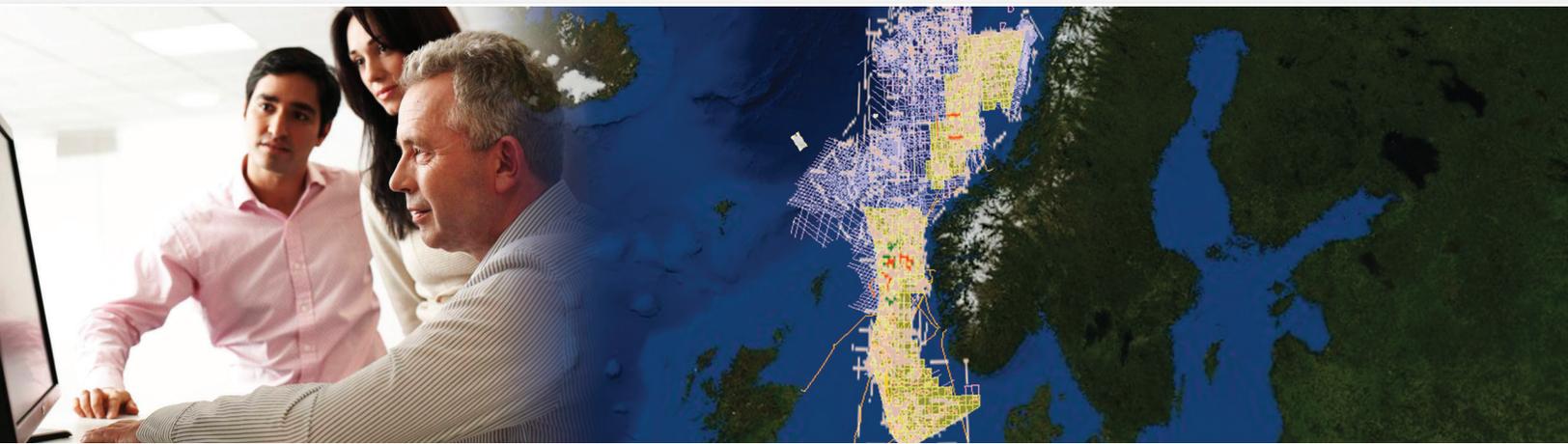


The Studio Environment: Driving Productivity for the E&P Workforce

The Studio E&P knowledge environment enables petrotechnical professionals to access all available information, collaborate with colleagues, and share knowledge, all in context of their Petrel project—improving productivity and gaining insight for smarter decisions in relevant timeframes.



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Abstract

In an environment in which the industry faces the task of exploiting more and more challenging reservoirs with a shortage of experienced industry professionals, productivity is crucial. This requires an intuitive software solution that facilitates integration and collaboration across multiple disciplines—and which promotes knowledge preservation for later reuse.

The Studio* E&P knowledge environment empowers users to be more agile and enables the business to anticipate and act confidently in the ever-changing dynamics of the E&P business. With a comprehensive set of advanced tools for collaboration, data and knowledge access, management, capture, and dissemination—in the context of domain workflows—the Studio environment transforms how asset teams work.

Industry challenge: Improving productivity with effective knowledge sharing and collaboration

Albert Einstein once said, “Information is not knowledge,” and “The only source of knowledge is experience.” Applying this to oil and gas exploration and production, the simple aggregation of data and information in a database is not knowledge. Knowledge comes from capturing the experience of working with the data and information; from collaboration with colleagues to solve complex problems and learning from experience.

E&P organizations report facing inefficiencies around finding, using, and sharing information among team members—previous considerations, analyses, and insights; key work processes; the context of how and why decisions were made; and lessons learned. These inefficiencies lead to lack of productivity that severely limits future analysis, decision-making, and action. The combination of challenging reservoirs and a shortage of experienced industry professionals further drives the need for improved productivity.

The Oil and Gas Collaboration Survey 2009, conducted by PennEnergy in partnership with the Oil & Gas Journal Research Center, surveyed industry engineers, geoscientists, and business managers worldwide and found that more than 70% believe that collaboration and knowledge sharing are important for driving revenue and cutting costs.

Collaboration and knowledge sharing have therefore become key factors that, if tackled properly, could contribute to major productivity improvements—leading to new reserves, improving execution, and driving innovation within E&P organizations.

