EPOS PP
European Plate Observing System | FP7 Preparatory Phase Project

EPOS

European Plate Observing System

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EPOS EUROPEANPLATEOBSERVINGSYSTEM

Solid Earth Science

KEYWORDS

- **Multidisciplinary contributions**
- **Geo-Hazards**
- **Geo-Resources**
- **Environmental changes**

ESFRI

- EPOS-PP 201011-201410
- Encouragement from ESFRI
- EPOS-IP proposal being prepared

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"Numbers" of solid earth science

MAP OF:
- Seismic/GPS stations
- Laboratories
-- etc….

Diversity in data type and formats

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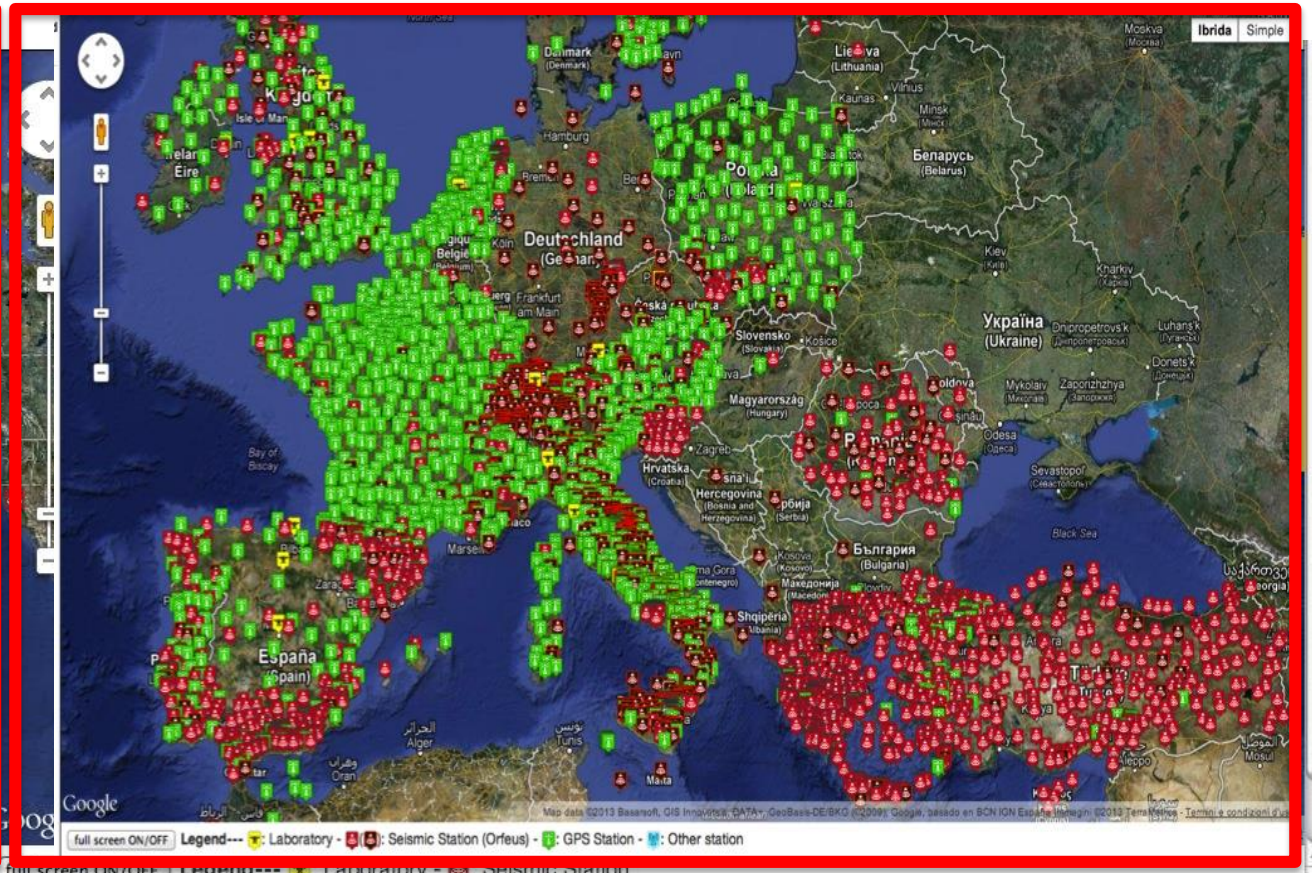
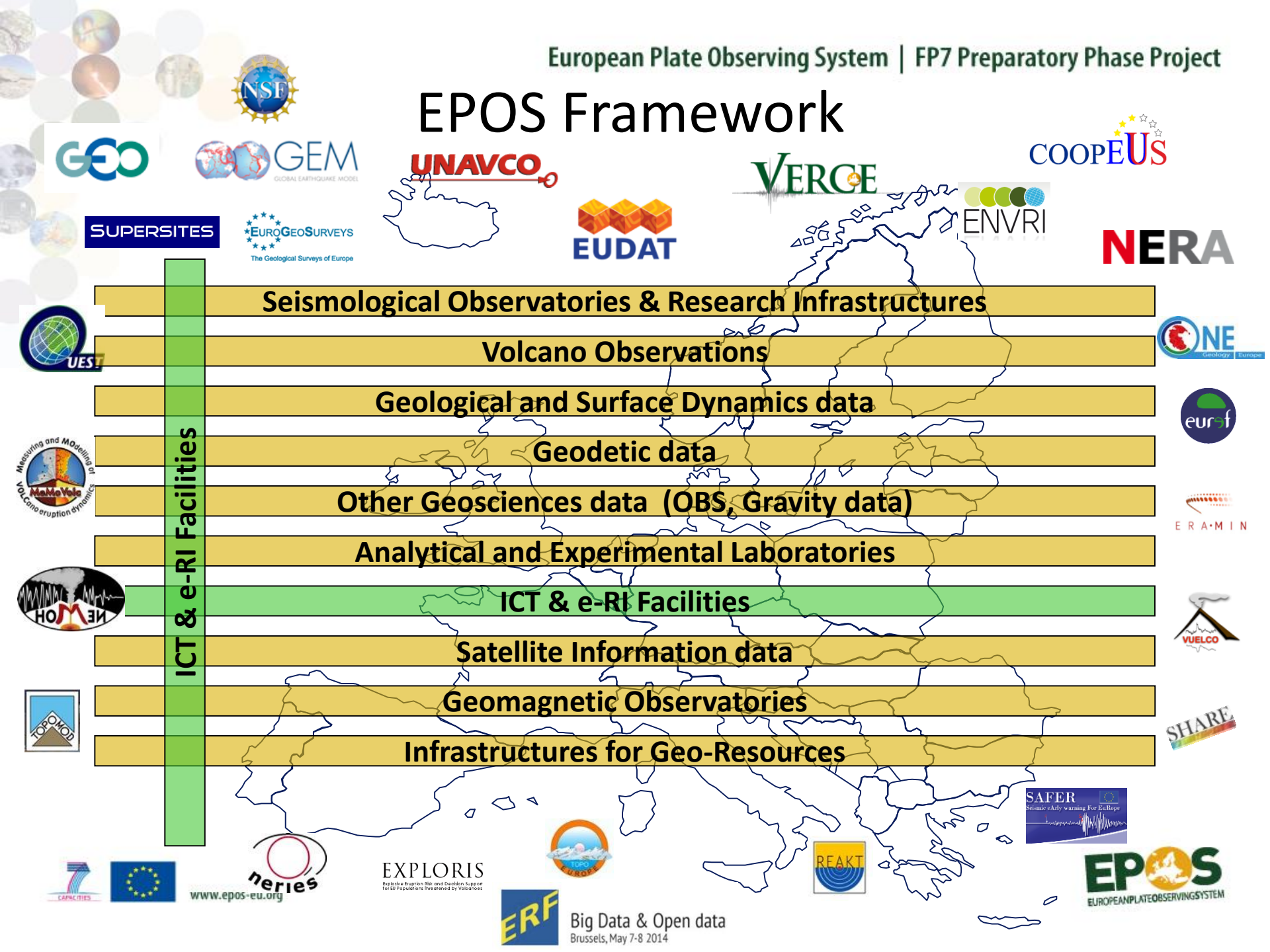
Research Infrastructure LIst

