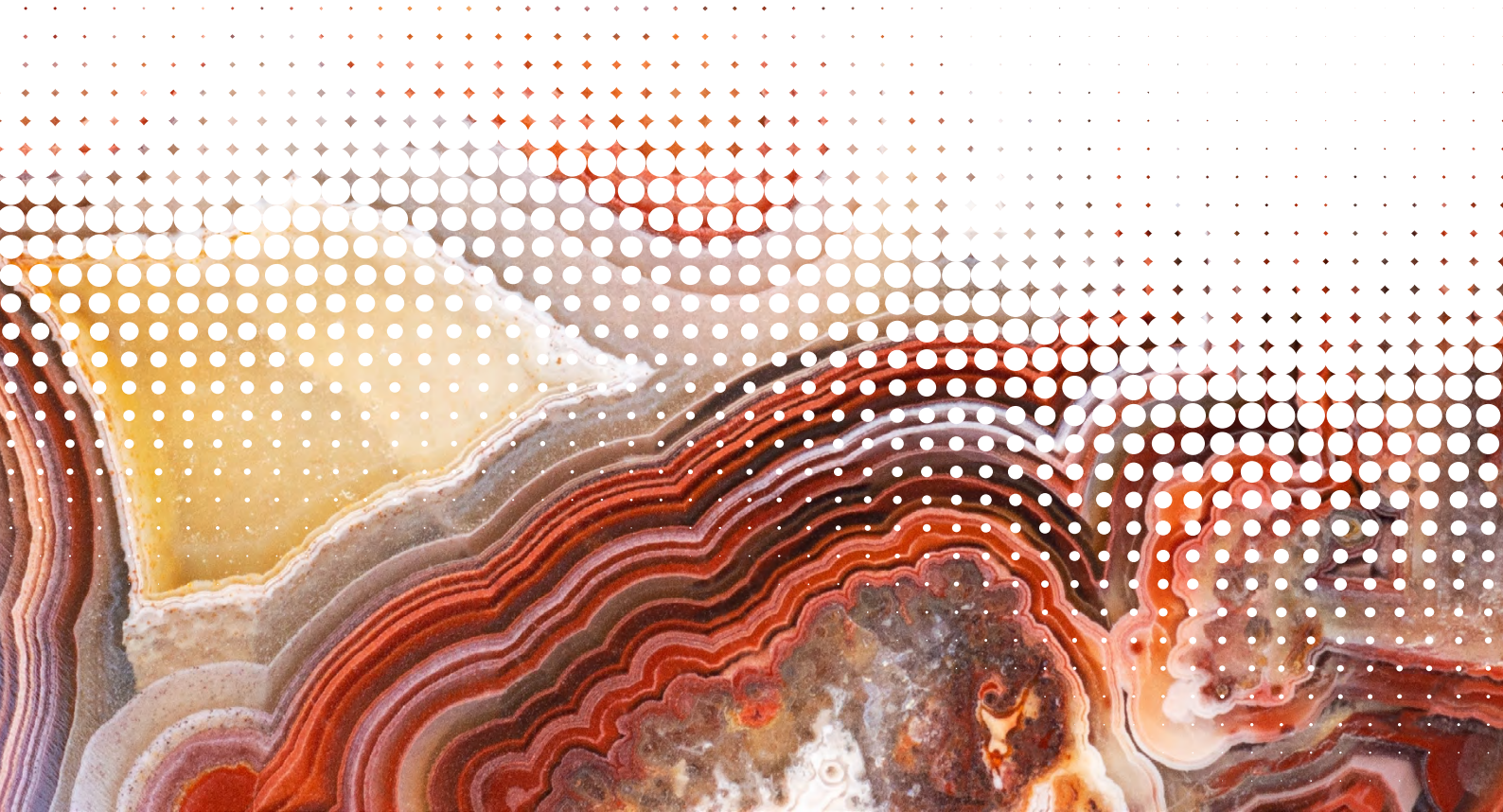
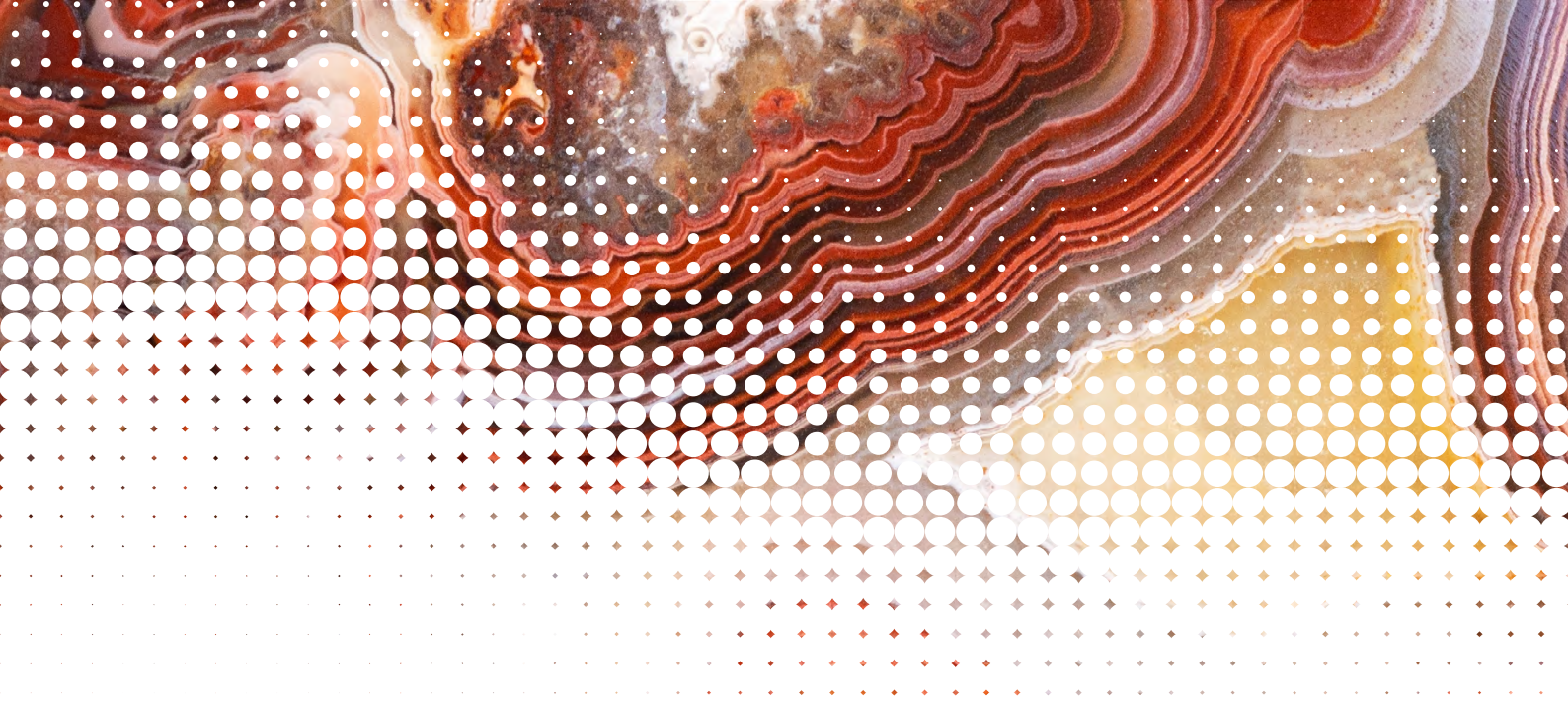
SEEQUENT · Evo

