National Library as a Public Sector Metadata Curator - The Finto Ontology Infrastructure

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The Law on Interoperability between Information Systems in the Public Sector

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- Everyone should follow the definitions and descriptions of interoperability

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- Everyone should follow the definitions and descriptions of interoperability
  - What are these?
    - No one knows!
   - But they are trying to find out!

Semantic Interoperability

- Common concepts with explicit meanings and explicit relations
- Common identifiers for common concepts
  - Or mappings between them

Semantic Interoperability

- Common concepts with explicit meanings and explicit relations
- Common identifiers for common concepts
    - Or mappings between them

- But why a library is doing this?

A long, long time ago
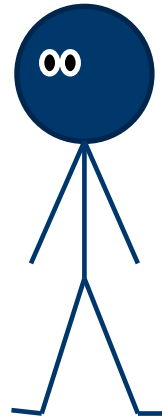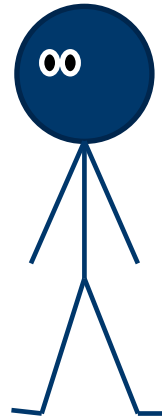
A book
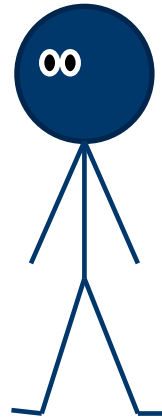
A long, long time ago
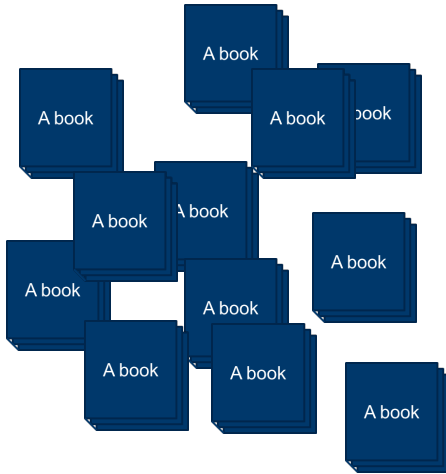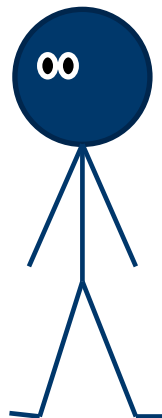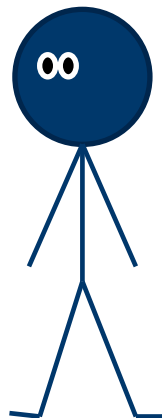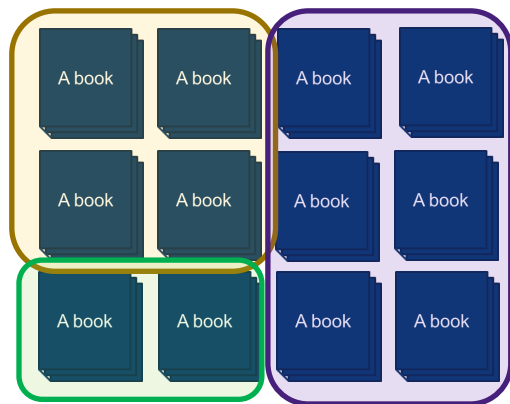

A book

A book storage guy

A long, long time ago

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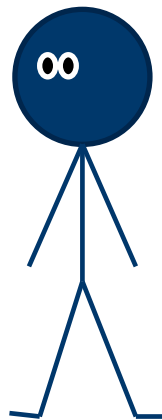A book storage guy

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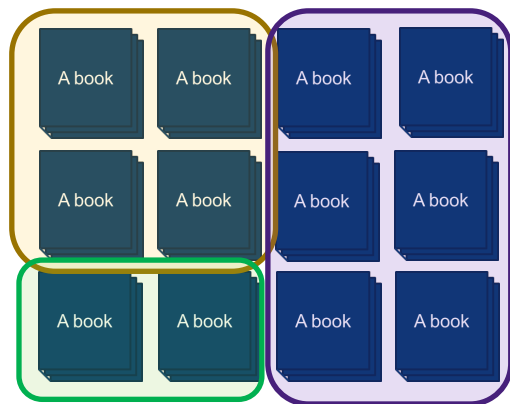
A librarian

