PLAXIS®

UNDERSTAND THE UNDERGROUND: MAKE SMARTER GEOTECHNICAL DECISIONS WITH PLAXIS

Understanding how soil and rock will respond to construction and environmental pressures is critical for reducing risk, ensuring safety, and delivering successful geotechnical projects across the civil engineering, mining, environmental, and energy sectors. From excavations and foundations to tunnels and tailings dams, every decision counts.

Seequent's PLAXIS is the industry-leading finite element analysis software designed specifically for geotechnical engineers. It provides advanced tools to assess ground-structure interactions, tunnels and underground excavations, stability, groundwater flow, and seismic risks. With intuitive workflows and reliable analysis, PLAXIS helps engineers solve any geotechnical challenge, whether it's a simple daily task or a complex project.

SEEQUENT

"

It's very simple and easy to understand, and importantly, it's reliable—it always works."

Douglas Tun
Associate Geotechnical Engineer at WSP
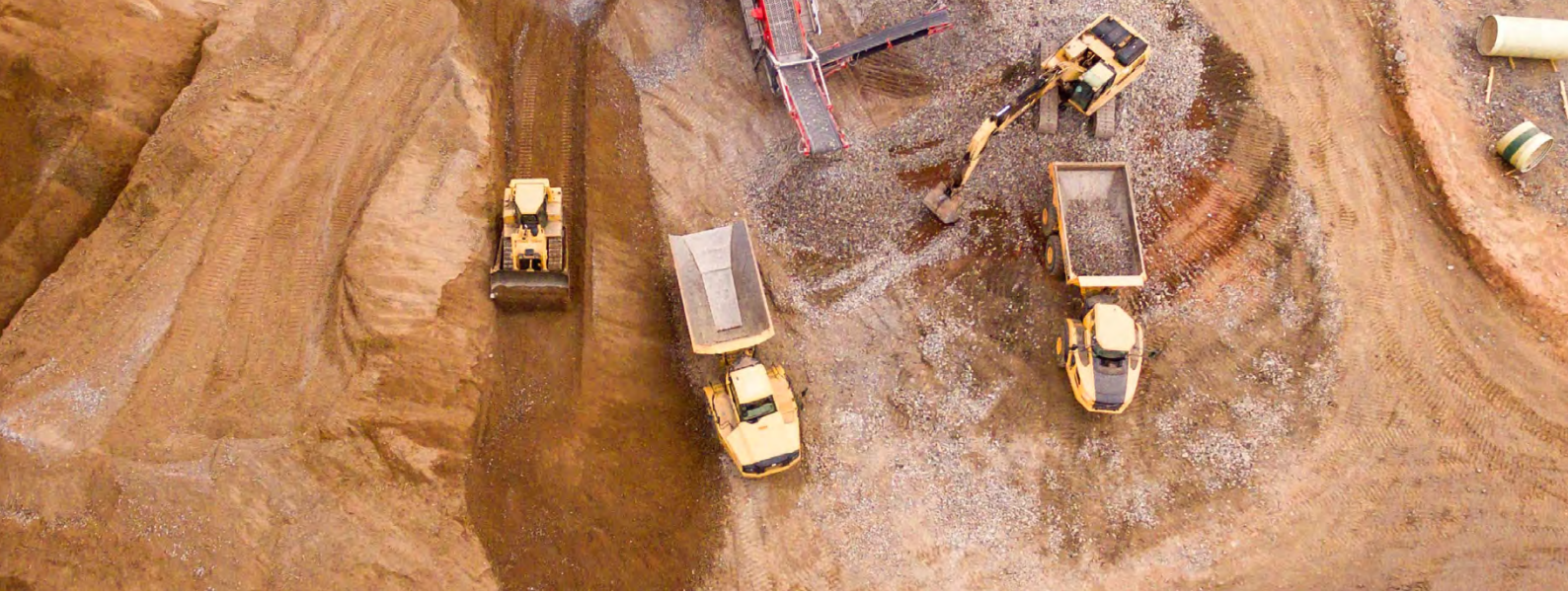
Projects around the world rely on PLAXIS

Realistic geotechnical assessments with advanced finite element modelling

Save time and cost with intuitive and connected workflows

Increase confidence in decision-making with powerful 2D and 3D visualisation of results

Successful projects are powered by PLAXIS

Realistic geotechnical assessments with advanced finite element modelling

Perform reliable 2D and 3D finite element modelling for deformation, stability, and ground-structure interactions. Select from an extensive library of constitutive models—ranging from simple linear to highly nonlinear—to accurately simulate soil and rock behavior under various conditions, including deformation, thermal or groundwater flow, and dynamics scenarios. Realistically simulate the construction or excavation process over time and pick the right analysis type for each construction stage - from field stress to fully coupled flow-deformation.

