

Headwave Architecture

Our technology is based on two principles – smart compression of multi dimensional data and number crunching using modern Graphics Processor Units (GPU) rather than the CPU (See tech-box). This combination of features allows us to store, retrieve, display and manipulate Terabyte size data volumes in real-time.

SOFTWARE ORGANISATION

The Headwave Core

All Headwave software modules rely on the Headwave Core. The Headwave Core contains the compression and data management routines. In addition data operations are implemented (on the GPU) to reformat, enhance and even carry out basic processing tasks on your seismic and related data, in real time. Future modules will implement specialist algorithms by extending the core.

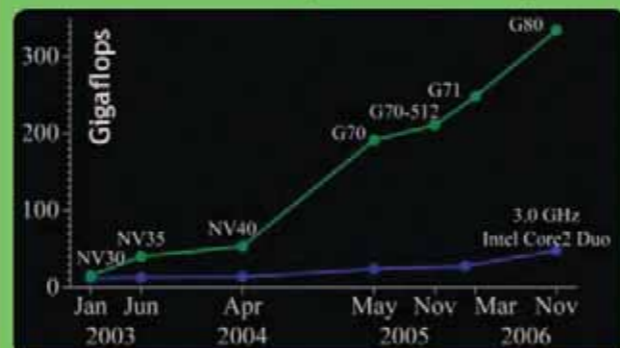
The Headwave, QC and Data Discovery Module

Has been designed for rapid visual QC, of multi dimensional data sets. View your data using juxtaposed views, probes, projection to a lower dimension onto in line cross line, time-slice or imported horizon surfaces. Link your prestack data to your stack data, well locations and tracks. Use the Headwave Core to calculate new attributes or manipulate multiple volumes.

Headwave, QC and Data Discovery in Petrel

Headwave now offers a plugin to Petrel, allowing users to view their prestack gathers intuitively linked to inline or crossline slices through their poststack volumes, with the same ease as the Headwave application. This is a seamless user experience- so tightly integrated, the user is left unaware that prestack visualization is not native Petrel functionality.

Tech-Box – GPU-CPU performance comparison.



Utilising the GPU on a current G8G workstations the power of more than twenty Intel Quad Xeon's is available

Maximum performance vs cost on current investment
Upgrade GPUs off the shelf. The trend of frequent doubling performance on GPUs is set to continue

Headwave™

Everything prestack

Software Requirements

DATA DISCOVERY STANDALONE:

Microsoft Windows or Linux, 32bit or 64bit

DATA DISCOVERY PETREL PLUGIN:

Headwave Prestack for Interpreters 2007 license

Client Hardware Requirements

Intel or AMD (single or multi-core)

OpenGL 1.4 compatible 3D accelerated graphics card

2GB memory (or more)

Internal or external storage to hold compressed data

Headwave™
Everything prestack

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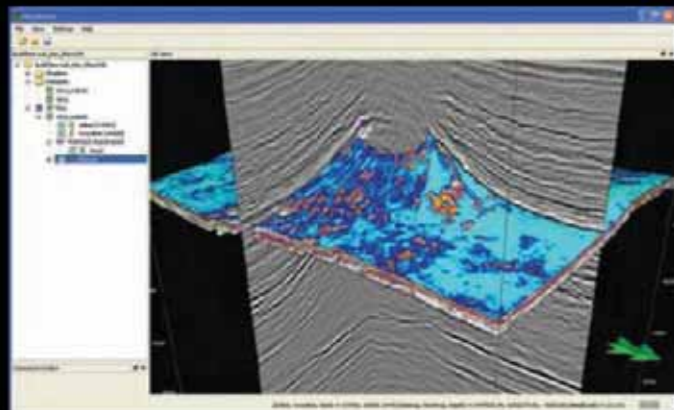
- More Than Just Visualization

DATA DISCOVERY -WITH HEADWAVE

DATA DISCOVERY -WITH HEADWAVE

Imagine:

- Full access to your prestack data – every line, every cdp, every offset
- Access fast enough that you can interact with all your seismic data, on a standard workstation
- Views of your prestack data juxtaposed with your inlines, crosslines, horizons and wells
- Prestack data projected onto in lines cross lines and horizons
- Flipping through volumes from different generations of a 4D monitoring project



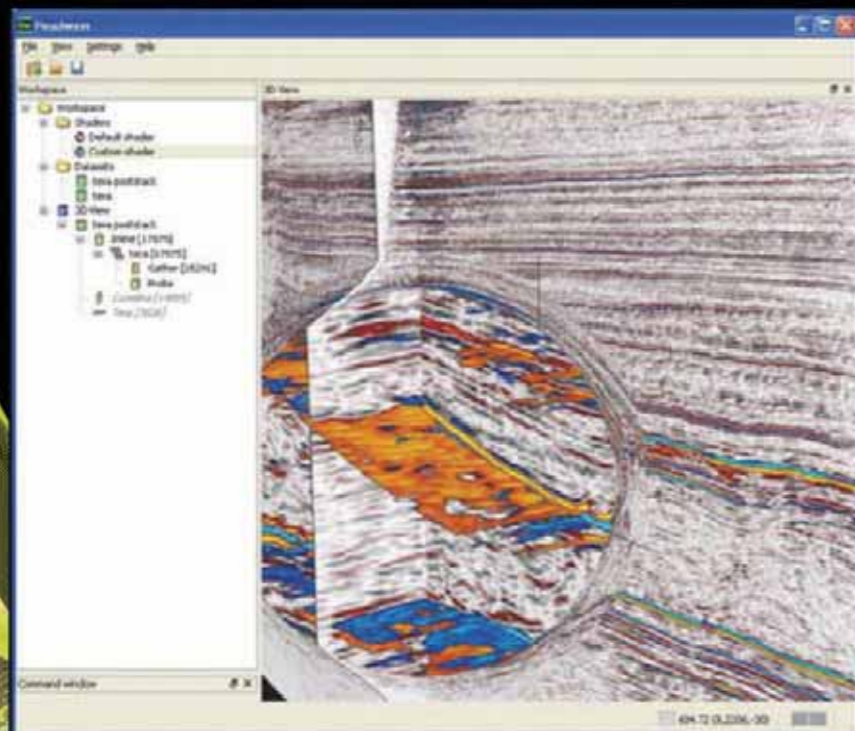
*"You don't need to imagine any more
Headwave Data Discovery is here"*

Benefits:

Bringing prestack seismic data into the domain of the E&P geophysicist enables full data availability for:

- QC of geophysical processes
- Better assessment of the validity of interpretation
- Assessment of reliability of data for use in further studies
- Rapid and more detailed workflows in the prestack domain, such as survey wide AVO reconnaissance
- Completely new workflows only available in the prestack and multi-attribute domain

