



ASA CONFERENCE · LAS VEGAS · 2026



Lean QA

Bridging the Aerospace *Workplace Skills Gap*

Building Workforce Readiness in a Specialized Industry

PRESENTED BY

Shawn · Lean QA

AK · Lean QA

This isn't a normal hiring problem.

It's an industry-wide structural shift — and the data is sobering.

15%

industry attrition rate

2x the cross-industry average

AIA/McKinsey 2025

76%

**of members struggle in
hiring talent**

56% struggle with skilled trades

AIA/McKinsey 2025

1M+

**projected worker shortage
by 2030**

Across A&D globally

AIA / Cielo 2025

If you're not already feeling this — you will be.

Before we dig in — where are you?

Q1

SHOW OF
HANDS

How long until a new hire works on their own?

- Under 3 months
- 3 to 6 months
- 6 to 12 months
- Honestly, we're not sure

Q2

SHOW OF
HANDS

What do you hand someone on Day 1?

- A structured program
- A binder and a buddy
- "Follow Bob around"
- We're still building it

Q3

SHOW OF
HANDS

Who owns onboarding at your company?

- A trainer or L&D team
- The hiring manager
- Whoever has time
- No one — that's the problem

Remember your answers. We'll close the gap on all three today.

What does this actually cost?

\$300M

to \$330M

Average annual talent-drain cost for a single mid-sized A&D company.

Source: McKinsey Aerospace & Defense Practice

PER EMPLOYEE

Replacement cost: 1.5x – 2x annual salary

Sources: Bersin / SHRM / Deloitte

Quality Inspector

\$50K–\$100K

\$75K – \$200K

Engineer / Technical

\$90K–\$140K

\$135K – \$280K

Manager / Lead

\$110K–\$160K

\$165K – \$320K

Insurance underwriters now price this gap into aerospace policies.

What is the gap costing YOU?

STEP 1

The Formula

A — Roles backfilled last year (under 18-month tenure)

B — Average fully-loaded salary for those roles

C — Replacement multiplier: 1.5x to 2x

Annual drain = $A \times B \times C$

Use real numbers: last year's backfills, your actual salaries

STEP 2

Worked Example

Don't take our number — build your own with last year's real figures.

8 roles × \$95K average salary × 1.75

≈ \$1.33M walking out the door every year

And that's before quality escapes, overtime, and lost throughput.

Hiring isn't the bottleneck. **Time-to-productivity is.**

The aerospace skills gap isn't a hiring problem.

It's a knowledge transfer architecture problem.

The companies that crack onboarding will out-execute the ones that don't.

The expertise is walking out the door.

A retirement wave is colliding with a hiring gap — and most of the knowledge was never written down.

~1 in 4

A&D workers are 55 or older

A retirement wave is already underway

U.S. Bureau of Labor Statistics

Most

of what your experts know is never written down

It lives in habits and instinct, not procedures

Tacit-knowledge research (illustrative)

One

retirement can erase a process no one documented

—

Every unplanned retirement is a data deletion — unless you capture it first.

Map your knowledge at risk.

STEP 1 · LIST

Who walks out the door?

WHO

Name your 3 most irreplaceable people.

WHAT

For each: what do they know that nobody else does?

When could they realistically leave — retirement, a competing offer, life?

STEP 2 · SCORE

Rate the risk.

Before you can transfer expertise, you have to find it. Be specific — names, not job titles.

Impact if they left Monday: High / Medium / Low

Is it written down anywhere? Yes / Sort of / No

Circle your single “capture this now” person.

Your highest-impact, least-documented person is this quarter’s priority. Start there.

The Four-Layer Gap Model

Most onboarding programs only address the top two layers. The bottom two are where new hires fail silently.