Studio environment delivers needed capabilities

The goal of the Studio environment is to enable companies to maximize the productivity of petrotechnical professionals and asset teams. It does this by providing them with the ability to capture critical project insight and knowledge, enabling informed decisions as soon as they are required.

The productivity revolution

When the Petrel* E&P software platform was launched in the late 1990s, the intent was to create an easy-to-use geological modeling software package. Geoscientists loved working in the Petrel platform so much that they wanted to use it for more than modeling—to bring more of their subsurface workflows into the intuitive system and to use a single, model-centric workflow for all their subsurface data and information.

To add more core geoscience capability, Schlumberger re-engineered the Petrel platform on the Microsoft .NET framework and expanded it to include seismic and geological interpretation, prestack workflows, and reservoir engineering—allowing it to continually evolve based on customer workflows and input. As the Petrel platform progressed from being a desktop application to an E&P enterprise platform, the need for a scalable, collaborative, and knowledge-centric environment arose.

The addition of the Studio environment propels the Petrel platform to a collaborative, multiuser knowledge environment, scalable across the E&P enterprise—while maintaining the intuitive, flexible Petrel experience that users love so much. Many traditional applications typically started with the data model and database, and then created workflows around the database. The Petrel platform started with users and their needs. This same user-centric focus continues to be the developmental philosophy and foundation going forward for the Petrel* platform, the Techlog* wellbore software platform, the Avocet* production operations software platform, and the Studio environment.

Studio overview

The Studio environment empowers a new level of usability and productivity that supports an E&P organization’s quest to streamline and optimize its workflow across the asset lifecycle, while also capturing vital knowledge to maximize personal and team productivity.

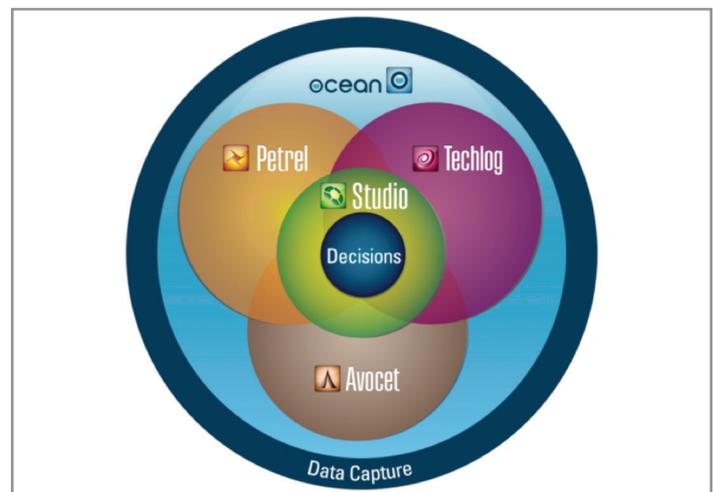


Figure 1. The Schlumberger vision for an integrated E&P platform.

It features a powerful set of tools that allow geoscientists and engineers to access, review, and use information, in the context of their subsurface Petrel workflows—with key capabilities that increase productivity:

- Find—for greater awareness of (and access to) information
- Collaborate—for greater context and understanding
- Manage—for knowledge capture, retention, and delivery

Find—for greater awareness and access to information

The integrated workflows provided through the Studio environment in the Petrel platform mean that data is always at your fingertips, within your current workflow context.

Find any data anywhere, and load into your project

The Studio environment lets you easily search and find all available information in your various data sources in the context of your project and workflows. Data sources include

- local Petrel projects and Studio repositories
- Microsoft Bing Map information on your field
- legacy data from GeoFrame* reservoir characterization software
- detailed wellbore information from your petrophysicist in the Techlog platform
- well information in the IHS database
- other petrotechnical sources through TIBCO OpenSpirit

The Studio environment supports the reviewing of this data in the context of current project data. Petrel 2D or 3D windows with powerful search tools using patented technology allow you to filter results based on data-specific criteria (data type, depth, user, project, dates, and more) to instantly uncover information related to your project. Then—with a simple click—you can load the data directly into the project and continue focusing on the exploration or development problem at hand.

Collaborate—for greater context and understanding

The Studio environment supports collaboration along multiple dimensions, through solution technologies that let team members connect related information or knowledge directly to data. Instant-messaging capabilities allow people to easily connect and communicate with team members and experts who are often geographically remote—allowing everyone to view the same data and models.

