

JIST2018 Tutorial

# Practical use of Knowledge Graph with Case Studies using Semantic Web Publishing tools

## Hands-on session

2018.11.26

Fujitsu Laboratories LTD.

(<http://lod4all.net/resource/corporate/jp/1020001071491>)

# Outline & Schedule(13:00-15:00)

- Introduction : 13:00-13:10 (10mins)
- Trials : 13:10-14:55 (95mins)
  - Trial1: Visualizing a corporate data. (About 30mins)
  - Trial2: Developing a financial analysis application. (About 65mins)
  - If you understand a sample program, you can develop freely.
  - If you do NOT understand a sample program, work with me.
- Closing : 14:55-15:00 (5mins)
  - Closing

**Please feel free to take a break when needed.**

# INTRODUCTION

# Introduction : Using Data

## ■ FDIC: Federal Deposit Insurance Corporation

■ <https://www.fdic.gov/>

- The Federal Deposit Insurance Corporation (FDIC) is an independent agency created by the U.S. Congress to maintain stability and public confidence in the nation's financial system by insuring deposits, examining and supervising financial institutions for safety and soundness and consumer protection, and managing receiverships.

The screenshot shows the FDIC website homepage. The header features the FDIC logo, the text "Federal Deposit Insurance Corporation", and "Each depositor insured to at least \$250,000 per insured bank". There are social media icons and an "Advanced Search" bar. The navigation menu includes: Home, Deposit Insurance, Consumer Protection, Industry Analysis, Regulations & Examinations, Institution & Asset Sales, News & Events, and About FDIC. The main content area has a "Transparency & Accountability" section with a list of links: Message from the Chairman, Bank Applications, Bank Examinations, Consumer Protection & Deposit Insurance, Deposit Insurance for Bankers, Legal Matters, and Resolutions & Failed Banks. To the right, a news article titled "Quarterly Banking Profile Date Announced" states that Chairman Jelena McWilliams will hold a press briefing on Tuesday, November 20, 2018, at 1:00 p.m. ET, to announce the bank and thrift industry earnings for the third quarter 2018. The event will take place at the FDIC's headquarters building located at 550 17<sup>th</sup> Street, N.W. Washington, D.C. The event will be webcast live. A "Learn More" link is provided. Below the article, there is a partial view of a line graph titled "All FDIC-insured Institutions" showing "Income Growth" in "Billions of Dollars" with a y-axis ranging from \$40 to \$50.

# Introduction : Creating Linked Data

- We have converted FDIC data to RDF data, and have linked to DBpedia.
- We have published this dataset on LOD4ALL.

The diagram illustrates the process of searching for a dataset on LOD4ALL. It starts with the 'LOD4ALL top page' which includes a navigation bar with links like HOME, Statistics, Dataset List, Instance Search, Search by SPARQL, API, Frontend, and Terms of Use. A callout 'Select "Dataset search"' points to the 'Dataset Search' tab. Below this, a search box contains the text 'FDIC' with a 'Search' button. A callout 'Input "FDIC"' points to this search box. A large curved arrow points from the search box to the 'Dataset List' page. The 'Dataset List' page shows the search results for 'FDIC', including a 'Count:1' and a list of dataset details for 'Federal Deposit Insurance Cor...'. A callout 'Searching results' points to this list. The details shown in the callout include: Author: LOD4ALL, URL: http://lod4all.net/, Update time: 2018-11-26, Num of triples: 20,787,756, and a Creative Commons BY license.

Select "Dataset search"

LOD4ALL top page

Input "FDIC"

Searching results

# Introduction : Data example

## ■ We welcome comments about this RDF.

```
<http://lod4all.net/resource/financial/fdicCert-3511> a <http://lod4all.net/ontology/financial/FdicOffice> ;
  a <http://www.w3.org/ns/org#Organization> ;
  <http://lod4all.net/ontology/financial/cbsaMetroFlg> "1"^^xsd:string ;
  <http://lod4all.net/ontology/financial/bkClass> "N"^^xsd:string ;
  <http://lod4all.net/ontology/financial/simsProjection> ""^^xsd:string ;
  <http://lod4all.net/ontology/financial/csaFlg> "0"^^xsd:string ;
  <http://lod4all.net/ontology/financial/cbsaNo> "43620"^^xsd:string ;
  <http://lod4all.net/ontology/financial/cbsaMetro> "43620"^^xsd:string ;
  <http://lod4all.net/ontology/financial/cbsaDiv> ""^^xsd:string ;
  <http://lod4all.net/ontology/financial/county> "Minnehaha"^^xsd:string ;
  <http://lod4all.net/ontology/financial/fiUninum> "2239"^^xsd:string ;
  <http://lod4all.net/ontology/financial/city> "Sioux Falls"^^xsd:string ;
  ...
  <http://lod4all.net/ontology/financial/fdicCert> "3511"^^xsd:string ;
  <http://lod4all.net/ontology/financial/simsLatitude> ""^^xsd:string ;
  <http://lod4all.net/ontology/financial/stCnty> "46099"^^xsd:string ;
  <http://lod4all.net/ontology/financial/stname> "South Dakota"^^xsd:string ;
  <http://lod4all.net/ontology/financial/simsLongitude> ""^^xsd:string ;
  <http://lod4all.net/ontology/financial/stAlp> "SD"^^xsd:string ;
  <http://lod4all.net/ontology/financial/cbsa> "Sioux Falls, SD"^^xsd:string ;
  <http://lod4all.net/ontology/financial/address> "101 N. Phillips Avenue"^^xsd:string ;
  <http://lod4all.net/ontology/financial/cbsaMicroFlg> "0"^^xsd:string ;
  <http://lod4all.net/ontology/financial/cbsaDivFlg> "0"^^xsd:string ;
  <http://lod4all.net/ontology/financial/name> "Wells Fargo Bank, National Association"^^xsd:string ;
  <http://lod4all.net/ontology/financial/offNum> ""^^xsd:string ;
  <http://lod4all.net/ontology/financial/estYmd> "1870-01-01"^^xsd:string ;
  <http://lod4all.net/ontology/financial/uninum> "2239"^^xsd:string ;
  skos:prefLabel "Wells Fargo Bank, National Association"@en ;
  <http://xmlns.com/foaf/0.1/primaryTopic> <http://dbpedia.org/resource/Wells_Fargo> .
```

FDIC RDF data



- Crawl LOD from around the world (several tens of billion data items), and provide a high-speed search service

**Solution1**

Use data without being aware of what site it is on



Use

**Solution2**

Applications need not to implement complex processes!



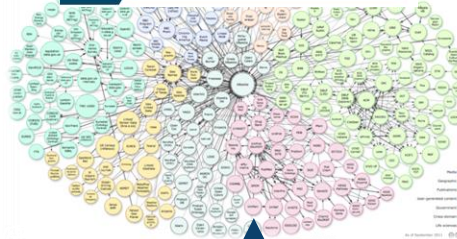
Application

Use

Search UI

Standard API

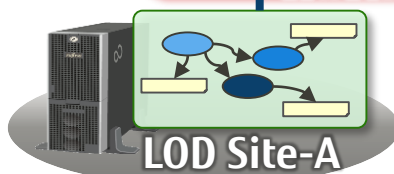
**LOD4ALL**



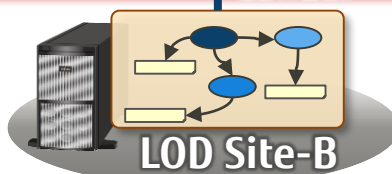
Collect

Collect

Collect



LOD Site-A



LOD Site-B

**Solution3**

Can even search sites without search functions!

# Introduction : Setup

- Fork hands-on materials to your account from **"<https://github.com/lod4all/jist2018-hands-on>"**

The image illustrates the steps to fork a GitHub repository. The top screenshot shows the repository page for `lod4all / jist2018-hands-on`. The 'Fork' button is highlighted with a callout that says 'Click Here'. Below the repository name, there are statistics: 42 commits, 1 branch, 0 releases, and 1 contributor. The 'Clone or download' button is also visible. A large arrow points from the 'Fork' button to a smaller screenshot of the 'Forking lod4all/jist2018-hands-on' confirmation page. This page shows the user's new repository, `h-morikawa / jist2018-hands-on`, and states 'It should only take a few seconds.' with a 'Refresh' button and a fork icon.



