Defense Coalition Interoperability

by Nick Clark | Published March 27, 2026 | PDF

Coalition military operations require autonomous agents from different national defense systems to coordinate in real time. Each nation builds its agents on different frameworks with different governance models, classification systems, and operational doctrines. A canonical agent schema provides the structural contract that enables coalition interoperability: each nation's agents carry their own governance while interacting through shared field semantics that make coordination structurally possible without requiring system unification.

The interoperability gap in coalition operations

Coalition operations bring together forces from nations that designed their command and control systems independently. Each nation's autonomous agents, whether for intelligence analysis, logistics coordination, or tactical planning, carry different state representations, different governance models, and

different classification systems. When these agents need to coordinate, the differences create friction that degrades operational tempo.

Current interoperability approaches rely on gateway translators that convert between national data formats. These gateways handle data translation but not governance translation. A US agent that delegates a task to a UK agent through a gateway translator can transmit the task data. It cannot transmit the governance constraints, classification requirements, and operational authorities that determine how the task should be executed.

The result is that coalition operations either restrict agent interaction to the lowest common denominator of shared capability or depend on human operators to bridge the governance gap manually, introducing latency and error into coordination that autonomous agents are supposed to accelerate.

Why data link standards address format but not governance

NATO standardization agreements (STANAGs) define data formats and communication protocols for coalition interoperability. Link 16 and its successors enable tactical data exchange. These standards solve the data format problem but not the agent governance problem. A Link 16 message can carry a track update. It cannot carry the governance policy that determines what the receiving agent is authorized to do with that track information.

Agent-level interoperability requires more than data format compatibility. It requires structural agreement on what an agent is: what fields it carries, what governance it operates under, what lineage it preserves, and what execution authority it holds. Without this structural agreement, agents from different nations can exchange data but cannot coordinate as autonomous entities.

How the canonical agent schema addresses this

A canonical agent schema provides the structural contract for coalition agent interaction. Each nation's agents carry the six canonical fields: governance, memory, lineage, execution eligibility, identity, and policy. The content of these fields reflects each nation's operational doctrine, classification system, and governance model. The structure of the fields is shared across all coalition partners.

When a US agent needs to coordinate with a UK agent, each agent inspects the other's canonical fields. The governance field reveals the other agent's operational constraints and classification requirements. The execution eligibility field reveals what the other agent is authorized to do. The lineage field reveals the other agent's operational history. These inspections are structural, not negotiated through gateway translators.

Classification and releasability constraints travel in the governance field. A US SECRET//NOFORN agent carries those constraints structurally. A UK OFFICIAL SENSITIVE agent carries its constraints structurally. When they interact, each agent evaluates the other's governance to determine what information can be shared and what coordination is possible. The evaluation is structural and immediate, not mediated by a gateway or human operator.

What implementation looks like

A coalition deploying canonical schema agents requires each participating nation to implement the six canonical fields on their autonomous agents. Each nation retains complete sovereignty over the content of those fields. The schema does not impose a shared governance model. It provides a shared structure through which different governance models interact.

For coalition command, canonical schema agents enable multi-national planning where each nation's planning agents contribute within their own governance constraints. The agents negotiate coordination through their canonical fields rather than through human intermediaries translating between national systems.

For intelligence sharing, the canonical schema makes classification and releasability structural rather than procedural. An intelligence agent's governance field carries its classification constraints. Receiving agents evaluate those constraints structurally before accepting shared intelligence. The sharing is governed by the agents' intrinsic fields rather than by bilateral sharing agreements that must be negotiated in advance of the operation.

For logistics coordination, supply chain agents from different nations coordinate through the canonical schema without requiring unified logistics systems. Each nation's logistics agents carry their own supply chain governance. Cross-national supply coordination happens through the agents' shared schema structure.

[Agent Schema](#) [All 21 steps →](#)

Define what an autonomous agent is — structurally.

Patent
[US 19/452,651](#) · filed
Primary Technical Disclosure
○ Cognition-Compatible Semantic Agent Objects and Structural Validation
Secondary Technical
○ Partial Agent Structural Validity: Fewer Fields, Still Deterministic○ Minimum Two-Field Validation Threshold: The Floor of Semantic Structure○ Field Interaction Rules: Deterministic Constraints Between Canonical Fields○ Field-Based Role Typing: Agent Roles Derived From Structural Composition○ Semantic Templates: Predefined Field Arrangements as Agent Class Contracts○ Structural Scaffolding Logic: Resolving Missing Fields Through Inference or Defaulting○ Field-Aware Default Resolution: Deterministic Behavior When Fields Are Absent○ Traceable Semantic Lineage Graph: Mutation History Embedded in Agent Objects○ Serialization With Stateless Compatibility: Reconstruction Without External Session State○ Schema Governance Through Versioned Policies: Cross-Version Structural Interoperability
Applications (General)
○ Enterprise AI Agent Interoperability Through Canonical Schema○ Robotic System Standardization via Structural Field Composition○ Multi-Vendor AI Agent Interoperability○ Digital Twin Standardization Through Canonical Fields○ Healthcare AI Agent Portability● Defense Coalition Interoperability○ Insurance Claims Processing Through Standard Agents○ Legacy System Integration via Schema Bridging
Applications (Specific)
○ LangChain Built the Agent Framework. It Did Not Define What an Agent Is.○ AutoGen Enabled Multi-Agent Conversations. The Agents Have No Structural Definition.○ CrewAI Organized Agents Into Teams. The Agents Still Have No Schema.○ Semantic Kernel Integrated AI Into Enterprise Code. The Agents It Creates Have No Schema.○ OpenAI Assistants API Provides Agent Tooling. It Does Not Define Agent Structure.○ Google Vertex AI Agents

[Provide Managed Agent Infrastructure. The Agents Have No Canonical Schema.○ Amazon Bedrock Agents Orchestrate Foundation Models. The Agents Have No Structural Definition.○ Haystack Built Composable NLP Pipelines. The Pipeline Components Have No Agent Schema.○ LlamaIndex Built the Data Framework for LLM Applications. The Data Objects Have No Agent Schema.○ Dify Made LLM Application Development Visual. The Applications Have No Agent Schema.](#)

[Agent Schema overview →](#)

AQ
deterministic
autonomy

Legal

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Last updated: 2026-03-03

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- nick@qu3ry.net
- 72 28 14 36 01

[Invented by Nick Clark](#) | Founding Investors: Devin Wilkie