The BRISEIDE project

BRISEIDE

ISPRA

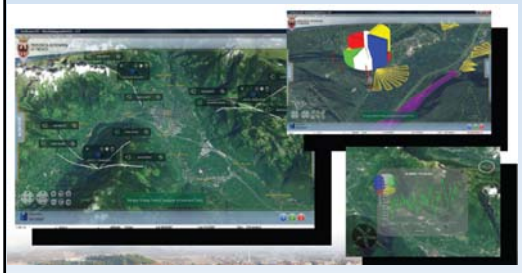
• BRISEIDE "BRIdging SErvices, Information and Data for Europe" is an EU-funded ICT Policy Support Programme project. It involves **15 EU partners** on the development of **spatio-temporal Web Processing Services (WPS)** for geospatial application.

ICTPSP

BRISEIDE

Duration: 30 months

Period: March 2010 – August 2012



• The project aims at **developing a software architecture and IT tools infrastructure deployed over a pan-European set of pilots**, that provide a Decision Support System for land planning (before an emergency event) and emergency management (during the event).

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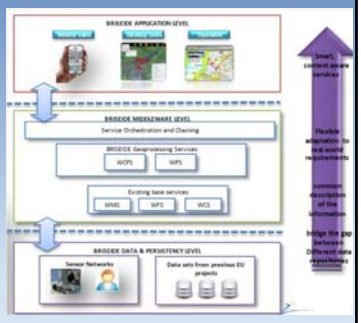
•Spatial analysis and spatio-temporal web processing services (WPS) will be **accessible through the web** and made available by **integrating them within existing open source frameworks** through compatible WebGIS applications.



• One of the main results of BRISEIDE is the implementation of **added-value spatio-temporal services based on potential final users and stakeholder needs and practices**.

• For this reason, the project has **a relevant number of user partners, such as Agencies and Public Administrations**, dealing with urban planning, environmental management and risk management.

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The BRISEIDE Consortium

GraphiTech
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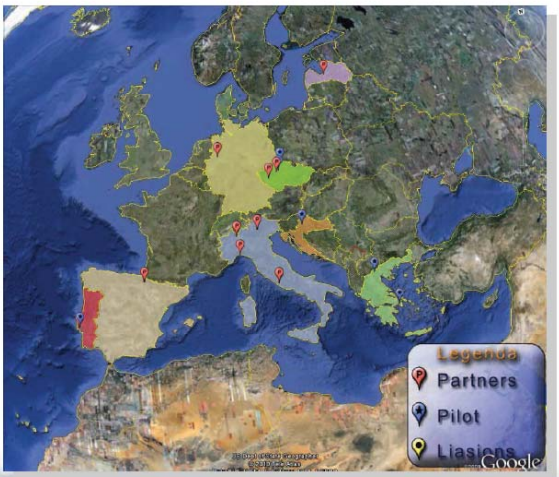

Gobierno de Navarra
tracasa
Epsilon
SAPIENZA

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The pilots (or “use cases”)

- Emergency Management
- Geological Effects induced by Earthquakes
  - Landslides
- Flood and Sustainable Forest Management
- Environmental Quality
- Fire Risk and Emergency Management
- Monitoring of Hydrogeological Disturbances

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ISPRA Pilot “Geological effects induced by Earthquakes”

Objectives

• to **identify the areas most prone to the occurrence of coseismic geological effects. Particular focus will be put on surface faulting and slope instabilities (rock falls);**

• to **point out the vulnerable strategic elements**, including transport networks (roads and railways), lifelines and critical facilities.

Users

1. **Emergency management operators** responsible for management of the emergency activities related to seismic events. Typically they operate immediately after an earthquake.
2. **Officers from Public (local) Authorities** who need to access information on earthquakes to improve planning and prevention. This knowledge is essential to provide input, within seismic areas to achieve better land planning in order to:

• take into account the presence of areas prone to the occurrence of geological effects during an earthquake;

• adopt mitigation measures to reduce their effects at least on the most strategic vulnerable elements;

• introduce land use restrictions when necessary.

