

# Making sense of it all

Paradigm Ltd.'s founder and CEO discusses the challenges the industry faces as the data explosion accelerates.

**E**ldad Weiss is a leading figure in the petroleum software industry, having grown Paradigm Ltd. from a small boutique technology player into one of the largest software and solutions vendors in the industry. While the industry has made tremendous strides in data integration over that time, he said, challenges remain. I recently visited with Weiss to discuss the status and future of the industry.

*What are some of the changes you anticipate in the computer industry that have the ability to bring about disruptive change in seismic interpretation? How will the industry need to adapt to those advances?*

I believe that the progress we've been seeing over the past two decades – the exponential growth in available data, the automation tools being developed to process and analyze these data, techniques for interpreting multiple surveys and multiple volumes, and multidisciplinary data sharing – will continue and perhaps even accelerate. Each leap forward will require the industry to adapt its tools and workflows to take advantage of the new capabilities.

The emergence of prestack data as a component of many workflows, for example, requires more than just an ability to see trace data. The inherent complexity of ray paths through the overburden, the sheer volume of data that need to be accessed, and the effects of anisotropy on waveform propagation are only some of the challenges that face deadline-constrained geoscientists who are suddenly being required to make sense of 30 to 50 times more data than before. Visualization tools, new display methods, and processes that make visible the illumination that resulted in a given reflector or event are all part of the answer and will become increasingly accessible to the new generation of geoscientists.

*Despite enormous advances in computer technology, many interpreters still do things the same way because "That's the way I've always done it." How can change management be driven by oil companies? By software vendors?*

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The challenges for the E&P industry, as I see them, are threefold: We need to further develop the tools needed to fully utilize all of the available data, we need to build new workflows to make efficient use of multidisciplinary integration of data and applications, and we then need to embark on a comprehensive educational program aimed at transitioning such novel processes from advanced users to the mainstream community. This will entail a joint effort on the part of E&P software vendors and oil and gas companies.

Users are in danger of being overwhelmed by the sheer amount of data now available and by the integration of all these data at the desktop level. The role of data management is becoming increasingly important due to the growing need to improve data access permission and security measures.

Oil companies must also insist that their asset teams take advantage of the new technologies and back up their drilling decisions with a critique of the data and their limitations; a review of alternate outcomes, probabilities, and uncertainties in the interpretation and model-building phases; and a discussion of the risks engendered by prospective drilling programs (overpressure, cave-ins, fracture zones, etc.). These discussions should be interactive and comprehensive and include all of the various teams as well as management. It is only when managers ask for more detail and rigorous science as part of the decision-making process that geoscientists will begin to broaden their activity and use new and advanced technology to deliver on these expectations. **E&P**