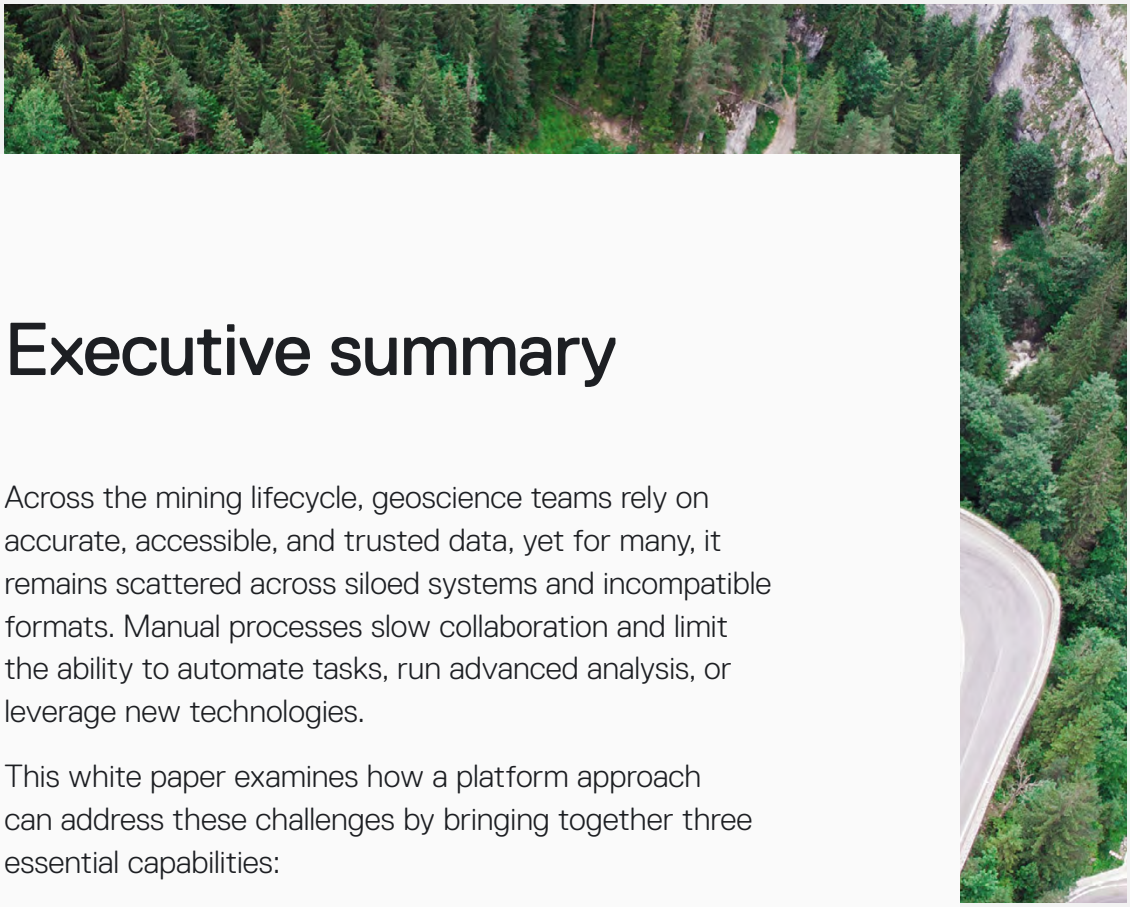
WHITE PAPER

UNLOCKING VALUE WITH OPEN GEOSCIENCE DATA

How Seequent's Evo provides a common language across Seequent and third-party applications for faster workflows and more confident decisions.







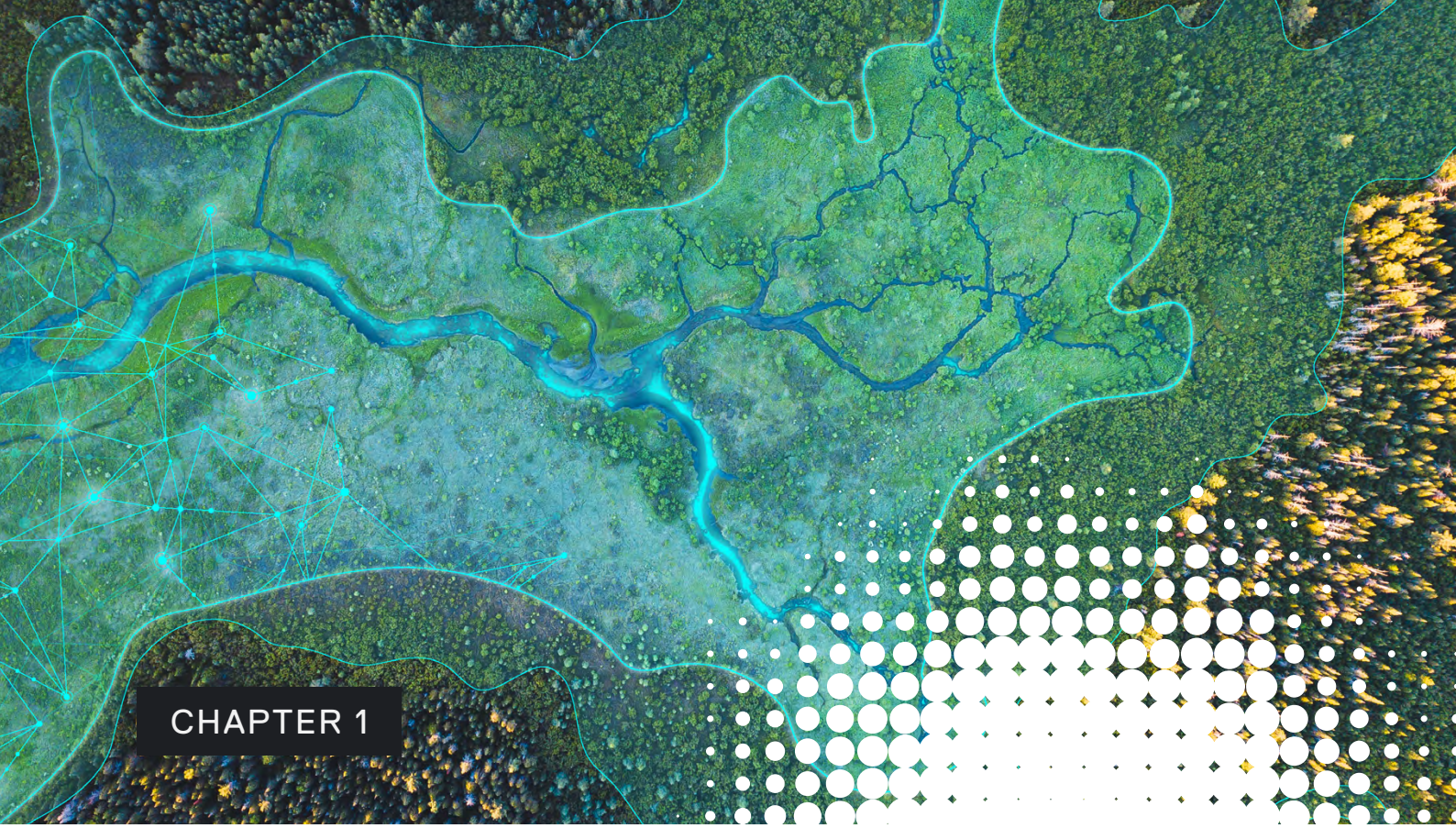
Executive summary

Across the mining lifecycle, geoscience teams rely on accurate, accessible, and trusted data, yet for many, it remains scattered across siloed systems and incompatible formats. Manual processes slow collaboration and limit the ability to automate tasks, run advanced analysis, or leverage new technologies.