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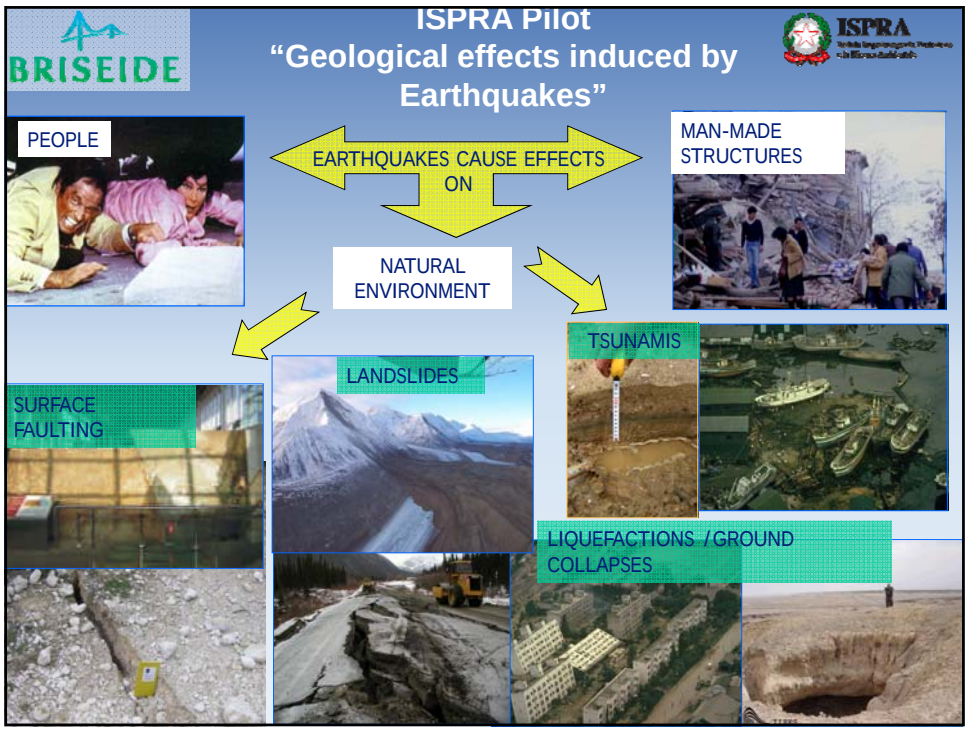
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"Geological effects induced by Earthquakes"
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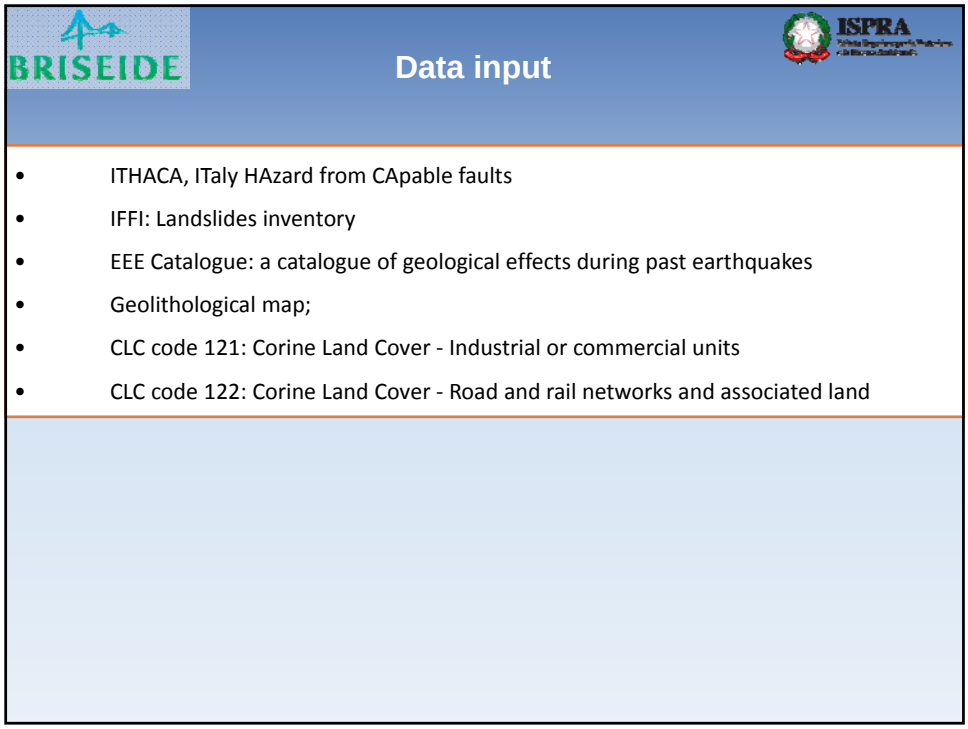
PEOPLE
EARTHQUAKES CAUSE EFFECTS ON
MAN-MADE STRUCTURES
NATURAL ENVIRONMENT
TSUNAMIS
LANDSLIDES
SURFACE FAULTING
LIQUEFACTIONS / GROUND COLLAPSES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Data input
