RapidSeis

Portlets integration and metadata

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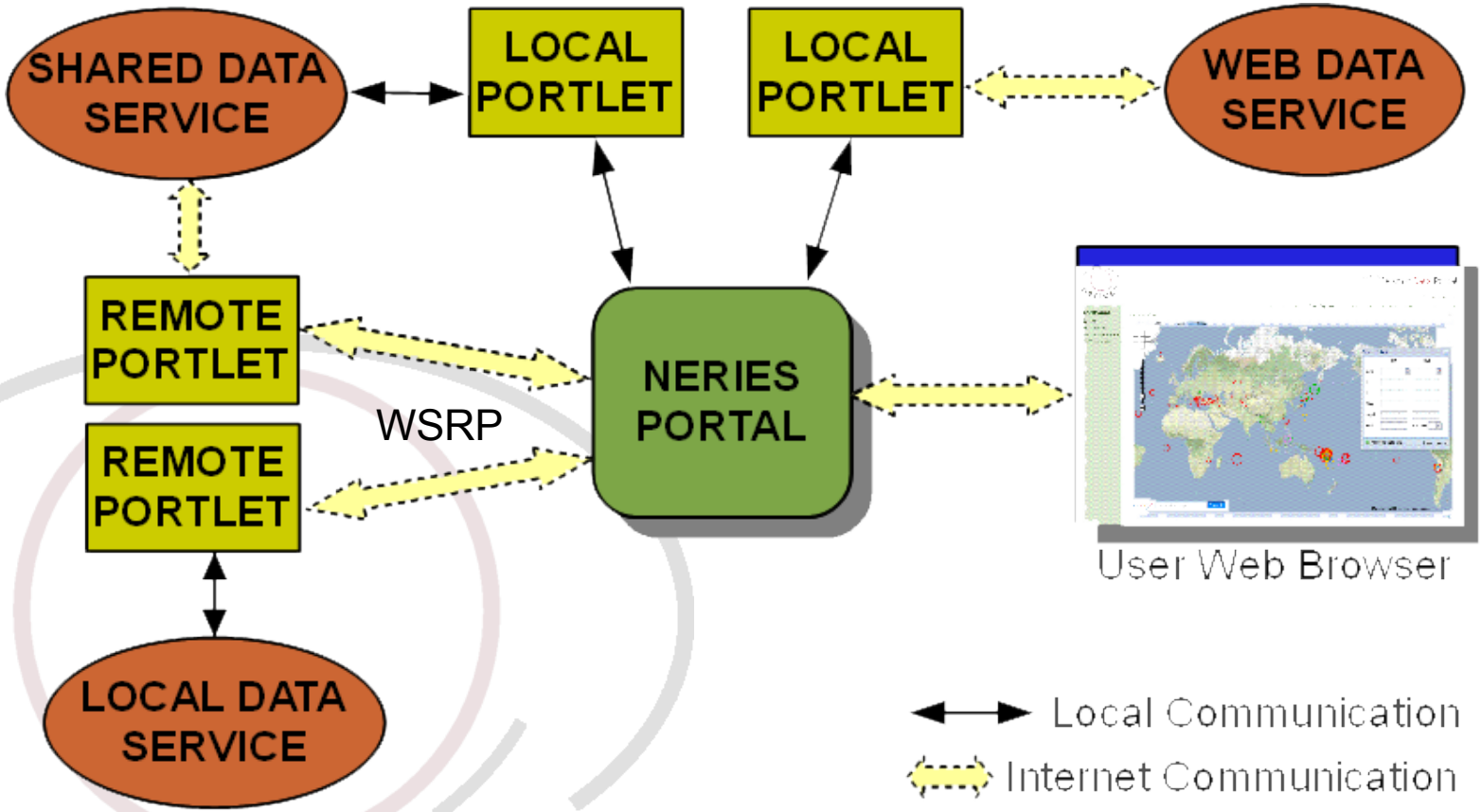
KNMI

