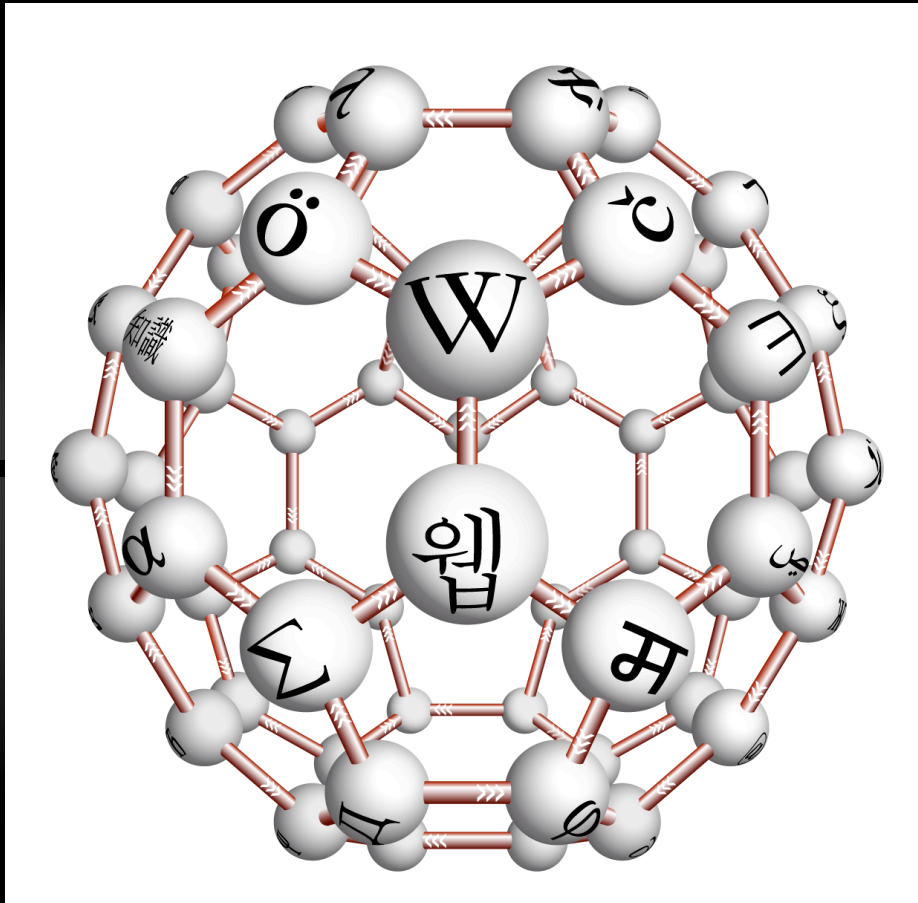# Semantic mediawiki

Some slide taken
from Danny Drandevic

Semantic MediaWiki

- ✓ Extension of **MediaWiki**
  - ✓ Popular Wiki engine
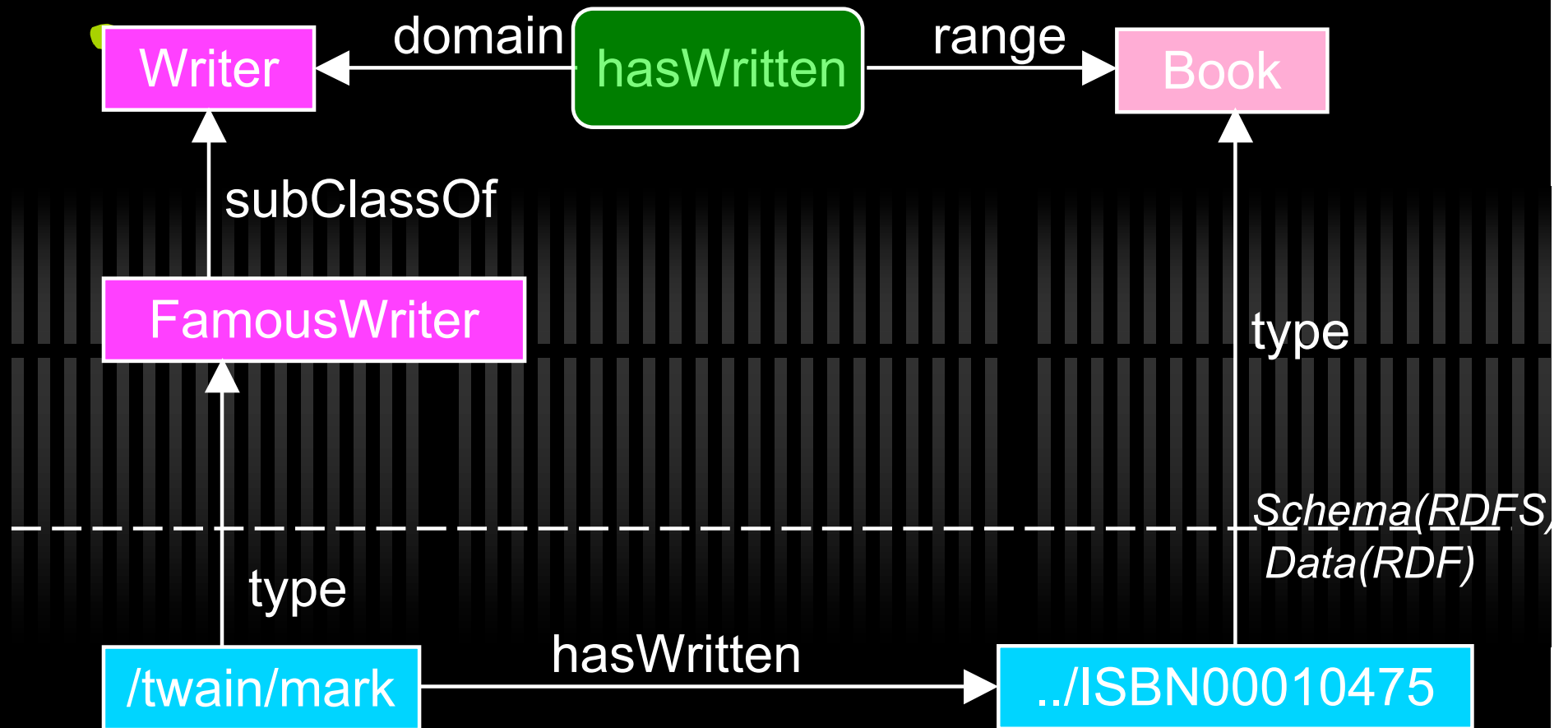 - ✓ Powers Wikipedia

