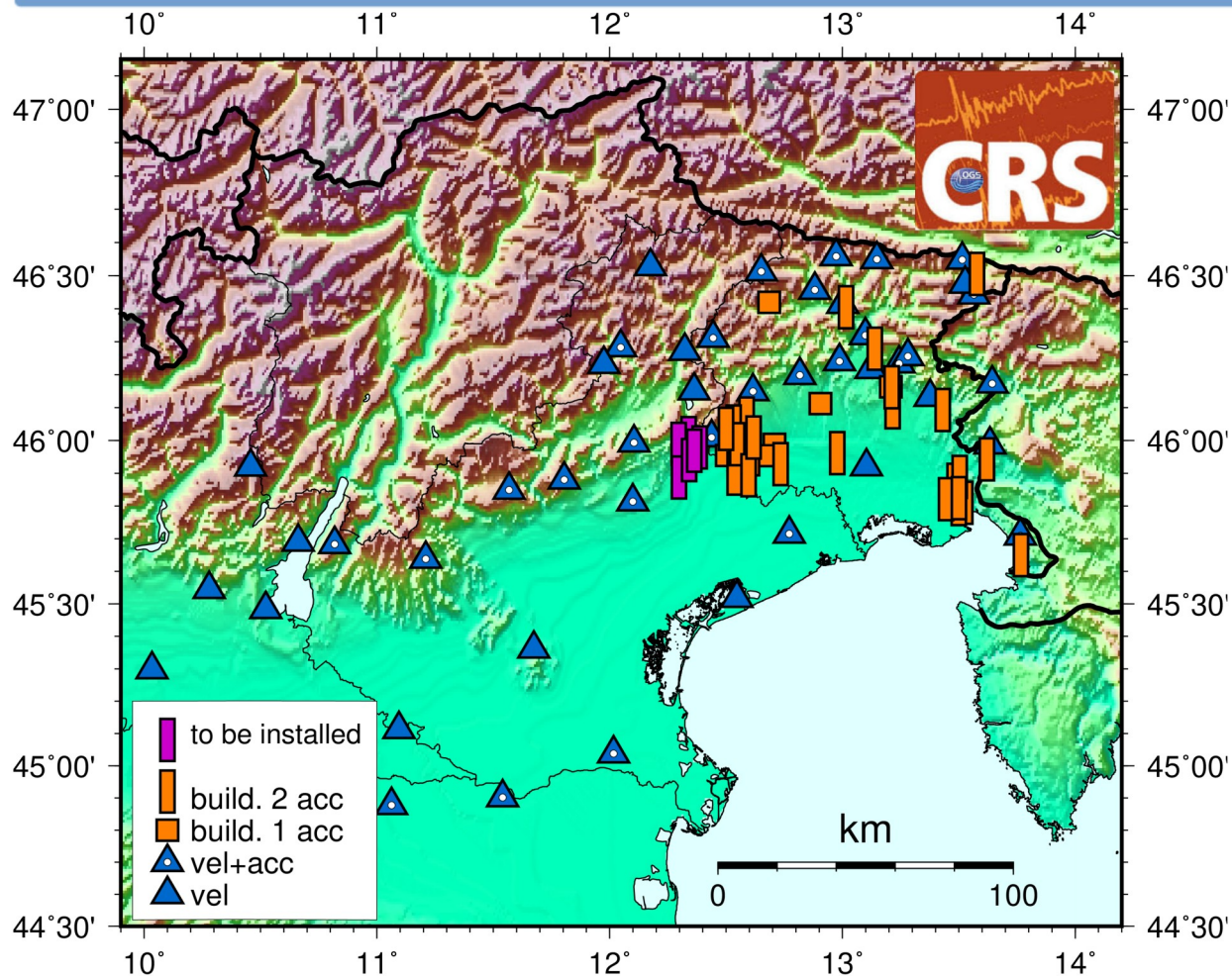# The CRS Network

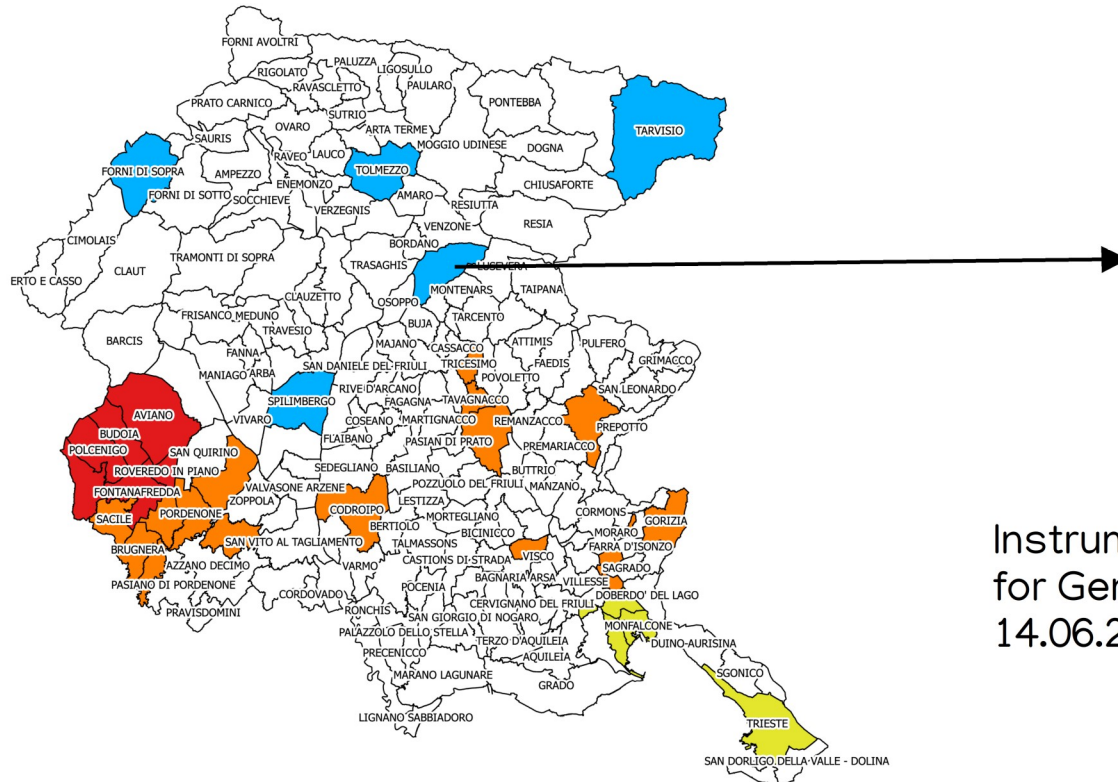Dense network of strong motion sensors