Save time and cost with intuitive and connected workflows

Create, modify, and visualise geotechnical models with integrated subsurface data and structural designs. Generate stratigraphy from imported CPT logs, enrich your models with CAD imports like IFC and point clouds, or import geological models and cross sections from Seequent's Leapfrog containing the latest geological data for geotechnical analysis. Integrate with Bentley's ProjectWise and Seequent's Central for more efficient team collaboration and information management. Automate repetitive tasks or produce detailed outputs quickly with Python scripting to save time and focus on engineering insights.

Increase confidence in decision-making with powerful 2D and 3D visualisation of results

PLAXIS provides advanced simulation capabilities to analyze ground behavior under various loading and boundary conditions. Model and evaluate stresses, displacements, safety factors, and other critical parameters to gain a comprehensive understanding of geotechnical performance. Use powerful 2D and 3D visualisation tools and Python scripting to interpret results, compare scenarios, and effectively communicate insights to stakeholders. Clearly demonstrate the impact of seismic events, dewatering, and reservoir depletion, ensuring informed decision-making for embankments, foundations, tunnels, and more.

Applications

Civil → **Embankments and dams**: Analyse the geotechnical structure and subsurface to design safe, dependable embankments, levees, and dams.

→ **Excavations and retaining structures**: See how ground conditions and stresses impact excavations and predict soil settlement and retaining structure response.

→ **Foundations**: Minimise settlement and limit damage to superstructures. Optimise raft, pile, and combined pile-raft foundation design.

→ **Tunneling**: Predict how soil and rock masses will respond to tunneling processes and ensure support integrity. Model concrete lining, NATM, or TBM tunnels with shells and volumes.

→ **Earthquake engineering**: Assess the effects of seismic activity on the ground and structures to design safer, more reliable infrastructure that withstands earthquakes and protects communities.

Mining → **Tailings dams:** Analyse the construction and operation of tailing storage facilities to mitigate dam failure risk.

→ **Underground excavations:** Improve rock mass stability around mine openings and calculate stresses of an underlying excavation.

Energy → **Offshore geotechnics**: Know the impacts of subsurface conditions and geohazards on platforms, wind farms, islands, and pipelines.

→ **Oil and gas**: Perform settlement and bearing capacity analysis and onshore/offshore pipeline movement and stability under various applied loading conditions.

→ **Monopile foundations**: Optimise the design of monopile foundations for offshore wind farms, reducing costs and simplifying workflows with PLAXIS Monopile Designer.

Understand the underground: Gain confidence in geotechnical analysis with PLAXIS

PLAXIS equips geotechnical engineers with the tools needed to model, simulate, and interpret everyday and complex geotechnical challenges. It's straightforward and strong user interface makes it intuitive and easy-to-adopt. The end-to-end experience with the broader Seequent and Bentley portfolio, and the flexibility of driving automation via remote scripting makes geotechnical analysis with PLAXIS future-proof.
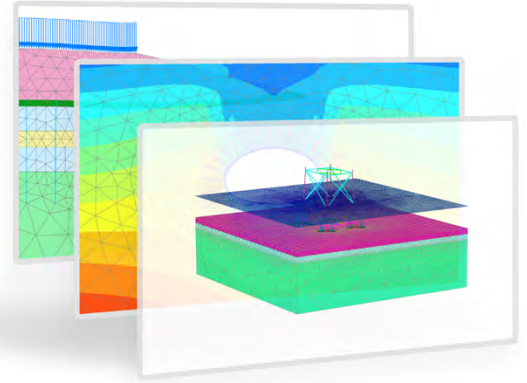
Fast, efficient finite element modelling

Spend less time building geotechnical models and more time analysing results:

- Perform 2D and 3D finite element analysis for deformation, stability, and ground-structure interactions
- Model soil and rock behavior under various conditions
- Address geotechnical challenges like slope stability, tunneling, and foundation design