- ✓ Extends MediaWiki by enabling…
  - ✓ Typed links
  - ✓ Property – Value
  - ✓ Inline queries
  - ✓ New ways to explore the content

- ✓ Open source and well documented
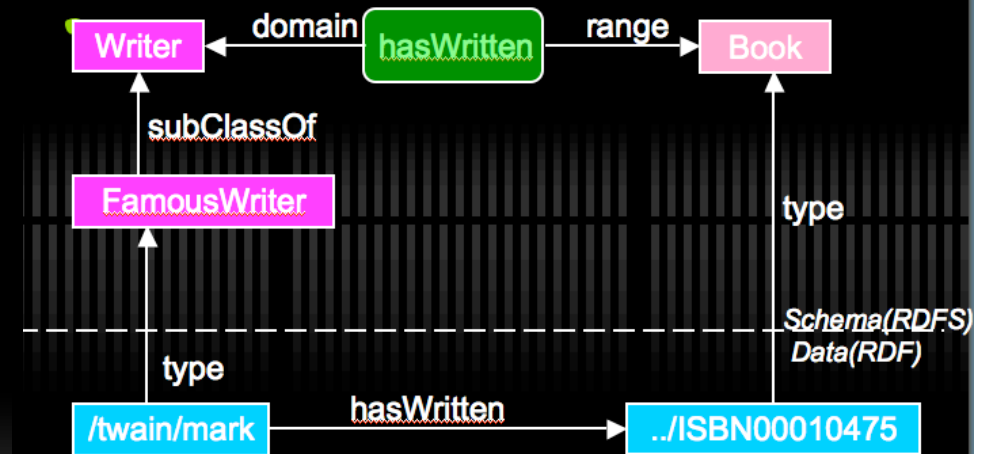
An example RDF Schema

Annotation of WWW resources and *semantic* links

Writer ← domain — hasWritten — range → Book

subClassOf

FamousWriter

type

type

Schema(RDFS)
Data(RDF)

/twain/mark — hasWritten → ../ISBN00010475

Concepts

An example RDF Schema

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- ✓ INSTANCE <=> PAGE
- ✓ CLASS   <=> CATEGORY
- ✓ RELATION <=> PROPERTY

Instance <-> Page

Annotation of WWW resources and *semantic* links

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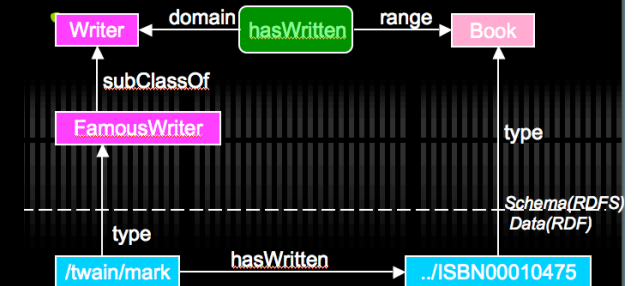

