

ONTOLOGY LIBRARIES: A STUDY FROM ONTOFIER AND ONTOLOGIST PERSPECTIVES

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OUTLINE

- ❖ Introduction
- ❖ Classification of the Ontology Libraries
 - ❖ By types
 - ❖ By type of contents
- ❖ Discussion of ontology libraries
- ❖ Evaluation of the Ontology Libraries
 - ❖ Evaluation criteria
 - ❖ Comparative analysis
- ❖ Conclusion

INTRODUCTION

- ❖ Digital library

- ❖ Ontology library

- ❖ Digital Library and Ontology Library

- ❖ Principally both a digital library and an ontology library have the similar kinds of purposes and objectives to achieve (e.g., store, organize and provide access to the digital objects), except the kind of materials they deal with.

- ❖ A digital library deals with the documents of various types, such as text, audio, video, images, etc., while an ontology library deals with the ontologies (where an ontology is an intelligent object, often referred as a digital artifact, consisted of representations of the entities in terms of their types, properties and the relationships of a domain of discourse).

- ❖ Purpose of the current work

- ❖ To make a comparative analysis of the existing and popular ontology libraries based on a selected set of features.

- ❖ Objective

- ❖ To make aware the about the current state of the ontology libraries.

WHAT IS ONTOLOGY LIBRARY

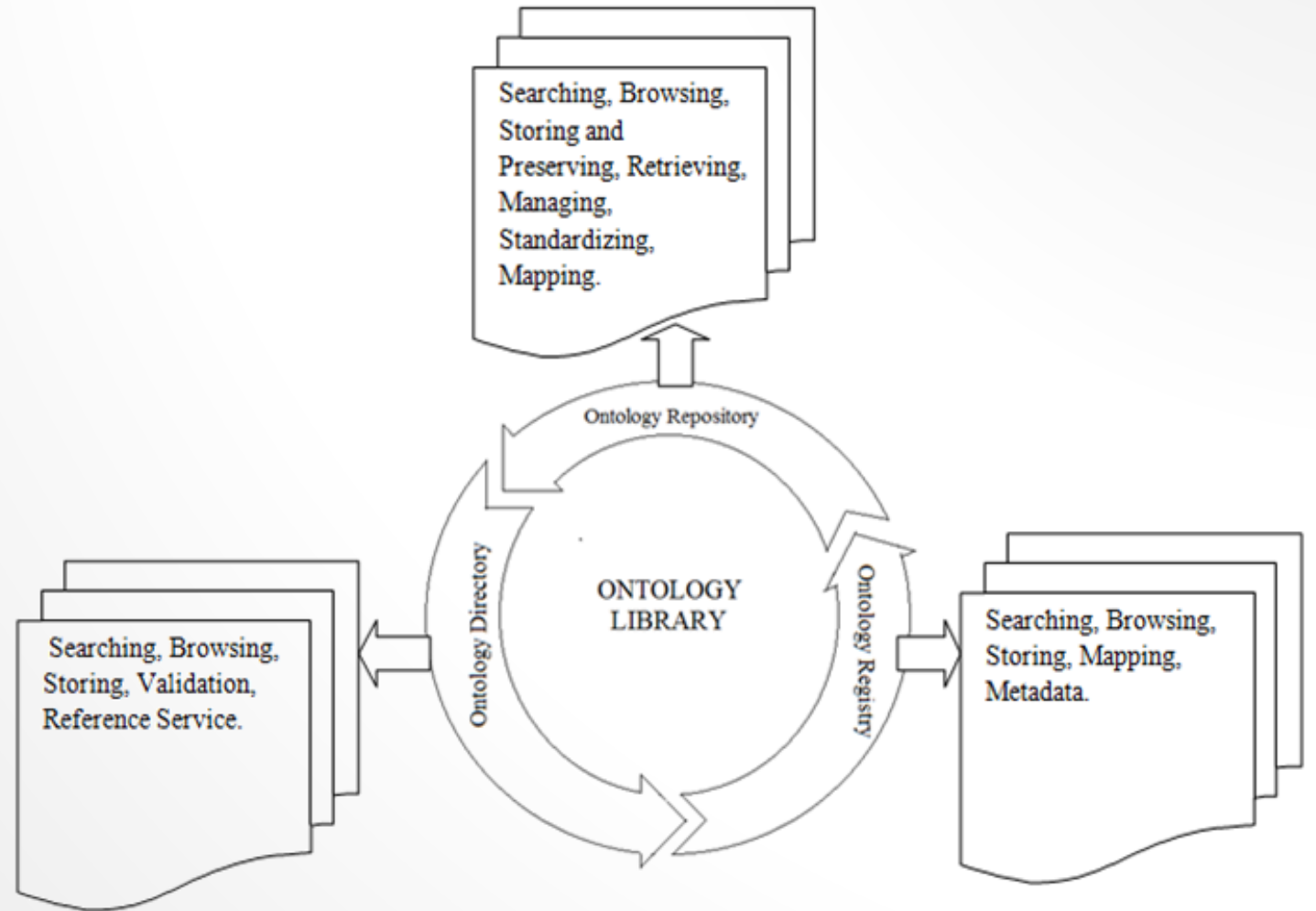
Ontology libraries are the systems or platform where various types of ontologies are stored from different sources and provide the ability to data providers and application developers to share and reuse the ontologies.



