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

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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.
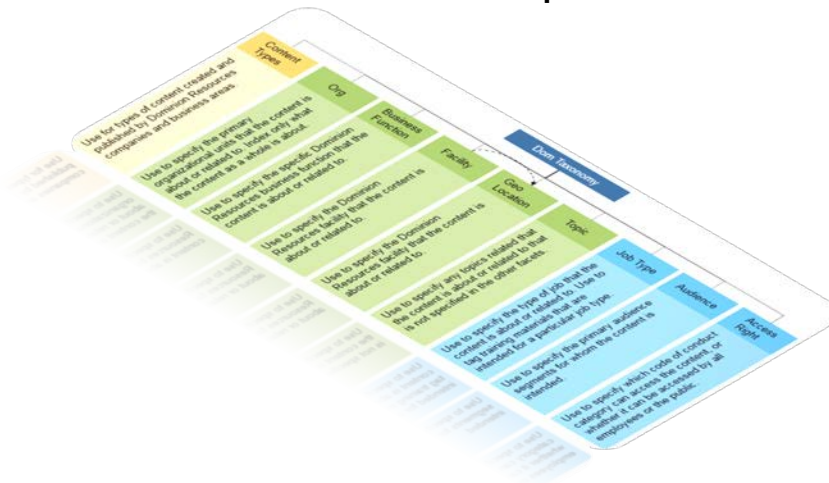
What choices are available to solve this problem?

❖ [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
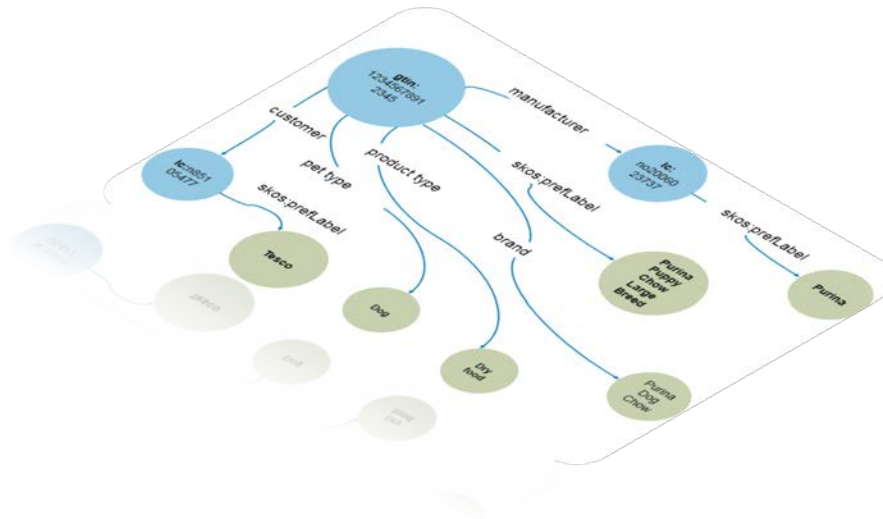
What is SKOS?

❖ 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.

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* 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 strengths

❖ 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, their relationships to each other and to other types of named entities; and Schema.org 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.