The Definitions and Descriptions of Interoperability

- Libraries have a lot to offer to the public sector when it comes to descriptive metadata
    - Granting access to information can be seen as the main function of libraries
- Our project's particular focus has been on the development, publication, and use of controlled vocabularies
    - for the whole public sector

Semantic interoperability through linked ontologies
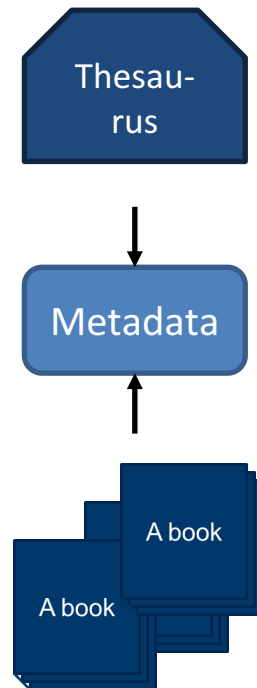
Semantic interoperability through linked ontologies
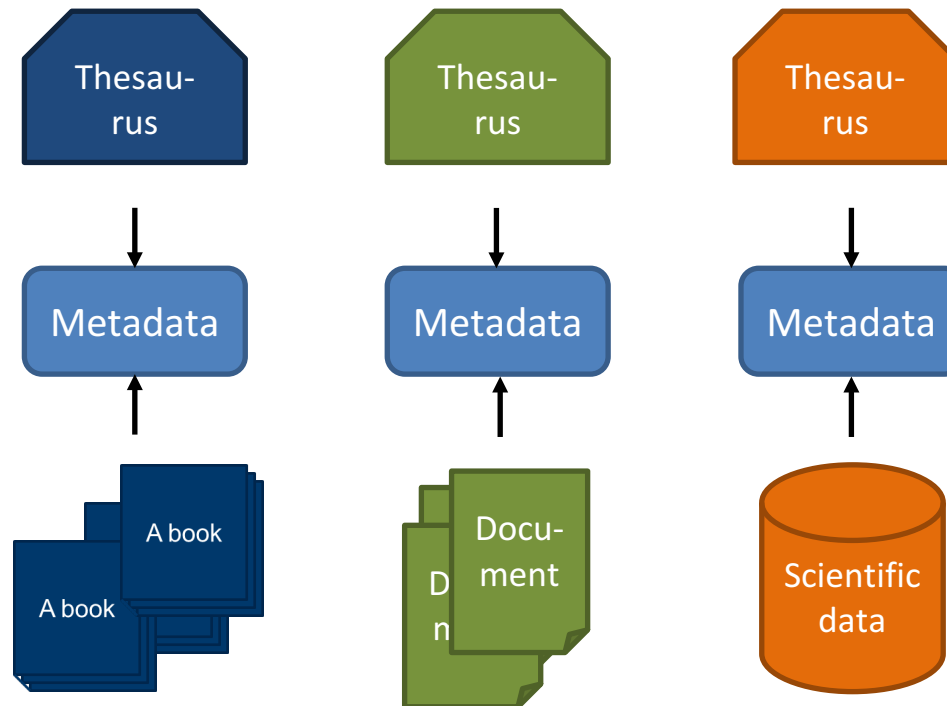