Automated earthquake location and alerts

Support activity for civil protection

Valuable scientific knowledge for the region
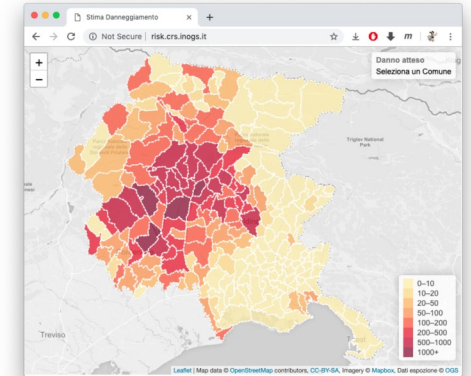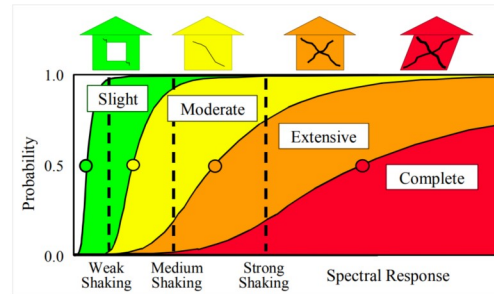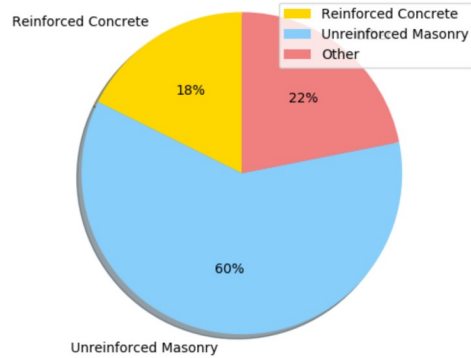
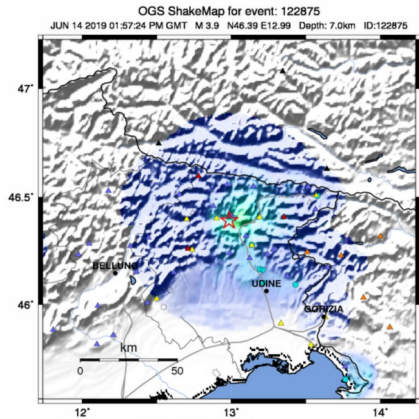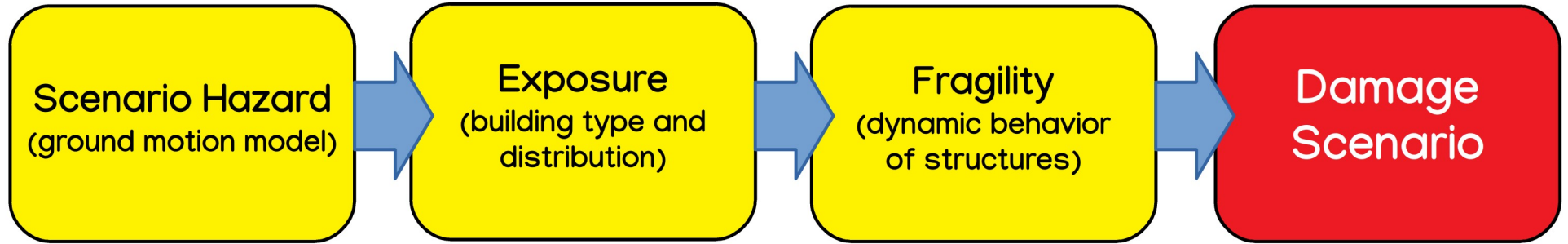# The