This white paper examines how a platform approach can address these challenges by bringing together three essential capabilities:

- Open geoscience data that moves easily between tools
- Integrated workflows that connect Seequent and third-party applications
- Powerful cloud compute for advanced analysis at speed and scale

We use Seequent Evo, a geoscience data and compute platform that enables integrated workflows and collaboration across Seequent and third-party applications, to show how teams can simplify collaboration, make better decisions, and innovate continuously with open data and APIs plus cloud compute.



Why geoscience needs a platform approach

Advances in drilling, sensing, and remote acquisition technologies are generating vast datasets across geology, geophysics, geotechnical engineering, and mine planning. Yet despite this growth, many teams face the same issues they did a decade ago:

- **Data scattered across locations.** Drillhole databases, geophysical models, spreadsheets, and block models are often stored in separate systems, each with its own file types, naming conventions, and update cycles.
- **Workflows stitched together with manual steps.** Moving data between applications frequently involves exporting, reformatting, and revalidating, with each hand-off introducing delays and opportunities for error.
- **Limited visibility across disciplines.** When geoscientists, engineers, and decision-makers work from different datasets or outdated versions, alignment is harder to achieve, and confidence in outputs declines.
- **Underused computational potential**. Advanced analyses such as conditional simulation, automated domain modelling, or large-scale scenario testing remain out of reach for many teams due to local hardware constraints and inaccessible compute resources.

As a result of these challenges, project timelines lengthen, opportunities for optimisation are missed, and decision-makers must act on information that may be incomplete or out of date.

The case for a platform model

Other industries have already moved towards platform-based data management to address similar issues. In a platform model, data from multiple sources, regardless of origin or format, can be connected, standardised, and made accessible across tools and teams. This creates:

- A single source of truth where all disciplines work from consistent, auditable data.
- Integrated workflows that eliminate redundant steps and reduce the risk of errors during transfer.
- Scalable compute resources that can be applied on demand, without capital investment in hardware.
- Openness and interoperability so data flows between native and third-party applications and custom in-house tools.

For geoscience, this approach not only simplifies collaboration but also opens the door to faster analysis, greater model fidelity, and a smoother path to innovations like machine learning and automation.

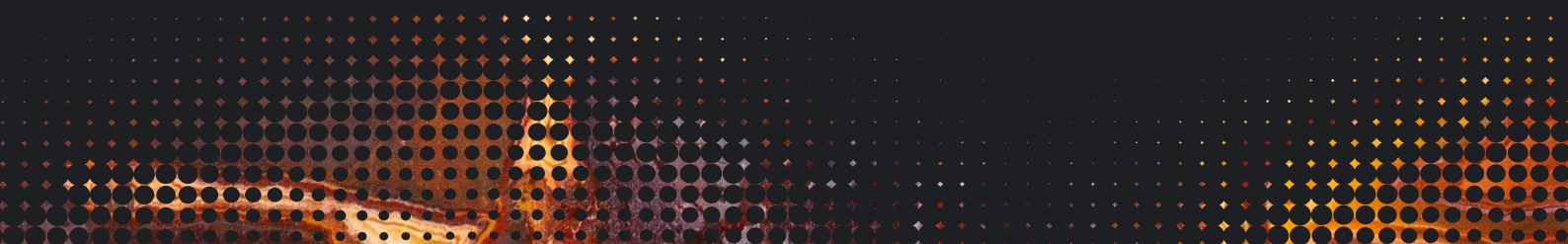
In the chapters that follow, we examine how Seequent Evo is ushering in this platform model for geoscience, focusing on three core pillars:

1. **Open geoscience data**
   Structured for interoperability and long-term value.
2. **Integrated workflows**
   Connecting Seequent and third-party applications to improve collaboration and keep models current.
3. **Powerful cloud compute**
   Enabling advanced algorithms and large-scale analysis at speed.

We'll explore each pillar in detail, examining how these capabilities reduce risk, improve productivity, and position geoscience teams for continuous innovation.

What is Seequent Evo?

Seequent Evo is a geoscience data and compute platform that enables integrated workflows and collaboration across Seequent and third-party applications. It powers geoscience solutions for data processing, modelling, and insight generation. This drives innovation and enables users to continuously improve their workflows and business with open APIs and data.



The value of open geoscience data

From hand-drawn cross-sections to today's interactive 3D models, each generation of geoscience professionals has advanced new methods to better understand the subsurface.

But with progress has come complexity. Each subsurface discipline—geology, geophysics, geotechnical, and environmental—developed its own tools, standards, and file types. Individually, these systems are powerful, but they were never designed to work together.

That fragmented approach no longer fits today's reality. Resources are deeper. Infrastructure is more complex. Budgets are tighter. Environmental and stakeholder expectations are higher. And the volume and variety of subsurface data, from drillholes and geophysics to groundwater, remote imagery, and environmental sensors, is exploding.