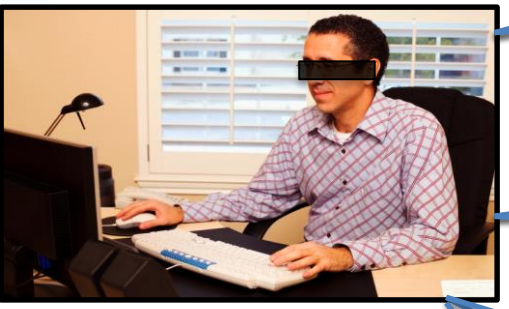
- 244 Research Infrastructures
- 138 Institutions
- 22 countries
- 2272 GPS receivers
- 4939 seismic stations
- 464 TB Seismic data
- 1.095 PB Storage capacity (seismology)
- 1.240 PB Storage capacity (GNSS DC)
- 828 instruments in 118 Laboratories



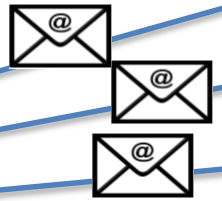
EPOS Framework

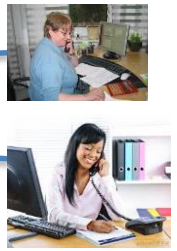


Data is obtained by:



Lots of emails





Lots of phone calls

Lots of log-in, passwords

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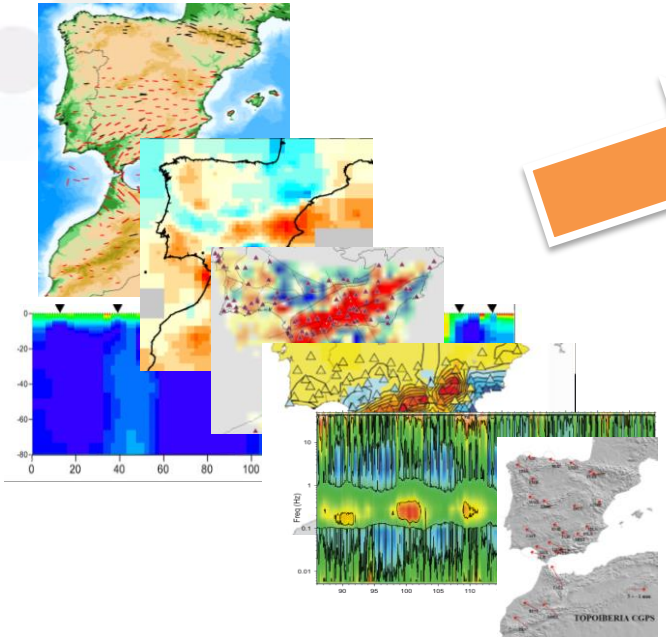
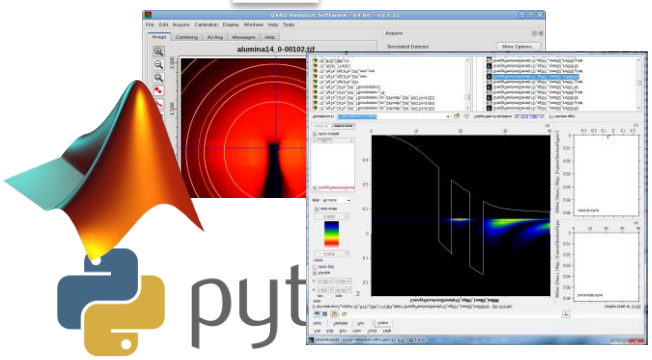
…Once you have the data…



Different data types

ASCII, UTF-8,
EBCDIC, UTF-16…

Different format, encoding & OS



Different software

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Dealing with complexity of users

- where does the user go
  - Too many offerings
- User role – can be dynamic
  - Am I a data provider? A data consumer?
  - Am I a service provider/manager?
- User role authorities and responsibilities
  - Am I allowed to access software services?
  - Am I allowed to access laboratory services?
  - Am I allowed to access computing / detector services?
- User role preferences
  - Device: mobile? Laptop?...
  - Modality: keyboard/mouse / gesture/ speech…
- **Simple – one stop shop**

Rights

Costs

Dealing with the complexity of usage

- *Ownership* and IP (data, software, publications)
- *Permissions* to use (data, software, facilities/equipment including computing)
- *Conditions of use*: (by class of user) (licence) acknowledgement, citation, payment
- *Conditions of use*: (by class of user) (licence) constraints on further actions

