



RapidSeis

Portlets integration and metadata

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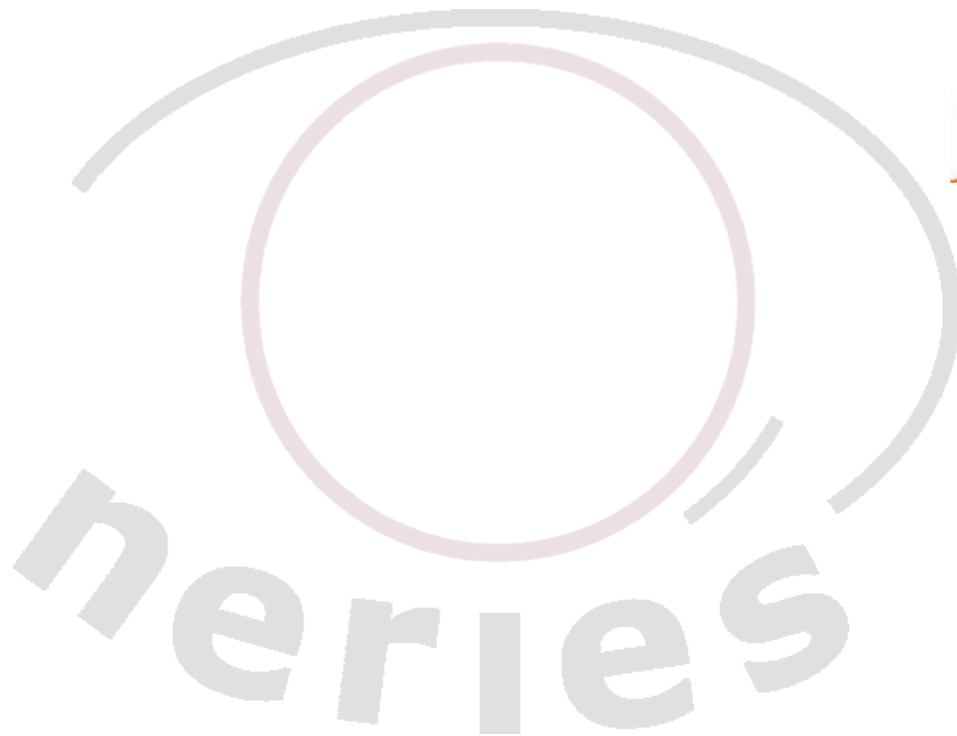