Much of this data remains locked in proprietary formats or siloed tools. Each time it moves between systems, teams lose time, scientific context, and confidence in the result.

Geoprofessionals often say, 'We spend all this time and money capturing our data. Why should a vendor's format determine what we can do with it?'

For decades, closed file formats have dictated how data could be used, limiting collaboration, slowing innovation, and locking insight into single-vendor ecosystems.

Seequent Evo changes that by making openness a core design principle with open schemas, open APIs, and open workflows, all designed to preserve the full scientific context of your data, so it can be shared, understood, and used anywhere it's needed.

In Evo, "open" doesn't mean public. Your data remains private, secure, and fully governed, but it's no longer trapped in a format or vendor-specific ecosystem. It's free to move between the applications, teams, and systems that need it.

Open by interface

RESTful APIs based on open standards are documented and available to any authorised customer, partner, or AI coding assistant at developer.seequent.com.

Open by model

Geoscience objects with open-source data schemas, published in Seequent's public GitHub repository, capture the scientific context of the data they represent, the relationships, parameters, and lineage that define geological, geophysical, or geochemical phenomena.

Open by design

Application-agnostic workflows allow data to move seamlessly between Seequent, Bentley, and third-party systems, because no single vendor should define how your subsurface data is used.

How Evo gives your geoscience data more meaning

Open data formats exist in other industries, but Evo takes it further. Its open data schemas don't just describe how data is stored. They capture the full meaning of what that data is.

In Evo, geoscience objects are:

- **Geo-located and searchable:** Every object can be found and filtered on a map.
- **3D in the browser**: Models and data are viewable in a browser, no special software required.
- **Immutable versions**: Data objects are never overwritten, changes create new, traceable versions.
- **Fully audited**: Every change is logged with who, what, and when.
- **Rich lineage**: Inputs, parameters, and methods are embedded, so results are explainable.

While traditional formats just store data, Evo schemas store its meaning, so tools, teams, and even AI systems can interpret and act on it without losing context.

Data format vs. data schema

A file format is the method by which data is stored (e.g., CSV, JSON, Parquet, GeoTIFF) and determines aspects such as encoding, delimiters, and compression, enabling software to open, use, and save the file.

A data schema describes what the data means, defining fields, types, units, relationships, and constraints so any tool (or AI) can interpret, validate, and query it correctly.

In Evo, open data schemas also carry geoscience context: objects are geolocated and map-searchable, viewable in 3D in a web browser, versioned immutably, fully audited, and linked by lineage, making the data trustworthy and reusable across products.

Collaboration through open-source and community

Evo's data schemas are not just open, they are open source.

Seequent publishes the core geoscience schemas in a public GitHub repository, enabling developers, researchers, and industry partners to use, adapt, and contribute to them freely. This open-source model invites shared innovation, transparency, and faster alignment across the geoscience community.

For customers, this means:

- **Freedom from vendor lock-in**: You're never restricted to a single application or vendor.
- **Faster custom integrations**: AI coding assistants and open documentation make it easy to build your own tools and connectors.
- **Stronger interoperability**: Partner organisations like Deswik are already aligning with these standards, making end-to-end workflows easier to implement.

This open approach ensures Evo's schemas are not only technically sound but widely adopted, future-proof, and community-led, making them the ideal foundation for industry-wide collaboration.

Unlocking broader access to data and tools

Open schemas do more than streamline workflows—they unlock the full value of your geoscience data.

Traditionally, tasks like block model comparison or geostatistical analysis required access to specialist software and deep familiarity with its proprietary file formats. That created bottlenecks around a few key team members, slowing progress and limiting who could engage with the data.

Evo changes this by embedding geoscientific meaning directly into open schemas.

These schemas don't just describe where data is stored; they define what it means: the field names, data types, units, spatial references, relationships, and constraints. This structure captures the full scientific context of the data so it can be interpreted by any compatible tool, application, or AI system, not just the one that created it.

In practice, this means other qualified team members, not just domain experts or software specialists, can interact with complex datasets confidently. They can query boreholes, run simulations, generate reports, or apply machine learning models using the best-fit tools for the task, all without needing to translate formats or decipher file-specific quirks.

And because Evo stores geoscience objects with built-in location, lineage, 3D context, and audit trails, that information remains trustworthy and reusable across workflows—no matter where it came from or where it's headed.

BlockSync: How open schemas transform block model management

BlockSync, Evo's native block model management application, shows how openness transforms collaboration.

With an open block model, BlockSync can ingest and manage block model data from any source—not just Seequent's Leapfrog Edge. Teams working in other modelling environments can still centralise their data in Evo, collaborate on updates, and generate audit-ready reports without duplicating or reformatting files.

Because all block models share the same underlying structure in Evo, users can:

- Update full or partial models and see changes reflected instantly.
- Run comparisons and generate reports on the latest version with one click.
- Share access across disciplines without risking overwrites or version confusion.

This means geologists, mine planners, and decision-makers can all interact with the most current, consistent data, regardless of the software used.