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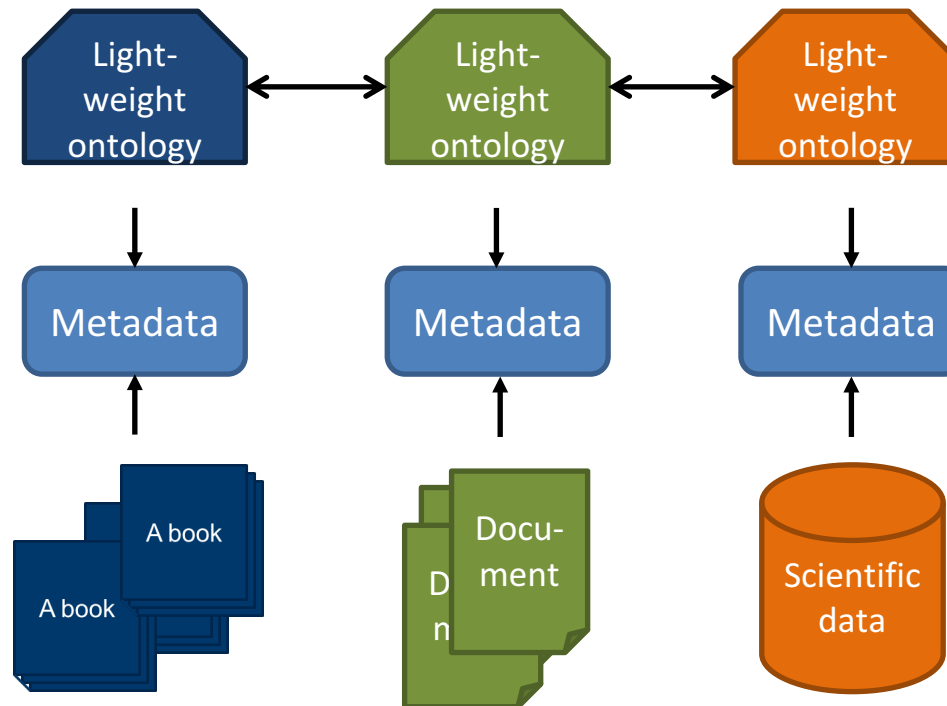
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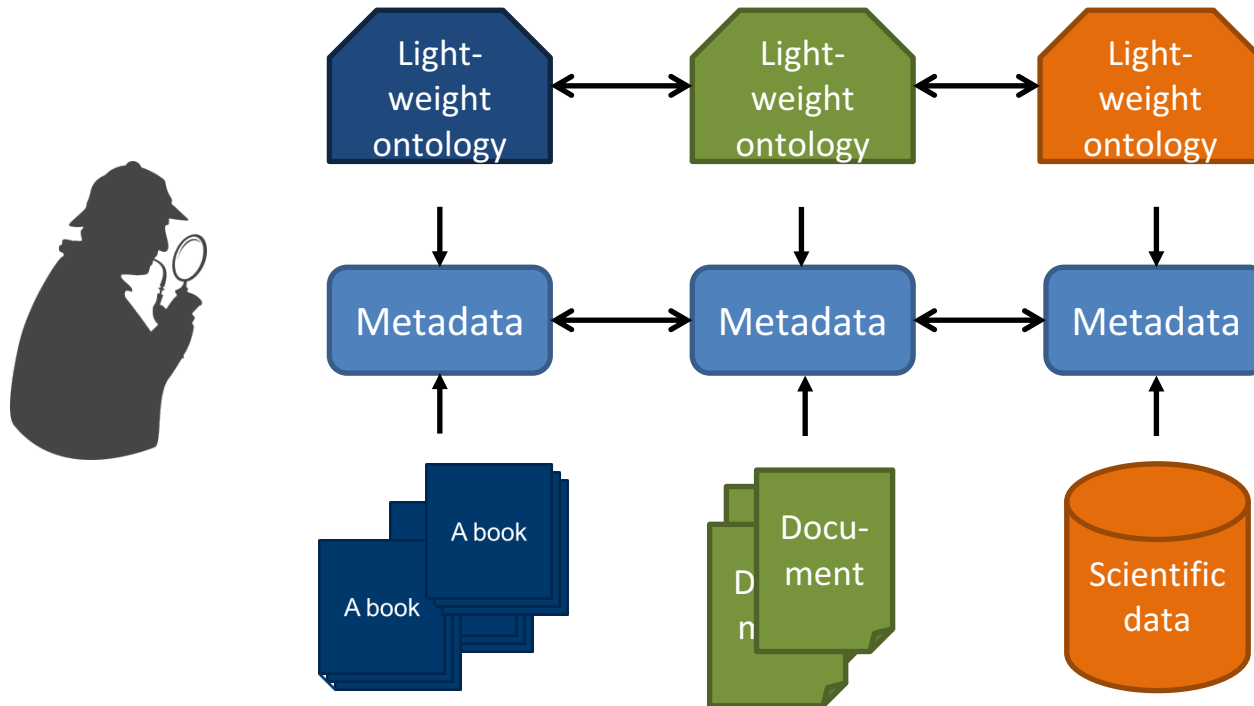
A short interlude on what we mean by "ontologies"

Ontology

- Gruber: " An ontology is a description (like a formal specification of a program) of the concepts and relationships that can formally exist for an agent or a community of agents. This definition is consistent with the usage of ontology as set of concept definitions, but more general."