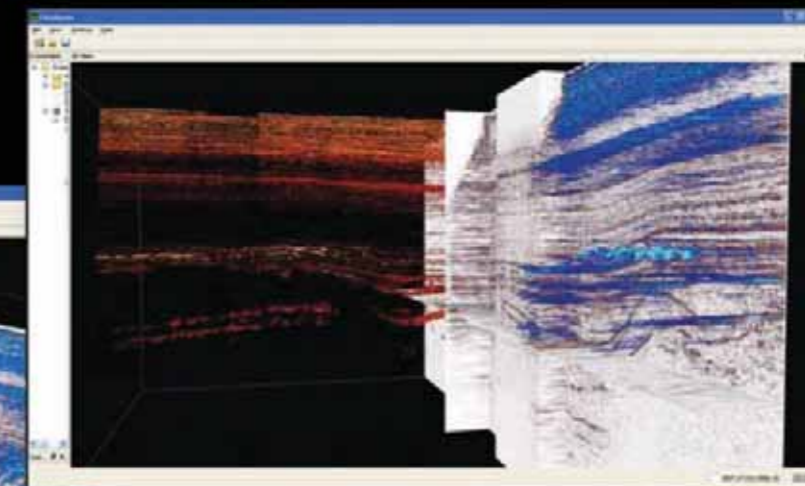
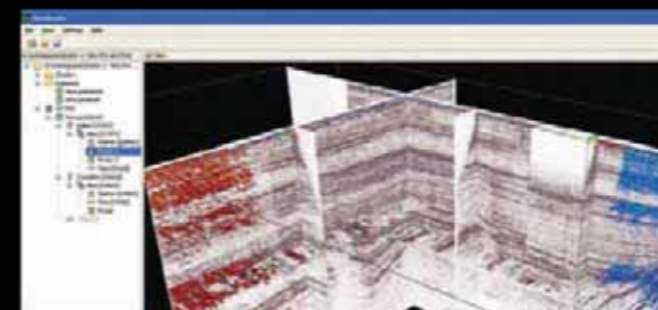
Your stack volume is noisy in a particular region:



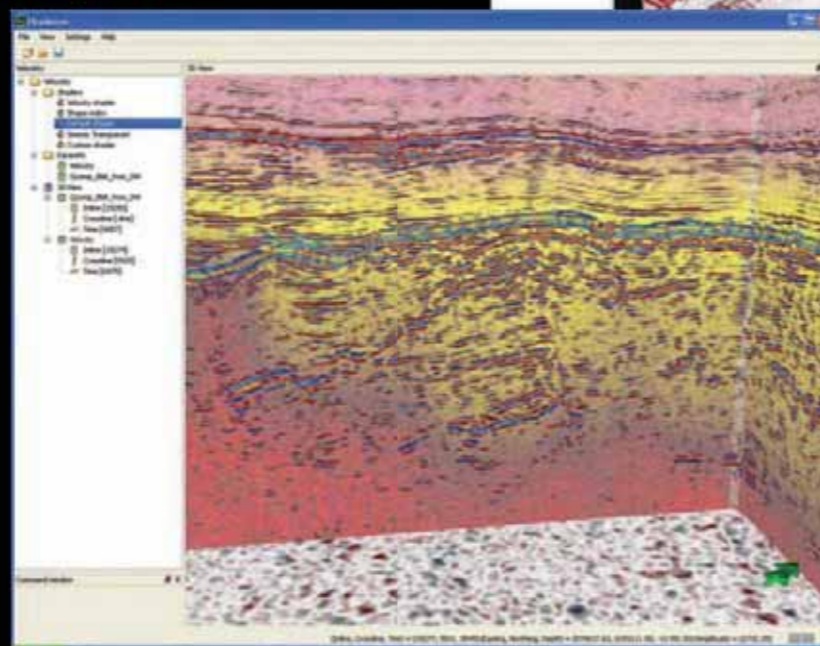
- Pull up the gathers do they show noisy inner or outer traces? - identify where you need to re-design the mute.
- View high and low amplitudes in a volume rendered 3D probe. Is there evidence of uncorrected move out? -identify locations for velocity analysis, and higher order move-out correction
- Switch on the magnifier to see details while preserving the data context

Modelling indicates that your prospects should have amplitude support

- You have correlated candidate top and base reservoir and identified potential targets.
- Import the horizons to Headwave – or work directly within Petrel
- Pull up the gathers, do you see an AVO effect?

