OOR Federation

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Panel Session:

Coordinating our OOR Software Development

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OOR Federation Overview

- OOR Federation allows metadata that is hosted remotely to be browsed locally.
- Our implementation is patterned after the "*OBO Pull*" capability.
  - Runs periodically via the Quartz Scheduler.
  - Retrieves metadata from remote hosts using their RESTful services.
  - Synchronizes local copies using the BioPortal core management functions.
  - Ignores remote metadata that is itself federated.
- The initial version just supports Ontologies and their Views.
  - Other RESTful services could be exploited (e.g. diffs, metrics).
  - We may want to add a RESTful service for mappings.
  - The requirements for other items such as users and projects are unclear.
    - Might need to employ a unique global identification scheme?
- The software resides in our Subversion repository, extended from:
  - bioportalui: branch OOR, rev 434
  - bioportal_core: tag 1023, rev 2405
  - bioportal_admin: rev 120

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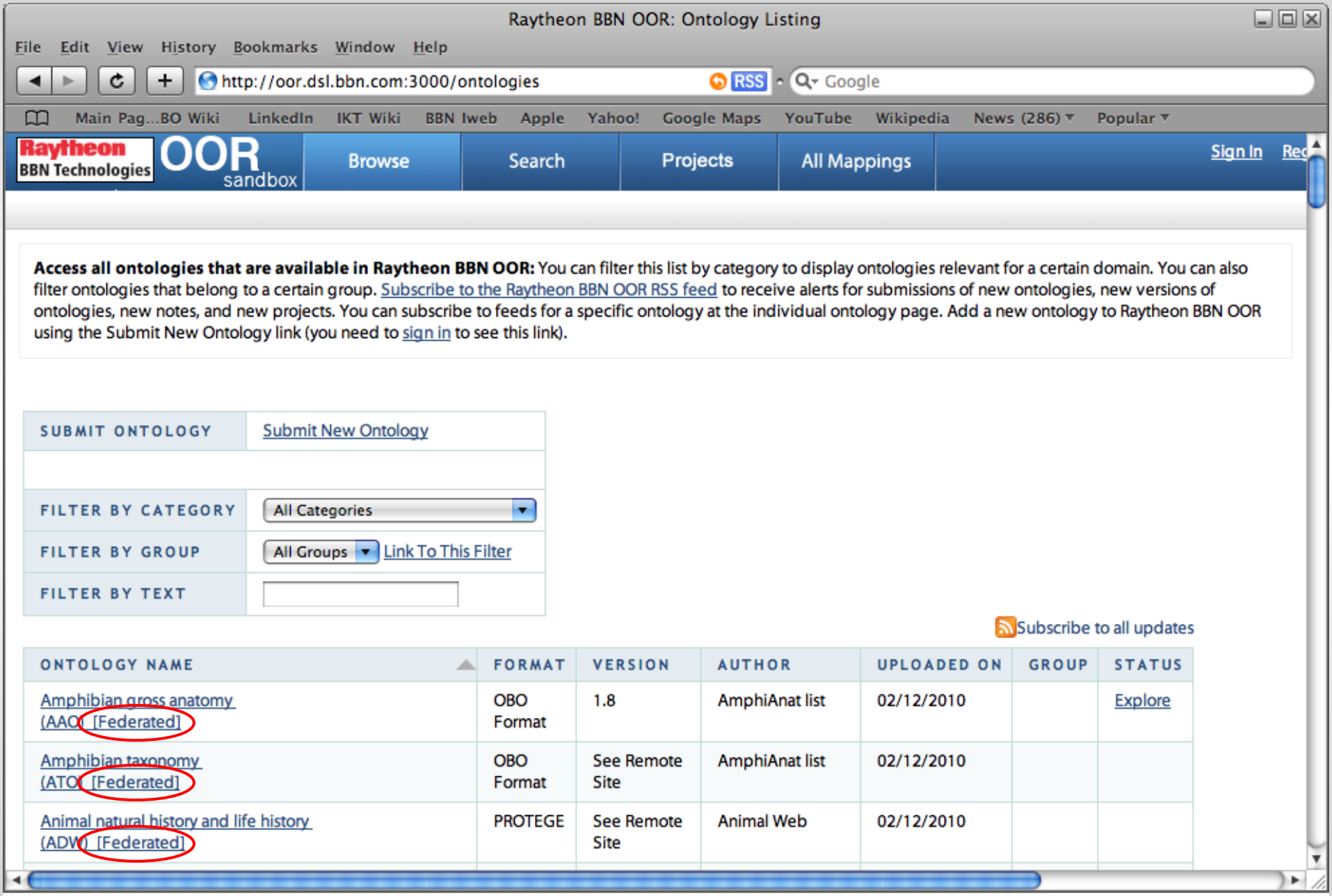
Our server is federated with the cim3 OOR sandbox