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- Unfortunately has evolved into two different branches
    - Lots of classes with few relations between them
    - A few classes with a lot of possible relations between them

- Structured Vocabulary: SUMO, YAGO, etc.
    - This is our focus
    - Light-weight ontologies

- Data model: FOAF, CIDOC CRM, etc.

Other reasons for using the word ontology

- Highlight the difference from traditional thesauri
    - From terms to concepts
        - Multilinguality
        - Linkability
    - Use dereferenceable URIs
    - Machine-processable relations between concepts
        - Complete hierarchy
    - Depicted using RDF

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        - Complete hierarchy using "is-a" relations
    - Depicted using RDF

    - Thesauri can be all of this but it is not widely acknowledged

Other reasons for using the word ontology

- Highlight the difference from traditional thesauri
- Historical reasons
  - YSO (General Finnish ontology) began its life in OWL in 2003
    - No SKOS yet
  - Meaning of the ontology had not yet solidified even to the current extent

# Other reasons for using the word ontology

- Highlight the difference from traditional thesauri
- Historical reasons
- Sexyness
  - Easier to find funding for ontologies rather than for "advanced thesauri" or for KOS (sorry!)

After that lengthy defense: light-weight ontologies

YSO - General Finnish ontology

- National Library's General Finnish thesaurus YSA was/is the most used thesaurus in Finland
  - Developed originally in the 1980's mainly for book indexing
  - Monolingual, has a swedish equivalent Allärs
  - Structure tied to MARC21-format, for example use of MARC-subdivisions
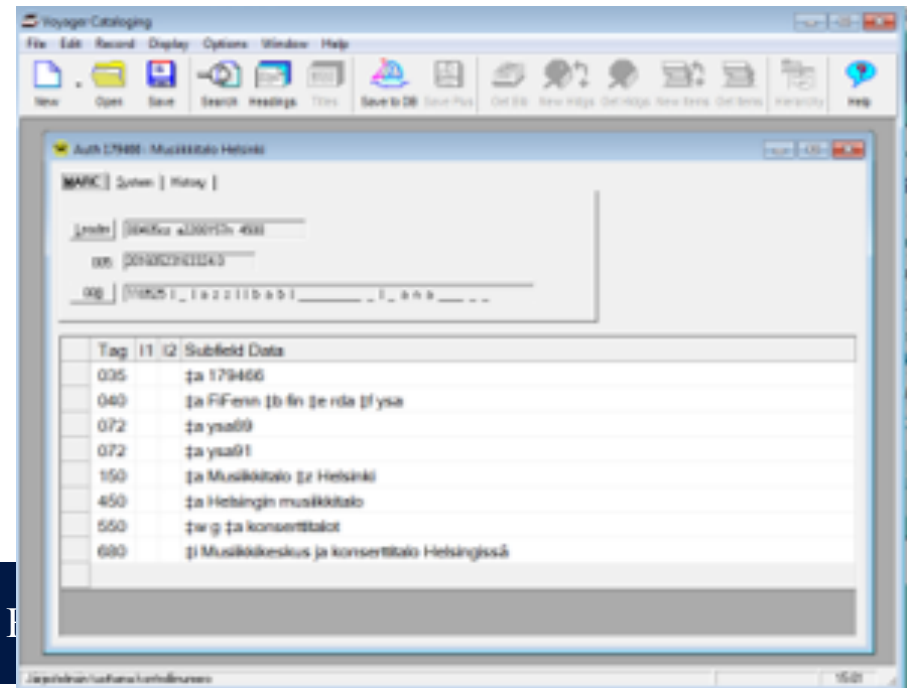
YSO - General Finnish ontology

- The work started in 2003 to transform YSA to machine readable and multilingual YSO

- Themes

  - From terms to concepts

  - From libraries to wider field

  - From library standards to open linked data standards

YSO - General Finnish ontology

- Approximately 30 000 concepts
- Trilingual terms for concepts (fi, sv, eng)
- URIs for concept identification (not terms)
- SKOS-format for easy open linked data use
- Complete hierarchical structure from top down
  - Top hierarchy based on a modified version of DOLCE