csem emsc

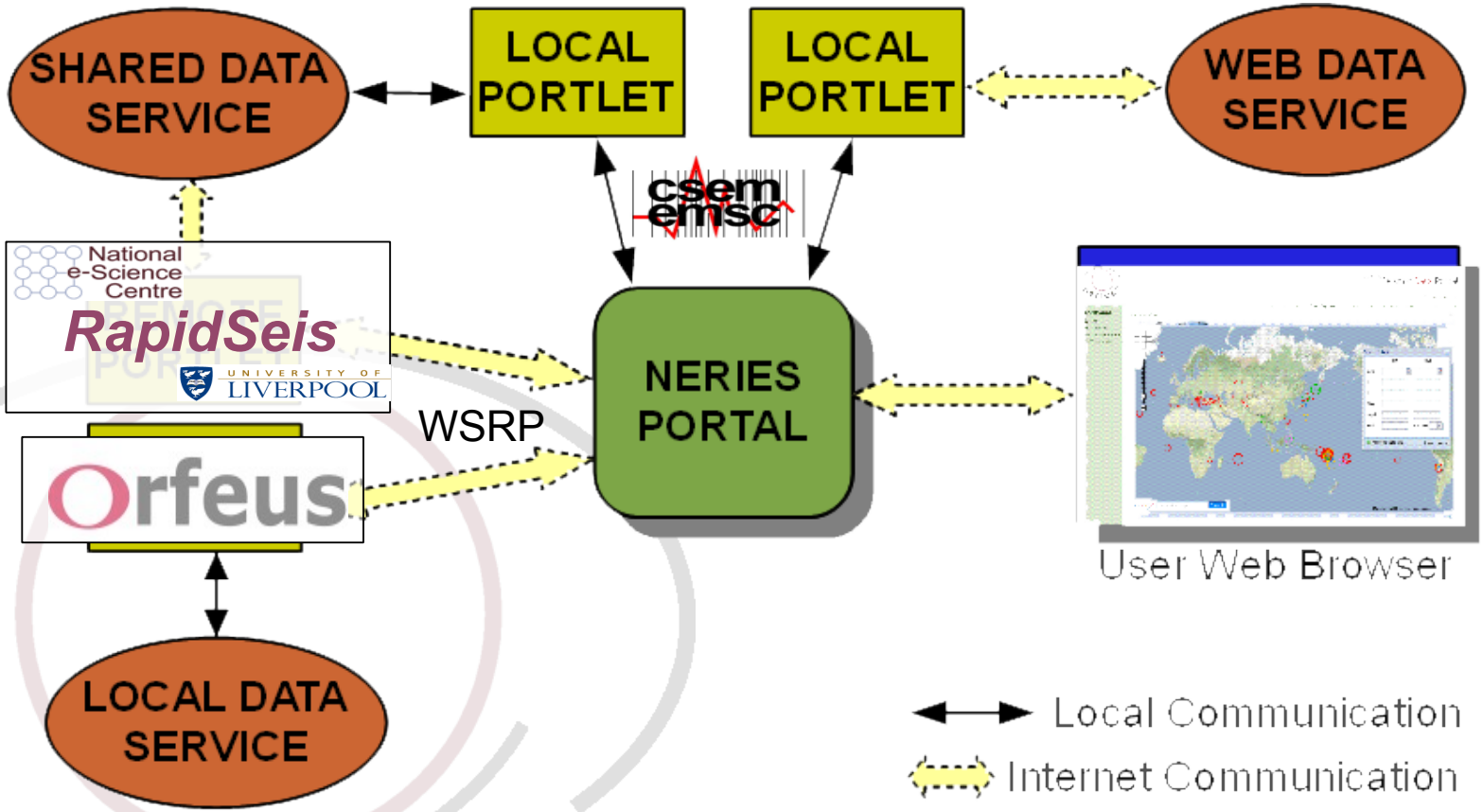
JISC

Seismic Data Portal

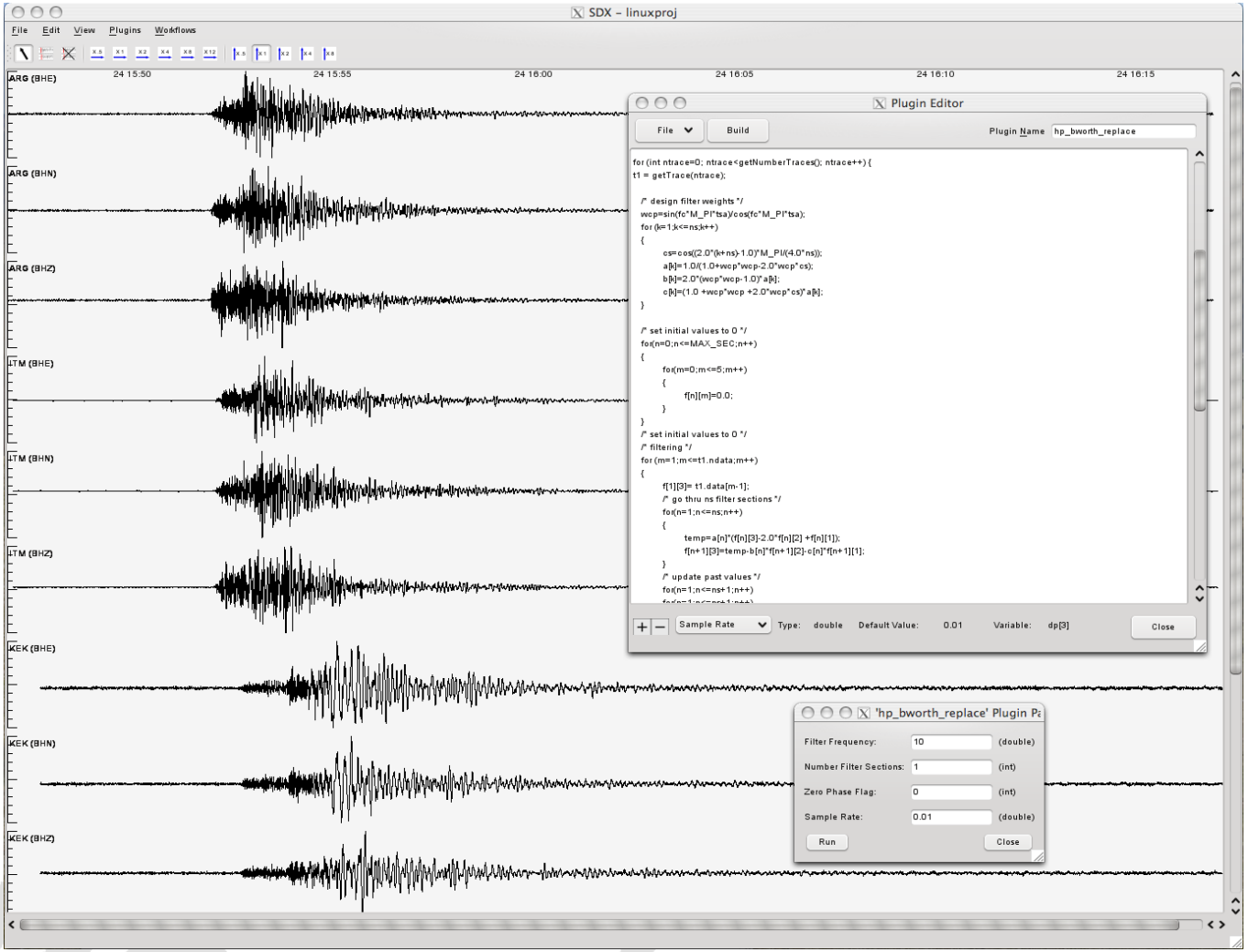


Seismic Data Portal

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