By removing format barriers, open data lays the foundation for leveraging cloud compute capabilities (Chapter 3) and integrated workflows for greater efficiencies (Chapter 4).

Openness in action

One mining organisation recently automated its short-term modelling workflow using Evo's open APIs and schemas. What once required weeks of manual coordination now executes in a single day, integrating business systems, the block model API, and open block model schemas to trigger automated updates, ease collaboration, and generate reports on the fly.

CHAPTER 3

Harnessing the power of cloud compute in geoscience

In many geoscience teams, high-demand computational tasks are still tied to local workstations. Running a conditional simulation, reprocessing a large dataset, or iterating on a complex structural model can take hours or even days on a single machine. These delays slow projects and create bottlenecks, particularly when tasks can only be run by those with access to specialist software and high-performance hardware.

The cloud changes this. By moving computational power off the desktop and into a scalable cloud environment, teams can execute intensive workflows faster, at any scale, and without the need for expensive on-site infrastructure.

More importantly, when compute is tied directly to your data platform, these tasks can be run in the same secure, versioned environment that stores your data, preserving full lineage and auditability.

Why compute belongs in the same platform as your data

Running compute within the same platform where data is stored and governed ensures:

- **Data fidelity**: No exports, reformatting, or manual transfers that risk losing context, units, or metadata.
- **Traceability**: Every task is versioned and linked to the exact dataset it used.
- **Repeatability**: Workflows can be re-run with updated data in minutes, not hours.
- **Collaboration**: Results are available to the whole team instantly, without file sharing.

This approach reduces risk, shortens turnaround times, and ensures computational outputs are trusted and easy to interpret.

Building a foundation for AI and automation

The cloud also positions geoscience teams for future innovation. With data and compute in one place, organisations can begin to integrate AI-assisted analysis, automate repeatable workflows, and run large-scale scenario testing that would be impractical on local machines.

For example, alerts from IoT sensors could automatically trigger model updates, AI-assisted coding could generate new workflow scripts, and data pipelines could deliver insights without human intervention, always with a human in the loop to validate results.

BlockSync comparisons on demand

With block models stored in Evo's open environment, BlockSync can use the cloud to generate comparisons and audit-ready reports on demand. This means no delays for local processing, no uncertainty over which version was used, and no need to manually consolidate outputs from different software packages.

Driver's rapid drilling data analysis

Driver uses Evo's compute capabilities to run machine learning models on drilling datasets in minutes. Without coding, users can classify lithology, detect structural trends, and model vein geometries; tasks that would otherwise require specialist setup and longer turnaround times.

Conditional simulation

High-demand geostatistical algorithms such as conditional simulation can run directly in Evo's compute layer, removing desktop hardware constraints. Users can launch simulations from within Leapfrog or via Evo's Geostats API, with results stored, versioned, and visualised in the same platform.

CHAPTER 4

Breaking down silos with integrated workflows

Even when geoscience teams have access to the right tools, disconnected workflows can limit their value. Data locked in one application must be exported, reformatted, and revalidated before it can be used elsewhere. Updates made in one model may never flow through to related datasets, creating version discrepancies that erode trust in the outputs.

This is where Evo's role as a geoscience data and compute platform comes into focus.

Evo is designed to be the common language between Seequent and third-party tools, connecting data, compute, and workflows in a single, secure environment. Through open APIs and integrated workflows, changes made in one stage of a project can update downstream tasks automatically, eliminating the need for manual reconciliation.

How data gets into Evo

There are several paths to bring data into Evo today:

1. Via Seequent applications with Evo integrations (e.g., Leapfrog, Oasis montaj) that convert data into Evo's open schemas.
2. Via native Evo applications (e.g., BlockSync, Driver).
3. Via Evo's APIs for third-party or custom tools. Seequent provides conversion tools for common geoscience formats. Today, these run client-side. Soon, converters will also be available as Evo compute tasks, with a simple web utility planned for drag-and-drop and bulk conversion.

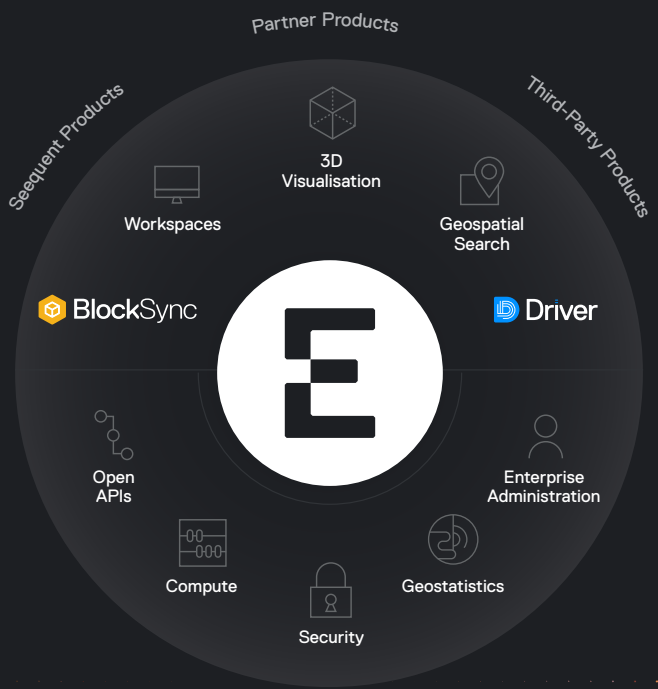
Data from each of these sources is stored in a common format, so changes flow through connected workflows automatically.

