

The Watchman Doctrine

A Field-First Framework for Emergency Coordination When the Network Fails

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Executive Summary

Between the moment an emergency is detected and the moment the right responder is moving on the right task, there is a gap. In current systems, that gap is measured in minutes. In wilderness search, in avalanche response, in flash-flood evacuation, in wildfire progression, those minutes are the difference between a rescue and a recovery.

The gap is not a technology problem in the ordinary sense. Alerting tools have improved. Radios have improved. Dispatch software has improved. **What has not improved is the layer that ties all of them together** — the coordination layer that sees, warns, and moves the response as a single organism.

This paper proposes a framework for closing that gap. We call it the **Watchman Doctrine**, and it is built on three tenets:

1. **See First.** Situational awareness is the first duty. Everything downstream depends on it.
2. **Warn Clearly.** The right people receive the right information, acknowledged, in the language of their mission.
3. **Coordinate Decisively.** The right responder is matched, tasked, and moving — with continued awareness of their safety — in seconds, not minutes.

These three tenets, and the architectural principles required to deliver them under real field conditions, are what “standing watch” over a modern emergency response actually means.

The paper is written for incident commanders, emergency managers, patrol directors, superintendents, sheriffs, and the deputies and program officers who advise them. It is not a product brochure. It is an argument.

Part I — The Coordination Gap

1.1 What the Gap Actually Is

Every modern emergency response involves a sequence:

Detection → Assessment → Alerting → Matching → Dispatch → En-route awareness → On-scene coordination → After-action reconstruction

In a well-run agency, each of these steps happens. The problem is that in most agencies, **each step lives in a different tool, owned by a different person, using a different protocol, over a different channel.** The transitions between steps are where the gap lives.

- The 911 call comes in on CAD.
- The alert goes out through a mass-notification system.
- The volunteers acknowledge (or don't) through text messages or a group chat.
- The mutual-aid partner uses a different CAD and hears about it on a different radio channel.
- The state EOC watches on WebEOC and asks for updates by phone.
- The commander in the field tracks the response with a marker on a paper map and a portable radio.
- The after-action report is reconstructed six weeks later from logs that don't quite line up.

At each transition, information degrades. Coordinates get transcribed. Acknowledgments get missed. A volunteer who was two miles from the incident doesn't get tasked because the dispatcher didn't know they were there. A mutual-aid team arrives at the wrong staging area because the change wasn't pushed to their radio.

None of this is anyone's fault. It is the geometry of a fragmented tool stack, and it will not fix itself.

1.2 Why the Gap Is Widening

Three trends are making the gap worse, not better.

First: the volunteer force is growing. Ski patrol, SAR, CERT, VFD — the workforce of emergency response is disproportionately volunteer, and volunteers are harder to coordinate

than salaried staff. They come from different departments, use their own devices, and are not sitting at a console when the call comes in.

Second: the incidents are getting more complex. A single hurricane response now involves county EM, city fire, state DPS, National Guard, federal FEMA, mutual-aid teams from five states, VOAD partners, and thousands of volunteers. A wildland fire crosses jurisdictional lines within hours. The number of agencies in a single incident has doubled in a generation. The tooling has not.

Third: cellular and radio infrastructure fails at the moments that matter most. Cell towers on wildfire fronts burn. Cellular is congested during a mass casualty event. Radio has dead spots in canyons and above tree line. And every one of these environments is where the response is needed the most.

1.3 The Cost of the Gap

The cost is measured three ways.

In lives. The peer-reviewed literature on emergency response coordination is consistent: measurable delay between detection and effective response correlates with worse outcomes, and the correlation is steepest in wilderness rescue, avalanche, and flash-flood scenarios where survival windows are short. The 24-hour survival rate for missing persons drops off a cliff. Every coordination minute costs.

In money. The average cost of a fatality in a preventable emergency — measured through insurance settlements, litigation, and municipal liability — sits in the millions. A single documented coordination failure that contributes to a death can bankrupt a small county or end a career.

In trust. After the fact, communities remember whether the response was ready. Trust in local government is built and lost on the visible performance of emergency services. Every year, another incident somewhere in the country becomes the case study that the profession studies. Every incident commander knows they are one bad day from being that case study.

