



Portale und Ontologien

Kerstin Zimmermann

<http://www.deri.org>
DERI Innsbruck

1



Inhalt

- Digitale Bibliothek
- Fachportal
- Semantic Portal
- Ontologien
- Semantic Library
- Beispiele

2



Die Digitale Bibliothek



vascoda





Fachportal

PhysNet - Physics Departments and Documents Worldwide - Mozilla

PhysNet

the physics departments and documents network

about PhysNet | the PhysNet-crew | how to contribute? | statistics | what's new?

- PhysNet
- PhysDep
- PhysDoc
- Journals
- Conferences
- PhysJobs
- Education
- Links
- Services
- Upload Form

Welcome to **PhysNet** the worldwide
Physics Departments and Documents Network

www.physnet.net

Official Mirrors of PhysNet:

Please select one of the global Mirror-Server of PhysNet

PhysNet Ontology
PhysNet has been reimplemented to a semantic RDF database. Additional information about institutions provided is linked with the **fi** buttons in the lists.

FAQ Open Access
PhysNet offers detailed information on **Open Access Publishing** for authors.

PhysNet Newsletter
Sign up now to receive the free **PhysNet Newsletter** and get information about new services and latest developments by e-mail.

WYP 2005

5



Fachinformationen im Internet

- Literatur
 - > UB online, Digitale Bibliothek: umfassend
 - > vascoda: Fachzugänge
 - > eprint server: fachspezifisch

Bündelung nach Ressourcen

- Kontakte / Experten
 - > Fachportal

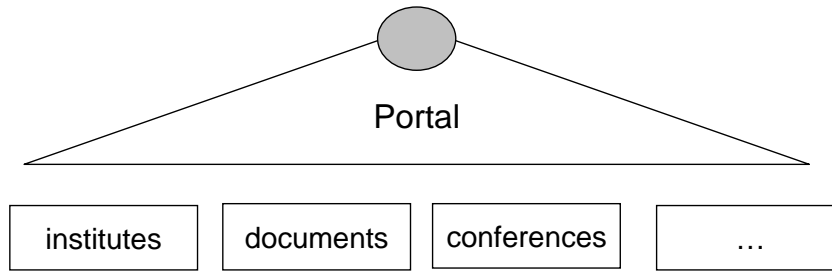
Bündelung nach Kategorien

- Events
 - > Fachportal

6



Fachportal

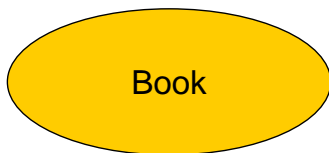


Person

Address



isPublication



- hasTitle*
- hasAutor*
- hasCoAuthor*
- hasEdition*
- hasPublisher*
- hasDate*
- hasPages*
- hasISBN*
- hasKeywords*
- hasLocation*

isPerson



- hasName*
- hasTitle*
- hasPublication*
- hasPublisher*
- hasTopics*
- hasAddress*
- hasHomepage*
- hasEmail*
- hasPhone / Fax*
- knows*
- isMemberof*



isAgent



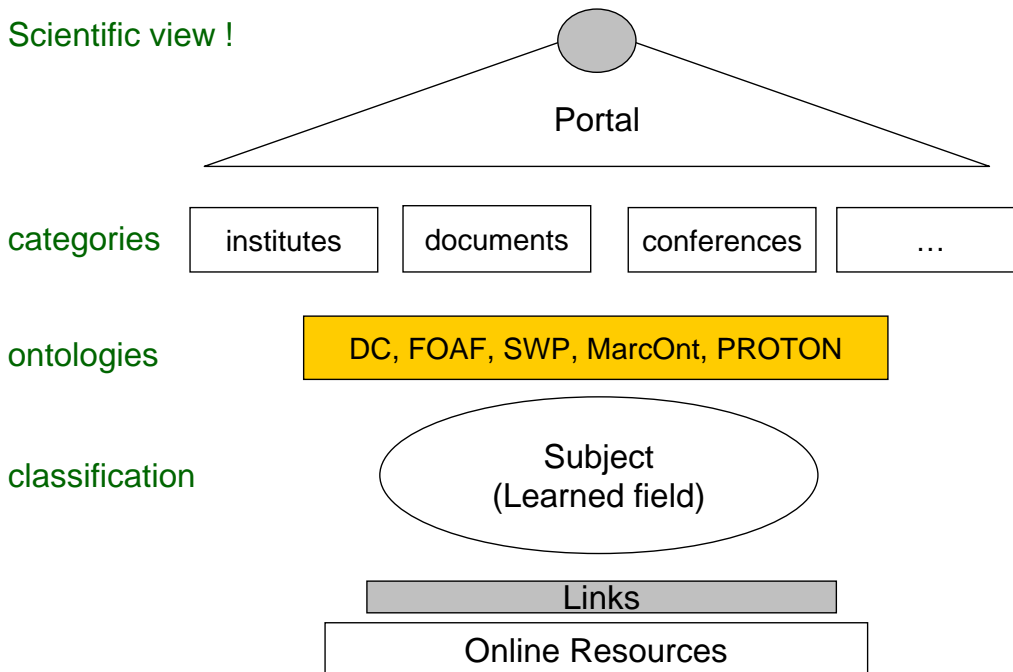
- hasName*
- hasMember*
- hasPublication*
- hasProject*
- hasAddress*