# Introduction : Setup (cont.)

- LOD4ALL GitHub top page describes today's hands-on and some useful information.
- **If you have any questions or troubles, please raise a hand.**

lod4all / jst2018-hands-on

Watch 0 Star 0 Fork 4

Code Pull requests 0 Projects 0 Wiki Insights Settings

No description, website, or topics

Manage topics

100 commits

1 environment 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

lod4all Merge branch 'master' of https://github.com/lod4all/jst2018-hands-on Latest commit 4c261f7 a minute ago

File	Update	Time
docs	Update	a minute ago
JST2018_Hands_on_20181126.pdf	Update	a minute ago
README.md	Update README.md	7 minutes ago

README.md

### About this page

These materials are used in "Practical Use of a Knowledge Graph with Case Studies using Semantic Web Publishing Tools" hands-on session. Information about this hands-on is referred a following page: <http://jst2018.knowledge-graph.jp/pages/program/tutorials.html>

Feel free to use/share this material. If you have any questions, you may contact us using the LOD4ALL contact page. The LOD4ALL contact page as following: <http://lod4all.net/contact.html>

### Introduction

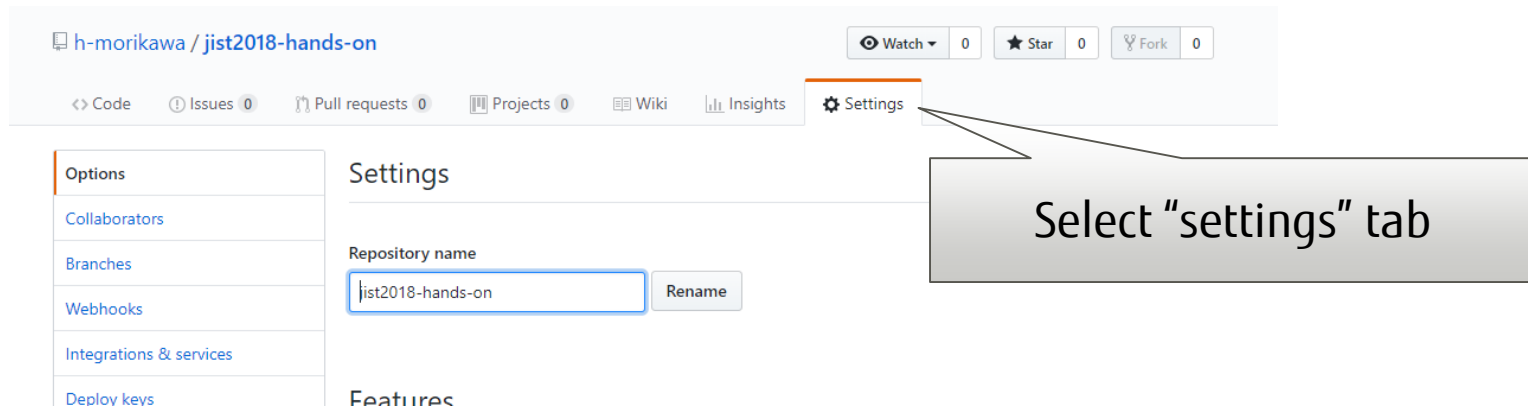
The Federal Deposit Insurance Corporation (FDIC) is an independent agency created by the U.S. Congress to maintain stability and public confidence in the nation's financial system by insuring deposits, examining and supervising financial institutions for safety and soundness and consumer protection, and managing receiverships.

FUJITSU Laboratories have converted the FDIC data to RDF data, and have linked to DBpedia, and have published this dataset on LOD4ALL. If you see a examples of FDIC RDF data, please check a data example section. The FDIC RDF data and DBpedia are loaded on LOD4ALL. LOD4ALL is LOD search engine that FUJITSU Laboratories developed. This engine Crawl Linked Open Data

You can reference today's hands-on and some useful information

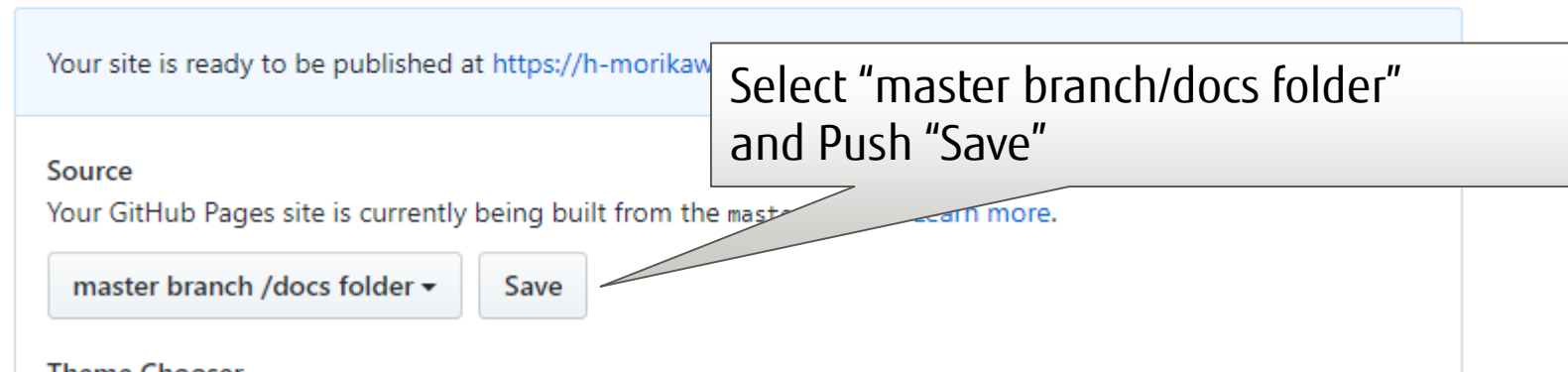
# Introduction : Setup (cont.)

## ■ Active GitHub Pages in your repository.



## GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.



# How to edit materials from GitHub

■ Need to wait a few minutes until activating GitHub Pages...

■ During this time, I introduce how to edit materials from GitHub.

lod4all / jist2018-hands-on

Watch 0 Star 0 Fork 4

Code Issues Pull requests Projects Wiki Insights Settings

No description, website, or topics provided.

Manage topics

100 commits 1 branch 0 releases 1 environment 1 contributor

Branch: master New pull request

Create new file Upload files Find file Clone or download

lod4all Merge branch 'master' of https://github.com/lod4all/jist2018-hands-on Latest commit 4c261f7 a minute ago

docs Update a minute ago

JIST2018\_Hands\_on\_20181126.pdf Update a minute ago

README.md Update README.md 7 minutes ago

README.md

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Introduction

The Federal Deposit Insurance Corporation (FDIC) is an independent agency created by the U.S. Congress to maintain stability and public confidence in the nation's financial system by insuring deposits, examining and supervising financial institutions for safety and soundness and consumer protection, and managing receiverships.

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jist2018-hands-on / README.md or cancel

Edit file Preview changes Spaces 1 Soft wrap

```
1 # jist2018-hands-on
2 ## h-morikawa
3 These materials are used in "Practical Use of a Knowledge Graph with Case Studies using Semantic Web Publishing Tools" tutorial session.
4 Information about JIST 2018 tutorial is referred a following page: http://jist2018.knowledge-graph.jp/pages/program/tutorials.html
5 Feel free to use/share today's material as you wish.
6 If you have any questions, you may contact us using the LOD4ALL contact page.
7 The LOD4ALL contact page as following: http://lod4all.net/contact.html
8 This GitHub page is https://lod4all.github.io/jist2018-hands-on/
9
10 ## Troubleshooting
11 1. GitHub nameが何故書けない
```

Commit changes

Update README.md

Add an optional extended description...

Commit directly to the master branch of this repository (recommended) Create a new branch for this commit and then create a pull request

Commit changes Cancel

432 lines (369 sloc) 21.5 KB Raw Blame History

About this page


Edit by LOD4ALL

These materials are used in "Practical Use of a Knowledge Graph with Case Studies using Semantic Web Publishing Tools"

# Introduction : Setup (cont.)

- Check your GitHub page using a browser.

← → ↻ 🏠  https://lod4all.github.io/jist2018-hands-on/

**JIST 2018 Hands-on materials**  https://<your account name>.github.io/jist2018-hands-on/

These materials are used in "Practical use of Knowledge Graph ~Case Studies using Semantic Web Publishing tools~" tutorial session.

Information about JIST 2018 tutorial is referred a following page: <http://jist2018.knowledge-graph.jp/pages/program/tutorials.html>

## Trial 1

- [Sgvizler](#)
- [D3SPARQL](#)

## Trial 2

- [Sample application](#)

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- Using a javascript based library
  - Sgvizler or D3SPARQL
- Merit: Both libraries run on Web Browser, and do not need a specific environment.
- You may choose whichever suits you best.
- In this session, I use Sgvizler for my example.

## ■ Click "Sgvizler sample"

← → ↻ 🏠 <https://lod4all.github.io/jist2018-hands-on/>

## JIST 2018 Hands-on materials

These materials are used in "Practical use of Knowledge Graph ~Case Studies using Semantic Web Publishing tools~" tutorial session.

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### Trial 1



Here

- [Sgvizler](#)
- [D3SPARQL](#)

### Trial 2

- [Sample application](#)

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## ■ Test page using Sgvizler

### sgvizler sample

SPARQL endpoint:

Query

```
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>
```

```
SELECT ?date (xsd:decimal(?org_value) as ?value) WHERE
  l4a-fin-r:fdicCert-3511 l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?org_value .
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
```

Click and execute SPARQL  
And you can see some  
chart in a chart field.

