Architecture

Overview

VIVO is an enterprise class software system relying on numerous open source software components. Fundamentally, VIVO relies on Vitro (see below). VIVO adds a collection of ontologies (see Ontology Reference) to represent data about scholarship.

Vitro

Vitro is an open source, general purpose, semantic web engine. It is the application development platform underlying VIVO. Vitro has no domain knowledge. Given ontologies regarding a domain, Vitro supports the editing of the ontology, creation of individuals, management of individuals on "pages" which it generates, organization of individuals into "class groups," indexing, search, faceted browsing, query, import, and export. Vitro has been used to manage collections of clinical trials, spaceships, library catalogs, datasets, and many more.

VIVO is Vitro with an ontology for representing scholarship, and a set of displays and visualizations that support the use of data for expert finding, team building, assessment, and other VIVO use cases.

Vitro can be built and operated independently of VIVO. VIVO is completely dependent on Vitro.

VIVO

VIVO is a customized Vitro. The table below shows how VIVO compares to Vitro.

	Vitro	**VIVO**
Purpose	General-purpose tool for working with Semantic Data	Specialized tool for Research Networking
Ontology	No ontology	Includes an ontology (VIVO-ISF) for Research Networking
Theme	Minimal theme	Elaborate theme, display and editing are customized for the ontology
Display Rules	Default display rules	Annotations are used to: • Assign data properties to groups • Arrange property groups on the page
Form editing	Default editing forms	Editing is customized to the ontology
Search Index	Default search index	Search index contains additional fields specific to VIVO
Functionality	Default functionality	Additional functionality: visualizations, interface to Harvester, QR codes, etc.

Component View

VIVO, with Vitro, as "made" out of components, including other open source software components. The figure below shows the various software components that are used in a VIVO/Vitro system.

VIVO/Vitro system architecture for linked open data regarding scholarship

HTTP

Ensures that only the VIVO/Vitro application, and not internal services such as Solr, are exposed to the public. Provides security filtering and a means to serve non-VIVO resources. This layer is optional, but recommended.

Presentation

Vitro UI

<#FREEMARKER>

VIVO Visualizations

VIVO UI Customizations

<#FREEMARKER>

Vitro provides a default web presentation for all entities. VIVO Freemarker templates override Vitro templates to provide presentation customized for scholarship. D3 is used to create viz that run on all modern devices.

Business Logic

Business logic and presentation services run as servlets in a Tomcat container

Simple Loader

Harvester

External applications load data through the Vitro APIs

User Access

Ontology Editor

Vitro APIs

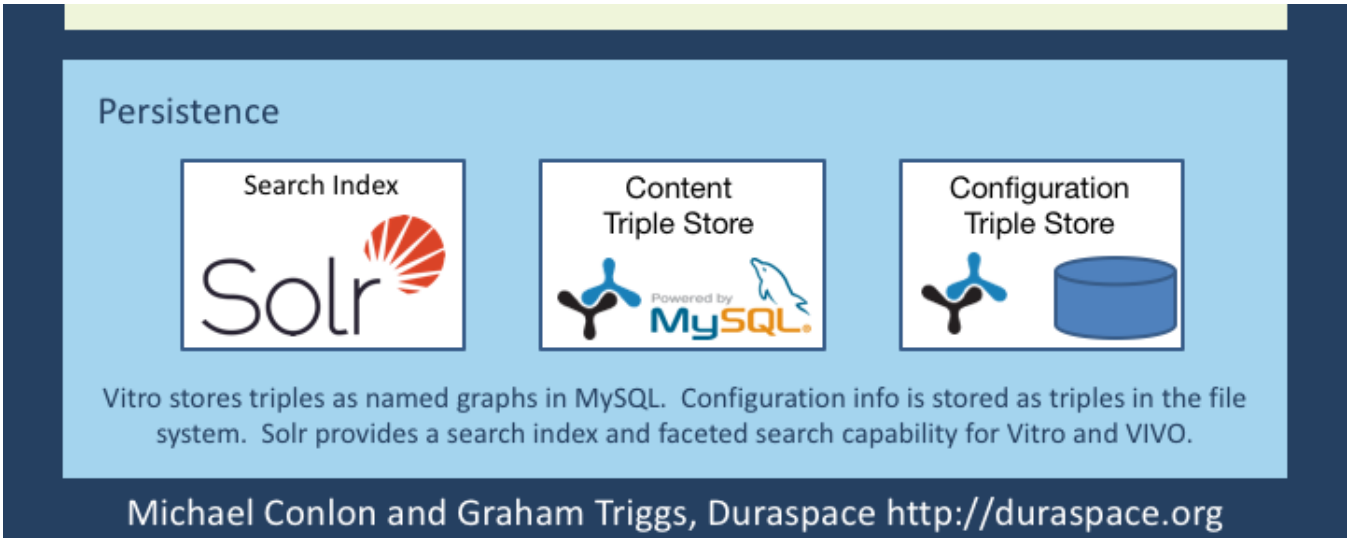
SPARQL

Apache JENA

Reasoner

Jfact

User access can be done with local credentials or external authentication services. An ontology editor supports creation of new ontologies, and management of classes and properties for ontologies loaded to Vitro. VIVO is pre-loaded with ontologies for representing scholarship. The Vitro APIs support SPARQL and LDF.



Additional Resources

- Vitro
- VIVO and Vitro
- Software Architecture Overview
- The StartupManager
- VIVO Data Models
- VIVO and the Solr search engine
- Image storage