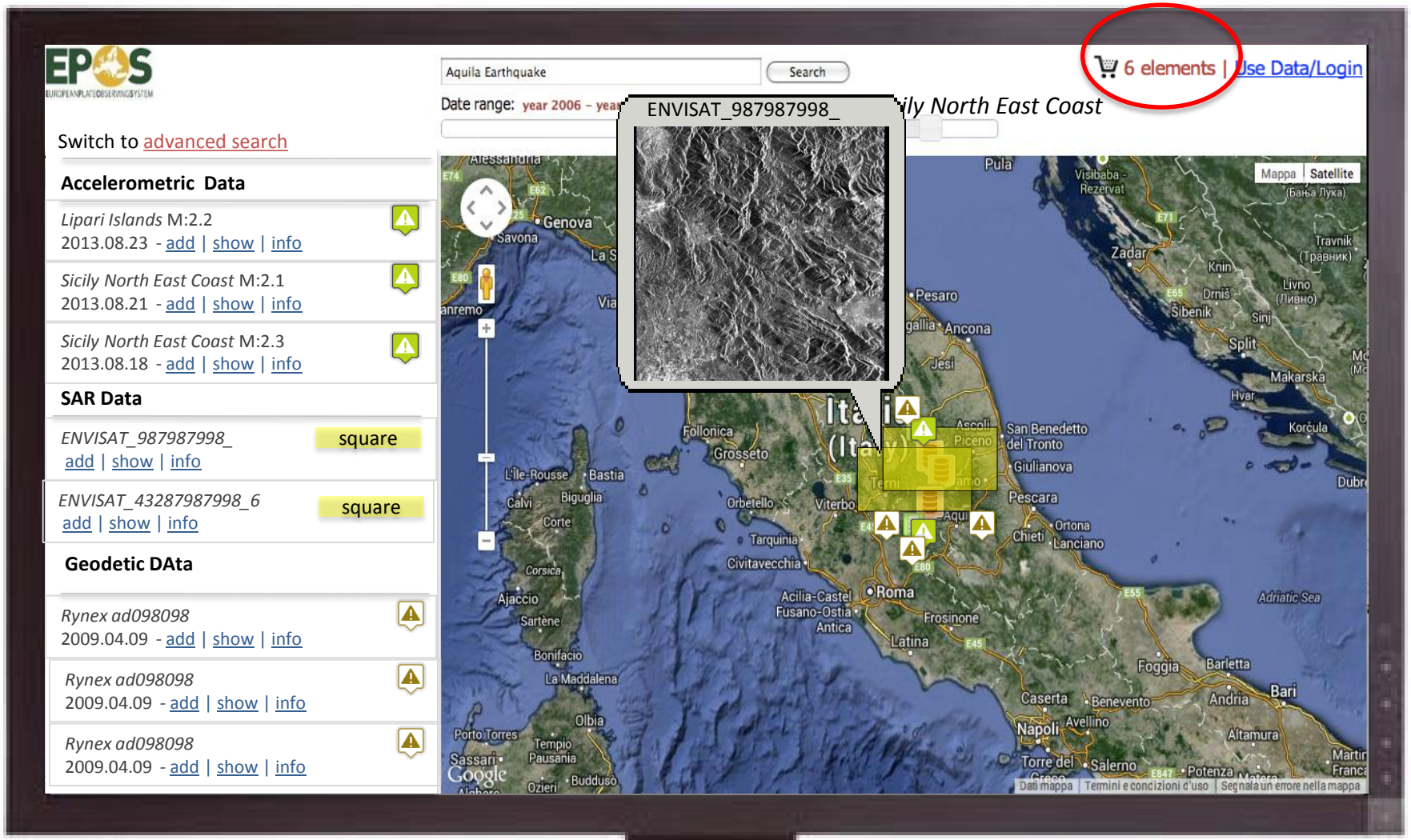
Dealing with complexity of request

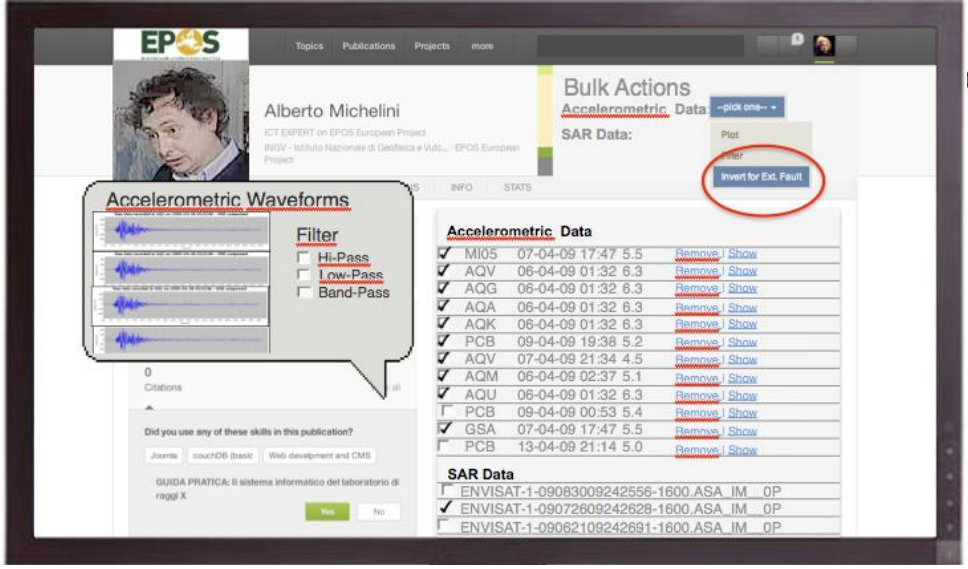
$$f_{Request}\,(user, data, software, facilities, equipment)$$

with constraints

(user X data,
user X software,
user X facilities/equipment,
data X software,
data X facilities/equipment,
software X facilities/equipment)