CLASSIFICATION OF ONTOLOGY LIBRARIES

Different forms of the ontology libraries:

- ❖ Ontology Repository (OR)
- ❖ Ontology Directory (OD)
- ❖ Ontology Registry (OReg.)



ONTOLOGY REPOSITORY (OR)

- ❖ An ontology repository is a facility where ontologies and related information (e.g., ontology metadata including the information on who included the ontologies) are stored, managed and retrieved .
- ❖ The purpose of ontology repository is to enable users to upload, browse, search, share and manage the ontologies.

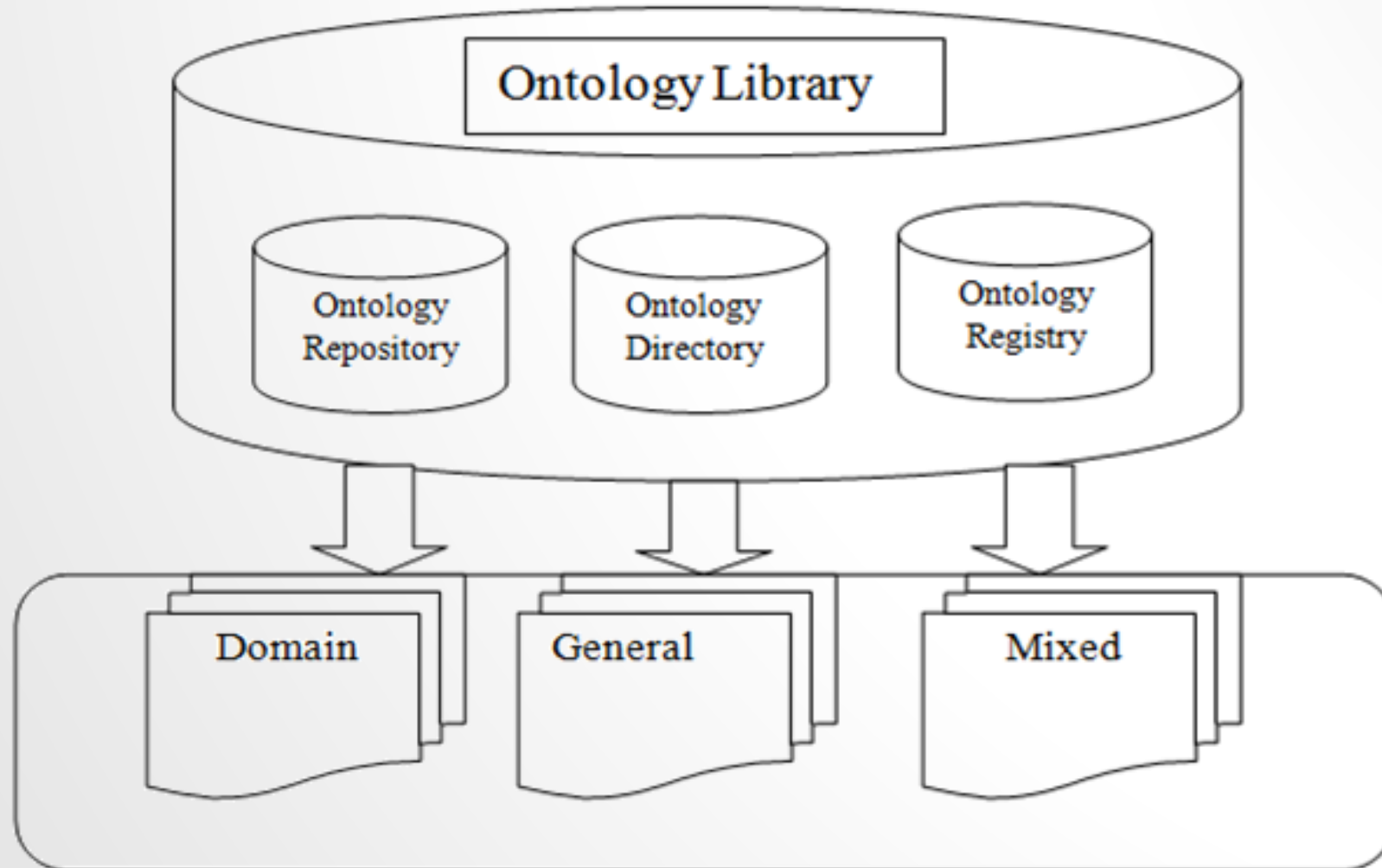
ONTOLOGY DIRECTORY (OD)