Chart filed

# Trial1-1:Visualizing corporate data

- Data: A changes in total assets of banks by quarter
- How: By Line chart

## sgvizler sample

SPARQL endpoint:

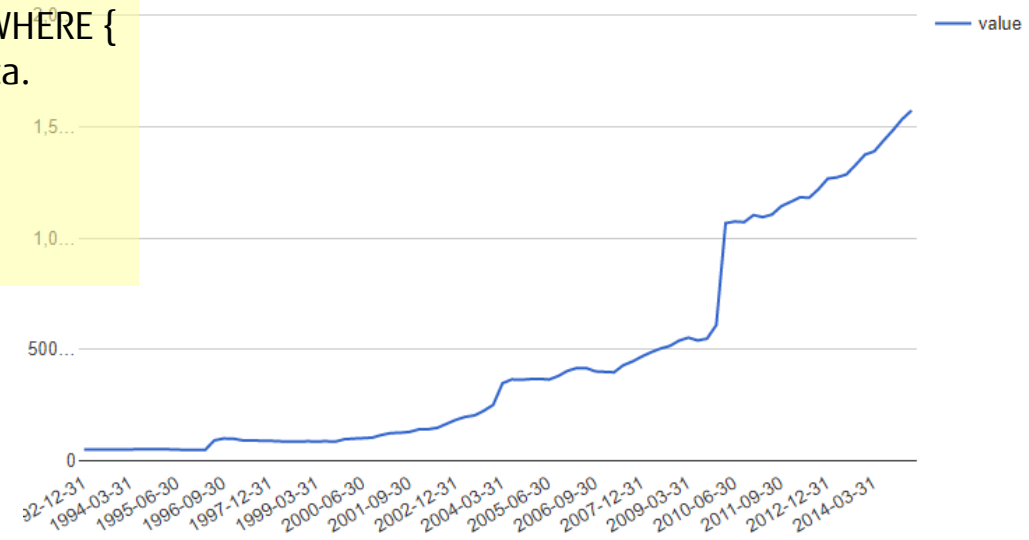
Query

```
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>

SELECT ?date (xsd:decimal(?org_value) as ?value) WHERE {
  l4a-fin-r:fdicCert-3511 l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?org_value .
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
```

PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>  
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>

SELECT ?date (xsd:decimal(?org\_value) as ?value) WHERE {  
 l4a-fin-r:fdicCert-3511 l4a-fin:data ?financial\_data.  
 ?financial\_data l4a-fin:date ?org\_date .  
 ?financial\_data l4a-fin:asset ?org\_value .  
 BIND(strbefore(?org\_date,"T") as ?date)  
} ORDER BY (?date)





# Trial1-2:Visualizing corporate data

## ■ Change Company

### sgvizler sample

SPARQL endpoint: <https://lod4all.net/api/sparql?token=jist2018-data>

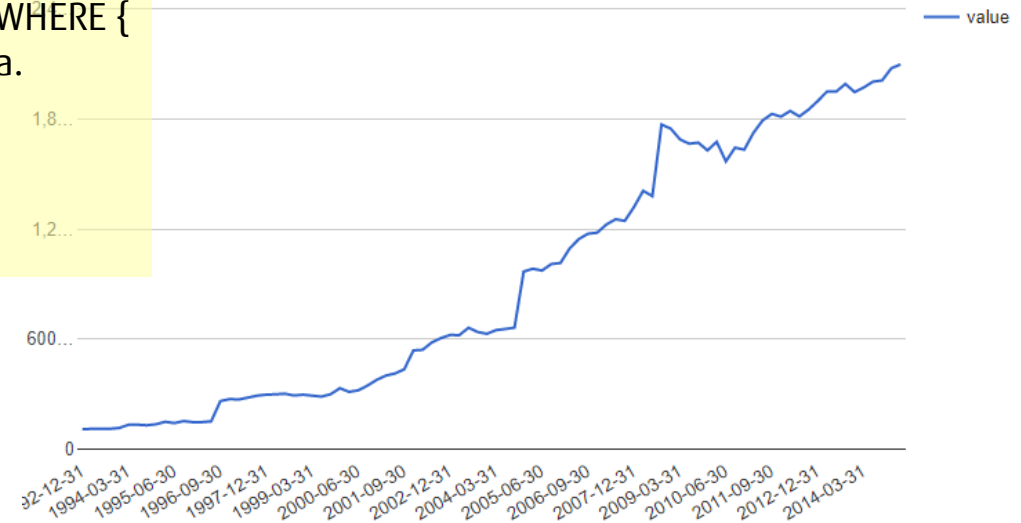
Query

```
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>

SELECT ?date (xsd:decimal(?org_value) as ?value) WHERE {
  l4a-fin-r:fdicCert-628 l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?org_value .
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
```

PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>  
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>

SELECT ?date (xsd:decimal(?org\_value) as ?value) WHERE {  
 l4a-fin-r:fdicCert-**628** l4a-fin:data ?financial\_data.  
 ?financial\_data l4a-fin:date ?org\_date .  
 ?financial\_data l4a-fin:asset ?org\_value .  
 BIND(strbefore(?org\_date,"T") as ?date)  
} ORDER BY (?date)



# Trial1-3: Visualizing corporate data

## ■ Change KPI

### ■ KPI: Total interest income

- l4a-fin:intinc

## sgvizler sample

SPARQL endpoint:

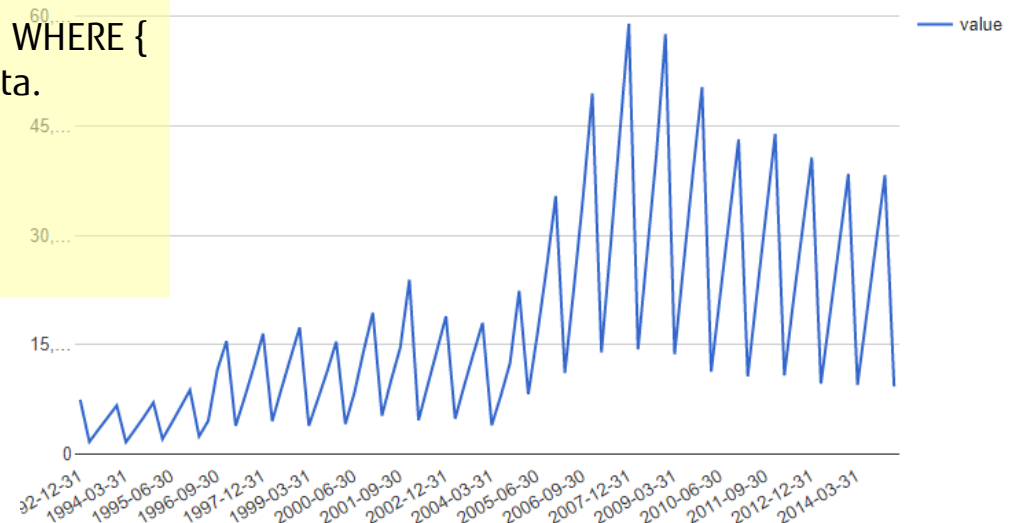
Query

```
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>

SELECT ?date (xsd:decimal(?org_value) as ?value) WHERE {
  l4a-fin-r:fdicCert-628 l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:intinc ?org_value .
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
```

PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>  
PREFIX l4a-fin-r: <http://lod4all.net/resource/financial/>

SELECT ?date (xsd:decimal(?org\_value) as ?value) WHERE {  
 l4a-fin-r:fdicCert-628 l4a-fin:data ?financial\_data.  
 ?financial\_data l4a-fin:date ?org\_date .  
 ?financial\_data l4a-fin:**intinc** ?org\_value .  
 BIND(strbefore(?org\_date,"T") as ?date)  
} ORDER BY (?date)



# Search other Companies

## ■ Using LOD4ALL Instance Search

URL : <http://lod4all.net/datasetdetail.html?graph=http://lod4all.net/graph/fdic>

The screenshot shows the LOD4ALL website interface. At the top, there is a navigation bar with links: HOME, Statistics, Dataset List, Instance Search, Search by SPARQL, API, Frontend, and Terms of Use. The main content area is titled 'Dataset Detail' and shows information for the 'Federal Deposit Insurance Corporation (FDIC)'. A callout box with a speech bubble points to the search input field, containing the text 'Input a bank name in USA'. The input field contains the text 'Sumitomo Mitsui Trust Bank (U.S.a.) Limited'. Below the input field, there are radio buttons for 'Keyword' (selected) and 'URI'. The 'Dataset Information' section is visible below the search area, showing fields like Contributor, Update time, Graph Name, Triples, Classes, Properties, Distinct subjects, and Distinct objects. The 'data in dataset' section is also visible, showing a table with columns: Subject, Predicate, and Object.

Field	Value
Contributor	LOD4ALL <sup>12</sup>
Update time	2018-11-26
Graph Name	<a href="http://lod4all.net/graph/fdic">http://lod4all.net/graph/fdic</a>
Triples	20,787,756
Classes	9
Properties	59
Distinct subjects	905,891
Distinct objects	2,011,165

Subject	Predicate	Object
2006-12-31 <a href="http://lod4all.net/resource/financial/fdicCert-100">http://lod4all.net/resource/financial/fdicCert-100</a> 2008-12-31	chbai <a href="http://lod4all.net/ontology/financial/chbai">http://lod4all.net/ontology/financial/chbai</a>	23936

## ■ We see "Company URI List" from a following URL.

■ [https://lod4all.github.io/jist2018-hands-on/companies\\_uri.txt](https://lod4all.github.io/jist2018-hands-on/companies_uri.txt)

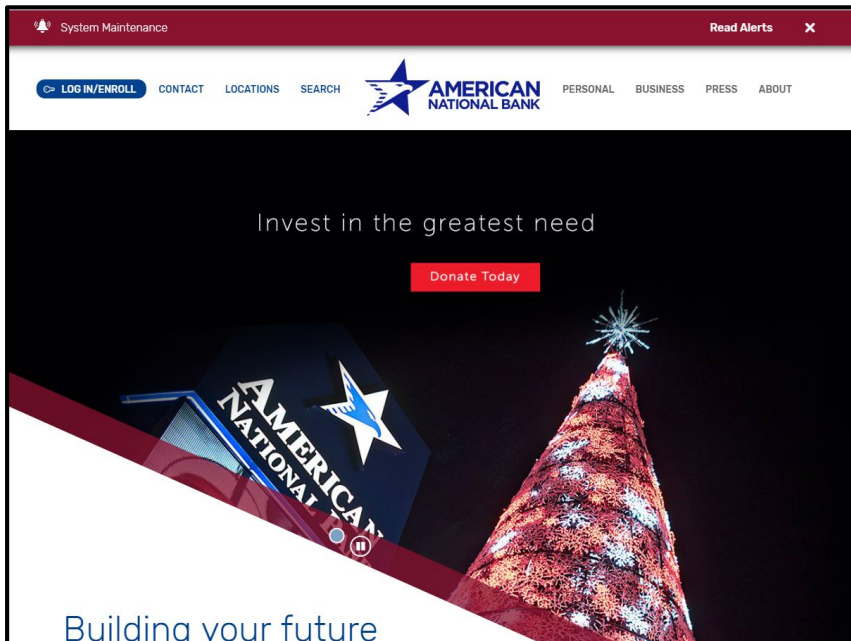
# FYIG: American National Bank?

