



Types of mapping recommended in ISO 25964, and the question of reciprocity

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Overview

- What is ISO 25964? (briefly)
- Recommended types of mapping
- Brief comparison with SKOS
- Reciprocity: when/how do mappings work in both directions?



What is ISO 25964?

ISO 25964: Thesauri and interoperability with other vocabularies

- Part 1: Thesauri for information retrieval
- Part 2: Interoperability with other vocabularies
- It updates ISO 2788 and ISO 5964
- Part 1, to be published early 2011, covers monolingual and multilingual thesauri
- Part 2, to be published in 2012, covers mapping between thesauri and other types of vocabulary
- information retrieval seen as main application; mapping applies to index terms or to search terms



ISO 25964-2 mapping types

- Basic mapping types:
 - Equivalence
 - Hierarchical
 - Associative
- equivalence mappings can also be marked as “Exact” or “Inexact”

ISO 25964-2 mapping types with examples



- Basic mapping types:

Equivalence Laptop computers EQ Notebook computers

Hierarchical Roads NM Streets; Streets BM Roads

Associative e-Learning RM Distance education

- “Exact” or “Inexact” equivalence

Aubergines =EQ Egg-plants

Horticulture ~EQ Gardening

Subdivisions of ISO 25964-2 mapping types



- Basic mapping types:
 - Equivalence
 - Simple
 - Compound
 - Intersecting compound equivalence
 - Cumulative compound equivalence
 - Hierarchical
 - Broader
 - Narrower
 - Associative
- “Exact” or “Inexact” applies to simple but not compound equivalence

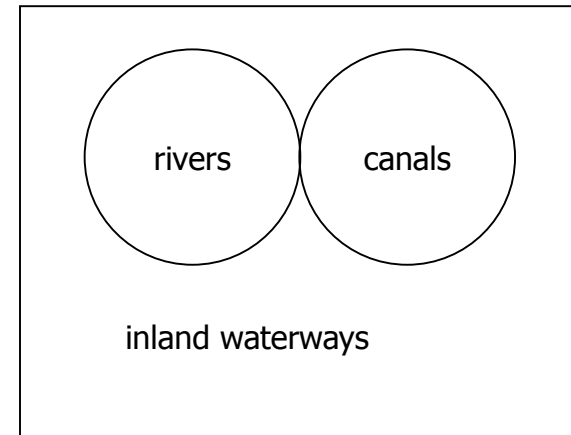
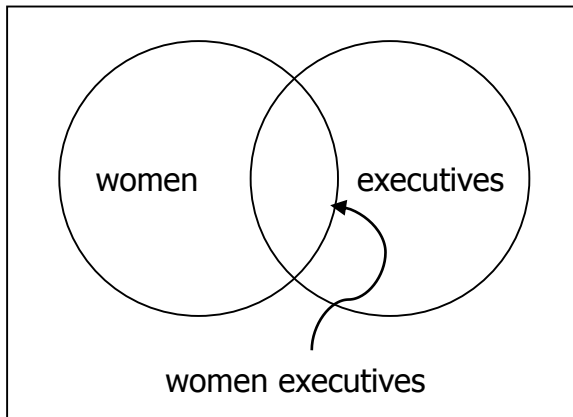
Equivalence subdivisions with examples



- **Simple** Laptop computers EQ Notebook computers
- **Compound**
 - **Intersecting compound equivalence**
Women executives EQ Women + Executives
 - **Cumulative compound equivalence**
Inland waterways EQ rivers | canals

Intersecting versus cumulative equivalence

Women executives EQ Women + Executives
Inland waterways EQ rivers | canals





And what about reciprocity?

- With simple equivalence (exact or inexact) and with hierarchical or associative mappings, two-way conversions are usually OK; but compound equivalence typically works in one direction only.
- ISO 25964 recommends that mappings from one vocabulary to another should be checked individually before they are used in the reverse direction



cf. SKOS (Simple Knowledge Organization System) data model

Basic mapping “properties” (skos:mappingRelation):

- skos:closeMatch (symmetric)
 - skos:exactMatch (symmetric, transitive)
- skos:relatedMatch (symmetric)
- skos:broadMatch (inverse of narrowmatch)
- skos:narrowMatch (inverse of broadmatch)
- No provision for compound mappings
- But much attention to reciprocity



In the real world, mapping perfection is elusive...

- Mapping projects are labour intensive, and often under-resourced
- Exact equivalence is all too rare
- Even when exact equivalence seems likely, it is often hard to be sure
- Often the vocabularies to be mapped are less than perfectly constructed
- Compound equivalence is needed commonly, but often unavailable
- Some systems allow only one mapping per concept
- While preparing mappings, you can't make assumptions about capabilities of the search software



Practical Example 1

Vocabulary 1 has the following 3 concepts:

Woods; Forests; Trees

Vocabulary 2 has only one approximate match:

Woodlands

Mappings from Voc1 to Voc2:

Woods ~EQ Woodlands

Forests ~EQ Woodlands

Trees RM Woodlands

Mappings from Voc2 to Voc1:

Woodlands ~EQ Woods

~EQ Forests

RM Trees



Practical Example 2

Thesaurus A

Animal products

Edible fats and oils

Fats

Oils

Vegetable products

Thesaurus B

Fats and oils

Animal fats

Butter

Margarine

Suet

Vegetable fats

Vegetable oils

Linseed oil

Olive oil

Sunflower oil

Mappings from A to B

Animal products NM Animal fats

Edible fats and oils NM Butter
Margarine
Olive oil
Suet
Sunflower oil

Fats EQ Animal fats | Vegetable fats

Oils NM Vegetable oils

Vegetable products EQ Vegetable fats | Vegetable oils

Mappings from B to A

Fats and oils EQ Fats | Oils

Animal fats EQ Fats + Animal products

Butter BM Animal products

Edible fats and oils

Fats

Margarine BM Animal products

Edible fats and oils

Fats

Suet BM Animal products

Edible fats and oils

Fats

Vegetable fats EQ Fats + Vegetable products

Vegetable oils EQ Oils + Vegetable products

Linseed oil BM Oils

Vegetable products

Olive oil BM Edible fats and oils

Oils

Vegetable products

Sunflower oil BM Edible fats and oils

Oils

Vegetable products



a few conclusions

- If you prepare mappings from A to B, and rely on inverse mappings for the reverse direction, some concepts will not get mapped
- Mappings that seem adequate for indexing applications may be insufficient for searching applications
- Compound mappings do not work reciprocally, but could be used to suggest hierarchical mappings in the reverse direction
- In systems which do not admit compound mappings, and/or which use only one mapping per concept, some very tough mapping choices have to be made



So is SKOS right to rely on reciprocity in all its mappings?

- At the micro level, and in the absence of any compound mappings, reciprocity should work as per the SKOS guidance
- But at the macro level, it is inadequate to prepare mappings in one direction and suppose this is enough for the reverse direction
- There are too many uncertainties about the context in which mappings were prepared, and about the way search systems will exploit mappings and internal relationships within each vocabulary
- ISO 25964 continues to recommend that if you want two-way mapping capability, the mappings should be checked individually before they are used in the reverse direction



Want a copy of ISO 25964-2 ?

- A draft is due to appear in January 2011, “ISO DIS 25964-2”, with the hope of attracting comments from potential users
- The official way to get it is through your national standards body (e.g. BSI, DIN)
- Distribution policies vary from one country to another; last time round we found a way to make the draft available online free of charge and free of passwords, on the BSI site.
- Send me an email and I’ll alert you when the DIS is released. stella@lukehouse.org