YSO as the basis for the Finnish ontology infrastructure

- 14 domain ontologies
  - Ranging from seafaring to museums to military to agriculture to public services
- All built by domain experts and extending YSO
  - The same hierarchy and the same principles
  - Readily linkable, readily interoperable
- A national-level infrastructure
  - Coordinated by the National Library of Finland
  - Funded by the Ministry of Finance and the Ministry of Culture and Education
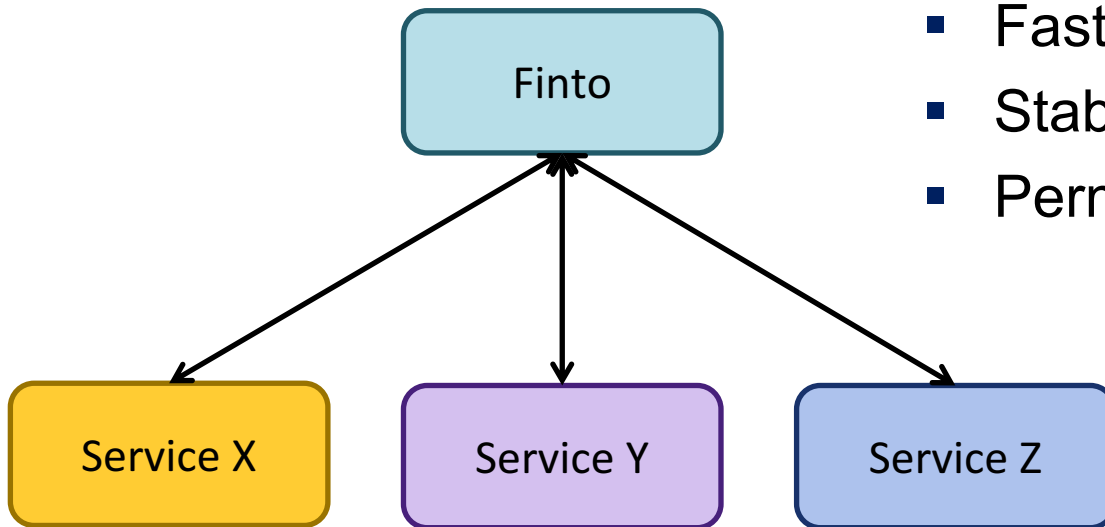
Finto service

Finto

- The aim of Finto is to provide a dependable, centralized, national thesaurus and ontology service

- http://finto.fi

- Developed in the National Library of Finland for use in the whole public sector

Finto

- The aim of Finto is to provide a dependable, centralized, national thesaurus and ontology service.

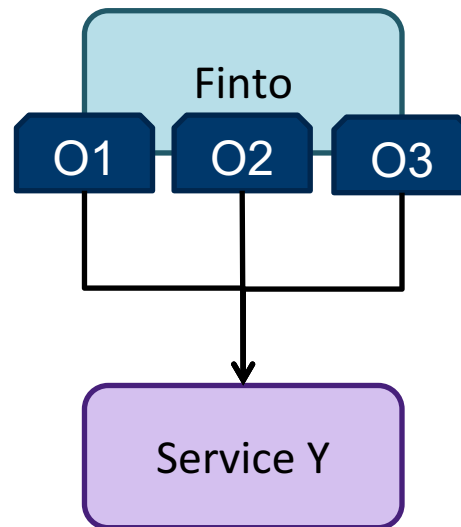

- Fast
- Stable and reliable
- Permanent

Finto

- The aim of Finto is to provide a dependable, centralized, national thesaurus and ontology service.

Finto

O1 O2 O3

Service Y

- One place to publish
- One place to find
- Common APIs
- Easy to switch between resources

Finto

- The aim of Finto is to provide a dependable, centralized, national thesaurus and ontology service.

Finto

- Working with all sorts of organizations with differing needs and capabilities
- Standards not shackled to the library world
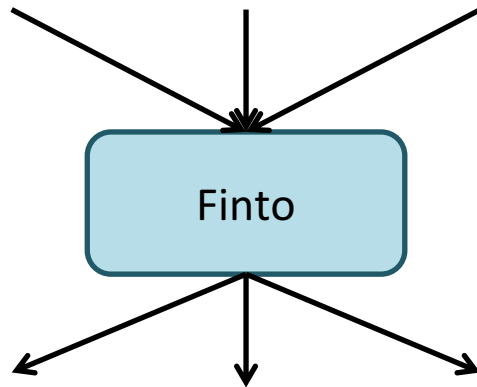
from all ▾ English ▾ | ✕ **Search**

Welcome to the Finto service!

