

When Five Parties Must Agree and One Is Hostile

A terminal coordination supervisor at a mid-size container port needs five parties to line up before a box leaves her gate: the vessel, the pilot's office, her own crane operations, customs, and the road carrier. On an ordinary Tuesday one of the five submits a confirmation referencing a receipt her terminal never issued, and the box goes out. By the time she looks, the ceremony that would have shown whose authority the release rested on has dispersed. This article describes subject matter disclosed in U.S. Provisional Application No. 64/049,409 concerning an N-party coordination settlement primitive, including role-differentiated attestation, weighted participation, partial-quorum handling, and a coordination-lineage recorder that writes each admission and outcome determination into a governance chain lineage field.

The Tuesday the Box Left on Someone Else's Word

The supervisor runs the landside handoff desk at a mid-size container port. Her Tuesday starts at 05:50 with a feeder discharge, and one particular forty-foot box has to pass through five hands before it clears her gate: the vessel's master, the harbor pilot's office, her own crane operations, the customs authority's inspection queue, and the road-haulage carrier booked to take it inland. Each of the five puts something on the record. None of the five puts anything on the same record.

At 09:12 the box goes out on a truck belonging to a carrier that was not the carrier named in the booking. The haulage dispatcher's system had submitted a pickup confirmation citing an equipment interchange receipt number, and the number belonged to a receipt her terminal never issued. Her gate software accepted the confirmation because, in her deployment, a confirmation is a confirmation.

At 09:20 she is standing over the gate camera replay, and the thing she cannot do is simple to state. She cannot say whose attestation the release actually rested on. Her gate system holds an entry. Customs holds a separate entry in a separate schema with its own clock. The pilot's office holds a movement log. The vessel holds a mate's receipt that will sail with the ship at noon. Five records, five formats, five clocks, and nothing in any of them that links the gate release backward to the customs clearance rather than forward from the dispatcher's fabricated number.

What She Cannot Get Back

The coordination she needed lasted about eleven minutes, and it happened in a place. The five parties were briefly co-present around one box, and then they were not. Her vessel sails at noon. Her crane telemetry rolls off on the retention window her deployment is configured for. The haulage dispatcher, by 10:00, has a different story and a corrected receipt number.

What she loses is not the container. Her container is insured, and someone will eventually pay for it. What she loses is her ability to say, in a form anyone else will accept, on whose authority the box moved. A week later she can assemble a binder. She cannot recover an ordering that none of the five recorded jointly, because the joint record was never made, and a binder she builds afterward is her account of the morning rather than the morning's own artifact.

That distinction costs her twice. When the claim goes to the insurers and to her counterparty's counsel, she arrives with five self-reported accounts and a reconstruction she authored herself, so the argument turns on whose paperwork is more confident rather than on what the five parties attested at the time. And when her commercial team asks whether the dispatcher should be excluded from future bookings, she has a suspicion and no recorded finding, so the party she believes acted against her keeps its slot in next Tuesday's ceremony. Neither of those comes back to her later, because the evidence that would have settled both existed for eleven minutes at her gate.

Why Five Is Not Two, Repeated

Her desk was built out of pairs. Terminal to vessel. Terminal to customs. Terminal to haulier. Every relationship she has is bilateral, and each one works reasonably well on its own terms. Five parties give her ten pairs, and the thing she actually cares about, the release, is not a property of any pair she keeps. In her flow it is a property of the set. None of the pairwise records she holds says anything about that set, so her reconstruction has to infer it from ten fragments, which is the inference her counterparty's counsel will contest.

Her five are also not doing the same thing. In her flow, the customs officer's clearance and the haulier's pickup confirmation are different kinds of statement with different authority behind them, and her gate software receives both as inbound confirmations of equal standing. Were her desk to treat those five inputs as interchangeable votes, the dispatcher's input would carry the weight of the customs authority's, which is close to what happened at 09:12.

Then there is the shape that makes this Tuesday specific rather than merely messy. One of her five was hostile. Not absent, not broken, not slow: participating, and participating falsely. Her failure handling is built for the missing party, the truck that does not show. Were the haulier simply to have gone silent, her ceremony would have

stalled at four of five, and she would have had no defined disposition for the partial set beyond calling people. The dispatcher's contribution that morning passed every check her configuration performs, because the check her configuration performs is whether a message arrived.

The last edge is the fence. Her authority over that box ends at the gate line, and the road carrier's begins there, under a different regulator with a different taxonomy of documents. For her purposes the custody question does not stop at the fence, but her records do.

Role-Differentiated Attestation and the Coordination Ceremony

The filed disclosure describes an N-party coordination settlement primitive directed to the governance-chain-preserving coordination and settlement of three or more authority-credentialed parties producing a coordinated outcome through role-differentiated attestations. It is described as extending the bilateral matched-pair settlement primitive of Chapter 20 to N-party ceremonies, and as operating across coordination patterns that the disclosure names, including consensus-required decisions, quorum-based resolutions, auctions, role-differentiated coordinations, lead-and-follower formations, custody-transfer chains, federated-contribution aggregations, multi-authority approvals, multi-source attestation aggregations, and governed voting, with per-deployment governance-policy parameterization specifying coordination pattern, role assignment, outcome function, and membership composition.

In an embodiment described in the filing, the primitive comprises a participant-admission interface ingesting governance-credentialed observations from N authority-credentialed parties, where N is three or more, and a coordination-pattern selector applying a governance-policy-defined coordination pattern that specifies the roles of each party and the rules for producing the coordinated outcome. A role-differentiated

attestation schema is described as specifying per-role observation content for each participating party, so that in such an embodiment a clearing role and a collecting role are not carried as the same kind of contribution.