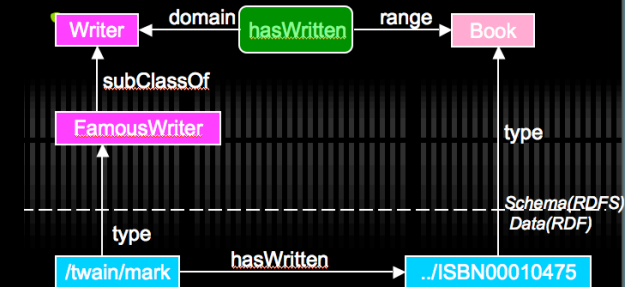## Editing Marco Ronchetti

B *I* Ab A

```
Hi guys,
My nationality is [[Has nationality::Italy|italian]].

My nickname in this wiki is [[User:Ronchet|Ronchet]].

Here is my [http://latemar.science.unitn.it home] where you can find info about me.
You can reach me at the e-mail address [[Has e-mail::marco.ronchetti@unitn.it]].

[[Category:Man]]
[[Category:Speaker]]
```

Class <-> Category

An example RDF Schema
Annotation of WWW resources and *semantic* links

Writer ← domain — hasWritten — range → Book

subClassOf

FamousWriter

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Editing Marco Ronchetti

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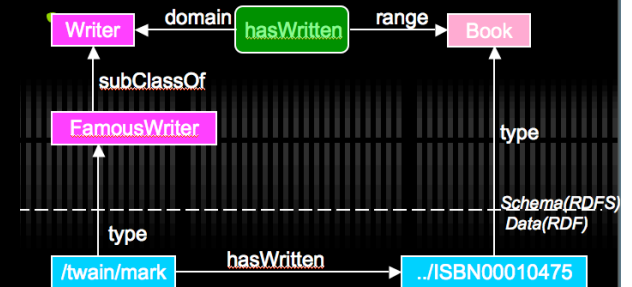You can reach me at the e-mail address [[Has e-mail::marco.ronchetti@unitn.it]].

[[Category:Man]]
[[Category:Speaker]]

Relation <-> Property

An example RDF Schema

Annotation of WWW resources and *semantic* links

Writer ←domain— hasWritten —range→ Book

↑ subClassOf

FamousWriter

type

type

Schema(RDFS)
Data(RDF)