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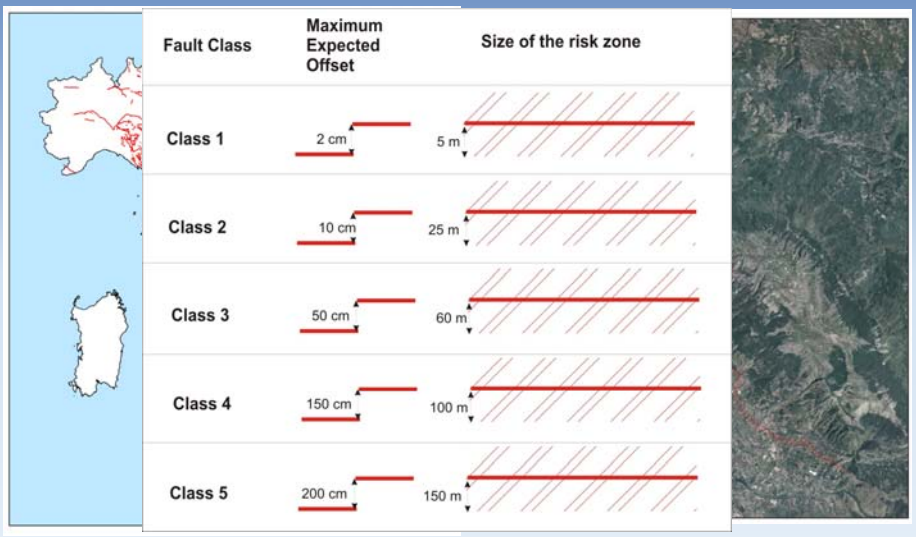
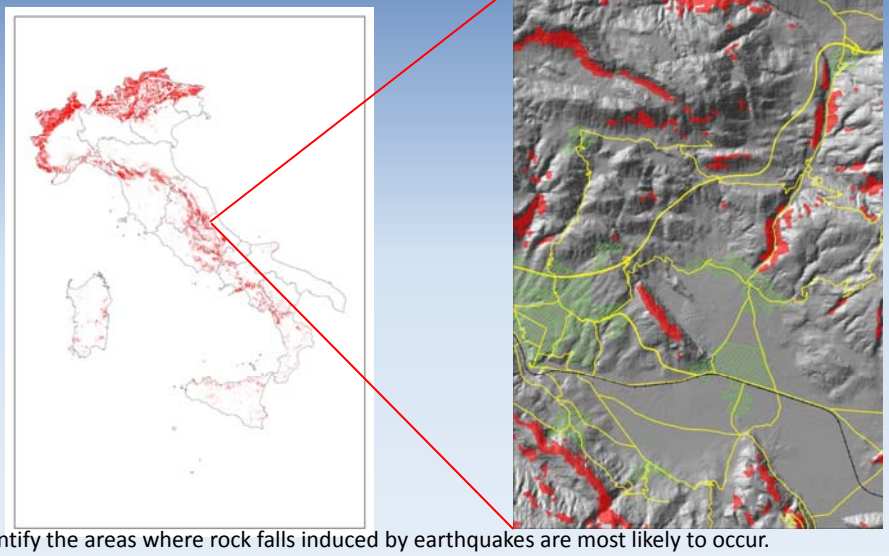
• ITHACA, ITaly HAzard from CApable faults
• IFFI: Landslides inventory
• EEE Catalogue: a catalogue of geological effects during past earthquakes
• Geolithological map;
• CLC code 121: Corine Land Cover - Industrial or commercial units
• CLC code 122: Corine Land Cover - Road and rail networks and associated land

