

# DUG

**WELL  
WELL  
WELL!**

PETROPHYSICIST

**GNEISS  
TO MEET  
YOU!**

GEOLOGIST

**GATHER  
ROUND!**

GEOPHYSICIST

**PICK  
ME!**

INTERPRETER

**DUG INSIGHT  
SPEAKS YOUR  
LANGUAGE**



# TALKING GEO

Technological advancements in geoscience are often incremental—small steps that refine our ability to understand the subsurface. But occasionally, we take a genuine leap. DUG Elastic Multi-parameter Full Waveform Inversion (MP-FWI) Imaging is realising the original promise of FWI: a complete solution that delivers high-resolution elastic rock properties directly from field data, without the need for complex, subjective, and time-consuming traditional workflows.

**But we're not done yet. Our R&D team is constantly embedding more physics so we can speak the Earth's language with even more clarity.**

### Throw away your noise cancelling headphones—it's all signal

We are now modelling complex acquisition effects—including tides, water column changes, currents and array geometry effects. This is vital when using the full wavefield, especially multiples, and for achieving superior time-lapse (4D) results. Even ground roll can be inverted to give high-resolution shear-wave-velocity.

### Listening to everything

We are listening to more of your data, including multi-component FWI for both towed-streamer and ocean bottom node (OBN) surveys.

### All those in favour, say AI

From lithology prediction to fault & horizon interpretation to accelerated convergence of our MP-FWI, we are embedding AI for maximum efficiency. Of course all of this functionality and much, much more, is integrated in **DUG Insight**, our flagship software that we use everyday in every office for all things geoscience—as do our clients in every corner of the globe.

### Essential research and development continues

As all our technology evolves, it will continue to extend what is possible with sub-surface data, allowing our clients to make more informed, faster decisions.



Tom Rayment | CHIEF GEOPHYSICIST. Fabio Mancini | REGIONAL CHIEF GEOPHYSICIST APAC, AMERICAS.



# DUG INSIGHT IS MULTILINGUAL

Whatever your language, DUG Insight speaks it fluently. DUG Insight is the single, integrated software built for the way you work. It's the only package that seamlessly flows from advanced seismic data processing and imaging, right through to interpretation, visualisation, and rock-property prediction.

### For the interpreter

You get modern, interactive 2D/3D/gather visualisation with tools for fault and horizon picking, well management, and crossplotting.

### For the geophysicist

You get a full arsenal of time-processing and depth-imaging tools, all scalable to handle massive data volumes from any acquisition geometry.

### For the QI expert

From statistical rock physics to traditional AVA inversion to our revolutionary elastic MP-FWI imaging — you get the fastest path to rock properties and probabilistic lithology and fluid prediction.

### For seamless integration

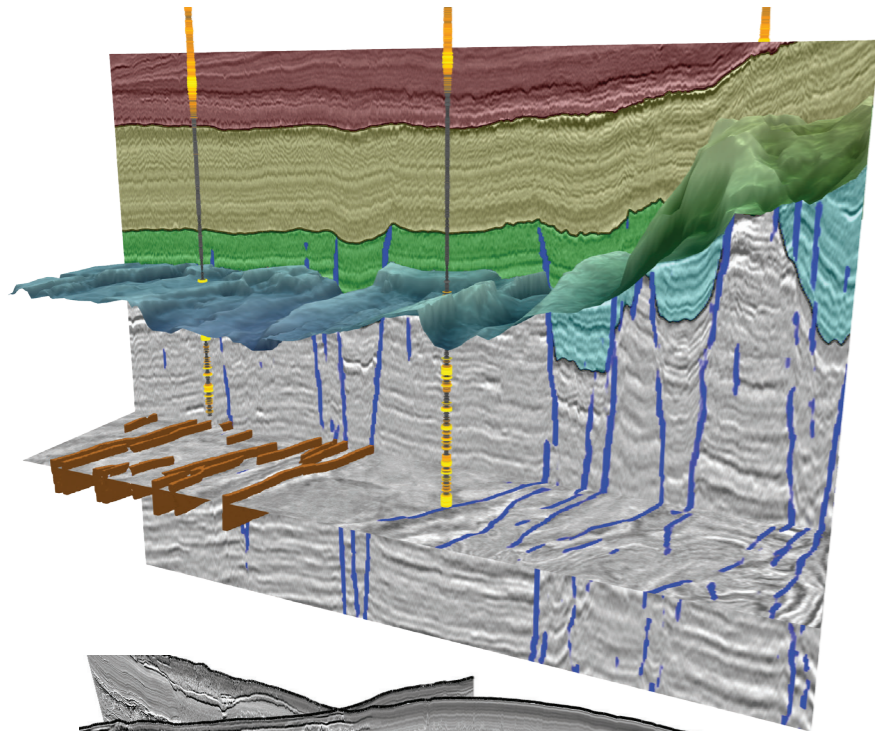
When experts can work together, simultaneously on a project, their complementary skills add constructively to reveal deeper understanding.

### For fluent teamwork

We've broken down the silos. No compartmentalisation. With the universal language of DUG Insight, no translation is needed between team members. One common workspace enables collaboration which leads to better results.

