



# The Impact of Ontologies and the Semantic Web on Electronic Thesis and Dissertation Publishing

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# Introduction

- Electronic thesis and dissertation (ETD)
- Increasing availability of **digital technology**.
- Growing demand for **open access to research**
- Need for researchers to have easy access to the most recent research.
- However, this had also created a number of obstacles.
  - ETDs are frequently stored in distinct repositories
  - Difficult for researchers to locate and access the information they require.
  - ETDs are frequently not indexed by conventional search engines, which can further complicate the situation for researchers.



- Ontologies and the various technologies of the Semantic Web can be utilised to resolve some of these challenges.
  - **Ontologies** (formal representations of knowledge)
  - **Semantic Web** (information is given meaning)
- ETDs can be described in a **machine-readable** manner by employing ontologies and other Semantic Web technologies.
- This paper attempts to address these problems and propose solutions that can be attained through the use of semantic web technologies.

# Objectives

- To explore semantic web technologies that can be used in enhancing ETD publishing.
- To discuss the impact of ontologies and the Semantic Web on ETD publishing and how these technologies can be used to improve ETD publishing.
- To discuss case studies of ETDs that uses semantic Web technologies for different purposes.

# Methodology

- This research will use a technique that combines a comprehensive literature review with a case study approach.
- It ascertain the advantages and difficulties associated with the use of ontologies and the Semantic Web in electronic theses and dissertations (ETDs).
- The case studies will serve as exemplifications of the use of ontologies and the Semantic Web in enhancing the performance of ETDs.
- The study included many aspects, including Ontology-based metadata, Semantic search engine, Semantic annotation tool, and Semantic portal, for comparison.

# Benefits of Semantic Web Technologies

- RDF (Resource Description Framework)
  - Describe resources and their relationships
  - ETD metadata and content can be represented in RDF.
  - Better integration with other datasets and systems
- Ontologies
  - Provide a formal and structured representation of concepts and their relationships
  - Can help standardize and enrich metadata
  - Easier to search, navigate, and relate ETDs to other resources.

- Linked Data

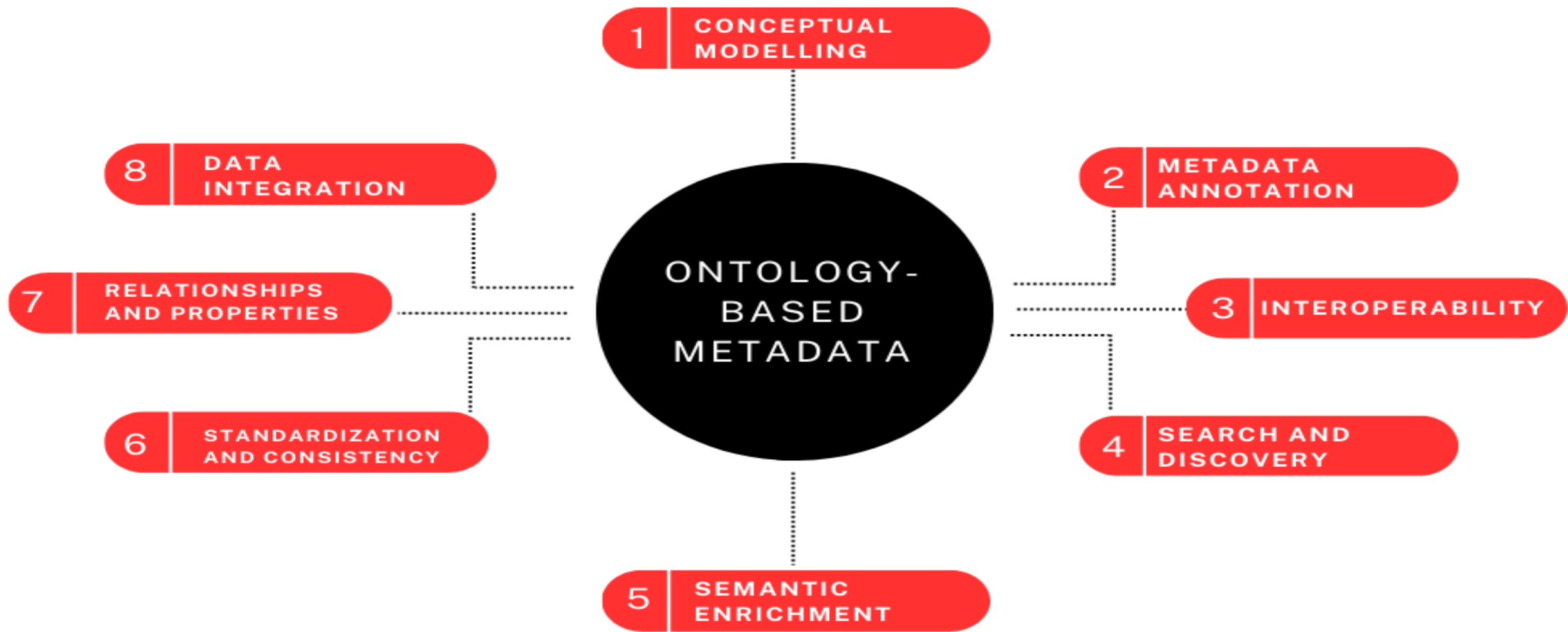
- Linking and connecting data across different sources on the web
- Can establish meaningful connections
- Enhanced discoverability.