Studio collaboration technologies help team members understand the context of their data quickly to reach better quality decisions faster and to eliminate or significantly reduce rework.

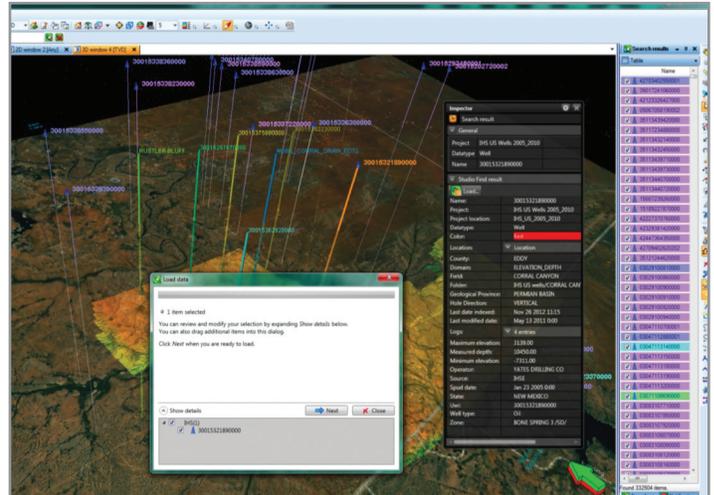


Figure 2. The Studio environment provides a powerful collaboration hub for all users.

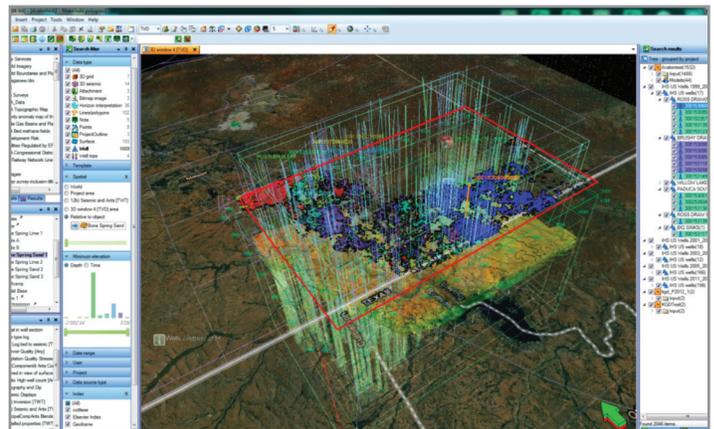


Figure 3. The Studio environment provides awareness and access in the context of your project

Multuser collaboration

The Studio environment enables you to publish interpretations and insights when they are ready for your team to access and use. It also enables you to sign up for notifications of changes, providing instant awareness of updates made across a project and who made them. As the team geologist, if the geophysicist gets new data and updates the key surfaces in your reservoir, you know about it immediately. You can then assess the new interpretations and decide whether to incorporate them into your project—no more hunting for data from different colleagues' projects, and no more periods of continuing interpretation and then having to rework after discovering an update in the corner of your field. These capabilities not only provide the productivity teams need to improve the efficiency and accuracy of technical and business analysis, but they can also be used to support traceability and accountability for safety or regulatory requirements.

Collaboration by annotation

The Studio environment allows team members to add virtual sticky notes (text, documents, images, and video) with comments to convey extra information, and even display workflow status—all stored in context with the data and analyses. This extra information richness allows current and future team members to understand how analyses were done—and why.

Similarly, you can quality tag interpretations, allowing you to differentiate a quick initial study from a detailed study, or the level of confidence in an interpretation. This gives others the information they need to take the analyses further.

Adding analogs, theories, papers, or diagrams underlying interpretation decisions gives complete understanding of the decision process, improving team collaboration in the current asset evaluation.

Collaboration by blogging

Through integration with Microsoft SharePoint technology, you can create blogs or discussion threads in the context of your asset. Creating a blog—in the context of a reservoir or workflow puzzle—provides a way for a team to converse as they work through the problem over time in the course of their analysis. The conversation is then saved for future team members to understand the rationale behind decisions.

