

# At the forefront of seismic processing and imaging

Tom Rayment, chief geophysicist at DUG Technology, discusses the company's expansion in the Middle East and its latest innovations in seismic processing and imaging.

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**How do you view prospects for your seismic processing and imaging solutions in the Middle East?**

DUG has a long history of providing services to the Middle East, and we have numerous ongoing projects in the region. We believe the future prospects are extremely encouraging, which is why we're opening a new office in Abu Dhabi. DUG has received a very positive reception in the Middle East, which includes a recent project award from Saudi Aramco. There are exciting times ahead for DUG in the region!

**What are the advantages of your MP-FWI imaging solution compared with traditional workflows?**

The traditional workflow has been around for decades. It involves testing and applying many processing steps such as deghosting, designature, demultiple and regularisation. These are designed to overcome the

restrictions of conventional imaging algorithms. However, these workflows can be complex, subjective, and time-consuming due to their serial nature. They often rely on many assumptions and simplifications, which require further steps to resolve, ultimately impacting the output data quality.

**DUG MP-FWI Imaging uses superior physics to get the most out of the recorded data.**

DUG MP-FWI Imaging turns this traditional paradigm on its head. It's now possible to determine a wide range of Earth properties including attenuation, anisotropic velocity, elastic parameters and true-amplitude three-component reflectivity, all from field data, using multi-parameter FWI. DUG MP-FWI Imaging uses superior physics to

get the most out of the recorded data, delivering unsurpassed imaging with rapid turnaround. It's a complete replacement for the traditional workflow!

**And your deblending solution, what benefits does it offer?**

Deblending is a common requirement for processing modern surveys. We have our own state-of-the-art inversion-based solution for deblending which gradually reconstructs the shots as if they had been acquired separately. We have processed countless datasets covering towed-streamer, OBN and land-data acquisition, with the number of interfering sources ranging from three up to 40 and beyond. We have also demonstrated how deblending is an elegant solution to seismic interference – which is nothing more than unintended blended acquisition.

Improvements in land seismic come from increases in data density,

Image Credit: DUG Technology

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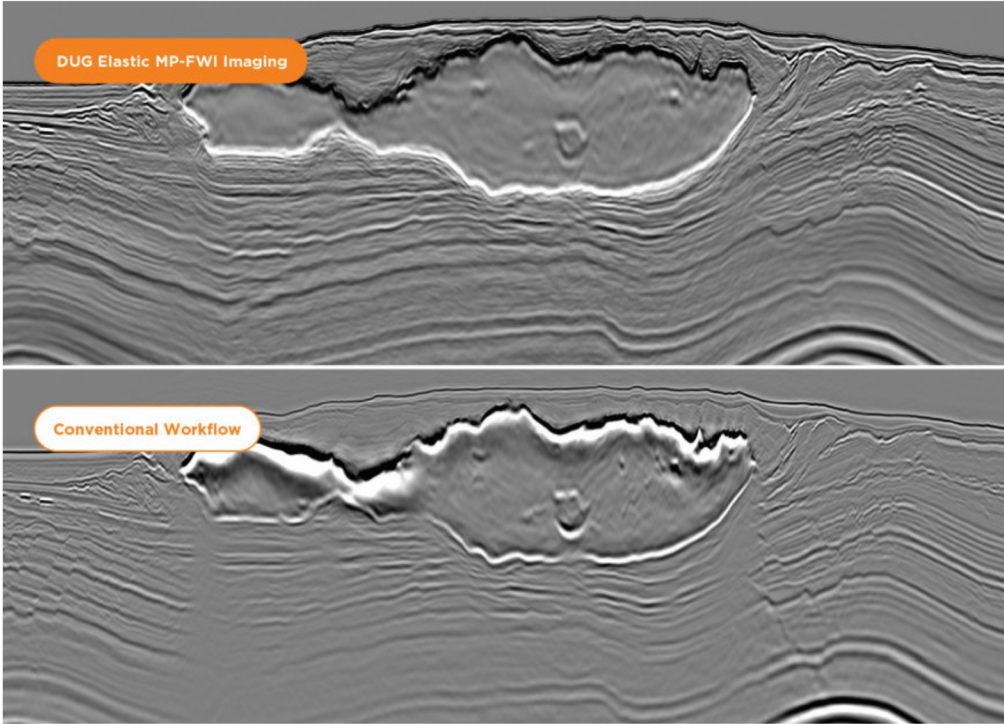
and blended acquisition makes this more economical. Our inversion-based deblending has other benefits too, such as improving the signal-to-noise ratio compared to conventional unblended data. We have performed exceptionally well in deblending benchmarks, achieving the best result in all those where we are aware of the outcome.

**Are you planning any new products or innovations?**

We've just released our latest

processing and imaging solution: DUG Elastic MP-FWI Imaging, which uses superior physics to remove the assumptions and approximations of both traditional processing and imaging, and traditional quantitative interpretation workflows. Strong impedance contrasts produce significant elastic effects that must be accounted for to correctly image the seismic wavefield and deliver true-amplitudes for quantitative interpretation. Our new elastic

imaging technology solves for three-component reflectivity,  $V_p$ ,  $V_s$ , P-impedance, S-impedance and density, delivering unsurpassed results in much shorter timeframes. It delivers not only another step change in imaging quality, but also elastic rock properties for quantitative interpretation and reservoir characterisation – directly from field-data input. We believe this is the new standard for seismic processing and imaging, and we are very excited about the future. ■



A comparison of DUG Technology's Elastic MP-FWI Imaging with a conventional workflow. Data courtesy of Shell.