

OMNI 3D

Seismic survey design software

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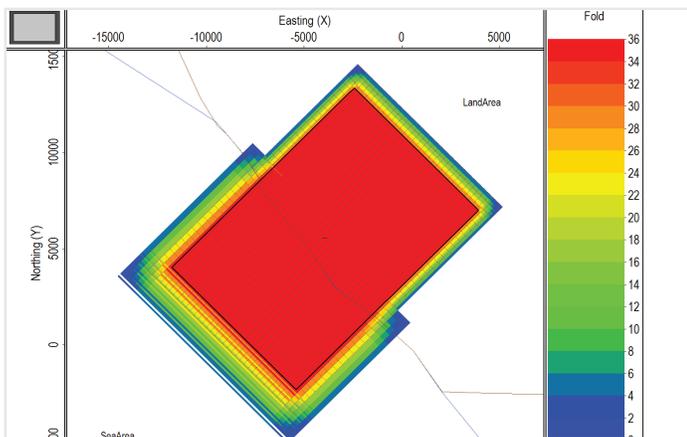
Seismic survey design software

Robust Survey Design and Modeling Software

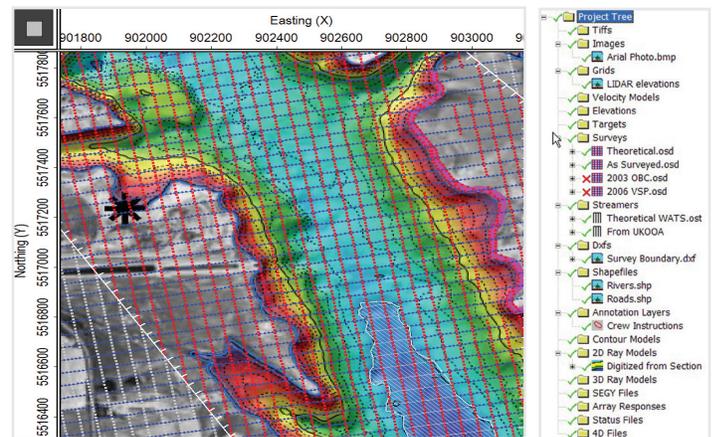
OMNI 3D* seismic survey design software is the industry standard for seismic survey acquisition design, modeling, and analysis. OMNI 3D software delivers fully optimized 3D designs for land, marine, transition zone, vertical seismic profile (VSP), and multicomponent surveys. Unleash the power of its advanced analysis modules to investigate potential geometry issues, resolution, or migration effects. Sophisticated tools, an easy-to-use interface, and versatile multiproject handling make OMNI 3D software the choice for specialists around the globe.

OMNI 3D software is available in two cutting-edge packages to meet your specific needs

Component	OMNI 3D Software Layout	OMNI 3D Software Workshop
Land, marine streamer (including circular acquisition), ocean-bottom cable (OBC), and VSP	X	X
Survey layout and geometry	X	X
Scripts	X	X
Bin analysis and statistics	X	X
Design comparison	X	X
Target parameter analysis	X	X
2D ray models and ray tracing	X	X
Array response for sources and receivers	X	X
Status of acquisition progress	X	X
Theoretical, preplot, and postplot comparison	X	X
Plot montage	X	X
Footprint analysis		X
Target illumination		X
Depth cube		X
3D ray models and ray tracing with anisotropy		X
Synthetic SEG Y volumes		X
5D interpretation, prestack time migration (PSTM), stack array, and velocity uncertainty		X
Fresnel zone binning		X
3D grid modeling		X



OBC survey design.



Survey including station edits overlaid on bathymetry imagery.

Flexible

OMNI 3D software handles unlimited multisurvey project types with an intuitive project tree for easy management

- Land
- Marine
- OBC
- Transition zones
- VSP



Compatible with all possible project sites.



Daily updates between design and acquisition teams.

Dependable

Aggressive product development cycle

- Annual software release
- Regular product updates
- User development surveys
- University consortium research membership

Worldwide software training program

- Public and private courses
- Software-specific and theory-based courses

Arsenal of DVD and web-based user resources

- Tutorials
- Videos
- New product features manuals
- Frequent addition of knowledge-base articles
- Tech notes

Practical

Operating system

- 64-bit Microsoft® Windows®

Minimum system requirements

- Standard off-the-shelf hardware
- Optimized for multicore hardware

Data compatibility

- All common file formats

Convenient

Versatile licensing options for individual or shared usage

- Portable USB license key
- Networked USB license key

Flexible license purchase or rental plans

- Flexible purchase options and annual maintenance
- Annual lease
- Short-term rental
- University consortium partnerships available

Efficient

User-oriented software

- Learn the interface easily

Data loading and data export

- Import field data from industry standard formats (SPS, INOVA Hawk®, SEG-P1, P¹/₉₀, and P¹/₁₁)
- Export designs for the field in industry standard formats

QC tools

- Create summary reports of design parameters and survey statistics
- Generate 2D charts displaying statistical information about the design (rose diagrams, trace count, azimuth distribution, offset distribution, KxKy plots, etc.)
- Compare surveys and their analyses using map boxes in Plot View
- Overlay bin information on individual bins within the survey
- Toggle between survey or status files within Bin View
- Compare statistical differences between designs
- Visualize effect of your design with interactive modules
- Create offset vector tiles (OVTs) and compare continuity between them to prevent artifacts from entering the data during processing
- Compare all OVTs as planes within a status file

