

Toward a Standard Rule Language for Semantic Enterprise Integration

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MITRE Sponsored Research

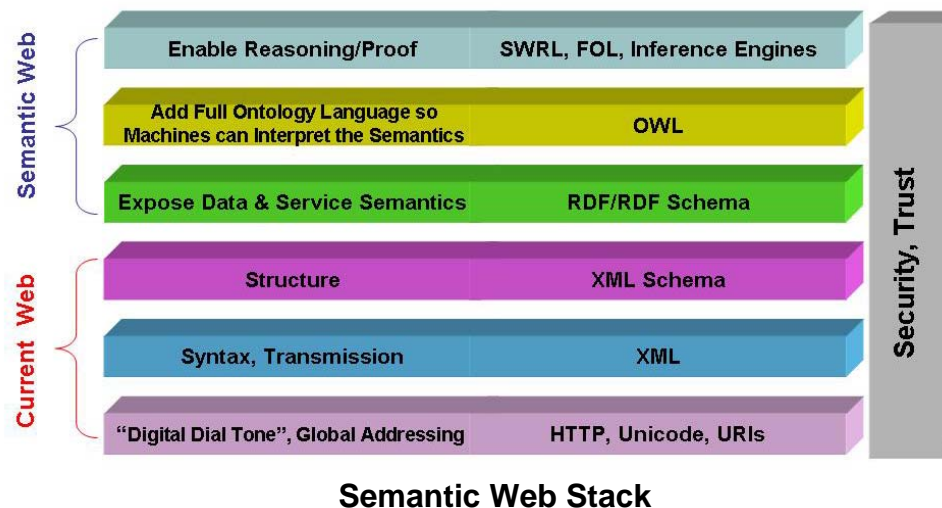


Problem

- **To defeat emerging threats, C2 systems must be dynamic and adaptable**
- **Separation of rules from application code supports the ability to dynamically modify system behavior in complex, changing environments**
- **A rule language standard is required to enable agility and interoperability across the enterprise**

Background

- Semantic Web standards provide infrastructure for specifying and operating over semantically defined information