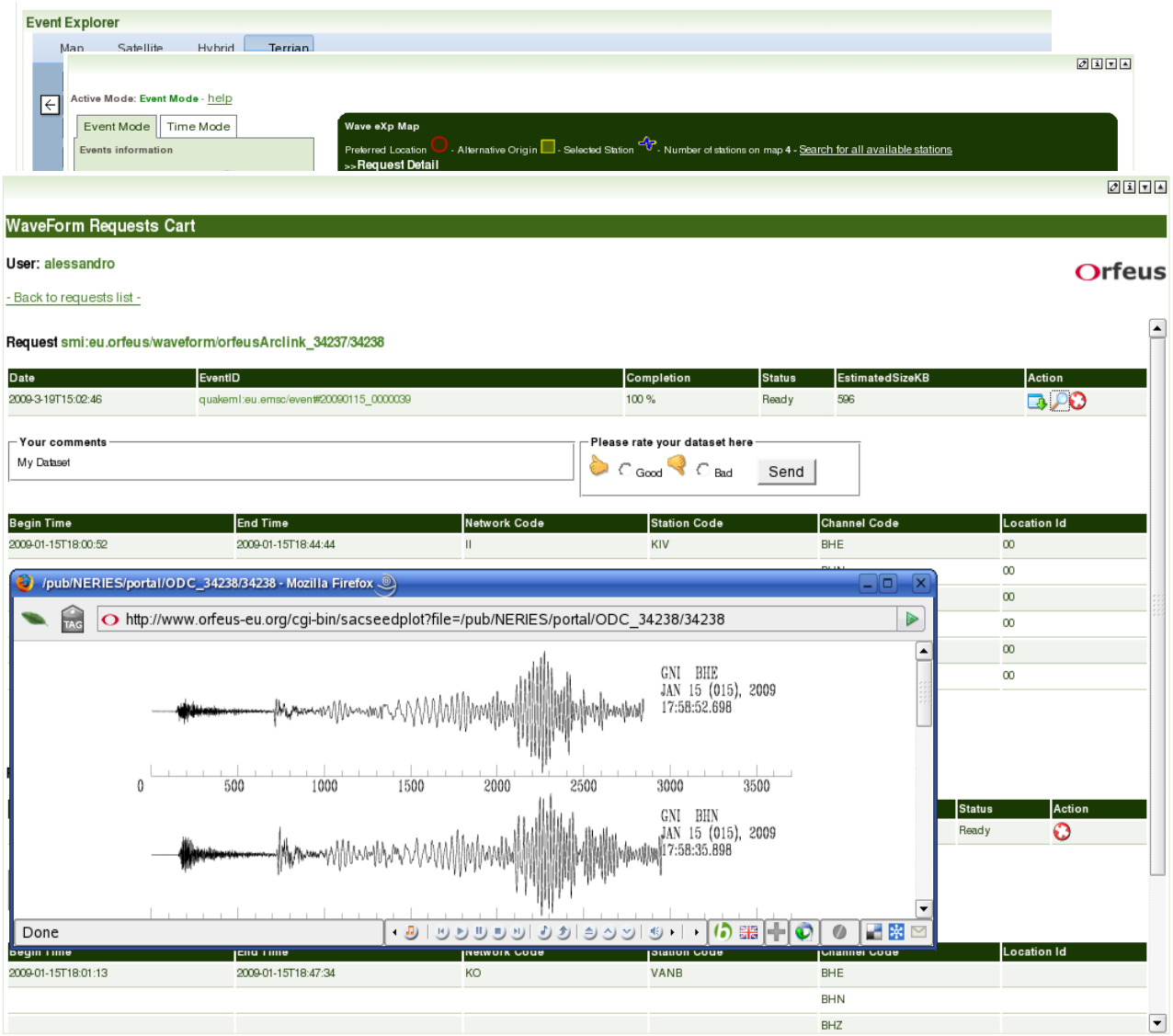
RapidSeis, Pilot project: Waveform Visualization and Analysis Remote Portlet

To utilise the vast amount of **seismic waveform data provided through the portal**, it is necessary that **scientists can perform analysises 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)**

