

FOR AVIATION & AEC ENGINEERING FIRMS

Take on more airfield pavement work without adding field crews.

A process-and-ROI guide for aviation and AEC firms that pursue and deliver FAA Part 139 pavement inspection and design.

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BOTTOM LINE

Your licensed engineer wins the work and signs the finding. The field data collection that eats the schedule can be captured on a single vehicle pass and delivered into your Esri and pavement-management system, so your most billable people spend their time deciding, not collecting.

EXECUTIVE SUMMARY

The constraint on how much airfield pavement work a firm can win and deliver is rarely engineering judgment. It is field data collection and processing: the slow, weather-bound, staff-intensive step between a pursuit and a signed deliverable. Remove that step and the same licensed engineers carry more pursuits, turn projects faster, and defend their findings with a far denser record.

- Manual field survey ties up senior and licensed staff and caps throughput: hand inspection tops out near **20–40 observations per shift**, inconsistent by inspector, weather, and light. (Source: Esri published case study.)
- Your engineer's value is the determination and the professional stamp, not the clipboard. Airwai captures the field data as a service and produces a first-pass condition record; **your P.E. reviews and signs.**
- A single vehicle pass captures more than **two million data points** and, in Esri's published comparison, detected **three to seven times more surface anomalies per mile** than the manual method, delivered straight into your ArcGIS and pavement-management system.

- This makes your engineers more valuable, not fewer. At an independent Air Force test, a licensed engineer's blind hand survey and the system agreed on the worst pavement on the field, the model that keeps the professional in charge and speeds the work.

THE COST OF THE STATUS QUO

Field collection, not engineering, is what caps your airfield throughput.

Every airfield pavement pursuit and delivery runs through the same bottleneck: getting accurate condition data off the pavement and into a form the engineer can act on. That step is slow, requires access windows around operations, and pulls your most billable people into the field and into re-keying. The number of airfield projects a firm can carry is set less by how many engineers it employs than by how much of their time is spent collecting rather than deciding.

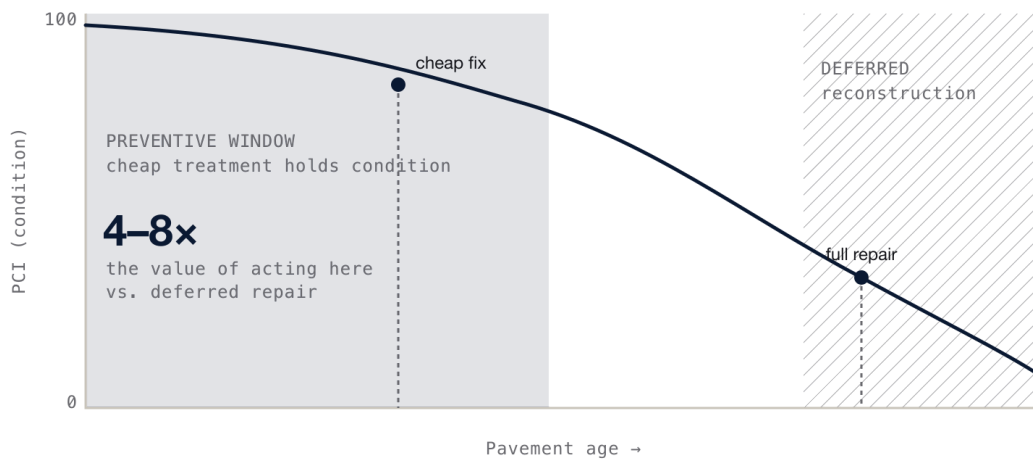


Exhibit 1. The value your client buys is catching deterioration in the preventive window. A denser, more frequent record is worth more work to them, and more work to you. Illustration of the industry deterioration curve; not a measurement of any specific pavement.

EXHIBIT 2

Your most billable people spend a large share of a project collecting data.

A hand survey records what one inspector can see and write, graded differently by different eyes on different days, then re-keyed into a system of record. The judgment that only a licensed engineer can provide waits behind hours of collection and transcription. Shift the collection to a sensor pass and that judgment happens sooner, on a fuller picture, across more projects.

Method note: manual observation rate (20-40 per shift) reported in Esri's published San Bernardino case study.

THE BOTTLENECK • PER PROJECT

TODAY (MANUAL)

20-40

observations per shift, licensed staff in the field, one project at a time.

Source: Esri published SBD case study.