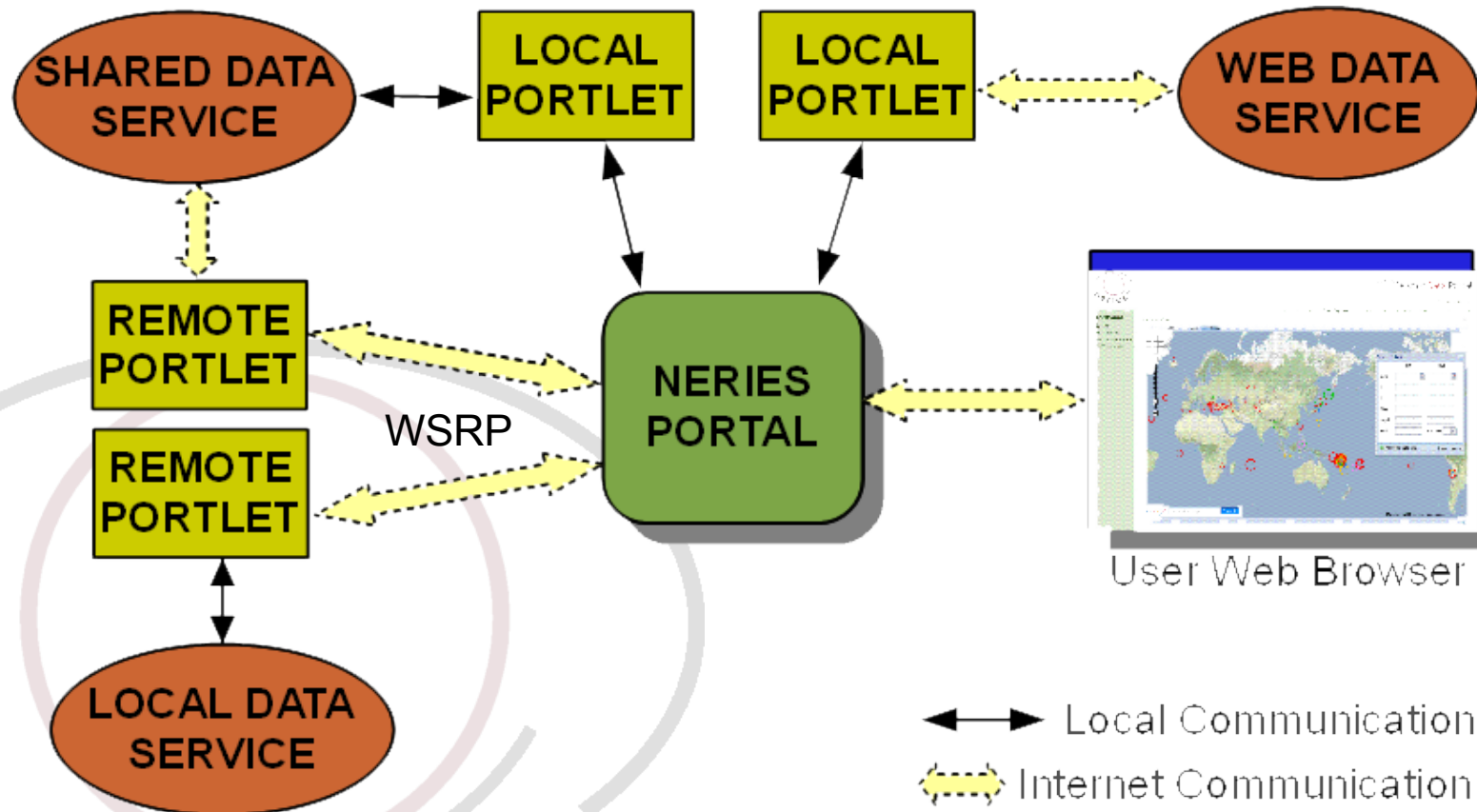
UNIVERSITY OF
LIVERPOOL

Orfeus

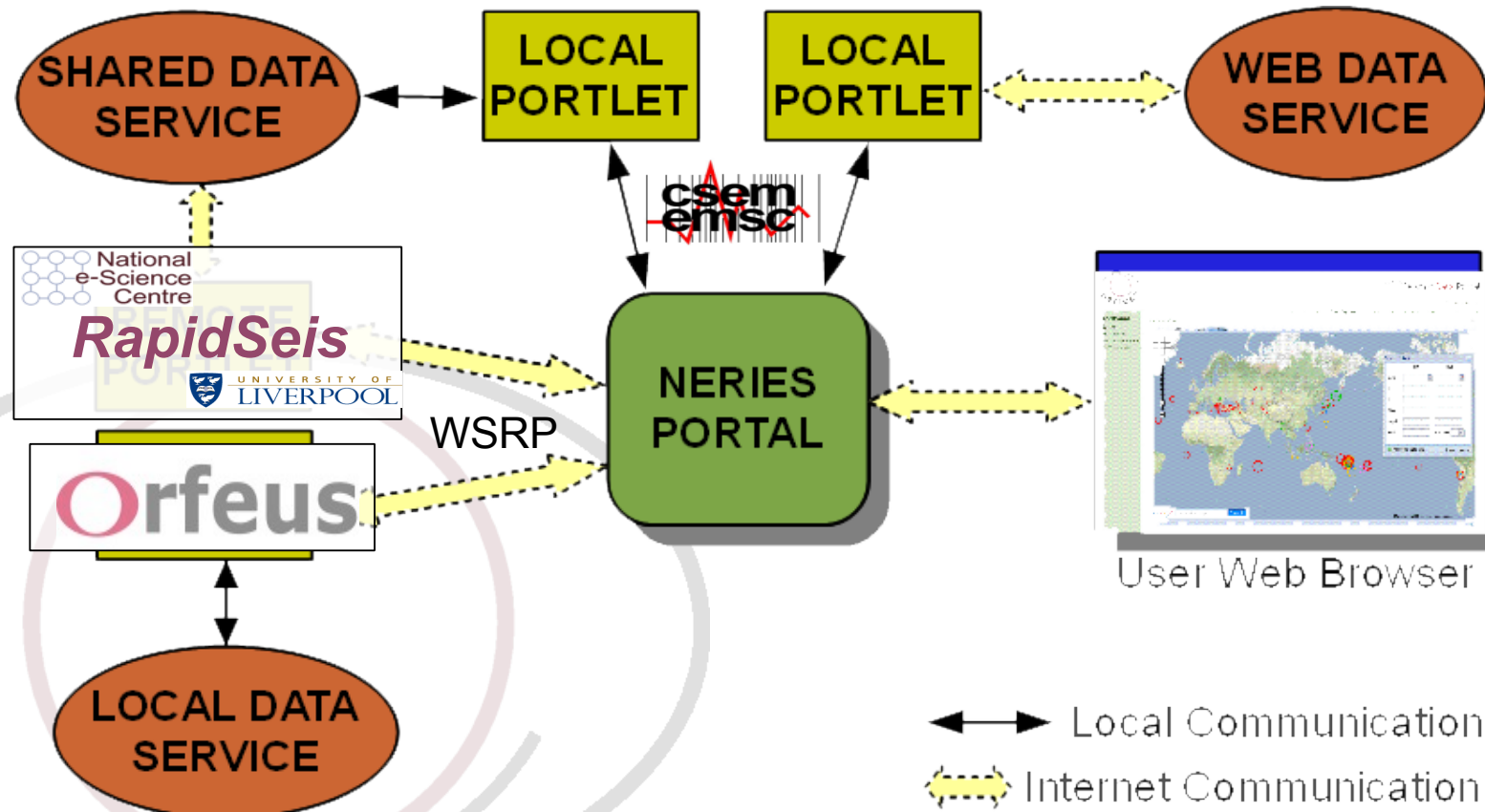


JISC

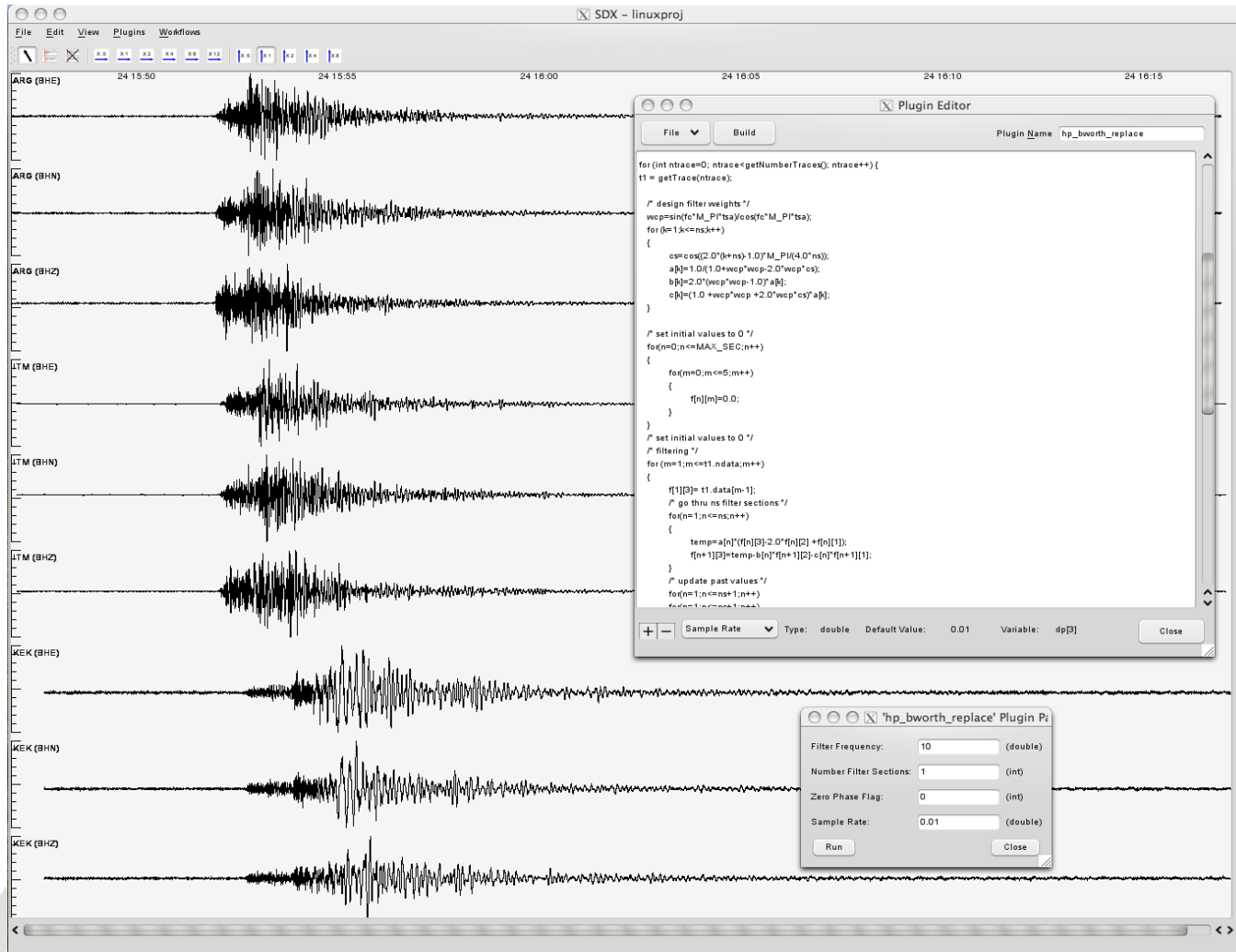




The Adoption of the **JSR-168** standard for the **NERIES** portlet/portal development made the **integration with Rapid** easy



RapidSeis >> WebGrid-ification of the UNIVERSITY OF LIVERPOOL SDX tool



RapidSeis, Pilot project: Waveform Visualization and Analysis Remote Portlet

To utilise the vast amount of seismic waveform data provided through the portal, it is necessary that scientists can perform analyses on them for their research.

