

Toward a Standard Rule Language for Semantic Enterprise Integration

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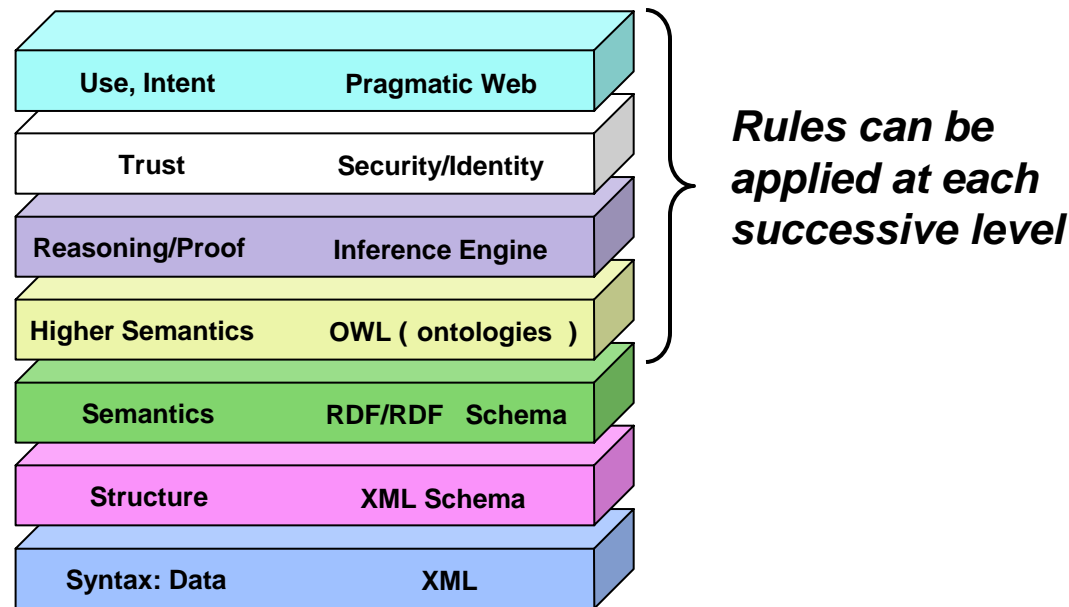
Problem

- To defeat emerging threats, C4ISR systems must be **dynamic and adaptable**.
- **Separation of rules** from executable code supports the ability to dynamically modify system behavior in complex, changing environments.
- To realize the benefits of rule separation, a **rule language standard** is required to support the sharing of rule abstractions across domains, thus enabling agility and interoperability.

Background

Semantic Web Standards provide **infrastructure**.

- Publishing **semantically meaningful** information (RDF, Ontology)
- **Reasoning** techniques over those concepts (Rules, Logic, Proof, Trust)