# NO TRANSLATION NECESSARY

DUG Insight is built on the philosophy that modern interpretation workflows need modern, high-performance software. A comprehensive set of tools to tackle any challenge for any survey—right out of the box. Teams need the ability to integrate, view and correlate diverse datasets simultaneously—from extremely-high-resolution near-surface seabed sonar and CPT logs to regional 3D seismic, wells, GIS and geological data.



#### Advanced visualisation

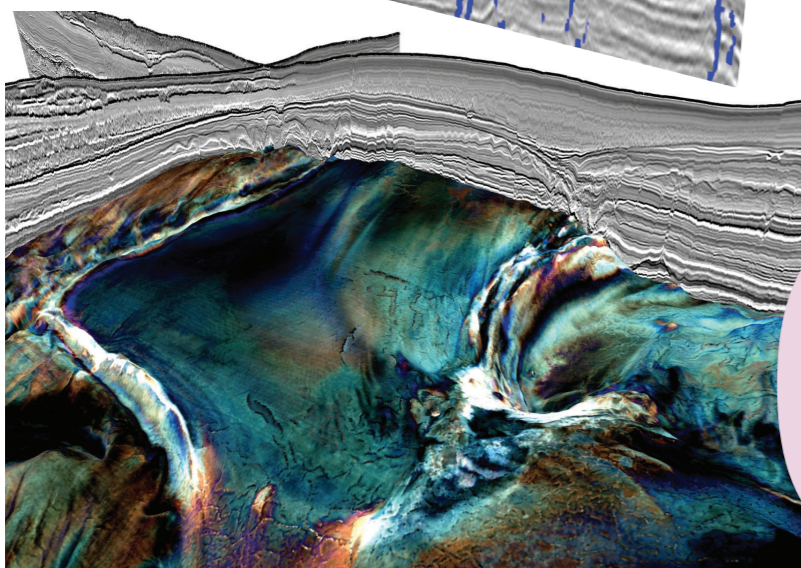
From your desk to the data room, easily view and interpret 2D, 3D, time-lapse, multi-azimuth and gather data. Our integrated 3D and 2D views are synchronised and interactive, making navigation easy and intuitive.

#### Comprehensive interpretation tools

From fault and horizon interpretation to crossplotting, advanced curve maths, and well management. Not to mention marker/tops picking, flexible subsurface model building and integrated AI tools for maximum efficiency.

#### Powerfully versatile

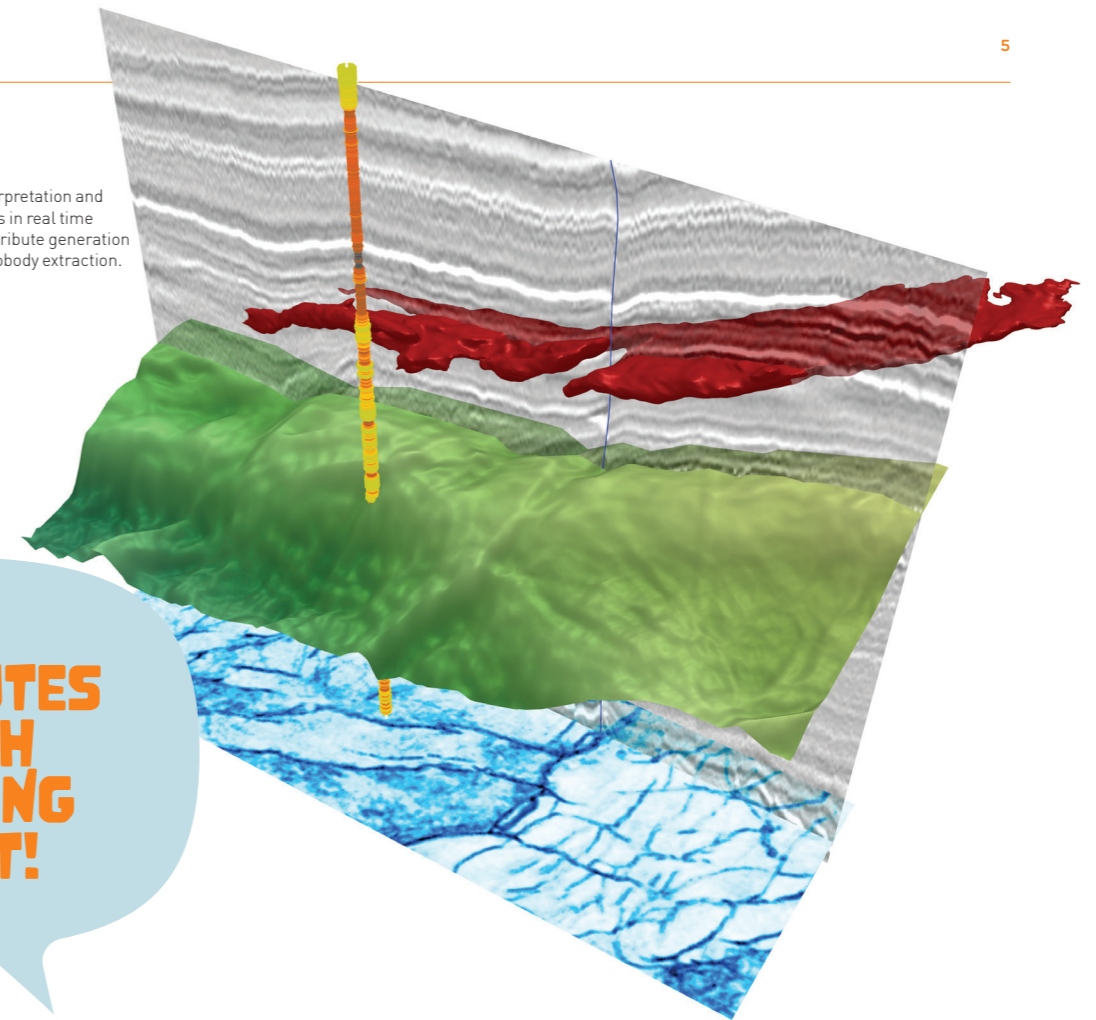
From traditional interpretation to pre-stack analysis, crossplotting, and advanced waveform propagation—everything you need for any application.