Dynamics and seismic analysis

Design resilient infrastructure with advanced dynamics and seismic analysis capabilities:

- Evaluate the impact of vibrations from earthquakes, machinery, or traffic
- Simulate seismic activity and its effects on ground and geotechnical structures
- Ensure safety and stability for projects in seismically active regions

Comprehensive material model library

Model geotechnical scenarios confidently with a wide range of material models:

- Simulate the behavior of various soils and rocks with advanced constitutive models
- Account for highly nonlinear materials, including stress-dependent and time-dependent properties
- Gain insights even for challenging materials like fractured rock masses

Staged construction simulation

Simulate real-world construction sequences for better planning and risk reduction:

- Model changes in geometry, loading, and boundary conditions over time
- Simulate construction processes for embankments, excavations, retaining structures, tunnels, and foundations
- Reduce project risks by understanding construction phase impacts

Comprehensive post-processing tools

Gain deeper insights with powerful post-processing tools to interpret and share results:

- Visualise results through coloured contour plots, cross-sections, and vector diagrams
- Export data for further analysis or reporting in external software
- Automate reporting workflows and streamline result-sharing across teams

Automated scripting and customisation

Save time and improve efficiency by automating routine processes with Python scripting:

- Remove time-consuming, repetitive tasks
- Generate models from imported data for faster setup and design processes
- Build tailored scripts for optimised outcomes

Industry interoperability

Ensure compatibility with industry standards and other common software:

- CAD import and export
- Perform ground-structure interaction with structural packages through superelements
- Generate stratigraphy from imported CPT logs
- Export results to Paraview
- Interoperability via remote scripting for PLAXIS Input, PLAXIS Output, and PLAXIS SoilTest

Integration with Bentley & Seequent ecosystems

Enhance geotechnical workflows with product integrations:

- Connect with Seequent tools like GeoStudio and Leapfrog via Seequent Central
- Automatic geotechnical model creation from/by OpenTunnel Designer
- Share data across platforms and streamline workflows with Bentley's ProjectWise integration
- PLAXIS 2D to 3D converter

A world of support at your fingertips

Beyond the powerful capabilities of PLAXIS, Seequent—the Bentley Subsurface Company—offers comprehensive support and learning resources to help you get the most out of your investment.

Learning centre

Maximise the value of PLAXIS with a range of flexible learning opportunities. Whether you prefer online learning paths, on-demand videos, or instructor-led courses, there are resources tailored to your needs.

Explore learning opportunities →

4.9/5
rating for Seequent e-learning from 16,000+ reviews

Community

Connect with a global network of geotechnical engineers through our community. Whether you're looking for peer support, insights from industry experts, or practical tips to get the most from PLAXIS, the community offers a space for shared learning and collaboration.

