

WHITE PAPER

A GUIDE TO MODERN GEOTECHNICAL DATA GOVERNANCE



Introduction	03
<hr/>	
Chapter 1 The pillars of modern geotechnical data governance	05
<hr/>	
Chapter 2 From risk to reward – The ROI of good governance	07
<hr/>	
Chapter 3 A practical path to implementation	09
<hr/>	
Conclusion	11
<hr/>	

INTRODUCTION

The high cost of digital chaos in ground engineering

The ground beneath our feet remains one of the most significant variables in any engineering project. Understanding it is fundamental to building a better, safer world. While an overwhelming majority of organisations (75%) now consider data management a high or critical priority, a troubling gap persists between ambition and reality.

This challenge is compounded by an explosion in data volumes. Modern ground investigation techniques, from measurement while drilling (MWD) and advanced laboratory testing to real-time remote monitoring, generate datasets of unprecedented scale and complexity. It is no longer practical, or even possible, for data managers to maintain data quality by hand. Even smaller infrastructure projects can generate vast amounts of data, and as projects scale, this can grow to thousands of boreholes and millions of individual data records. This complexity at any scale demands robust, automated tools to ensure effective data governance, as the need for efficient data management is critical for everyone, not just the largest players.

32%

of geoprofessionals report they still lack the information needed to make confident, data-driven decisions¹

¹ Seequent, "Geoprofessionals Data Management Report - 7th edition," 2026.

For decades, vital subsurface data like borehole logs, lab tests, in-situ results, and monitoring data have been scattered across a fragmented landscape of disconnected spreadsheets, local servers, and incompatible software. The result is a state of chronic inefficiency, where highly skilled engineers spend over a quarter of their week (27%) not on high-value analysis, but on the manual work of finding, cleaning, and reformatting data.²

This is more than an operational headache; it is a direct threat to competitiveness and project viability. Decisions made with incomplete or outdated information lead to conservative, expensive designs, costly rework, and project delays. More critically, they introduce unacceptable levels of risk, leaving projects vulnerable to the unforeseen consequences of the one thing they sought to understand: the ground itself. It is time for a new approach.



Too much of our industry is still data-rich but insight-poor. The opportunity is not simply to collect more information, but to govern it properly so it becomes trusted, usable, and valuable. When that happens, geotechnical data moves from being a source of friction to a source of intelligence that supports better decisions, safer delivery, and better outcomes.”



Mark Coates

Vice President, Infrastructure Policy Advancement, Bentley Systems



CHAPTER 1

The pillars of modern geotechnical data governance

Modern geotechnical data governance is a transformative business framework designed to turn scattered, unreliable data into a trustworthy, enterprise-wide asset. It is built on five indispensable pillars that together create a single source of truth for all subsurface data.

01 Centralisation

A single, cloud-based source of truth eliminates the data fragmentation and version control issues that plague projects. When every team member, from the field to the office, works from the same dataset, data conflicts disappear, and collaboration becomes seamless. This is the bedrock upon which reliable analysis and modelling are built.

02 Standardisation

Data is only powerful if it speaks a common language. Ensuring data is structured and consistent, through the enforcement of well-defined schemas and validation rules, guarantees that high-quality information is captured, stored, and shared in a uniform way. This eliminates ambiguity and the time-consuming process of data translation, allowing geoprofessionals to integrate diverse datasets with confidence and ease.

03 Accessibility

Valuable data locked in a silo is worthless. A modern governance framework ensures that data is readily and securely accessible to the right people, at the right time, anywhere in the world. Through role-based permissions, teams can access the information they need to make timely decisions, whether they are on-site, in the office, or collaborating with external partners across continents.

04 Security

As data becomes more centralised and accessible, its security becomes paramount. Robust data governance protects this critical asset with enterprise-grade security protocols and a complete, unalterable audit trail. This ensures data integrity, protects sensitive information, and provides the transparent traceability required for regulatory compliance and stakeholder confidence.

05 Interoperability

A modern governance framework must ensure that your data remains your data. Interoperability breaks down the walls of proprietary systems, mitigating vendor lock-in and future-proofing your most valuable asset. Through open APIs and a commitment to data transfer formats like AGS and DIGGS, a governed system allows for the controlled, audited flow of data into other critical applications for analysis or visualisation. This provides the best of both worlds: a secure, centralised source of truth that can seamlessly connect to a wider ecosystem of tools, all while maintaining a clear record of who has access to your data and where it is being used.