What is an open API?

Open APIs let you connect Evo to any tool (e.g., Seequent or third-party apps, in-house systems, or BI/notebooks, enabling data to flow in and out. Because API calls inherit platform permissions and lineage, integrations stay secure, governed, and fully auditable. This enables automation (ingest, QA/QC, simulation, reporting) and on-demand cloud compute, cutting manual effort and speeding delivery.

Integrated workflows don't just save time, they also improve the quality and reliability of decisions. When everyone is working from the same, up-to-date data, there's less risk of misalignment between teams or of critical decisions being made on outdated information.

For project managers, integration also brings greater transparency. With Evo as the central hub, it's possible to see at a glance what data has changed, who made the change, and how it flows through connected workflows. This visibility supports more confident approvals, faster reporting, and stronger stakeholder engagement.



CHAPTER 5

Security, privacy, and governance in an open platform

Evo's strict governance enables teams to integrate third-party tools and custom-built applications without sacrificing security.

Open APIs are governed by the same permission controls as the rest of the platform, ensuring that only authorised applications can read from or write to your datasets.

This balance, security with openness, is what makes Evo a future-ready platform. It allows organisations to innovate and integrate freely while protecting intellectual property, sensitive results, and business-critical data.

Governance and control

Evo's governance model is designed for organisations that need both flexibility and accountability. Role-based permissions ensure the right people have the right level of access, from read-only viewing to full administrative control. Every action taken in Evo is logged, creating a complete audit trail of what changed, when, and by whom.

This means your organisation can confidently manage sensitive datasets, whether they are internal exploration results, operational block models, or externally reported resources, knowing that data integrity and traceability are preserved at every step.

Regional storage and reliability

Evo is deployed on a globally distributed infrastructure that supports regional data residency requirements. Data can be stored in locations that align with your operational, legal, or compliance obligations, ensuring that jurisdictional rules are met without sacrificing platform performance.

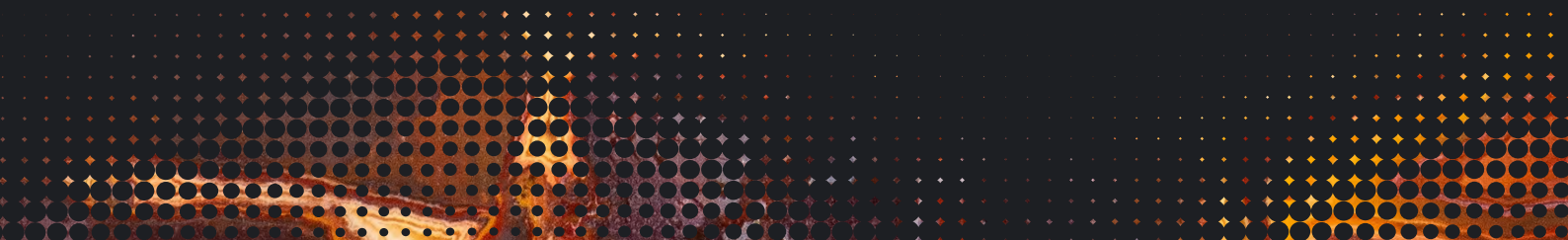
To maintain uptime and data safety, Evo incorporates redundancy and backup measures across its infrastructure. If an outage occurs in one region, services fail over to another without disrupting active workflows.

Built-in resilience

Downtime can delay decisions, stall projects, and increase costs. Evo's cloud architecture is designed for high availability, with active monitoring, automated recovery, and maintenance processes that minimise disruption. This resilience is critical for workflows that rely on up-to-date data—whether you're running a simulation in the cloud, updating a block model, or collaborating across time zones.

