

The Move from Observations to Active Monitoring: The Proqio Platform and Modern Data Synthesis

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<p>Published on 24th of October 2024. Doi:10.54878/a7fdt217</p> <hr/> <p>KEYWORDS:</p> <p><i>technical, buildings, geotechnical, project engineers</i></p> <hr/> <p>HOW TO CITE:</p> <p>The Move from Observations to Active Monitoring: The Proqio Platform and Modern Data Synthesis. (2024). <i>1st International Geotechnical Innovation Conference</i>, 1(1).</p> <div></div> <p>© 2024 Emirates Scholar Research Center</p>	<p>This technical share presents our comprehensive approach to asset monitoring and management in the face of escalating geohazard risks, aging infrastructure, climate awareness, and the growing need for resilient infrastructure in high-rise buildings, energy infrastructure, dams, mining transportation, tunnels, bridges, and more. Our focus extends beyond traditional monitoring, encompassing a broad spectrum of technologies that help us support assurance for the safety of civil infrastructure, the environment, and surrounding communities. PROQIO, the infrastructure data intelligence platform, is a central hub for this integration, combining data from ground-based geotechnical and environmental sensors, satellite imagery (including Instar), BIM, UAVs, LiDAR, and more.</p> <p>x</p>

Introduction

This data aggregation provides a comprehensive view of the project landscape, which is essential for accurate risk assessment and mitigation planning. Your location's Digital Twin, GIS layers, visualization tools, data analysis, and focused understanding methods help make this sustainable and offer a firm foundation for decision-making support. Proqio also includes the ability to integrate the Site Cameras. The platform offers advanced filtering options on the map interface, allowing users to sort and analyze data based on specific parameters like alert status, instrument type, or date range. This functionality streamlines the process of pinpointing areas of concern. Heatmaps visualize data distribution over the site area, highlighting potential hotspots of activity or concern. Proqio's flexible graphs also enable stakeholders to combine data from multiple instruments into customizable visual representations, aiding in complex data analysis and trend identification. Proqio supports creating custom data models, enabling engineers and analysts to build and refine models based on the unique needs of each site. These models can help predict future conditions and optimize maintenance schedules. The platform's advanced data intelligence capabilities are critical in analyzing the complex interactions between site conditions and infrastructure elements. PROQIO employs machine learning algorithms to interpret vast datasets, offering insights into potential risks and enabling predictive modeling, allowing for timely maintenance and reinforcement of transportation networks, tunnels, and bridges before disaster strikes. Proqio's platform enables stakeholders to create detailed real-time virtual dashboards that provide instant access to all necessary project information, real-time data, maps, and textual insights through customizable widgets. This seamless integration facilitates effective natural time management, crucial in monitoring the dynamic environment. Additionally, the platform allows stakeholders to automate and schedule reports tailored to the specific informational needs of various roles, such as project engineers, operational managers, safety inspectors, and environmental agencies. These reports are vital for maintaining regular oversight and facilitating prompt decision-making, enhancing the proactive management capabilities essential for infrastructure construction and maintenance. Once the report template is established via the widget tool, it is automatically emailed to the concerned stakeholders and stored on the platform for easy access and download. The system provides real-time alerts based on predefined thresholds and conditions. These alerts can trigger automated responses or alert relevant personnel to potential issues, facilitating swift action. The early warning system uses predictive analytics to forecast potential failures, enhancing disaster preparedness. Proqio provides stakeholders with

robust analysis and support tools that can correlate between current and historical data. These tools help managers prepare for potential emergencies and plan mitigation strategies effectively, thus enhancing preparedness for adverse events. Proqio's platform supports role-based access control, ensuring team members have appropriate access to the information necessary for their roles. This feature fosters collaboration while maintaining data security and integrity. This dynamic adjustment of monitoring based on real-time data aids in designing resilient structures, planning effective maintenance schedules, and implementing emergency response strategies, showcasing the platform's practical application in the field. Our presentation underscores the opportunity to emphasize the importance of an integrated, intelligent approach to monitoring and management. This approach, particularly along transportation corridors, through tunnels, and over bridges, can significantly enhance infrastructure safety, resilience, and longevity. By leveraging comprehensive data aggregation and analysis capabilities, stakeholders can effectively address diverse project challenges, thereby reinforcing this approach's importance and potential impact.

1. About Encardio Rite and Proqio

Encardio Rite has been the industry standard-bearer in Geotechnical and Infrastructure Health Monitoring for over five decades, supporting more than a thousand global projects. From vital bridges and tunnels to secure dams and mines and from efficient high-speed rail systems to complex construction sites, our pioneering Metasensing philosophy has been instrumental in bringing safety to megastructures worldwide. Our services include full-scale turnkey project management, geotechnical, environmental, and structural health monitoring instrumentation and sensors manufacturing, IoT data loggers, and communication systems. Our promise to you continues beyond sensing. 'Meta,' derived from Greek, means 'beyond.' We go beyond traditional methods to offer you a trifecta of data, expertise, and cutting-edge technology. This ensures unparalleled structural safety while providing you with complete control—anytime, anywhere. We have over 56 years of experience, 10 subsidiaries globally, and over 1000 critical projects such as the Los Angeles Metro, Burj Khalifa, Dubai Metro, The Line in Neom, Hatta Dam, Doha Metro Gold Line, DRIP Project India comprising 70 Dams, and more!

Founded in 2022, Proqio, the infrastructure data intelligence platform, is a data integration, visualization, and analysis tool that helps you flexibly navigate through your versatile data needs and puts you in control of your project. Headquartered in Spain, Proqio boasts a global team of innovative engineers led by Roberto Prado, a technology-driven

MSc in Civil Engineering. Our mission is ushering in an era of infrastructure data intelligence that enhances construction safety, productivity, and sustainability.

Guided by our commitment to go beyond mere software provision, we've crafted a transformative platform – a fusion of Expertise (PRO), Intelligence (IQ), and Technology (IO). Our intuitive solution integrates data amalgamation, responsive alerts, efficient reporting, geospatial technology, and mobile connectivity, making us the definitive choice for infrastructure data intelligence.