The Watchman Doctrine is a framework for making sure your agency is not next.

Part II — The Watchman Doctrine

The doctrine has three tenets. Every capability of a modern coordination platform should ladder up to one of them. If a capability does not, it is decoration.

2.1 See First

Situational awareness is the first duty. Nothing downstream matters if we do not see it early, see it clearly, and see it as one picture.

See first means the coordination layer ingests every relevant signal — sensor data, environmental data, external feeds (NWS, USGS, FCC), inbound reports from the public, telemetry from responder devices — and fuses it into a single operational picture *before* the alert fires.

This is not a dashboard. It is a discipline. The dashboard is the artifact.

Three tests of “see first” maturity:

1. **Predictive, not reactive.** The best coordination layer identifies a developing threat *before* the 911 calls start. Rising stream gauge + saturated soil + forecasted precipitation should trigger a pre-alert to the flood-response team, not wait for the first person to be swept away.
2. **Multi-source, not single-source.** A siren isn’t enough. An SMS isn’t enough. A radio call isn’t enough. The system that sees best is the one that fuses telemetry, sensor, feed, and human input into a single truth.
3. **Terrain-aware.** A 2D map is not enough for mountain, wildland, or urban-vertical response. Terrain determines what is possible; the picture must show it.

An organization that has mastered “see first” catches things earlier than its neighbors and pays a lower price for every response.

2.2 Warn Clearly

The right people must receive the right information, in language they trust, acknowledged, on channels that work — even when the primary network doesn’t.

Warn clearly is a discipline of communication, not a piece of technology. The technology serves the discipline.

Four tests of “warn clearly” maturity:

1. **Right people.** Alerts are targeted by role, geography, availability, and skill — not blasted to every phone in the county. Blast alerting trains people to ignore alerts. Targeted alerting trains people to trust them.
2. **Right information.** ICS-aligned language. No jargon that dispatch invented and only dispatch understands. Multilingual when the community requires it. Compact enough for a watch face, complete enough for a briefing.
3. **Acknowledged.** An alert with no acknowledgment loop is a wish, not a warning. Every alert should return a state: received / accepted / declined / no-response. The commander should know within seconds who is moving.
4. **Multi-channel, with fallback.** SMS + push + email + radio + mesh + wearable. Not because more channels are better in the abstract, but because on the day the primary channel is down, the fallback is the difference between a coordinated response and a silent one.

Agencies that have mastered “warn clearly” find that their acknowledgment rates rise, their false-response rate falls, and their people stop dreading the alert tone.

2.3 Coordinate Decisively

The right responder, matched to the right task, moving on the right information, with their safety monitored — in seconds, not minutes.

Coordinate decisively is where the doctrine earns its keep. Seeing and warning are prerequisites; coordination is the payoff.

Five tests of “coordinate decisively” maturity:

1. **Skills-based matching.** Not “who’s on shift” — “who is the nearest AIARE Pro with an active avalanche transceiver.” The match should be automatic, ranked, and defensible in an after-action review.
2. **One-tap acceptance.** From alert to en-route in a single interaction on the device the responder is already carrying. Every added tap is a second bled.
3. **Turn-by-turn to the objective.** Not a map pin — a route. Especially in wilderness, where the map pin is a mile from the trail that actually reaches it.
4. **Continuous en-route awareness.** Responder location, task status, and vitals visible to the commander in real time. Not a snapshot — a stream.
5. **Standing watch over safety.** Biometric monitoring of the responder is part of coordination, not a separate program. A commander who does not know that a wildland crew is entering heat exhaustion is coordinating blind.

The last of these — biometric monitoring — is where most agencies are furthest behind, and where NFPA and the wildland community are moving fastest. It is the leading edge of the doctrine.

Part III — What Standing Watch Requires: Six Architectural Principles

A coordination layer that lives up to the doctrine cannot be assembled from consumer-grade tools bolted together. It must be built to six principles.

3.1 Field-First, Not Office-First

Most incident management software was built for the EOC and retrofitted for the field. The result is software that assumes bandwidth, a keyboard, a good chair, and a quiet room. None of those things exist on the mountain, in the canyon, or on the fireline.