## ■ Different Banks of the same name in USA

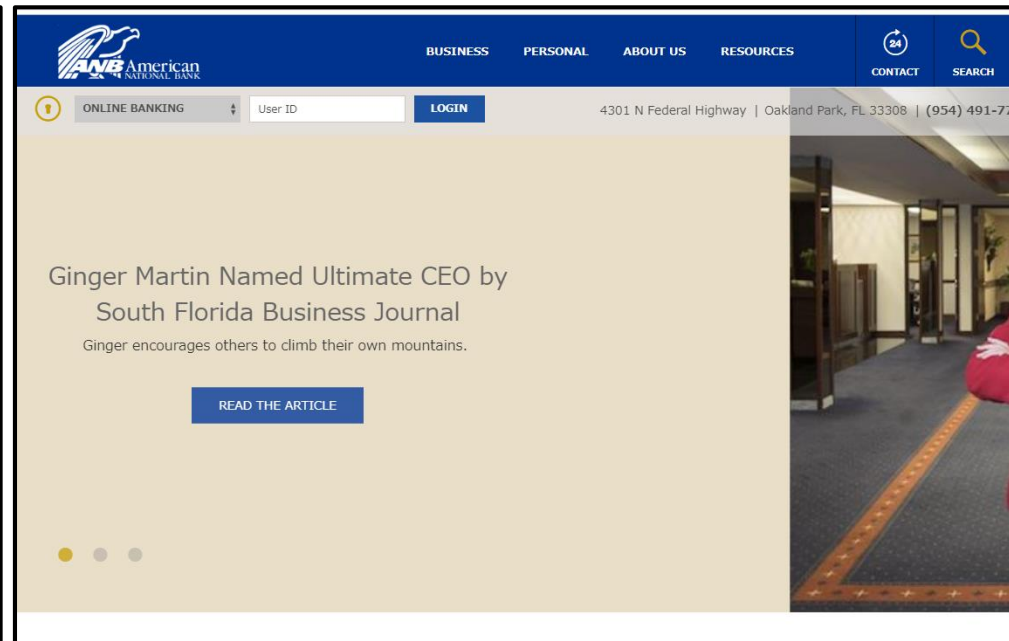
■ I4a-fin-r:19300 <https://american.bank/>

■ I4a-fin-r:26398 <https://www.americannationalbank.com/>

## ■ The "Company URI List" contains banks of same name.



<https://american.bank/>



<https://www.americannationalbank.com/>

PREFIX l4a-fin: < <http://lod4all.net/ontology/financial/>> .

Predicate URI	Label	Label(Japanese 日本語)	Label(Chinese 中文)
l4a-fin:asset	Total assets	総資産	总资产
l4a-fin:assetfor	Total assets in foreign offices	外国の総資産	国外资产总额
l4a-fin:chbal	Cash & Balances due from depository institutions	現金と、預貯金取扱金融機関の残高	处理存款和储蓄的金融机构的现金和未结余额
l4a-fin:dep	Total deposits	総預金	总存款
l4a-fin:depi	Interest-bearing deposits	利息付き預金	利息存款
l4a-fin:eintexp	Total interest expense	総利息費用	毛利费用
l4a-fin:eq	Bank equity capital	銀行自己資本	银行资本
l4a-fin:eqtot	Total equity capital	総自己資本	总资本
l4a-fin:idtrngov	U.S. Government	米国政府とのトランザクション総額	与美国政府的交易总额
l4a-fin:idtrnmu	States and political subdivisions in the U.S.	州および行政的小区域との総トランザクション総額	具有州和行政子区域的总交易金额
l4a-fin:ilndom	Interest income: Domestic office loans	国内法人ローンの利息収入	国内公司贷款利息收入
l4a-fin:ilnfor	Interest income: Foreign office loans	国外法人ローンの利息収入	外国公司贷款的利息收入
l4a-fin:intan	Goodwill and other intangibles	営業権と他の無形財産	商誉和其他无形财产
l4a-fin:intinc	Total interest income	総利息収入	利息总收入
l4a-fin:liab	Total Liabilities	負債総額	总债务
l4a-fin:noni	Total noninterest income	総非金利収入	非利息收入总额
l4a-fin:nonix	Total noninterest expense	総非金利経費	非利息费用总额
l4a-fin:numemp	Total employees (full-time equivalent)	総従業員（常勤職換算）	员工总数（全职工作转换）

**WORKING TIME (-13:40)**

## ■ Click "Sample Dashboard"

← → ↻ 🏠 🔒 <https://h-morikawa.github.io/jist2018-hands-on/>

## JIST 2018 Tutorial and Hands-on

This page is constructing...

For further information, see as following page: <http://jist2018.knowledge-graph.jp/pages/program/tutorials.html>

- [D3SPARQL sample](#)
- [Sgvizler sample](#)
- [Search corporate entities using LOD4ALL](#)
- [Sample Dashboard](#)



Here

# Trial2: Sample Application

Financial analysis application

powered by **LOD4ALL**

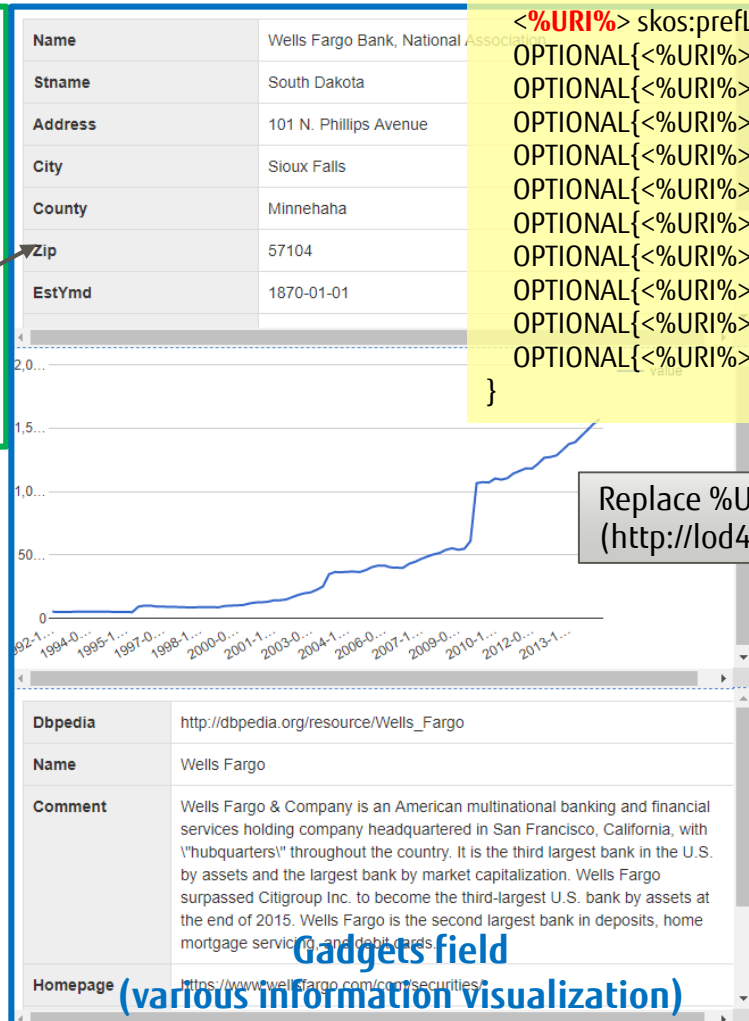
Keyword:

Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank

Instance search field



Gadgets field

(various information visualization)

PREFIX skos: <<http://www.w3.org/2004/02/skos/core#>>  
PREFIX l4a-fin: <<http://lod4all.net/ontology/financial/>>

```
SELECT DISTINCT * WHERE {  
  <%URI%> skos:prefLabel ?name .  
  OPTIONAL{<%URI%> l4a-fin:stname ?stname.}  
  OPTIONAL{<%URI%> l4a-fin:address ?address.}  
  OPTIONAL{<%URI%> l4a-fin:city ?city.}  
  OPTIONAL{<%URI%> l4a-fin:county ?county.}  
  OPTIONAL{<%URI%> l4a-fin:zip ?zip.}  
  OPTIONAL{<%URI%> l4a-fin:estYmd ?estYmd.}  
  OPTIONAL{<%URI%> l4a-fin:uninum ?uninum.}  
  OPTIONAL{<%URI%> l4a-fin:fiUninum ?fiUninum.}  
  OPTIONAL{<%URI%> l4a-fin:cbsaNo ?cbsaNo.}  
  OPTIONAL{<%URI%> l4a-fin:cbsaMetroName ?cbsaMetroName.}  
}
```