Scientist at work



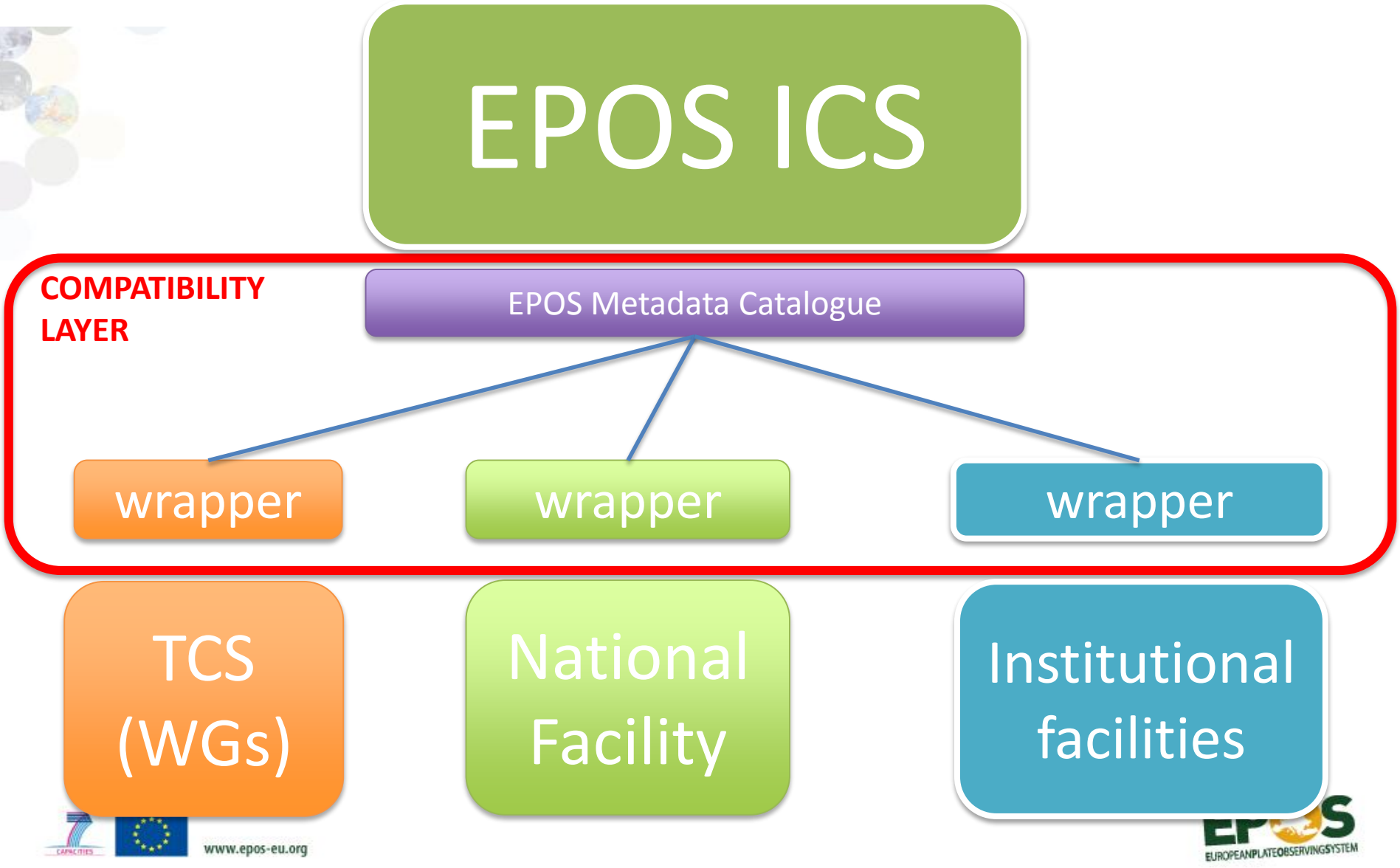


Scientist at work

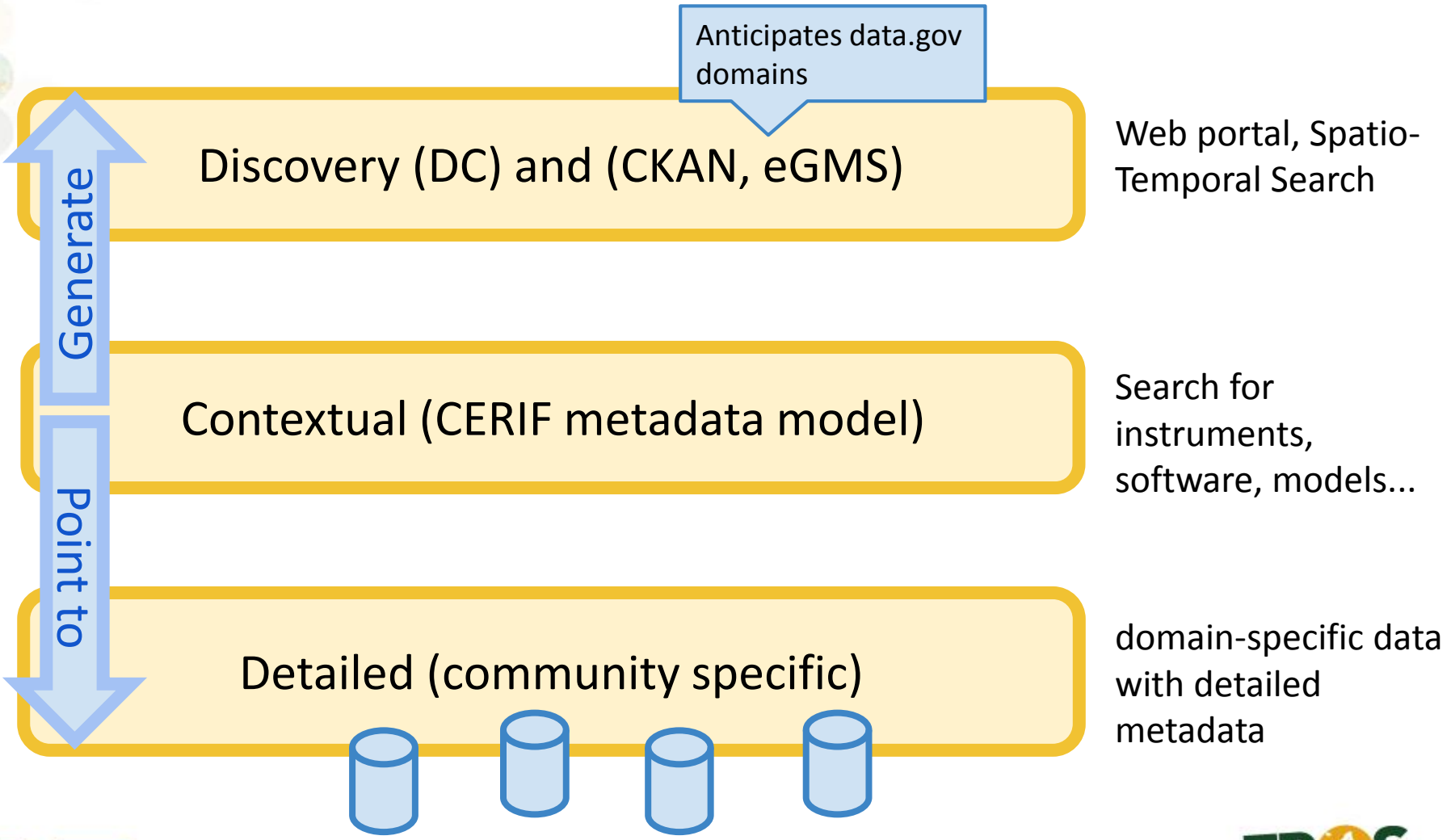
Then… what can the scientist do?

- Integrate use of SAR, GPS, Accelerometric Data, etc.
- Use different codes and languages (python, fortran, any other…)
- Perform heavy processing online (use of HPC resources)