WITH CAPTURE-AS-A-SERVICE

2M+

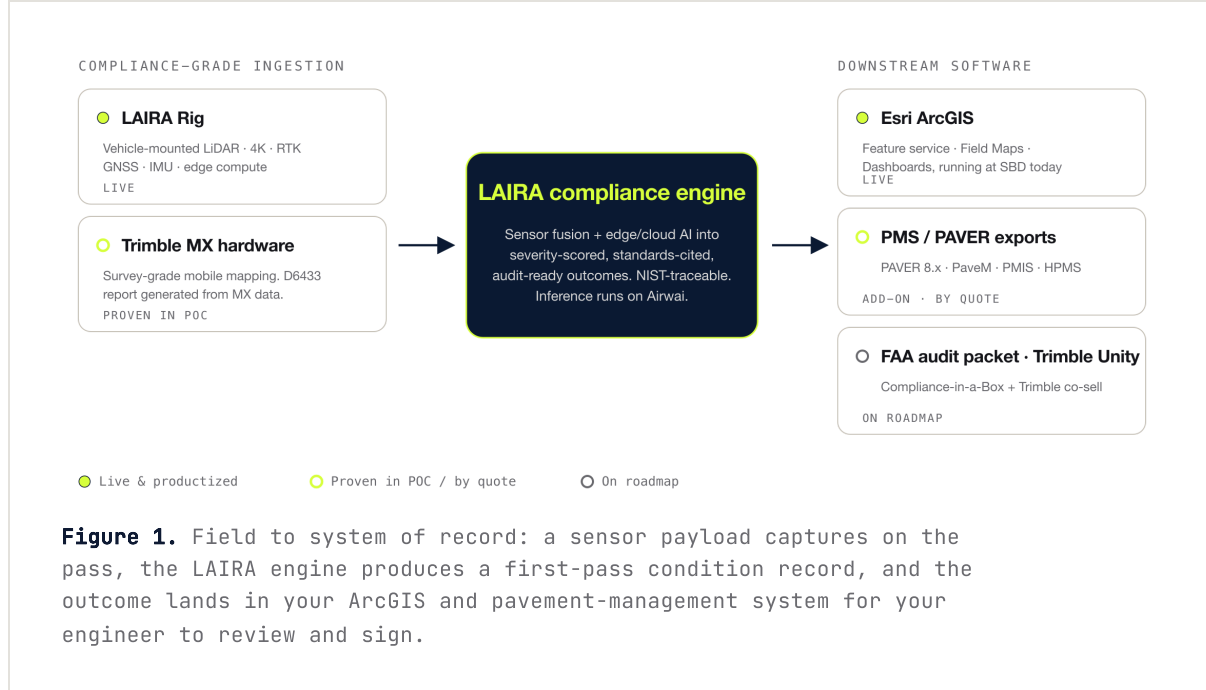
data points per pass, staff on the determination, across more pursuits.

Source: Esri published SBD case study.

HOW IT WORKS

Capture is the service. The determination and the stamp stay yours.

Airwai's engine, LAIRA (Layered Autonomous Inference and Reasoning Agent), reads sensor data as a vehicle drives the airfield, computes a first-pass condition determination on the vehicle during the pass, and delivers the outcome into your Esri (ArcGIS) and your pavement-management system. Your engineer reviews the record, applies judgment, and signs. The software drafts; the licensed professional owns the finding. You receive outcomes through the map and the API, never raw model labels or scores.



The LAIRA Rig is engaged as a service, with no capital outlay to the firm. The sensing is commercial off-the-shelf: LiDAR (a laser scanner that measures surface geometry), an electro-optical survey camera, survey-grade satellite positioning, and an inertial navigation unit, with the artificial-intelligence inference running on the vehicle. It operates without closing a runway, taxiway, or apron, and every reported number resolves to an auditable per-sample-unit worksheet your engineer can defend.



Figure 2. The LAIRA Rig, the survey-grade sensor unit, engaged as a service on your projects.



Figure 3. Capture on a live airfield, no closures required.

THE ENGINEER STAYS IN CHARGE

This makes your engineers more valuable, not fewer.

Automation of the field step does not remove the engineer from the work. It removes the part of the work that a license was never required for. The determination, the interpretation, the recommendation, and the professional

stamp remain the engineer's, and they now sit on a denser, more consistent, more defensible record than a hand survey can produce. A firm that adopts this does not shed engineers; it takes on more airfield work with the engineers it has, and puts those engineers on the judgment their clients actually pay for.

✓ **The division of labor:**

Airwai captures the field data and produces the first-pass record. Your licensed professional engineer reviews it, exercises judgment, and signs. Airwai never issues the professional determination.

THE MATURITY MODEL

Five stages from field crews to a standardized airfield practice.