Finto is a Finnish thesaurus and ontology service, which enables both the publication and browsing of vocabularies. The service also offers interfaces for integrating the thesauri and ontologies into other applications and systems.

Available vocabularies and ontologies

GENERAL

Allärs - Allmän tesaurus på svenska
Finnish Corporate Names
KOKO Ontology
Metatietosanasto
Pondus categories
YSA - General Finnish thesaurus
YSAn ja YSOn käsite-ehdotukset
YSO - General Finnish ontology

SOCIETY

JUHO - Julkishallinnon ontologia
Julkisten palvelujen luokitus
JUPO - Finnish Ontology for Public Administration Services
KEKO - Ontology for Education for Sustainable Development
Korkeakoulujen tutkimustiedonkeruussa käytettävä tieteenalaluokitus
LIITO - Liiketoimintaontologia
MERO - Merenkulkualan ontologia
PUHO - Puolustushallinnon ontologia
TSR ontology

GEOGRAPHY AND GEOINFORMATION

YSO - General Finnish ontology

Content language **English ▾**   [×] **Search**

| A-Z | Hierarchy | Groups | New |

- events and action
- objects
  - abstract objects
  - physical objects
  - physical whole
  - place
    - areas and regions
    - other places
    - places created by nature
      - **coral reefs**
      - craters
      - natural sites
      - potholes
    - places defined by humans
- systems
- properties

objects > place > places created by nature > coral reefs

PREFERRED TERM

coral reefs

TYPE	General concept
BROADER CONCEPT	places created by nature
RELATED CONCEPTS	lagoons
BELONGS TO GROUP	11 Geography. Cartography. Geodesy. Geology. Palaeontology
	13 Hydrology
IN OTHER LANGUAGES	koralliriutat Finnish
	atollit
	korallrev Swedish
	atoller
URI	http://www.yso.fi/onto/yso/p14886

Download this concept: RDF/XML TURTLE JSON-LD   Last modified 10/7/16

CLOSELY MATCHING CONCEPT	Coral reefs and islands	Library of Congress Subject Headings
	koralliriutat (fi)	YSA - General Finnish thesaurus
	korallrev (sv)	Allärs - Allmän tesaurus på svenska

Images indexed with the term in Finna 6   ▲ Image   ▲

«

Postikorttipainanteinen lähivalokuva värikkään keltasinisest ...

Postikorttipainanteinen ilmakuva Cairnsin kaupungista Austra ...

Postikorttipainanteinen valokuva Australian suuren koralliri ...

Postikorttipainanteinen valokuva Australian Green Islandista ...

Postikorttipainanteinen valokuva Australian Green Islandin r ...

»

Skosmos

Skosmos

- The heart beating inside Finto
- Open source SKOS vocabulary browser
  - http://skosmos.org
- Publication and use of light-weight ontologies, thesauri and classifications
  - Web interface
  - REST API
  - SPARQL endpoint
- Community
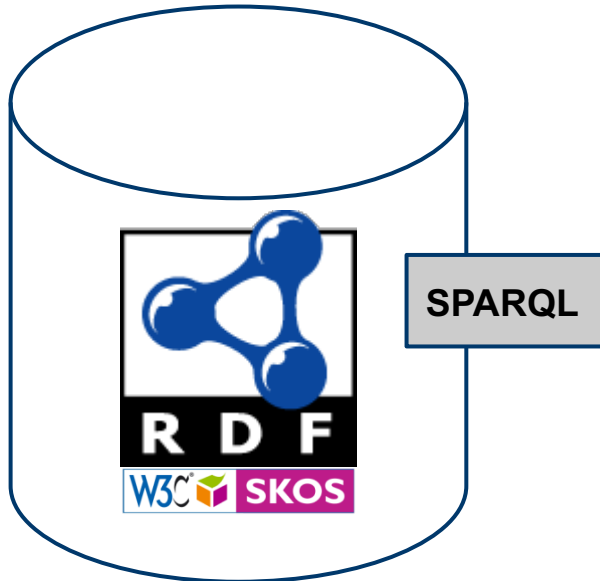 - https://groups.google.com/forum/#!forum/skosmos-users

How does it work?