- Sets the stage for net-centric autonomous reasoners and M2M capabilities

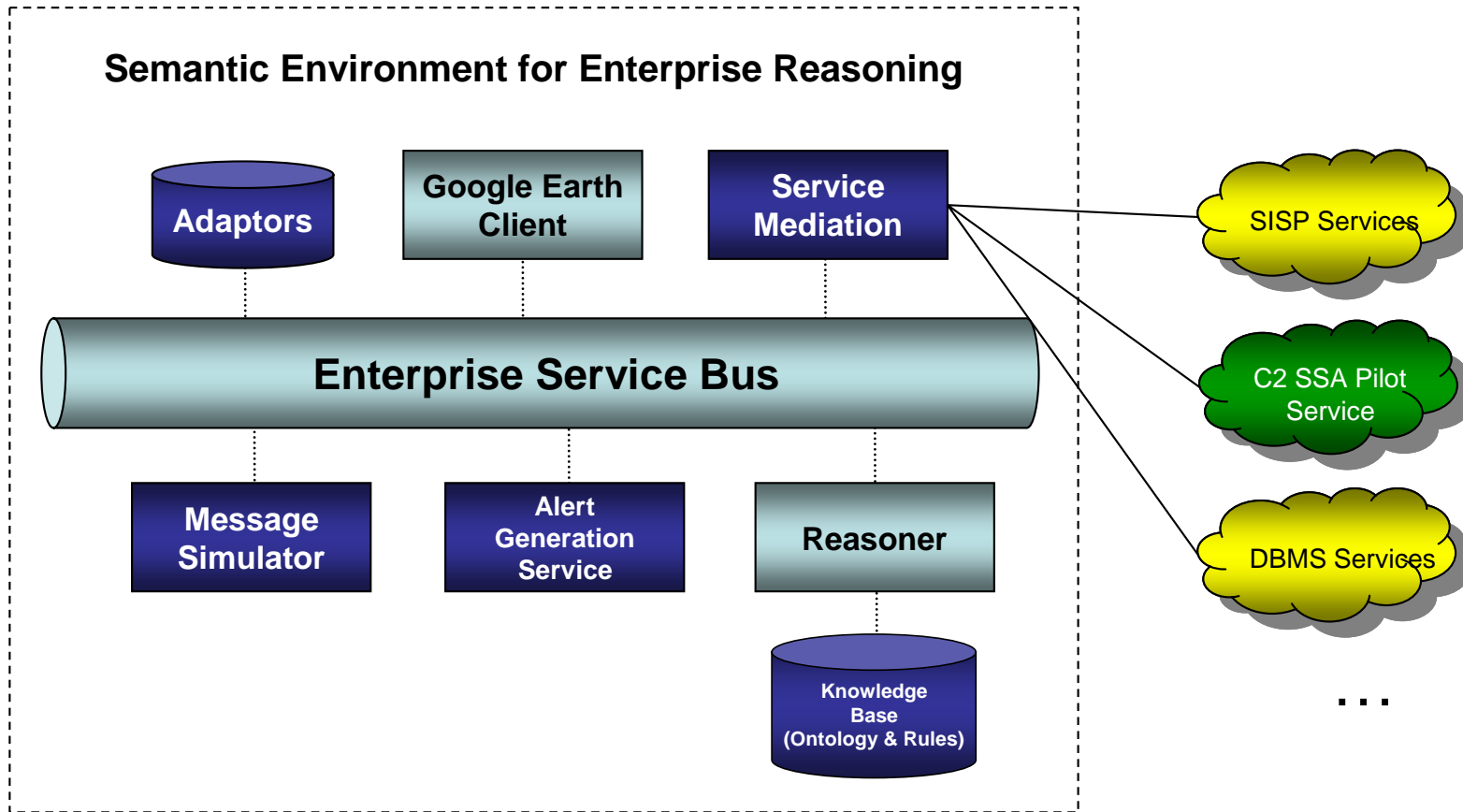
Objective

- **Develop demonstrable recommendations for a standard rule language**
- **Identify sponsor-specific requirements for rules and ensure those are captured in the standard**
- **Year 3 Focus:**
 - **Examine impact of rule exchange and reuse across multiple disparate domains**
 - **Transition technology to solve customer needs**

Activities

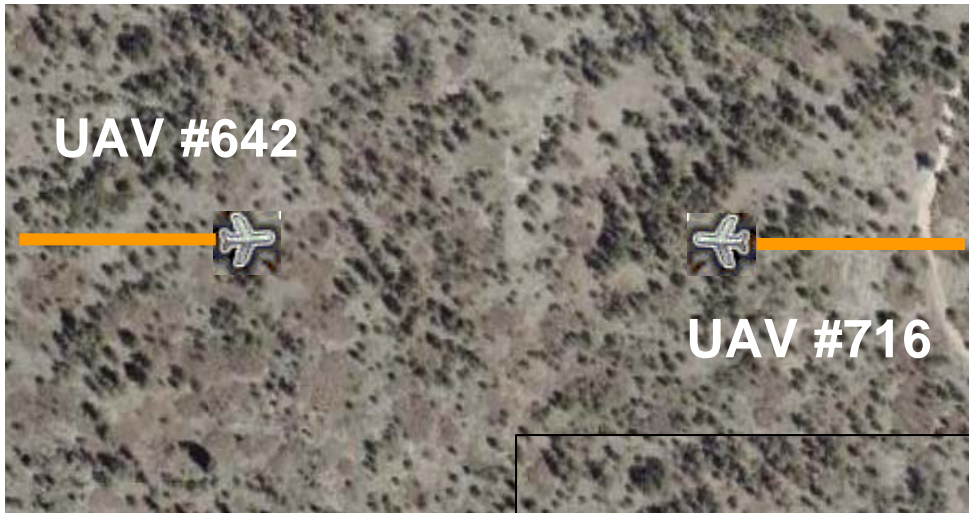
- Reuse geospatial rules in other scenarios and contexts
 - UAV collision avoidance
 - Maritime awareness
- Demonstrate operational utility by participating in Joint Expeditionary Field Experiment (JEFX 08)
- Improve the flexibility and ease of use of the reasoning environment

