Noname manuscript No.
(will be inserted by the editor)

Requirements and design criteria for a Linked Open Statistical Data API

Do you have a subtitle? If so, write it here

First Author · Second Author

Received: date / Accepted: date

Abstract Insert your abstract here. Include keywords, PACS and mathematical subject classification numbers as needed.

Keywords First keyword · Second keyword · More

1 Introduction

Motivation:

- Linked Open Statistical Data (LOSD)
- Need to facilitate LSD re-use without the need to know QB vocabulary, RDF etc and easily build apps that consume JSON on top of LOSD
- Re-use s/w tools across LOSD datasets

Objective: To specify the requirements of an API that standardizes the interaction, including input and output, with LOSD.

2 Methodology

Related work:

- OLAP APIs interaction with multidimensional data (input): Oracle OLAP API [1], Olap4j [2], ++
- Standardization of outcome: Json-stat, Json-ld, ++

Discussion with developers: Workshop, +++

F. Author
first address
Tel.: +123-45-678910
Fax: +123-45-678910
E-mail: fauthor@example.com

S. Author
second address

3 Solution overview

A large part of statistical data is isolated, meaning that exists in different portals as different datasets. The technology of Linked data and RDF Data Cube vocabulary solves the problem of distributed data sources through their integration, creating interoperable linked statistical data portals. These portals are used for the design and creation of a Linked Open Statistical Data API.

The architecture of the API is developed in JSON format offering benefits which are not exist until now. The implementation of JSON-API abolishes the need to implement different data access layers for each tool is created. In the traditional architecture data access layers had to be coded separately leading to additional costs. The JSON-API can be installed on top of any RDF repository and offers basic and advanced operations on RDF Data cubes.

Moreover, using JSON for accessing RDF Stores is an easier way to build software applications. Developers need to know and use neither RDF Data Cube vocabulary nor expert programming skills at LOSD. They have full access at LOSD just using JSON, a much more common and understandable programming language. Through SPARQL queries, JSON-API has access at data cubes returning the asked data in the re-used format of JSON. By this way, all LOSD-related programming and its complexity is now hidden.

As figure 1 shows, JSON-API helps developers create custom applications according to their needs. JSON language is commonly re-used by many libraries offering data representation and visualization. +++

4 Requirements and design criteria

- need to know what datasets are available
- need to know about structure to subset the observations
- in order not to return everything, need to subset
- don't necessarily need a n-array/ tabular response - array of observations is sufficient. can always get back to the table
- Filtering
- Multilinguality
- Ordering & paging
- merging, aggregations
- json-ld representation is sufficient for query and response format
- ++

API functionality:

- GET dataset-metadata
- GET dimensions
- GET attributes
- GET measures
- GET dimension-values
- GET attribute-values