/twain/mark —hasWritten→ ../ISBN00010475

Editing Marco Ronchetti

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[[Category:Man]]
[[Category:Speaker]]
```

Instance <-> Page

An example RDF Schema
Annotation of WWW resources and *semantic* links

| article | discussion | edit | history | move | watch |

Marco Ronchetti

Hi guys, My nationality is italian.

My nickname in this wiki is Ronchet.

Here is my home where you can find info about me. You can reach me at the e-mail address marco.ronchetti@unitn.it.

Facts about Marco Ronchetti ⊕   RDF feed

Has e-mail   marco.ronchetti@unitn.it + 🔍

Has nationality   Italy + 🔍

Categories: Man | Speaker

Instance

- ✓ Blue links mean there is a page about it
- ✓ Red link means there is no page about it

| article | discussion | | edit | history | protect | delete | mo |

Denny Vrandecic

Denny is working at the AIFB. He is from Croatia, but lives in Germany for quite a while now.

Facts about Denny Vrandecic ⊕   RDF feed ⌗

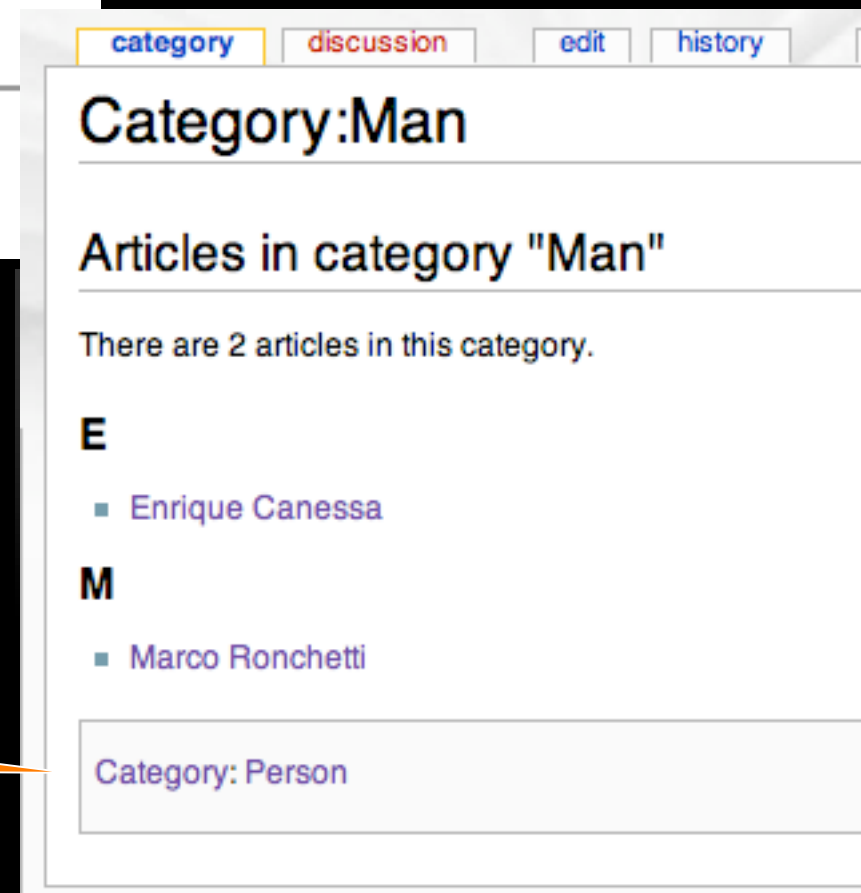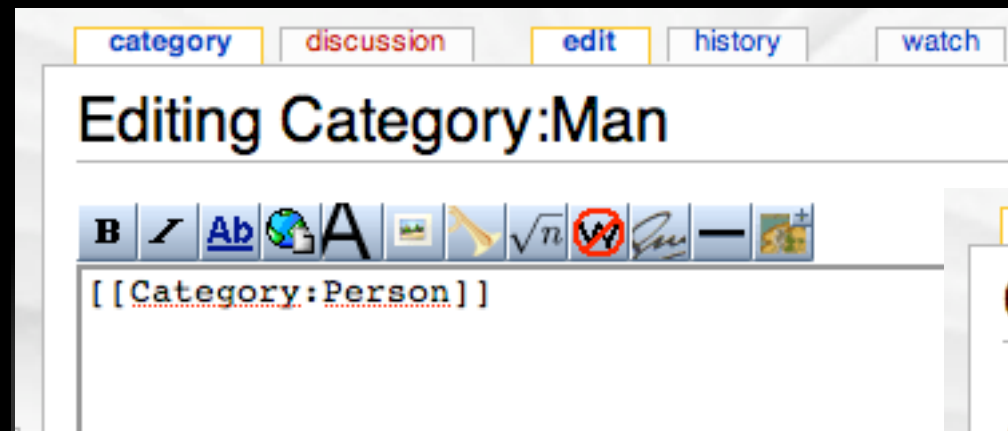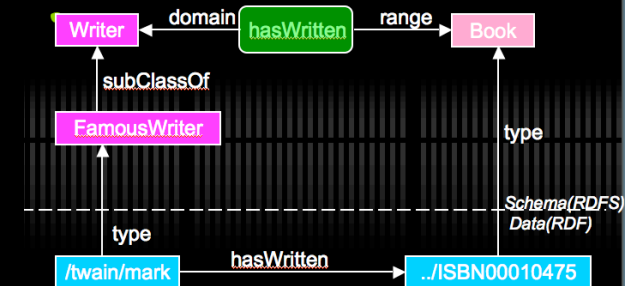| Affiliation | AIFB | +🔍 |
| Located in | Germany | +🔍 |
| Nationality | Croatia | +🔍 |

Categories: Tutor | Man

Class <-> Category

An example RDF Schema
Annotation of WWW resources and *semantic* links
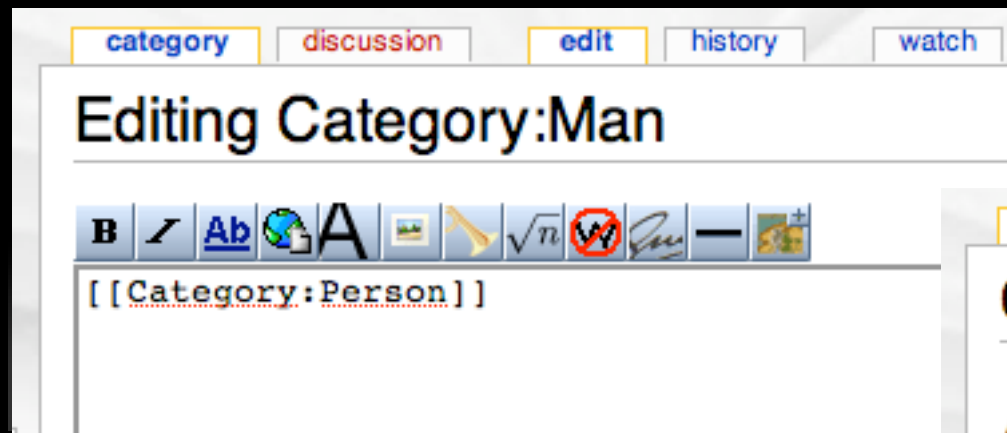
There are pages describing categories
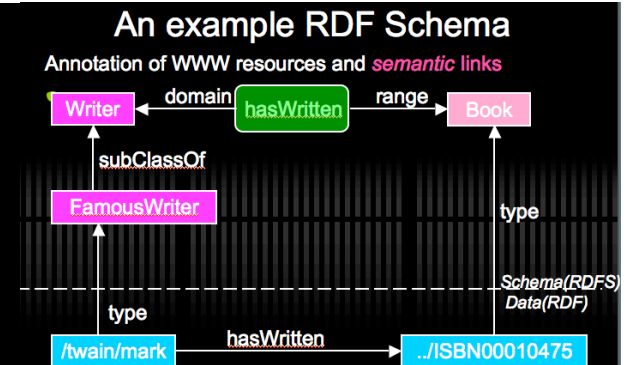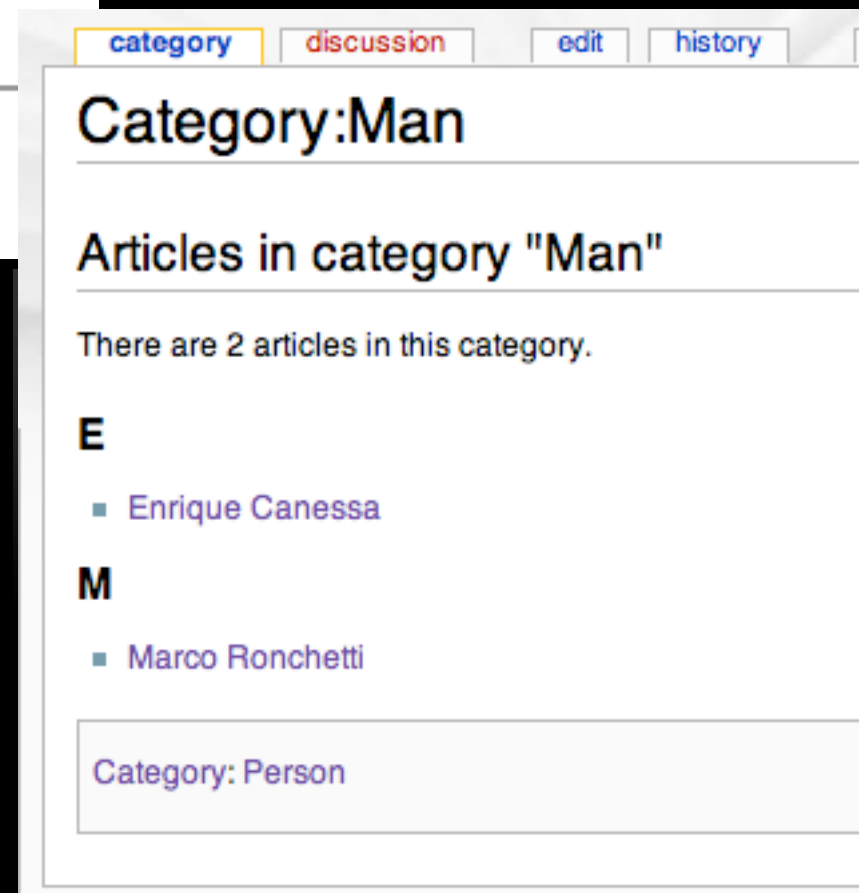
Class <-> Category

An example RDF Schema
Annotation of WWW resources and *semantic* links

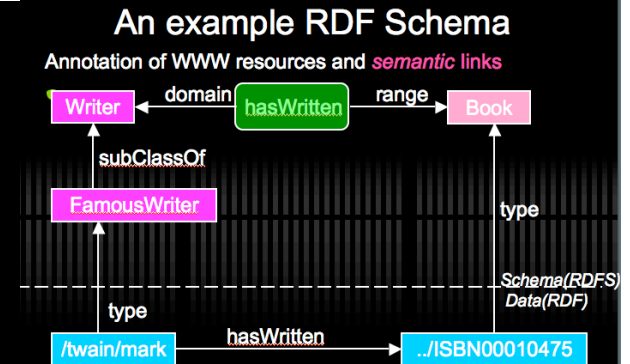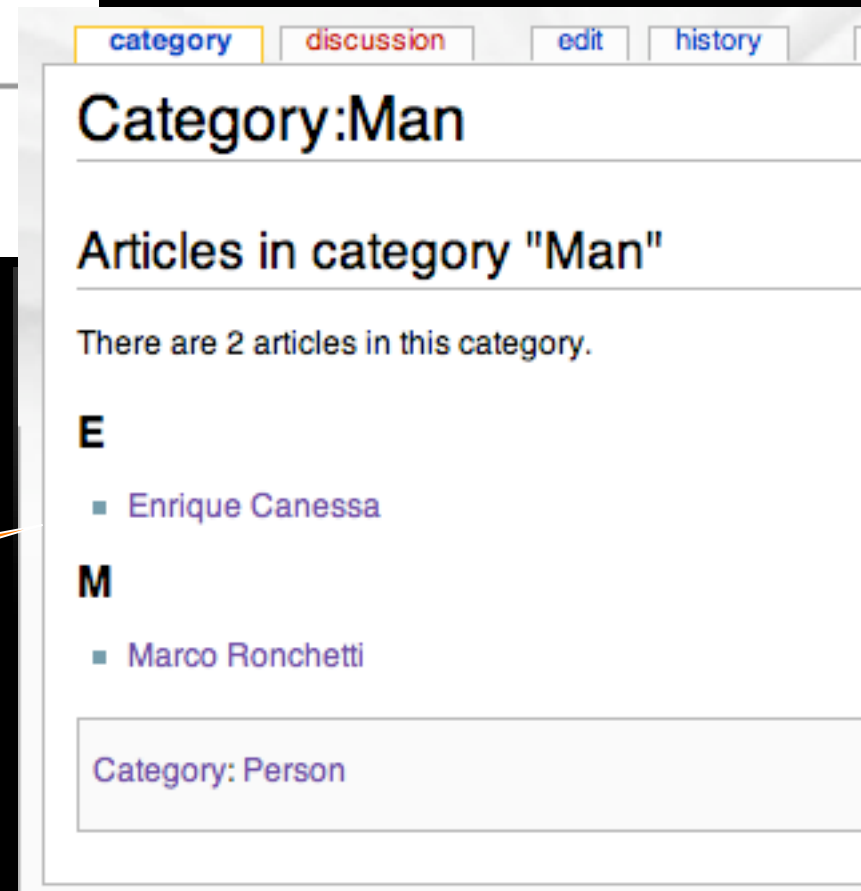Writer ← domain — hasWritten — range → Book