TOP: AI-assisted fault and horizon interpretation for maximum efficiency.  
BOTTOM: Regional exploration with an RGB blend of spectral decomposition data.

**DUG INSIGHT IS WHERE GEOSCIENCE, NOT COMPUTER SCIENCE, TAKES PRIORITY.**

3D interpretation and analysis in real time with attribute generation and geobody extraction.



**ATTRIBUTES WORTH SHOUTING ABOUT!**

# TURN UP THE INTERP VOLUME

#### Attributes on demand

Generate 3D dip & azimuth, incoherence, semblance, curvature and perform structurally oriented filtering. Every attribute at your finger tips. We also include advanced features like geobody detection, spectral decomposition and RGB blending.

#### Well beyond the basics

Calculate volumetrics, build velocity models, sculpt volumes, and merge datasets with ease. Condition your seismic data with matching, mistie corrections and spectral balancing/shaping tools.

#### Massive-dataset ready

Whether you're dealing with legacy mega-merges or modern, ultra-high-density multi-component OBN acquisitions with billions of traces, DUG Insight is inherently scalable.

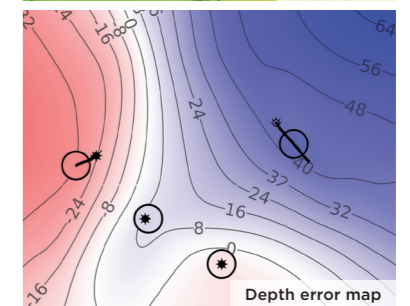
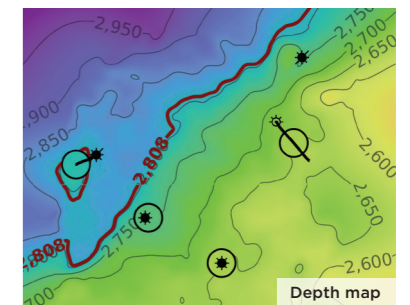
It handles the colossal without breaking a sweat, so you can focus on the geoscience, not on data management.

#### Basin to prospect

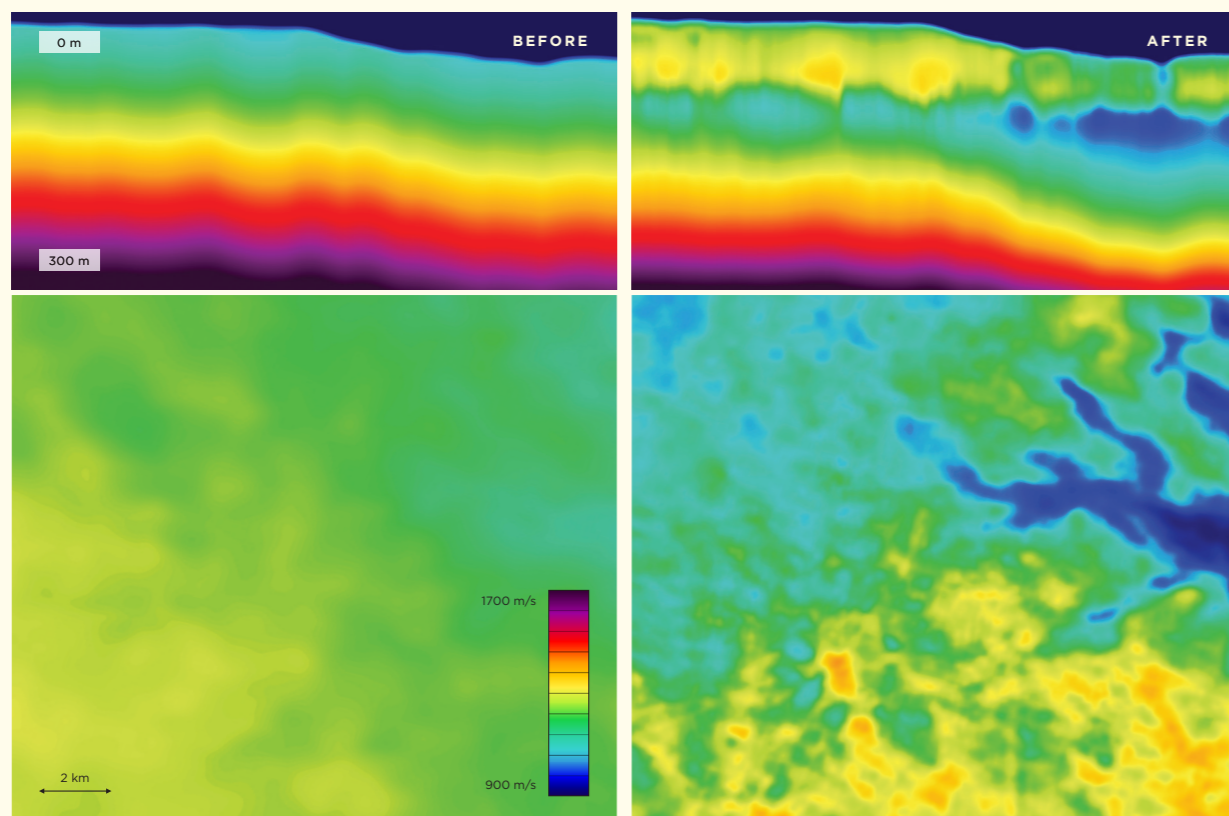
Insight is the only tool you need, whether you are working on a regional basin-scale study or a focused prospect-scale investigation. The software's capabilities are there, at your desk or in the data room.

