

WE DESIGN, INSTALL & COMMISSION

- Integrated geotechnical, geodetic and seismic/vibration monitoring systems for infrastructure projects.
- Building and structural monitoring systems.
- High resolution seismic monitoring systems for geothermal, mining and reservoir-induced seismicity.

WE MANUFACTURE BOREHOLE SEISMOMETERS

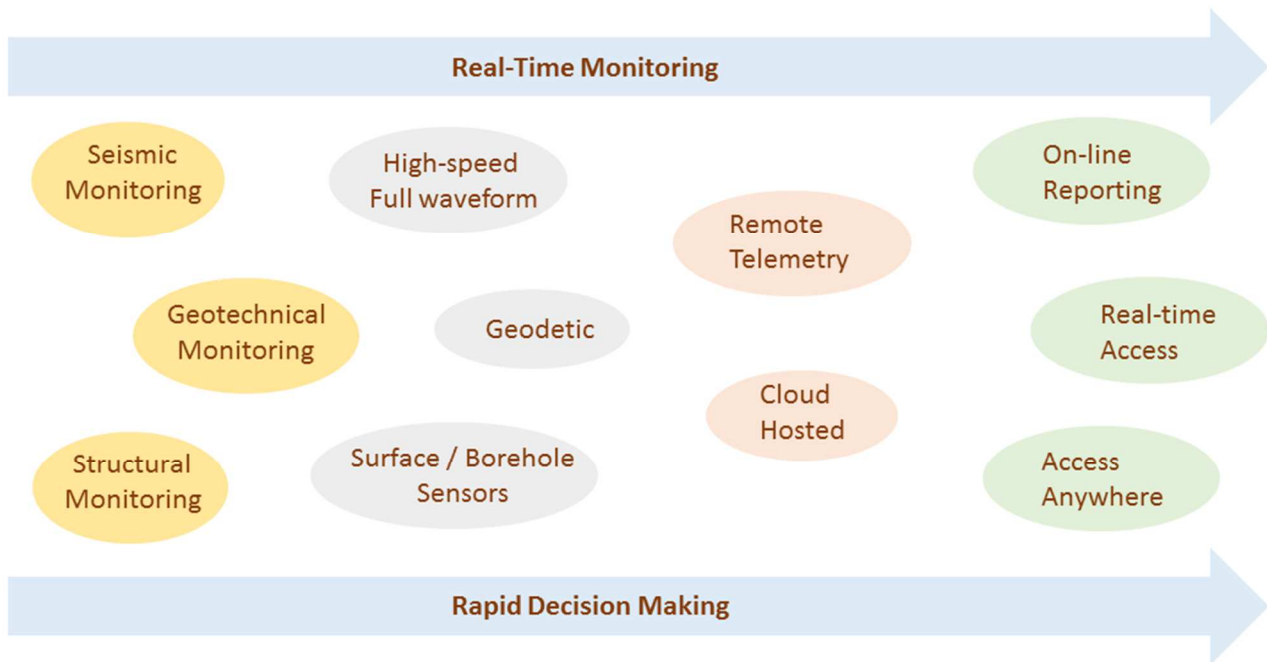
- Deep (our record is 4.2 km) or Shallow.
- Hot (Up to 180°C).
- Corrosive (e.g. Geothermal Wells).

WE FABRICATE

- Field deployable instrumentation enclosures.
- Remote power systems (e.g. solar).
- Telemetry systems (cellular, radio & satellite).

WE MONITOR

- Remote telemetry and automated measurements.
- Cloud-based static (e.g. geotechnical) and dynamic (e.g. seismic) monitoring systems.
- Geotechnical, geodetic, structural, building and environmental monitoring.
- Hybrid manual / automated monitoring.



IESE is based in New Zealand, and has representatives in Japan, Europe, South America and Indonesia. Our people include senior international experts in geology, seismology, physics, instrumentation and data analysis technologies. Customers include private and public organisations in Germany, USA, New Zealand and Australia, Indonesia, India, Mexico, Japan and various African countries. We operate in the geothermal, mining, oil and gas, civil and environmental sectors.