- ❖ Ontology directory is a service that provides the information about ontologies that are available in a particular platform.
- ❖ Ontology directory contains the reference to the definition of ontology related language based schema such as OWL, XML, and RDF Schema. It provides metadata and source of information.
- ❖ It follows simple hierarchical structures, which is effective in data storage and classification.

ONTOLOGY REGISTRY (OREG.)

- ❖ A registry provides a data storage interface where data, knowledge, metadata of a semantic object including the name of the person or any community and process of using data are registered.
- ❖ It can be defined as a platform where list of metadata can be declared for visualizing data, storing information and access the knowledge about domain, scientific elements.
- ❖ An ontology registry consists of a list of ontologies and metadata instead of consisting the actual set of ontologies.

CLASSIFICATION OF ONTOLOGY LIBRARIES BASED ON TYPE OF CONTENTS



EXAMPLES OF ONTOLOGY LIBRARIES

Ontology Repository			Ontology Directory			Ontology Registry		
Domain	General	Mixed	Domain	General	Mixed	Domain	General	Mixed
BioPortal	COLORE	ROMULUS	OeGov	ODP	ONKI	MMI-ORR	—	Protégé ontology library
AgroPortal					DAML Ontology Library			

EVALUATION OF THE ONTOLOGY LIBRARIES

- ❖ Target: to make a comparative analysis of the existing and popular ontology libraries.
- ❖ To do the analysis, we have identified the following characteristics.
 - ❖ *Specialization or field*
 - ❖ *Browsing and searching ontologies*
 - ❖ *Submission process of ontology*
 - ❖ *Mapping and relations*
 - ❖ *Web service protocol(API)*
 - ❖ *Usage and access of ontology*
 - ❖ *File format for input and output*
 - ❖ *Technology and interface*

OL Features	BioPortal	AgroPortal	COLORE	ROMULUS	OeGOV	ODP	ONKI	DAML OL	MMI-ORR	Protégé OL
Specialization	Biomedical	Agronomic	General	Mixed	e-Government	General	Mixed	Mixed	Domain	Mixed
Browsing and Searching ontologies	YES	YES	No support	YES	No support	No support	YES	YES	YES	YES
Submission process of ontology	Registered users	Registered users	Administrators and Registered users	Administrators	Administrators via blog post	Registered users	Administrators	Organization and any users	Registered users or organization	Registered users
Mapping and Relations	Mapping between classes	Mappings between ontologies	Mappings between modules	Mappings between ontologies	No support	N-ary Relation	No support	No support	Mapping across vocabularies	Mapping between ontologies
Web Service Access (APIs)	REST	REST	REST	REST	No support	No support	REST	JENA	REST	REST
Usage and Access of Ontology	Upload, Edit and Download	Upload, download	View and Download	View and Download	List of Ontologies description & View	Design ontology for pattern reuse & View	Access general ontology, Upload, Download & View	Access and View	View, Upload, Print and Download	View and Download
File Format for Input and Output	OWL, RDF, OBO, RRF	OBO, RDF, OWL	XML, CLIF	OWL DL, OWL 2DL, OBO	OWL, RDF, N3	OWL	RDF	RDF, DAML + OIL, OWL	OWL, RDF/XML, N3, JSON, CSV	OWL, DAML+OIL, RDFS
Technology and Interface	Protégé, LexGrid	Protégé, Web-Protégé	Samian Platform	WebProtégé	Wordpress	MediaWiki	Ad-hoc	Protégé	Voc2RDF	Protégé

CONCLUSION

- ❖ The exact and precise requirement for building Ontology and Ontology libraries is essential to amalgamate and compile the vast pool of knowledge into a unified platform. It seeks to find the connections between various areas of such a compilation of knowledge.
- ❖ In the current study, we have classified the ontology libraries into three types: ontology repository, ontology directory and ontology registry.
- ❖ The libraries primarily consists of general, domain and mixed kinds of ontologies.
- ❖ In the current study, we have studied and critically analysed the ontology libraries against a set of parameters.
- ❖ In the future, we would like to extend this work by studying the libraries with more advanced features, such as, pictography document, community service, interface, etc.

