

Rapid Deployment of a RESTful Service for Oceanographic Research Cruises

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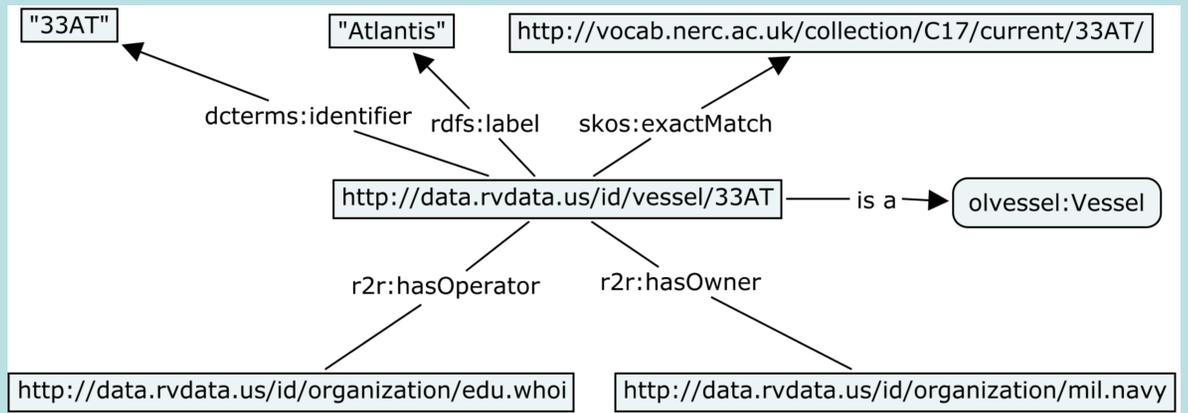


Tetherless World Constellation, Rensselaer Polytechnic Institute, Troy, NY, United States
Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY, United States

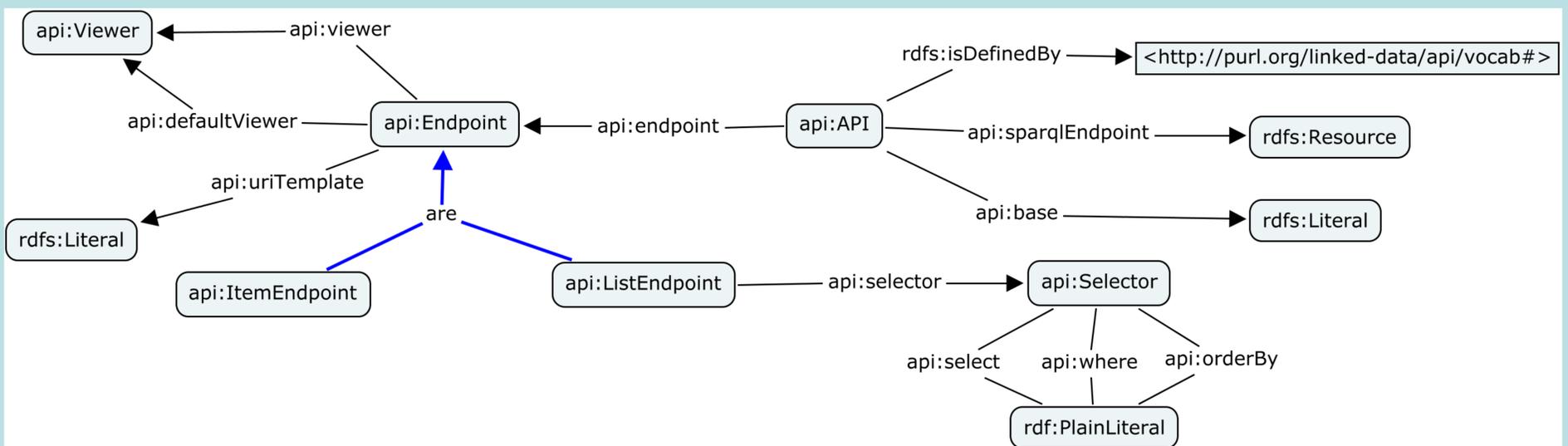
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INTRODUCTION

The **Rolling Deck to Repository (R2R)** program addresses the need for consistent preservation and dissemination of environmental sensor data routinely acquired by oceanographic research vessels in the U.S. academic fleet. R2R collects information about each expedition that includes vessel identifier and operator; cruise identifier, project title, and research program; port stops and dates; science party names, institutions, and roles; funding agency and award identifier; sensor identifier, classification, manufacturer, and model; cruise reports and event logs; and file manifests. R2R publishes content as Linked Data using the D2RQ software package, which transforms content from a SQL database to RDF resources in a virtual triple store.



