



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

# The Finnish General Upper Ontology YSO

Katri Seppälä

Semantic Computing Research Group (SeCo)

Helsinki University of Technology, Laboratory of Media Technology;  
University of Helsinki, Department of Computer Science;

The Finnish Terminology Centre

<http://www.seco.tkk.fi/>

The Challenge of the Electronic Environment to the Organization of Knowledge –  
Second International Seminar on Subject Access to Information  
Helsinki, 30 November 2007



UNIVERSITY OF HELSINKI



SeCo  
semantic computing

# The Finnish General Upper Ontology YSO



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

- | For what purpose is the Finnish General Upper Ontology needed?
- | What is the Finnish General Upper Ontology like?
- | Work on the Finnish General Upper Ontology

# For what purpose is the Finnish General Upper Ontology needed?



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

- | problem: intelligent services of the semantic web need information in computer readable format
- | thesauri, which are currently used in describing resources, are meant for human users
  - ambiguity (polysemy, homonymy)
  - not enough information about concepts and their relations
- | solution: FinnONTO project decided to develop the widely used Finnish General Thesaurus into a general Finnish upper ontology
- | goal: to promote the public use of a free Finnish general upper ontology in order to save development costs
- | advantages:
  - more exact, computer readable description of resources
  - concept based search (interoperability)
  - formulation of search results



UNIVERSITY OF HELSINKI



# What is the Finnish General Upper Ontology like?



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

- | based on the Finnish General Thesaurus (from year 2005)
- | includes about 20 000 concepts in the ontology and concepts from the original thesaurus linked with each other
  - every concept has an URI (<http://www.yso.fi/onto/yso/p00000>)
- | languages: Finnish
  - Swedish and English equivalents are included, but they have not been checked to match the ontological structure
- | concepts relations in the ontology
  - subclass of, part of and associative relation
- | can be used as a structural model and link to special ontologies
  - different ontologies have common concepts, but also include conflicting information which has to be sorted out
  - has already been merged with the following ontologies or parts of them: Agriforest (agriculture, forestry), FinMeSH (medicine), HP Multi (health promotion), MAO (museums), Design Ontology and Ontology of Photography

# Work on the Finnish General Upper Ontology



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

- | structure: based on SKOS (Simple Knowledge Organisation System)
- | language: OWL (Web Ontology Language)
- | tool: Protégé ontology editor
- | work phases:
  - an upper structure has been created in order to integrate the concept groups of the thesaurus into one system which computers can use in information processing
  - concepts have been placed into the hierarchy based on this upper structure
    - » information about the thematic grouping of the thesaurus has not been removed
  - concepts related to ambiguous words have been specified
    - » fuzzy concepts of the thesaurus have not been removed