subClassOf

FamousWriter

type

type

Schema(RDFS)
Data(RDF)

/twain/mark — hasWritten → ../ISBN00010475

---

category | discussion | **edit** | history | watch

Editing Category:Man

B / Ab A

`[[Category:Person]]`

---

category | discussion | edit | history

Category:Man

Articles in category "Man"

There are 2 articles in this category.

E

- Enrique Canessa

M

- Marco Ronchetti

Category: Person

Subclass (subcategory) of

Class <-> Category

category | discussion | edit | history | watch

B _I_ Ab A

Editing Category:Man

`[[Category:Person]]`

category | discussion | edit | history

Category:Man

Articles in category "Man"

There are 2 articles in this category.

E

- Enrique Canessa

M

- Marco Ronchetti

Category: Person
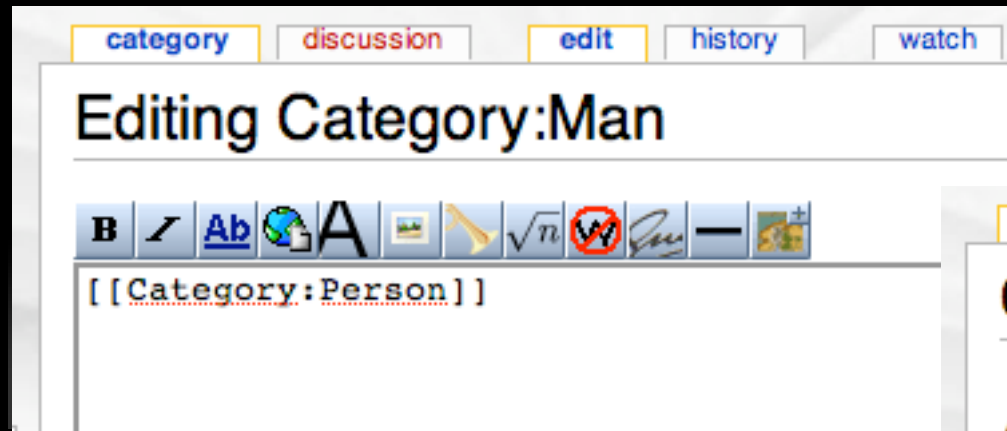
✓ Extensional description
  ✓ List of all instances
  ✓ But: only direct ones

Categories

✓ Informal description
  ✓ Can be discussed
  ✓ Can be edited

category	discussion	edit	history	protect	delete

Category:Tutor

A tutor is a person that gives a course, talk, tutorial, or similar at the

Articles in category "Tutor"

There are 2 articles in this category.

D

- Denny Vrandecic

P

- Peter Haase

Category: Person

Relation <-> Property

An example RDF Schema

Annotation of WWW resources and *semantic* links

Writer ← domain — hasWritten — range → Book

subClassOf

FamousWriter

type

Schema(RDFS)
Data(RDF)

hasWritten → ../ISBN00010475
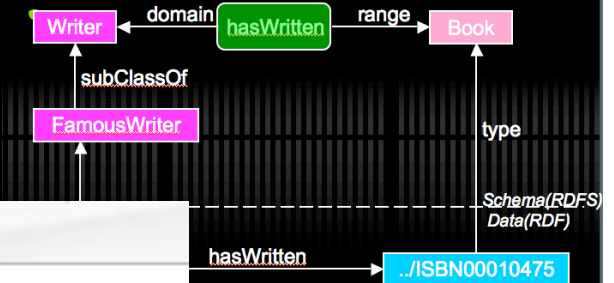
| property | discussion | edit | history | move | watch |

Editing Property:Has nationality

B *I* Ab 🌐 A 🖼 🎺 √n 🚫 ✒ — 🗺

Property that links a [[person]] to a [[country]]

