

BEFORE INTELLIGENCE BECOMES REALITY

Governing what building AI receives, examining what it proposes, and preserving what happens next.

One architecture. Two connected public benefits.

Governed building intelligence: examinable environmental evidence and computation, followed by an independent execution-authority boundary.

Environmental accountability: traceable observations, proposed actions, authorization decisions and verified physical outcomes that may support future oversight and policy.

For: government property agencies, public-building owners, digital government and AI assurance offices, facilities engineers, environmental/public-health authorities, procurement teams and integrators.

Purpose: an invitation to evaluate a proposed architecture, not a claim of certified deployment or government endorsement.

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01 The executive decision

Public buildings are becoming connected systems in which sensors, building information models (BIM), digital twins, building management systems (BMS), and AI can influence equipment and occupied environments. The central risk is not only bad data or a bad model: it is the conversion of an inadequately supported recommendation into a real physical consequence.

The governing question

Does this proposed consequence have sufficient Admissible Evidence, Applicable Authority, and Established Standing to become reality NOW?

What TA14 is proposing

- Before interpretation: Atmospheric Integrity Records (AIR) preserve the provenance and continuity of environmental observations; Admissible Computation Architecture (ACA) supports examination of the processing and computational basis supplied to intelligence.
- After interpretation: Admissible Execution Architecture (AEA) examines the proposed consequence at an authority boundary, independently of how convincing the AI output sounds.
- After action: record the authorization, attempted command, actual equipment response, measured conditions, and deviations as distinct events.

What a government can evaluate first

A single, bounded AI-to-building-control pathway can be examined without giving TA14 or an AI system live authority over government equipment. The initial outcome is a gap assessment, an authority-boundary design and a validation plan—not an operational certification.

The distinction that matters

Admissible inputs do not guarantee a correct interpretation. A plausible interpretation does not confer execution authority. An authorized command does not prove the intended physical outcome occurred. Each boundary requires separate evidence.

02 The end-to-end architecture

Stage	Required examination
REALITY	Observe physical conditions and equipment state. Preserve raw observations separately from inference.
RECORD / AIR	Capture source identity, timestamps, calibration context, provenance and environmental evidence.
CONTINUITY / ACA	Examine processing, transformations, time validity, versions and computational lineage.
AI INTERPRETATION	Identify what the model concluded, its assumptions, uncertainty and proposed consequence.
ADMISSIBILITY / BINDING / AEA	Examine evidence, applicable authority, actor capacity, standing and current conditions.
COMMIT / EXECUTION	Permit only appropriately authorized pathways; preserve existing BMS interlocks and local controls.
OUTCOME	Verify the command, physical response, environmental effect and exceptions; feed observations back into the record.

Canonical TA14 chain: Reality → Record → Continuity → Admissibility → Binding → Commit → Execution → Outcome.

Available dispositions: ALLOW / HOLD / DENY / ESCALATE. A HOLD or ESCALATE must not silently degrade into execution.

Two separate governance boundaries

Evidence and computation boundary: AIR and ACA support traceability of what the AI receives and the transformations applied to it. Execution boundary: AEA separately determines whether a specific proposed consequence may proceed under valid authority and standing at that moment.

03 Government-building demonstration

Illustrative scenario: An occupied classroom reports elevated CO₂. A building AI proposes increasing outside-air ventilation. This example is educational; it does not represent an operational TA14 deployment.

Checkpoint	What must be established
Observation	Which sensor and location? Is calibration known? Are raw values, timestamps and quality flags retained?
Computation	What averaging, filtering, unit conversion or inference occurred? Which software and model versions were used?
Interpretation	What is the proposed damper or fan change? What uncertainty, alternatives and possible side effects exist?
Authority	Is the action within delegated scope? Who or what has standing? Is the authority current and not revoked?
Safety	Would the change violate smoke-control, pressure, humidity, equipment, occupancy or other constraints?
Disposition	ALLOW, HOLD, DENY or ESCALATE, with recorded reasons and evidence references.
Outcome	Was the command accepted? Did equipment respond? Did conditions improve? Were adverse effects detected?

An essential negative test

If a sensor is stale, the authority credential has been revoked, the AI proposes an out-of-scope change, or the decision service is unavailable, the system must demonstrate a defined fail-closed or safe escalation response—not simply log the problem after execution.

04 The record that makes accountability possible

Environmental accountability is not created by a score alone. It requires an examinable chain connecting observed conditions, computations, proposed interventions, decision authority and physical outcomes.

Record element	Minimum example
Observed reality	Building/space ID, device/source, timestamp and clock quality, raw measurement, calibration/quality context.
Computational lineage	Transformations, derived values, software/model version, referenced inputs and uncertainty where applicable.
Proposed consequence	Target equipment, intended setpoint/command, reason, expected effect and constraints.
Authority and standing	Actor/system identity, capacity, authority basis, validity interval, revocation status and local policy.
Disposition and commit	ALLOW/HOLD/DENY/ESCALATE, rationale, signed/verifiable receipt, binding to the exact proposed action.
Execution and outcome	Command acknowledgement, measured equipment response, environmental follow-up, deviations and escalation.