01



VOCABULARY

Acronyms, part nomenclature, regulatory shorthand

FAA, EASA, PMA, DER, C of C, 8130-3

MOST PROGRAMS COVER THIS

02



PROCESS

How work flows: receiving, traceability, segregation

FOD control, ESD handling, NCR initiation

PARTIALLY COVERED

03



REGULATORY

Why the process exists

AS9100, AS9120, 14 CFR Part 21/145, ITAR/EAR, AS6081

RARELY COVERED WELL

04



JUDGMENT

Pattern recognition built from experience

"This paperwork looks wrong." "This part doesn't feel right."

ALMOST NEVER COVERED

Group exercise: Identify a recent quality escape at your org. Which layer caused it?

The Aerospace *Onboarding Tool Kit*

Five modular components. Adapt them to your organization. Implement what's realistic — not all five at once.

A · Acronym Decoder

B · Why Library

C · Shadow Map

D · Competency Checklist

E · Scenario Library

The Acronym Decoder

A living glossary — not a static handout.

TIER 1

Day 1

50

Must-Know

- C of C
- FAI
- NCR
- FOD
- ESD
- PMA
- OEM
- MRO
- AOG
- + 41 more

TIER 2

Week 1–4

100

Working Knowledge

- DER
- DAR
- ODA
- 8130-3
- EASA Form 1
- JAA
- CAAC
- ATA chapters
- + 92 more

TIER 3

Month 2+

Role-specific

Specialty

- Distribution
- Quality
- Receiving
- Sales
- Engineering
- Customer-specific terms

INNOVATION: Build it as a searchable wiki or Slack/Teams bot — tag each acronym with definition, example, procedure ref, and a 30-sec senior-employee video.

The "Why" Library

A 2-minute video for every major procedure — explaining the regulatory or safety reason behind it.

Why we double-verify part numbers against the C of C

Anti-counterfeit: AS6081

Why suspected unapproved parts get segregated immediately

FAA AC 21-29 / SUP

Why ESD matters even for parts that "look fine"

ANSI/ESD S20.20

Why traceability documents are kept for the life of the part

AS9120 / 14 CFR Part 21

WHY IT WORKS



New hires from outside aerospace follow rules better when they understand the consequence chain.

Adults learn through cause-and-effect — not compliance theater.

The Shadow Map

A structured 30/60/90 — not just "follow Bob around."

1

2

3

DAYS 1–30

Observe & Document

Shadow 3–5 different roles. Write a one-page "what I learned" for each.

OUTCOME *Builds context across the operation — not just one role.*

DAYS 31–60

Perform with Verification

Every task is double-checked, but the new hire owns the work.

OUTCOME *Builds confidence + creates a safety net for errors.*

DAYS 61–90

Independent + Check-ins

Weekly 1:1 with mentor. Monthly competency review.

OUTCOME *Independence with structured feedback loops.*

Make Competency Real.

MODULE D

The Competency Checklist

VAGUE

"Understands quality procedures"

OBSERVABLE

"Can identify a non-conforming C of C and initiate the NCR process within 15 minutes."

Sign-off matrix: trainee, trainer, supervisor

Re-qualify on: process change · 12-month interval · post-incident

MODULE E

The Scenario Library

Real anonymized scenarios from your org's history — turned into 15-minute training cases.

You receive a shipment with a C of C missing the heat treat lot. What do you do?

A customer is screaming for an AOG part. Paperwork has a discrepancy. Walk through your decision.

You spot a part number that's one digit off from what's on the PO. Next step?

Run a real scenario — out loud.

1

2

3

MINUTES 0–5

Set the Scene

One person is the new hire, one is the customer or AOG caller, one is the observer. Pick a scenario card from your packet.

OUTCOME *Everyone has a role — nobody just watches.*

MINUTES 5–12

Play It Out

The new hire works the problem aloud — checks the paperwork, decides who to call, says what they will not ship. The observer notes every decision point.

OUTCOME *Judgment becomes visible and coachable.*

MINUTES 12–15

Debrief

The observer reads the decisions back. The group names one thing that was right and one thing to improve.

OUTCOME *The lesson is named, not just felt.*

The real attrition spike is months 6–12.