There are pages describing properties

| property | discussion | edit | history | move | watch |

Property:Has nationality

Property that links a person to a country

Pages using the property "Has nationality"

Showing 2 pages using this property.

E

Enrique Canessa + ⓘ   Chile + 🔍

M

Marco Ronchetti + ⓘ   Italy + 🔍

Relation <-> Property
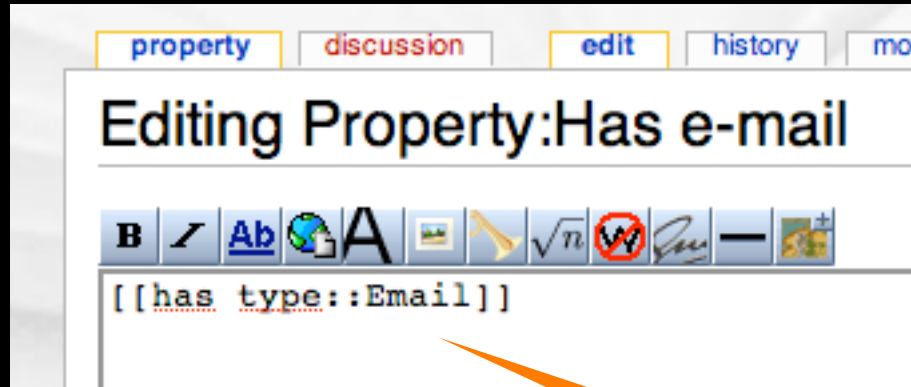
An example RDF Schema

Annotation of WWW resources and *semantic* links

Writer — domain — hasWritten — range — Book

subClassOf

FamousWriter

type

Schema(RDFS)
Data(RDF)

type

/twain/mark — hasWritten — ../ISBN00010475

property | discussion | edit | history | mov

Editing Property:Has e-mail

B | I | Ab | | A | | | √n | | | —

[[has type::Email]]

Datatype definition

15
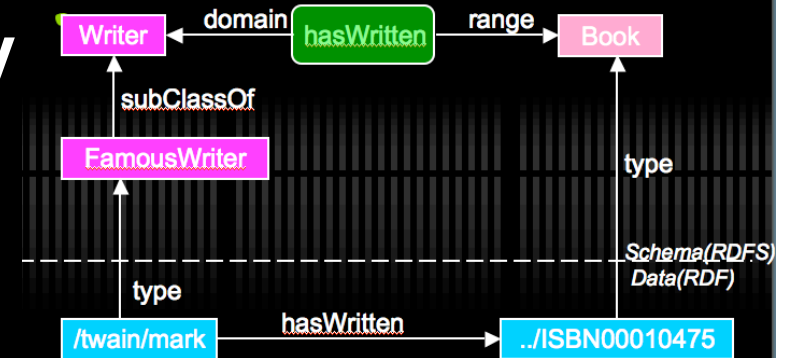
Data values and types

✓ Attributes like [[birthdate::February 27 1978]] or [[population::3,635,389]] must know the *type* of the value

✓ This is done by adding [[has type::T]] on the page of the attribute

✓ Available, predefined types:

o Annotation URI

o Date

o Email

o Enumeration

o Float

o Geographic coordinate

Integer
Page
String
Temperature
Text
URL

16

Special:Categories

special

Categories

The following categories exist in the wiki.

(first I last) View (previous 50) (next 50) (20 I 50 I 100 I 250 I 500)

- City (3 members)
- Country (1 member)
- Man (2 members)
- Organizer (1 member)
- Person (2 members)
- Querypage (2 members)
- Speaker (1 member)

(first I last) View (previous 50) (next 50) (20 I 50 I 100 I 250 I 500)

Special:Properties

Special:Ask

special

Search by entering a query into the search field below. Further information is given on the help page for semantic search.

