

An open-source frontend for RDF- based knowledge graphs

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Project context

Initial observation

- There is no central resource on Japanese visual media that is suitable for research
- But: Enthusiast communities have been discussing and collecting information on Japanese media online for more than 20 years
- Idea: Make this data available in a central location
 - “Japanese Visual Media Graph” (JVMG) project

- Utilize the potential of **Linked Open Data**
 - **Transform** community data into RDF
 - Describe individual data models in OWL
 - Namespace “mediagraph.link”
 - **Match** entities covered by multiple datasets
 - Link information from multiple sources to a **merged** entity
- Data can be queried and presented on two levels
 - Individual dataset per community with different vocabularies
 - Merged dataset with unified vocabulary

Linked Data web frontend

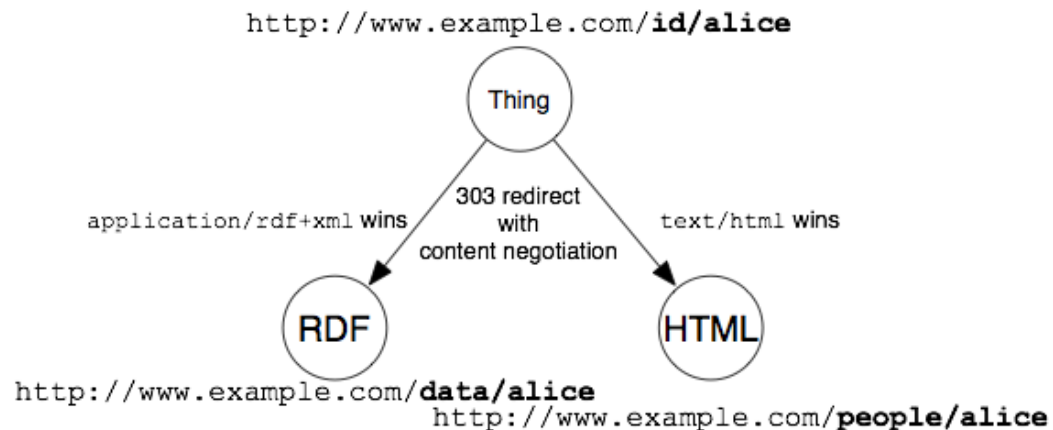
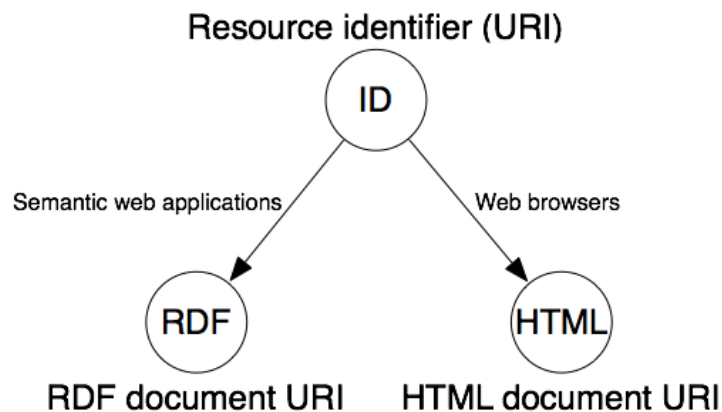
Software stack

- Custom **python** scripts
 - Data transformation into RDF
 - Matching and clustering of entities
- Apache Jena **Fuseki** Tripel Store
 - Open source
 - Well documented
 - Reliable and fast for our purpose
 - Access using SPARQL endpoint
- Why not use any available Linked Data web frontend?

Linked Data web frontend functions

■ Data provisioning

- To humans with web browsers
- To applications that require RDF
- Usually using http-303-redirect and content negotiation
 - Accept-header in http request



■ Browsing

- Show all relevant statements for a given URI in HTML view
 - Show the information in a human-understandable way
 - Labels instead of cryptic URIs
 - Allow following links to different resources
 - Allow for multiple CSS styles
-
- What is “relevant” for a given URI?
 - All RDF tripels with URI as **subject**
 - All RDF tripels with URI as **object**
 - **Labels** for all URIs used on the page

Project specific requirements

■ **Multi-Language**

- Labels and literal property values are available in multiple languages
- Selection of preferred language or showing all available information
- Remember selection during browsing

■ **Data provenance**

- Data from multiple sources is available in one interface
→ data provenance on the statement level needed
- Selection of one, many or all sources
- Remember selection during browsing

Project specific requirements

■ Search function

- Integrated into browsing view
- Provide index of entity **labels** and property **values**

■ Extendability

- Extend browsing function with analysis, starting from the currently shown URI
- Show available extensions depending on entity type

■ Performance

- Show entity pages with >100.000 entries

Existing Linked Data web frontends

- No available open source or commercial frontend provides all functions
- Several open source frontends are no longer maintained
 - Relies on older libraries or frameworks