- Compare results (e.g. focal mechanism catalogues)
- Compare different data
- Save data in personal area
- …and more… (even download the data)

Compatibility layer



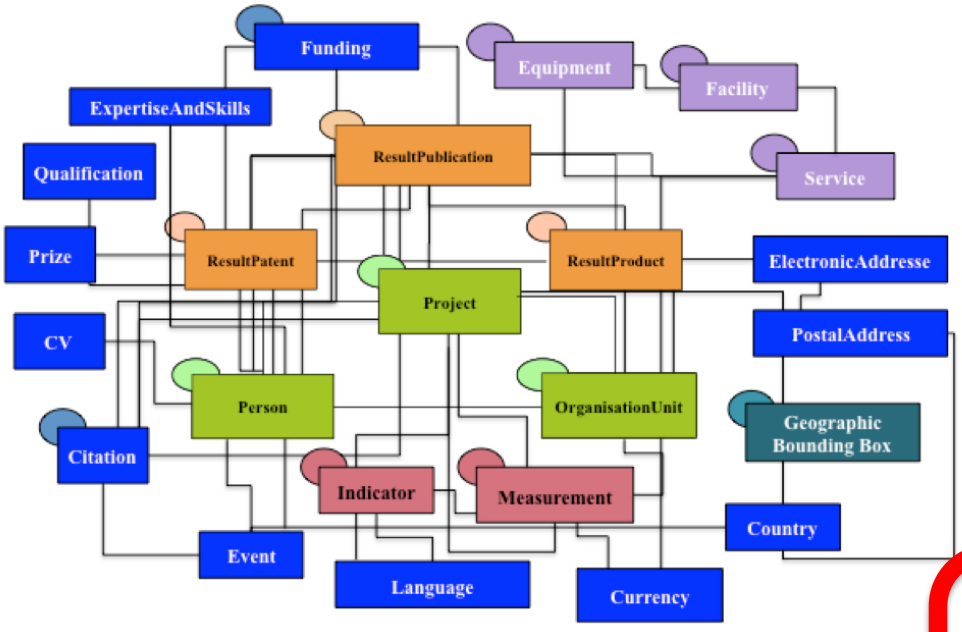
3-layer metadata model



Contextual (**CERIF** metadata model)

(http://www.eurocris.org/)