- Make your thesaurus into SKOS

How does it work?

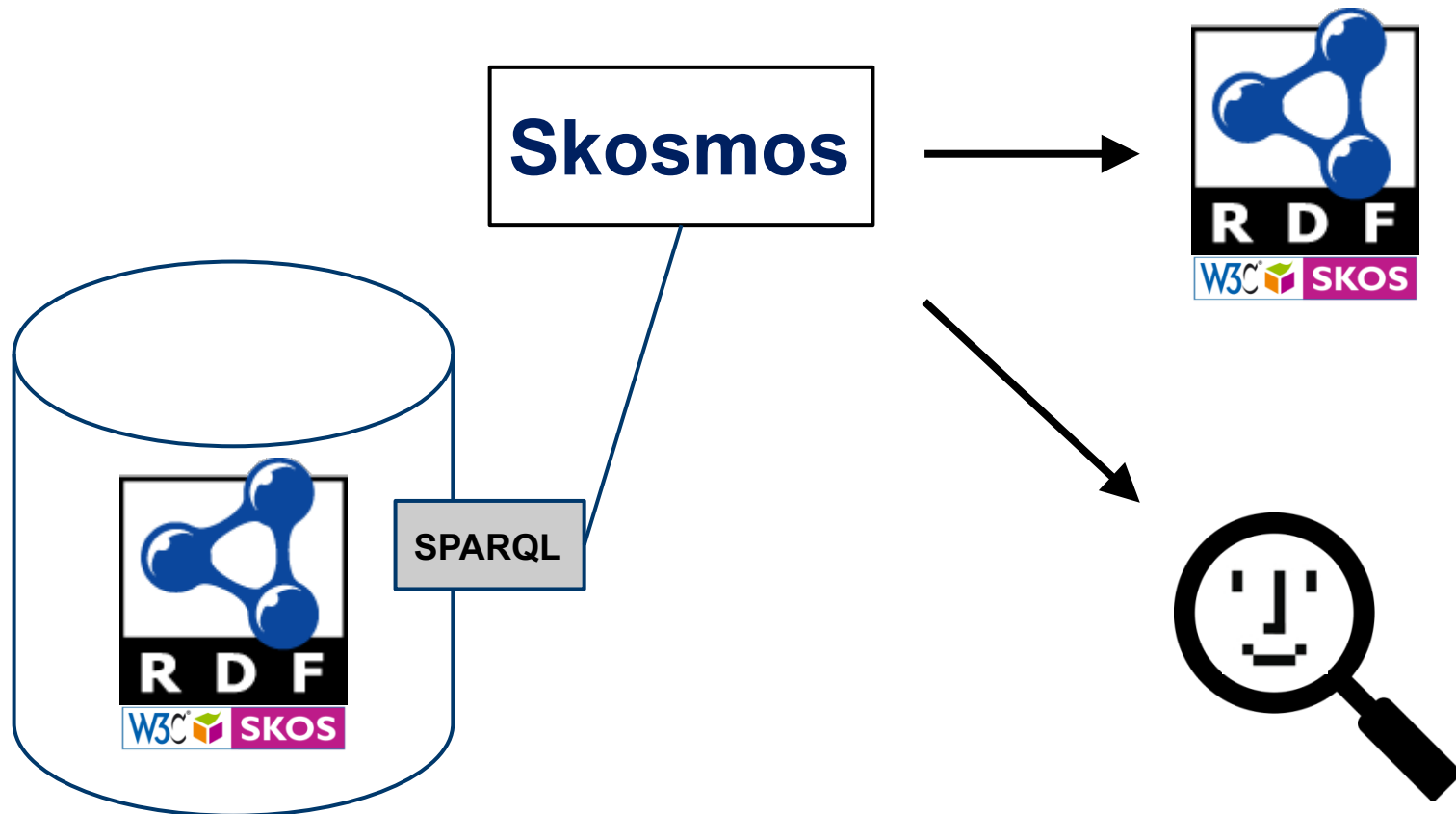- Put in in a SPARQL triple store

How does it work?