Surface faulting hazard model



Delineate the areas around capable faults where the surface faulting hazard is relevant.
It is based on the distribution of capable faults (ITHACA database), considering a suitable buffer area around each tectonic lineament

Coseismic rockfalls susceptibility model

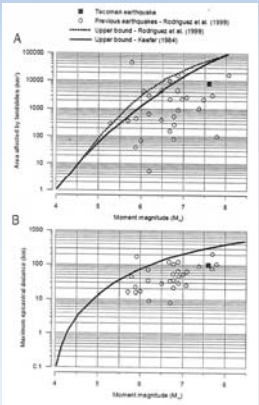


Identify the areas where rock falls induced by earthquakes are most likely to occur.
It is based on morphological and lithological characteristics and basic structural elements (attitude of strata, proximity to faults, etc.).

User requirements

Identification of the area of interest

The system will show the area of interest centred on the epicentre and a circle with radius proportional to the earthquake energy based on empirical relationship between size area and magnitude / PGA



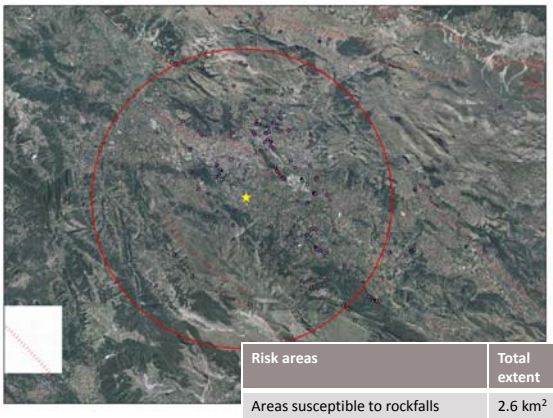
User requirements

Identification of "hazard areas"

Identification areas susceptible to coseismic rock falls
Identification of surface faulting hazard

The user will activate, from the TOC, the layers corresponding to
•the areas susceptible to rockfalls;
•the areas prone to surface faulting hazard:
•the landslides from IFFI;
•the geological effects induced by past earthquakes from the EEE Catalogue.

The system will show the hazard areas and some tables summarizing alphanumeric information (e.g. total area prone to each risk, expected maximum displacement, etc.).



Risk areas	Total extent
Areas susceptible to rockfalls	2.6 km^2
Areas prone to surface faulting	1.3 km^2

User requirements

Identification of vulnerable elements

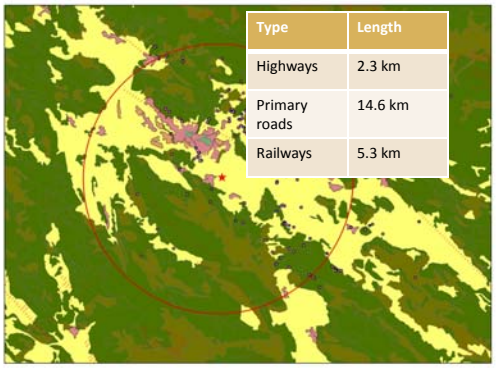
Identification of vulnerable elements

Temporal trends from changes in vulnerable elements

The user will activate the transport network and land cover /land use layers (CORINE Land Cover 2006). The system will display the segments of the transport network within the risk area and the pattern of land land cover.

The user will be able to select also specific land use / land cover codes, corresponding to specific vulnerable settlements (e.g. code 121 Industrial and commercial sites).

Additional tables will summarize some alphanumeric data (e.g. total length of vulnerable transport network, incidence of land cover classes, etc.).