Semantic Web Portal

Scientific view !



Definition Ontologien

- In der Informatik

A shared conceptualisation (Gruber 1993).

Or more formal:

- An ontology O is a 4-tuple $\langle C; R; I; A \rangle$, where C is a set of concepts, R is a set of relations, I is a set of instances and A is a set of axioms.



Im Gegensatz zur Philosophie

Seins-Kategorien: Subjekt, Objekt, Zeit

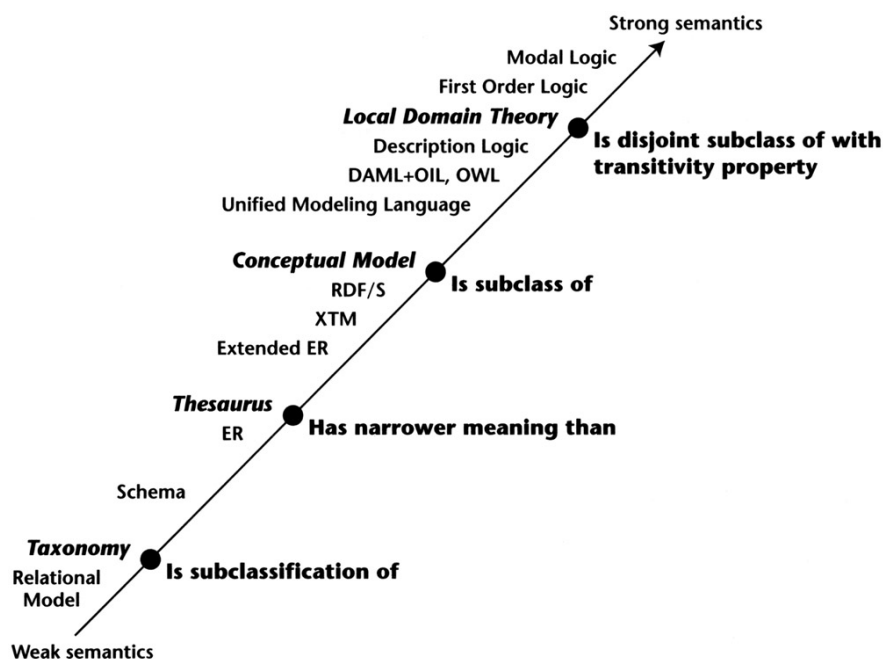


Weitere Definitionen

- **Terminology:** vocabulary of a specific field
- **Taxonomy:** a former hierarchical classification especially of plants and animals.
- **Thesaurus:** a vocabulary of controlled indexing language and formally organised so that the a priori relationship between concepts are made explicit (ISO 2788).
- **Classification:** putting together of similar things, or more fully described, it is the arranging of things according to likeness and unlikeness. It is the sorting and grouping of things, but, in addition, classification of books is a knowledge classification with adjustments made necessary by the physical form of books (Mann 1943).