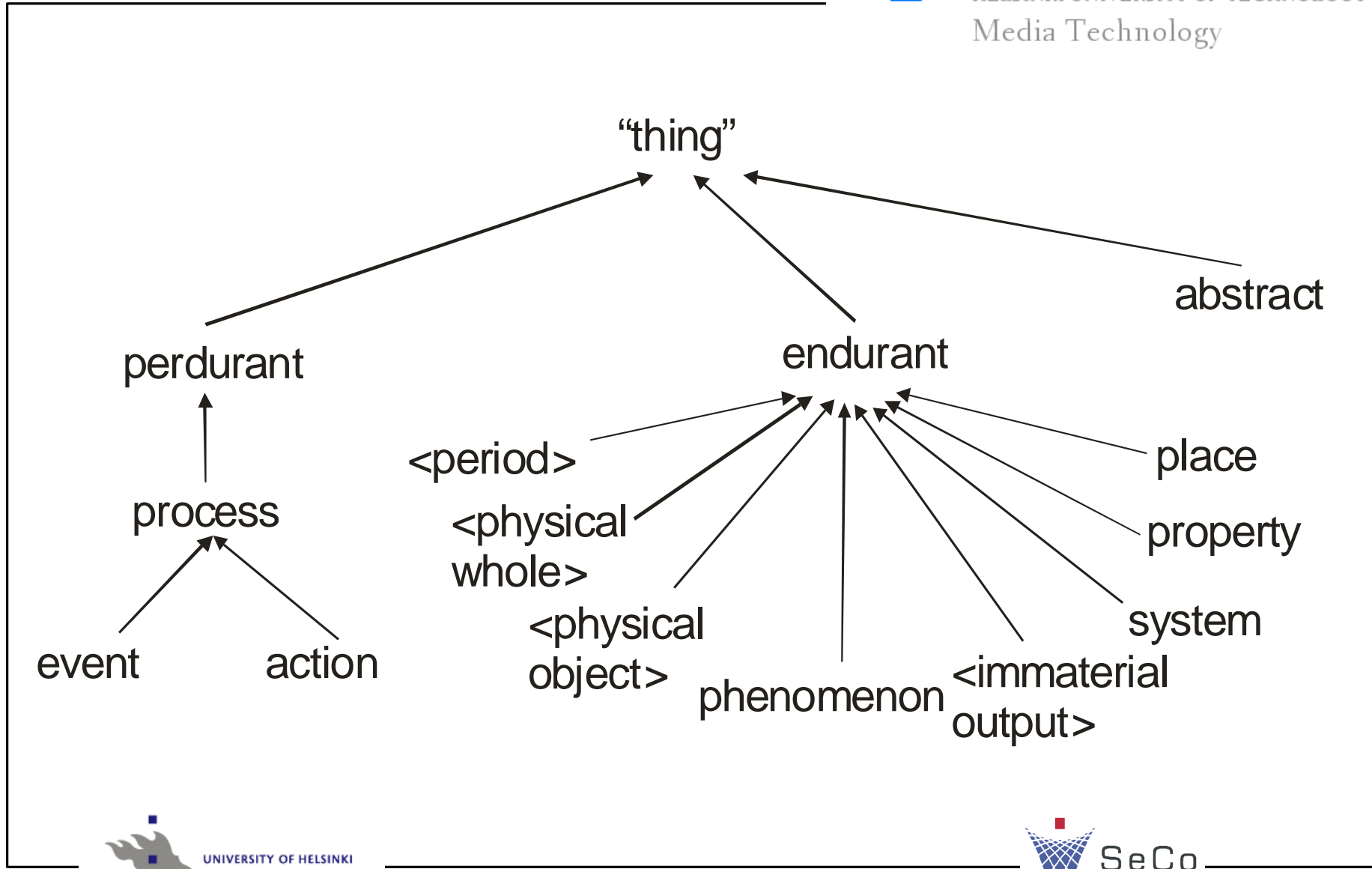
# Work on the Finnish General Upper Ontology



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

- new concepts have been added in order to build a solid hierarchy
- part of relations have been taken into use
- the hierarchy, partly inherited from the thesaurus and partly created for the ontology, has been roughly checked
- | the ontology has no room for interpretation, but several viewpoints to one concept can be shown with the help of:
  - several generic superordinate concepts
    - » exposure meter: photographic equipment and meter
  - roles
    - » human: occupation, family member
    - » material: source of energy, building material
  - different kind of associative relations
    - » instrument used in action, result of action