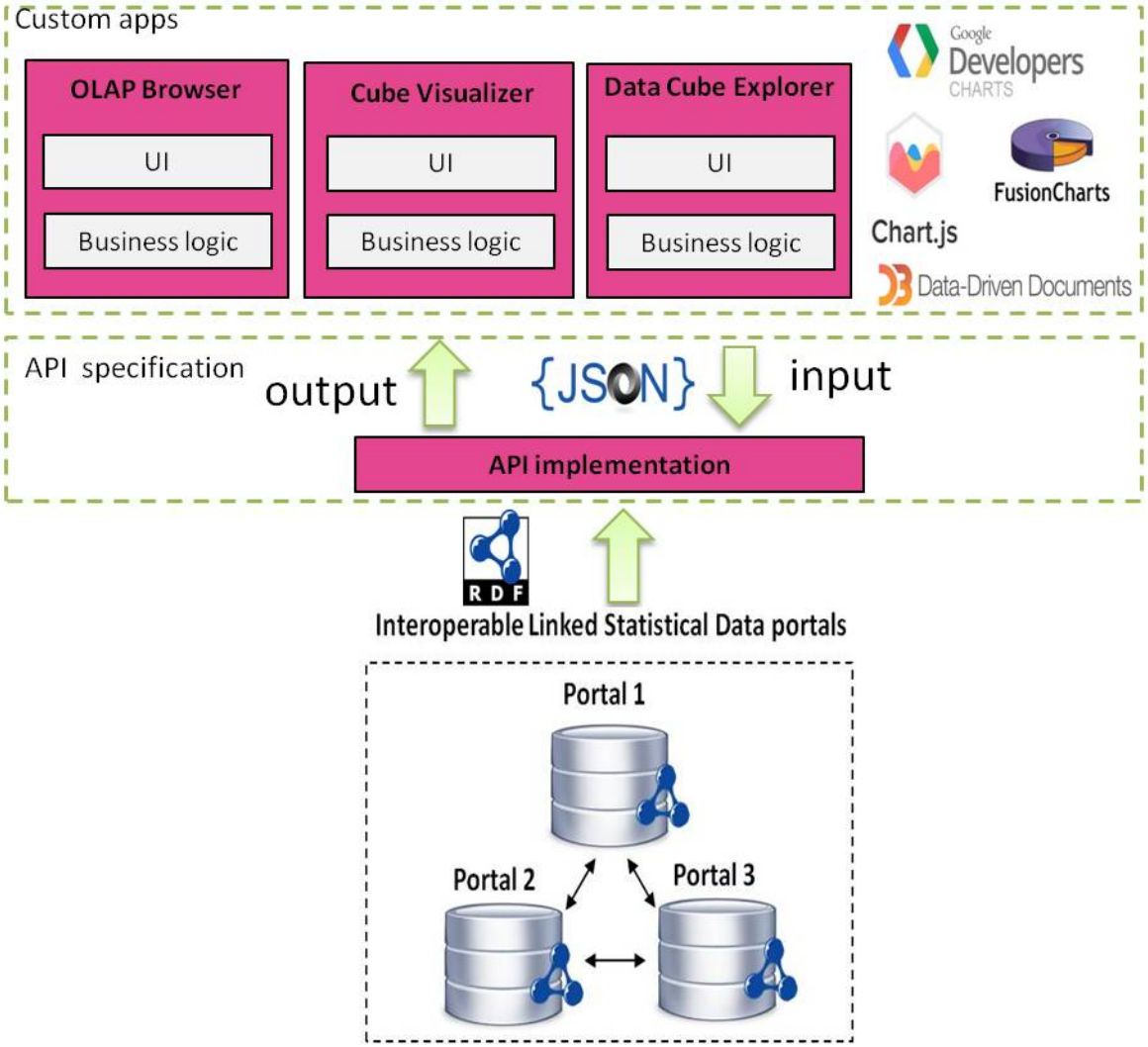

Fig. 1 Solution overview

- GET dimension-levels
- GET slice
- GET table
- GET cubes
- GET aggregationSetcubes
- GET create-aggregations
- GET cubeOfAggregationSet

[Janssen et al(2012)Janssen, Charalabidis, and Zuiderwijk]
possible example for slice/ observation-selection query:

Table 1 Please write your table caption here

first	second	third
number	number	number
number	number	number

```
{
  "jqql:dataset": "scot:home-care-clients",
  "jqql:filter": {
"dimension:gender": "gender:male",
   "dimension:age": { "jqql:greater-than": 50 }
  },
  "jqql:order": {
    "dimension:refPeriod": { "jqql:order-predicate": "ui:sortPriority", "jqql:direction": "jqql:asc"
  },
  "jqql:page": {
    "jqql:limit": 10,
    "jqql:offset": 0
  }
}
```

output:

```
{ "observations": [
{ "Average Cost": "1182",
      "Date": "1-1-2013",
  "Day": "Tuesday",
  "Number of crashes": "5",
  "Time": "No available time",
      "Total Cost": "5908",
  "@id": http://id.mkm.ee/observation/1" },
{ "Average Cost": "400",
  "Date": "1-1-2013",
  "Day": "Tuesday",
  "Number of crashes": "1",
  "Time": "24:00",
    "Total Cost": "400",
  "@id": "http://id.mkm.ee/observation/2" }
]}
```

5 Implementation

6 Conclusion

References

[Janssen et al(2012)Janssen, Charalabidis, and Zuiderwijk] Janssen M, Charalabidis Y, Zuiderwijk A (2012) Benefits, adoption barriers and myths of open data and open government. Information Systems Management 29(4):258–268, DOI 10.1080/10580530.2012.716740, URL http://dx.doi.org/10.1080/10580530.2012.716740, http://dx.doi.org/10.1080/10580530.2012.716740