



Workshop Designing your Linked Data October 16, 2016

Ana Alice Baptista Eva Méndez Mariana Curado Malta Tom Baker



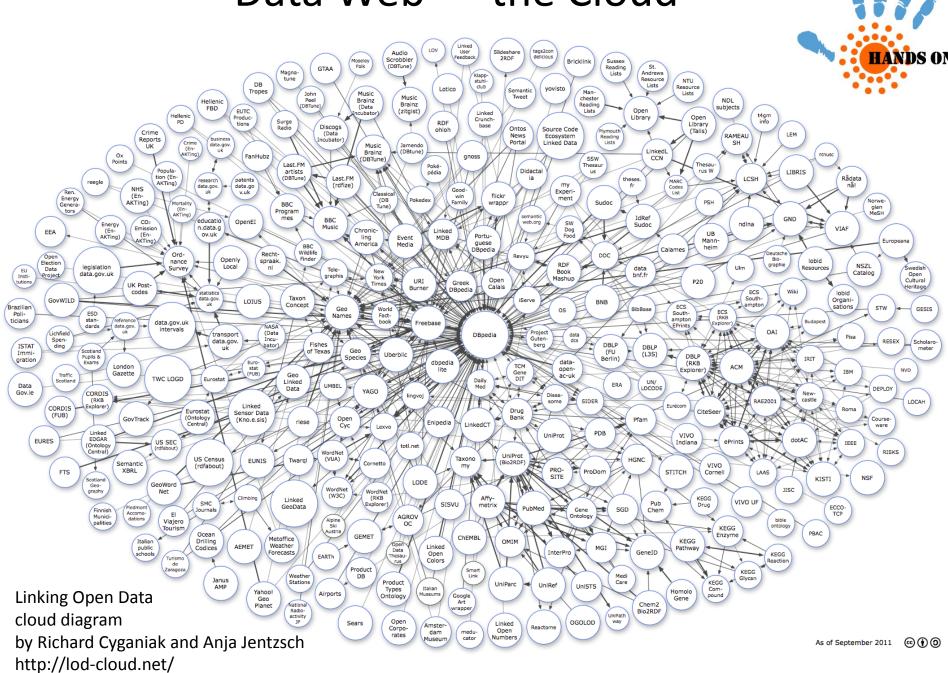
Application Profiles for Linked Data

Thomas Baker

Dublin Core Metadata Initiative

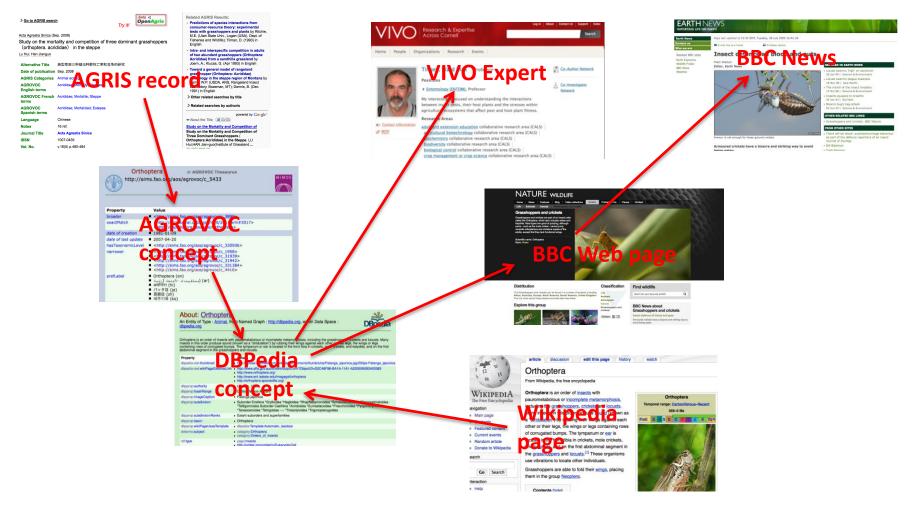
Workshop on Development of Application Profiles
DC-2016, Copenhagen, Denmark
16 October 2016

Data Web = "the Cloud"