The RapidSeis tool will provide a way to seismologists to create new analysis plugin that can be shared and executed within the portal itself, allowing the computation and data movement to be performed on suitable computational infrastructures (Local GRIDs)

NERIES, Datasets discovery tools and services

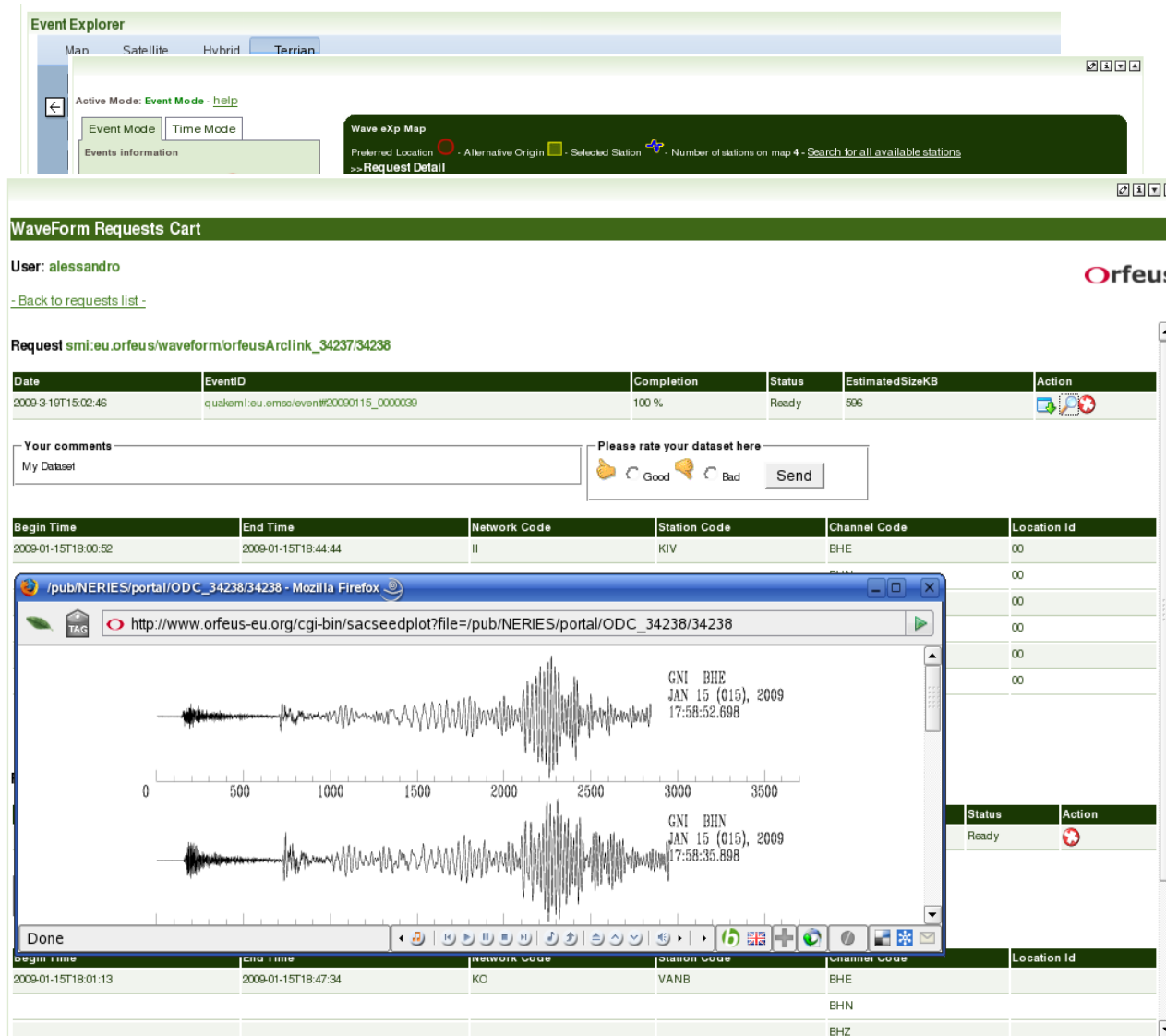
User Data Cart

Earthquake parametric information, waveform, phases and arrival times (theoretical) are...

- Aggregated as a single data product that can be visualized and downloaded

- Described in a machine understandable way (RDF) and accessible through a

SPARQL Endpoint



The screenshot displays the 'Event Explorer' interface with a 'WaveForm Requests Cart' for user 'alessandro'. A request for event '2009-01-15T18:00:52' is shown with a completion status of 100%. Below the request details is a table of station data:

Begin Time	End Time	Network Code	Station Code	Channel Code	Location Id
2009-01-15T18:00:52	2009-01-15T18:44:44	II	KIV	BHE	00
				BHN	00
				BHZ	00

An inset window shows a waveform plot for station GNI BHE on January 15, 2009, at 17:58:52.698. The plot shows two traces of seismic waveforms over a time interval from 0 to 3500 seconds.