Federated Ontology Example

- Federation creates local copies of Ontology Beans and Files.
- Editing of local copies is disallowed.
- But links to the remote OOR hosts are provided.

COSMO [Federated]

Subscribe to updates

Metadata | Views (0) | Projects (0) | Reviews (0) | Metrics | Ontology Widgets

ONTOLOGY NAME:	COSMO
ONTOLOGY ID:	1105
FORMAT:	OWL
CATEGORIES:	Other
CONTACT:	Patrick Cassidy, cassidy@micra.com
HOME PAGE:	
PUBLICATIONS PAGE:	
DOCUMENTATION PAGE:	http://micra.com/COSMO/
DESCRIPTION:	A Foundation Ontology in OWL. Contains representations of most of the words in the Longman dictionary defining vocabulary, but still needs supplementation with another 300 words. This will be used to test the utility of a foundation ontology based on primitive concepts to support general accurate semantic interoperability.
FEDERATE:	http://oor-01f.cim3.net:3000/ontologies/10021

VERSION NUMBER	RELEASE DATE	ONTOLOGY FILE	VISUALIZE	DOWNLOAD DIFF FILE
0.61-875	02/11/2010	Download Ontology	Parsing Ontology	

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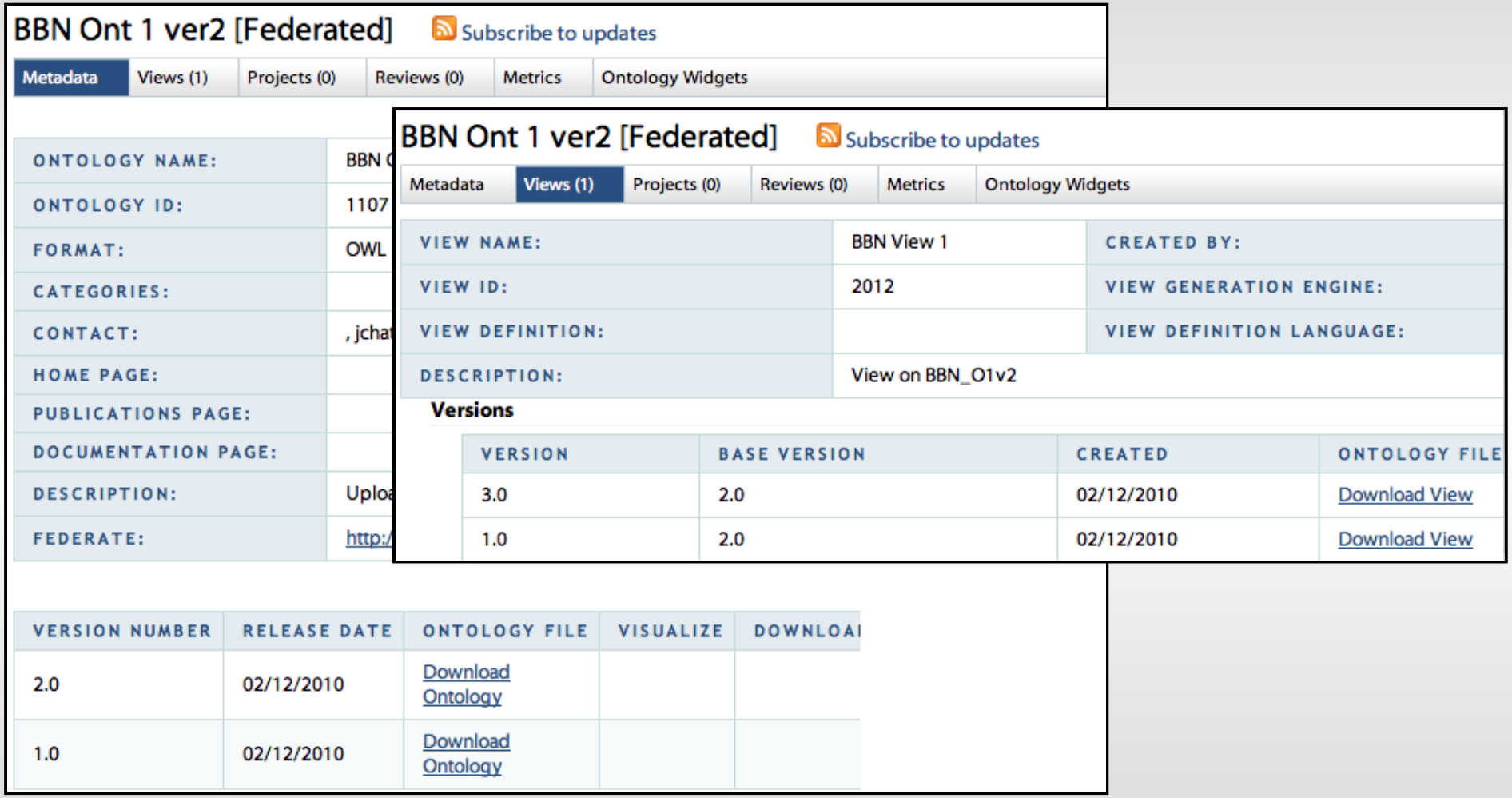
All versions of Ontologies and Views are supported