#### Multi-user collaboration

Teams need to talk. Insight is multi-user and cross-platform compatible. Your project setup, navigation, and QC views can be seamlessly shared and synchronised, ensuring everyone is looking at the same thing—literally—from anywhere on Earth.



DUG Insight's 3D geostatistical velocity scaling workflow calibrates a model to wells for use in depth conversion, model building workflows, and QI applications including pore pressure prediction.



Shear eloquence! **BEFORE** (left) and **AFTER** (right) elastic MP-FWI of ground roll for high-resolution shear-wave-velocity model building. The top row compares a depth section while the bottom row compares a near-surface depth slice. Data courtesy of Geophysical Pursuit's Flying Dutchman multi-client survey.

## DUG ELASTIC MP-FWI IMAGING

# THE ULTIMATE CONVERSATION STARTER

For too long, traditional seismic processing has relied on a series of approximations—deghosting, demultiple, regularisation—to overcome limitations of conventional imaging. This serial workflow is complex, subjective, and time consuming.

DUG Elastic MP-FWI Imaging turns that paradigm on its head—a single workflow that simultaneously delivers:

- Velocity model-building
- True-amplitude least-squares depth imaging
- Elastic rock property inversion

### Field data is all you need

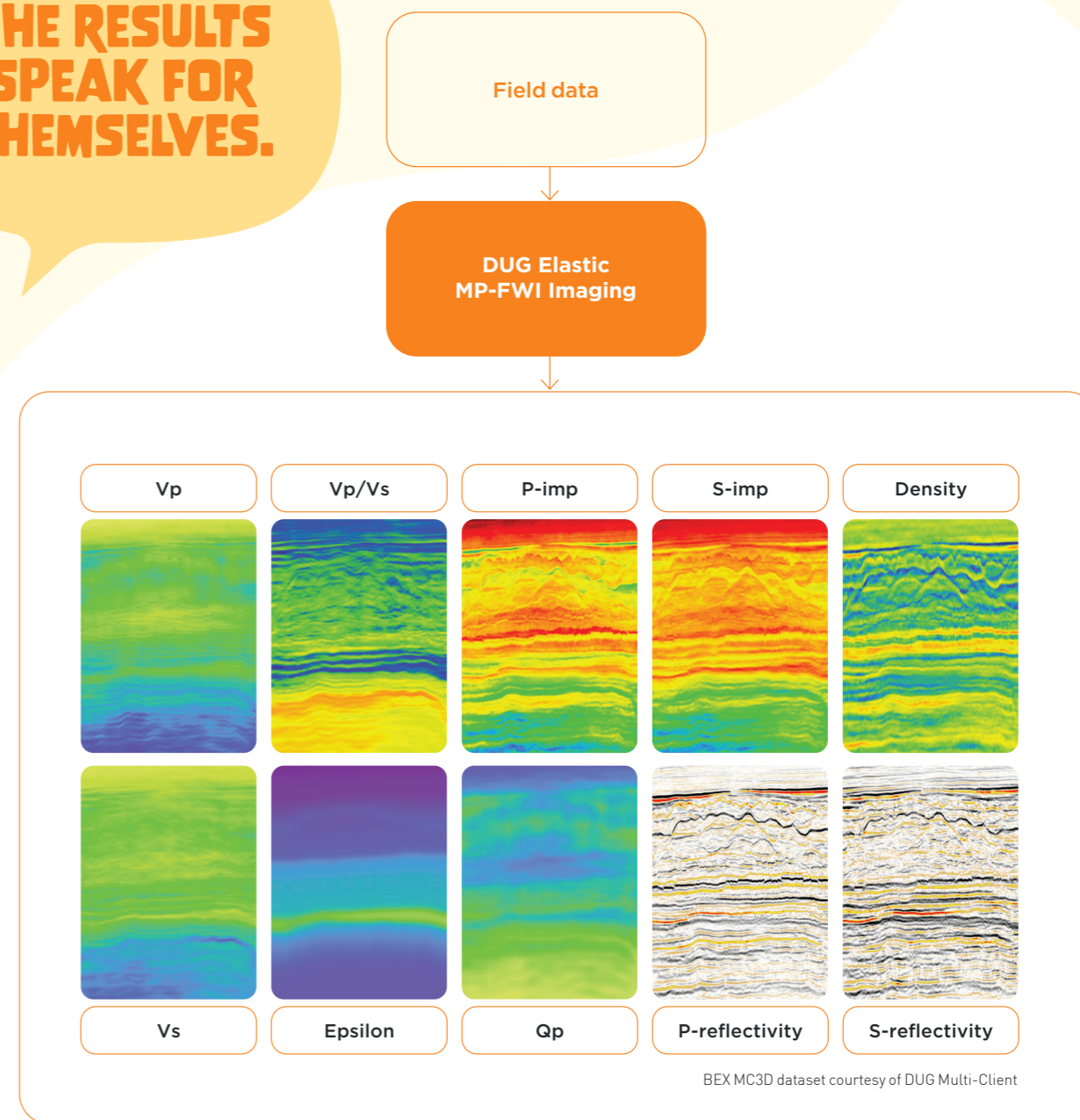
To utilise the entire recorded wavefield we use the field data as input—including primaries and multiples—to solve the elastic wave equation. This removes the need for extensive, legacy

