gempa

SHARD

GLOBAL EARTHQUAKE MONITORING PROCESSING ANALYSIS

SHARD
Structural Health Monitoring

Next generation of Structure Health Monitoring

Real–time structural health monitoring

SHARD is an innovative web-based tool designed for structural health monitoring. PSAs calculated in real-time are compared with response spectra given in design codes like the EC, NEHRP, or DIN. Warnings are promptly issued if these standards are exceeded. Additionally, SHARD also monitors data quality, including delay and variance and issues quality incidences. The built-in incident browser facilitates quick and easy access to incident history showing the data quality, excedance and earthquake occurrance. Incidents are displayed in a heat map offering users immediate, clear overview.

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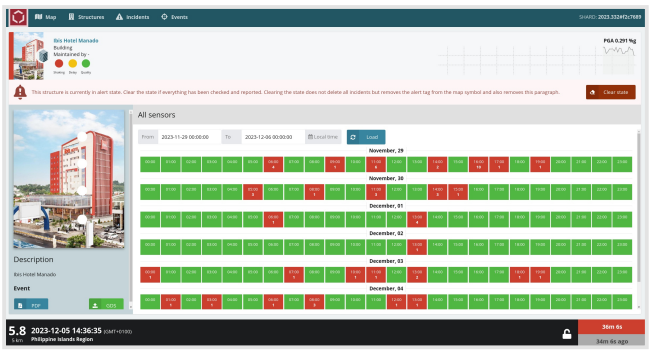
EUROPEAN UNION
European Regional Development Fund
www.efre.brandenburg.de

The development of SHARD is part of a European funding program (EFRE) for research, development and innovation.

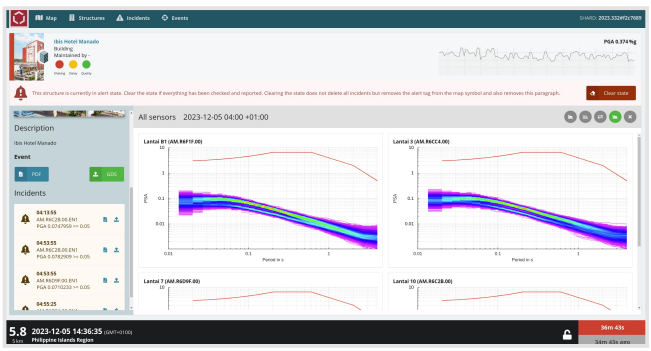
FEATURES

- Monitor many structures simultaneously by tables and map
- Real-time calculation of response spectra
- Exceedance: response spectra, fragility
- Quality and exceedance incident browser
- Connectivity to earthquake report services
- Reports for earthquakes and incidents
- Web based application for easy access



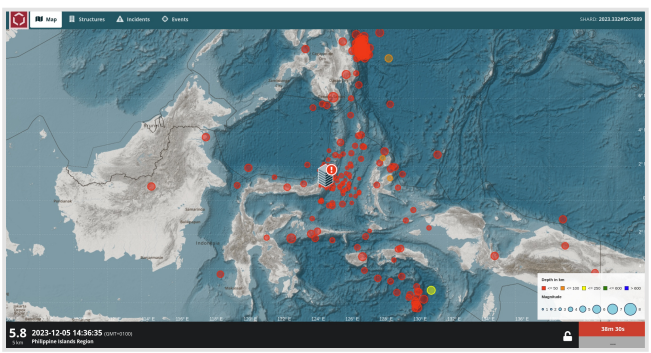
Status information

SHARD effectively displays buildings, their sensor locations, and status. Its heat map feature provides a historical view of earthquakes, exceedances, and data quality issues for either the entire building or a specific sensor, ensuring an immediate overview. The bottom line shows the latest earthquake with expected arrival time at the structure.



Real–time PSA exceedance

Response spectra for 5% damping are calculated in real-time and compared with spectra derived from national design codes as for example DIN, EC8 or IBC2000. Any other building code can be easily adopted. Additionally, live waveforms are shown. A table allows easy access to information on incidents like data quality issues, reference spectrum exceedance or PGA exceedance.



Custom Reports for events and incidents

All relevant events are displayed and can be selected on a interactive map. For events and incidents reports can be generated either manually or automatically by predefined criteria. Those reports are completely customizable w.r.t content, language, images, etc. all your requirements.

TECHNOLOGY

gempa GmbH offers a strong motion processing package fulfilling the task of real-time structural health monitoring. It calculates pseudo-acceleration responses for configurable frequencies given by design codes and checks the exceedance. Also threshold exceedance of PGA/PGV/PGD for different notification levels as info, watch, alert and warning. Through the use of CAPS (Common Acquisition Protocol Server) and additional plugins also the calculation of drift ratios is supported. Sensor data quality is monitored by analyzing data delay and data root mean square values.
Earthquake solutions from various sources can be imported through the Quakelink server.

SHARD also comes with an earthquake reporting engine giving the most important earthquake engineering parameter as
- PGA/PGV/PGD
- Root-mean-square (RMS) of acc., vel. and dis.
- Arias (Ia) and characteristic (Ic) intensities
- Arias duration
- Cumulative Absolute Velocity (CAV)
- Specific Energy Density (SED)
- Effective design acceleration (EDA)
- Predominant (Tp) and mean (Tm) periods
- Response spectra

As the reports are template based, they are highly customizable supporting different layouts and languages.

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