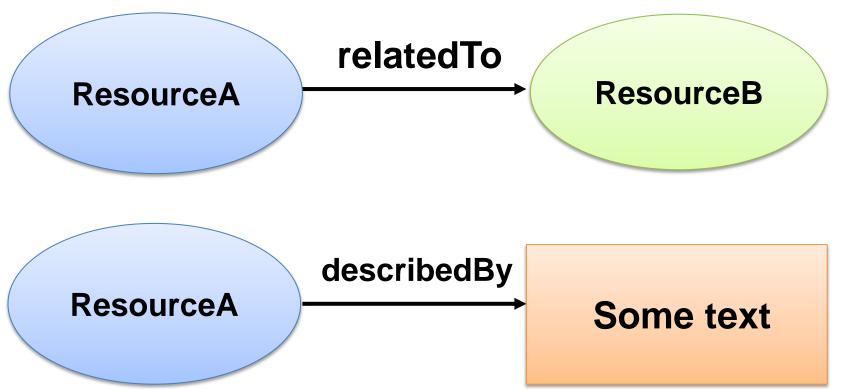


Data Linked to Data

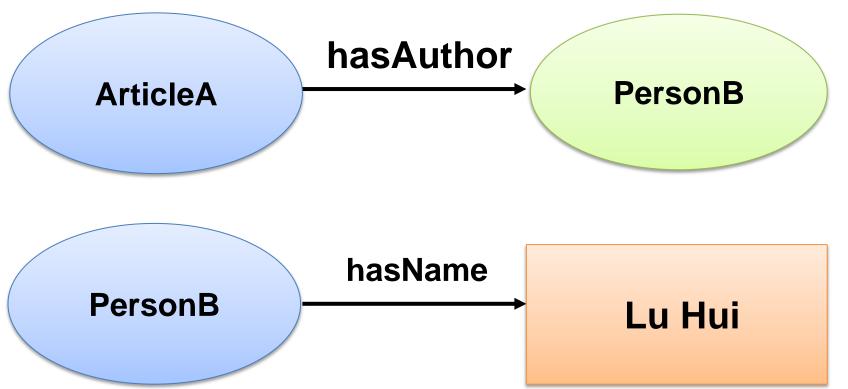




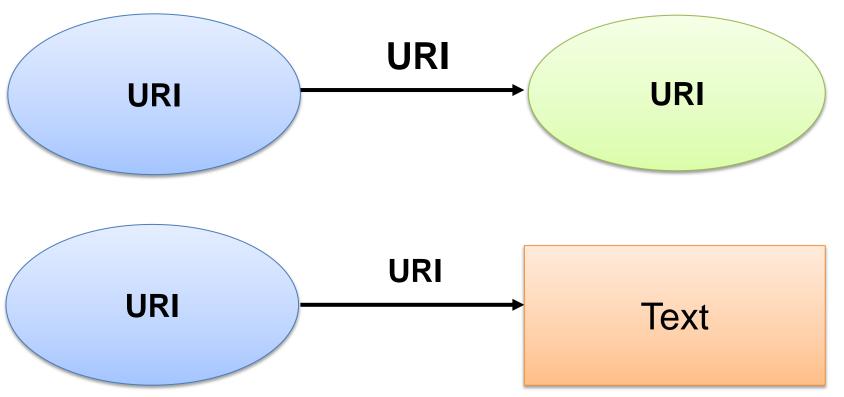
















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<http://www.w3.org/2000/01/rdf-schema#isDefinedBy>
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<http://www.w3.org/2000/01/rdf-schema#range>
<http://www.w3.org/2000/01/rdf-schema#seeAlso>

2010-10-11

Linked Data



- 1. Publish data on the Web.
- 2. Name things with URIs.
- **3.** Tag things with URIs.
- **4. Point to** other data with URIs.



EXAMPLE: "LINKING" TWO RESOURCES

Resource A: Article in AGRIS database



Go to AGRIS search

Try it!



Acta Agrestia Sinica (Sep. 2008)

Study on the mortality and competition of three dominant grasshoppers (orthoptera, acrididae) in the steppe

Lu Hui; Han Jianguo

Alternative Title 典型草原三种蝗虫种群死亡率和竞争的研究

Date of publication Sep. 2008

AGRIS Categories Animal ecology

Acrididae; Mortality; Steppes **AGROVOC English terms**

AGROVOC French Acrididae; Mortalite; Steppe

terms

AGROVOC Acrididae: Mortalidad: Estepas

Spanish terms

Language Chinese Notes 16 ref.

Journal Title Acta Agrestia Sinica

ISSN 1007-0435

Vol. No. v.16(5) p.480-484 Topic of the article Is "acrididae", i.e. "grasshoppers".

One author is named "Lu Hui".

Related AGRIS Results:

- Predictions of species interactions from consumer-resource theory: experimental tests with grasshoppers and plants by Ritchie, M.E. (Utah State Univ., Logan (USA). Dept. of Fisheries and Wildlife); Tilman, D. (1993) in English
- Intra- and interspecific competition in adults of two abundant grasshoppers (Orthoptera: Acrididae) from a sandhills grassland by Joern, A.; Klucas, G. (Apr 1993) in English
- Toward a general model of rangeland grasshopper (Orthoptera: Acrididae) phenology in the steppe region of Montana by Kemp, W.P. (USDA, ARS, Rangeland Insect Laboratory, Bozeman, MT); Dennis, B. (Dec 1991) in English
- Other related searches by title
- > Related searches by author/s

powered by Google™

▼ About the Title ■ □ □ □



Study on the Mortality and Competition of

Study on the Mortality and Competition of Three Dominant Grasshoppers (Orthoptera: Acrididae) in the Steppe. LU Hui.HAN Jian-quo(Institute of Grassland ...



Statements using "pseudo-triples"

Subject	Predicate	Object
Resource A	has the Title	典型草原三种蝗虫种群死 亡率的研究
Resource A	has an Author	Lu Hui
Resource A	has a Topic	Acrididae (grasshoppers)



Subject	Predicate	Object
agris:CN2009002389	has the Title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	has an Author	Lu Hui
agris:CN2009002389	has a Topic	Acrididae (grasshoppers)

Resource A is identified by the URI http://agris.fao.org/resource/CN2009002389. Let's abbreviate this as agris:CN2009002389.

AGRIS articles (identified in a "scheme")



Subject	Predicate	Object
agris:CN2009002389	has the Title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	has an Author	agris-author:luhui
agris:CN2009002389	has a Topic	Acrididae (grasshoppers)

The author is identified by the URI http://agris.fao.org/author/luhui. Let's abbreviate this as agris-author:luhui.

AGRIS authors ("scheme")



Subject	Predicate	Object
agris:CN2009002389	has the Title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	has an Author	agris-author:luhui
agris-author:luhui	has the Name	Lu Hui
agris:CN2009002389	has a Topic	Acrididae (grasshoppers)

The author agris-author:luhui has the name Lu Hui.



