



Semantic Web Applications in CBP

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Business drivers for Semantic web applications in CBP

- The CBP business environment is a dynamic and diverse business environment
- CBP deals with a **broad spectrum of threats**
 - National security, e.g., terrorism, weapons of mass destruction
 - Economic security, e.g., trade compliance, intellectual property rights
 - Public health and safety, e.g., narcotics, domestic food supply
- The knowledge and expertise used to tackle these risks is constantly expanding and changing
- CBP has a workforce of 40000 officers that need timely access to this knowledge
- CBP information systems use this knowledgebase in decision support applications



Components of the CBP Knowledgebase

- Risk Ontology
 - Used to store expert knowledge about various risks and threats
 - E.g. individuals (Mad cow, Citrus greening disease)
 - Used by Information system agents in screening applications
 - Used to disseminate expertise to workforce
- Portfolio Ontology
 - Used to store knowledge about business entities involved in imports and exports
 - Knowledge derived by mining transactional data
 - Knowledge extracted from analysis and research
 - Intel based knowledge
 - Risk and Gain notions about business entities
 - Relationships to other business entities



Key technical challenges

- Ontological visualization
 - Rapidly growing knowledgebase
 - Delivery to a user community that is non-technical
 - User interfaces that can visualize evolving and extending ontologies
- Semantic Extraction
 - Sentiment analysis of unstructured data to associate risk or gain sentiments with extracted entities
 - Use domain vocabularies and ontologies for context specific extraction
- Securing the Knowledge
 - Access control of ontologies at multiple levels (classes/relationships/properties)
 - Access control of individuals within an ontology



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