Highlight: Transition via JEFX



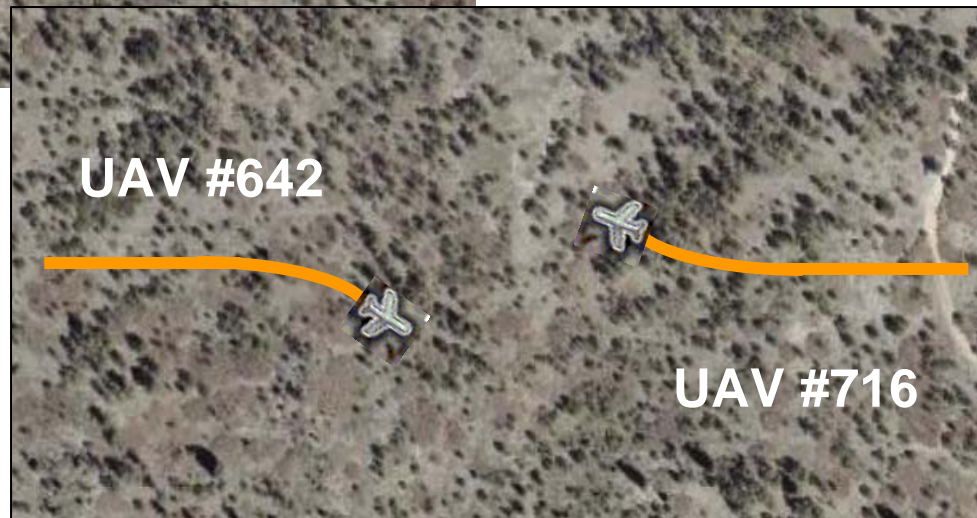
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Demonstration



Integrate rules that describe objects, time, and space with a Closest Point of Approach algorithm in a logic programming environment

Result: Rules fire and prevent UAVs from colliding with one another



Impacts

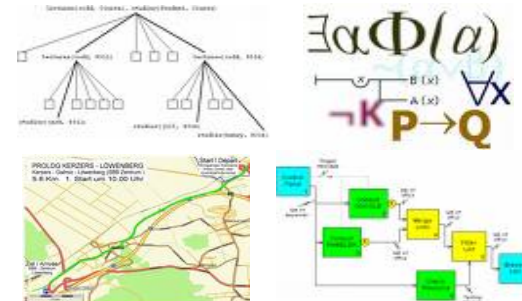
- **Advances critical sponsor needs**
 - Agility in a changing world
 - Semantic interoperability and integration in a net-centric enterprise
 - Integration of heterogeneous data sources in JEFX 08
- **Contributes to the sound evolution of the rule layer of the Semantic Web**
 - Recommendations for how language should evolve to support critical sponsor needs
 - Orchestration strategy for rules, ontologies, engines

Future Plans

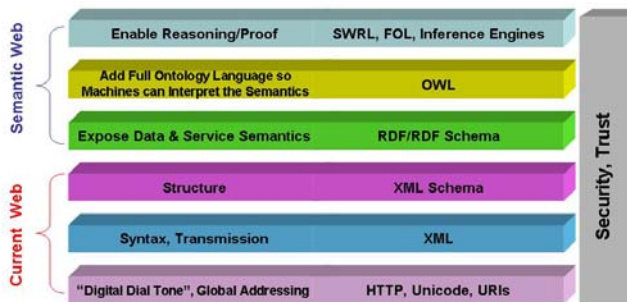
Support JEFX 08 Initiative through 4 spirals



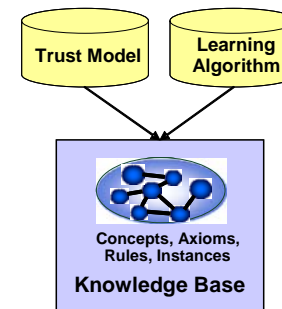
Integrate rules with other logic systems



Participate in W3C Rules Working Group to help define the standard



Investigate automated generation of ontologies for rapid enterprise integration



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