Seismic Data Portal

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

Waveform metadata

Persistent Dataset URI Generated by the SeismoLink ws

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

  <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>

    <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">48540.21137251435</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>
```

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

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**

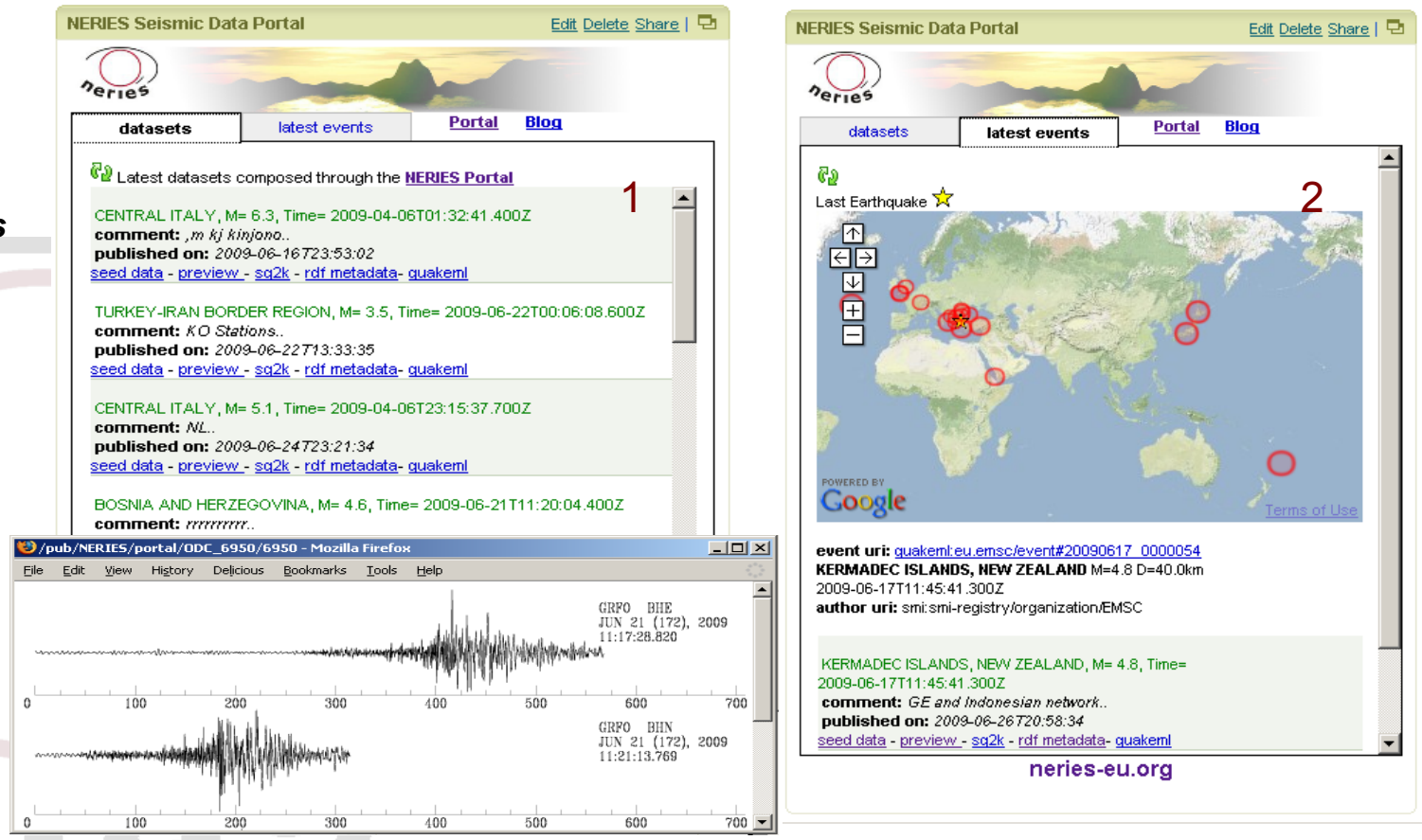
Metadata applications

- 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* ***Ifig 1)***

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



RapidSeis
(datasets and metadata update/exchange)

UNIVERSITY OF LIVERPOOL

RapidSeis Plugin editor

RapidSeis executor

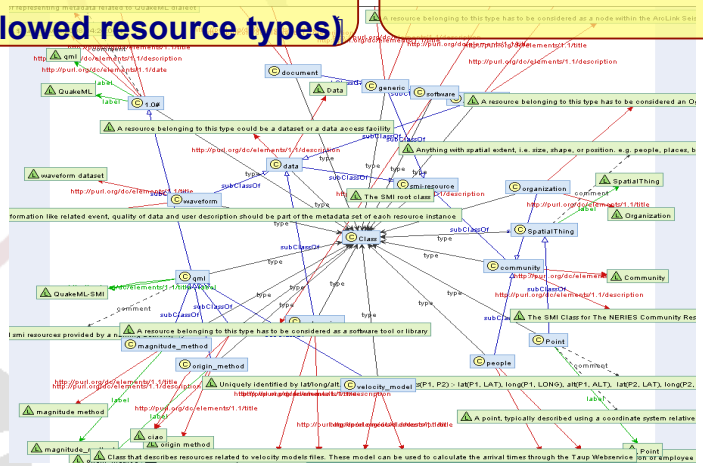
Queries/Updates of Plugin/waveform metadata

SDX Processing on the User Cart`s Waveform datasets/metadata

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

SPARQL Endpoint

Orfeus



Plugin metadata

