

Data specification in the risk domain

ORCHESTRA DAY
STRESA - Italy

12th December 2007
BRGM

Presented by Jean-Jacques SERRANO



Data used in the ORCHESTRA pilot

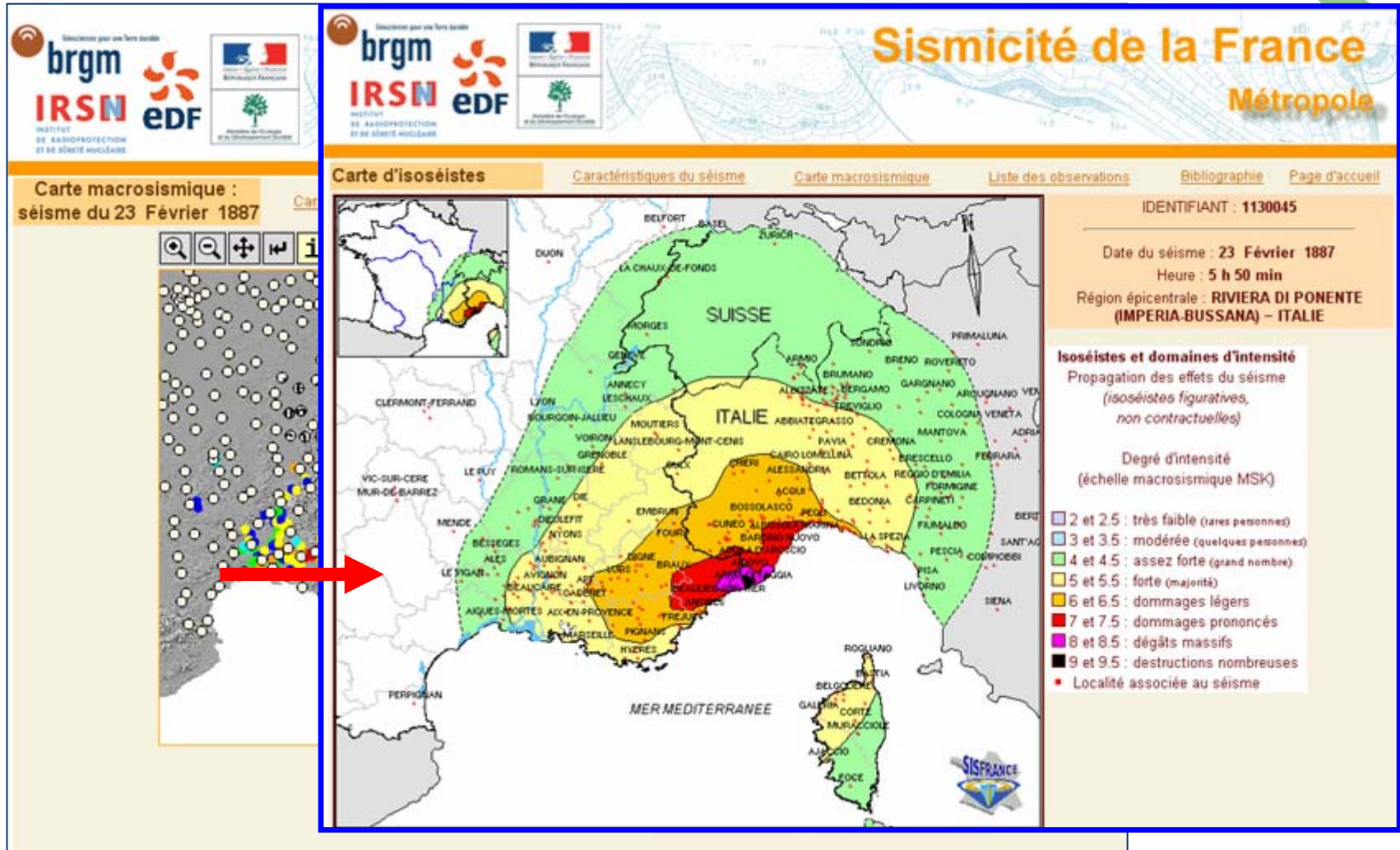
- Historical events (earthquakes, landslides, cavities)
- Hazard maps (Roya valley)
- Road network
- Traffic intensity (only for a limited set of routes)
- Damages on road => unavailability periods
- Regional boundaries

We want to improve web services in the risk domain

- Two examples:
 - To better estimate the area affected by a historical earthquake
 - To know the real unavailability of a road after an event