Replace %URI% to a clicked URI  
(<http://lod4all.net/resource/financial/fdicCert-3511>)



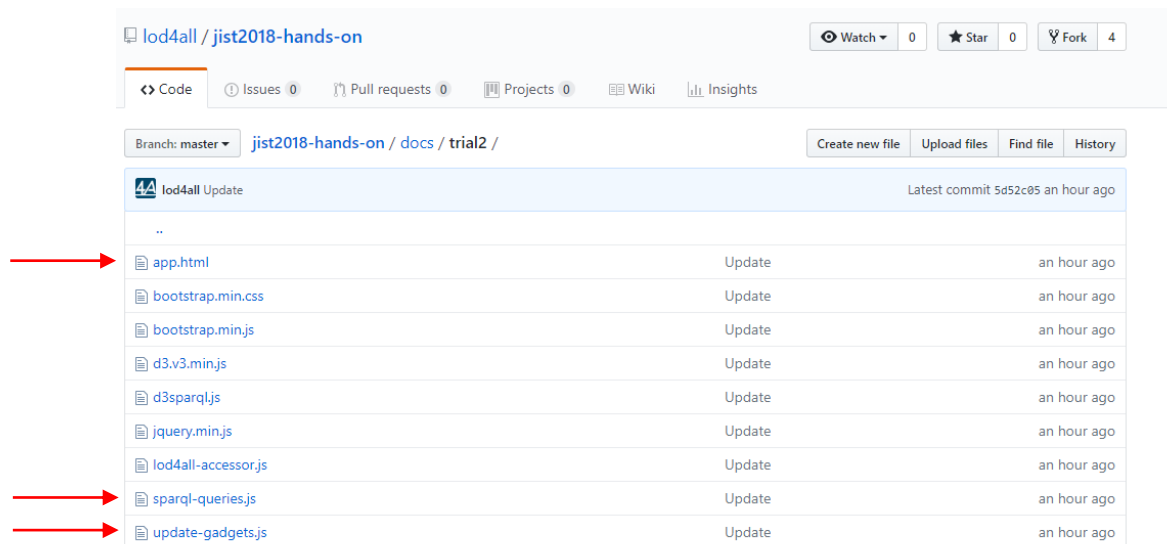
# Trial2: Sample Application

## ■ Supported browsers

- Chrome or Firefox or Safari version 12
- *Internet Explorer is **not** supported*

## ■ Application structure

- app.html : HTML page
- sparql-queries.js : Manage SPARQL queries for using this application
- update-gadgets.js : Manage a visualization configuration for using this application



The screenshot shows the GitHub repository page for 'lod4all / jist2018-hands-on'. The 'Code' tab is selected, showing the file structure of the 'trial2' directory. The files listed are:

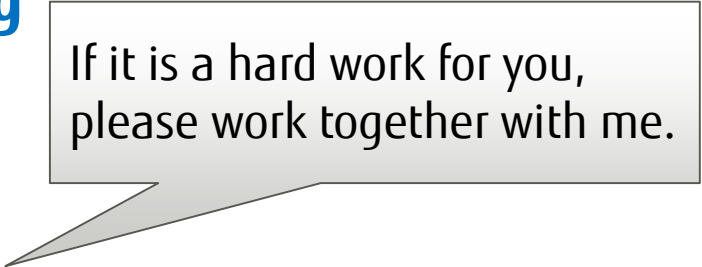
File	Update	Latest commit
..		5d52c05 an hour ago
app.html	Update	an hour ago
bootstrap.min.css	Update	an hour ago
bootstrap.min.js	Update	an hour ago
d3.v3.min.js	Update	an hour ago
d3sparqljs	Update	an hour ago
jquery.min.js	Update	an hour ago
lod4all-accessor.js	Update	an hour ago
sparql-queries.js	Update	an hour ago
update-gadgets.js	Update	an hour ago

Red arrows point to the following files:

- app.html
- sparql-queries.js
- update-gadgets.js

## ■ Until ~14:55

### ■ Break as appropriate by your timing

A grey speech bubble with a black border and a tail pointing towards the bottom left.

If it is a hard work for you,  
please work together with me.

## ■ Example

### ■ Change gadgets

- Change queries(KPI), Change Chart type etc...

### ■ Add new gadget

### ■ Add new function

# Trial2-1: Changing gadgets

## Financial analysis application

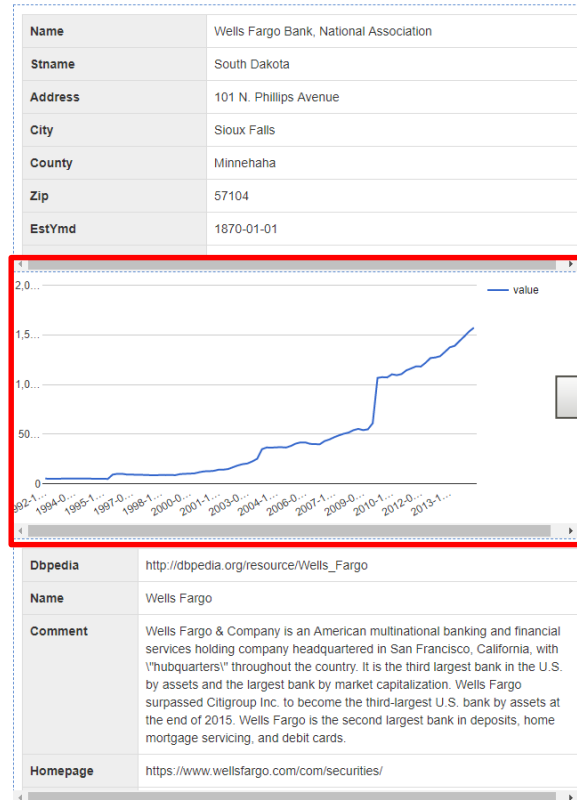
powered by **LOD4ALL**

Keyword:

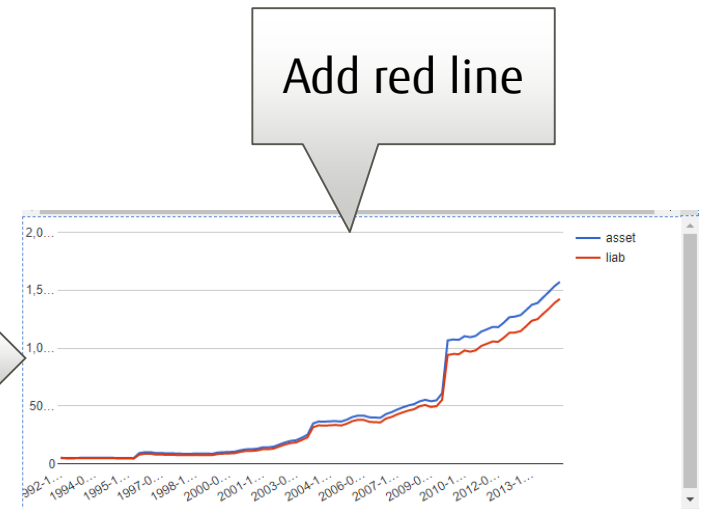
Search

Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank



Before

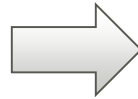


After

## ■ Edit sparql-queries.js

```
function getSPARQL002()
{
  var sparql_query = `
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>

SELECT ?date (xsd:decimal(?org_value) as ?value) WHERE {
  <%URI%> l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?org_value .
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
`
  return sparql_query;
}
```



```
function getSPARQL002()
{
  var sparql_query = `
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>

SELECT ?date (xsd:decimal(?org_asset) as ?asset)
(xsd:decimal(?org_liab) as ?liab) WHERE {
  <%URI%> l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?org_asset.
  ?financial_data l4a-fin:liab ?org_liab.
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
`
  return sparql_query;
}
```

# Trial2-1: Changing gadgets

## ■ Check your dashboard

Financial analysis application

powered by **LOD4ALL**

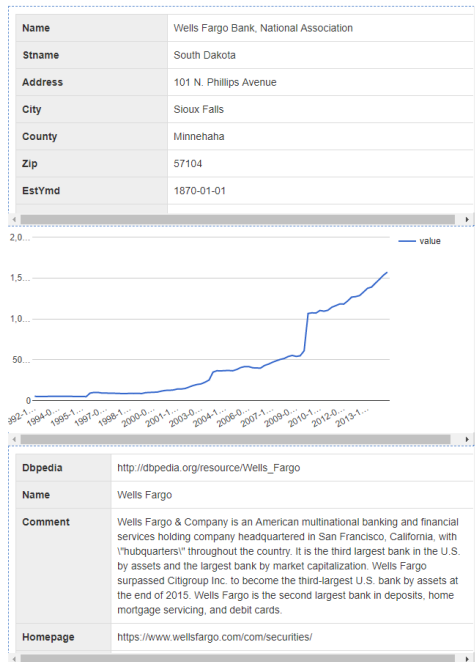
Keyword:

Wells Fargo Bank

Search

Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank



Before

Financial analysis application

powered by **LOD4ALL**

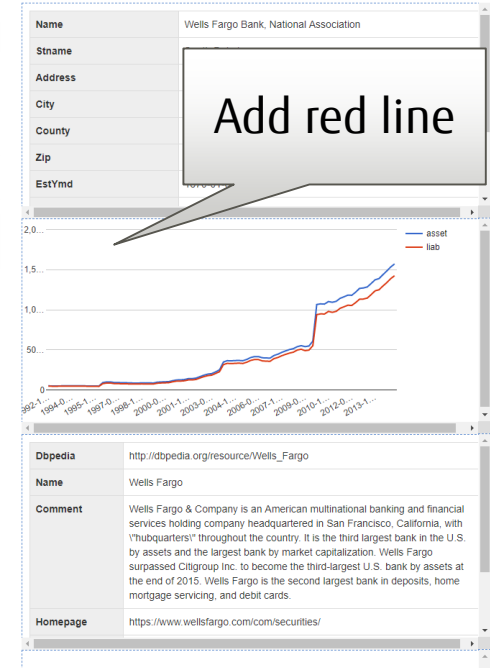
Keyword:

Wells Fargo Bank

Search

Done.