→ **New development easier than changing existing code**

- Python code with minimal external dependencies
 - RDFlib module
 - SparQLWrapper module
 - Django Web Framework

Keitai Shoujo ケータイ少女

Property	Value
label <small>vndb</small>	<ul style="list-style-type: none">Keitai Shoujo <small>🇺🇸</small>ケータイ少女 <small>🇯🇵</small>
type <small>vndb</small>	Visual novel <small>🇺🇸</small>
Description <small>🇺🇸 vndb</small>	Chihiro is a second year high school student. He is a bit impatient since he's got no girlfriend even though he gets closer to Christmas. One day, while he is on the mobile phone internet, he finds an interesting web site and downloads it. When he finishes it, his phone suddenly flashes..., and a tiny girl appears in front of him. "I'm Rin. What's your name? You have no girlfriend, don't you? I'll be in trouble if I don't make you happy." She tells him that if he doesn't find a girlfriend before Christmas, she won't be able to go back to her world. Will he be able to find a girlfriend before Christmas for himself and Rin...? <small>\n\n[From [url=http://www.himeyashop.com/product_info.php/products_id/6137]Himeya Shop[/url]]</small>
Has release <small>🇺🇸 vndb</small>	<ul style="list-style-type: none">Keitai Shoujo PC <small>🇺🇸</small> ケータイ少女PC <small>🇯🇵</small>Shouji Shaonv PC <small>🇺🇸</small> 手機少女 PC <small>🇯🇵</small>
Original <small>🇺🇸 vndb</small>	ケータイ少女
is Primary role <small>🇺🇸 of vndb</small>	<ul style="list-style-type: none">Fujimiya MomokaGotou MiyaMishima IchiruRinTomoe SayoYamao Avano
is Studio <small>🇺🇸 of vndb</small>	<ul style="list-style-type: none">Yamao AvanoYamao Avano
Tag <small>🇺🇸</small>	<ul style="list-style-type: none">PTeroin
Title <small>🇺🇸 vndb</small>	Keitai Shoujo
VNDB link <small>🇺🇸 vndb</small>	http://vndb.org/v1010
Visual novel length <small>🇺🇸 vndb</small>	Medium (10 - 30 hours) <small>🇺🇸</small>
Wikidata link <small>🇺🇸 vndb</small>	https://www.wikidata.org/wiki/Q11075743

Property label

Entity label

Keitai Shoujo ケータイ少女



















Data source selection

Property	Value
label <small>vndb</small>	<ul style="list-style-type: none">Keitai Shoujo <small>🇺🇸</small>ケータイ少女 <small>🇯🇵</small>
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Data provenance indicator

Keitai Shoujo ケータイ少女

Language selection

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Description  <small>vndb</small>	Chihiro is a second year high school student who is a bit impatient since he's got no girlfriend even though he gets closer to Christmas. One day, while surfing the internet, he finds an interesting web site and downloads it. When he finishes it, his phone rings and a girl appears in front of him. "I'm Rin. What's your name? You have no girlfriend, don't you? I'll be your girlfriend and make you happy." She tells him that if he doesn't find a girlfriend before Christmas, she won't be able to go back to her world. Will he be able to find a girlfriend before Christmas for himself and Rin...? <small>\n\n[From [url=http://www.himeyashop.com/product_info.php/products_id/6137]Himeya Shop[url]]</small>
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Language indicators

Keitai Shoujo ケータイ少女

Example CSS
change

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Keitai Shoujo ケータイ少女

Search
function

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Keitai Shoujo ケータイ少女

Example
analysis
extension

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Current development

Dark Mode Search crosstab languages

Keitai Shoujo ケータイ少女

Resource: <http://mediagraph.link/vndb/vn/1010>

Graph: **vndb**

Data sorted by source
No more indicators

Hide data source

hide

Property	Value
label	<ul style="list-style-type: none">Keitai Shoujo <small>en</small>ケータイ少女 <small>ja</small>
type	Visual novel <small>en</small>
Has release <small>en</small>	<ul style="list-style-type: none">Keitai Shoujo PC <small>en</small> ケータイ少女PC <small>ja</small>Shouji Shaonv PC <small>en</small> 手機少女 PC <small>ja</small>
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Title <small>en</small>	Keitai Shoujo
VNDB link <small>en</small>	http://vndb
Visual novel length <small>en</small>	Medium (10 -
Wikidata link <small>en</small>	https://www.w

Code for languages

Impressum

Outlook

Current state and developments

- **Database available** to the public as RDF with custom web frontend
 - Separate data from different community sources
 - Web interface for browsing
 - Plug-in architecture for data analysis web services
- **Coming soon**
 - Open source for frontend
 - Open data for knowledge graph data
 - Open source for local installation of full software stack

Thank you for your attention

Project blog:
<https://jvmg.iuk.hdm-stuttgart.de/>

Main database page:
<https://mediagraph.link/>

Project github:
<https://github.com/Japanese-Visual-Media-Graph>