Structural Monitoring Network

"Earthquakes don't kill people, collapsed buildings do so"
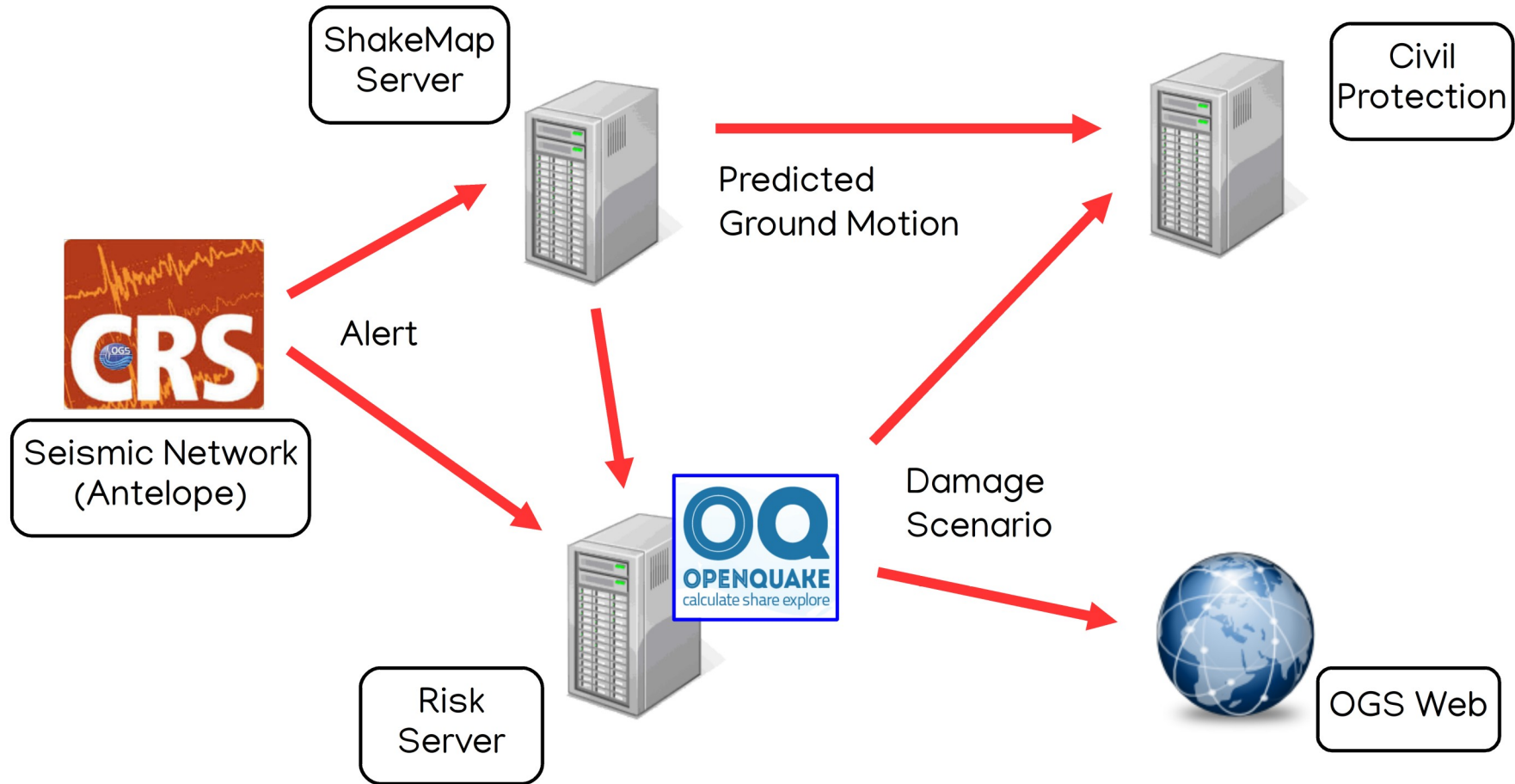Nigel Priestley (1943–2014)