Day 90 is not the finish line. The “second cliff” is where your best new hires quietly decide to leave.

1

2

3

DAY 90

Don't Declare Victory

The program ends but support shouldn't. Run a 90-day stay interview: what's working, what's frustrating, what would make them leave.

OUTCOME *You hear problems while they're still fixable.*

MONTH 6

Re-Engage

Plateau and boredom set in. Give a stretch assignment, a cross-train, or a visible win. Connect their work to the mission.

OUTCOME *Growth replaces the “is this it?” drift.*

MONTH 12

Make Them a Mentor

The fastest way to keep someone is to make them responsible for someone else. Hand them a new hire to shadow.

OUTCOME *Retention compounds — they now own the culture.*

Beyond the basics:

7 innovative approaches

Pick what fits your culture. You don't need all seven.

Seven moves that compound



01

Reverse Mentorship

Career-changers bring outside-industry insight. Pair deliberately so knowledge flows both ways.



02

Cross-Industry Translation

Map medical device, automotive, logistics, and military experience to aerospace. Don't make people start from zero.



03

Microlearning

10-minute daily modules over 90 days beat 8-hour marathon onboarding. Spaced repetition wins.



04

"Stupid Question" Channel

Anonymous Slack/Teams channel for new hires. Senior employees rotate weekly answering.



05

Gamified Certification

Internal "belts" tied to demonstrated competency. Tangible recognition at each tier.



06

Field Trips

Take new hires to a repair station, OEM, or end customer. Paperwork becomes visceral.



07

AI-Assisted Buddies

Internal AI trained on your procedures: 24/7 acronym lookup + scenario coaching. Human-verified for regulatory calls.

PICK THREE

You don't need all seven.

Implement the three that fit your culture and constraints best.

Cross-Industry Translation

Career-changers already have transferable muscle. Show the deltas — don't restart from zero.

MEDICAL DEVICE <i>ISO 13485 QMS</i>	➔ AS9100 / AS9120 <i>Target framework</i>	KEY DELTA Both ISO 9001-derived. Show traceability + airworthiness deltas.
AUTOMOTIVE <i>IATF 16949</i>	➔ AS9100 / FAI / AS9120 <i>Target framework</i>	KEY DELTA PPAP ≈ FAI. Similar logic, different documentation requirements.
LOGISTICS / 3PL <i>Supply chain</i>	➔ Aviation Distribution <i>Target framework</i>	KEY DELTA Traceability is a step-change up. Lot control becomes life-of-part.
MILITARY / VETERAN <i>Mil-Spec experience</i>	➔ Aerospace Quality <i>Target framework</i>	KEY DELTA Strong cultural fit. Discipline + procedure-following already there.

This single shift can cut time-to-productivity by 30–50% for career-changers.

No L&D team? No budget? Start here.



01

One-Page Cheat Sheet

A single laminated sheet at every workstation beats a 50-page binder nobody opens.



02

Phone-Camera “Why” Library

Film a senior employee explaining one procedure on a phone. Two minutes. Build the library one clip at a time.



03

Shared Acronym Doc

A free shared spreadsheet anyone can add to. Your living glossary, zero budget.



04

Structured Shadowing

Give shadowing a checklist and a one-page write-up so it's real — not “follow Bob.”



05

Weekly 15-Minute Scenario

Turn one real escape into a huddle topic. Rotate who presents.



06

One Owner, One Metric

Name a single onboarding owner and track one number. That's a program.



07

Buddy System

Pair every new hire with one go-to peer for their first 90 days.

START MONDAY

You don't need software.

Pick three and begin this week.

Your 90-Day Plan

Working session — fill out the worksheet at your seat.

01 STEP

Audit your current state

- What do you hand a new hire on Day 1?
- Where do new hires actually struggle in months 2–4?
- What's your current 90-day retention rate?

02 STEP

Pick three high-impact moves

- Choose 3 modules from the tool kit
- Pick what's realistic in 90 days
- Not 10. Not 5. Three.