- Point Skosmos at your SPARQL endpoint
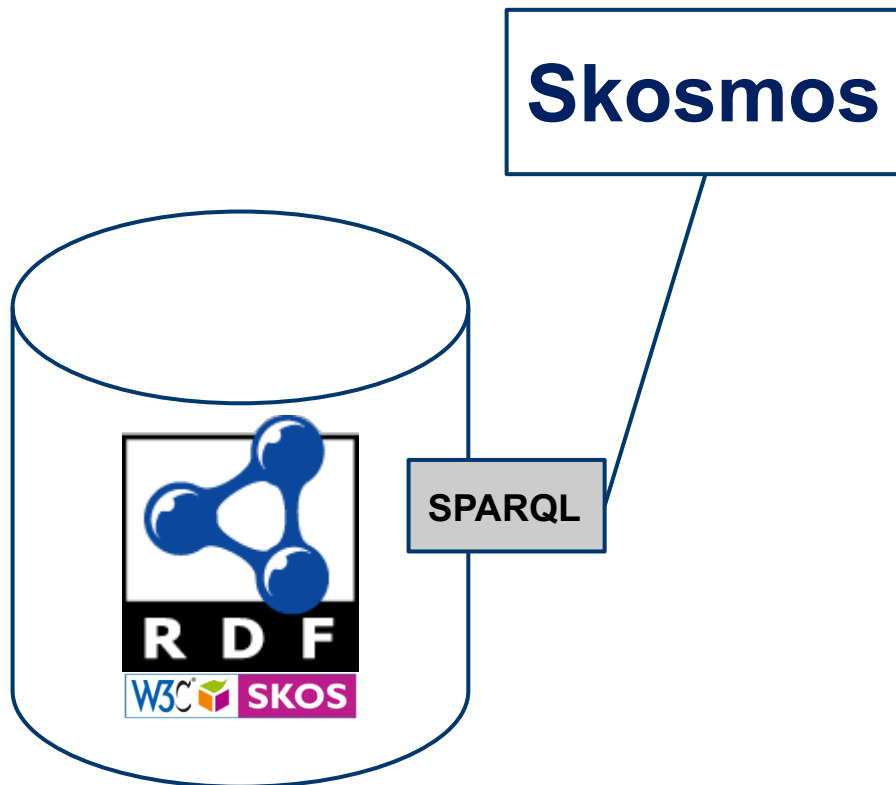
How does it work?

- And serve your thesaurus for humans, Linked Data agents, and REST API access

Skosmos

SPARQL

Key features

- Multilingual browser interface (10 languages)
  - Autocomplete search
  - Alphabetical index
  - Concept hierarchy display
  - Concept groups (thematic index)
  - New concepts
- REST API for enabling use of vocabularies in other applications
  - responses usually JSON-LD

Skosmos around the world

UN	FAO: Skosmos used for publishing [AGROVOC](#)
	[GACS project](#) (FAO, CABI (UK), NAL (USA)) is using Skosmos
	UNESCO is using Skosmos for publishing its thesaurus
Germany	Rheinland-Pfalz spatial data infrastructure: [publishing classifications](#)
	German National Library of Economics (ZBW)
	North Rhine-Westphalia university library centre (HBZ-NRW): [publishing classifications](#)
France	Institute for Demographic Studies INED: publishing Demovoc thesaurus
	Sparna (helping UNESCO and INED in deploying Skosmos)
Italy	University of Tor Vergata (developers of VocBench thesaurus editor)
Austria	University of Vienna, [Phaidra](#) project
Norway	Oslo University Library [Norwegian General Thesaurus](#) project
Finland	Terminology Centre TSK
	Lingsoft Oy
	SeCo research group [light.onki.fi](#)
	Mikkeli University of Applied Sciences

AGROVOC browser

http://aims.fao.org/standards/agrovoc/functionalities/search

Summary

- Promoting the importance of descriptive metadata done using controlled, linked vocabularies
  - Interoperability is key
- Providing tools and processes for developing, publishing and using vocabularies in the production of descriptive metadata
- Building solutions on a national scale for the whole public sector
  - Utilizing library know-how

Thank you! Questions?

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http://finto.fi

http://skosmos.org