BBN Ont 1 ver2 [Federated] Subscribe to updates

Metadata | Views (1) | Projects (0) | Reviews (0) | Metrics | Ontology Widgets

ONTOLOGY NAME:	BBN
ONTOLOGY ID:	1107
FORMAT:	OWL
CATEGORIES:	
CONTACT:	, jchat
HOME PAGE:	
PUBLICATIONS PAGE:	
DOCUMENTATION PAGE:	
DESCRIPTION:	Uploa
FEDERATE:	http:/

VERSION NUMBER	RELEASE DATE	ONTOLOGY FILE	VISUALIZE	DOWNLOAI
2.0	02/12/2010	Download Ontology		
1.0	02/12/2010	Download Ontology		

BBN Ont 1 ver2 [Federated] Subscribe to updates

Metadata | Views (1) | Projects (0) | Reviews (0) | Metrics | Ontology Widgets

VIEW NAME:	BBN View 1	CREATED BY:	
VIEW ID:	2012	VIEW GENERATION ENGINE:	
VIEW DEFINITION:		VIEW DEFINITION LANGUAGE:	
DESCRIPTION:	View on BBN_O1v2		

Versions

VERSION	BASE VERSION	CREATED	ONTOLOGY FILE
3.0	2.0	02/12/2010	Download View
1.0	2.0	02/12/2010	Download View

