Winter Meeting 2013

Lessons learned in deploying a cloud-based knowledge platform for the ESIP Federation



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Advantages

- A repository with tools where ESIP members can store, visualize, share, and map their ontologies
- Ontology versioning managed within the portal

Challenges

- Maintenance
- Governance
- Integration into ESIP infrastructure
- Advertisement of portal contents Reconciliation of conflicts among ontologies

Objectives

Simulations, models, experiments,

- Community sourcing of ontology maintenance
- Low-budget solution

Implemented Portal

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CP-Portal Browse Search Mappi	ings Recommer	nder Anno	otator Res	ource Index	Projects			Sign In	Help	Feedback			
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Access all ontologies that are available in the ESIP-Portal	l: You can filter onto	logies that bel	ong to a certai	in group. Add a ne	ew ontology to the E	SIP-Portal using th	e Submit New Ontolo	gy link.					
New: Configure which ontologies you see in ESIP-Portal													
	All Groups 💌 🥜	Groups 🔻 🕜			w Ontology								
FILTER BY TEXT													
ONTOLOGY NAME	VISIBILITY	TERMS	NOTES	REVIEWS	PROJECTS	UPLOADED	CONTACT						
Basic Formal Ontology (BFO)	Public	<u>39</u>	0	0	0	08/07/2012							
Contour Map WDO (CoM-WDO)	Public	<u>65</u>	0	0	0	08/18/2012	Leonardo Salayano	lia					
Crustal Modeling WDO (CrM-WDO)	Public	<u>84</u>	0	0	0	08/18/2012	Leonardo Salayano	lia					
Data Fusion project WDO (DF-WDO)	Public	<u>45</u>	0	0	0	08/18/2012							
Eddy Covariance WDO (EC-WDO)	Public	<u>64</u>	0	0	0	08/18/2012							
ESIP Data Ontology (ESIPData)	Public	<u>108</u>	0	0	0	08/27/2012	Rahul Ramachandı	an					
ESIP Service Ontology (ESIPService)	Public	<u>13</u>	0	0	0	08/27/2012	Rahul Ramachandı	an					
Hole's Code WDO (HC-WDO)	<u>Public</u>	<u>55</u>	0	0	0	08/18/2012							
ISDC ontology (gfz)	<u>Public</u>	<u>185</u>	0	0	0	08/21/2012							
<u>OBOE</u> (OBOE)	<u>Public</u>	<u>40</u>	0	0	0	08/07/2012	Ben Leinfelder						
OBOE-SBC (OBOE-SBC)	<u>Public</u>	<u>630</u>	0	0	0	08/07/2012	Ben Leinfelder						
<u>Plant Ontology</u> (PO)	<u>Public</u>	<u>1,609</u>	0	0	0	08/04/2012	Plant Ontology Co	nsortium					
Proof Markup Language - Justification (PML-J)	Public	<u>39</u>	0	0	0	08/18/2012							
Proof Markup Language - Provenance (PML-P)	Public	<u>31</u>	0	0	0	08/17/2012							
Quick Look WDO (QL-WDO)	Public	<u>366</u>	0	0	0	08/18/2012							
Reflectance Data Gathering WDO (RDG-WDO)	Public	<u>70</u>	0	0	0	08/18/2012							
Semantic Web for Earth and Environment Technology (SWEET)	<u>Public</u>	<u>4,527</u>	0	0	0	08/04/2012	ESIP						
Site Selection WDO (SS-WDO)	Public	<u>69</u>	0	0	0	08/18/2012							
Third Provenance Challenge WDO (ThirdPCWDO)	Public	<u>57</u>	0	0	0	08/18/2012							
<u>Virtual Solar Terrestrial Observatory</u> (VSTO)	<u>Public</u>	<u>301</u>	0	0	0	08/07/2012	Peter Fox						
Workflow-Driven Ontology (WDO)	Public	<u>39</u>	0	0	0	08/16/2012	Leonardo Salayano	lia					
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Federation of ontologies



What worked

- Very small budget
- Volunteer effort for the mentors
- Work with undergraduates
- Pre-existing relationships
- Platforms designed for interoperability and re-use