Plan the practice by stage, not by tool. The ladder measures how much of your field-data step is captured and processed for the engineer rather than by the engineer. Find the last stage fully true of your firm today; the next stage is your target.

STAGE 0 Field crews Licensed and senior staff hand-survey; findings re-keyed later. You are here if a project's data is collected by walking the pavement.	STAGE 1 Digitized field Field data captured on a device, still scored by hand. You are here if you log digitally but analysis is manual.	STAGE 2 Sensor capture Sensor collection engaged per project, one-off; review still human. You are here if you outsource capture on occasional jobs.	STAGE 3 Automated first-pass Condition first-passed automatically; the engineer reviews and signs. You are here if the engineer starts from a record, not raw field data.	STAGE 4 • TARGET Standardized practice Capture standardized across pursuits; engineer time is all judgment. You are here if every airfield pursuit runs the same capture-to-sign flow.
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Self-locate: mark the last stage fully true of your firm today. Most firms sit at Stage 0-1. The return comes from advancing one stage on one project, then standardizing.

Screen a pursuit for free; deliver on the Rig by project or subscription.

Most firms start with a free screening pass on one active pursuit to qualify or scope it, then engage the survey-grade Rig on the project they win. The Rig is available as an annual subscription or scoped to a single project. All three tiers deliver into the systems you already run.

Pursuit screening

\$35K /yr • free
first pass

SCREENING-GRADE

- Rapid condition screening from a phone or GoPro to qualify or scope a pursuit.
- Determination engine, human-in-the-loop; recurring passes and history.
- Export and API into your ArcGIS and pavement-management system.
- Screening-grade, for pursuit and scoping, not the signed deliverable.

Advances you to **Stage 2-3** • a free first pass on one active project.

Rig survey • delivery

\$150K /yr • or
per project

SURVEY-GRADE • FAA-ACCEPTED PATH

- The LAIRA Rig (LiDAR) as a service: survey-grade capture, no capital outlay.
- First-pass condition record and inspection archive keyed to sample units.
- Your P.E. reviews and signs; supports the client's path to FAA acceptance.
- Delivered into your Esri and pavement-management system.

Advances you to **Stage 3-4** • annual or project-scoped; ask for a project quote.

Esri integrator

Free

AUTOMATION • NO
CAPTURE

- For firms operating a client's ArcGIS: keep their accepted inspection records current.
- Work-order routing and a daily airfield briefing.
- Automation only; no sensor capture, AI stays out of the compliance record.
- A low-friction way to stand up the relationship.

Advances you to **Stage 1-2** • automation only, never a compliance claim.

A note on the words. Airwai says “FAA-accepted,” not “certified” or “compliant.” Airfield condition data becomes acceptable for an airport's Part 139 reporting only when its FAA Airport District Office accepts an amendment to the Airport

Certification Manual naming the method. The Rig tier is built to support that path; the licensed engineer signs the determination.

THE IMPLEMENTATION PATH

Prove it on one project, then standardize across pursuits.

01 Pick one active pursuit or project and name who signs.

CONTEXT

Start where a faster, denser record changes the outcome of a live pursuit or delivery.

PREREQUISITES

One airfield project; the deliverable and standard it must meet; the P.E. of record.

ACTIONS

Scope the segment; confirm your ArcGIS and pavement-management system; set the deliverable and the reviewer.

BEST PRACTICE & PITFALLS

Name the signing engineer up front. The point is to speed their work, not to replace their judgment.

02 Run a free screening pass to qualify or scope.

CONTEXT

A screening pass gives the pursuit team a fast read before committing survey effort.

PREREQUISITES

A phone or GoPro on a vehicle with airfield access; an access window around operations.

ACTIONS

Capture the segment; review the screening record; use it to scope the pursuit or price the delivery.

BEST PRACTICE & PITFALLS

Treat screening as screening: it scopes and prioritizes, it is not the signed survey.

03 Deliver the survey with the Rig; your engineer signs.

CONTEXT

On the project you win, capture survey-grade and deliver into your systems.

PREREQUISITES

A scheduled capture window; the P.E. of record; the client's system of record.

ACTIONS

Run the Rig; review the first-pass record; apply judgment; sign; deliver into Esri and the pavement-management system.

BEST PRACTICE & PITFALLS

Bank the archive keyed to sample units so the next cycle starts from a record, not a blank sheet.

04 Standardize the flow across pursuits.

CONTEXT

Once one project proves out, make capture-to-sign the default for airfield pavement work.

PREREQUISITES

A repeatable capture cadence; a subscription if volume warrants it.

ACTIONS

Template the deliverable; train reviewers on the record; carry the same flow into every pursuit.

