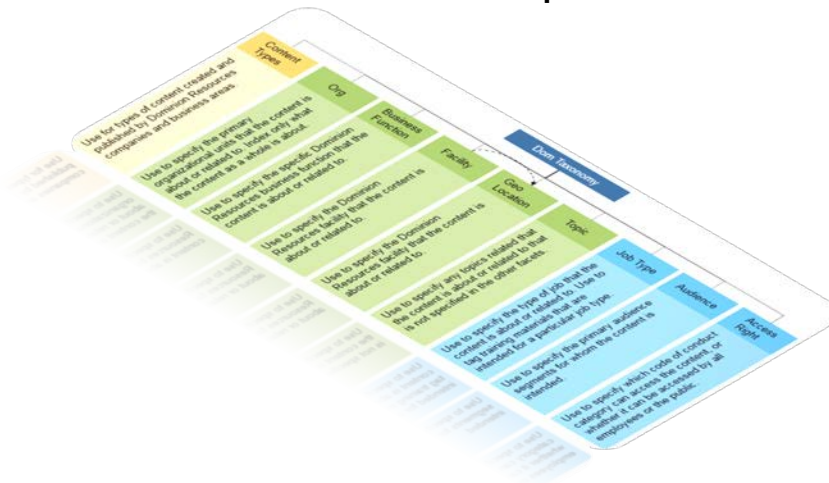


What's SKOS, What's not, Why and What Should be Done About It

Joseph Busch

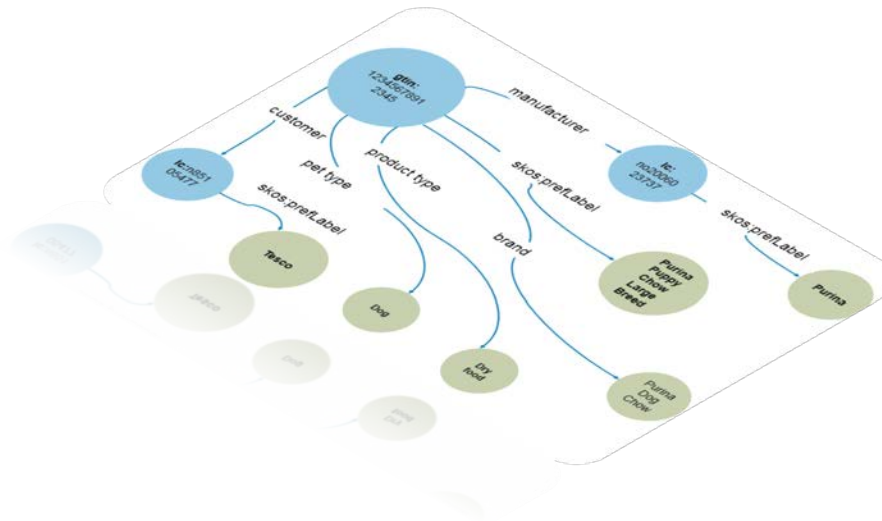
What is the problem we are trying to solve?

- ❖ Vocabularies are used in a great variety of contexts
 - E.g., databases, faceted navigation, website browsing, linked open data, spellcheckers, etc.
- ❖ Vocabularies are re-used in combination with other vocabularies.
 - E.g., [ISO3166 country codes](#) + [USAID regions](#); USPS zip codes + [US Congressional Districts](#); [USPS States](#) + [EPA regions](#), etc.
- ❖ It's a common requirement to share vocabularies across an organization, (and sometimes also outside an organization)
 - Sometimes this is called an enterprise taxonomy.



What choices are available to solve this problem?

- ❖ [ANSI/NISO Z39.19-2005](#) Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies
- ❖ ISO 25964 Thesauri and Interoperability with other Vocabularies:
 - [Part 1](#)-Thesauri for information retrieval
 - [Part 2](#)-Interoperability with other vocabularies
- ❖ [Zthes](#) specifications for thesaurus representation, access and navigation
- ❖ [W3C SKOS](#) Simple Knowledge Organization System





What is SKOS?

