪ 1-2 people to help Change Leader develop, define, and implement their initiative	▪ 2 year rotating position	▪ Dedicated to an individual team	▪ Full-time
Technical experts	▪ SMEs from throughout the FAA and industry to help develop technical content where needed	▪ Duration of a specified initiative	▪ Remain in current role ▪ Report directly to individual teams as needed (remotely)	▪ Part-time
Change agents	▪ FAA and industry members leveraged to champion and help implement change management	▪ Duration of a specified initiative	▪ Remain in current role ▪ Report directly to individual teams as needed (remotely)	▪ Part-time

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The Change Leadership Branch has 9 roles that jointly support the change management agenda

Adjunct to CLB
Rotating position
Permanent position

Roles	Primary responsibilities
Change Leadership Branch Manager	▪ Own overall strategic planning, governance, and continuous improvement for CLB ▪ Manage initiative list and selection process ▪ Establish CLB operating rhythm with CLB staff and initiative team leads ▪ Communicate status, progress, and issues faced by initiatives to AIR 300 Manager ▪ Lead people selection process
CL deputies	▪ CL deputies have two primary roles: – Act as change management experts and provide training and coaching to change leadership branch members – Assist non-CLB members plan and implement initiatives and change management programs for non-national programs ▪ CL deputies will also assist the CLB manager with administrative and organizing workload on issues such as time sheets, travel, evaluation preparation, steering committee preparation etc.
Comms specialist	▪ Comms specialists have two primary roles: – Provide assistance in crafting the change management plans and communications for individual change leaders on their initiatives – Liaise with AIR 310 to produce external communications

Roles	Primary responsibilities
Impact specialist	▪ Evaluate and identify impacts of initiatives on policy, rules, orders, and directives ▪ Lead revision process for required changes ▪ Drive changes through AIR 100 policy writers
CLB Executive Assistant	▪ Assist CLs in tracking dashboards and overall progress for transformation ▪ Coordinate calendar for CLB ▪ Coordinate the scheduling of training with AIR 520 training management division
Change leaders	▪ Manage planning and execution of initiative strategy ▪ Escalate issues when facing resistance and challenges
CL associates	▪ Full-time staff members reporting directly to an individual change leader ▪ Associates help change leaders develop, define, and implement their initiative
Technical experts	▪ Part-time remote resources that work with individual change leaders and change teams to develop the technical content of their initiatives
Change agents	▪ Part-time remote champions of the initiatives embedded throughout the FAA and industry ▪ Support the development of the change management plan ▪ Assist with the roll-out of initiatives by championing and role-modelling for the program

Contents

AIR transitions tied to transition recommendations: Active

PRELIMINARY

Initiatives tied to recommendations 1-14

Compliance

- Applicant Showing Expansion
- EWIS
- Issue Paper Reform
- LOPI Orders
- No PNL Expansion
- Noise

Organization & Skills

- AIR Reorg
- Cross Organizational Evaluation Program
- SASI Workforce

Management Systems

- AIR integrated oversight policy
- Aviation safety knowledge management environment
- Certificate Management Enhancements
- CPI Guide
- DMS Automated Forms
- EDPA
- ODA Scorecard
- OSP
- Quality management system & streamlining
- Revitalization of local PSPs

Standards

- Avionics Certification & DO-178B
- BMAV
- CAG (International)
- FCAA Post-Validation Audit
- Intl'l Production & Supplier Oversight Enhancements
- International risk-based validation process
- MCAI
- NORSEE
- Part 23 Rewrite
- Part 27/29 Rewrite
- Training Academy

Strategy

- Communication Strategy
- Part 23 Change Management
- Risk-based ODA Oversight
- Safety Management Policy
- UAS Certification Guidance

AIR transitions tied to transition recommendations: Completed

PRELIMINARY

Initiatives tied to recommendations 1-14

Compliance

- Accountability Framework and Methodology
- Emissions
- Fly Once
- ICAs

Organization & Skills

- Ft. Worth Functional Realignment
- Wichita Resource Alignment of Oversight of Multiple ODAs

Management Systems

- Project Prioritization
- RBRT / RBRTA
- Tracking Validation

Standards

- Standard IPA Template

Strategy

- AIR/AFS Integration
- BRASS/BRM
- EASA TIP Changes
- Expedited Rulemaking
- ICAs
- Manufacturing SMS Pilot Project
- Monitor Safety Analyze Data Policy
- Part 21 SMS ARC, Production & Rule making
- Safety Continuum Philosophy

AIR is working on many initiatives that support the strategic focus areas

	Existing initiatives	Strategic focus area	Description
Standards		Innovation	1 Partner with industry to prioritize and implement pre-emptive policies for emerging technologies
		Gray areas	2 Reduce issue paper workload through timely generation of policy and guidance
	Part 23 Rewrite Avionics Certification & DO-178B Part 27/29 Rewrite	Performance-based regulation	3 Update priority regulations for Transport, Engine, and Rotorcraft, ensuring standards are performance based and update associated directives, orders, and guidance • Must be accompanied by updated directives and orders, updated guidance (or reliance on industry standards where applicable, e.g., TSO system), frontline FAA training, and exploration of multi-use issue papers and compliance libraries
	International Production and Supplier Oversight Enhancements MCAI FCAA Post-Validation Audit Training Academy Standard IPA Template International risk-based validation process BMAV	International harmonization	4 Pursue international reciprocity and harmonization by involving senior leadership, executing on existing initiatives, and communicate results to industry and the FAA
Compliance	Issue Paper Reform Fly Once	Level of involvement	5 Establish pathway for AIR to transition from project-level involvement to systems-level oversight by providing top down guidance to FAA frontline: • Risk to be determined based on safety and predictive analysis for: – Regulatory/product areas – Organizational maturity
	LOPI Orders No PNL Expansion ICAs Noise Emissions Applicant Showing Expansion EWIS	Accelerate delegation	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
Oversight	Risk-based ODA Oversight	Risk-based oversight model	7 Systems-level oversight at FAA by building applicant and ODA capabilities and responsibilities 8 Adapt FAA oversight program to fully incorporate risk and applicant performance

AIR has many existing initiatives that will play a role in the organization and skills, and management systems transition