Type	Length
Highways	2.3 km
Primary roads	14.6 km
Railways	5.3 km

ISPRA Pilot "Landslides"

Objectives

to provide a landslide scenario for a selected area (NUTS3 level) with information on:

- **number, area and type of movement of landslides occurred in the past**;

--**urban settlements affected by landslides:**

--**population, critical points along road network and railways**

--**change detection;**

--**network analysis**

The operator can perform a number of Web geo-processing tasks (e.g. buffer, overlay, network analysis) in order to produce landslide risk maps and tables summarising information related to landslides and exposed elements.

The pilot will be used in:

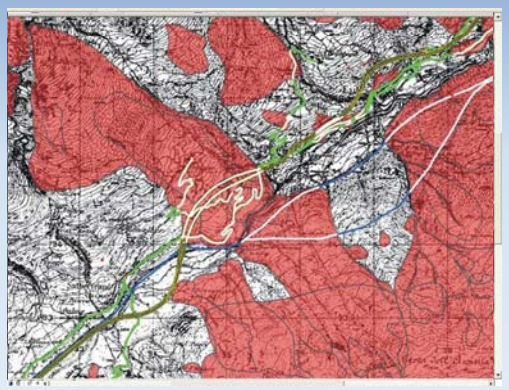
- **Planning prevention measures (before event);**
- **Emergency management (during event).**

User requirements

Identification of infrastructures

The user starts the system. The user flies to the area of interest: zoom, pan, “go to features” (geographical search by entering NUTS3 name or selecting from a drop-down menu)

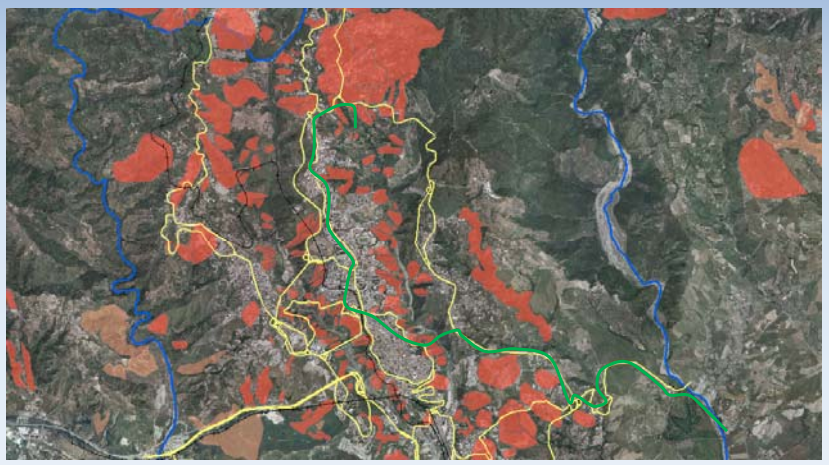
The user activates, from the TOC, the layers corresponding to datasets of interest (landslides, railways or road networks and base map layers (eg. Digital orthophoto, topographic map of Italy).



User requirements

Landslides network analysis

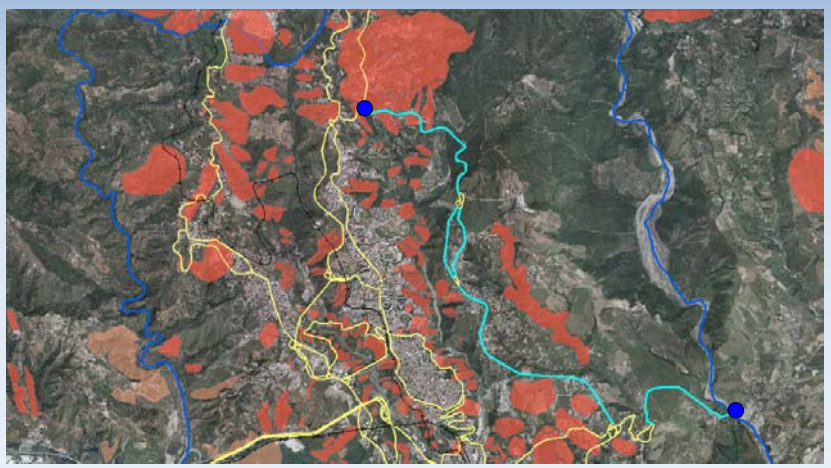
The operator selects the area of interest for the analysis (NUTS3 or municipality). Features of landslides and road networks in the area of interest are extracted and shown as new layers.