Semantic Web Stack

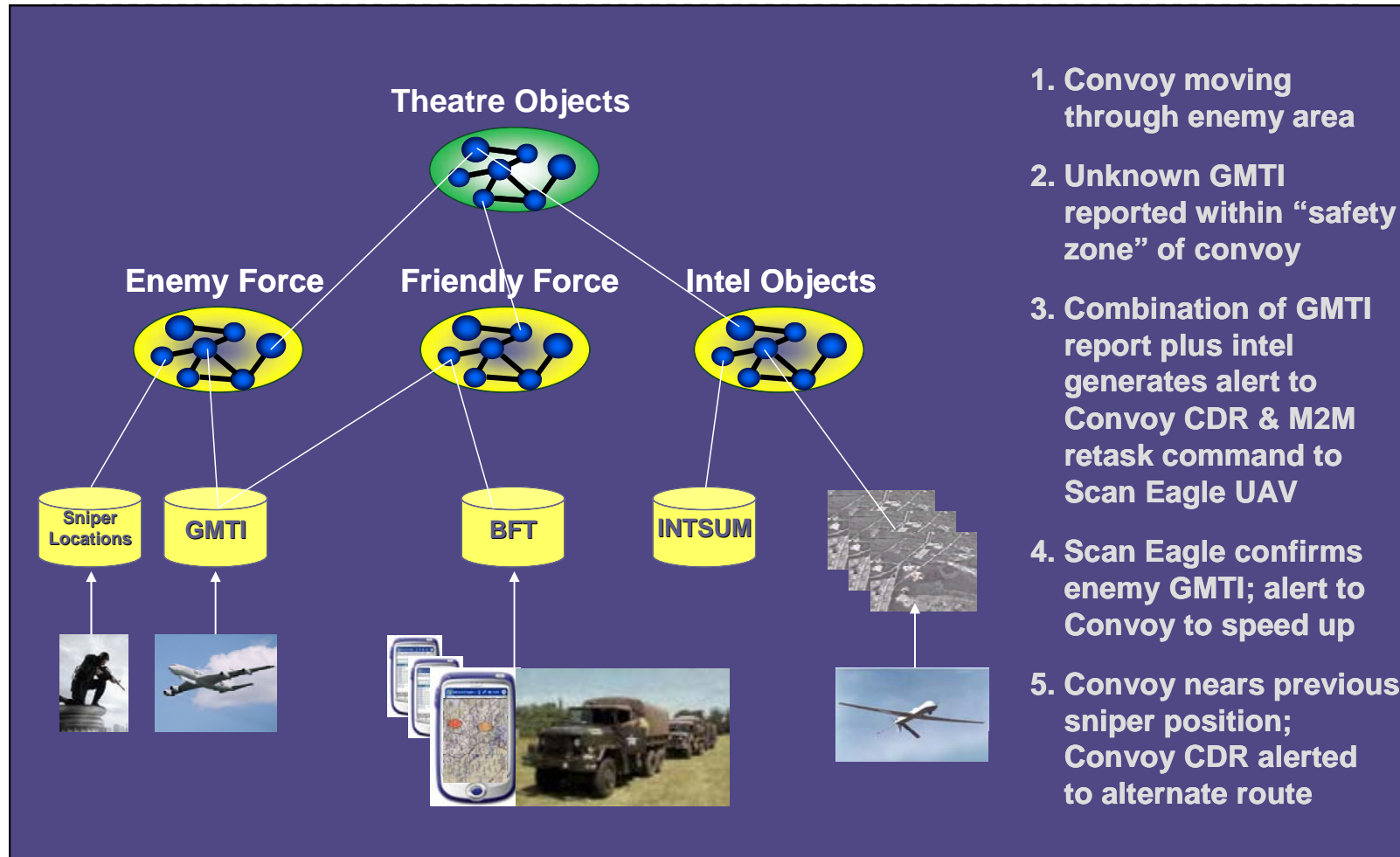
Objectives

- Develop demonstrable recommendations for a **standard rule language**
- Build experiments to show how ontology and rule layers should interact and compare approaches
- Identify **sponsor-specific requirements** for rules and ensure those are captured in the standard
- Look ahead to future requirements for the evolving standard

Activities

- Build experiment to develop recommendations for **standard rule language**
 - Select **mission use case** and capture ontology and rules
 - Build an application with **rules separate** from ontology
 - Build second application with **integrated rules** and ontologies
 - Keep all factors constant other than differences in languages used
 - Compare how each performs and observe issues with **interaction** and **orchestration** across layers

Demonstration



Impacts

- **Contributes to the **sound evolution** of the rule layer of the Semantic Web**
 - Ground-breaking research to provide evidence for how the standard rule language should evolve
 - Orchestration strategy for rules, ontologies, engines
 - Recommendations for how language should evolve to support critical sponsor needs
- **Advances critical **sponsor needs****
 - Agility in a changing world
 - Semantic interoperability and integration in a net centric enterprise
 - Dynamic, semantically enabled SOAs
- **Demonstrates a potential new **development paradigm****

Future Plans

- Explore more complex, **dynamic** rules and how those affect the rule standard
- Examine impact of **rule exchange** across multiple disparate domains
- Investigate **self-correcting ontologies** and rule sets
- Explore ontological closure and annotation for **rule discovery**