



SEISMIC MONITORING CASE STUDY

GeoNet

Turns to Control Synergy and FreeWave for Seismic Monitoring

Taupo, New Zealand – GeoNet is a project to build and operate a modern geological hazard monitoring system. The GEONET project is a collaboration between the New Zealand Earthquake Commission and GNS Science. Together, a network of geophysical instruments, automated software applications, and skilled staff work to detect, analyze and respond to earthquakes, volcanic activity, large landslides, tsunamis, and the slow deformation that precedes large earthquakes. GeoNet provides information to help people and researchers live safely near the active Pacific-Australian Plate boundary that passes through New Zealand. The monitoring is crucial to protect the small country from major events that could impact the safety of the population and the health of the local economy.

Control Synergy provides advanced control systems technology to help improve the integration and efficiency of modern manufacturing, industrial and mining applications. The Australian-based channel partner of FreeWave helps facilitate seamless data flow throughout these systems and enables control system synergy.

FreeWave Usage and Applications

According to GeoNet, there are more than 250 significant earthquakes in New Zealand each year,

and it collects and analyzes data from more than 15,000 total earthquakes per year. GPS sites also examine ground movement which can indicate stress points and the increased probability of an earthquake in the future. FreeWave's radios monitor data from GPS sites as well as seismic data from seismometers and transmit the information to several centrally located hubs on a real-time basis.

Back in 2001, GeoNet's wireless M2M communication network was sparse with the exception of a few wireless data radios providing monitoring capabilities. It became obvious that in order to provide more accurate seismic monitoring of the active landscape, GeoNet needed to upgrade its existing systems and infrastructure. They were pleased with FreeWave's wireless M2M communications solutions in the past, so they contacted Control Synergy to help facilitate the implementation process.

For these seismic monitoring applications, FreeWave's M2M networking solutions had to operate effectively in the 900 to 928 MHz spectrum, making serial wireless data radio technology the best fit. FreeWave's serial data radios feature a separate diagnostic port for real-time remote diagnostics

and setup. These technologies offer long range communication, up to 60 miles with clear Line of Sight (LOS), and the ability to extend through repeaters. All of the FreeWave wireless M2M solutions used are backwards compatible with previous data radio technology, thus allowing GeoNet to continue to use its existing M2M communications network along with their newly deployed FreeWave radios without missing a beat.

Outcomes

By deploying FreeWave, GeoNet is able to report remote seismic monitoring data more accurately and effectively across the vast New Zealand landscape, even in harsh weather conditions. This solution continues to perform extremely well, and has increased the real-time data quality for both GPS and seismic

monitoring across New Zealand. Fourteen years later and GeoNet has now deployed hundreds of FreeWave's wireless M2M communication devices to provide its citizens with improved intelligence around the country's seismic activity.

HIGHLIGHTS

- > FreeWave's wireless M2M communications solutions are able to operate reliably in even the most extreme weather conditions and remote locations in New Zealand.
- > Fourteen years later, GeoNet has deployed hundreds of FreeWave radios as it continues to build out its seismic monitoring infrastructure.



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