The described embodiment evaluates the contributions rather than counting them. A spatial-proximity evaluator per Chapter 16 and a temporal-proximity evaluator per Chapter 17 are described as verifying participant spatial and temporal proximity. A per-participant admissibility evaluator is described as applying the composite admissibility evaluator of Chapter 4 to each contributed observation. A coordination-outcome function is described as evaluating the contributed observations to determine the coordinated outcome per a governance-policy-defined function, and a weighted-participation mechanism is described as supporting authority-tier-weighted contributions.

Several of the described components correspond to the situations the supervisor met that Tuesday. The filing describes a Byzantine-robust coordination mechanism tolerating a governance-policy-defined fraction of adversarial or failed participants, a partial-quorum and abandonment handler managing incomplete coordination ceremonies, a dynamic-membership mechanism supporting member replacement during ceremonies, a multi-round coordination engine supporting iterated ceremonies converging to a terminal outcome, and a cross-pattern composition mechanism combining multiple coordination patterns within a single ceremony.

For the fence, the disclosure describes a cross-domain coordination handoff mechanism transferring coordinated operations across authority-domain boundaries without loss of governance continuity, lineage continuity, or coordination-state continuity. In an embodiment, that mechanism includes a relinquishing-domain authority and a receiving-domain authority each holding governance-credentialed control within their respective domains, a handoff-eligibility evaluator producing a handoff-eligibility observation, a handoff-acceptance interface producing a receiving-authority acknowledgment observation, a matched-pair handoff settlement per Chapter 20

recording the handoff as a lineage-linked pair, a cross-authority taxonomy translator per Chapter 28 reconciling authority context and observation schemas across taxonomies, a lineage-continuity preserver, and a graduated handoff-confidence governor per Chapter 6 modulating receiving-authority acceptance by cross-authority evidential weight. Named instances in the filing include intermodal freight handoff between sea-freight, rail-freight, and road-freight authorities, and maritime port-entry handoff from flag-state authority to port and harbor-pilot authority.

Underneath all of it, the disclosure describes a coordination-lineage recorder recording each participant admission, attestation, outcome determination, round transition, Byzantine event, abandonment, membership change, composition, and cross-domain handoff in the governance chain lineage field. That is the artifact the supervisor did not have at 09:20: not five accounts of a morning, but one lineage-recorded ceremony with per-participant authority attribution.

What the Disclosed Architecture Leaves to Her

Robustness in the filing is stated with a bound, and the bound is hers to declare. The described Byzantine-robust mechanism tolerates a governance-policy-defined fraction of adversarial or failed participants, so if a given ceremony in her deployment ran past whatever fraction her policy declares, what an embodiment produces is a recorded Byzantine event and a ceremony disposition rather than the release outcome she wanted. The recording is the durable part; the outcome is conditioned.

Proximity is likewise a configuration question in her hands. The described evaluators verify participant spatial and temporal proximity, and were one of her five parties contributing from a back office two time zones away, whether that contribution is admitted under her deployment's policy is something her governance configuration would have to answer rather than something this article can predict for her.

The filing describes attestation content, admissibility, and coherence evaluation. It does not undertake to tell her that a party's statement about the physical world matches the physical world beyond what those described evaluators assess, so for her purposes a well-formed contribution from a credentialed party remains a claim that her outcome function and her weighting have to handle.

Nothing described here does her commercial recovery. Were the box to leave her gate anyway, the disclosed architecture as described would give her a lineage-recorded attribution of the ceremony, and her contract remedies, her insurers, and whether her counterparty pays are all outside what the filing addresses.

And the fence still needs two sides. The described handoff mechanism pairs a relinquishing-domain authority with a receiving-domain authority producing an acknowledgment observation, so were her inland rail and road counterparts not credentialed participants in her deployment, there would be no receiving-authority acknowledgment for the described matched-pair handoff settlement to pair against.

Disclosure Scope

This article is a technical description of subject matter disclosed in U.S. Provisional Application No. 64/049,409, "Governed Spatial Mesh for Physical-World Perception, Coordination, and Actuation," and specifically of the N-party coordination settlement primitive and the cross-domain coordination handoff mechanism described in that filing. The port scenario, the roles in it, and the deployment configuration described are illustrative and are not drawn from any actual deployment.

Nothing in this article characterizes the scope of any claim, present or future, in that application or in any application claiming priority to it. Nothing here is an admission regarding the state of the art, and no statement about any described mechanism should

be read as a limitation on the subject matter disclosed in the filing. Mechanism names, chapter references, coordination patterns, and outcome language used above follow the filing's own terminology.

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

[All 49 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)
- [When Five Parties Must Agree and One Is Hostile \(/articles/n-party-coordination/n-party-coordination-stakes\)](/articles/n-party-coordination/n-party-coordination-stakes)

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)

HOW-TO GUIDES

- [How to Coordinate a Clinical Care Team Across Institutions \(/articles/guides/coordinate-a-clinical-care-team-across-institutions\)](/articles/guides/coordinate-a-clinical-care-team-across-institutions)
- [How to Coordinate a Multi-Agency Incident Response Without a Central Command Server \(/articles/guides/multi-agency-incident-response-without-a-central-command-server\)](/articles/guides/multi-agency-incident-response-without-a-central-command-server)
- [How to Coordinate an Action Across Many Parties Without a Central Coordinator \(/articles/guides/coordinate-many-parties-without-a-central-coordinator\)](/articles/guides/coordinate-many-parties-without-a-central-coordinator)

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