

# An open-source frontend for RDF-based knowledge graphs

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## Project origins

The ongoing research project "Japanese Visual Media Graph" strives to create a knowledge graph for the domain of Japanese visual media, especially manga, anime and computer games, by cooperating with fan communities on the web to re-use their curated data [1,2].

Data is collected from multiple sources and converted into the RDF format. This allows for an iterative approach to integrating and merging the information into the final knowledge graph, while preserving provenance information for the individual statements [3]. The resulting graph can be queried using SPARQL, but is also published as Linked Open Data using the domain mediagraph.link.

## Assessing Existing Solutions

Most RDF triple stores, especially commercial solutions, come with a simple web frontend. These are usually quite limited in their setup options.

There are open source alternatives. Best known would be the "Pubby" frontend, which was developed in the D2ME side-project of the Europeana initiative [4]. Other examples are Cliopatria or LodView.

We noticed severe slowdowns with our data and the Java servlet stack made debugging very hard. Some of the open source solutions were not well maintained and did not build out-of-the-box.

## Required Main Features

- Lookup all information on a given URI (default both as subject or as object)
- Support for browsing
- Show labels instead of URIs per default
- Show information from separate subgraphs
- Host any domain without DNS access (dynamic URI rewrite)
- Search interface
- **Manage browsing of 100.000 entities on a page**

**Saiyuki Gaiden**  
Resource: <http://mediagraph.link/aclick/work/3222>

Graph: **aclick**

Property	Value
label	Saiyuki Gaiden
Category en	OVA series en Serie OAV it
English title en	Saiyuuki Gaiden
Episodes en	3
is From work en of	<ul style="list-style-type: none"><li>Erlang Shen</li><li>Jirōshin</li><li>Kanzeon Bosatsu</li><li>Kenren Taishō</li><li>Konzen Dōji</li><li>Li Tōten</li><li>Nataku Taishi</li><li>Seikai Ryūō Gōjun</li><li>Seiten Taisei</li><li>Shōu</li><li>Son Goku</li><li>Tempō Gensui</li></ul>
Genre en	<ul style="list-style-type: none"><li>Action en Azione it</li><li>Adventure en Avventura it</li><li>Fantastic en Fantastico it</li><li>Supernatural en Soprannaturale it</li></ul>
ID en	3222
Kanji title en	最遊記外伝
Nationality en	Giappone
is Original of en of	Saiyuki Gaiden
Original title en	Saiyuki Gaiden
Prequel of en	Saiyuki - La leggenda del demone dell'illusione
Rating en	7.3
Related en	<ul style="list-style-type: none"><li>Gensomaden Saiyuki: Kibo no Zaika</li><li>Saiyuki Reload</li><li>Saiyuki Reload - Burial</li><li>Saivuki</li></ul>

Image: Screenshot of a work-type entity

## Interactive Interface Functionality

- 1) Multiple CSS variants, including a "dark mode"
- 2) Provenance information to indicate the data source
- 3) Settings to limit the labels to one or more languages
- 4) Expandable attribute sections to keep the view compact
- 5) Filters to hide information contained in specific subsets of the data (separate graphs in the triple store)

## Main Development Goals

- Low overhead, simple code, easy modifiable
- No dependence on large frameworks (specifically JAVA servlets)
- Use SPARQL to interface to any triple store
- Comply to the Linked Open Data standards

## Implementation

- Fully open source, lean (45 KBytes!)
- Dependencies
  - Python, Django web framework
  - Unicorn plus nginx web server
  - Elasticsearch indexing for search

## Ongoing and Future Development

- Advanced search
  - User-controllable custom index generation
  - Custom search interfaces
- Proper start page
  - Data sources
  - Statistics
  - Examples
- SPARQL endpoint integration
- Topology view?
- React component rewrite?

## Sources

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- [4] Baierer, Konstantin; Dröge, Evelyn; Eckert, Kai; Goldfarb, Doron; Iwanowa, Julia; Morbidoni, Christian; Ritze, Dominique (2017): DM2E: A linked data source of digitised manuscripts for the digital humanities. In: Semantic Web, 8 (5), 733–45.

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



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