Outline

- EIDA => EIDA NG
- EIDA NG architecture
  - Routing service
  - QC service
  - Mediator
  - Auth service
- EIDA => EPOS IP
- EIDA => EUDAT2020
- Why EIDA? Benefits?
EIDA => EIDA NG (Next Generation)

More than just data and federated archive

- Coordination of data holdings and software/strategic developments
- Provides quality control of data/metadata
- Helps define seismological center best practice’ for ORFEUS community

Users: Geoscientists Etc…

http://www.orfeus-eu.org/ida/ida.html
EIDA NG: why?

Challenges:
- Growth: archive volume, data variability, new nodes, more users, downloads
- More complex user requirements

Requirements:
- Scalability: beyond traditional seismology
- Interoperability / Compliance with standards
- Extensibility: services can be migrated to other communities
- Faster request handling
- Comprehensive handling of restricted datasets
- Extended search requests
- Combining QC / SoH information with data requests
- Data replication and identification: Serving user only the best datasets
EIDA NG: how?

Users
(thin and/or smart clients)

Routing service to:
Fdsnws-station
Fdsnws-dataselect
QC-service
Generic-service

Mediator service:
Assemble dataset
Provide PID for the dataset
Dataset logging
...

Generic-service-1
Generic-service-n
Generic-service-2
EIDA Node 1
EIDA Node 2
EIDA Node 3
EIDA Node 4
EIDA Node n
Generic Node n

Fdsnws-station
Fdsnws-dataselect
Fdsnws-station
Fdsnws-dataselect
Fdsnws-station
Fdsnws-dataselect
Fdsnws-station
Fdsnws-dataselect
The EIDA routing service

What does a routing service?
- Provides routing to data (streams)
- Routing to services
- Routing priorities

Additional parameters information being discussed:
- Geolocation of data and services
- Type of archive (master, validated/non validated copy, etc)
- Contact information

Can also be deployed as a standalone router to run on the client side to create virtual DCs

First stable release 10.2014
The EIDA routing service output

Provides the routing to data and service according to priority level requested by the user.

- Formats: XML, JSON, GET, POST
- Collapsed (useful in case of simple routes, the majority)

http://geofon.gfz-potsdam.de/eidaws/routing/1/query?net=GE
The EIDA routing service

Short term task force established within FDSN WGIII to discuss and decide the best approach to federate data centers, in particular the following points will be discussed:

- Definition of standard output of a federator/routing service
- How to input and maintain the routing information
- All technical and political implications
The EIDA routing service

Simple harvesting of fdsnws-station services will lead to the following ambiguities:

- Questionable priorities in the routes (the decision stays with the data owner or network operator)
- May assume that fdsnws-datasetct and/or other services are running also where fdsnws-station is running
- May wrongly assume additional services
- May need to interpret mismatching station locations

A declarative approach would remove all these ambiguities. Disadvantage? Not trivial to maintain as an harvested catalog but definitely providing the correct information to the user.
The EIDA QC service (dedicated presentation from L. Trani) is being developed to cope with user requirements to query for relevant data only. The web service provides detailed information on the contents of the waveform data in an archive and in particular the following features and quality parameters are provided:

- gaps
- statistical values
- availability
- overlaps
- quality flags
- and more...
The EIDA QC service  (dedicated presentation from L. Trani)

Short term task force established within FDSN WGII to define a number of FDSN standard quality metrics.

Initially at least the metrics in common between the EIDA QC service and MUSTANG will be included.
The EIDA mediator (design phase)

The Mediator will allow users to perform complex/filtered data requests based on a number of parameters available from a number of web services. Initially developed as a server/node side application, afterwards also as a client application.
The EIDA AAI (Authentication and Authorization Infrastructure, prototype)

Separate authentication from data services (leaving just authorization to data services).