03 STEP

Identify your first metric

- Time-to-first-independent-task
- 90-day retention rate
- NCR rate (employees < 12 months tenure)

5 minutes per step. 15 minutes total. Walk out with a real plan.

If you can't measure it, it quietly dies.



01

Time-to-Independence

Days until a new hire completes a real task unsupervised. Your single best leading signal.



02

Ramp Milestones Hit

Percent of 30/60/90 checkpoints completed on time. An early-warning system.



03

New-Hire NCR Rate

Quality escapes from employees under 12 months tenure. Tracks real competence.



04

90-Day Retention

Percent of new hires still here at 90 days. The basic health check.



05

12-Month Retention

Catches the second cliff. The number that protects your ROI.



06

Confidence Pulse

One question: "I know who to ask when I'm stuck." Cheap, fast, predictive.



07

Manager Check-In Rate

Percent of scheduled 1:1s actually held. Skipped check-ins predict turnover.

PICK TWO

One leading metric, one lagging.

Baseline now, review monthly. Don't track ten.

A plan with no owner is a wish.

Every module needs *ONE* name accountable — not a committee. Write a name on each row before you leave.

01



ACRONYM DECODER + WHY LIBRARY

Owns the living glossary and the 2-minute “why” videos

Who updates it when a new term or procedure appears?

OWNER: _____

02



SHADOW MAP

Schedules the 30/60/90 rotations and the mentor 1:1s

Who makes sure shadowing actually happens?

OWNER: _____

03



COMPETENCY + SCENARIOS

Signs off on competency and curates real escapes into cases

Who decides when someone is “qualified”?

OWNER: _____

04



METRICS + REVIEW

Tracks the numbers and reports them to leadership monthly

Who brings the scorecard to the table?

OWNER: _____

Rule: if everyone owns it, no one does. One name per row — today.

Why onboarding programs quietly die.

Every one of these is survivable — if you see it coming. Four ways good intentions fizzle.

01



THE FIREHOSE

Eight hours of slides on Day 1, then nothing. Retention craters by Friday.

Fix: spread it over 90 days in small, spaced doses.

WEEK-1 KILLER

02



“FOLLOW BOB”

Unstructured shadowing with no checklist. Quality depends on which Bob you got.

Fix: give shadowing a map and a sign-off.

INCONSISTENT

03



NO OWNER

Everyone is responsible, so no one is. The program slowly rots.

Fix: one name accountable, one metric tracked.

SILENT DEATH

04



COMPLIANCE THEATER

Rules with no “why.” People comply until they’re busy, then improvise.

Fix: teach the consequence chain, not just the rule.

HIGHEST RISK

The program that dies is rarely a bad idea — it’s a good idea no one maintained.

THE COMPOUNDING RETURN



Every well-onboarded employee *becomes a future mentor.*

The system gets stronger over time. The companies that crack onboarding will win the talent war.

COMMIT TO ONE CHANGE

Before you leave Vegas — pick one thing.

Write it down. Follow up in 30 days.

Take it home. Adapt it. Use it.

- 1 Aerospace Onboarding Tool Kit (full editable document, 17 pages)
- 2 Manager's New Hire Onboarding Checklist (printable tracker)
- 3 Quick-Reference One-Pager (workstation cheat sheet)
- 4 Tier 1 Acronym Reference Guide (50 must-know acronyms)
- 5 30/60/90 Shadow Map + Competency Framework
- 6 Scenario Library Starter Pack (10 scenarios with answers)
- 7 Cross-Industry Translation Guide (4 industries mapped)

DATA SOURCES

AIA / McKinsey 2025 A&D Workforce Study
Cielo 2025 A&D Talent Report
Aerospace Industries Association (AIA)
Bureau of Labor Statistics 2024
SHRM (Society for HR Management)
Bersin / Deloitte talent research
Gallagher "Plane Talking" 2024