Subject	Predicate	Object
agris:CN2009002389	has the Title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	has an Author	agris-author:luhui
agris-author:luhui	has the Name	Lu Hui
agris:CN2009002389	has a Topic	agrovoc:c_4416

The topic is identified by the URI http://aims.fao.org/aos/agrovoc/c_4416. Let's abbreviate this as agrovoc:c_4416.



Subject	Predicate	Object
agris:CN2009002389	has the Title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	has an Author	agris-author:luhui
agris-author:luhui	has the Name	Lu Hui
agris:CN2009002389	has a Topic	agrovoc:c_4416
agrovoc:c_4416	has preferred label	Acrididae (en)
agrovoc:c_4416	has preferred label	蝗科 (zh)

The description of http://aims.fao.org/aos/agrovoc/c_4416 in the AGROVOC Concept Scheme tells us how this concept is labeled in English and in Chinese.



Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	has an Author	agris-author:luhui
agris-author:luhui	has the Name	Lu Hui
agris:CN2009002389	has a Topic	agrovoc:c_4416
agrovoc:c_4416	has preferred label	Acrididae (en)
agrovoc:c_4416	has preferred label	蝗科 (zh)

The Dublin Core element "Title" is identified by the URI http://purl.org/dc/terms/title. Let's abbreviate this as dct:title.

Dublin Core "schema"



Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	dct:creator	agris-author:luhui
agris-author:luhui	foaf:name	Lu Hui
agris:CN2009002389	dct:subject	agrovoc:c_4416
agrovoc:c_4416	has preferred label	Acrididae (en)
agrovoc:c_4416	has preferred label	蝗科 (zh)

Ditto for author (i.e., creator) and topic (i.e. subject). Name is defined in the FOAF vocabulary.



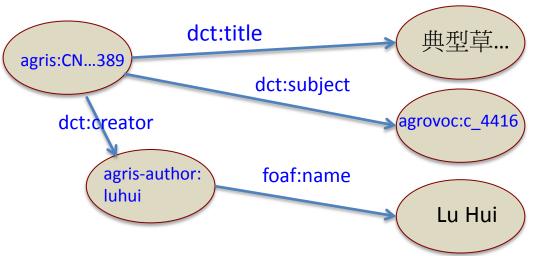


Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	dct:creator	agris-author:luhui
agris-author:luhui	foaf:name	Lu Hui
agris:CN2009002389	dct:subject	agrovoc:c_4416
agrovoc:c_4416	skos:prefLabel	Acrididae (en)
agrovoc:c_4416	skos:prefLabel	蝗科 (zh)

A property for the preferred label of a concept has been defined In the Simple Knowledge Organization System (SKOS) vocabulary.



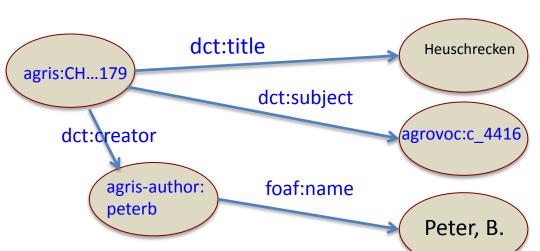
Article A (in Chinese)





Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	dct:creator	agris-author:luhui
agris-author:luhui	foaf:name	Lu Hui
agris:CN2009002389	dct:subject	agrovoc:c_4416

Article B (in German)





Subject	Predicate	Object
agris:CH2001000179	dct:title	Heuschrecken brauchen ökologische Ausgleichsflächen
agris:CH2001000179	dct:creator	agris-author:peterb
agris-author:luhui	foaf:name	Peter, B.
agris:CH2001000179	dct:subject	agrovoc:c_4416



Mash up triples for Resource A...

Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	dct:creator	agris-author:luhui
agris-author:luhui	foaf:name	Lu Hui
agris:CN2009002389	dct:subject	agrovoc:c_4416



...with triples for Resource B...

Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	dct:creator	agris-author:luhui
agris-author:luhui	foaf:name	Lu Hui
agris:CN2009002389	dct:subject	agrovoc:c_4416
agris:CH2001000179	dct:title	Heuschrecken brauchen ökologische Ausgleichsflächen
agris:CH2001000179	dct:creator	agris-author:peterb
agris-author:luhui	foaf:name	Peter, B.
agris:CH2001000179	dct:subject	agrovoc:c_4416