- Support multiple authentication mechanisms (Shibboleth, OAuth, E-Mail, etc.).
- Secure authentication in scripts and browser.
- Pattern-based authorization (data access rules).
ORFEUS-EIDA => EPOS

European Plate Observing System

Long term plan to create a single, pan-European, sustainable and distributed infrastructure for solid Earth science to support a safe and sustainable society

- EIDA is a core component of EPOS Seismology;
- EIDA is the prototype service to define and demonstrate compliance with the emerging EPOS ICS (Integrated Core Services);
- EIDA and other EPOS TCS (Thematic Core Services):
  - EIDA provides a template governance and technical architecture that may be followed by other TCS;
  - EIDA will be extended to distribute data from outside the EPOS Permanent Network / Seismology community.
ORFEUS-EIDA => EPOS

European Plate Observing System

Long term plan to create a single, pan-European, sustainable and distributed infrastructure for solid Earth science to support a safe and sustainable society

- Acceleration and Strong-Motion data
- Volcanology: seismic and infrasound monitoring
- Temporary deployments
- Ocean Bottom Seismometers
- Structural monitoring
- Near-fault observatories
## Overview - Challenges [no / minor / major problem]

<table>
<thead>
<tr>
<th>Data Types</th>
<th>Data Types</th>
<th>Data Volume</th>
<th>Data Standards?</th>
<th>Existing Public Dissemination?</th>
<th>Open Data Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strong Motion</strong></td>
<td>existing</td>
<td>low / high</td>
<td>exist, not always followed</td>
<td>RRSM / ESM</td>
<td>rarely</td>
</tr>
<tr>
<td><strong>Volcano</strong></td>
<td>many new</td>
<td>high</td>
<td>exist in some cases, not always followed</td>
<td>depends on observatory</td>
<td>rarely</td>
</tr>
<tr>
<td><strong>Temporary Deployments</strong></td>
<td>existing</td>
<td>high</td>
<td>exist in some cases, not always followed</td>
<td>depends on group</td>
<td>depends on group, embargo</td>
</tr>
<tr>
<td><strong>OBS</strong></td>
<td>existing</td>
<td>moderate</td>
<td>insufficient</td>
<td>depends on group</td>
<td>depends on group, embargo</td>
</tr>
<tr>
<td><strong>Structural Monitoring</strong></td>
<td>existing</td>
<td>moderate</td>
<td>exist</td>
<td>depends on group</td>
<td>depends on group</td>
</tr>
<tr>
<td><strong>Near Fault Observatories</strong></td>
<td>many new</td>
<td>high</td>
<td>exist in some cases, not always followed</td>
<td>depends on group</td>
<td>depends on group</td>
</tr>
</tbody>
</table>

*Observatory Meeting, Bucharest, September 2015*
ORFEUS-EIDA => EUDAT2020

The pan-European Data Infrastructure
EUDAT offers common data services, supporting multiple research communities as well as individuals, through a geographically distributed, resilient network of 35 European organizations.

- Improve data security
- Improve data discoverability, accessibility and reuse
- Guarantee failsafe and transparent access
- Achieve full identification, citation, traceability and reproducibility of data
- Facilitate data movement and analysis of large volumes of data
- Evolve EIDA (subsequently other EPOS) services

http://eudat.eu/
EIDA resources management

Resources for the next 3 years

- 0.25 FTE at all nodes (operations and services deployment)
- ~6 FTEs at some of the nodes (development)
Why EIDA? Benefits?

- Safe, persistent archival of data for European institutions
- Improve attribution and in the near future ensure full identification, traceability and reproducibility of data
- Get data ready for a number of related products within ORFEUS (ESM, RRSM, ...)
- Logging service to quantify data usage
- Quality Assurance
- Increase visibility of data, improved data discovery
- Stronger role within the FDSN

- EPOS ready! Liaising with EPOS ICS to achieve full integration and interoperability
Thanks for your attention!

Additional information at:
http://www.orfeus-eu.org/eida/eida.html