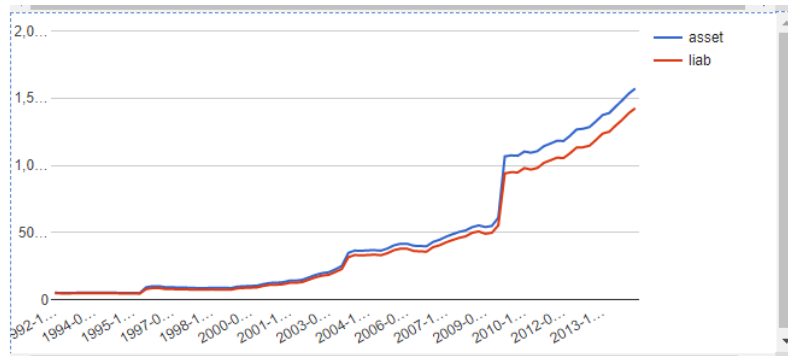
URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank



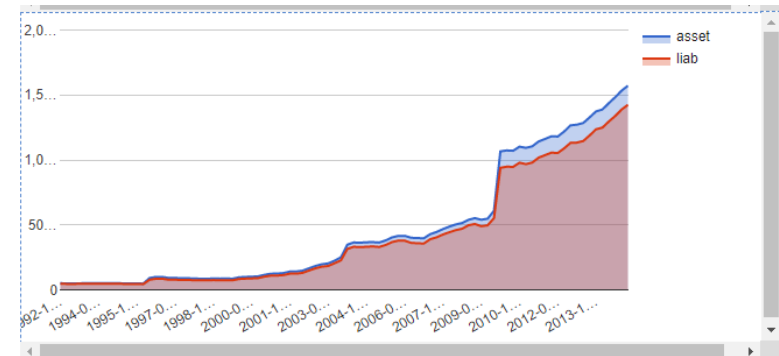
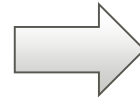
After

# Trial2-2: Changing gadgets

## ■ Change a chart type



Line chart

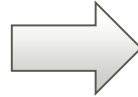


Area chart

# Trial2-2: Changing gadgets

- Edit : update-gadgets.js
- Line chart -> Area chart

```
function updateGadget002(click_uri)
{
    $('#gadget-002').empty();
    var sparql_val = getSPARQL002().trim();
    sparql_val = sparql_val.replace(/<%URI%>/g,
    '<' + click_uri + '>');
    var Q = new sgvizler.Query();
    Q.query(sparql_val)
        .endpointURL("https://lod4all.net/api/sparql")
        .endpointOutputFormat("json")
        .chartFunction("google.visualization.LineChart")
        .draw("gadget-002");
}
```



```
function updateGadget002(click_uri)
{
    $('#gadget-002').empty();
    var sparql_val = getSPARQL002().trim();
    sparql_val = sparql_val.replace(/<%URI%>/g,
    '<' + click_uri + '>');
    var Q = new sgvizler.Query();
    Q.query(sparql_val)
        .endpointURL("https://lod4all.net/api/sparql")
        .endpointOutputFormat("json")
        .chartFunction("google.visualization.AreaChart")
        .draw("gadget-002");
}
```

- You can check other chart types from following URL
  - <http://msgskjaeveland.github.io/sgvizler/>

# Trial2-2: Changing gadgets

## ■ Check your dashboard

### Financial analysis application

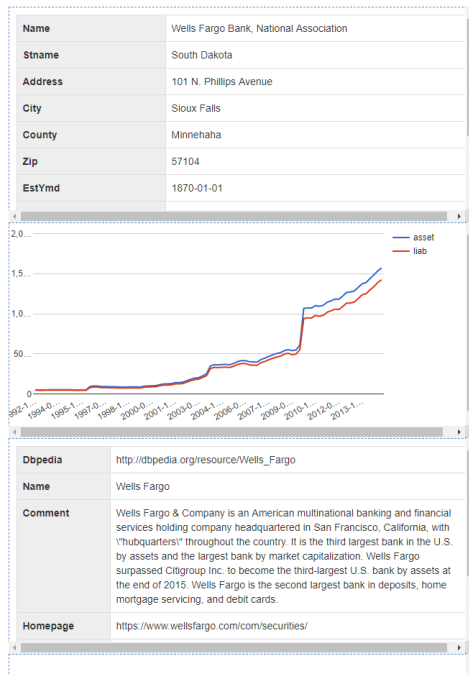
powered by LOD4ALL

Keyword:

Search

Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank



Before

### Financial analysis application

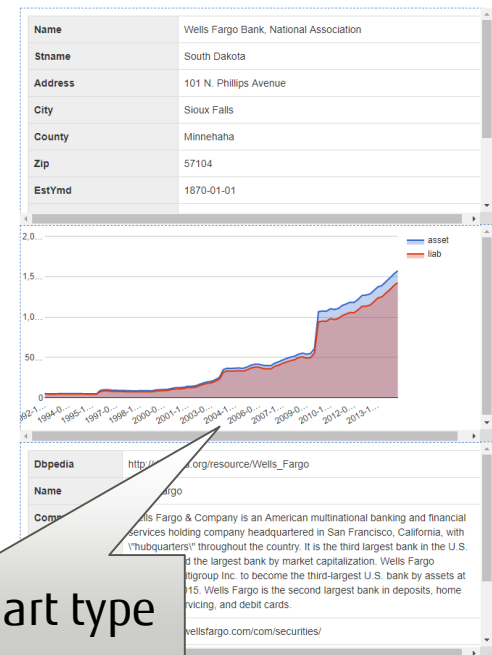
powered by LOD4ALL

Keyword:

Search

Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank



Change a chart type

After



# Trial2-3: Changing gadgets

## ■ Change a KPI

Financial analysis application

powered by **LOD4ALL**

Keyword:

Wells Fargo Bank

Search

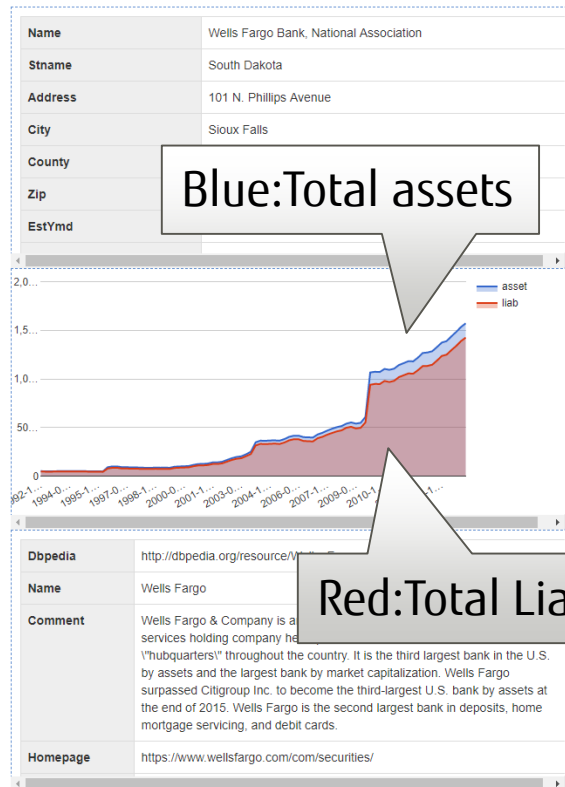
Done.