CHAPTER 2

From risk to reward: The ROI of good governance

Adopting a modern data governance strategy is a direct investment in de-risking projects and unlocking profound returns on investment (ROI). By confronting the industry's most significant challenges head-on—unmanaged historical data (57%) and the difficulty of combining diverse data sources (57%)—organisations can turn their biggest liabilities into their most valuable assets.³

³ Seequent, "Geoprosessionals Data Management Report - 7th edition," 2026.

Use case A: Major infrastructure project

Challenge A multi-billion-pound rail project involves hundreds of ground investigations conducted by numerous specialist consultants over several years. Data arrives in multiple formats, is stored in disconnected silos, and uncertainty about which information is current creates delays and friction between teams.

Solution By implementing a centralised platform, the project team creates a single source of truth for all geotechnical data. This eliminates data conflicts and provides a live, continuously updated 3D ground model. Design teams can now visualise subsurface conditions with unprecedented clarity, reducing uncertainty and enabling more efficient, less conservative designs. The time saved on data administration is reallocated to value-added engineering, directly improving project outcomes.

Use case B: AI and predictive analytics

Challenge An organisation is eager to leverage its decades of historical project data to train predictive AI models for ground behaviour. However, the data is unstructured, unmanaged, and unreliable. With 51% of organisations now using or considering AI, the C-suite knows they are falling behind, but they cannot trust the output of a model trained on poor data.⁴

Solution A governed, single source of truth provides the clean, structured, high-quality historical dataset necessary to train reliable AI models. While acknowledging the challenges of data ownership and the initial investment required to digitise historical archives, the organisation can systematically process its data with robust QA/QC. By doing so, it turns a dormant data archive into a powerful predictive asset. Now, they can more confidently leverage AI to anticipate ground conditions on future projects, optimise designs, and build a safer, more resilient infrastructure.



The business case for geotechnical data governance is straightforward: better governed data leads to better decisions, lower risk and more efficient delivery. When organisations move from fragmented information to trusted, connected data, they create the conditions for stronger workflows today and more advanced analytics and AI tomorrow.”



Mark Coates
Vice President, Infrastructure
Policy Advancement,
Bentley Systems

⁴ Seequent, “Geoprosessionals Data Management Report - 7th edition,” 2026.



CHAPTER 3

A practical path to implementation

While the benefits are clear, the perceived cost of implementation is cited as the main barrier for nearly a third of organisations (32%).⁵ This perspective, however, overlooks the immense and ongoing cost of inaction. The discussion must shift from expense to value, focusing on the significant ROI generated by eliminating inefficiency and mitigating risk.

5 Seequent, "Geoprotection Data Management Report - 7th edition," 2026.



The path to modern data governance is a strategic journey:

01

Data audit

Begin by identifying where all your current and historical data resides. Understand its formats, its condition, and the processes currently used to manage it.

02

Define standards

Establish a clear data standard for your organisation. This includes defining required fields and classification systems to ensure consistency across all future projects.

03

Select a platform

Choose a solution that embodies the five pillars of modern governance. A cloud-native platform like OpenGround is purpose-built to address these needs, providing the accessibility of the cloud, robust tools for schema enforcement to ensure standardisation, and a secure, centralised environment. It directly tackles the top concern for maintaining a solution—the time and resource burden (32%)—by automating many of the manual tasks that currently consume engineers' time.⁶

⁶ Seequent, "Geoprosessionals Data Management Report - 7th edition," 2026.

CONCLUSION

Building the future on a solid data foundation

The challenges of the 21st century demand that we build a safer, more resilient, and more sustainable world. To do this, we must first truly understand the underground. Modern geotechnical data governance is the essential business practice that makes this possible. It is the framework that transforms data from a source of risk and inefficiency into a catalyst for innovation and a cornerstone of project success.

In an era where game-changing technologies like AI are rapidly becoming mainstream, a strong data foundation is now a prerequisite for survival. Organisations that invest in governing their data today are not just solving the problems of the present; they are building the solid foundation on which the future will be built.

Geotechnical data governance health check

You have the data. But do you have the answers?

Our 10-minute health check reveals how to turn your archives into a strategic asset and unlock advanced insights.

[Get My Action Plan](#)

Understand the underground to build a better world.

Seequent, The Bentley Subsurface Company, helps organisations to understand the underground, giving them the confidence to make better decisions faster.

Seequent builds world-leading technology that is at the forefront of Earth sciences, transforming the way our customers work.

Every day we help them develop critical mineral resources more sustainably, design and build better infrastructure, source renewable energy, and reduce their impact on the environment.

Seequent operates in 145+ countries while proudly maintaining headquarters in New Zealand.