Connect with team members and experts

Collaboration and mentoring from senior technical staff and experts is another great way to gain better understanding and to build confidence and expertise. With the globally dispersed E&P workforce, it is rare that experts, or often even team members, are located in the same office. In the Studio environment, point-to-point screen sharing makes it possible for multiple users to share Petrel sessions and collaborate with other professionals anywhere in the world. Experts and peers can share knowledge and work through interpretation and modeling challenges in real time, on their desktops—together. Collaborative Petrel session sharing is optimized so each user can not only visualize project data and interpretations, but also fully control the project window to interrogate the data and maximize the collaborative decision-making process.

With the integration of Microsoft Lync communications technology, the Studio environment lets you see the online status of users who have worked on the project data or annotation. With a simple click, you can initiate a chat session with that person, directly within the data and information being reviewed. With both parties sharing the data context in the Petrel window, questions and issues are easier to resolve.

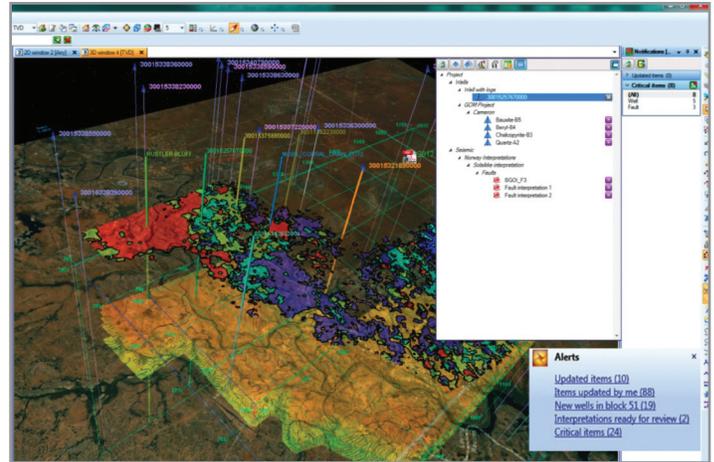


Figure 4. Subscribe and receive automatic notifications on new and updated data.

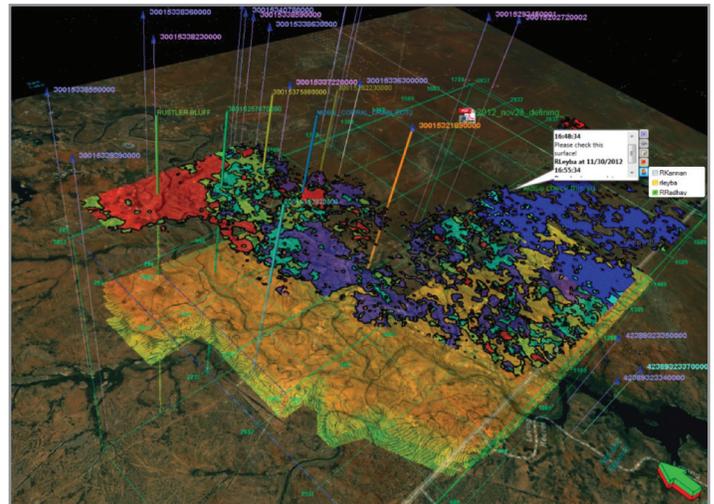


Figure 5. Connect insights to data via annotations.

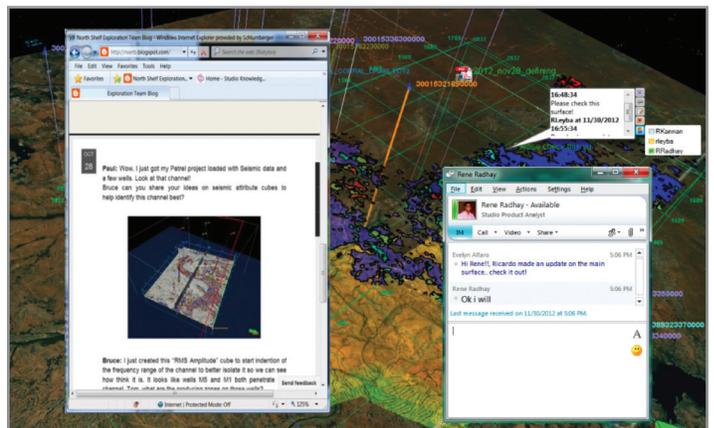


Figure 6. Connect and collaborate quickly and efficiently with your team.

Manage—for knowledge capture, retention, and delivery

Knowledge loss is inherent in the E&P industry because of far-flung global operations, workforce mobility, and geographical dispersion and availability of expertise. The Studio environment delivers the ability to capture, retain, and deliver knowledge to users, which is realized in several ways.