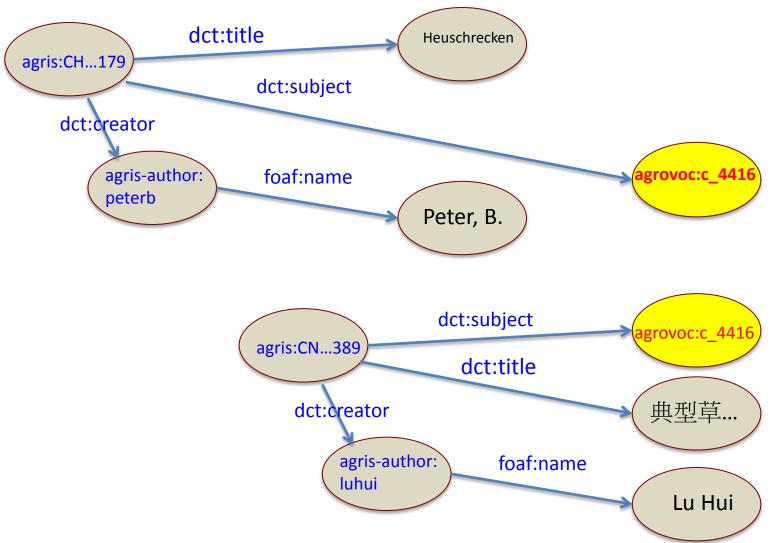
HANDS ON

The computer detects matching URIs... \

Subject	Predicate	Object
agris:CN2009002389	dct:title	典型草原三种蝗虫种群死 亡率的研究
agris:CN2009002389	dct:creator	agris-author:luhui
agris-author:luhui	foaf:name	Lu Hui
agris:CN2009002389	dct:subject	agrovoc:c_4416
agris:CH2001000179	dct:title	Heuschrecken brauchen ökologische Ausgleichsflächen
agris:CH2001000179	dct:creator	agris-author:peterb
agris-author:peterb	foaf:name	Peter, B.
agris:CH2001000179	dct:subject	agrovoc:c_4416

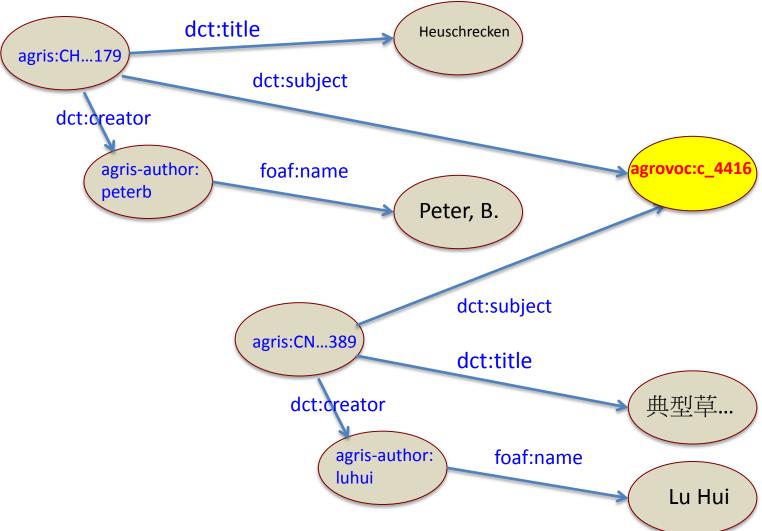
The computer detects matching URIs...







...and links the data



Description Set Profiles



- Constraints that can be validated
 - "Only one title"
 - "Uses Library of Congress Subject Headings"
 - "Describes things of the class Book"