URI

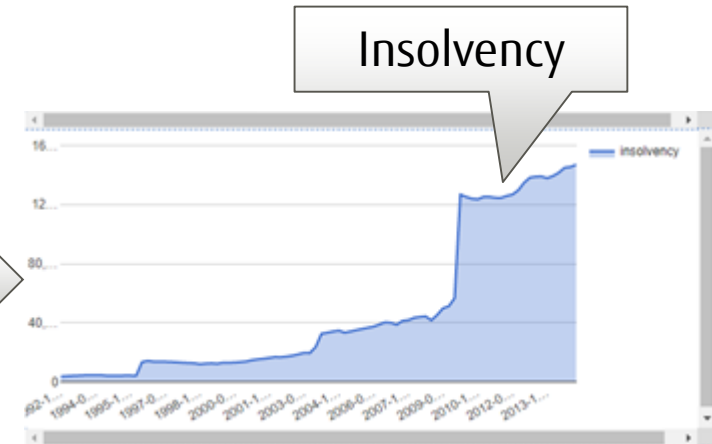
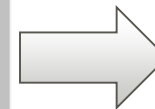
Label

<http://lod4all.net/resource/financial/fdicCert-3511>

Wells Fargo Bank



Before

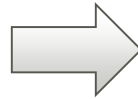


After

## ■ Edit : update-queries.js

```
function getSPARQL002()
{
  var sparql_query = `
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>

SELECT ?date (xsd:decimal(?org_value) as ?value) WHERE {
  <%URI%> l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?org_value .
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
`
  return sparql_query;
}
```



```
function getSPARQL002()
{
  var sparql_query = `
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>

SELECT ?date ?insolvency WHERE {
  <%URI%> l4a-fin:data ?financial_data.
  ?financial_data l4a-fin:date ?org_date .
  ?financial_data l4a-fin:asset ?asset .
  ?financial_data l4a-fin:liab ?liab.
  BIND(xsd:decimal(xsd:decimal(?asset) -
  xsd:decimal(?liab)) as ?insolvency).
  BIND(strbefore(?org_date,"T") as ?date)
} ORDER BY (?date)
`
  return sparql_query;
}
```

# Trial2-3: Changing gadgets

## ■ Check your dashboard

Financial analysis application

powered by LOD4ALL

Keyword:

  
  
  
  
Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank

Dbpedia	<a href="http://dbpedia.org/resource/Wells_Fargo">http://dbpedia.org/resource/Wells_Fargo</a>
Name	Wells Fargo
Comment	Wells Fargo & Company is an American multinational banking and financial services holding company headquartered in San Francisco, California, with "hubs" throughout the country. It is the third largest bank in the U.S. by assets and the largest bank by market capitalization. Wells Fargo surpassed Citigroup Inc. to become the third-largest U.S. bank by assets at the end of 2015. Wells Fargo is the second largest bank in deposits, home mortgage servicing, and debit cards.
Homepage	<a href="https://www.wellsfargo.com/com/securities/">https://www.wellsfargo.com/com/securities/</a>

Before

Financial analysis application

powered by LOD4ALL

Keyword:

  
  
  
  
Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank

Dbpedia	<a href="http://dbpedia.org/resource/Wells_Fargo">http://dbpedia.org/resource/Wells_Fargo</a>
Name	Wells Fargo
Comment	Wells Fargo & Company is an American multinational banking and financial services holding company headquartered in San Francisco, California, with "hubs" throughout the country. It is the third largest bank in the U.S. by assets and the largest bank by market capitalization. Wells Fargo surpassed Citigroup Inc. to become the third-largest U.S. bank by assets at the end of 2015. Wells Fargo is the second largest bank in deposits, home mortgage servicing, and debit cards.
Homepage	<a href="https://www.wellsfargo.com/com/securities/">https://www.wellsfargo.com/com/securities/</a>

Change a KPI

After

# Trial2-4: Adding new gadget

- Add a "Counting branches by region" gadget on the right side bottom of the application.

- Procedure

- Design SPARQL
- Add new gadget code
- Edit sample-dashboard.html

Financial analysis application

powered by **LOD4ALL**

Keyword:

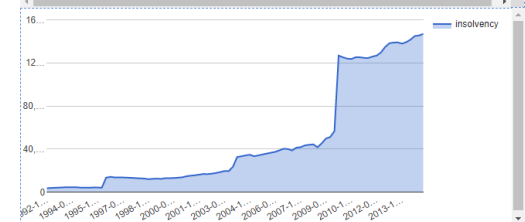
Wells Fargo Bank

Search

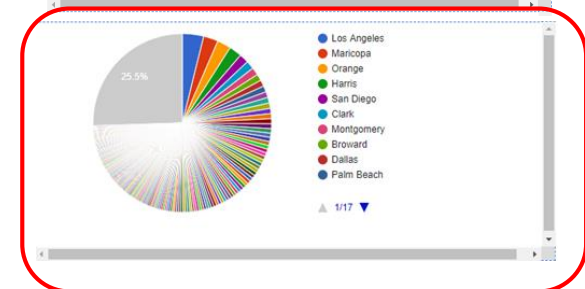
Done.

URI	Label
<a href="http://lod4all.net/resource/financial/fdicCert-3511">http://lod4all.net/resource/financial/fdicCert-3511</a>	Wells Fargo Bank

Name	Wells Fargo Bank, National Association
Strname	South Dakota
Address	101 N. Phillips Avenue
City	Sioux Falls
County	Minnehaha
Zip	57104
EstYmd	1870-01-01



Dbpedia	<a href="http://dbpedia.org/resource/Wells_Fargo">http://dbpedia.org/resource/Wells_Fargo</a>
Name	Wells Fargo
Comment	Wells Fargo & Company is an American multinational banking and financial services holding company headquartered in San Francisco, California, with "hubs" throughout the country. It is the third largest bank in the U.S. by assets and the largest bank by market capitalization. Wells Fargo surpassed Citigroup Inc. to become the third-largest U.S. bank by assets at the end of 2015. Wells Fargo is the second largest bank in deposits, home mortgage servicing, and debit cards.
Homepage	<a href="https://www.wellsfargo.com/com/securities/">https://www.wellsfargo.com/com/securities/</a>



## ■ Edit sparql-queries.js

- Add a following code in this file.

```
function getSPARQL004()
{
    var sparql_query = `
PREFIX l4a-fin: <http://lod4all.net/ontology/financial/>

SELECT ?county (xsd:decimal(count(?branch)) as ?num_of_branches) where
{
    <%URI%> l4a-fin:branch ?branch.
    ?branch l4a-fin:county ?county.
} group by ?county order by desc(?num_of_branches)
`
    return sparql_query;
}
```

# Trial2-4: Adding new gadget

## ■ Edit update-gadgets.js

```
function updateGadget004(click_uri)
{
    $('#gadget-004').empty();
    var sparql_val = getSPARQL004().trim();
    sparql_val = sparql_val.replace(/<%URI%>/g, '<'+click_uri+'>');
    var Q = new sgvizler.Query();
    Q.query(sparql_val)
      .endpointURL("https://lod4all.net/api/sparql?token=jist2018-
data")
      .endpointOutputFormat("json")
      .chartFunction("google.visualization.PieChart")
      .draw("gadget-004");
}
```

```
function updateGadgets(click_uri)
{
    setSgvizler();

    updateGadget001(click_uri);
    updateGadget002(click_uri);
    updateGadget003(click_uri);
    updateGadget004(click_uri);
}
```

## ■ Add new HTML code

- In "docs/sample-dashboard.html"

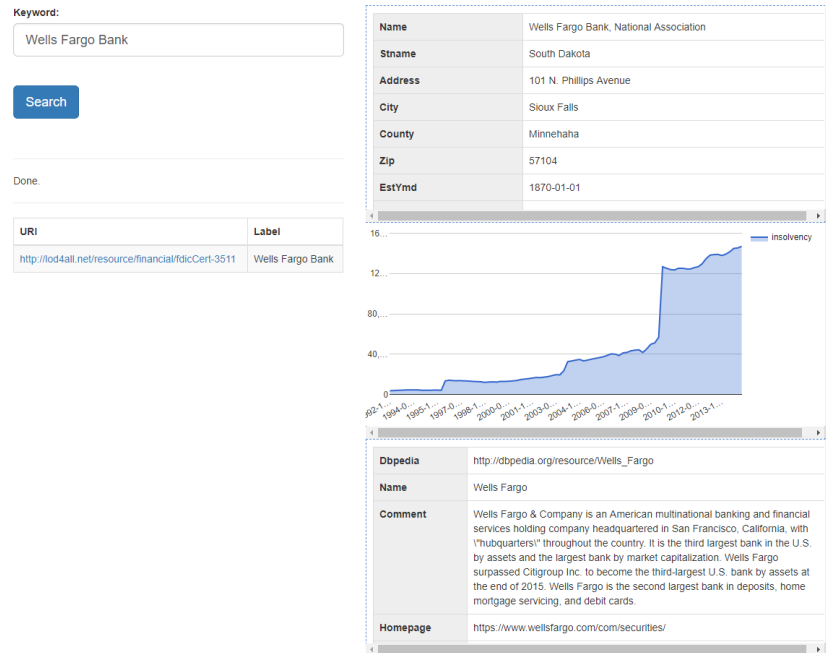
```
<div class="col-lg-7">  
  <div id="gadget-001" style="border: dashed 0.5px #5b8bd0; height:300px; overflow:scroll;"></div>  
  <div id="gadget-002" style="border: dashed 0.5px #5b8bd0; height:300px; overflow:scroll;"></div>  
  <div id="gadget-003" style="border: dashed 0.5px #5b8bd0; height:300px; overflow:scroll;"></div>  
  <div id="gadget-004" style="border: dashed 0.5px #5b8bd0; height:300px; overflow:scroll;"></div>  
</div>
```