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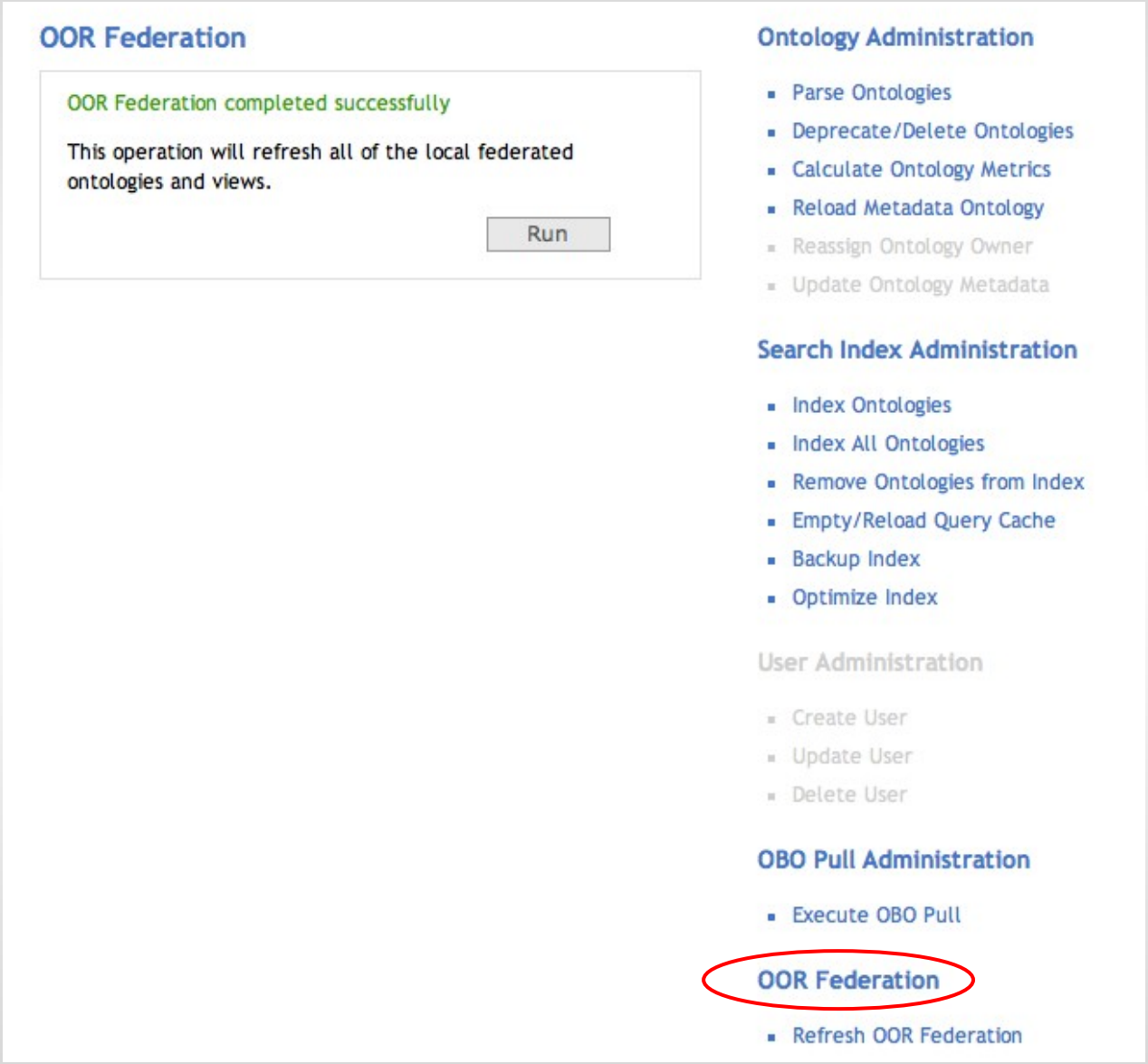
Federation is also available via the Admin app



Implementation – Federation Extensions

- Added new federation configuration settings.
  - **`oor_federation.xml.tmpl`**: for remote host specifications.
  - **`build.properties`**: for resource path and Quartz options.
- Added properties to the OWL metadata model.
  - **`federatedUrl`**: Base URL of the remote RESTful services.
  - **`federatedId`**: ID attribute of the remote OntologyBean.
- Updated the Java/Ruby models and their dependencies accordingly.
- Integrated new service classes into bioportal_core.
  - **`OORFederationService`**: performs the federation operation.
  - **`OORFederationRestlet`**: allows federation to be invoked via a URL.
- Modified bioportalui to include federation info and to disallow editing.
- Added a federation utility to the bioportal_admin webapp.

Implementation – Federation Synchronization

Managing State

- State is represented as sets of OntologyBean instances.
  - A separate bean instance represents each ontology/view version.
- Beans are organized into "synchronizer" objects specific to each remote host.
  - Local state = all local beans that are federated from that host.
  - Remote state = all beans residing at that host that are not themselves federated.

Processing Steps

1. Synchronizers are populated to reflect the local and remote states.
   - If communicating with a remote host produces an error, it is skipped.

1. Local beans are deleted if:
   - Their remote host is not declared in the current configuration.
   - Their remote bean is found to no longer exist.

1. User-editable fields of the remaining local beans are updated as necessary.

2. New local beans are created for each new remote bean that was retrieved.

Recommendations

- We should merge our sources into the group's subversion repository.
- The group should more fully develop operational requirements.
  - Start with federation Use Cases?
- RESTful services should be implemented for all metadata artifacts that are deemed appropriate for federation.
  - And incorporated into the OWL metadata model?