- SPARQL

- Used to query RDF data
- Allows users to perform advanced searches
- Explore relationships between different ETDs.

- SKOS (Simple Knowledge Organization System)

- Provides a way to represent controlled vocabularies and taxonomies
- Improve consistency.
- Facilitate more accurate searches.





## ▪ Semantic search engine

- Natural Language Queries
- Relationship Mapping
- Cross-Disciplinary Discoveries
- Personalization
- Advanced Filtering and Faceting
- Synonym and Variance Handling
- Content Summarization and  
Extraction

## ▪ Semantic annotation tool

- Enhanced Search and Discovery
- Improved Navigation and Browsing
- Contextual Understanding
- Interoperability and Integration
- Accessibility and Inclusivity
- Data Mining and Analysis
- Personalization and Recommendation
- Long-Term Preservation

# Case Studies

- **OATD - Open Access Theses and Dissertations (<https://oatd.org/>)**
  - Theses and dissertations' metadata are exposed via Resource Description Framework (RDF) and other Semantic Web standards, allowing for more efficient discovery and interlinking of academic resources
- **Thesis Commons (<https://thesiscommons.org/>)**
  - Thesis Commons is a platform that employs Semantic Web technologies to provide a linked data representation of theses and dissertations. This platform enables writers to publish their works accompanied by enhanced metadata and semantic annotations, hence promoting seamless integration into the academic ecosystem and augmenting their visibility.

- **EThOS - Electronic Theses Online Service**

- EThOS, the UK's national thesis service, provides access to the complete text of ETDs, although it is not exclusively concentrated on Semantic Web technologies. It employs a variety of metadata standards and formats, including Dublin Core, which can be combined with Semantic Web principles to improve discoverability and integration.

# Conclusion

- The use of ontologies and the Semantic Web has the capacity to fundamentally transform the manner in which Electronic Theses and Dissertations (ETDs) are disseminated and employed.
- They facilitate the **discovery, retrieval, and utilisation of electronic theses and dissertations (ETDs)** by establishing a standardised framework for the representation and dissemination of information pertaining to ETDs.
- Despite the inherent difficulties, the use of ontologies and the Semantic Web in the context of electronic theses and dissertations (ETD) publication has considerable potential as a subject of scholarly investigation.
- With the ongoing advancement of technology, it is anticipated that there will be a proliferation of inventive applications of ontologies and associated Semantic Web Technologies in order to augment the efficacy of Electronic Theses and Dissertations (ETDs).

Thank You...