

# How to Coordinate a Clinical Care Team Across Institutions

If a patient's care spans an emergency department, a cardiology group, a home-monitoring vendor, and a receiving hospital, no single system owns the decision and none of them trust each other's database. This guide describes an architecture for driving one coordinated action across many independent parties without a central coordinator, using credentialed state that carries its own provenance and a policy-scoped set of parties whose agreement is required. The approach is disclosed in U.S. Provisional Application No. 64/049,409 as the N-Party Coordination inventive step; it is an architecture you build, not a shipping library.

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## What You Are Building

You are building the coordination layer for a care event that touches more than one institution: an emergency department, a specialist practice, a home-monitoring vendor, an ambulance service, and a receiving facility. The clinical question is not "can these systems exchange records" but "can these parties commit to one action together" when a decision needs the attending physician's sign-off, the nurse's confirmation, and the receiving facility's acceptance, and none of them sits inside the same trust domain.

The search that brings people here is usually some version of "how do I coordinate a care team across institutions without everyone logging into one portal." What you actually want is a way for a proposed action to gather the right set of credentialed agreements, from parties who each stay in their own system, and to end up with a durable record of who agreed to what and under whose authority. That is the problem the N-Party Coordination inventive step, disclosed in U.S. Provisional Application No. 64/049,409, addresses. This guide translates that disclosure into an approach you can implement.

## **Why the Obvious Approaches Fall Short**

There are three common ways teams attempt this, and each has a real structural gap.

The **central hub** approach puts one system in the middle. Every institution integrates to it, and it holds the state of the care event. This works until you cross an ownership boundary. A hub owned by one health system is not a neutral coordinator for a competing system, a private cardiology group, and a device vendor. It becomes a single point of trust, a single point of failure, and a single point of liability, and getting four independent legal entities to route their patient decisions through one party's server is where most of these efforts stall.

The **message-exchange** approach (secure messaging or document exchange between institutions) moves data but does not carry decisions. A signed message tells you a message is authentic; it does not tell you where the enclosed claim came from, what authority stands behind it, or whether the receiving party is even the right party to act on it. The receiver is left to re-establish all of that context by hand, which is exactly the coordination work you were trying to automate.

The **workflow engine** approach models the care pathway as steps and assignees. It coordinates well inside one organization because it assumes one policy owner and one identity directory. Across institutions there is no shared directory and no shared policy

owner, so the assignee of a step in system A is not resolvable or trustable in system B.

The common gap: none of these treats *who is authorized, where the claim came from, and which parties must agree* as first-class, portable properties of the thing being coordinated. They bolt trust on at the edges. The disclosed architecture puts it inside the unit of coordination itself.

## The Architecture

The disclosed approach has three load-bearing pieces. Everything else follows from them.

**1. State that carries its own credentials and provenance.** The unit of coordination is a *governed observation*: a self-describing record that carries, at minimum, an authority credential identifying the authority responsible for it, a device-identity attestation, a spatial and temporal reference, a time-to-live, a domain-specific payload, and a lineage field recording provenance (see U.S. Provisional Application No. 64/049,409, Section 1.5). The lineage field references the source observations it was derived from, so lineage fields *compose*: a later observation's provenance chains back through the earlier ones, producing a cross-device, cross-authority provenance record. In clinical terms, a "transfer this patient" observation carries proof of which credentialed party raised it and a verifiable chain back to the vitals, the arrhythmia reading, and the physician assessment it was built from. The state does not depend on a shared database because it explains itself wherever it travels.

**2. Authority as a governance-configurable taxonomy, not a binary check.**

Each consuming agent evaluates a received observation against an authority taxonomy: a hierarchical trust structure defined by a deploying authority, where each level maps to a *behavioral response* (treated as a substrate condition, a mandatory mutation, a high-confidence observation, an advisory input, or an untrusted proposal), an evidential weight, and a supersession rule (Section 1.4). The disclosure gives an explicit healthcare

taxonomy with attending-physician, resident-physician, nurse, and orderly levels. This is what makes "requires the attending's sign-off" expressible: an observation at attending-physician authority supersedes a conflicting one at a lower level, and that supersession is evaluated and recorded, not assumed.

