



## Editor's corner

Dear readers,

It is always my endeavour to share content that I believe will be of interest and value to our readers. As this conference issue of GEOHORIZONS offers a rich selection of material, including a strong lineup of technical articles as well as human-interest features such as interviews, memoirs, and SPG News, I will keep this column brief.

I hope you find the content both insightful and engaging, and that it contributes meaningfully to your professional journey.

I was recently invited to join SEG's new team initiative on Integrated Subsurface Reservoir Characterization (ISRC), an effort aimed at improving cross-disciplinary communication in the context of subsurface studies. The core objective is simple yet essential: *true integration* of geoscience and engineering disciplines to achieve more accurate and effective reservoir characterization.

While integration is a familiar theme, in practice, collaboration often falls short. Members of an interdisciplinary team may place disproportionate value on their own discipline, while the inputs from others may be oversimplified or, worse, ignored. This undermines the goal of integrated reservoir studies and highlights the need for more *structured and transparent workflows*.

In the initial round of discussions within our ISRC group, several valuable ideas emerged. Some of these may not be new, but they are worth revisiting, refining, and building upon:

### 1. Broadening the scope of Quantitative Seismic Interpretation (QSI)

QSI is becoming a widely used tool, but too often it is limited to inputs from geology and geophysics alone. To enhance its reliability and depth, QSI must evolve into a *truly interdisciplinary process*, incorporating

insights from reservoir engineering, petrophysics, and production data.

### 2. Demystify disciplinary black boxes

Each domain has its own tools, terminologies, and workflows, many of which appear opaque to colleagues from other disciplines. These "black boxes" hinder collaboration. We must make a concerted effort to *explain and demystify* these processes so that team members can better understand and trust each other's contributions.

### 3. Addressing uncertainty explicitly

Uncertainty is often underrepresented in subsurface models. Encouragingly, more recent case studies are beginning to incorporate uncertainty analysis. For example, deterministic prestack impedance inversion has been augmented by *Direct Bayesian Inversion (DBI)*, which delivers, *facies probability volumes*, assigning a probability distribution to each sample point, *most probable facies models*, derived from maximum a posteriori estimates, *uncertainty quantification*, identifying areas of ambiguous classification to aid confidence assessment.

These efforts show the way forward; we need to expand such practices and identify other areas where uncertainty should be rigorously integrated into the analysis.

### 4. Identify underutilized tools and products

Some tools with potential to enhance integrated workflows remain *underused or poorly understood*. We should systematically identify such tools and evaluate how they can be more effectively incorporated into routine workflows.

### 5. Avoid delays that undermine integration

In many cases, we hear of well-planned integrated studies being bypassed because *drilling decisions were made before the studies were completed*, often due to tight schedules and rig readiness. To avoid such costly

disconnects, we must emphasize *better planning and alignment* between subsurface studies and operational timelines. Integration workflows may also benefit from *greater automation* and workflow management systems.

#### 6. Diagnose why integration still fails

Despite decades of talking about integration, work often continues in *disciplinary silos*. If this resonates with you, it's time to ask: *What is causing the disconnect?*

Is it technical limitations, organizational structure, company culture, lack of training, or something else? Identifying the root cause is the first step toward meaningful change.

#### 7. Avoid "end-of-process integration"

Integration is *not* about stapling together final reports from different teams. That results in disjointed, ineffective "handoffs." Instead, integration should be *planned early* and executed *in phases*. Start by identifying the key project objectives, the required inputs from each discipline, and the interdependencies. Discuss potential data gaps, complexity, and constraints *upfront*, so that all members understand the full scope of the study and how their work fits into the whole.

#### A broader reflection

After all the technical discussion, one must return to the fundamental question:

*Why do final results often get selectively used, or ignored, by the end user, such as a geomodeler or reservoir engineer?*

Often, it is because the simulation software used doesn't support the parameters or attributes provided. This suggests a critical gap between *data generation* and *data consumption*, and it highlights the need for

*better alignment between modeling tools and integrated outputs.*

One of our ISRC members, formerly an advisor at a major multinational energy company, shared an exemplary model of integration. During Gulf of Mexico field developments, their interdisciplinary team would dedicate a *full week to each major reservoir*, working together in one room.

They would perform *Pressure Transient Analysis (PTA)* to determine key reservoir and engineering parameters. If a fault was suspected to act as a pressure barrier, it was added to the model in real time. If the petrophysicist suggested changes due to depletion-related compaction, those were incorporated immediately. Everyone, geophysicist, geologist, reservoir and production engineers, could see how their inputs influenced the evolving model.

This kind of *real-time collaborative iteration* ensured that data was not discarded or misunderstood. Even when geophysical imaging was ambiguous, reinterpretation was done jointly using depositional models and production data. It was a powerful reminder that *no dataset is perfect, and no model is absolute*.

The closing remark from that team member was truly insightful:

*"All data are inexact, and all models are wrong, but if they can be reconciled with each other, they become more useful."*

These are the kinds of ideas we hope to expand on in the ISRC initiative. True integration isn't just about tools or techniques, it is about *mindset, transparency, communication, and shared responsibility*. Let us commit to making integration real, not just rhetorical. 

- Chief Editor