Panel: Using Schema and Value Vocabularies
to Provide Consistency Across Structured Content

Schema and Value Vocabularies for Thesauri and Taxonomies

by
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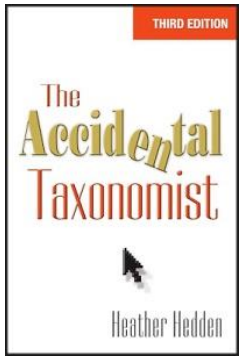
About Heather Hedden

- Taxonomy consultant and instructor, Hedden Information Management
- Taxonomy Manager, Northern Light (business/competitive intelligence platform)
- Former taxonomy-related roles at Semantic Web Company, Gale/Cengage, Viziant, Project Performance Corp., First Wind
- Working group member for the revision of the thesaurus standard, ISO 25964-1
- Author of *The Accidental Taxonomist, 3rd ed.* (2022, Information Today, Inc.)



Thesauri and Taxonomies: Value Vocabularies

Thesauri

- Originated from library subject headings, but are applied to specific subject domains for journal article indexing, starting in 1960s.
- Became widely adopted value vocabularies used for metadata "descriptor" properties for journal article index databases.
- Follow ISO 25964 thesaurus standard for best practices.
- Used in special libraries, research databases, collections from multiple published sources.
- Most are published and can be licensed; are increasingly being made available on the web to be linked to. See BARTOC register

Taxonomies

- Borrow principles from thesauri and from classification systems (hierarchical structure) for specialized uses.
- Became widely adopted value vocabularies with interactive web user interfaces in the late 1990s and controlled vocabulary support of CMSs in the early 2000s.
- Follow ISO thesaurus standards less strictly.
- Used for internal organizational/enterprise content and website content.
- Most are proprietary; some may be licensed; more are being shared to be linked to.

SKOS: A Schema Vocabulary for Thesauri and Taxonomies

SKOS Overview

Simple Knowledge Organization System

- Published by the World Wide Web Consortium (W3C) in 2009
- Data model for sharing and linking knowledge organization systems via the web: taxonomies, thesauri, classification schemes, terminologies, glossaries
- Based on RDF (Resource Description Framework)
- Used in various encodings/serializations: XML, JSON, N3, Trig, Turtle, etc.
- Supported by taxonomy/thesaurus management software.

SKOS Principles

- A KOS is a group of concepts identified with URIs and grouped into a concept scheme.
- Concepts are labeled with any number of lexical strings (labels) in any natural language.
- Concepts have one preferred label in any natural language and any number of alternative labels and hidden labels.
- Concepts can be linked to each other using hierarchical and associative semantic relations.
- Concepts can be documented with notes of various types: scope notes, definitions, editorial notes, etc.
- Concepts across different concept schemes can be mapped using types of mapping relations.
- Concepts can be grouped into collections, which can be labeled and ordered.

SKOS: A Schema Vocabulary for Thesauri and Taxonomies

SKOS Schema Vocabulary, also called SKOS Elements

Concept Scheme & Collection	Concepts	Labels & Notation	Documentation	Semantic Relations	Mapping Relations
ConceptScheme	Concept	prefLabel	scopeNote	broader	exactMatch
inScheme	hasTopConcept	altLabel	definition	narrower	closeMatch
Collection	topConceptOf	hiddenLabel	example	related	broadMatch
orderedCollection		notation	changeNote		narrowMatch
member			editorialNote		relatedMatch
memberList			historyNote		

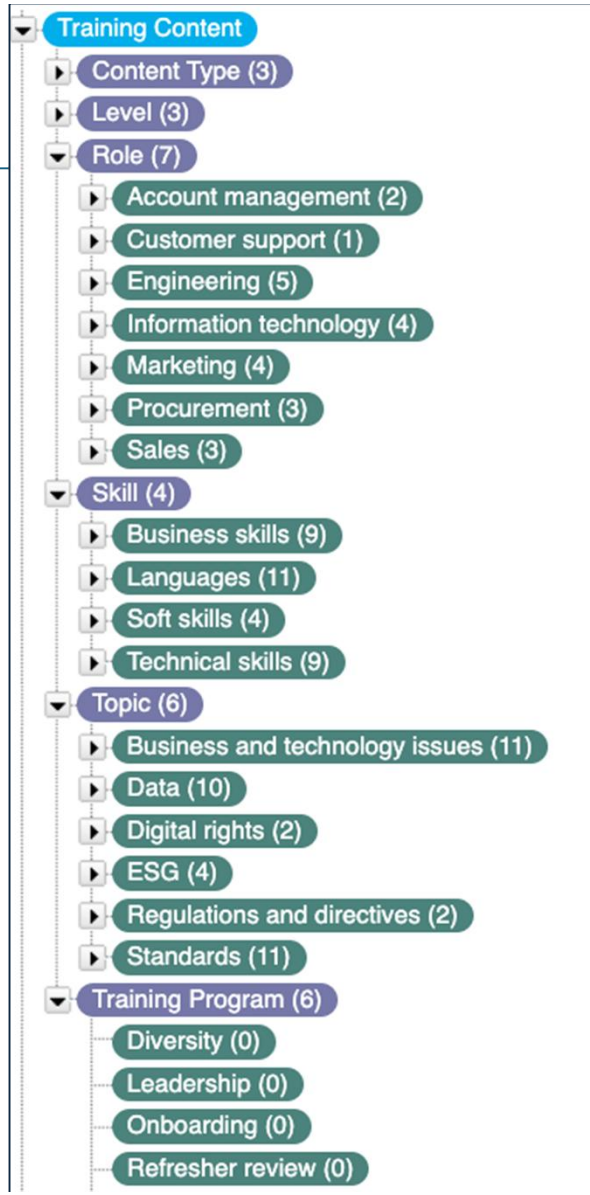
Example as applied to value vocabulary concept of "Budgeting"

N3: skos:prefLabel "Budgeting"@en

RDF/XML: <skos:prefLabelxml:lang="en">Budgeting</skos:prefLabel>

Thesauri, Taxonomies, SKOS, and Metadata

- Thesauri and taxonomies were originally developed not as metadata,
  but for printed **indexes** (as thesauri) and **navigation** (as taxonomies).
  Soon became used as **metadata** values.
- An entire thesaurus is typically used in a single metadata property, such as one labeled Descriptors, Terms, Topics, or Subjects.
- Taxonomies, which are increasingly designed as **faceted**, have each facet implemented as a metadata property.
- A value vocabulary in SKOS typically assigns each Concept Scheme to a metadata property.
  For example: Subject, Location, Person, Organization, Activity, Product.
- Thus, in faceted taxonomies, each Concept Scheme is also a facet.



Application Profiles for Vocabularies in SKOS

- SKOS is “simple” and allows a great deal of flexibility.
- Example flexible options:
  - Must the relations be only between concepts within the same Concept Scheme, or may they be across Concept schemes?
  - Will the Related Concept relationship be utilized in a taxonomy?
  - Is a Top Concept fundamentally different or implemented differently than a Concept?
  - How is a Hidden Label used differently from an Alternative Label?
  - How are Collections to be used?
  - When are Definitions to be used?
  - What is the difference between a Change Note and History Note?
  - What are the criteria distinguishing Close Match from Exact Match?
- Areas of SKOS flexibility require policy, governance, and thus application profiles.
- An application profile describes how a standard, such as SKOS, is to be applied in a particular domain or application.
- Additional areas of governance also include style (e.g. capitalization, pluralization) and criteria for adding value vocabulary concepts.

Questions/Contact

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