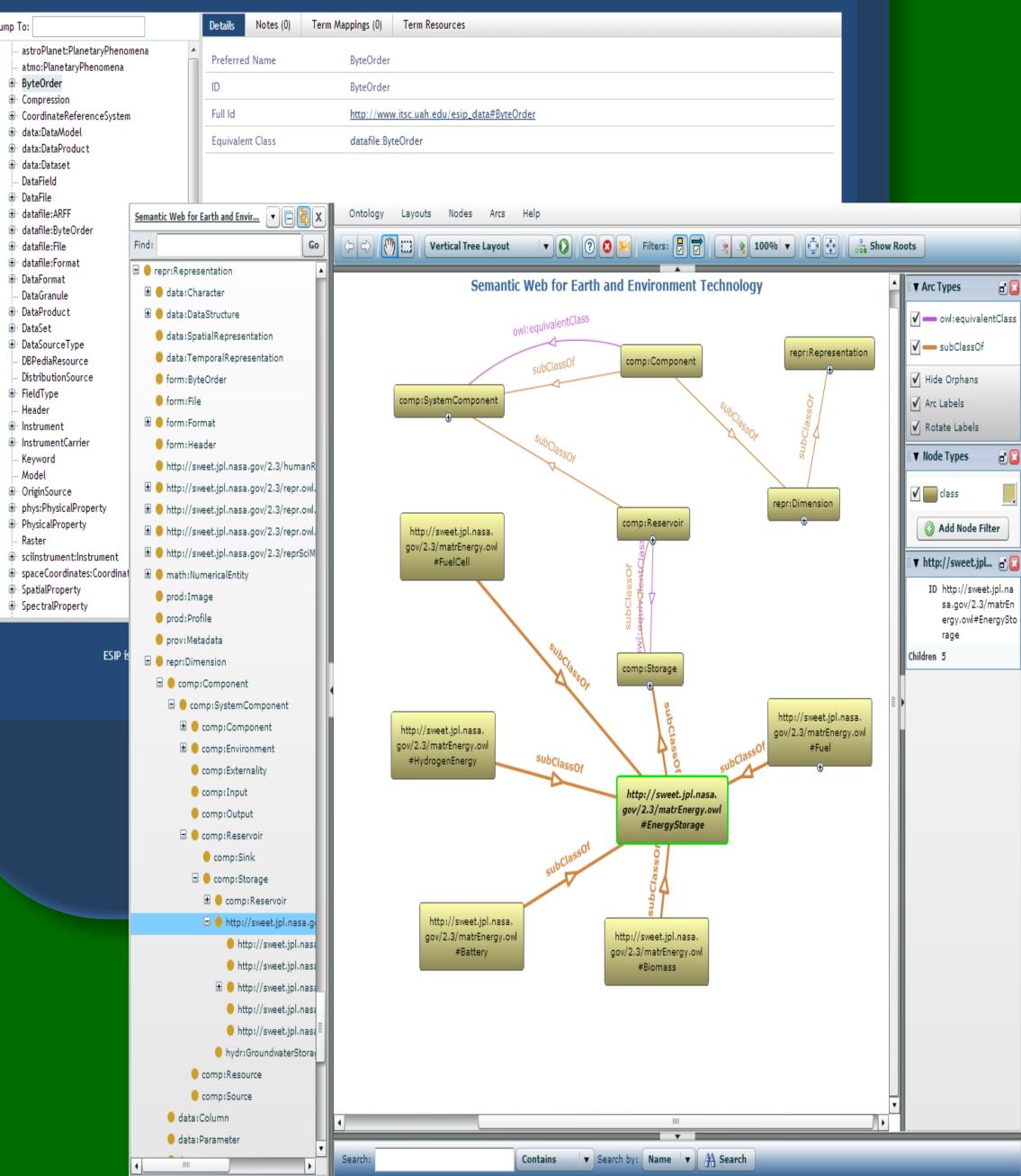
- remote sensing, GIS, molecular and -omic databases, publications
- Numerous metadata schemas
- Workflows, scenario development, data and process re-use, provenance
- Complex systems of systems, networks of projects, repositories, archives, publishers
- Enable earth and environmental science ontologies to be accessible from the Web
- Host ontology services in a scalable public cloud
- Incorporate tools for managing, accessing, searching, browsing, and disseminating ontologies

Approach

ESIP is a collaboration among many partner organizations, activities are spor

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ESIP Data Ontology Terms 🔻



- Open source APIs
- Straightforward deployment in the AWS Elastic Cloud (EC2)
- Required creation of custom image

Collaborations

- **ESIP Federation Semantic Web** \bullet Cluster
- ESIP Federation Products and Services
- National Center for Biomedical Ontologies
- University of South Carolina Center for IT
- ORNL Scientific Data Group

- Investigate and set up a private cloud \bullet computing environment at USC for serving ESIP ontologies
- Investigate and set up an Amazon AWS \bullet point of service for serving ESIP ontologies
- Obtain and install the BioPortal image \bullet
- Produce ESIP-related descriptions for re-branding of BioPortal into an ESIP portal
- Produce outreach material to publicize \bullet and assist users with the ESIP-Portal

What did not work

- Custom image doesn't contain all \bullet features
- Lack of continuity \bullet
- Lack of incentives for mentors \bullet
- Need for better evaluation of ontologies





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