Semantik



The ontology spectrum (Daconta et.al 2003)





Größenvergleich

Klassifikationen

- DDC: 10 x 10 x 10 Klassen, 1 Mio. Deskriptoren
- RVK: 34 x 142.000 Deskriptoren
- UDK: 66.00 Deskriptoren

Thesauri

- Ethics in the Life Sciences (2004)
12 fields 2,505 descriptors; Engl. / German
- Tourism and Leisure Activities (WTO 2000)
20 fields 1,805 descriptors; Engl., Fr., Spanish

13



Größenvergleich II

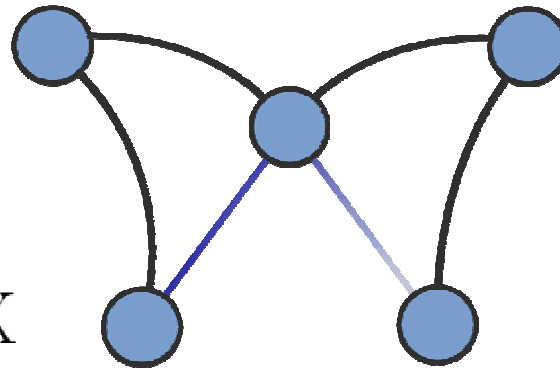
Ontologies

- **FOAF** (Friend Of A Friend) for communities
Describing homepages of people, the links between them and the things they create and do
Coverage: Person 1 concept, 10 classes
- **SWP** (Semantic Web Portal) Ontology
for Scientific Portals
Coverage: Person (Agent and Organisation),
Publication, Conference 3 concepts
68 classes, 21 data properties, 57 object properties
- **MarcOnt** for Digital libraries
Ongoing under construction