```
<rdf:RDFxmlns: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>

 <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>
```

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

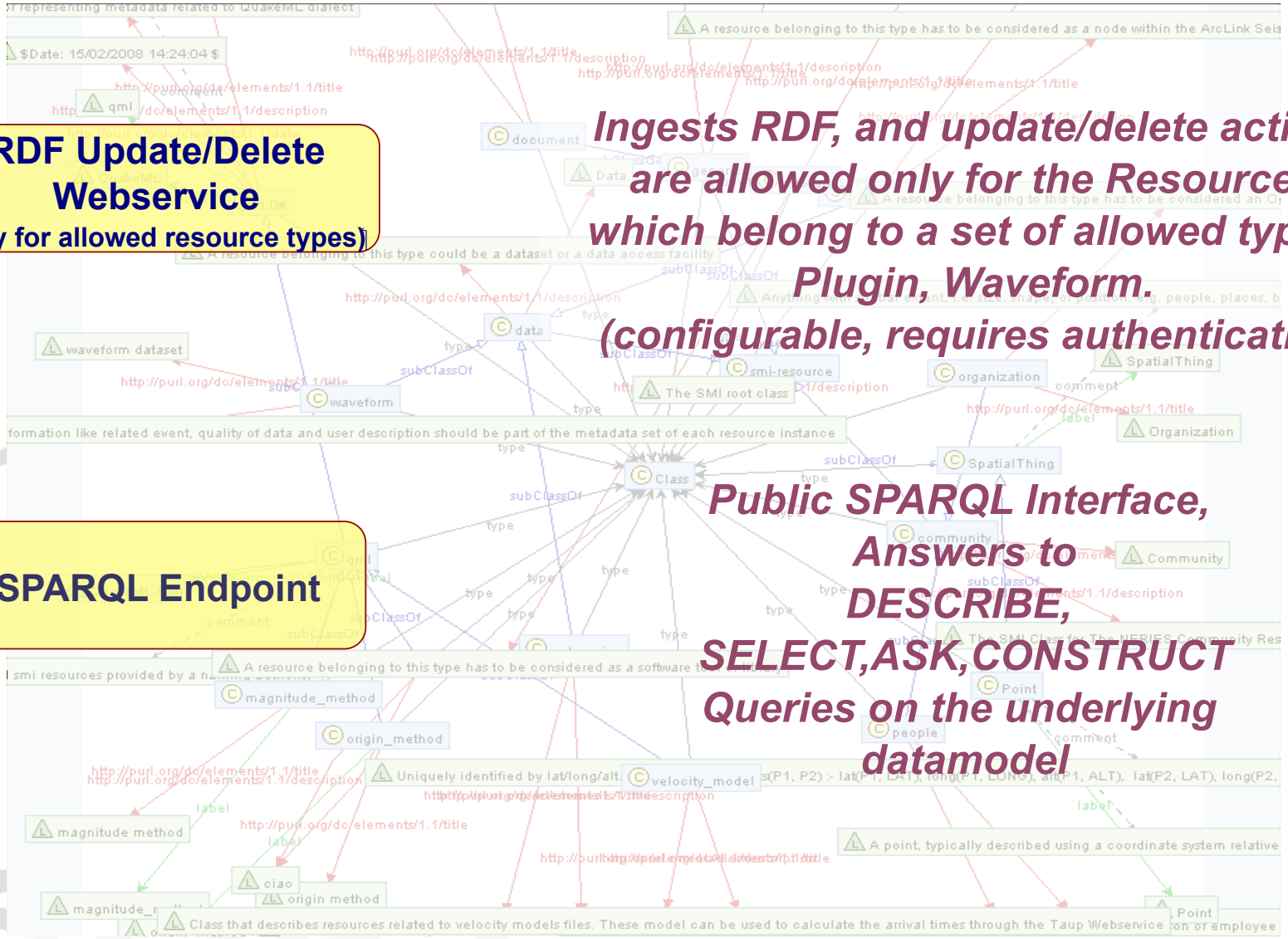
RDF metadata services