Field-first means: - Mobile is the primary interface, not a companion app. - The rugged tablet in the truck and the watch on the wrist are first-class. - Screens are readable through polarized safety glass and in direct sun. - Every workflow is completable one-handed, gloved.

3.2 Offline-First, With Queue-and-Sync

The system must assume the network will fail, and continue to operate when it does. This is an architectural choice, not a feature. Bolting offline mode onto a cloud-first system produces a bad approximation of offline; building offline-first from the ground up produces a system that behaves the same on and off the grid.

- Local-first data model
- Deterministic conflict resolution
- Queue-and-sync when connectivity returns
- Peer-to-peer mesh where infrastructure is absent

3.3 Interoperable by Default

The coordination layer will not replace the CAD, the radio, or the state EOC platform. It must plug into them.

- Standards: NIEM, EDXL, CAP for interchange
- Bridges to the incumbent CAD, RMS, and EOC platforms
- Radio interoperability via P25 gateways where budget permits
- Data export in formats regulators, insurers, and courts will accept

3.4 Auditable End-to-End

Every alert, acknowledgment, dispatch, movement, and biometric reading should be timestamped, immutable, and reconstructible.

The after-action reconstruction should take an afternoon, not six weeks. The court exhibit should be a query, not a scavenger hunt.

3.5 Secure to the Level the Mission Requires

- CJIS-compliant for law enforcement data
- HIPAA-appropriate handling for biometrics
- FedRAMP-track hosting for federal deployments
- Least-privilege access, role-based, audit-logged

Security is not a bolt-on. It is a precondition for adoption in any serious agency.

3.6 Human-Centered, Not Vendor-Centered

The last principle is the hardest and the most important. Every workflow should be designed for the person in the moment they use it — not for the vendor demo, not for the RFP checklist, not for the marketing screenshot.

The test: a patrol director, a deputy, and a volunteer should each be able to complete their core workflow in the platform without training beyond a 20-minute orientation. If they can't, the platform is wrong.

Part IV — Field Application

The doctrine applies across every emergency response context. Four illustrative cases.

4.1 Mountain Rescue and Avalanche Response

The environment: high elevation, extreme cold, thin or no cellular, radio dead zones, small teams, life-critical time windows.

See first: avalanche forecast + snow telemetry + terrain overlay + ski-patrol location. **Warn clearly:** patrol-only alert, ack-tracked on the watch, no siren for the guests. **Coordinate decisively:** nearest AIARE Pro tasked, route to zone, biometric monitoring for the responder entering the debris field.

4.2 Missing-Person Search and Rescue

The environment: remote parkland, degraded comms, multi-agency (park, sheriff, SAR volunteers), long duration.

See first: last-known point + terrain + weather + probability-of-detection modeling. **Warn clearly:** callout to the right SAR team, mutual-aid partners looped in, family liaison informed on separate channel. **Coordinate decisively:** teams assigned to segments, real-time coverage-gap analysis, UAV detection feeding new tasks into the queue.

4.3 Rural County Flash Flood

The environment: warning window measured in minutes, elderly population, poor cellular, multiple jurisdictions.

See first: USGS stream gauge + NWS forecast + local sensor + soil saturation. **Warn clearly:** IPAWS to the public, targeted alert to volunteers, coordination alert to mutual-aid counties. **Coordinate decisively:** door-to-door evac assignments, live evacuation status, shelter capacity tracking, all timestamped for the inevitable after-action.

4.4 Multi-Agency Wildfire Response

The environment: rapid escalation, unified command, hundreds of personnel, cellular infrastructure literally burning.

See first: fire perimeter + wind + fuel + structure protection assignments + crew locations. **Warn clearly:** structure-triggers, evac orders, crew rotation cues. **Coordinate decisively:** crew tasking, air-attack integration, biometric monitoring for heat stress across every crew in the field.

In each case, the doctrine is the same. The tenets do not change. What changes is the sensor mix, the responder mix, and the terrain — and the platform must adapt to all three.

Part V — What This Means for Buyers

For an agency evaluating a coordination platform, the doctrine offers a diagnostic framework.