Sort by column [   ] Ascending ▼

Find results

Query examples - Category

For example, the query:

[[Category:Teacher]]

is a query for all pages within the category Teacher, i.e. for all teachers. If you enter this in Special:Ask and click "Find results", SMW executes the query and displays results as a simple list of all requested pages. If there are many results, they can be browsed via the navigations links at the top and bottom of the query results

20

Query examples - Subcategories

For example, the query:

[[Category:Person]]

Will find all pages in the categories Teachers, Students and Organizer if these categories are subcategories of Person

Query examples - combining queries (AND)

For example, the query:

[[Category:Person]] [[has nationality::Italy]]

Will find all items in category Person that have the property of being italian. (AND)

Query examples - combining queries (OR)

For example, the query:

[[Category:Organizer || Teacher]]

Will find all items that are category Organizer OR in category Teacher (Set Union).

[[Category:Organizer]] || [[has nationality::Italy]]

Will find all items that are category Person PLUS (Union) all those that have the property of being italian. (OR)

Query examples - Properties

For example, the query:

[[has nationality::Italy]]

Will find all occurencies that have the specified property.
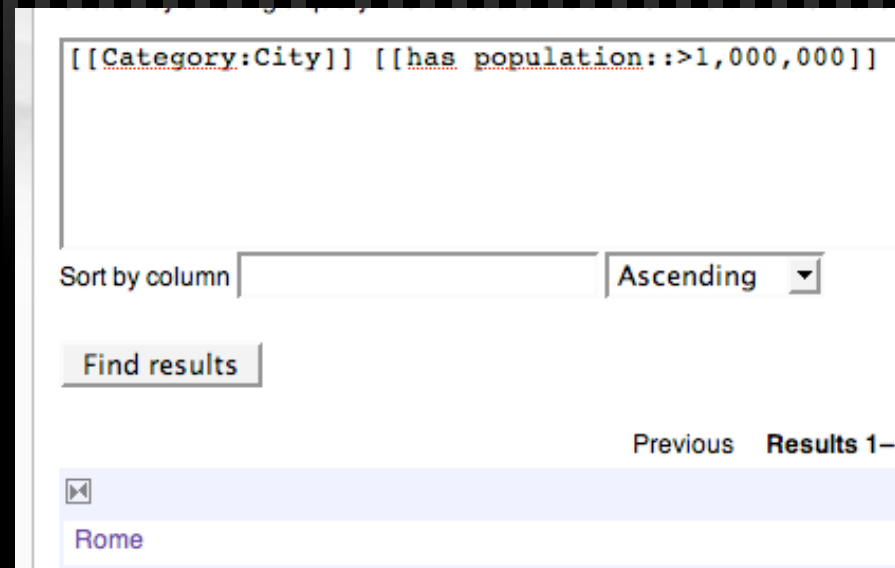
Query examples - conditions on attributes

For example, the query:

[[Category:City]] [[Has population>1,000,000]]

Will find all pages in the category City, having more than one million inhabitants.