Designed-for-purpose database

The Studio environment provides a proven, scalable database specifically designed to handle the burgeoning volumes of data for E&P projects—as well as the knowledge related to that data, stored together in context. Using industry-standard database technology (Oracle and Microsoft SQL Server), all of the data annotation and knowledge capture features of the Petrel platform are managed and accessible in the Studio database.

Additionally, to meet the rigorous and often specialized demands of E&P, the database provides all of the required data access controls and security, as well as advanced capabilities such as on-the-fly spatial and units-of-measure conversions required when working on regional studies and exploration workflows.

The database is the engine powering collaboration, using a publish/subscribe model that lets users subscribe to data and receive automatic, real-time notifications when data is updated or published. With this approach, you publish interpretations and insights to the Studio environment when they are ready for your team to access and use. Once you achieve a specific result or milestone and are ready to share it, you publish only the final results or data to the database. All working or transient data remains on your workstation. The database isn't cluttered with incomplete or transient versions of a model or interpretation.

Data managers application

Studio provides data managers with a single application that delivers a suite of tools to effectively support and manage the Studio environment. It consolidates all administration and core data management workflows for the Studio environment.

Expert guidance and knowledge management

To help your company enhance staff productivity and improve performance, the Studio environment integrates Studio Advisor; a complete suite of guidance tools, composed of video tutorials, training materials, methodologies, quality checks, and workflows that help team members use the Petrel platform fully and confidently. Guidance for all key Petrel workflows, domains, and processes (from basic to advanced) can be simply accessed by right-clicking processes or objects in the Petrel interface. Just as importantly, you can create company specific

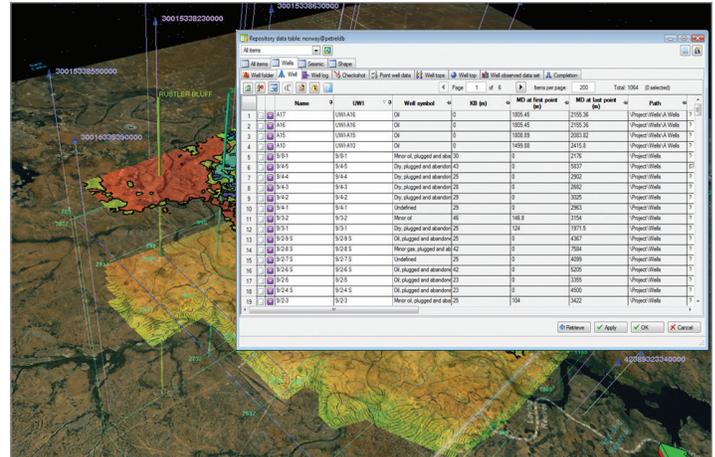


Figure 7. Data managers application.

content, and make it available to your geoscience and engineering community, to share best-practice work processes thus managing and retaining the knowledge gained through experience.

New ways to approach and solve problems

The ability to capture knowledge—to easily work together to solve problems and create new knowledge—is crucial in a time when reservoir exploitation is continually more challenging. Retaining that knowledge and making it easily available to people across the organization—in the context of specific analyses, when needed—is crucial for organizational productivity.

With the Studio environment, E&P organizations can achieve the transformative efficiencies to continue to excel in a business and technical environment that is rapidly evolving. Being agile, productive, and able to quickly make the best decisions is essential for success.

The Studio E&P knowledge environment enables geoscientists and engineers to find information, collaborate with peers, and manage knowledge—in the context of their Petrel workflows—to maximize productivity and improve decision making.

For more information, visit www.slb.com/studio

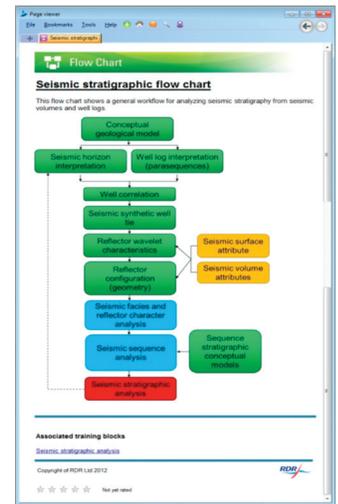


Figure 8. Integrated guidance tools and tutorials.