5.1 The Twelve-Question Assessment

Ask these of any candidate platform. Score honestly.

See First 1. Does it fuse at least three real-time data sources into a single operational picture? 2. Does it support predictive alerting, not just reactive? 3. Is the operational picture terrain-aware?

Warn Clearly 4. Are alerts targetable by role, geography, and skill? 5. Is every alert acknowledged with a state machine, not a fire-and-forget? 6. Does the alerting stack survive cellular failure?

Coordinate Decisively 7. Does the platform match responders to tasks by skill and proximity, automatically? 8. Is task acceptance one-tap on a wearable or phone? 9. Does the commander see responder location and biometrics in real time?

Architecture 10. Is the platform field-first — designed for the vehicle and the wrist, not the desk? 11. Is it offline-first — same behavior on and off the network? 12. Does it produce an auditable end-to-end timeline in a single query?

A platform that scores 10 or more is a serious candidate. A platform that scores under 7 will not close the gap.

5.2 The Buying Process

Coordination platforms should not be bought like typical software. Recommended process:

1. **Doctrine alignment.** Read the doctrine with your command staff. Decide whether you agree with the framing. If you don't, no platform will satisfy you.
2. **Twelve-question assessment.** Score every candidate.
3. **Operational trial.** Not a demo. A trial during a live drill, in your terrain, with your people.
4. **Six-month pilot.** One incident type, one team.
5. **Full deployment.** Only after the pilot has closed at least one gap that would otherwise have been documented in an after-action.

5.3 The Funding Pathway

Coordination platforms are grant-fundable. The primary vehicles:

- **FEMA AFG (Assistance to Firefighters Grant)** — allowable equipment categories include communications and interoperability.
- **DHS SHSP / UASI (Homeland Security Grant Program)** — regional interop and preparedness.
- **FEMA EMPG (Emergency Management Performance Grant)** — planning and coordination capacity.
- **DOI / DOD veteran-focused programs** — for federal and interagency deployments.
- **Insurance premium credits** — some carriers now credit documented coordination capabilities.

An agency serious about closing the gap should treat platform funding as a program, not a purchase.

Part VI — Who Wrote This and Why

The Watchman Doctrine was developed by **Intrepid Logic, LLC**, a Service-Disabled Veteran-Owned Small Business based in Katy, Texas. It reflects a decade of thinking about the coordination gap by operators, engineers, and emergency-response practitioners who have lived it.

Signal Storm — Intrepid Logic’s flagship emergency coordination platform — is our attempt to build the doctrine into working software. But the doctrine is not the platform. The doctrine is available to any agency, any vendor, and any peer that wants to close the gap. The more platforms that align to it, the better off the profession will be.

If you disagree with the doctrine, tell us why. If you agree with it, we want to work with you.

Appendix A — Glossary

- **AAR** — After-Action Review
- **AIARE** — American Institute for Avalanche Research and Education
- **CAD** — Computer-Aided Dispatch
- **CAP** — Common Alerting Protocol
- **CJIS** — Criminal Justice Information Services (FBI security policy)
- **EDXL** — Emergency Data Exchange Language
- **EOC** — Emergency Operations Center
- **FRC** — Field Response Coordination (category term)
- **ICS** — Incident Command System
- **IPAWS** — Integrated Public Alert & Warning System
- **NIEM** — National Information Exchange Model
- **NFPA** — National Fire Protection Association
- **NWS** — National Weather Service
- **SAR** — Search and Rescue
- **UAV** — Unmanned Aerial Vehicle
- **USGS** — United States Geological Survey
- **VOAD** — Voluntary Organizations Active in Disaster

Appendix B — Further Reading

For agencies interested in the primary literature underpinning the coordination-gap thesis, we maintain a curated reading list of peer-reviewed research on UAV-based human detection, multi-agency coordination frameworks, and detection-to-dispatch latency. Available on request from signalstorm.io.

Appendix C — About Signal Storm

Signal Storm is the flagship product of Intrepid Logic, LLC. It is the AI-powered field coordination platform built to the Watchman Doctrine — see first, warn clearly, coordinate decisively.

To request an operational trial, or to have your command staff walked through the doctrine, contact **signalstorm.io**.

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