Ex1: To better estimate the area affected by a historical earthquake

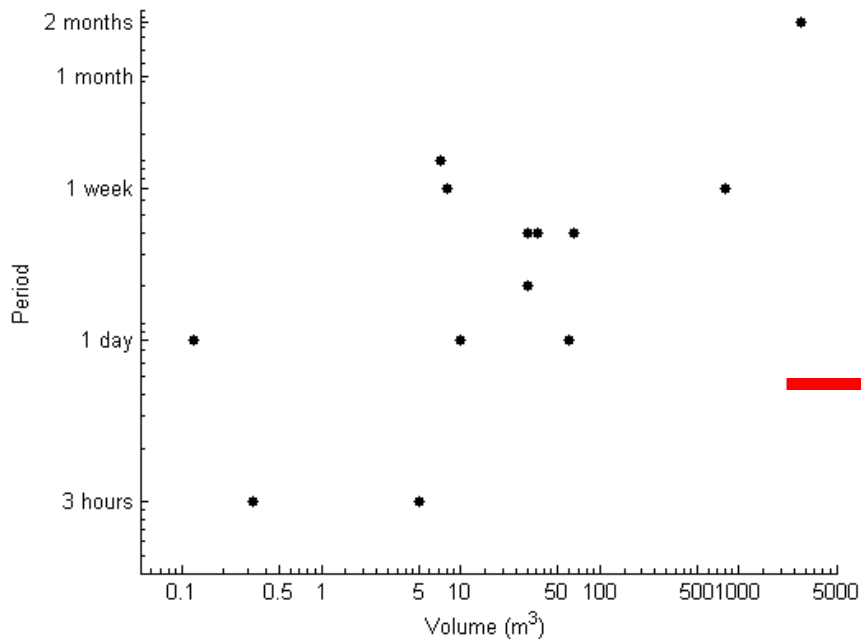


=> Kriging of macroseismic intensities



Ex2: Length of road unavailability

- Currently we assume roads are closed for two weeks
- For moderate earthquakes less than one week more reasonable (unless bridge collapse)
- For landslides data from region used to develop empirical relationship between volume and closure period
- Cost Calculation Service will be modified to take account of these improvements



Volume	Period
Less than or equal to 1m ³	1 day
Between 1 and 100m ³	4 days
Greater than 100m ³	1 week



Need for schema mapping and translation



Orchestra Project
Risk assessment for the road network in the French-Italian border region

Presentation Data Access Contact

Go to : OK lon: lat:

Localisation

France **Italy**

Séismes Routes

Terremoti Autostrada

« Common » Earthquakes Road network

Translation

Web services

Portrayal

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The screenshot shows a web application interface for the Orchestra Project. At the top, the logo and title 'Orchestra Project' are displayed, along with the subtitle 'Risk assessment for the road network in the French-Italian border region'. Below this is a navigation bar with 'Presentation Data Access Contact' and a search bar with 'Go to :', 'OK', and latitude/longitude fields. The main area features a map of the French-Italian border region, with labels for 'France' and 'Italy'. Two blue cylinders represent data sources: 'Séismes Routes' (Earthquakes Routes) and 'Terremoti Autostrada' (Earthquakes Autostrada). Arrows from these cylinders point to a central orange cylinder labeled '« Common » Earthquakes Road network'. To the right, a panel shows 'Layers' (teleatlas, demis), 'Information', and 'Routing Service'. Below the map, a flow diagram shows 'Translation' leading to 'Web services' (in an orange oval), which then leads to 'Portrayal'.



Earthquakes in France and in Italy : two application schemas



French schema (simplified)