Instrumented building network (left) and example for Gemona (right), where the M3.9 event of 14.06.2019 (Verzegnis) was recorded.

A real–time damage scenario calculator

Scenario Hazard (ground motion model) → **Exposure** (building type and distribution) → **Fragility** (dynamic behavior of structures) → **Damage Scenario**

Processing Infrastructure

ShakeMap Server

Civil Protection

Predicted Ground Motion

Alert

Seismic Network (Antelope)

Damage Scenario

Risk Server

OGS Web

Interaction with Civil Protection

As for the case of predicted ground motion, the expected damage distribution is sent to Civil Protection for operational purposes using a dedicated channel:
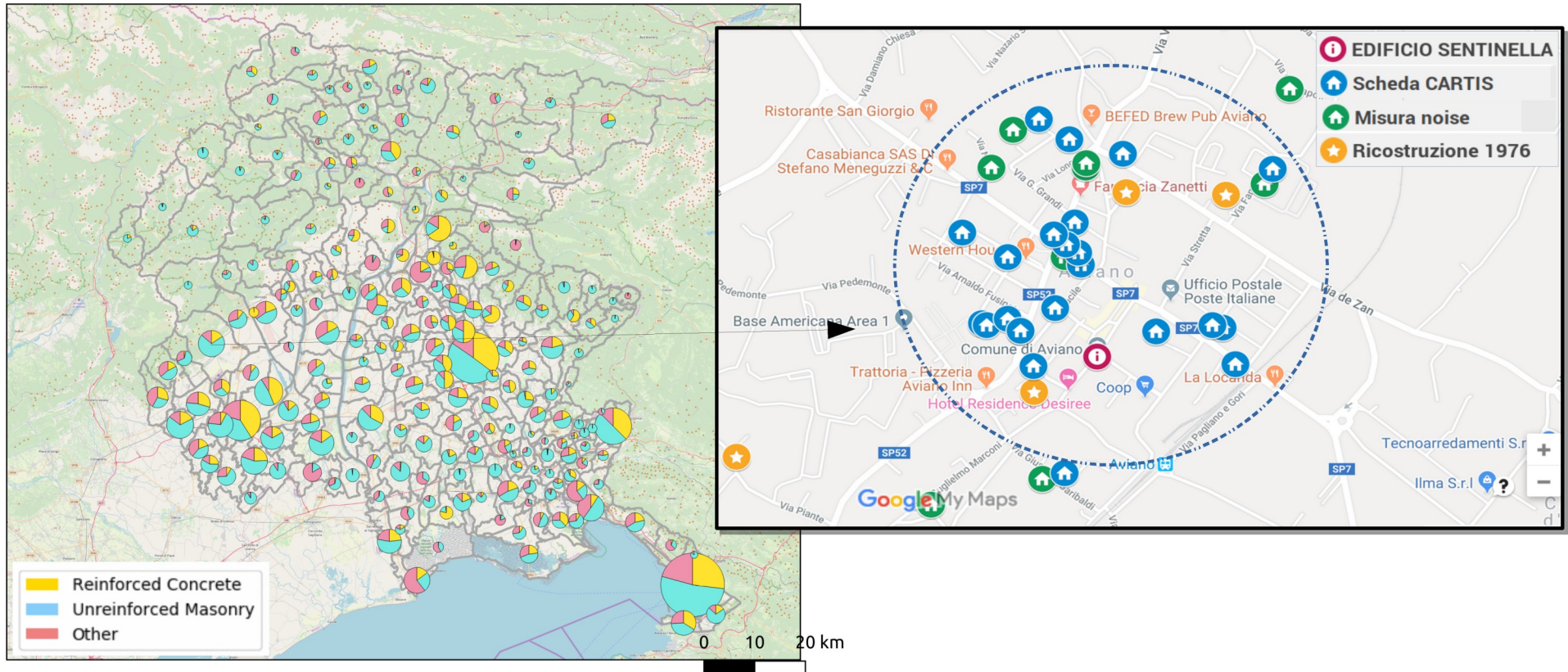
- Training
- Emergency planning
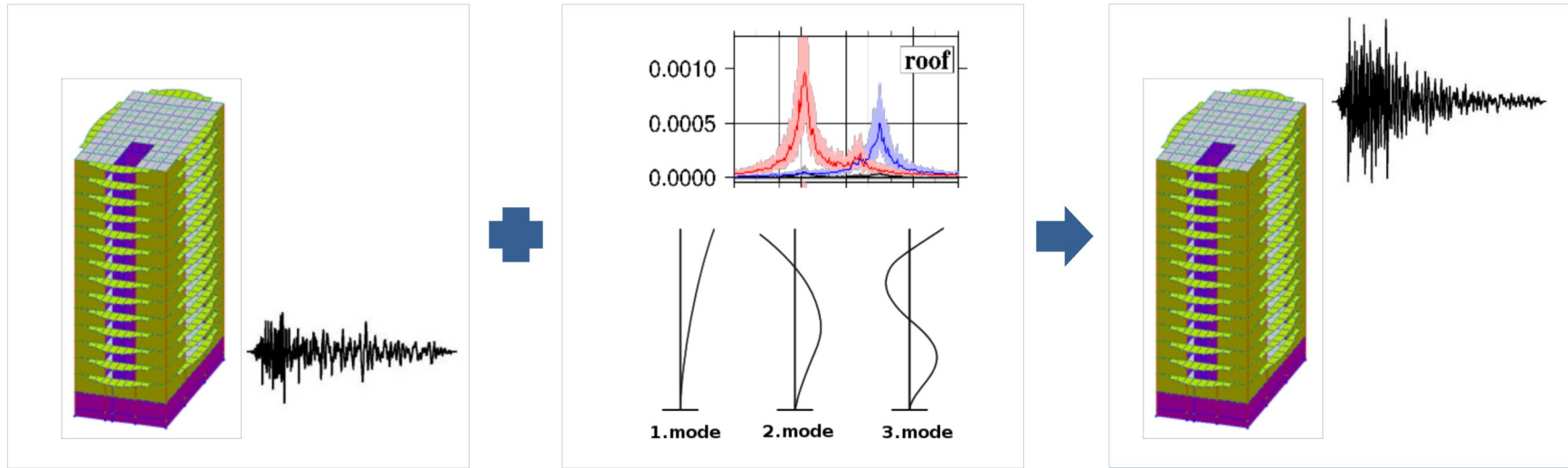- Post-event response organization
- Etc...
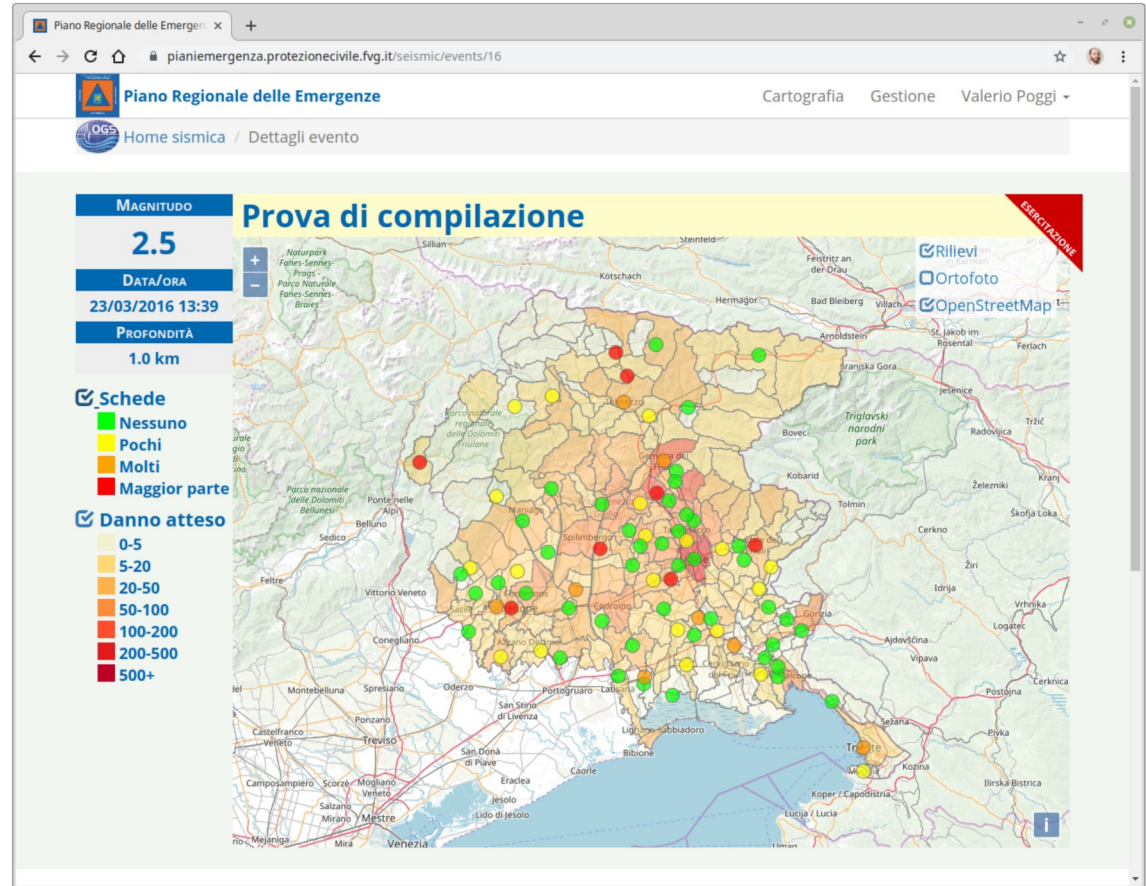
Characterization of target areas