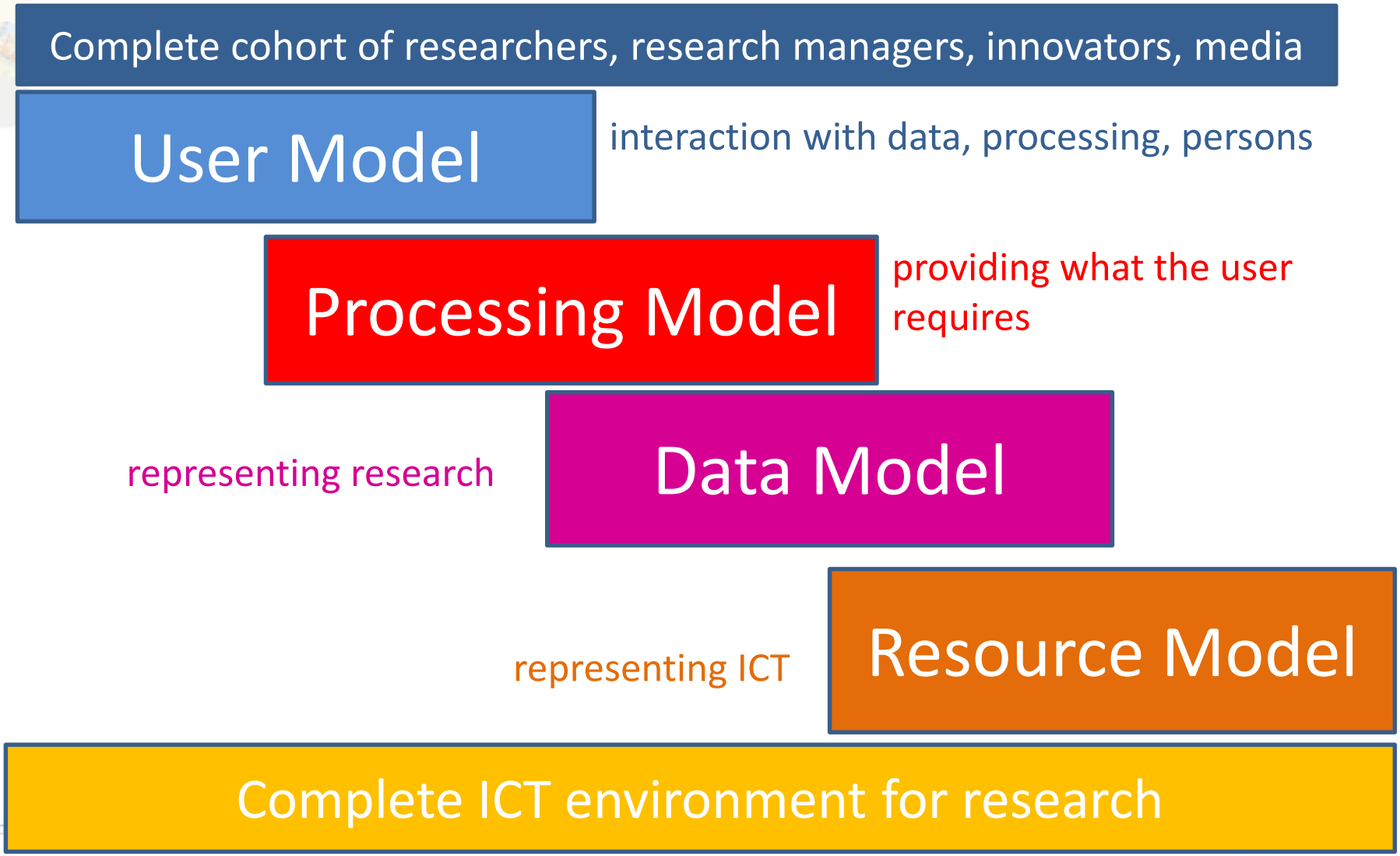
Common European Research Information Format