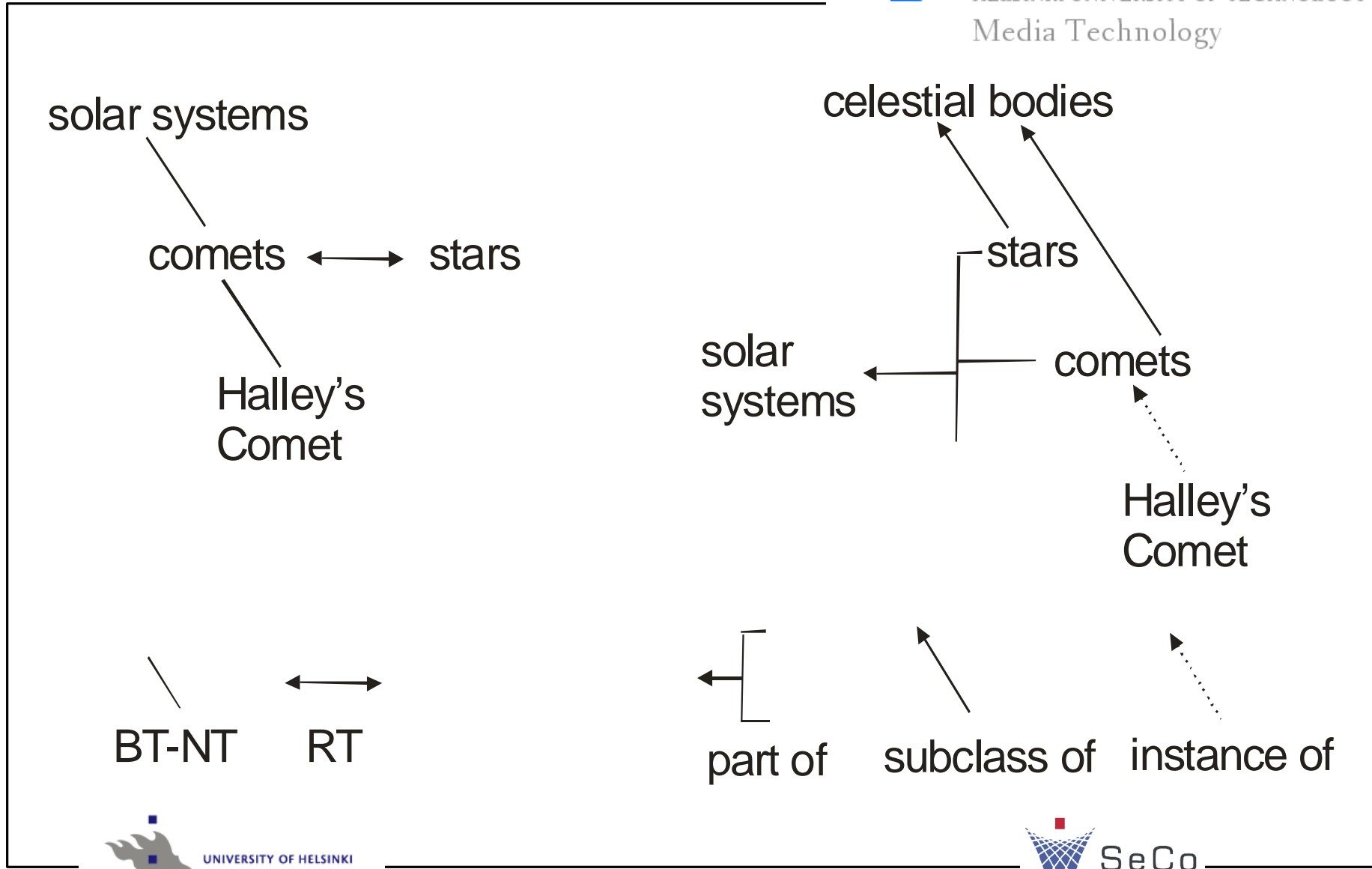
# Work on the Finnish General Upper Ontology – the upper structure