User requirements

Landslides network analysis

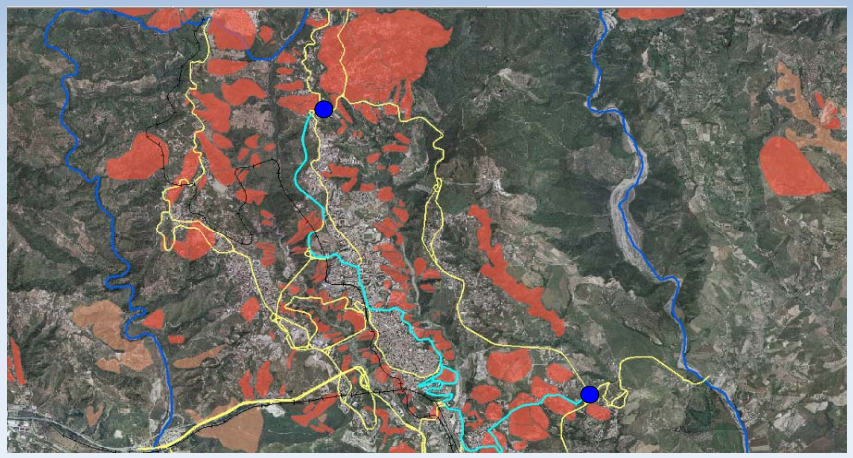
The user verifies the connectivity between two villages by selecting the geo-process responsible for creating a route between two points of the road network, by clicking on two points of the scene. The route is automatically rendered on top of current scene.



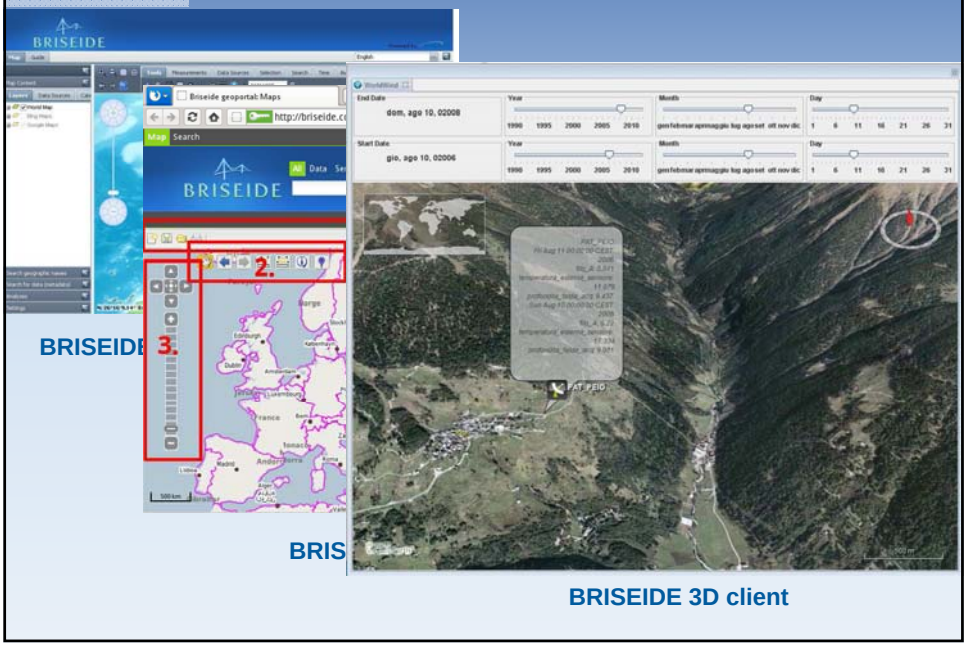
User requirements

Landslides network analysis

The user can also connect to the routing process, landslide areas which contain, in case of the event, where interruptions to the network will occur. As a result the system displays, if available, an optional path to connect the selected start point and arrival point avoiding landslides.



BRISEIDE Clients



BRISEIDE 3D client