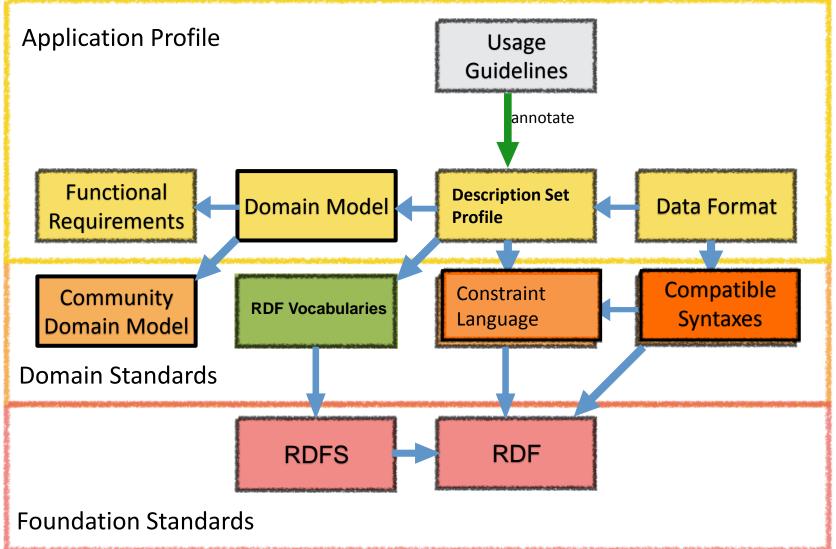
Record

```
"items" : [
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          "id": "http://bibfra.me/work/u2",
          "title" : "Bluebeard",
          "titleRemainder" : "a novel",
          "type" : "Book"
          "classification" : "025.3 M465f 2008",
          "author" : "http://bibfra.me/auth/person/kurt vonnegut",
          "subject": [ "http://bibfra.me/auth/subject/foo",
                                       "http://bibfra.me/auth/subject/bar" ],
          "language": "english",
          "summary": "Broad humor and bitter irony collide in this fictional
autobiography of Rabo Karabekian, who, at age seventy-one, wants to be left alone on his
Long Island estate with the secret he has locked inside his potato barn. But then a
voluptuous young widow badgers Rabo into telling his life story—and Vonnegut in turn
tells us the plain, heart-hammering truth about man's careless fancy to create or
destroy what he loves.",
        },
                                                                     Resource B
          "id": "http://bibfra.me/instance/u2-1",
          "type": "HardcoverBook",
          "edition": "1st",
          "volumes": "1",
          "pages": "300",
          "date": "1987-09-02",
          "publisher": "http://bibfra.me/auth/org/delacorte press",
          "ISBN": "9780385295901",
          "image": "http://ecx.images-amazon.com/images/I/51vbo8zwJlL. SL160 .jpg"
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Description Set	Templa	at	ing Des	scriptions			