1. Metadata Entities and Relations
2. Used as metadata engine at contextual level
3. CERIF-XML exchange format and APIs

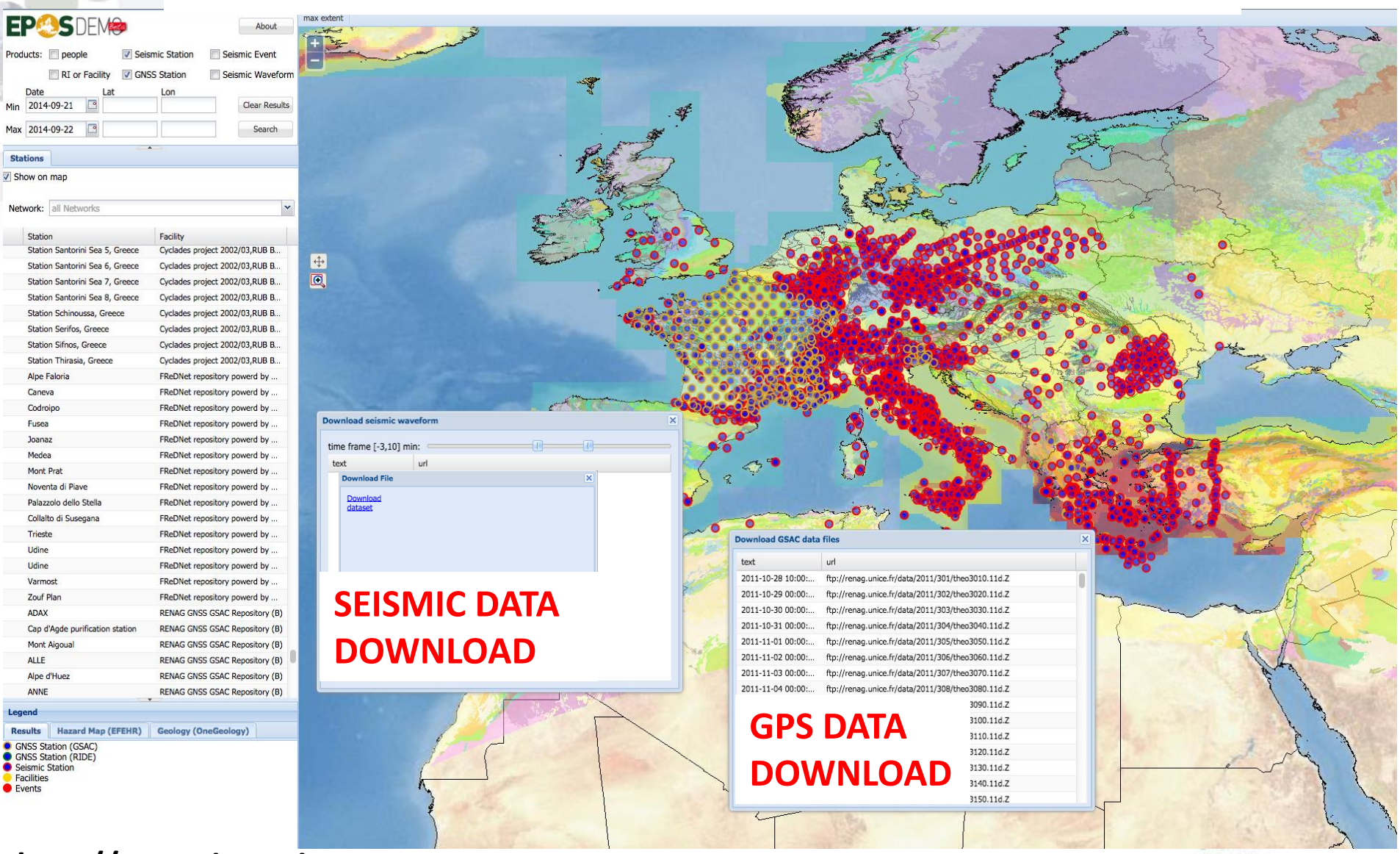
Compatibility Layer

e-Infrastructure Metadata Model



The EPOS Added Value

EPOS prototype for Solid Earth Science



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Who's in(tegrated)?

- ORFEUS/EIDA: Waveform Data, Station Metadata, Orfeus Metadata for Waveforms
- VERCE: seismology e-Science centre
- SMdB - Waveform Data
- EMSC – seismic events
- AHEAD - Earthquake Products - Historical Data
- EFEHR - Hazard & Risk Maps
- OneGeology Europe – geological maps (Images (WMS) , GeoSciML (WFS), and others)
- Geodesy – geodetic data GSAC repositories (INGV, Geo Azur ,INOGS (FredNet), Univ Athens, NOA Greece)
- And the supersites (e.g. FUTUREVOLC, Iceland; MED-SUV (S. Italy); MARSITE (Marmara Sea))
- ➔ and e-infrastructures: EUDAT, PRACE, EGI

EPOS Interest in RDA

- To discover others' best practice that may be adopted by EPOS
- To share EPOS experience
- To participate in standardisation
  - Formats
  - Protocols
  - Best practice
- Especially metadata !

EPOS and RDA Organisation

- Several members of EPOS e-infrastructure team attend
  - RDA plenaries
  - RDA/ESFRI meetings
- Keith Jeffery is co-chair of 3 metadata groups
  - MIG, MSDWG, DICIG
  - And provides coordination across them and also the provenance group
  - These groups reaching out to domain specific groups (e.g. biomed (ELIXIR), marine, agriculture…)

Conclusion EPOS ad RDA

- We believe there is mutual benefit in EPOS-RDA collaboration
- EPOS is tackling multidisciplinary e-Science
- EPOS has a clear vision, architecture and has demonstrated feasibility
  - Based on metadata
- The EPOS architecture is general and not restricted to earth science

Thank You

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