

Ontology work in Finland

EAFT Summit, Budapest

12-13.11.2010

Katri Seppälä

Finnish Terminology Centre TSK &

Aalto University School of Science and
Technology

Ontology work in Finland

- FinnONTO project
 - goals
- From thesauri to ontologies
 - the Finnish General Upper Ontology
 - the Finnish General Upper Ontology extended with domain ontologies
- What does ontology work mean for terminologists?

FinnONTO project 1.9.2003-31.12.2011

- project coordinator: Professor Eero Hyvönen, Aalto University School of Science and Technology
- research group: 15 persons
- participating organisations from several sectors: museum, library, education, health care, land survey etc.
- financiers: Finnish Funding Agency for Technology and Innovation Tekes and participating organisations

- starting point: intelligent services of the semantic web need information on concepts in computer readable format
- solution in FinnONTO project: to develop
 - widely used Finnish General Thesaurus into a general Finnish General Upper Ontology
 - special thesauri into domain ontologies which extend the General Ontology and cover one or more domains on a more detailed level than the General Ontology
- tool: Protégé ontology editor
- language: OWL (Web Ontology Language)

FinnONTO project: goals

- to provide central ontologies for free public use in order to maximize their use and to avoid multiple work
- to create a national ontology library for decentralised use, management and development of ontologies
 - ONKI ontology library service: www.yso.fi
- to demonstrate the usability of ontologies
 - for example CultureSampo (www.kulttuurisampo.fi) and HealthFinland (www.terveysuomi.fi) are portals which use Finnish General Upper Ontology (YSO) extended with several domain ontologies
- to suggest a model for organizing ontology work in future
 - possible co-ordinator of ontology work: National Library of Finland
 - responsibility for extending the General Upper Ontology with domain ontologies: expert organisations in co-operation with the co-ordinator

From thesauri to ontologies

- ontology: description of concepts of a certain domain in computer readable format
- ontologies built in FinnONTO project are based on thesauri and meant to be used for the same purpose as thesauri have been used: for indexing and information retrieval
- when an ontology is built using a thesaurus as starting point
 - every concept must have its own exact place in the hierarchy and an URI (Uniform Resource Identifier) which identifies the concept
 - in order to integrate the concepts into one system which computers can use in information processing an upper structure for the ontology needs to be added
 - ontological relations have no room for interpretation
 - generic relation (broader term – narrower term)
 - partitive relations have to be separated from generic relations
 - generic group concepts (dimensions) have to be added
 - associative relation (related term)

From thesauri to ontologies

- there are different means to describe several viewpoints simultaneously
 - different kind of associative relations, for example
 - instrument used in action; result of action
 - roles, for example
 - human: occupation, member of a family
 - material: source of energy, building material
 - several generic superordinate concepts, for example exposure meter: photographic equipment and meter
- advantages of using ontologies
 - more precise description of material than before
 - more uniform way of describing
 - possibility to develop intelligent web services which use ontologies
 - use of concept relations in information retrieval and sorting search results

The Finnish General Upper Ontology

- based on the Finnish General Thesaurus (from year 2009)
- includes about 23 000 concepts
 - every concept has an URI
(<http://www.yso.fi/onto/yso/p00000>)
- languages: Finnish and Swedish
 - English equivalents are included, but only partly checked
- concept relations in the ontology
 - subclass of, part of and associative relation
- is used as a structural model and link to domain ontologies

Finnish domain ontologies

- The Finnish General Thesaurus and special thesauri have a significant amount of common concepts (30-80%) and special thesauri are often used together with the general thesaurus
 - however the relations between concepts in different thesauri are not always unambiguous
- combinations in which the general ontology forms a part of the domain ontology
 - clarify which concepts originally belonging to different ontologies are really equivalent (intelligence, power / biodiversity; biological diversity)
 - make it easier to use the combination of general and domain ontology
 - help to avoid unnecessary overlap and make it possible to concentrate on the concepts of the domain in question when doing ontology work

The Finnish General Upper Ontology extended with domain ontologies

- the following Finnish domain ontologies have been merged with the Finnish General Upper Ontology:
 - Agriforest ontology (agriculture, forestry etc.)
 - Business Ontology
 - Geo-ontology
 - Finnish Fiction Ontology
 - Finnish Ontology for Public Administration
 - Maritime Ontology
 - Ontology of Applied Arts
 - Ontology for Folk Culture Studies
 - Ontology on Health Promotion
 - Ontology for Linguistics
 - Ontology for Literary Studies
 - Ontology for Museum Domain
 - Ontology for Music
 - Ontology of Photography

What does ontology work mean for terminologists?

- concept analysis is the key for high quality ontologies
- written definitions improve the quality and usability of ontologies for human users
- co-operation between terminologists and domain specialists of the domain in question is important

A terminologist who has used concept analysis, can write systematic definitions and is experienced in coordinating projects has the competence to do ontology work!

Ontology work is a possibility to use our know-how on concept analysis in a new environment and to promote the importance of high-quality results of concept analysis!

What does ontology work mean for terminologists?

- The Finnish Terminology Centre TSK has participated in FinnONTO projects since 2004
 - 1-2 terminologist have built the Finnish General Upper Ontology and several domain ontologies as well as consulted other participants of the projects doing ontology work
- 2009 TSK had 1 ontology project which was ordered directly from TSK
- 2010 TSK has 3 ongoing ontology projects
- offers for new ontology projects starting 2011 have been made

Ontologies mean new business opportunities for terminologists!

More information

- The Finnish Terminology Centre: www.tsk.fi
- The FinnONTO project: www.seco.hut.fi/projects/finnonto
- The ONKI ontology service: www.yso.fi
- Protégé ontology editor: protege.stanford.edu