**3. A dynamically scoped set of parties whose agreement is required.** The disclosure describes a composite admissibility evaluator that ingests an observation or a proposed action and produces one of several outcomes: admit, gate, defer, reject, solicit (emit a discovery query for more input), or escalate (Section 4.2). On top of it sits a governance-policy-defined set of *escalation rules*. Each rule specifies a combination of observation types that must co-occur within stated spatial and temporal proximity, an escalated classification produced when they do, the authority level at which the escalation is emitted, and, critically, "a set of authorities and agents to which the escalation observation is to be delivered with priority routing" (Section 4.6, paras [O114] to [O116]). The disclosure's own worked example is clinical: a collision-detection observation, a biometric arrhythmia observation, and an emergency-call observation, each pertaining to a common spatial-temporal region, together satisfy a rule that classifies the event as a medical emergency requiring cardiac-equipped responders, and the escalated observation is routed with emergency-preemptive authority to the parties the rule names.

This is the quorum, and it is *dynamically scoped* because the rule selects which parties matter based on what actually co-occurred and where. The set is not a fixed committee; it is computed from the current admitted observations. Agreement is not a vote tallied by a coordinator but a condition that the co-occurring credentialed observations either satisfy or do not, evaluated independently at each participant.

**Crossing institutional boundaries.** Two disclosed mechanisms make this work across separate trust domains without a center. First, the world-model topology is explicitly allowed to be *distributed*: state is the union of local state held at each participant, "without any central repository," and coherence "emerges from the

governance chain operating at each contributor and each consumer" (Section 1.2, para [0019]). Second, a *cross-authority boundary agent* maps an observation from one authority taxonomy to the equivalent level in another operational domain's taxonomy (Section 1.4, para [0045], and Chapter 28). That is precisely the cross-institution problem: an "attending-physician" credential from institution A is translated to its equivalent standing in institution B's taxonomy through a credentialed boundary agent, rather than requiring both institutions to share one directory. The disclosure also supports temporary, scoped, time-bounded *authority escalation* (a party elevated to a higher level under stated conditions, for a stated duration and scope), with every escalation recorded in the lineage of the escalating entity and each receiver.

## How to Approach the Build

Implement it in this order. The interface sketches below are illustrative and faithful to the disclosure; they are not a package you can install.

1. **Define your governed-observation record.** Fix the fields from Section 1.5 before anything else, because everything downstream reads them:

```
# illustrative, per 64/049,409 Section 1.5 (implement yourself)
GovernedObservation:
  authority_credential # issuing authority, scope, validity, device binding
  device_identity      # continuity attestation of the emitter
  spatial_reference    # where it pertains to
  temporal_reference   # when
  time_to_live         # validity window
  payload              # e.g. "transfer_request", vitals, assessment
  lineage[]           # source-observation refs + integrity attestation
```

2. **Write the healthcare authority taxonomy for your domain.** Enumerate the levels (attending-physician, resident, nurse, and so on per the disclosed example), and for each level specify its behavioral response, evidential weight, and supersession rule. This is a policy artifact, not code, so a deploying authority can revise it without re-architecting.
3. **Build the composite admissibility evaluator as one shared primitive.** It should take an observation or proposed action and return admit / gate / defer / reject / solicit / escalate. Use it uniformly for every admissibility decision rather than scattering ad hoc trust checks. Weight inputs by the taxonomy level of their credential.
4. **Express your quorums as escalation rules.** For each coordinated action (for example, an inter-facility transfer), write a rule stating which credentialed observation types must co-occur, within what spatial and temporal proximity, the classification produced, the authority level of the emitted result, and the explicit set of parties to route it to. "Requires attending sign-off plus receiving-facility acceptance" becomes a rule over two co-occurring observations at named authority levels.
5. **Stand up a boundary agent per institutional edge.** It holds the mapping between your taxonomy and each partner institution's taxonomy and translates credentials across the edge. This is what lets a credential minted in one trust domain be evaluated in another without a shared identity provider.
6. **Record lineage at every step and keep the topology distributed.** Each participant stores its own local state and emits governed observations; coherence comes from the composing lineage chains, not from a hub. Persist the lineage so the final coordinated action reconstructs to "who agreed, at what authority, derived from what."
7. **Handle the negative outcomes deliberately.** Decide, in policy, what happens on *defer* (waiting on a missing party), *reject* (a credential fails or a higher authority supersedes), and *solicit* (the evaluator emits a discovery query for input it needs).