Services

Seismic processing and analysis services, including:

- Standard seismic processing: event detection, location and magnitude determination.
- Shear wave splitting analysis for fracture interpretation.
- Seismic source characterization.
- Relative event location for active seismic structure delineation.
- 3D velocity tomography.
- Stress field inversion from focal mechanisms.
- Diffusion analysis.
- Real-time seismic monitoring: state of health system alerts and semi-automated processing and reporting.
- Joint interpretation of seismic with other geophysical data.

Geotechnical instrumentation and monitoring services and software, including:

- System design and procurement services.
- Installation and commissioning of in-ground and above-ground systems.
- Pore-water pressure, displacement, inclination, tilt, vibration etc.
- Integration with geodetic and seismic monitoring.
- Telemetry and data management, including hosting on our ring-fenced cloud servers.

Training services:

- Training in seismometer installation and network operation.
- Workshops on microseismic theory and application to geothermal monitoring.
- Workshops on processing methods including practical application.



Building Monitoring

IESE has installed a network of broadband accelerometers in buildings in Christchurch. These accelerometers monitor whether building design criteria are exceeded during earthquakes. Data is telemetered to an offsite cloud server for continuous analysis.

Geotechnical Monitoring

IESE has been assisting major infrastructure projects in Auckland and Wellington for the past three years with geotechnical monitoring solutions. Data from piezometers is automatically telemetered to a cloud server, and displayed using a web-based analysis & display solution. Manually-acquired inclinometer and geodetic data is uploaded from site to a Dropbox account, and then automatically absorbed into the web-based software.

Structural Monitoring

In today's dense inner cities, the construction of new infrastructure often impinges on existing infrastructure. In Queensland, we monitor the effects of a new high-rise construction on an existing tunnel.

Reservoir-Induced Seismicity

IESE's sensors are installed at 1.5 km depth in the vicinity of Koyna Dam in India. Data from these sensors has allowed scientists to gain unprecedented insights into reservoir-induced seismicity.

Geothermal Induced Seismicity

IESE's sensors are installed at two geothermal fields in Japan in deep boreholes. Scientists and engineers use data from these sensors to better understand geothermal processes in actively producing geothermal fields.

Seismic Monitoring

IESE is responsible for seismic monitoring on a producing geothermal field in NZ. Data is acquired from a network of borehole sensors and 13 data-loggers. Up to several hundred micro-earthquakes a day are telemetered to a cloud server for automatic and manual processing.

Geothermal Exploration

In Mexico and American Samoa, IESE helps to understand the potential for geothermal development. Instrumentation and scientists are deployed to monitor naturally-occurring seismicity around potential geothermal fields.



Paua New Guinea Seismic Instrumentation Supply

IESE supplied a significant amount of instrumentation for the PNG Rapid Deployment project

Seismic and Geotechnical Monitoring System Design for Mining

In Zambia, IESE designed a integrated monitoring system for a planned mass mining operation. The system included seismometers, time-domain reflectometers, open holes and piezometers.

Seismic Monitoring in Germany

Our borehole sondes are used to monitor any seismicity that may arise from geothermal exploitation at a site in Germany

Shape Accel Arrays in Mining

IESE installed SAA's in a high-wall in an open-pit coal mine to monitor slope stability. The remoteness of the site posed some telemetry challenges, solved by using repeater stations.



Effects of Vibration on Structures

IESE consults to a range of clients on the effects of vibration on buildings, including heritage structures. We give advice on monitoring methodologies, maximum tolerable vibration levels, and methods of mitigation

Indonesia Geothermal

IESE has been involved in several Indonesia geothermal seismic monitoring projects. We process and analyse the data, and provide regular reports on the evolution of the seismicity during extraction and re-injection.



Part of the IESE Range of Sondes, including 1 Hz, 2 Hz and 4.5 Hz triaxial geophones



IESE is a Trimble Partner for Sales & Systems Integration of Reftek seismometers & T4D Monitoring Software



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