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"author": "http://bibfra "subject": ["http://bibf "language": "english", "summary": "Broad humor a autobiography of Rabo Karabekian, wh Long Island estate with the secret h voluptuous young widow badgers Rabo tells us the plain, heart-hammering destroy what he loves.",		type		String	from controlled vocabulary		1
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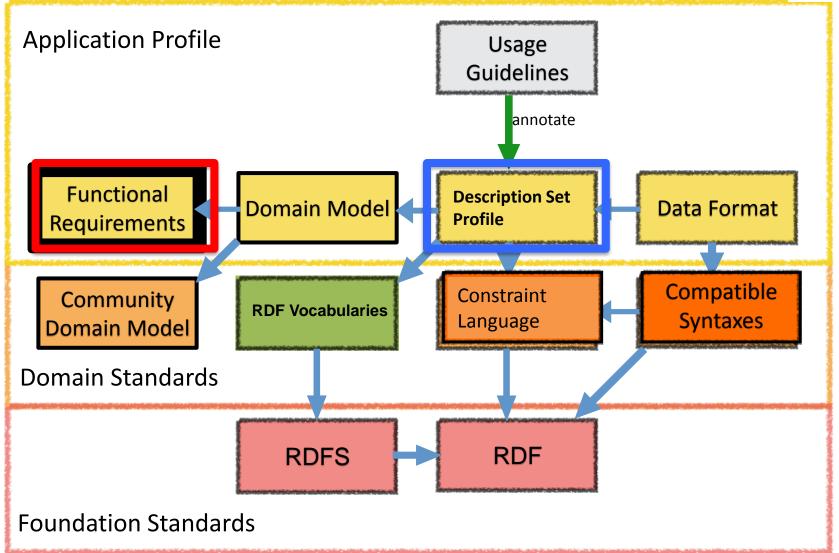
Singapore Framework (revised)





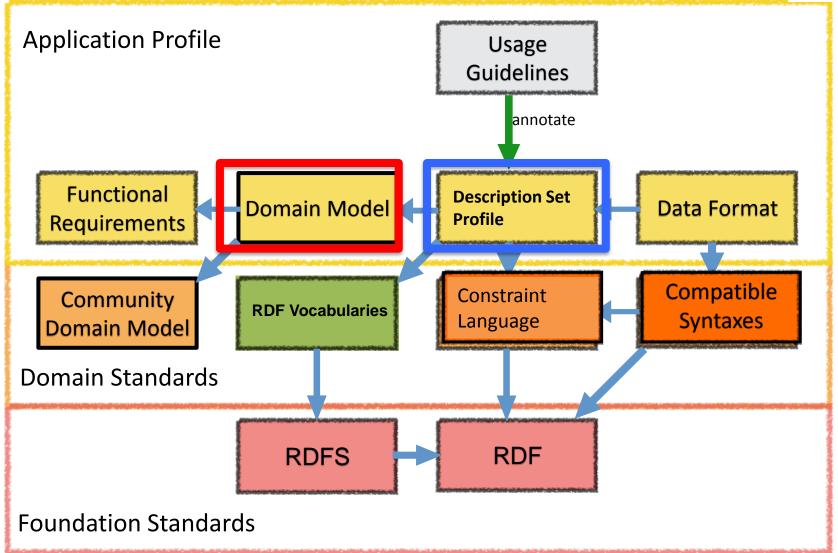
Design a profile on specific requirements





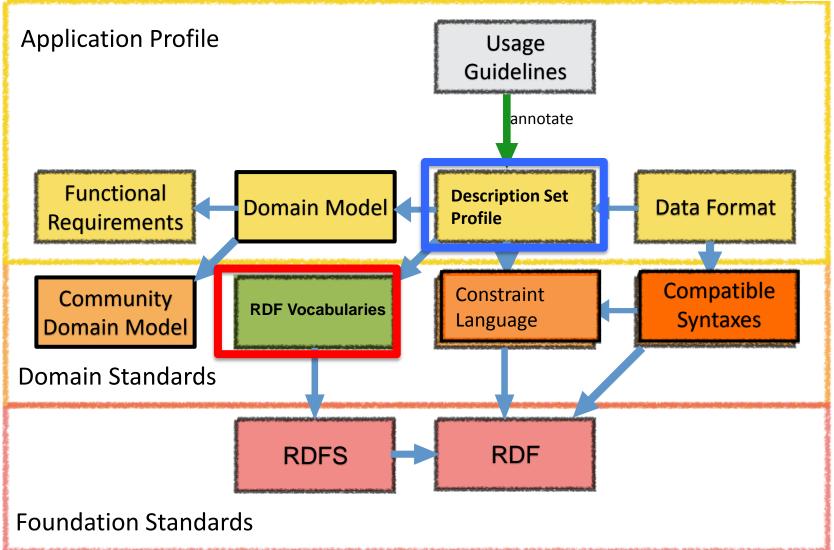
"Cartoon" model of what to describe





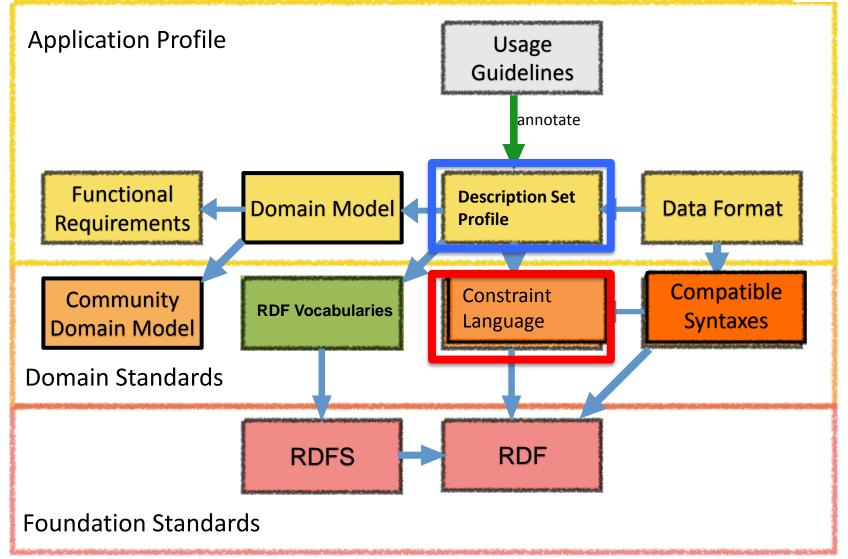
Use RDF vocabularies





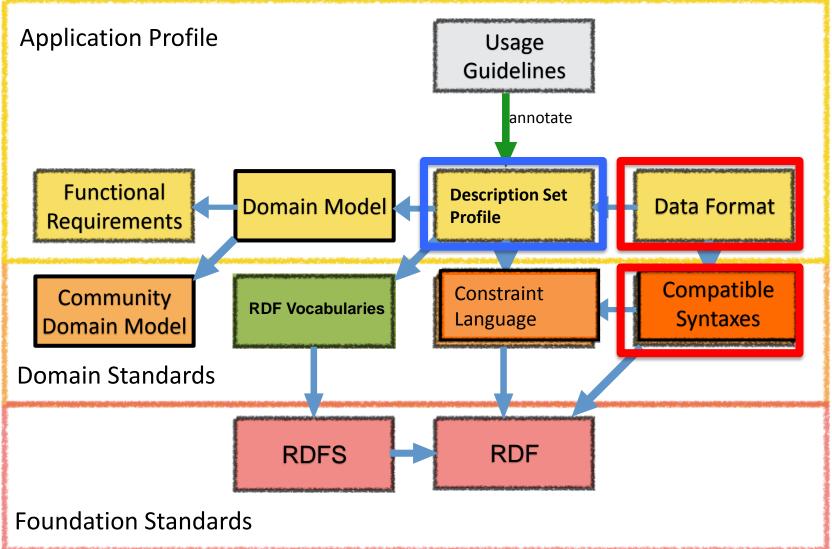
Constrain those vocabularies in specific ways





Express data using RDF-compatible syntax





Modern metadata trend



- Moving from Static Record Formats
 - Bounded sets of fields to be "filled in" with information
- Towards Recombinant Graph Data
 - Unbounded webs of information connected by statements

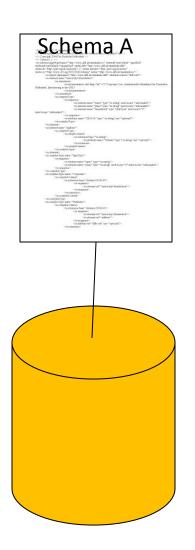
Record formats are documents

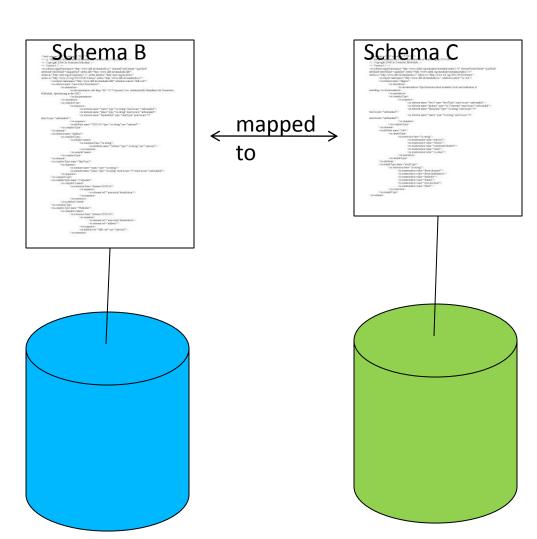


<abstract>The SIGRID-3 vector archive format is one of the World Meteorological Organization (WMO) standards for archiving digital ice charts in the Global Digital Sea Ice Data Bank (GDSIDB). The WMO ice chart archiving formats are the Sea Ice Grid (SIGRID) format developed