# Work on the Finnish General Upper Ontology – use of part of relations



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

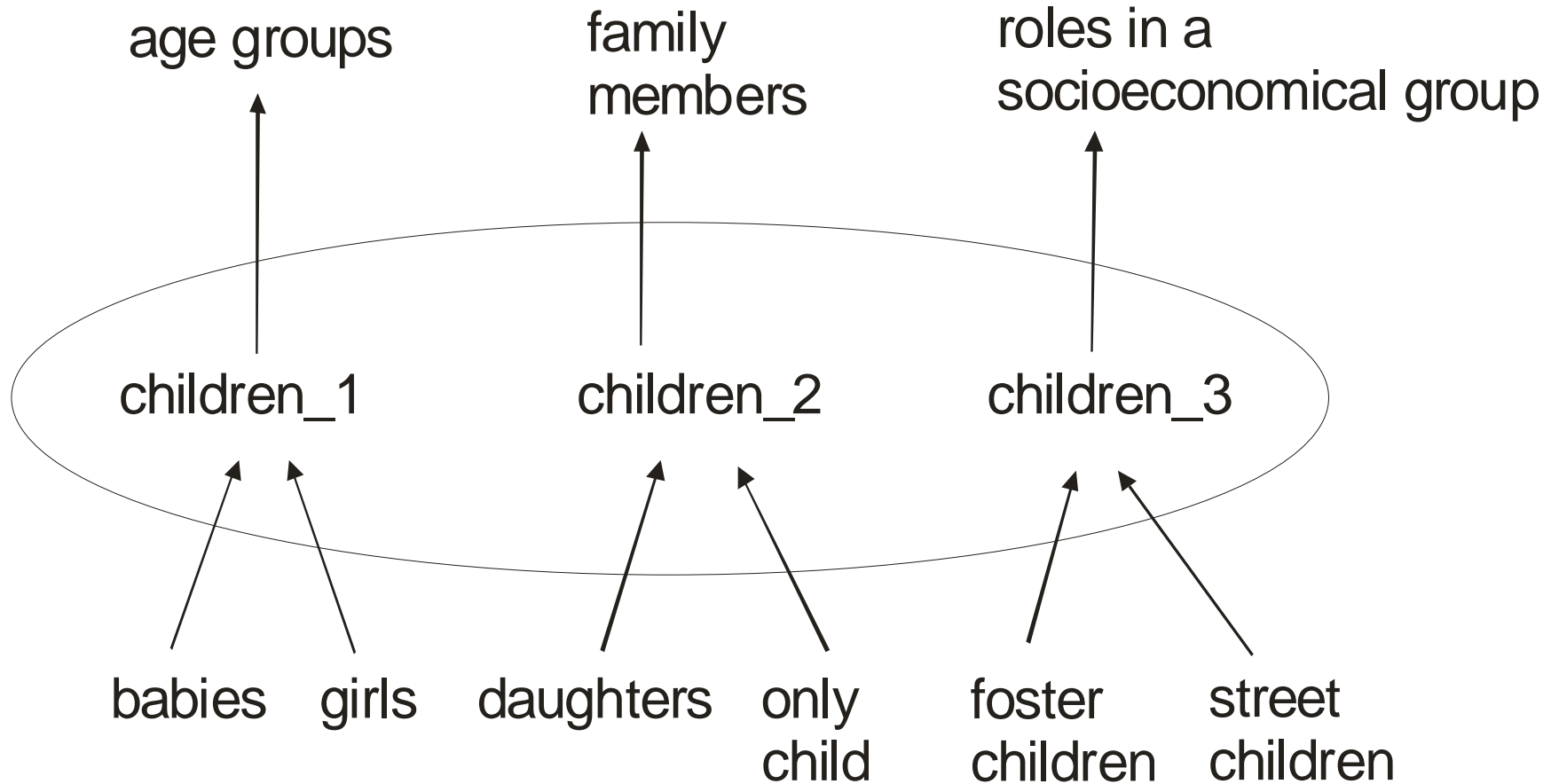




# Work on the Finnish General Upper Ontology – ambiguity



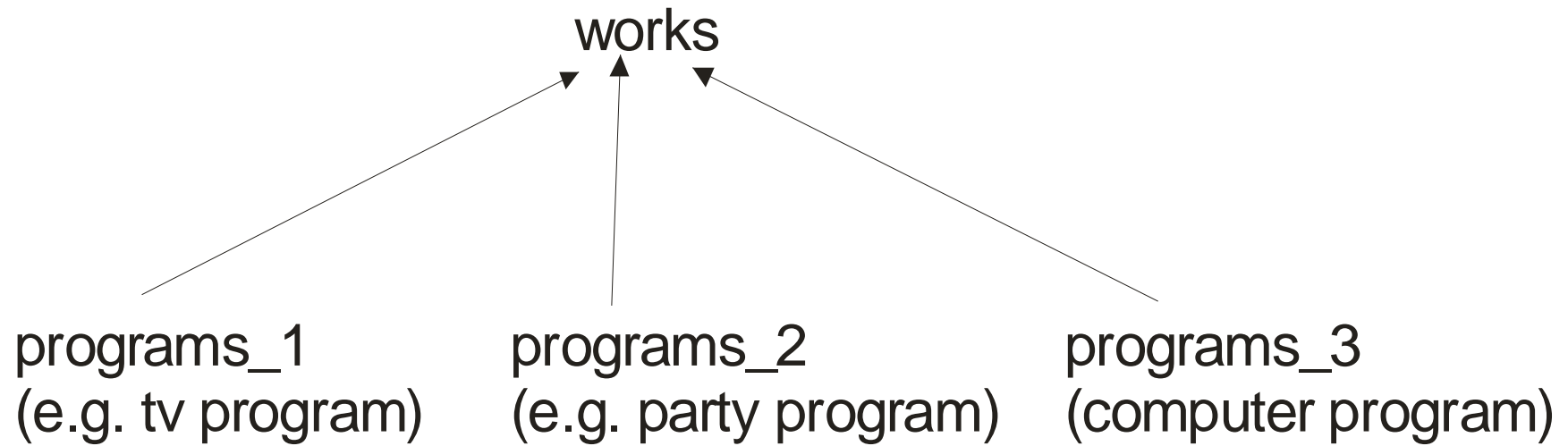
HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology



# Work on the Finnish General Upper Ontology – ambiguity



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology



# Work on the Finnish General Upper Ontology



# Work on the Finnish General Upper Ontology



HELSINKI UNIVERSITY OF TECHNOLOGY  
Media Technology

- | can be used through ONKI ontology server
  - easy to import URIs to other systems
  - ONKI can even be easily integrated into systems using the ontology
  
- | partners in developing the Finnish General Upper Ontology, e.g.
  - The National Library of Finland
  - Helsinki City Library (English translation)
  
- | more information: <http://www.seco.tkk.fi/>
  - **The Finnish General Upper Ontology:**  
**<http://www.yso.fi/onki/yso/>**