pre-processing steps and their inherent simplifications.

### Better imaging, higher resolution

Multiples (free surface, interbeds, ghosts, and converted waves) illuminate the subsurface in complementary ways to primary reflections—providing a far more complete sampling of the subsurface. Treating multiples as signal significantly enhances spatial resolution, resulting in sharper, clearer images and better-constrained inverted parameters.

THE RESULTS SPEAK FOR THEMSELVES.



**DUG Elastic MP-FWI Imaging is the ultimate conversation starter. It's not just a replacement for conventional processing and imaging—it also replaces the subsequent amplitude variation with angle (AVA) inversion workflow. It is now available as part of DUG Insight.**

### Quantitative interpretation ready

Elastic MP-FWI imaging simultaneously resolves not only subsurface structural features but also fundamental, quantitative rock property information. This includes P-impedance, density, Vp/Vs, and S-impedance—directly from your field data.

### A conversation full of physics

By accounting for both compressional and shear waves, our technology handles variations in wave dynamics and geological complexity, including

attenuation and anisotropy. And you can also say goodbye to Gardner's approximation forever!

### Gather round

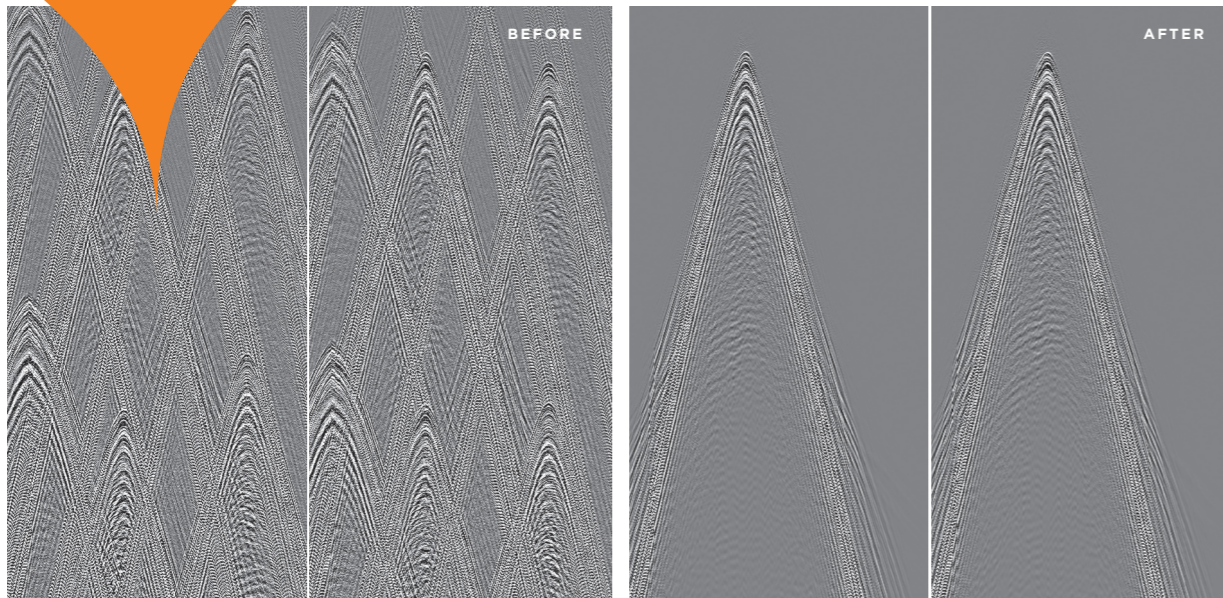
With angle gathers from our MP-FWI imaging, additional pre-stack amplitude analysis is at your disposal.