BEST PRACTICE & PITFALLS

Standardize the review, not just the capture, so quality is consistent across engineers.

THE PROOF

A denser record on a live airfield, and blind agreement with a licensed engineer.

At San Bernardino International Airport, a Part 139 airport, the LAIRA capture rides vehicles already in service and publishes into the airport's own ArcGIS. Esri's published comparison found the AI-based pass detected three to seven times more surface anomalies per mile than manual inspection, across pavement, foreign object debris, vegetation, and marking, on a consistent objective baseline. The denser record is exactly what an engineering firm needs to defend a finding and win the next cycle of work.

2M+

machine-ready data points captured per pass.

Source: Esri published SBD case study.

3–7×

more surface anomalies per mile than manual, in Esri's comparison.

Source: Esri published SBD case study.

50%+

less field-validation time, in Esri's published estimate.

Esri estimate ("could reduce"), not a measured Airwai result.

The result that matters most to a firm is that the automation holds up against a licensed engineer. At Wright-Patterson Air Force Base, a civil engineer hand-surveyed a set of pavement sample units to the airfield standard (ASTM D5340) while a LAIRA-equipped vehicle scanned the same areas the same day, neither seeing the other. Both named the same unit as the worst pavement on the field and the same dominant failure, and the system's ranking tracked the engineer's. The engineer stayed in charge; the capture made the check faster and denser.

"We tested it the honest way: my team surveyed the pavement by hand, and the system scanned the same areas the same day, neither side seeing the other. Where it mattered most, the two agreed, including on the worst pavement on the field. An independent check like that is exactly what I want before we rely on any new tool."

Maj Ryan Samolewski, 88th Operations Support Squadron, Wright-Patterson Air Force Base

- ✓ **Straight talk:** the field agreement is first-look and qualitative; the condition engine is validated as arithmetic against the FAA's PAVEAIR values. No accuracy claim is declared compliance-grade until a completion run is scored blind and signed by a licensed professional engineer, which in your projects is your engineer.

Your first-week runbook.

☐	Pick
one active airfield pursuit or project where a faster, denser record changes the outcome.	
☐	Name
the P.E. of record and the deliverable the capture feeds.	
☐	Confirm
your ArcGIS and pavement-management system of record.	
☐	Schedule
a free screening pass on that project's pavement.	
☐	Set
the review step and who signs before anything is delivered.	

Screen one of your projects for free; deliver the survey on the project you win.

STEP 0 • ZERO COMMITMENT

Free pursuit screening

A screening pass on one of your active airfield projects, so your pursuit team sees the record before committing survey effort.

STEP 1 • PROJECT-SCOPED

A Rig survey on one delivery

Survey-grade capture on the project you win, delivered into your systems, your P.E. reviews and signs, with a written scope and review date.

Registered, small-business, and

easy to bring onto a project team.

LEGAL ENTITY	Airwai, Inc. · Delaware C-corporation
HEADQUARTERS	13214 Crenshaw Blvd., Gardena, CA 90249
UEI	YAD4JA8BN6N6
CAGE	07Z17
EIN	99-3673785
NAICS	541330 Engineering Services (primary) · 488190 Air Transportation Support · 541511 Custom Computer Programming
BUSINESS SIZE	Small Business · SAM.gov registered & active

Ways to engage

- Subcontract or teaming on a specific airfield pursuit or delivery.
- Rig survey scoped to a single project, or an annual subscription for volume.
- Cooperative and federal vehicles (Sourcewell, OMNIA, GSA, defense software vehicles via authorized distributor) where the end client requires them.
- Esri (ArcGIS) partner channel for firms delivering into a client's ArcGIS.

Bring us onto a live pursuit and we will screen one segment at no cost so your team can price the delivery.

STRAIGHT TALK ON THE CLAIMS IN THIS PAPER

Numbers from the San Bernardino deployment are drawn from Esri's published case study and blog; the "50%+ field-validation" figure is **Esri's estimate** ("could reduce"), not a measured Airwai result. The independent field test was **first-look and qualitative**; the condition engine is **validated as arithmetic** against the FAA's PAVEAIR values. **Airwai captures the field data and produces a first-pass record; the licensed professional engineer reviews, judges, and signs.** No accuracy claim is declared compliance-grade until a completion run is scored blind and signed by a P.E. Airwai delivers **outcomes** through your system of record and API, never raw labels or scores. Airfield pavement is assessed to **ASTM D5340** (not the roadway standard). We say **"FAA-accepted," not "certified,"** and FAA acceptance is the airport's Airport District Office decision on an ACM amendment.

Airwai · Intelligence for critical infrastructure.

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