What this does—and does not—establish

A preserved record can help a government ask whether a ventilation intervention worked, whether a decision was authorized and whether environmental conditions improved. But a complete-looking log is not automatically trustworthy or legally admissible. Source validation, chain of custody, privacy, security, retention and applicable evidentiary rules still matter.

Raw observations and adjusted or inferred values should remain distinguishable. AI-generated conclusions should never be presented as direct measurements.

05 From governed buildings to governed air

The primary mission is to govern consequential intelligence in physical systems. Environmental accountability is a connected capability that can emerge when the same governed pathway retains reliable evidence of building conditions, decisions and outcomes.

Step	Institutional possibility
1. Govern intelligence	Examine evidence and computation supplied to AI; examine its proposed actions before physical execution.
2. Establish records	Preserve traceable environmental observations, authorization decisions, execution and verified outcomes.
3. Evaluate performance	Compare actual conditions and intervention outcomes against relevant technical requirements.
4. Support oversight	Provide evidence that competent authorities may use in compliance assessments, audits and regulatory reviews.
5. Inform policy	Use sufficiently validated, appropriately governed evidence to improve standards, programs and public decisions.
6. Protect occupants	Enable better-informed and more accountable decisions affecting schools, offices and other public buildings.

Regulatory boundary

TA14 does not itself set legal air-quality limits, create enforcement authority, certify compliance or compel government adoption. Standards and lawful regulatory action remain with competent institutions. The architecture is a proposed means to support evidentiary and execution accountability.

Why this is relevant beyond air quality

The same authority question can apply to AI-influenced HVAC operation, energy optimization, pressure control, building access, equipment sequencing and other consequential building actions. Each application requires its own safety analysis and authority policy.

06 What must be proven before operational use

A government should not rely on architectural diagrams as proof of operational assurance. TA14 proposes that any implementation be tested against explicit, agreed acceptance criteria.

Validation area	Evidence expected
Source and computation integrity	Tampered, stale, incomplete, miscalibrated and transformed data cases; reproducible computational lineage.
Authority provenance	Valid/expired/revoked credentials, actor capacity, standing, local authority scope and policy changes.
Boundary enforcement	Replay, bypass, race-condition, duplicate command, unavailable dependency and policy-conflict tests.
Fail-closed behavior	Documented HOLD/DENY/ESCALATE under missing evidence, outages or uncertainty, with no unsafe default execution.
Safety interoperability	Verification that BMS interlocks, life-safety systems and authorized human overrides remain effective.
Performance	Measured decision latency and throughput under representative load; no unverified machine-speed guarantees.
Security and auditability	Cryptographic/verifiable receipts as appropriate, retention, access controls, cybersecurity and incident reconstruction.
Outcome verification	Evidence that a permitted command executed as intended—or that deviation was captured and addressed.

Current claim boundary: This publication describes the architecture and an evaluation method. It does not claim independent operational certification, government endorsement, or completed production BMS integration. Specific implementation maturity and test results must be supplied separately during due diligence.

07 Proposed paid institutional evaluation

Objective: Determine the suitability and gaps of TA14 for one identified AI-to-building-control decision pathway. Start with a controlled, non-operational examination; no live control permissions are presumed.

Work package	Government-facing deliverable
A. Define the use case	Selected building, equipment, AI decision, institutional participants and system boundaries.
B. Map the evidence	Source-to-model lineage, AIR/ACA evidence requirements and identified data-quality gaps.
C. Examine authority	Actors, capacities, standing basis, local policy, AEA disposition logic and decision receipts.
D. Design validation	Negative tests, fail-closed cases, interlocks, cybersecurity, latency and measurable acceptance criteria.
E. Commercial roadmap	Responsibilities, integration dependencies, milestones, priced follow-on work and potential licensing.

What the institution receives

- A written decision-pathway and trust-boundary map.
- A prioritized evidence, computation, authority and safety gap register.
- A proposed test and acceptance plan with unresolved risks clearly marked.
- An implementation feasibility and procurement roadmap, if the findings justify it.

Commercial boundary

An introductory discussion and review of public materials may occur without cost or obligation. Detailed examination, integration, implementation and licensing require separately agreed scope and commercial terms. No fixed fee or purchasing commitment is implied by this public brief.

08 Invitation to governments

TA14 invites government institutions to examine whether its architecture could strengthen assurance over AI-influenced public-building operations while creating an evidence foundation for environmental accountability.

Who should participate?

Public-property owner/operator; facilities engineering; BMS integrator; AI/data governance; cybersecurity; environmental or occupational health; procurement; and legal/regulatory counsel. The institution retains control of its property, systems and regulatory responsibilities.

A practical first response

Please identify the responsible office for intelligent buildings, government property technology or AI assurance, and nominate one representative AI-to-building-control decision pathway for a preliminary written scoping discussion.

What we are asking

Would your institution be interested in a bounded, commercially scoped technical evaluation of a governance architecture that examines both the information supplied to building AI and the authority behind its proposed physical actions—with environmental accountability as a connected benefit?

Public references and correspondence

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