### Breaking the cycle

We use the power of multi-dimensional optimal transport to prevent cycle-skipping inside our MP-FWI, ensuring we converge quickly and accurately from our starting models.

# PROCESSING AND IMAGING THAT SPEAKS VOLUMES

ANY SURVEY.  
ANY CHALLENGE.  
NO PROBLEM.



Shot gather before and after DUG Deblend. In this OBN example three triple-source vessels were firing within 15 km of each other. Data courtesy of Carbon Transition and TGS.

**DUG Insight's processing, depth imaging and MP-FWI imaging modules will satisfy all your needs. Comprehensive 2D/3D/pre-stack/time-lapse functionality for oil & gas, offshore wind, mining, geothermal & CCUS applications for land, marine and ocean-bottom surveys.**

#### Ocean bottom node specialists

We are pushing the boundaries of OBN processing with technology that includes state-of-the-art deblending, joint  $V_z$  denoise and wavefield separation, up/down and down/down deconvolution.

#### Little things make a big difference

We have a strong focus on time-lapse (4D) processing and imaging—from binning and matching to shifting and QC—ensuring you track subtle changes in the reservoir with confidence.

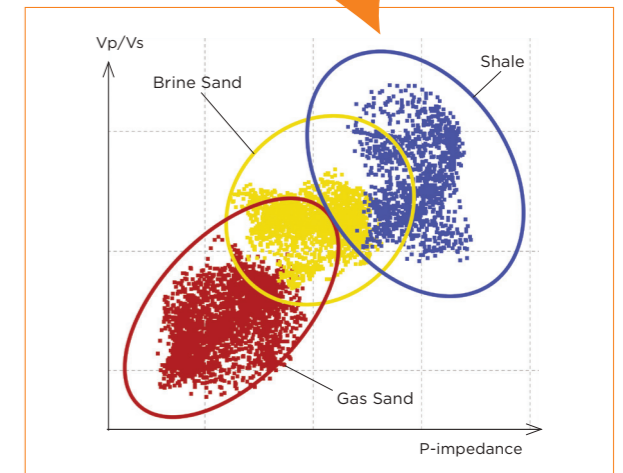
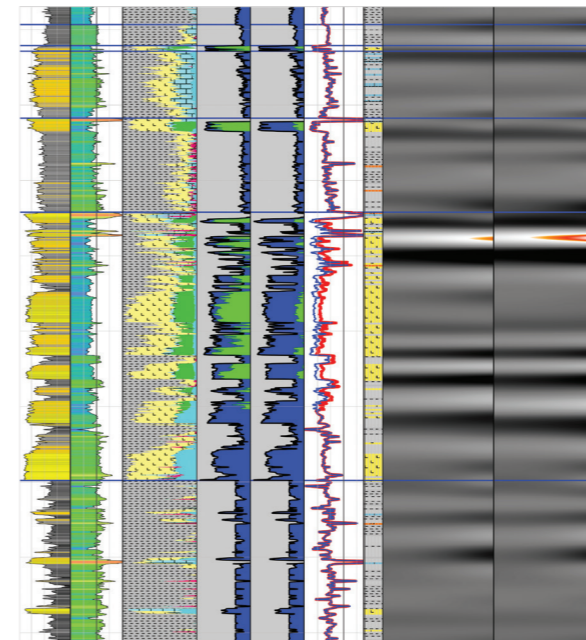
#### Expertise on land

Advanced approaches, like elastic FWI of ground roll to get near-surface  $V_s$  and our new land statics methodology (AMGRT), solve near-surface complexity to correctly position deep targets.

#### Designed for productivity

Quickly parametrise workflows from hundreds of interactive processes and see the outputs on the fly. That means faster prototyping, optimal parameters, and superior results sooner—all within a consistent, easy-to-use interface.