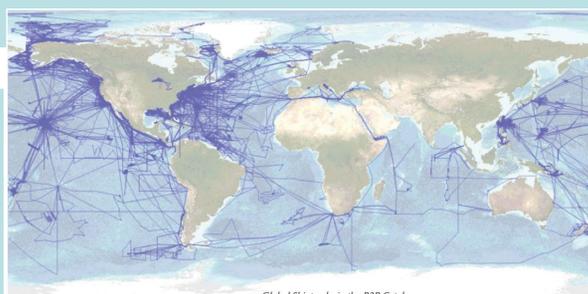
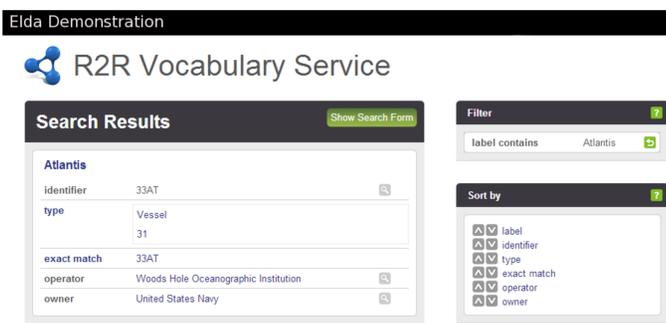
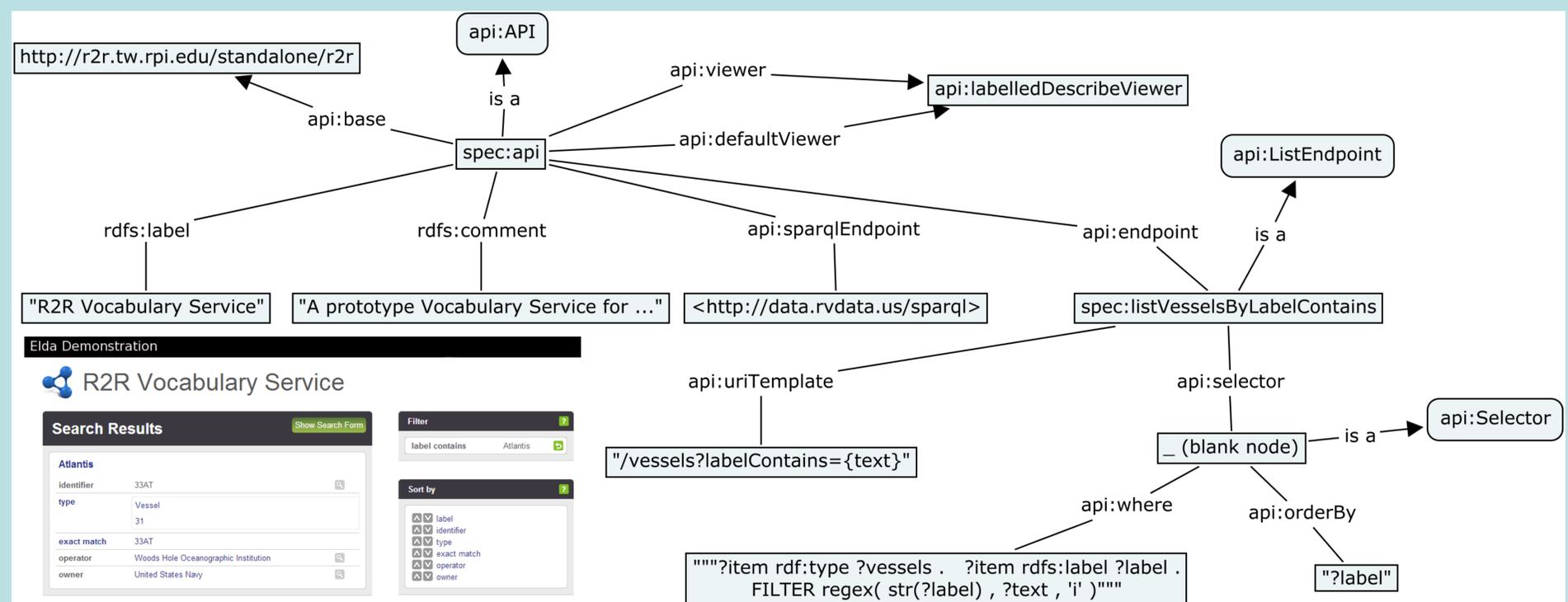
The **Linked Data API** was developed in response to a requirement from Web developers that Linked Data in the RDF data structure should be accessible in a way that is familiar to them, namely through RESTful services, in addition to through SPARQL endpoints. The Linked Data API achieves this goal by defining a proxy layer on top of existing SPARQL endpoints that 1) translates HTTP requests into SPARQL queries, and 2) renders the returned results as required by the request sender using content negotiation, suffixes and parameters.



USE CASE

Here is how we define the `api:API` instance along with one of its associated endpoints and the endpoint's selector to create our RESTful service for the R2R dataset. The `api:API` instance talks to the SPARQL endpoint located at `http://data.rvdata.us/sparql`, one of its Linked Data API endpoint is `spec:listVesselsByLabelContains`, which is responsible for listing all the resources in the dataset that have a certain substring in their `rdfs:label` fields. The endpoint deals with HTTP requests matching the pattern `base:/vessels?labelContains={text}`, and uses a selector to fulfill its duty in a way that is encoded as `api:where` and `api:orderBy` values. It then creates a view with the `api:labelledDescribeViewer`, which returns the graph created from a DESCRIBE query for each query result, supplemented by labels for linked resources.

The final Web page rendered by Elda for the HTTP request `base:/vessels?labelContains=Atlantis` is also shown below.



Poster: ESIP2014SUMMER-R2R

Glossary:

- R2R** – Rolling Deck to Repository
- D2RQ** – a system for accessing relational databases as virtual, read-only RDF graphs
- SKOS** – Simple Knowledge Organization System
- ELDA** – Epimorphics Linked Data API