A platform approach fits every team

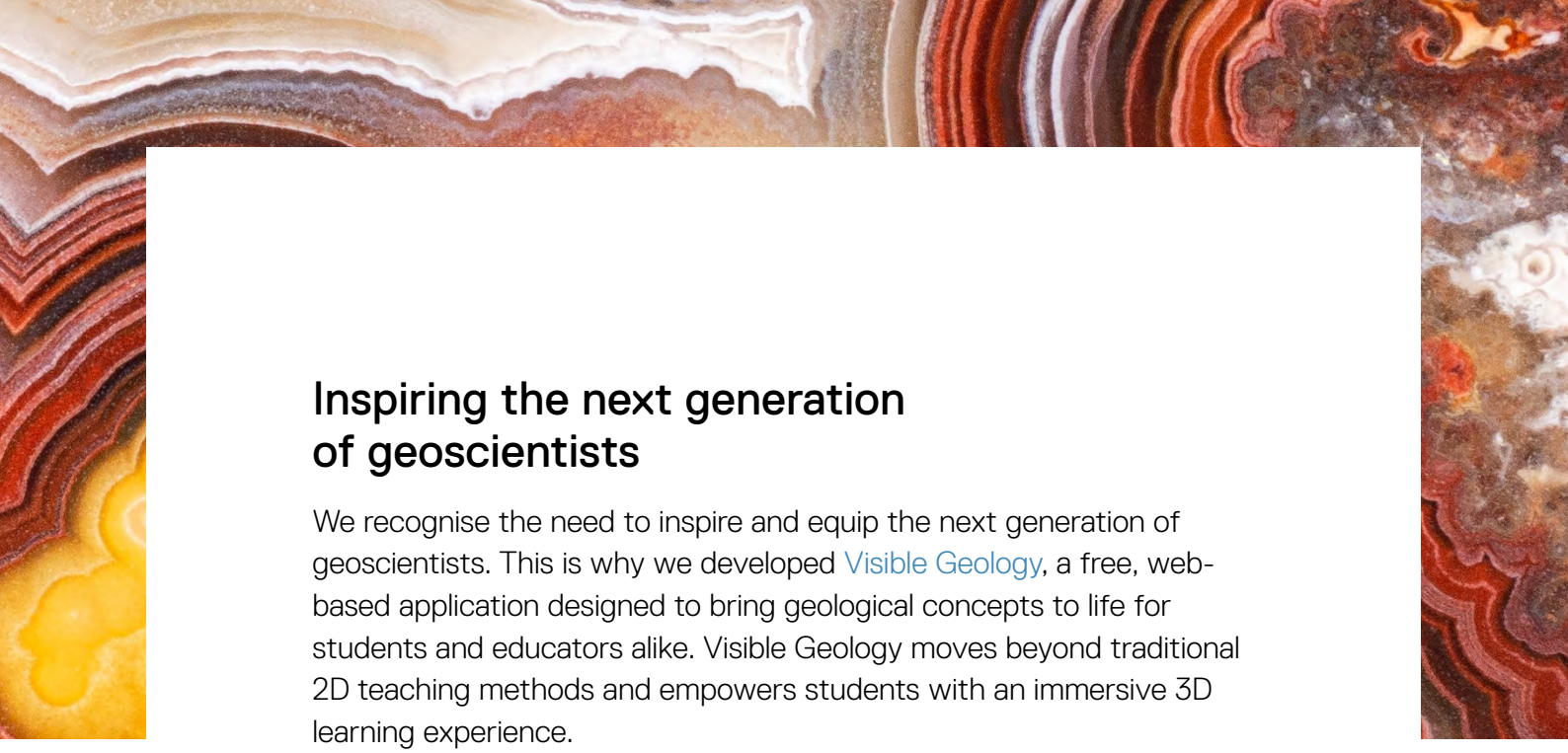
Seequent's Evo is modular and scalable so it suits every team, regardless of size. Users can start with a single workflow, such as BlockSync for block model governance or Driver for drilling data analysis, and add capabilities over time. Cloud compute scales on demand, so small teams aren't forced into enterprise overhead, and larger operations aren't limited by hardware constraints.



CHAPTER 6

Leading the future of geoscience: innovation, education, and collaboration

At Seequent, our commitment to geoscience runs deep. As a company built by geoscientists for geoscientists, we are constantly pushing the boundaries of what's possible with innovative tools and technologies. By combining technical expertise with user-centered design, we have created a portfolio of solutions that not only enhance our understanding of the subsurface but also make complex processes more accessible and intuitive. With Evo, we're bringing all these solutions together to deliver even greater value.



Inspiring the next generation of geoscientists

We recognise the need to inspire and equip the next generation of geoscientists. This is why we developed Visible Geology, a free, web-based application designed to bring geological concepts to life for students and educators alike. Visible Geology moves beyond traditional 2D teaching methods and empowers students with an immersive 3D learning experience.

With its intuitive 3D modelling capabilities, collaborative classroom features, and digitised stereonets, Visible Geology helps students grasp fundamental geological concepts in a captivating way. Educators can integrate this tool into their curriculum, modernising the learning experience and engaging students with interactive topographies, cross-sections, core samples, and more.

By encouraging students to explore the subsurface world in an innovative digital environment, Seequent is playing a key role in shaping the future of the geoscience field.

See Visible Geology for more →

Discover the future of subsurface intelligence today

Visit seequent.com/evo to request a free trial or live demo.

SEEQUENT · Evo

Understand the underground to build a better world.

Seequent is evolving the way organisations work through better subsurface understanding.

As the world leader in subsurface earth-modelling, analysis and data management, and collaboration software, Seequent is at the forefront of building a collective understanding of the Earth.

We hire amazing people who collaborate with our customers to find technology solutions to their challenges that deliver more positive outcomes for a better world.

As The Bentley Subsurface Company, Seequent connects our natural environment with the built world so organisations can manage the impact of their projects at every stage.

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