Waveform metadata

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" ...
  xmlns:j.1="http://eu.neries/smi-resource/data/waveform#" ..>
```

Persistent Dataset
URI
Generated by the
SeismoLink ws

```
<rdf:Description rdf:about="smi:de.gfz-potsdam/waveform/gfzArclink__8586/46679"
```

```
  <rdf:type rdf:resource="http://eu.neries/smi-resource/data/waveform" />
  <!-- DC properties --->
  <dc:creator rdf:resource="smi:smi-registry/people/admin" />
  <dc:date rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2009-01-07T11:45:22</dc:date>
  <dc:publisher rdf:resource="smi:smi-registry/organization/GFZ" />
  <dc:title> Sichuan 2008-05-12T06:28:00</dc:title>
  <dc:description>Sichuan event 2008-05-12T06:28:00 Permanent GEOFON network</dc:description>
```

Datasets composed by
the Users are
described in RDF
(*machine understandable*)

```
<rss:link>ftp://www.orfeus-eu.org/pub/NERIES/portal/GFZ\_46679/46679.seed</rss:link>
```

```
<!-- NERIES properties --->
```

```
<j.1:event-uri>quakeml:eu.emsc/event#20080512_0000023</j.1:event-uri>
```

```
<j.1:event-url>http://193.52.21.83/axis2/services/quakeml/events?uri=quakeml%3Aeu.emsc/event252320080512\_0000023</j.1:event-url>
```

```
<j.1:channels>
```

```
<rdf:Bag>
```

```
<rdf:li rdf:parseType="Resource">
```

```
<dc:coverage rdf:datatype="http://purl.org/dc/terms/Period">start=2009-04-20T07:13:57;end=2009-04-20T07:15:36;scheme=ISO</dc:coverage>
```

```
<j.1:velocitymodel-name rdf:datatype="http://www.w3.org/2001/XMLSchema#string">iasp91</j.1:velocitymodel-name>
```

```
<j.1:velocity-model rdf:datatype="http://www.w3.org/2001/XMLSchema#string">http://www.orfeus-eu.org/taup/iasp91.tvel</j.1:velocity-model>
```

```
<j.1:stationcode rdf:datatype="http://www.w3.org/2001/XMLSchema#string">MATE</j.1:stationcode>
```

```
<j.1:networkcode rdf:datatype="http://www.w3.org/2001/XMLSchema#string">GE</j.1:networkcode>
```

```
<j.1:channelcode rdf:datatype="http://www.w3.org/2001/XMLSchema#string">BHE</j.1:channelcode>
```

```
<j.1:P-phasetime rdf:datatype="http://www.w3.org/2001/XMLSchema#double">48540.31137251435</j.1:P-phasetime>
```

```
<j.1:S-phasetime rdf:datatype="http://www.w3.org/2001/XMLSchema#double">49220.54324534535</j.1:S-phasetime>
```

