National Aeronautics and Space Administration

System for Performing Single Query Searches of Heterogeneous and Dispersed Database

The NASA Technology Transfer System (NTTS) is a NASA created technology transfer workflow management system, a schema-less database management system used to track the lifecycle of NASA inventions. It is built on XDB, a NASA home-grown XML database. Because of its schema-less approach to store data, NTTS can host a cluster of distributed XDB nodes, referred to as Grid XML data-storage framework (GDX). NTTS stores data associated with different modules like Invention Disclosures, Patent Applications, Contract Grants, and Partnership Agreements, etc. Different communities at NASA use a module or a group of modules to manage their domain workflow. With volumes of heterogeneous data stored in different modules on a schema-less storage framework, the challenge is to provide a flexible query Application Programming Interface (API) to perform traditional relational-model queries. This challenge is addressed by an NTTS Search API, the product of this Invention.

This patented technology is available for licensing from NASA's space program to benefit U.S. industry.

Technology Details

NTTS Search API analyzes query-relevant data in real-time to structure implicit relationships within a document. In this process, a record is characterized by a group of relationship-objects and associated data-objects within a document. Using these objects from multiple documents as parameters for query-criteria function, the Search API provides relational model query approaches on heterogeneous schema-less distributed data from multiple modules. Also, using the API, a user can formulate complex queries using relation-model operations like primary key - foreign key, inner joins, outer joins, unions, intersections, etc. in real-time. This technology leverages the power of GDX that enables an unlimited number of desktops and distributed information sources to be linked seamlessly and efficiently into an information grid. Using XML, Web, and Excel spreadsheets as the import/export format, GXD has XML Hadoop-like type file management available over the net to tie these to the vertical applications.

Commercial Applications

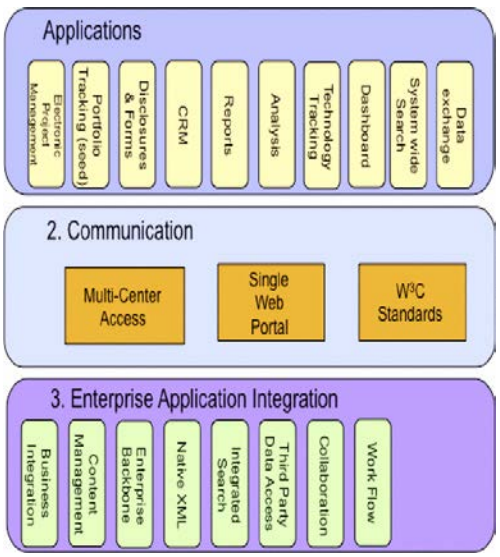
- Information Technology Industry
- Database Management
- Telecommunications
- E-Commerce
- Health Care Information Systems
- Scientific and Engineering industry

Patent

This technology is protected by a pending U.S. Patent Application (Reference No. ARC 16697-1)

Benefits

- Ability to provide search criteria on content within a context and scope
- Ability to dynamically interpret the operations based on data type
- Ability to provide conditional operators on combination of logical operations on datasets ability
- Perform set-operations on datasets in combination with logical operations
- Output can be retrieved in XML or Comma Separated Value (CSV) format
- Scalable, high-throughput open framework



NTTS Architecture

Contact the Ames Technology Partnerships Office at 1-855-627-2249 or ARC-TechTransfer@mail.nasa.gov