(datasets and metadata update/exchange)

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

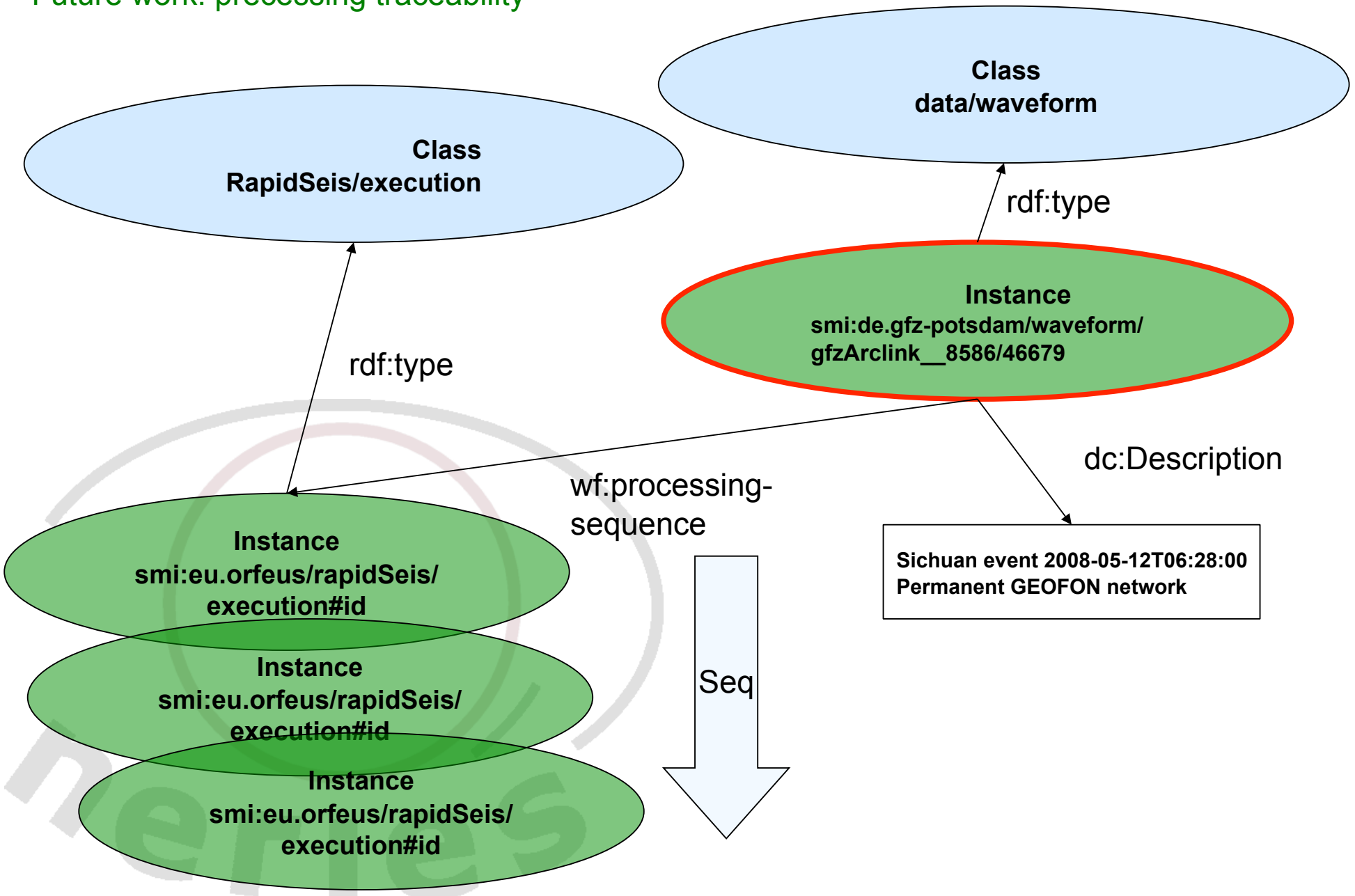
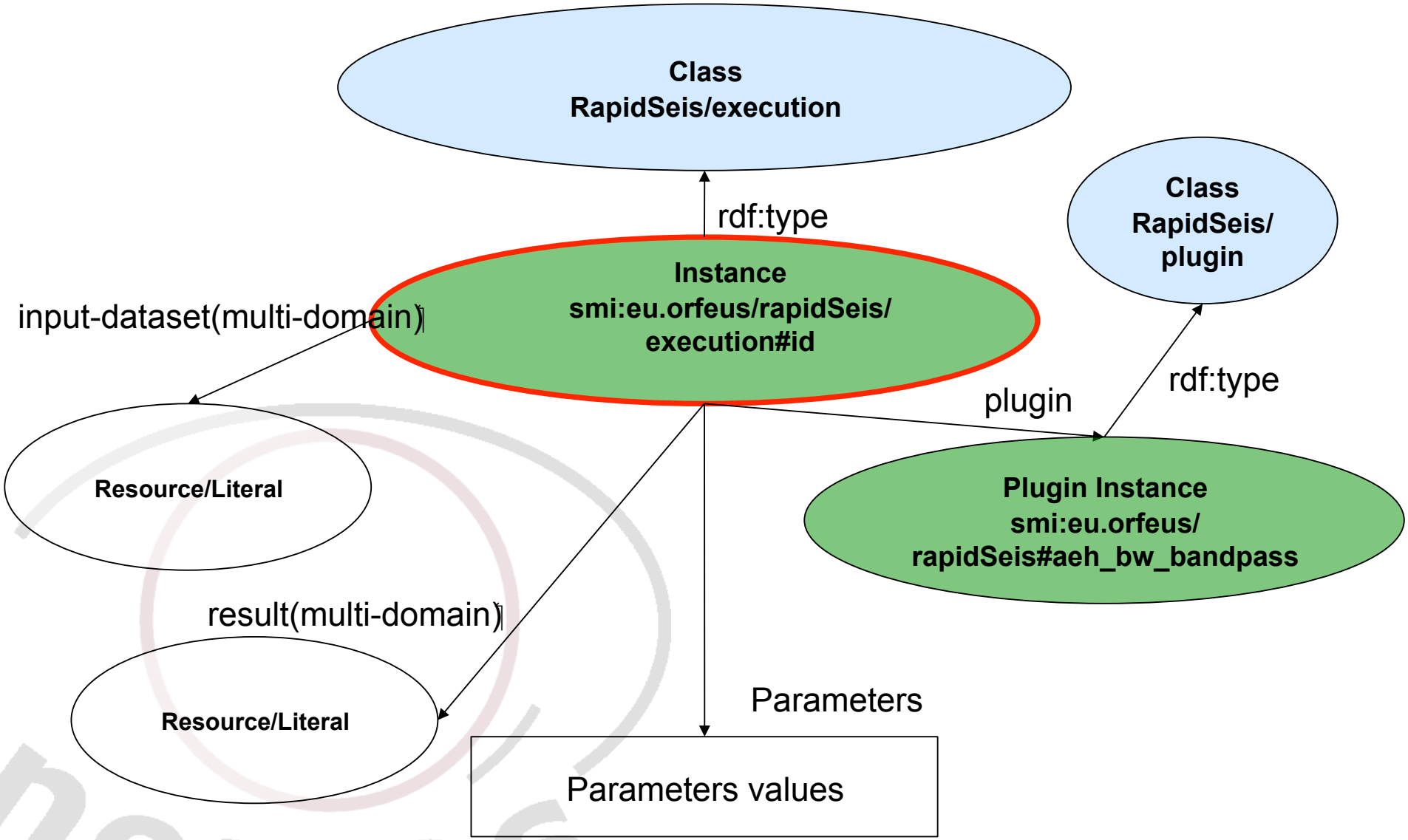
Ingests RDF, and update/delete actions are allowed only for the Resources which belong to a set of allowed types: Plugin, Waveform.
(configurable, requires authentication)

SPARQL Endpoint

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



Future work: precessing traceability



.. RapidSeis/execution metadata