14



Semantic Library



BIBTEX

BibTeX
Bibliographic
Format

MarcOnt



Dublin Core
Metadata



MARC21
Bibliographic
Format

15



Größenordnung III

- bibtex
10 descriptors for citation

type → 12

editor/author

booktitle/journal/series

month/day/year

Issn/isbn

Volume/number/pages

Institution/organization/school

Publisher/howpublished/URL

Address

note

- DC
15 core elements
36 other / refinement

Type → 12

Subject → DDC, UDC, LCC

- Marc21

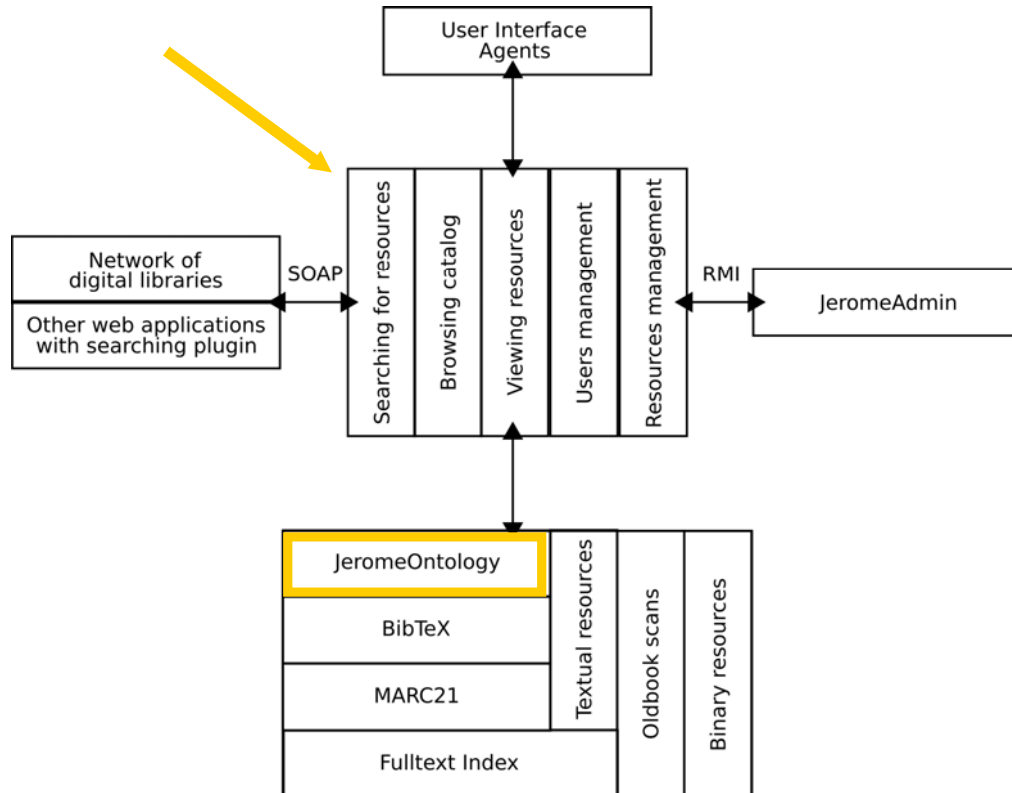
Type → record, resource

16





Architecture



17



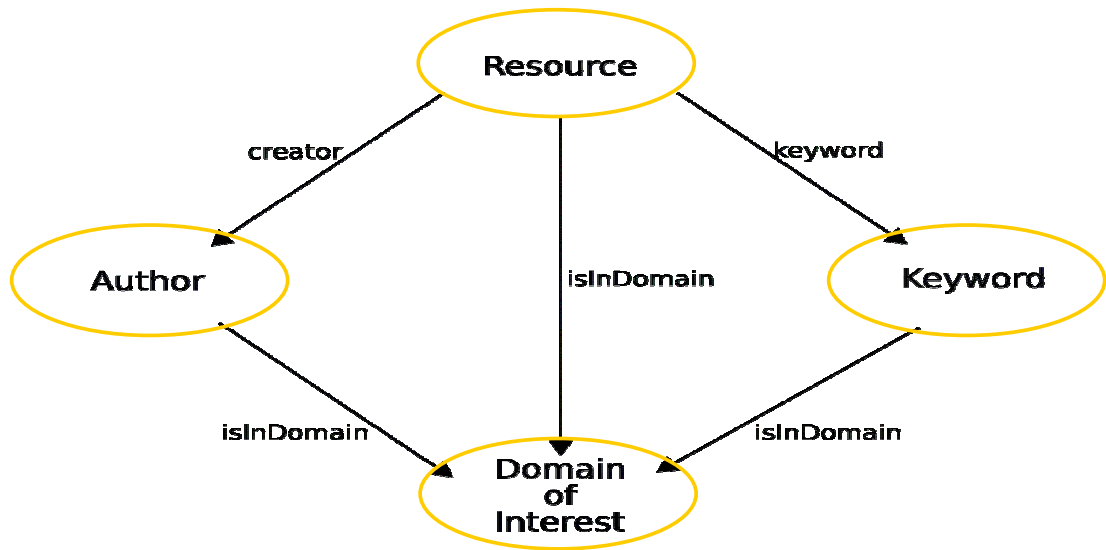
MarcOnt Initiative

- Bibliographic description and related tools utilising Semantic Web technologies
- Searching on ontology level
-> cross lingual
- Recommendation system for registered users -> community function

18



Concepts Core Ontology



19



Class Hierarchy

Protege-2000 Class Hierarchy - Mozilla

- ListOfAuthors
- Marc21Description
 - AdditionalDescription
 - BooksAD
 - ComputerFilesAD
 - ContinuingResourcesAD
 - MapsAD
 - MixedMaterialsAD
 - MusicAD
 - VisualMaterialsAD
 - DiscriptiveCatalogingForm
 - Instances: *ISBD, AACR2, unknownDCF, nonISBD*
 - EncodingLevel
 - Instances: *notApplicable, lessThanFullLevel, fullLevel, minimalLevel, coreLevel, fullLevelMaterialNotExamined, unknownEL, prePublicationLevel, abbreviatedLevel, partialLevel*
 - GeneralDescription
 - BooksGD
 - Biography
 - Instances: *individualBiography, containsBiographicalInfo, autobiography, noBiography, collectiveBiography, notCodedB*
 - ConferencePublication
 - Instances: *conferenceCP, notCodedCP, notACP*
 - Festschrift
 - Instances: *notCodedE, festschrift, noFestschrift*
 - FormOrItem
 - Instances: *microficheFOI, microopaqueFOI, noAttemptsToCodeFOI, largePrintFOI, microfilmFOI, regularPrintReproductionFOI, noneFOI, electronicFOI, brailleFOI*
 - GovernmentPublication
 - Instances: *notAGP, localGP, unknownGP, autonomousSemiAutonomousGP, stateProvincialGP, federalNationalGP, internationalIntergovernmentalGP, otherGP, multistateGP, multilocalGP, undeterminedLevelGP, notCodedGP*
 - Illustrations
 - Instances: *samples, facsimiles, music, genealogicalTables, charts, illuminations, noAttemptsToCode, maps, noIllustrations, plans, illustrations, portraits, plates, forms, phonodisc, photographs, coatsOfArms*
 - Index
 - Instances: *index, notCoded, noIndex*



20



Relationen

Fragepronomen	Ontologies	bisher
<ul style="list-style-type: none">• What• Who• When• Where	<ul style="list-style-type: none">• Topic• Person• Time / Event• Location	<ul style="list-style-type: none">• SC• FOAF• DC• DC
<ul style="list-style-type: none">• How	<ul style="list-style-type: none">• Meta	<ul style="list-style-type: none">• ?