in 1981 and formalized in 1989 and its successor SIGRID-2. The Canadian Ice Service digital Ice Analysis charts (Regional, Daily and Image) are encoded in SIGRID-3 and have two main components: the shapefile containing the Ice Analysis ice information (ice polygons and related attributes) and the metadata describing the Ice Analysis data under the SIGRID-3 format. The











Graph data is based on RDF vocabularies



SKOS Simple Knowledge Organization System Reference SKOS mmendation 18 August 2009 http://www.w3.org/TR/2009/REC-skos-reference-20090818/ http://www.w3.org/TR/skos-reference
Previous versions: http://www.w3.org/TR/2009/PR-skos-reference-20090615/ Editors: Alistair Miles, STFC Rutherford Appleton Laboratory / University of Oxford Sean Bechhoter, University of Manchester

EOAF Vocabulary Specification 0.98

Namespace Decument 9 August 2010 - Marco Polo Edition

This version:

W3C"

http://xmlns.com/foaf/spec/20100809.html (rdf.wiki) Latest version: http://xmlns.com/foaf/spec/ (rdf, wiki)

Previous version:

http://xmlns.com/foaf/spec/20100101.html (rdf, wiki) Authors:

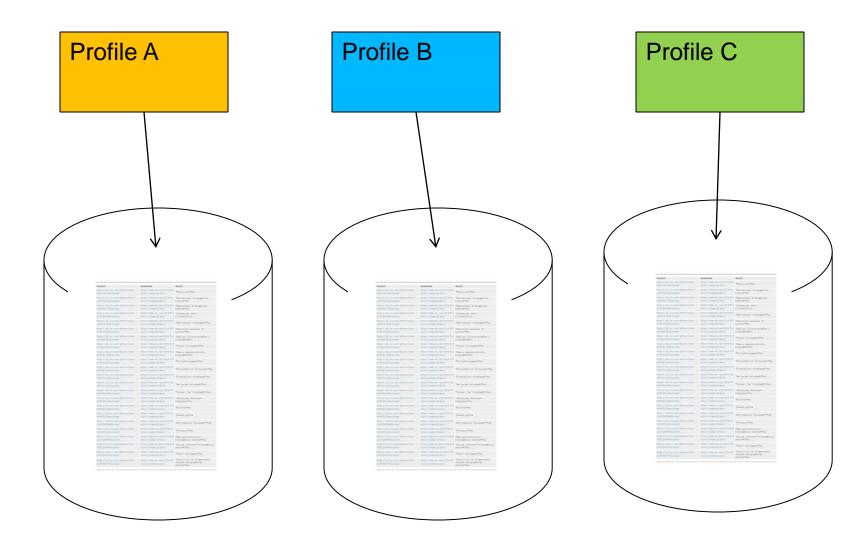
Dan Brickley, Libby Miller Contributors:

Members of the FOAF mailing list (foaf-dev@lists.foaf-project.org) and the wider RDF and Semantic Web developer community. See acknowledgements.

Copyright @ 2000-2010 Dan Brickley and Libby Miller

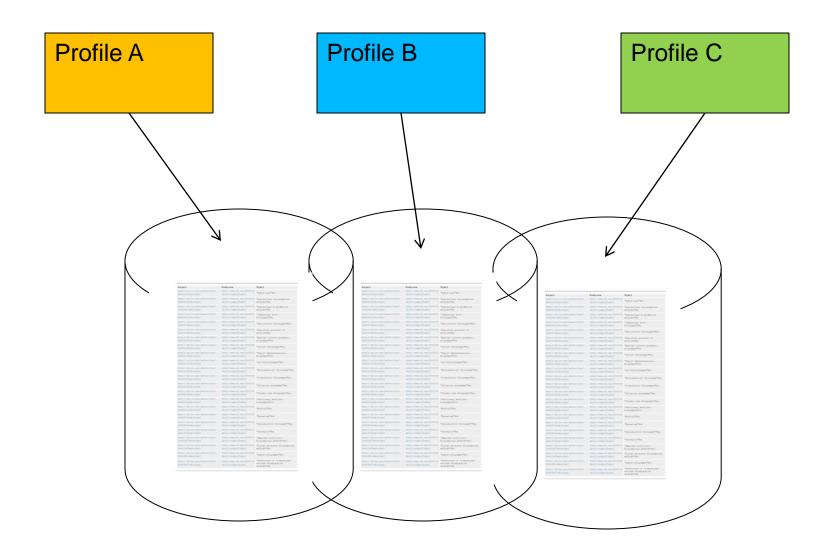
Good profiles make good graph data





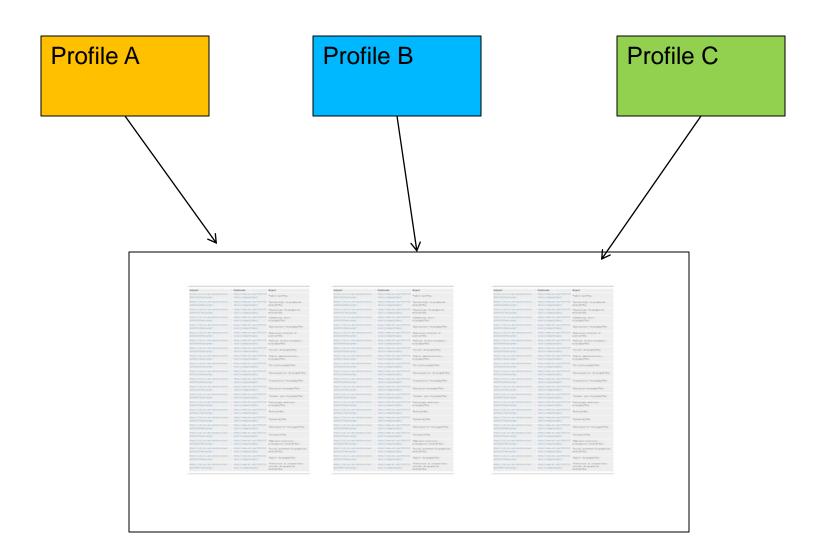