- ❖ SKOS is a common data model for knowledge organization systems (KOS) such as thesauri, classification schemes, subject heading systems and taxonomies.
- ❖ Using SKOS, a knowledge organization system can be expressed as machine-readable data, that can then be exchanged between computer applications and published in a machine-readable format in the Web.
- ❖ The SKOS data model is defined as an OWL* ontology. SKOS data are expressed as RDF** triples, and may be encoded using any RDF syntax.

* OWL = Web Ontology Language for authoring ontologies

** RDF = Resource Description Framework for modeling information

Original SKOS requirements

- ❖ Represent the concept labels (preferred or not) for display or to search.
- ❖ Represent relationships between concepts for display or to search.
- ❖ Represent lexical information in multiple languages.
- ❖ Represent text descriptions attached to concepts (to help understand how to use them)
- ❖ Specialize the SKOS vocabulary for a local application
 - E.g., specific kinds of definitions or notes for concepts, specification of new types of concepts, etc.
- ❖ Extend concept schemes with new concepts referring to existing ones.
- ❖ Map between concepts from different concept schemes.

Is SKOS under-specified?

SKOS is less formal than OWL

- ❖ While SKOS is an OWL ontology, it is not intended for encoding more complex ontologies
 - Types of relations that refine semantics beyond isA and isPartOf relations.
- ❖ “Using OWL and SKOS” describes several scenarios (<http://www.w3.org/2006/07/SWD/SKOS/skos-and-owl/master.html>)
 - Overlay SKOS with OWL
 - Transform SKOS to OWL
 - Overlay OWL with SKOS
 - Transform OWL to SKOS
 - Part OWL and Part SKOS

- ❖ SKOS excels at defining and referencing URIs for named entities, but describing and managing their relationships is sometimes more highly articulated in other schemas like OWL.
- ❖ SKOS supports Thesaurus relationships
 - Hierarchical – BT/NT (Broader Term/Narrower Term)
 - Associative – RT (Related Term)
 - Equivalent – UF (Used For term)
 - Notes – SN (Scope Note)

Should SKOS be used when a Class is already defined in another schema?

- ❖ FOAF and schema.org provide a Person class:
 - Friend of a friend (FOAF) http://xmlns.com/foaf/spec/#term_Person.
 - Schema.org <http://schema.org/Person>.
- ❖ Schema.org also provides classes for:
 - Organization <http://schema.org/Organization>
 - Place <http://schema.org/Place>
 - Product <http://schema.org/Product>
 - Event <http://schema.org/Event>

Recommended practice

- ❖ Use SKOS for mapping properties between concepts in different schemes.
 - SKOS-XL provides for explicit relationships between concept labels in different schemes.
- ❖ Use FOAF, schema.org and OWL to extend what cannot be expressed with SKOS.



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QUESTIONS?

Resources

- ❖ [ANSI/NISO Z39.19-2005](#) Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies
- ❖ [FOAF Vocabulary Specification 0.99](#) (January 2014)
- ❖ ISO 25964 Thesauri and Interoperability with other Vocabularies: [Part 1](#)-Thesauri for information retrieval, [Part 2](#)-Interoperability with other vocabularies.
- ❖ schema.org [Organization of Schemas](#) (n.d.)
- ❖ [SKOS Reference](#): W3C Recommendation (August 2009)
- ❖ [SKOS Use Cases and Requirements](#): W3C Working Group Note (August 2009)
- ❖ [SKOS Simple Knowledge Organization System Namespace Document](#) (August 2009)
- ❖ [Using OWL and SKOS](#) (May 2008)

Abstract

- ❖ SKOS is an under-specified framework for encoding knowledge organization schemes. This is a problem with generic frameworks, and can be addressed by using other namespaces such as FOAF (Friend of a Friend), which provides a vocabulary specification for people and their relationships to each other and to other types of named entities, and Schema.org, which is a collection of schemas to mark-up named entities in web-published content so that they can be readily parsed and processed by search engines and searchers. This presentation discusses types of functional requirements for using vocabularies that are missing from SKOS. The case will be made for using SKOS extensions rather than multiple namespaces or schemas to assemble what is common semantic functionality.