These are where real coordination lives.

## **What This Does Not Give You**

This is an architecture, not a drop-in library. There is no SDK to install and nothing here "just works" out of the box; you implement the record format, the evaluator, the taxonomy, the boundary agents, and the transport yourself, against your own systems and your own regulatory obligations.

The disclosure is a patent filing. It is not a benchmarked or production-proven product, and this guide reports no performance numbers because the filing states none. The cryptographic attestations, transport, and identity-continuity mechanisms are referenced by the disclosure but are yours to select and to get right; a governed observation is only as trustworthy as the credential and signature scheme you actually deploy.

The approach also does not decide clinical policy for you. It gives you a faithful, machine-checkable way to express and enforce "which parties must agree, at what authority, on what evidence," but the taxonomy levels, the escalation rules, and the consent and privacy handling are governance you author. Where a single organization already owns every party and every identity, a conventional workflow engine may be simpler and this architecture's cross-authority machinery is more than you need. Its value shows up specifically when the parties are independent, mutually distrustful, and unwilling to route decisions through anyone's central server.

## **Disclosure Scope**

The N-Party Coordination inventive step, together with the governed observation, authority taxonomy, composite admissibility evaluator, cross-domain escalation, cross-authority boundary translation, and distributed-topology mechanisms described above, is disclosed in U.S. Provisional Application No. 64/049,409. This guide is educational:

it explains an architectural approach drawn from that filing so a skilled developer can build their own implementation. It is not a warranty, not a specification of a released product, and not an offer of software. Any implementation, and its fitness for a given clinical or regulatory setting, is the reader's responsibility.

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## **N-Party Coordination** (</n-party-coordination>)

[All 40 steps → \(/inventive-steps\)](/inventive-steps)

Multi-party ceremonies grounded in physical proximity. Cross-domain authority handoff.

Provisional application

### **PRIMARY TECHNICAL DISCLOSURE**

- [N-Party Coordination: Physical-Proximity-Grounded Multi-Party Settlement \(/articles/n-party-coordination-physical-proximity-grounded-multi-party-settlement\)](/articles/n-party-coordination-physical-proximity-grounded-multi-party-settlement)

### **SECONDARY TECHNICAL**

- [Role-Differentiated Multi-Party Attestation \(/articles/n-party-coordination/role-differentiated-attestation\)](/articles/n-party-coordination/role-differentiated-attestation)
- [Proximity-Grounded Multi-Party Coordination \(/articles/n-party-coordination/proximity-grounded-coordination\)](/articles/n-party-coordination/proximity-grounded-coordination)
- [Coordination Pattern Plurality \(/articles/n-party-coordination/coordination-pattern-plurality\)](/articles/n-party-coordination/coordination-pattern-plurality)
- [Byzantine-Robust Multi-Party Coordination \(/articles/n-party-coordination/byzantine-robust-coordination\)](/articles/n-party-coordination/byzantine-robust-coordination)
- [Partial Quorum Handling \(/articles/n-party-coordination/partial-quorum-handling\)](/articles/n-party-coordination/partial-quorum-handling)
- [Dynamic Membership for Multi-Party Coordination \(/articles/n-party-coordination/dynamic-membership\)](/articles/n-party-coordination/dynamic-membership)
- [Cross-Pattern Coordination Composition \(/articles/n-party-coordination/cross-pattern-composition\)](/articles/n-party-coordination/cross-pattern-composition)
- [Cross-Domain Coordination Handoff \(/articles/n-party-coordination/cross-domain-handoff\)](/articles/n-party-coordination/cross-domain-handoff)
- [Intermodal Freight Coordination Embodiment \(/articles/n-party-coordination/intermodal-freight\)](/articles/n-party-coordination/intermodal-freight)
- [Airspace Handoff Coordination \(/articles/n-party-coordination/airspace-handoff\)](/articles/n-party-coordination/airspace-handoff)
- [Medical Patient Transfer Coordination \(/articles/n-party-coordination/medical-patient-transfer\)](/articles/n-party-coordination/medical-patient-transfer)