Join the community →

7,400+
Seequent customers in 145+ countries

Support

Get the most from PLAXIS anytime, anywhere. Access our knowledge base, connect with technical experts, or explore specific support options for all Seequent and Bentley products, keeping your projects running smoothly and efficiently.
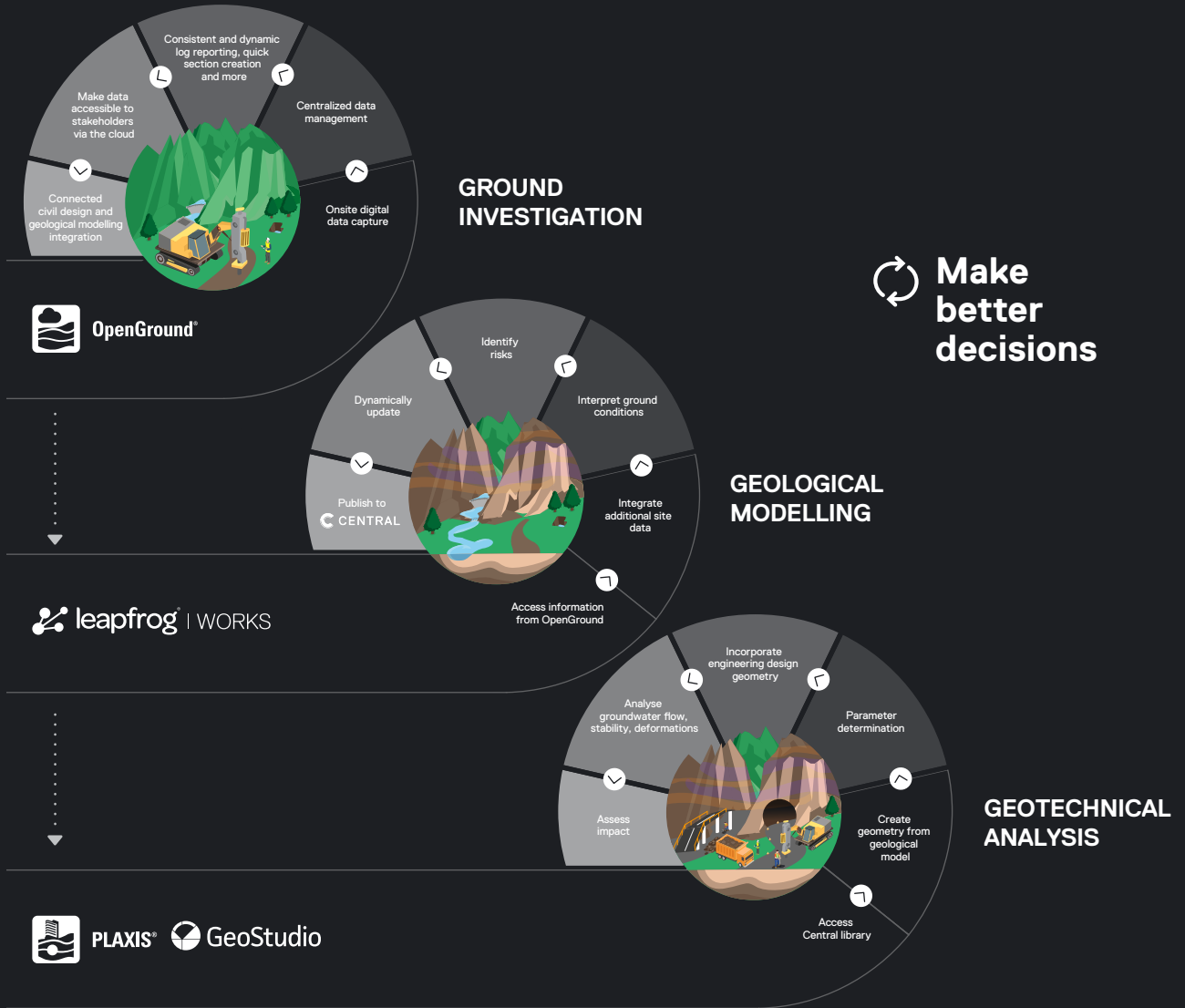
Get support →

95%
satisfaction with our front-line help and support

Seequent's Connected Geotechnical Product Workflow

Reduce errors and accelerate geotechnical understanding, collaboration, and productivity with an end-to-end solution

GROUND INVESTIGATION

- Consistent and dynamic log reporting, quick section creation and more
- Centralized data management
- Make data accessible to stakeholders via the cloud
- Onsite digital data capture
- Connected civil design and geological modelling integration

OpenGround®

GEOLOGICAL MODELLING

- Identify risks
- Interpret ground conditions
- Dynamically update
- Integrate additional site data
- Publish to CENTRAL
- Access information from OpenGround

leapfrog | WORKS

GEOTECHNICAL ANALYSIS

- Incorporate engineering design geometry
- Parameter determination
- Analyse groundwater flow, stability, deformations
- Create geometry from geological model
- Assess impact
- Access Central library

PLAXIS® GeoStudio

Make better decisions

Discover the power of PLAXIS

Visit seequent.com/plaxis to explore product videos and customer success stories, or request a free 30-day evaluation license or live demo.

![Seequent logo] **SEEQUENT**

About Seequent

At Seequent, we've spent decades empowering geoscientists with the tools they need to make better, faster decisions. Trusted by industry leaders in mining, environmental, civil, and energy sectors, Seequent's innovative solutions help professionals turn complex data into actionable insights. Whether it's enhancing subsurface knowledge or supporting strategic decisions, Seequent is the global leader in transforming geological data into informed action. See more at **seequent.com**.

10/10
of the world's largest civil engineering companies use Seequent software.

8/10
of the world's largest mining companies use Seequent software.

6/10
of the world's largest energy companies use Seequent software.

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