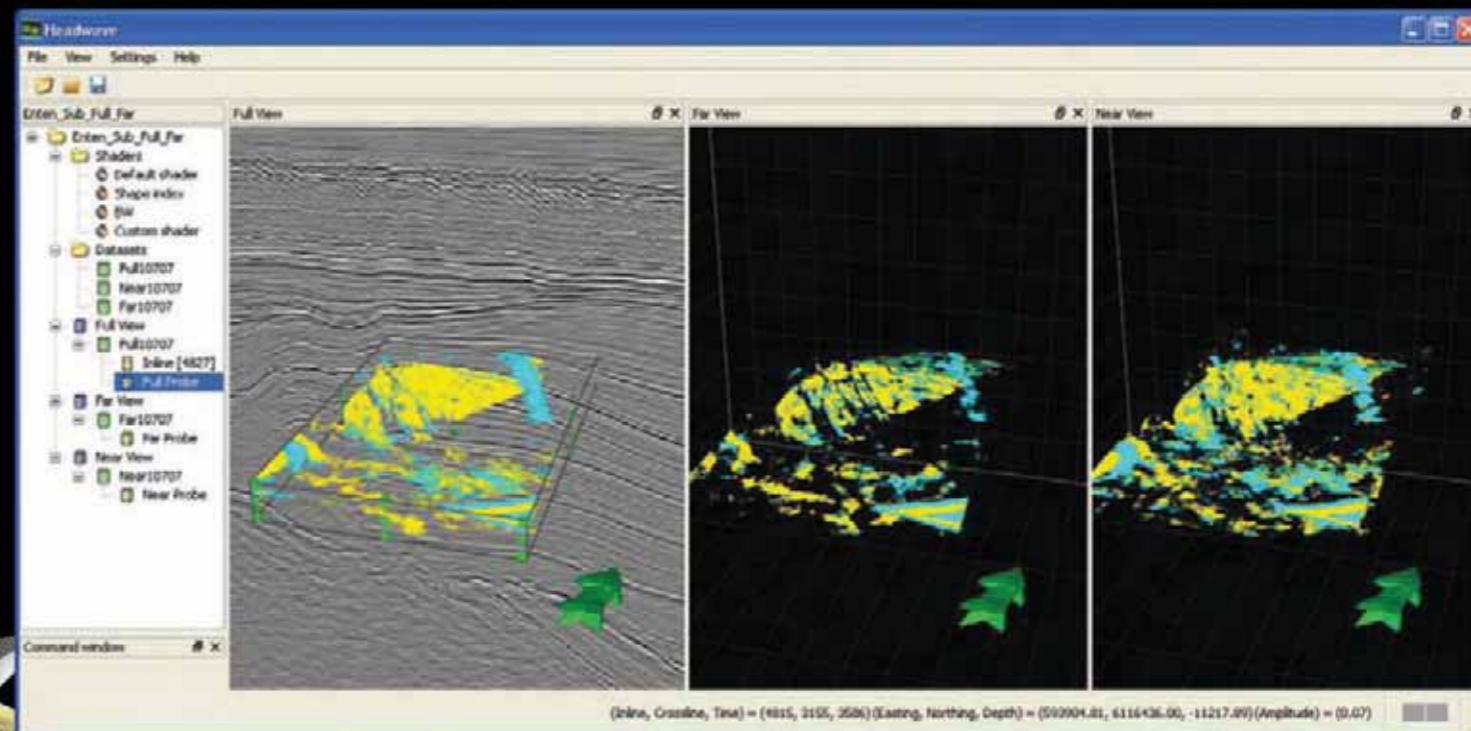


- Pull up inline and/or cross line gather volumes. Is the AVO effect spatially consistent, and consistent with the model?
- Project the offset data onto a horizon and cycle through the offsets in turn. Does the AVO effect conform to structure?



You want to view impedance derived porosity and fluid indicator simultaneously

- Define a probe in one view, parallel to the 3D axes or windowed on a layer
- Open a second 3D view with a copy of the probe, drop your second data set into the probe
- Adjust transparency to enhance the sweet spots - Move the probe in one 3D view and all probes move together



(Inline, Crossline, Time) = (4815, 3155, 3506) (Easting, Northing, Depth) = (502904.81, 6116436.00, -11217.89) (Amplitude) = (0.07)