```
</rdf:li>
```

```
</rdf:Bag>
```

```
</j.1:channels>
```

```
</rdf:Description>
```

```
</rdf:RDF>
```

Status of the specification in NERIES? (*early design, but flexible.. so far, so good*)
The definition of RDF metadata model should be done with the involvement of
the domain community

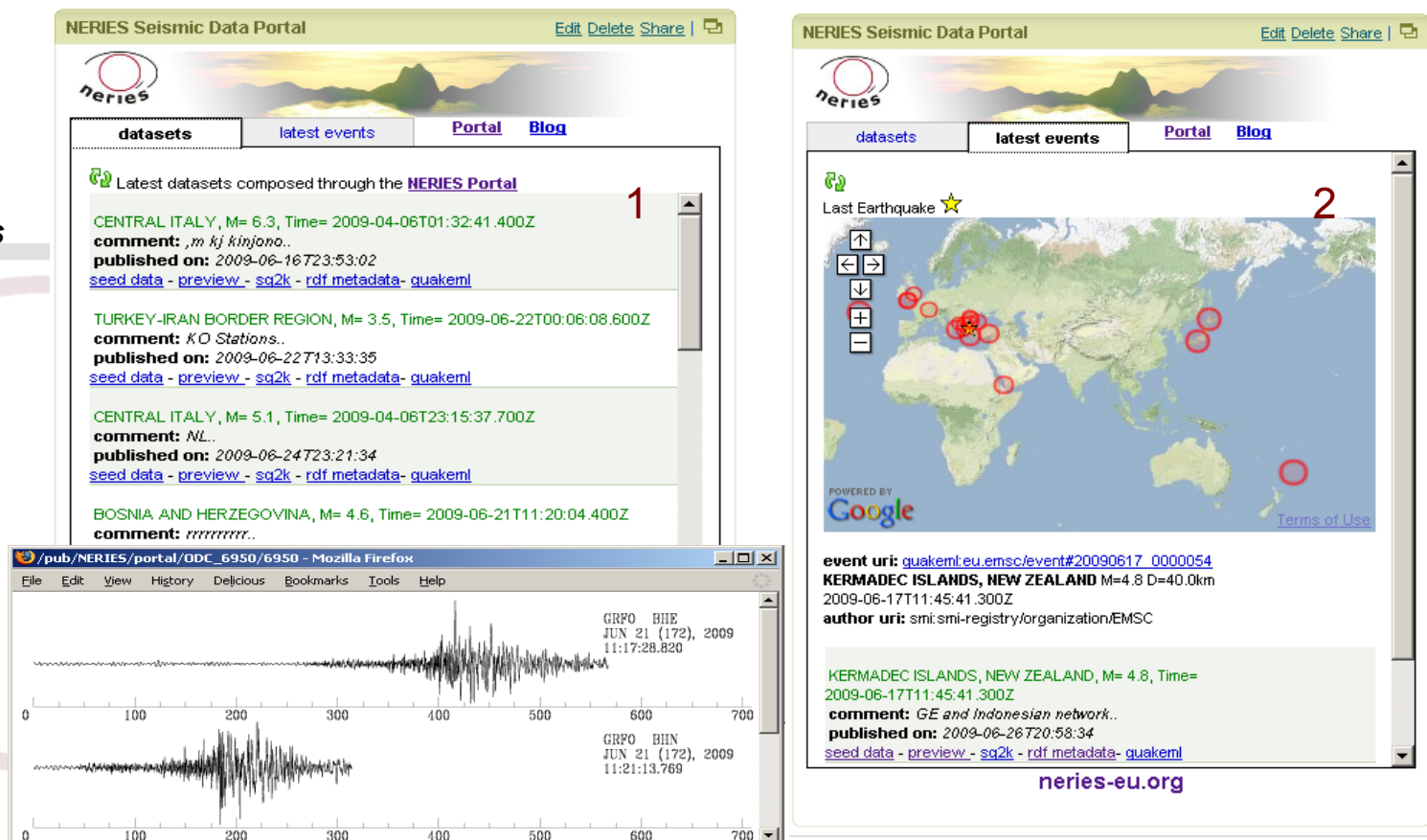
Metadata applications

- The metadata provide the starting point to display, aggregate and **PROCESS** information beyond the NERIES Data Portal

a small example..iGoogle gadget

latest waveform datasets composed by the users of the NERIES portal (fig 1)

datasets related to the latest Earthquakes, which are Described in all their Parameters by the QuakeML Data Format (fig 2)



The image displays two screenshots of the NERIES Seismic Data Portal. The left screenshot (Fig 1) shows a list of datasets under the 'datasets' tab. The right screenshot (Fig 2) shows a map of the world with red circles indicating earthquake locations, and a detailed view of a specific earthquake event.

Fig 1: Latest waveform datasets

Location	Magnitude (M)	Time	Comment	Published On
CENTRAL ITALY	6.3	2009-04-06T01:32:41.400Z	.m kj kinjano..	2009-06-16T23:53:02
TURKEY-IRAN BORDER REGION	3.5	2009-06-22T00:06:08.600Z	KO Stations..	2009-06-22T13:33:35
CENTRAL ITALY	5.1	2009-04-06T23:15:37.700Z	NL..	2009-06-24T23:21:34
BOSNIA AND HERZEGOVINA	4.6	2009-06-21T11:20:04.400Z	

Fig 2: Earthquake event details

event uri: quakem:eu.emsc/event#20090617_0000054
KERMADEC ISLANDS, NEW ZEALAND M=4.8 D=40.0km
 2009-06-17T11:45:41.300Z
 author uri: smi.smi-registry/organization/EMSC

comment: GE and Indonesian network..
 published on: 2009-06-26T20:58:34
[seed data](#) - [preview](#) - [sq2k](#) - [rdf metadata](#) - [quakeml](#)

neries-eu.org



RapidSeis (datasets and metadata update/exchange)

**RapidSeis
Plugin editor**

**RapidSeis
executor**

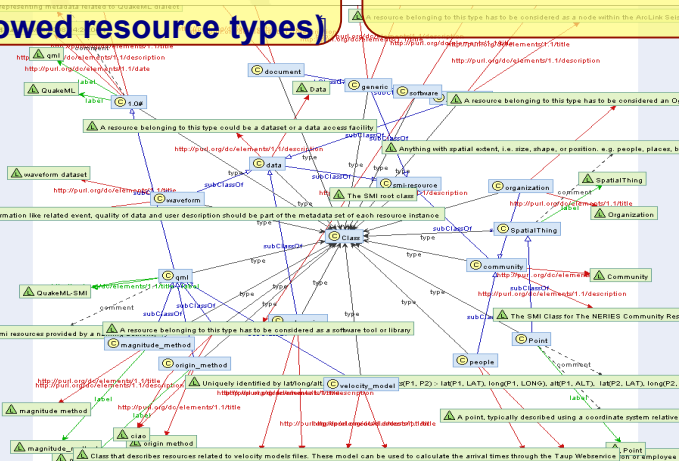


**Queries/Updates
of
Plugin/waveform
metadata**

**SDX Processing on the
User
Cart's Waveform
datasets/metadata**

**RDF Update/Delete
Webservice
(only for allowed resource types)**

SPARQL Endpoint



Orfeus

neries

Plugin metadata

```
<rdf:RDF xmlns:j.0="http://eu.neries/smi-resource/generic/rapidSeis/" ..>  
<j.0:plugin rdf:about="smi:eu.orfeus/rapidSeis#aeh_bw_bandpass">  
  <dc:description>Butterworth+band-pass+filter...</dc:description>
```

The plugin metadata are generated by the RapidSeis plugin editor and then stored into the RDF Model

