Cross-Unit Coordination Through Broadcast

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What Cross-Unit Coordination Through Broadcast Specifies

Each unit's actuation events propagate as credentialed observations through the mesh. Other units within scope consume the observations through their composite admissibility framework. Coordination emerges from each unit's response to the credentialed observation stream rather than from reconstructed observation of physical effects.

The architecture supports coordination patterns that physical-effect observation cannot match. Multiple vehicles coordinating an evasive maneuver in shared traffic. Drone formations adjusting position based on lead-drone commit broadcasts. Industrial robots coordinating handoff in shared space.

Why Reactive Coordination Has Latency Limits

Reactive coordination depends on each unit observing the effects of other units' actions. The observation has physical latency — propagation time of the effect, sensor response time, processing time, decision time. The cumulative latency limits how tightly units can coordinate.

Proactive coordination through credentialed broadcast eliminates the physical-effect latency. Units coordinate at the moment of commit rather than at the moment of effect-observation. The structural latency is mesh-propagation time (milliseconds) rather than physics-observation time (hundreds of milliseconds).

How Coordination Composes With Admissibility

Each unit's composite admissibility framework consumes broadcast actuation observations from neighboring units. The unit's policy specifies how the broadcasts modulate the unit's own admissibility evaluation. Mode selection adjusts based on the credentialed observation flow.

The architecture supports both cooperative and adversarial-aware coordination. Cooperative units coordinate through credentialed cross-recognition; adversarial-classified units (or partially-trusted peers) modulate the receiving unit's admissibility appropriately, with hostility classification triggering expanded envelope evaluation.

What This Enables for Tight Coordination

Tight platooning, formation flying, cooperative manipulation, multi-vehicle evasive coordination — all gain structural support that physical-effect observation cannot match. The coordination tempo improves by an order of magnitude.

The architecture also supports human-collaborative coordination. Human-operated vehicles broadcasting Tier 2 partial-fidelity intent (turn signals, brake lights) participate in the same coordination framework as autonomous vehicles broadcasting Tier 1 full intent. Mixed-fleet coordination becomes structurally tractable.