JACKALFISH™

Ontology-driven Search Engine

Like any other large-scale industry managing complex engineering projects, NASA and the Department of Defense face the persistent challenge of effectively discovering related information and data among distributed project teams and information sources. The Small Business Innovation Research (SBIR) office addressed this challenge by awarding KBSI a multiple phase SBIR project to design and develop an Ontology Driven Integration Framework (ODIF) that establishes a common ontology for integrating and searching diverse data sources.

KBSI's primary challenge was discovering how to best facilitate the rapid gathering of knowledge among several project teams. The Cape Canaveral Air Force Station (CCAFS) and the 45th Space Wing were selected as the focus for KBSI's work because of the complex operations, data, and information sharing needs required for their space launch and range applications. KBSI's Phase I ODIF effort determined the theories and alternative ontology driven search frameworks that might be used. The Phase II effort enabled the rapid generation of applications for ontology driven semantic searches, allowing participating organizations to find information and data quickly across a variety of DoD information systems and sources. In continuing to validate the results of the Phase II effort, KBSI expanded the participants to include the Missile Defense Agency (MDA), where large complex projects are also managed.

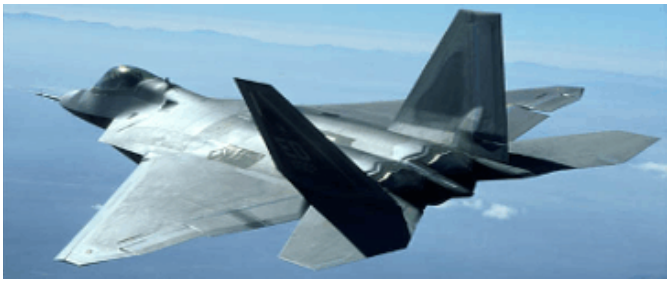
"It's the equivalent of Google on steroids" – Dr. Perakath Benjamin, KBSI ODIF Project Manager

JACKALFISH™, the technology application developed during the on-going Phase II effort, applies ontology-assisted text mining and natural language processing methods to knowledge extraction from unstructured text sources. JACKALFISH™ allows users to perform targeted searches of disparate data sources--unstructured and structured alike--using keywords, extracted phrases from relevant documents, common concepts, and/or defined ontology relationships. JACKALFISH™, leveraging learning and self-adaptation mechanisms from the ODIF framework, reasons about the objects in the target domain and the relations among the search items, returning only those data artifacts or documents that are relevant to the search, including knowledge derived from any predefined ontology. This ontology learning capability is based on a WordNet approach enhanced by KBSI using statistical and machine learning methods.

JACKALFISH™, by applying this ontology driven search capability, significantly improves the cost, speed, and effectiveness of extracting and integrating knowledge from distributed, unstructured data sources and of sharing that knowledge among distributed teams.

"It means the difference between extracting information quickly and not finding it at all." – User, Patrick Air Force Base

As the DoD and large industries look to build the next generation of information-integrated systems, the technology derived from the ODIF project will provide a sustainable mechanism for building ontology driven enterprise integration applications. The immediate application for JACKALFISH™ and the ODIF technology will be in facilitating semantic information sharing and knowledge management for space launch and range applications. But JACKALFISH™ also has a number of possible commercial uses, particularly for large distributed organizations who perform knowledge management, collaborative planning and scheduling, supply chain management, or business intelligence.



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