QI IS  
OUR LOVE  
LANGUAGE

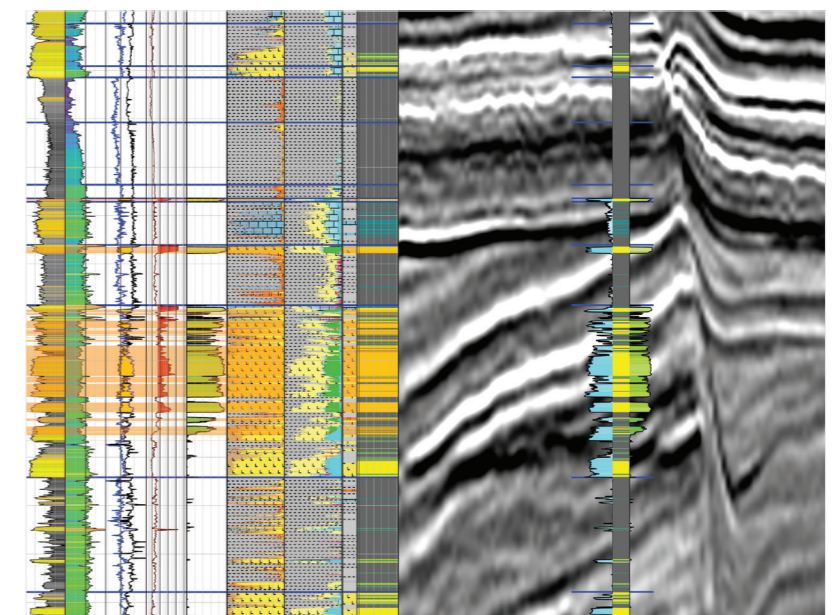


**Quantitative interpretation is where all the conversations—interpretation, processing, and imaging—come together.**

DUG Insight's dedicated QI module offers statistical rock physics, stochastic modelling, absolute and relative pre-stack AVA inversion, and Bayesian classification for probabilistic lithology and fluid analysis. With integrated AI tools, DUG Insight continues to enable efficiency.

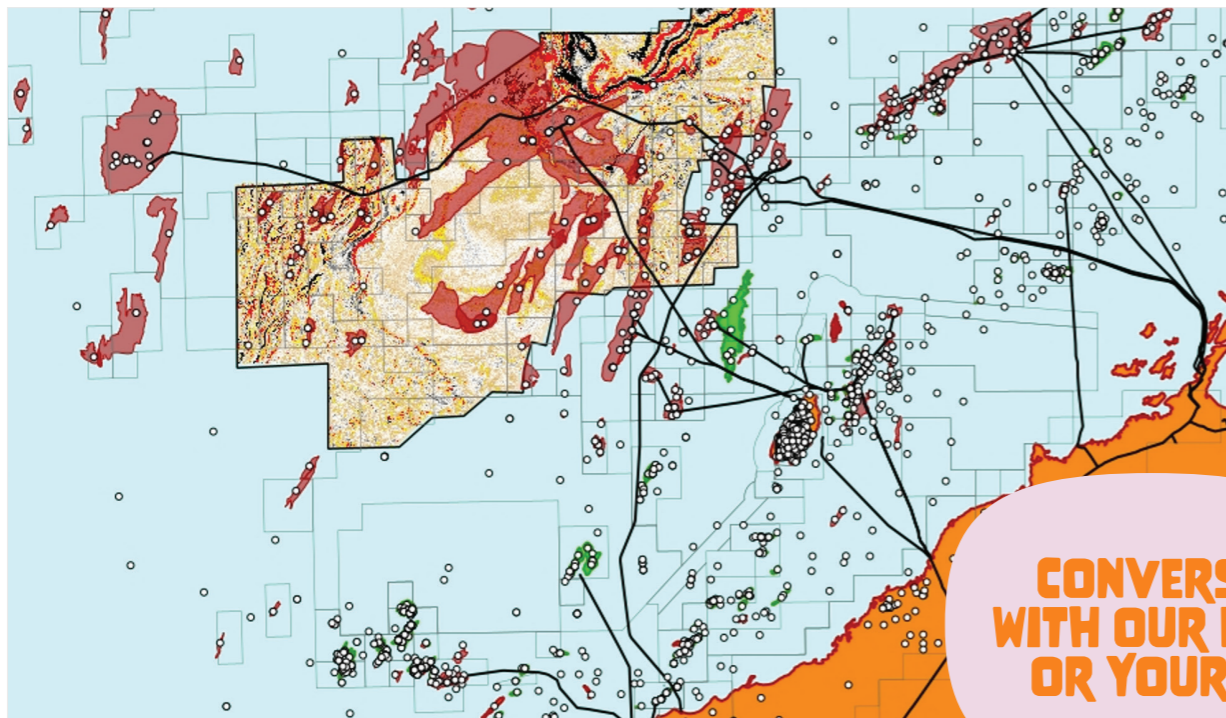
#### No pressure

Our Pore Pressure Prediction module provides a complete workflow for interactive geopressure analysis, giving you 1D models at well locations and 3D models from seismic velocities using a number of methods.



**TOP LEFT:** Well ties, forward modelling & Gassmann fluid substitution. **TOP RIGHT:** Interactive cross-plotting of volume data and statistical rock physics models. **BOTTOM:** AI-assisted lithology interpretation. BEX MC3D dataset courtesy of DUG Multi-Client.

# TALKING FLUENTLY WITH DATA AND HPC



Measure, edit, and map with confidence. DUG Insight seamlessly integrates your GIS and culture data into customisable, presentation-ready views. BEX MC3D dataset courtesy of DUG Multi-Client.

**CONVERSE  
WITH OUR HPC  
OR YOURS.**

**QUICK  
CHATS WITH  
OTHER  
SOFTWARE.**

#### Let's connect

Our Petrel™\* Link, Kingdom™ Reader and GEOH5 Link allow you to migrate and synchronise all your project data—including horizons, faults, and wells—with ease.