```
<j.1:parameters>  
  <rdf:Bag>
```

```
    <rdf:li rdf:parseType="Resource">
```

```
      <j.1:parameter-insourcename rdf:datatype="http://www.w3.org/2001/XMLSchema#string">D0
```

```
    </j.1:parameter-insourcename>
```

```
      <j.1:parameter-displayname rdf:datatype="http://www.w3.org/2001/XMLSchema#string">flo
```

```
    </j.1:parameter-displayname>
```

```
      <j.1:parameter-defaultvalue rdf:datatype="http://www.w3.org/2001/XMLSchema#double">1
```

```
    </j.1:parameter-defaultvalue>
```

```
  </rdf:li>
```

```
</rdf:Bag>
```

```
</j.1:parameters>
```

```
<j.1:public-binary rdf:datatype="http://www.w3.org/2001/XMLSchema#boolean">>false</j.1:public-binary>
```

```
<dc:date rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2009-11-10T10:40:04</dc:date>
```

```
<j.1:source-code>ENCODED_SOURCE_CODE</j.1:source-code>
```

```
<dc:publisher rdf:resource="smi:smi-registry/organization/ULIV" />
```

```
<dc:creator>aeh</dc:creator>
```

```
<dc:title>bw_bandpass</dc:title>
```

```
<link>/aeh/bin/libbw_bandpass.so</link>
```

```
</j.0:plugin>
```

```
</rdf:RDF>
```

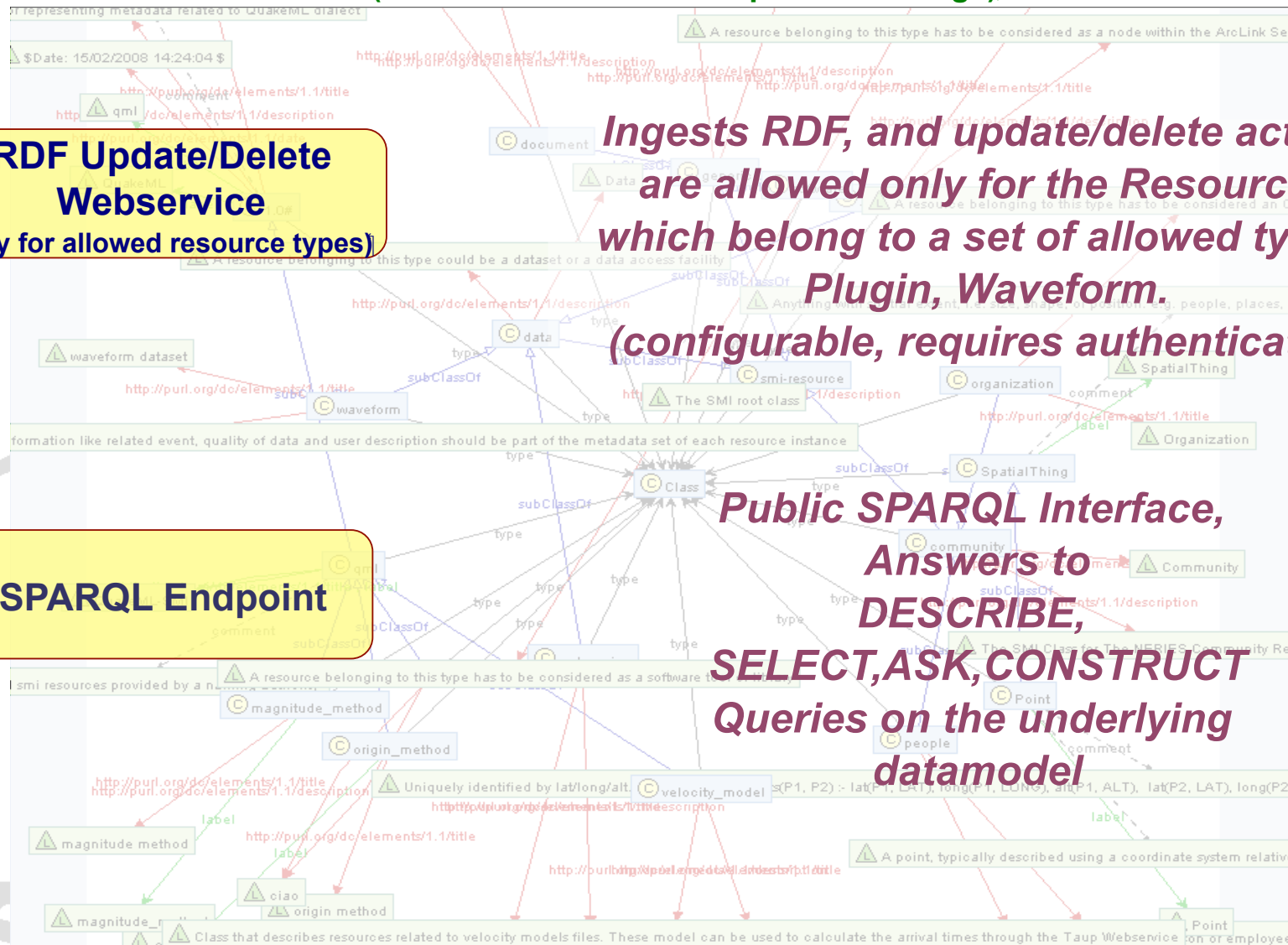
RDF metadata services (datasets and metadata update/exchange)

**RDF Update/Delete
Webservice**
(only for allowed resource types)

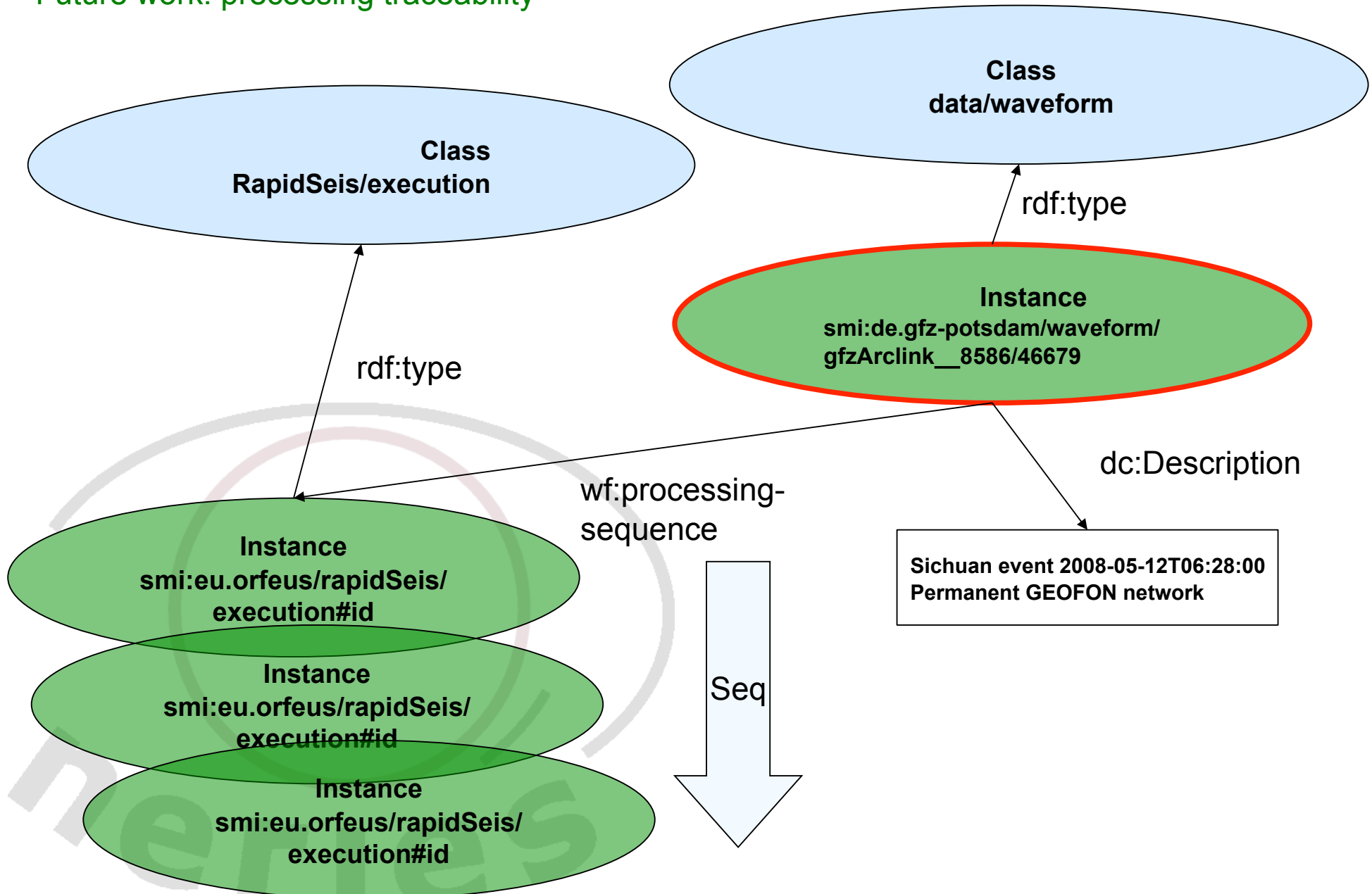
SPARQL Endpoint

*Ingests RDF, and update/delete actions are allowed only for the Resources which belong to a set of allowed types: **Plugin, Waveform.** (configurable, requires authentication)*

*Public SPARQL Interface, Answers to **DESCRIBE, SELECT, ASK, CONSTRUCT** Queries on the underlying datamodel*



Future work: precessing traceability



.. RapidSeis/execution metadata