## APPLICATIONS · GENERAL

- [Coalition Defense Coordination Across National Authorities Without a Shared Data Fabric \(/articles/n-party-coordination/coalition-defense-coordination\)](/articles/n-party-coordination/coalition-defense-coordination)
- [Care Team Coordination Across Hospitals, Specialists, and Home Care: A Credentialed Handoff Substrate \(/articles/n-party-coordination/healthcare-team-coordination\)](/articles/n-party-coordination/healthcare-team-coordination)
- [Multi-Stakeholder Supply Chain Coordination \(/articles/n-party-coordination/multi-stakeholder-supply-chain\)](/articles/n-party-coordination/multi-stakeholder-supply-chain)
- [Multi-Institution Research Collaboration Without Surrendering Institutional Sovereignty \(/articles/n-party-coordination/academic-research-collaboration\)](/articles/n-party-coordination/academic-research-collaboration)
- [Multi-Site Clinical Trial Coordination Across Sponsors, CROs, Sites, and IRBs \(/articles/n-party-coordination/clinical-trial-multi-site\)](/articles/n-party-coordination/clinical-trial-multi-site)
- [Multi-Agency Humanitarian Aid Coordination Across Agencies, Governments, and Donors \(/articles/n-party-coordination/humanitarian-aid-coordination\)](/articles/n-party-coordination/humanitarian-aid-coordination)
- [Incident Command System Multi-Agency Coordination Software for NIMS Compliance \(/articles/n-party-coordination/incident-command-system-coordination\)](/articles/n-party-coordination/incident-command-system-coordination)
- [Cross-Utility Grid Coordination: Settling Interchange Across ISO, RTO, and Balancing-Authority Seams \(/articles/n-party-coordination/smart-grid-multi-utility\)](/articles/n-party-coordination/smart-grid-multi-utility)

## APPLICATIONS · SPECIFIC

- [Epic EMR Care Coordination vs Payload-Bound N-Party Governance \(/articles/n-party-coordination/epic-emr-care-coordination\)](/articles/n-party-coordination/epic-emr-care-coordination)
- [NATO FMN vs Governed N-Party Coalition Coordination \(/articles/n-party-coordination/nato-fmn\)](/articles/n-party-coordination/nato-fmn)
- [Project Maven and JADC2 vs Cross-Authority Coordination Substrate \(/articles/n-party-coordination/project-maven-jadc2\)](/articles/n-party-coordination/project-maven-jadc2)
- [Salesforce Commerce Cloud vs Governed N-Party Coordination \(/articles/n-party-coordination/commerce-cloud-coordination\)](/articles/n-party-coordination/commerce-cloud-coordination)
- [HL7 FHIR vs Governed N-Party Coordination: The Layer Above Exchange \(/articles/n-party-coordination/hl7-fhir\)](/articles/n-party-coordination/hl7-fhir)
- [Oracle Fusion Cloud vs Governed N-Party Coordination \(/articles/n-party-coordination/oracle-fusion-coord\)](/articles/n-party-coordination/oracle-fusion-coord)
- [Governed Multi-Party Supply Chain Beyond SAP S/4HANA: N-Party Coordination \(/articles/n-party-coordination/sap-supply-chain\)](/articles/n-party-coordination/sap-supply-chain)
- [ServiceNow Alternative for Cross-Organization Governed Coordination: N-Party Co-Signature Beyond the Now Platform \(/articles/n-party-coordination/servicenow-coordination\)](/articles/n-party-coordination/servicenow-coordination)

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[N-Party Coordination overview → \(/n-party-coordination\)](/n-party-coordination)