Good triples can be merged coherently





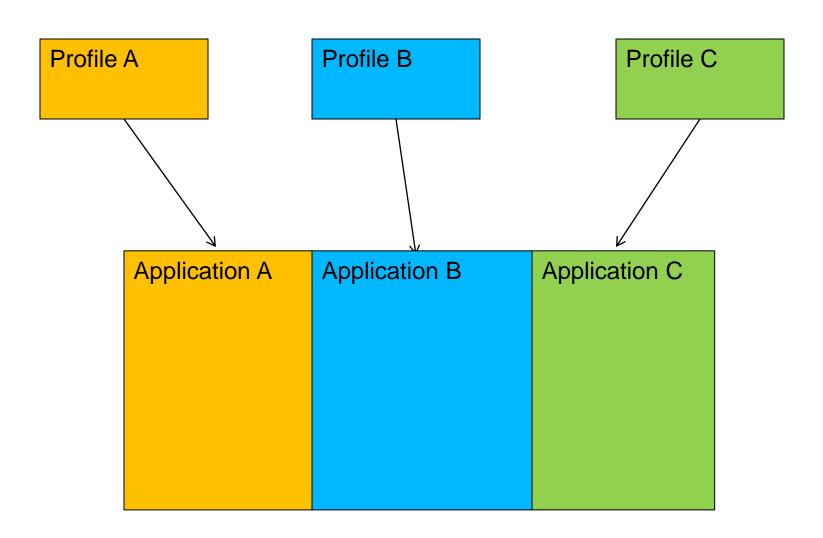
Good triples can be merged coherently





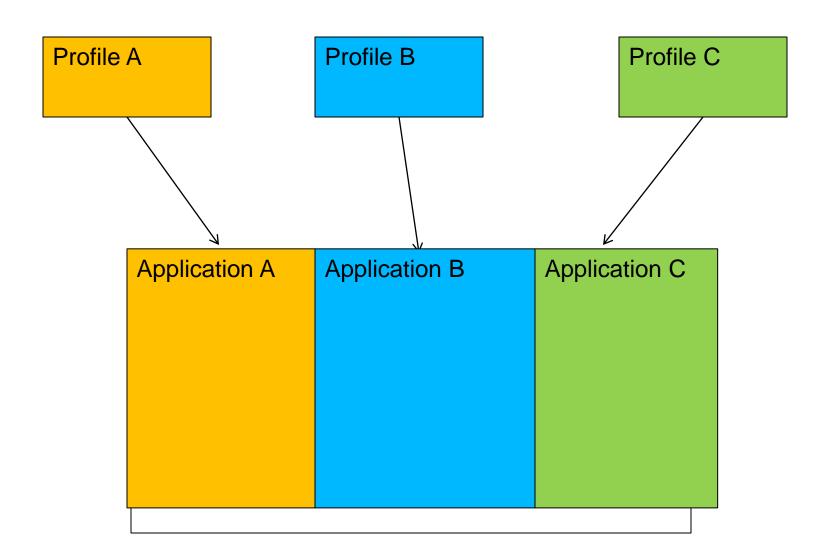
Profiles support good applications





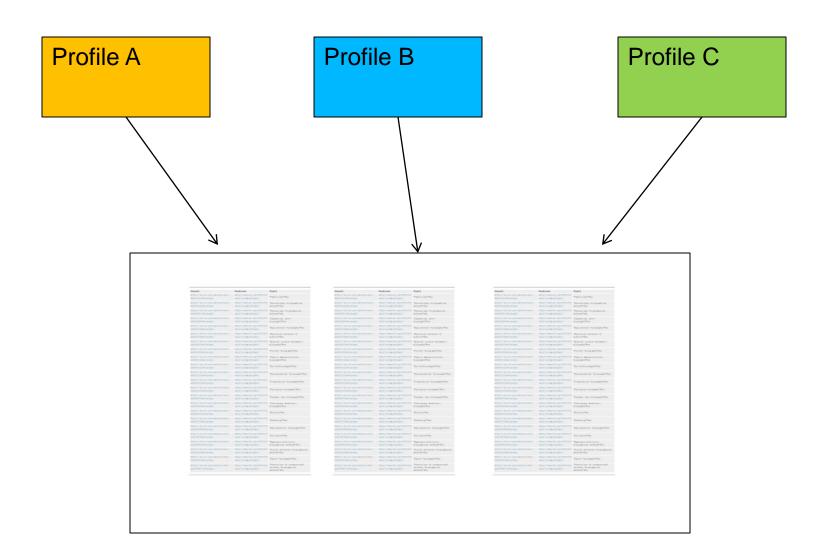
Applications come and go...





Profiles get lost or forgotten...





The data remains



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Meaning is based on published vocabularies



FOAF



FOAF Vocabulary Specification 0.98

Namespace Document 9 August 2010 - Marco Polo Edition

This version:

http://xmlns.com/foaf/spec/20100809.html (rdf, wiki) Latest version:

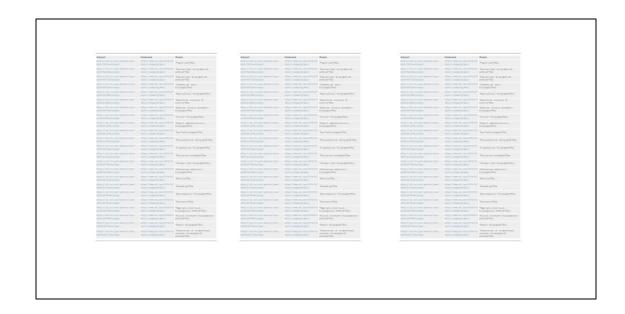
http://xmlns.com/foaf/spec/ (rdf, wiki)

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Summary – 1



- Application Profiles
 - document your metadata (context and content)
 - provide a template for your metadata [records]
 - help developers and users of your metadata

HOWEVER

- RDF data is based on published schemes and schemas
- Your data can therefore "stand on its own" even without the profile

Summary – 2



- Your Application Profiles should say:
 - Why you need the metadata (the scenario)
 - Which queries or processes your data must support (functional requirements)
 - Which properties you need (Description Set Profile)
 - How those properties are constrained in specific statements (Description Set Profile)

Closing thoughts



- Design data to "play well" with other data.
- Anticipate unexpected uses.
- Keep it [as] simple [as possible].