21



Proton

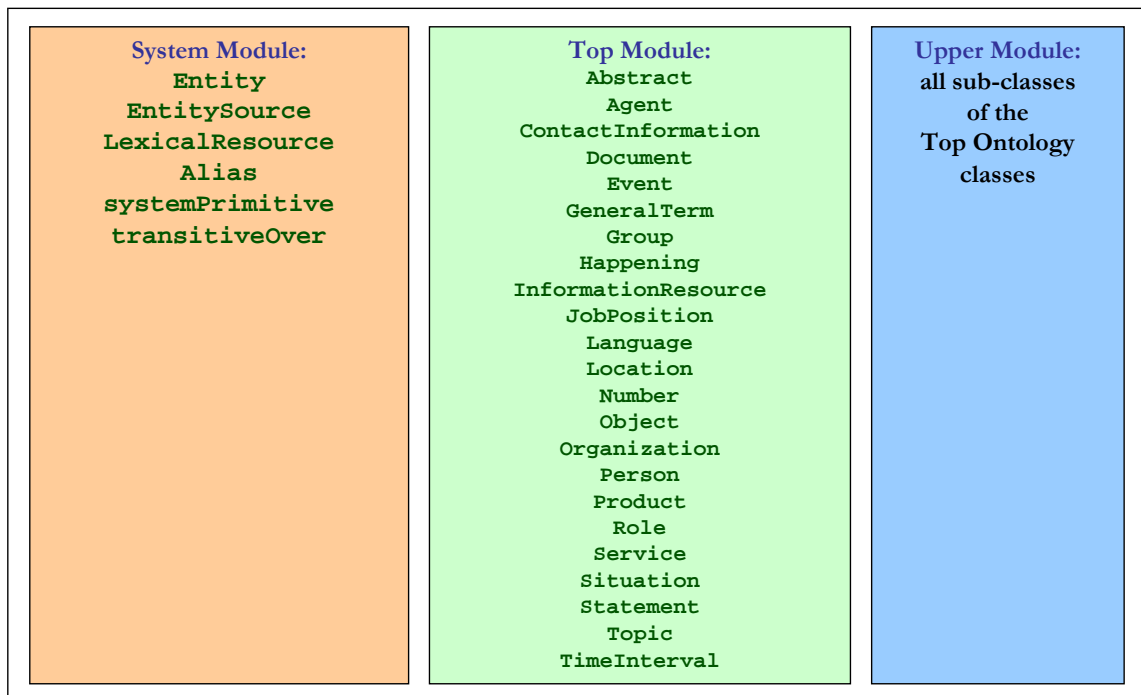
- Basic Upper-Level Ontology
- ontology generation
- metadata generation (annotations and population)
- **250 classes and 100 properties**
- Modular architecture (3 parts)
- SYSTEM module - a few meta-level primitives (6 classes and 7 properties); 'entity',
- TOP module - the highest, most general, conceptual level, consisting of about 20 classes;
- UPPER module - over 200 general classes of entities, which often appear in multiple domains.



22



Proton Architektur



23



Basierend auf

- **ADL Feature Type** Thesaurus and GNS
 - the backbone of the Location branch;
 - on its turn aligned with the geographic feature designators, of the GNS database of NIMA;
 - PROTON is more coarse-grained, taking about 80 out of 300 types.
- **Dublin Core**
 - the basic element set available as properties of `protont:InformationResource` and `protont:Document` classes;
 - the resource type vocabulary is mapped to sub-classes of `InformationResource`.
- **OpenCyc** and **WordNet** – consulted and referred to in glosses.
- **ACE** (Automatic Content Extraction) annotation types – covered.
- **FOAF** – assure easy mapping (e.g. the Account class was added).
- **DOLCE**, EuroWordnet Top, and others – consulted to various extent.

24





Zusammenfassung

- Ontologien sind maschinenlesbar
- dienen der Vernetzung
- Mehrwert aber auch mehr Aufwand
- Bisher eher domain spezifisch
- Erste Integrationsversuche
- Mediation, Mapping, Alignment



25



References

- FOAF <http://www.foaf-project.org/>
- SWP <http://sw-portal.deri.org/ontologies/swportal.html>
- MarcOnt <http://www.marcont.org/>



26