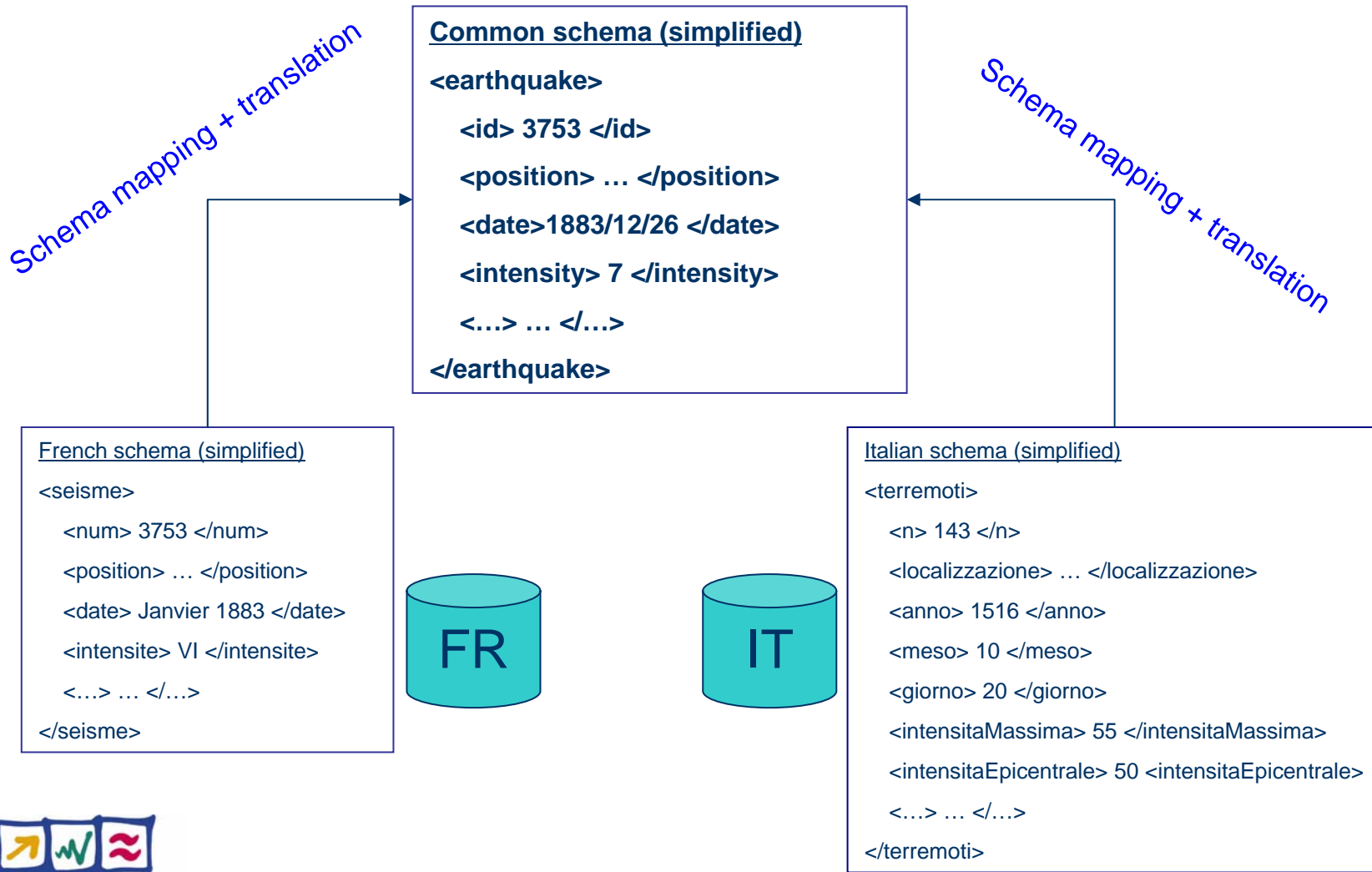
```
<seisme>
  <num> 3753 </num>
  <position> ... </position>
  <date> Janvier 1883 </date>
  <intensite> VI </intensite>
  <...> ... </...>
</seisme>
```

Italian schema (simplified)

```
<terremoti>
  <n> 143 </n>
  <localizzazione> ... </localizzazione>
  <anno> 1516 </anno>
  <meso> 10 </meso>
  <giorno> 20 </giorno>
  <intensitaMassima> 55 </intensitaMassima>
  <intensitaEpicentrale> 50 <intensitaEpicentrale>
  <...> ... </...>
</terremoti>
```



Earthquakes: a very simple common application schema





Conclusion

- Need to harmonize data models to share web services:
 - Earthquakes, landslides,
 - Traffic
 - Road network
 - ...
- How?
 - Framework defined by the INSPIRE Directive for environmental data
 - Existing initiatives: *ML (EarthquakeML, LandslideML, WaterML, ...)
 - An issue: sharing common classes between data models or referencing classes of another data model (i.e. landslide – water)
- Support?
 - From thematic communities to support and promote the data modeling activity at an international level (=> define standards)
 - From projects: INTERREG?, ...





Thank you for your attention

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