#### (Number) Crunch time

Use DUG Insight on the DUG HPC Cloud or deploy it seamlessly on-premise.

#### Intuitive ease-of-use

DUG Insight handles the computer science for you, dealing with everything from cluster management, scheduling, memory usage and task sizing.

This makes interactive processing inherently intuitive, allowing you to focus on the geoscience.

#### Real-time feedback

Because DUG Insight doesn't force you to run heavy batch processes just to test a parameter, workflows that used to take hours or overnight to run can be tested and QC'd in seconds.

#### Flexible licensing

With a range of options to suit every use case, all inclusive of maintenance, support, and upgrades, you will always be up-to-date and ready to go. And DUG Insight is always free for students!

\*Mark of Schlumberger

# SAY IT YOUR WAY

**CUSTOM CODE.  
NOW YOU'RE  
TALKING!**

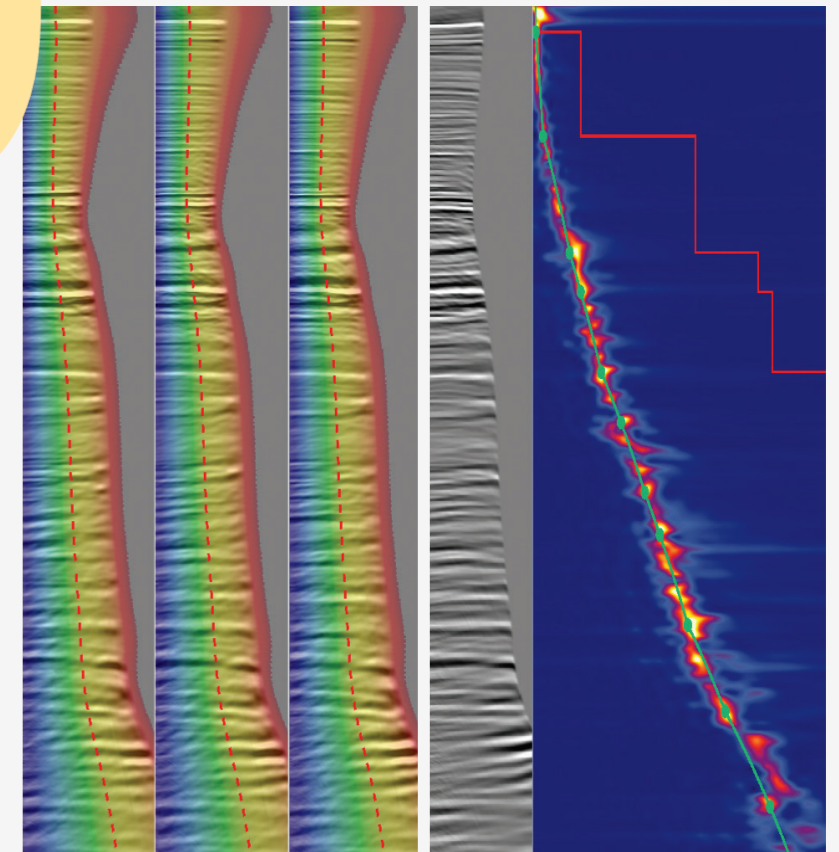
The most important language DUG Insight speaks is yours. Do you have a custom algorithm, a proprietary filter, or a unique workflow? Insight's API lets you integrate your custom code directly. Or if you need just a little bit of help or technical advice, our support team is listening.

#### Your code, your IP

Create custom processes that run inside a standard workflow or build custom standalone jobs. The best part? No extra licensing is needed, and you keep all your intellectual property and code.

#### Talk to Insight

The API supports popular languages like Java, C/C++, C#, and scripting languages like Python. You can wrap existing code or call external applications.



Interactive velocity picking in DUG Insight.

#### Seamless integration

Your custom code is treated as a first-class citizen. Insight generates the user interface, handles database persistence, and automatically manages parallelisation. With the DUG Insight API, you're not just a user—you're a developer too.

#### Your HPC

We can help you customise your HPC ecosystem too. From computing on the edge with DUG Nomad to data-centre feasibility and design to our energy-efficient immersion cooling technology—let's talk.

#### Round-the-clock support

Our acclaimed technical team provides tailored, round-the-clock, rapid same-day support. We're not just selling technology; we're partnering with you for success.

# INSIGHT ON THE EDGE

LET'S TALK  
SOVEREIGN  
DATA  
PROCESSING.



**To align with regional digital mandates, operators are increasingly bypassing traditional foreign-hosted cloud models in favour of in-country sovereign compute capabilities.**

**Zero data-latency with complete sovereign control:** DUG Nomad is a mobile, rapidly-deployable, high performance computing (HPC) solution that can operate in constrained and extreme environments. It is also, more generally, a solution for sovereign HPC outside traditional data centre environments, all while addressing heat and humidity constraints, and hybrid hardware architectures.

DUG Nomad brings the full spectrum of data processing capabilities directly to the data—enabling in-country seismic processing, including elastic MP-FWI imaging, with DUG Insight. Let's talk.



VISIT [DUG.COM](https://dug.com)  
FOR MORE INFO