# Trial2-4: Adding new gadget

## ■ Check your dashboard

Financial analysis application

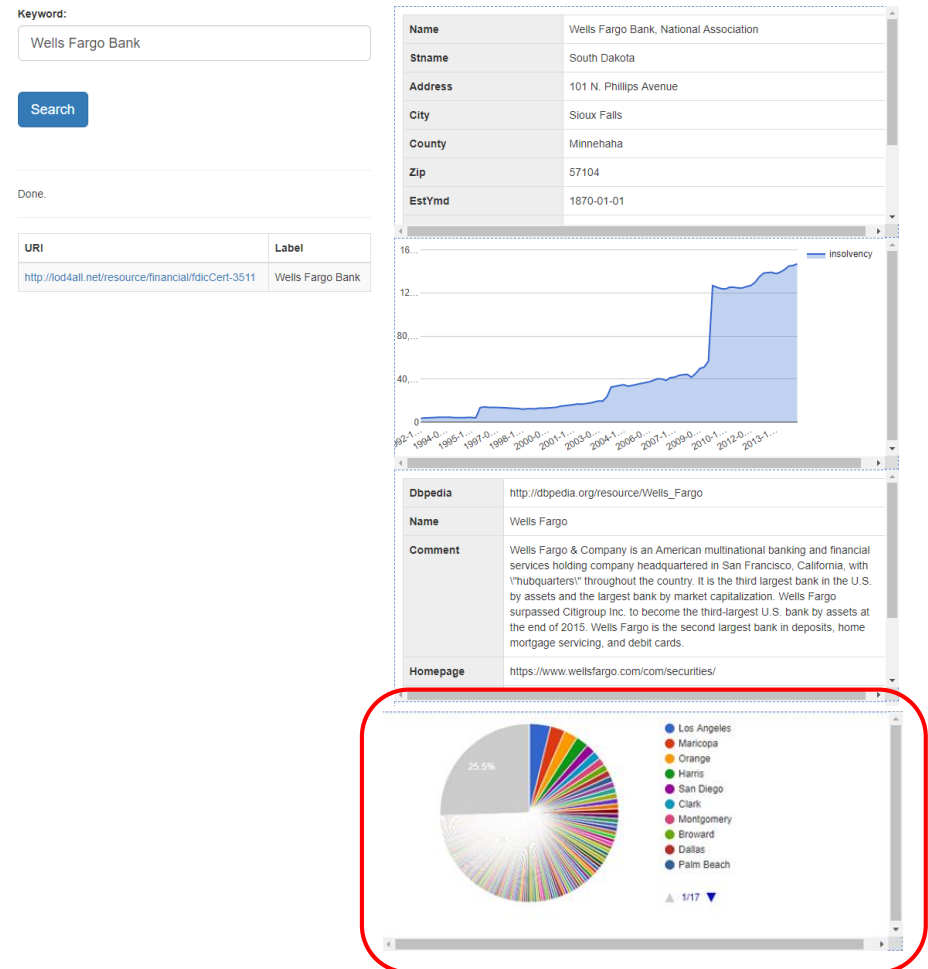
powered by LOD4ALL



Before

Financial analysis application

powered by LOD4ALL



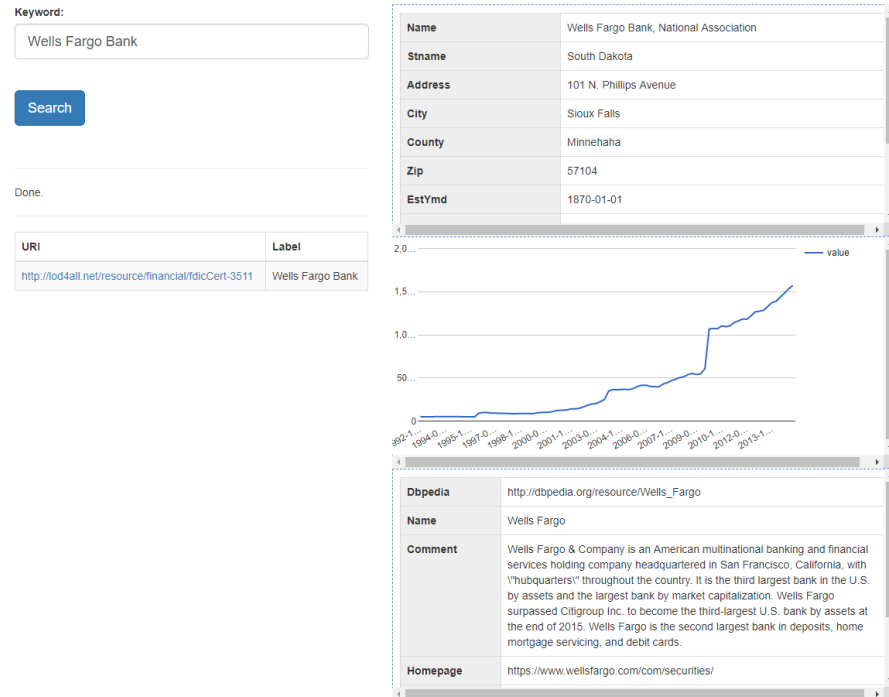
After



# Trial2: Result of enhancing sample application

## Financial analysis application

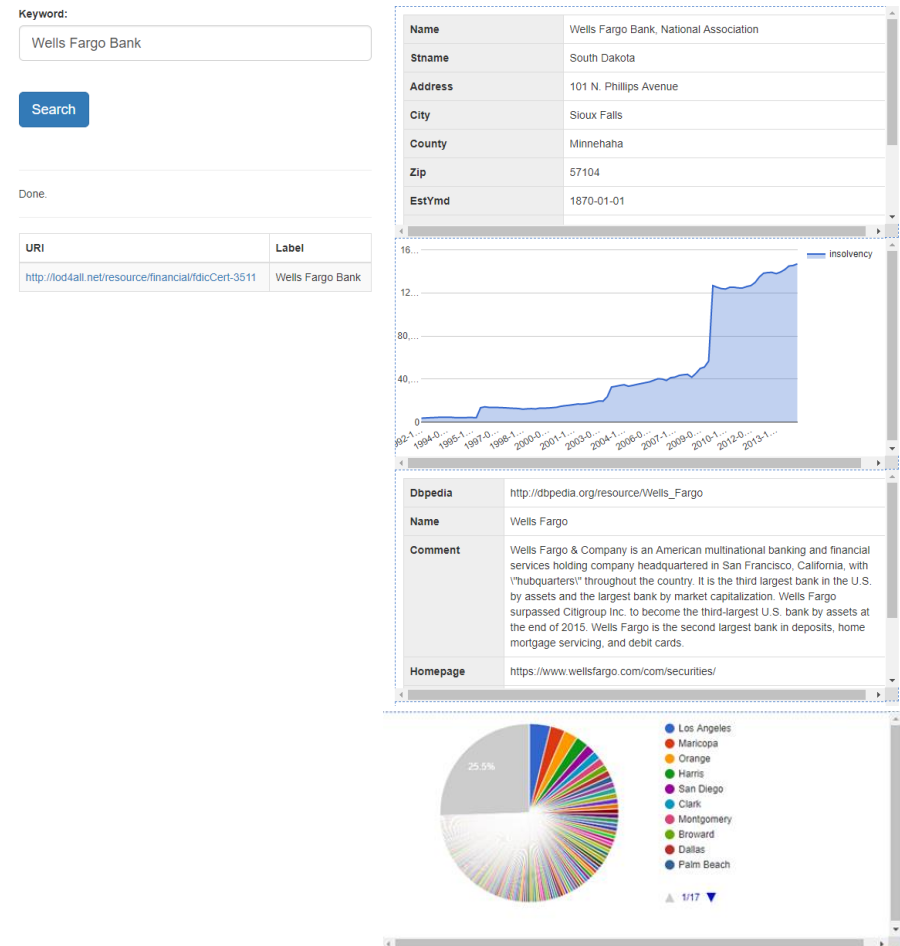
powered by **LOD4ALL**



Before

## Financial analysis application

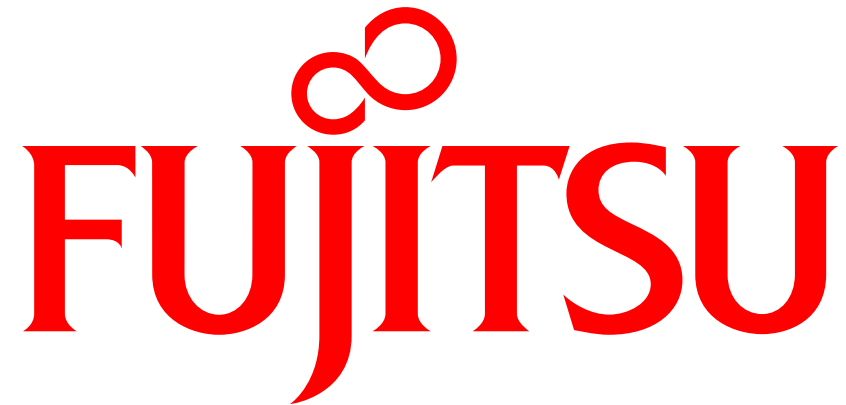
powered by **LOD4ALL**



After

# CLOSING

- Thank you for attending our lecture and hands-on session today.
- Feel free to use/share today's material as you wish.
- If you develop any applications using LOD4ALL, please contact us so we can introduce your application in the LOD4ALL application page.
- If you have any questions, you may contact us from a LOD4ALL contact page.
- Page information
  - LOD4ALL application page: <http://lod4all.net/application.html>
  - LOD4ALL contact page: <http://lod4all.net/contact.html>



shaping tomorrow with you