The exposure database is progressively enriched by including more and more refined information about residential buildings


Legend:
- Reinforced Concrete
- Unreinforced Masonry
- Other

0   10   20 km

EDIFICIO SENTINELLA
Scheda CARTIS
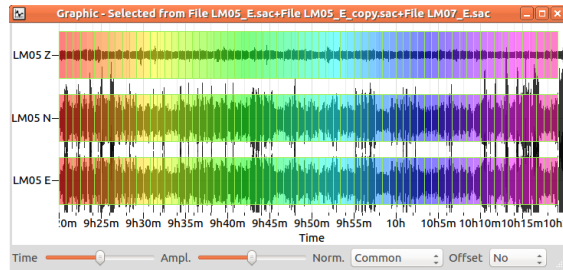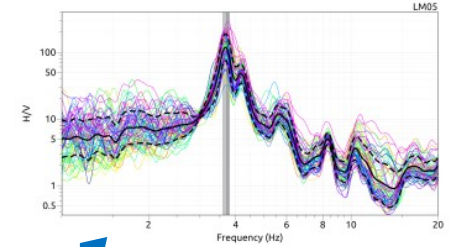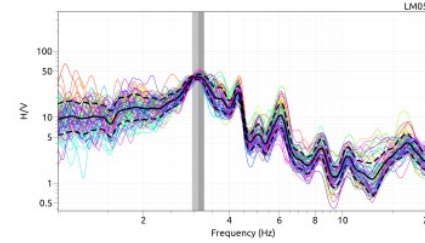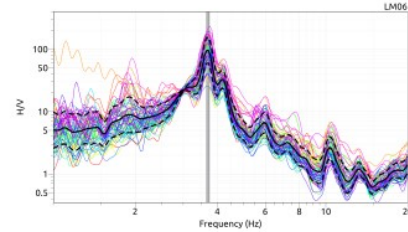Misura noise
Ricostruzione 1976

Expected damage for building typologies

We can reconstruct the expected acceleration and displacement at the top of the buildings (and therefore the expected damage). This analysis can be done for each building typology

Characterization of specific buildings
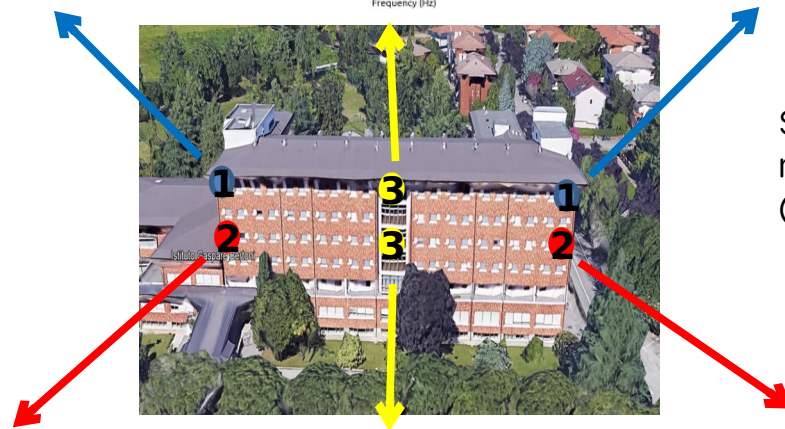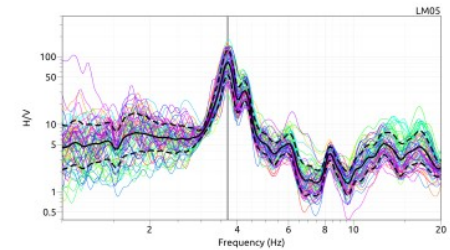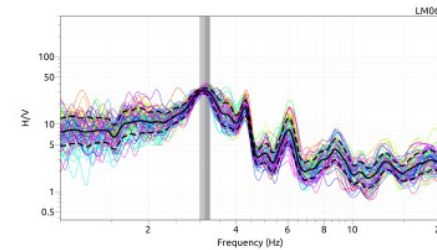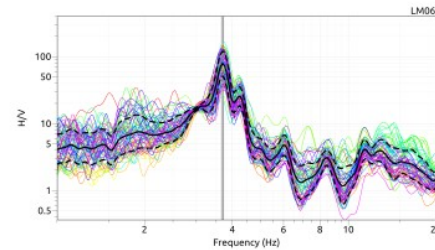
Spectral ratios to a reference station (on the basement)

Conclusions and future work

The tools and products currently developed at CRS can support emergency management, training activities and territorial planning.

We are improving the current tool by:

- Enriching exposure and fragility information

- Including local measurements (ex. instrumented buildings)

- Accounting for site effects

- Collecting feedback from stakeholders