```
[[Category:City]] [[has population::>1,000,000]]
```

Sort by column [   ]   Ascending ▼

Find results

Previous   **Results 1–**

⊠

Rome

All cities having a has population property

[[Category:City]] [[has population::+]]

All cities having and their population

[[Category:City]] [[has population::*]]

All cities with more than 1,000,000 people and their population

[[Category:City]] [[has population::>1,000,000]] [[has population::*]]

Embedding queries into pages

<ask>…</ask>

Formatting and sorting

See

http://ontoworld.org/wiki/Help:Inline_queries

Social aspects

✓ You are free to define categories and properties, but…

    ✓ How to decide which properties and categories are important?

    ✓ How to define the properties or categories?

    ✓ How to ensure high quality data? What does it mean?

    ✓ How to control the wiki knowledge base and its growth?

Querying and social aspects

- ✓ Querying can only be done on aligned vocabularies
  - ✓ If half of the people use "affiliation" and the other half "works for" you cannot query the knowledge easily

- ✓ Inside SMW, information integration usually happens with social tools, not with technology
- ✓ Gardening tools can help with aligning vocabularies, but not replace them
  - ✓ Tools that allow you to rename a property throughout the wiki
  - ✓ Or to join two different names

Exporting the data

✓ Every page can export its knowledge as RDF

Go to the wiki!

- ✓ If you are e.g. Bjorn Hassler, and your user page is Bjorn:
    - ✓ Copy the content of your User:Bjorn page into a new page called Bjorn Hassler
    - ✓ Add to it the right categories (e.g. Man, Teacher)
    - ✓ Add to it the right properties and values (e.g. Has nationality, Has e-mail)
    - ✓ Replace the content of your old User: page User:Bjorn with a link to your new page [[Bjorn Hassler]]
    - ✓ Go to the Special:Ask page and play with queries

- ✓ Discuss in group and propose new Categories and Properties