Multiproject handling

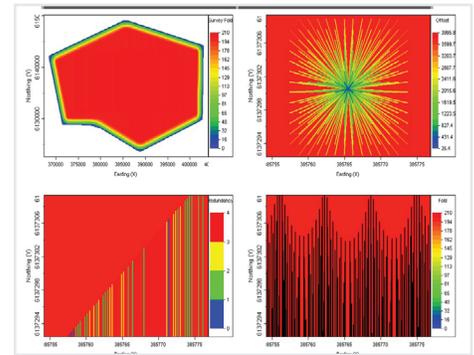
- Create multiple surveys or versions of the same survey within the same project for easy comparison and QC

Full suite of editing tools

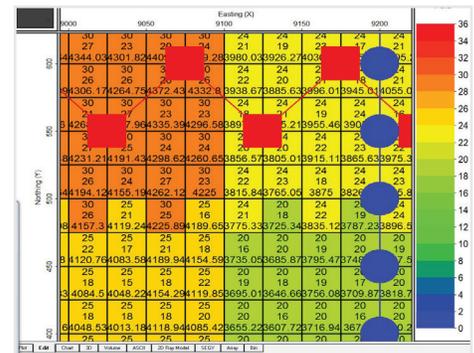
- Easily edit one or more station positions using editing tools and wizards
- Edit shot and receiver stations separately or concurrently
- Undo your changes within the wizards
- Create and update attributes
- Use color-coded stations based on attributes

Imagery and elevation data

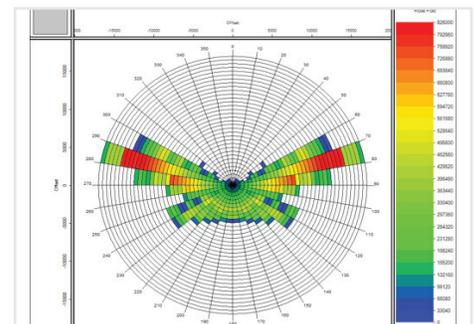
- Acquire aerial images and elevations with free download from Microsoft Bing® Maps or from private web map service server
- Set station elevations from a variety of sources



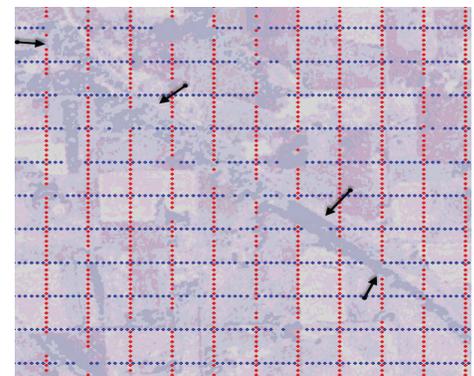
Daily comparisons using the plot-view map.



Overlay of bin statistics on fold analysis.



Marine survey design rose diagram.



Exclude stations based on image properties.

Effective

Unbiased solution designs

- Rely on survey design wizards (3D, OBC, 2D, theoretical streamer, and coil) and their informative messages to guide you to a satisfactory design
- Use flexible dialogs and wizards for the freedom to place the station where needed for more complex designs
- Select from a range of script shooting modes including ppattern- and area-based
- Modify or design your own shooting mode

Performance improvements

- Read and write files larger than 2 GB
- Take advantage of all memory available on your hardware

Additional utilities

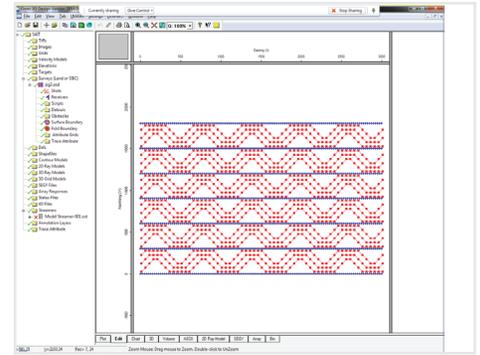
- Convert external data formats
- Decimate datasets
- Modify your input data

Versatile obstacle and detour tools

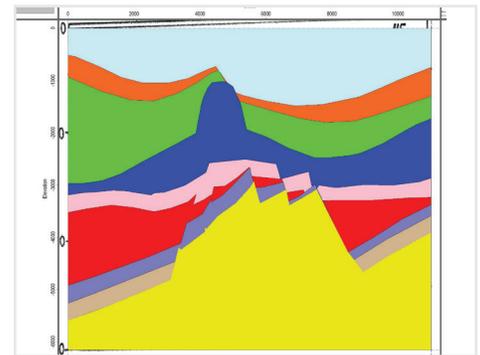
- Conduct undershooting for marine surveys
- Obtain precise representation of streamer vessels
- Create polygon-, corridor-, and point-type obstacles and detours for land, OBC, and transition zone surveys
- Apply individually or to a group
- Apply in multiple directions, with smoothing available

Montage plotting and reporting

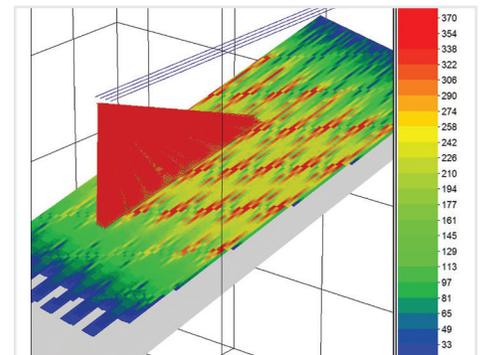
- Create sophisticated scaled plots that include side labels, 2D and 3D maps, charts and parameter lists
- Generate custom reports that contain embedded tags to easily reproduce project reports
- Add color, images, and other textual enhancements
- Generate standard reports
- Work with a large variety of custom tags (bin statistics, bin values, script values, chart values, and shot and receiver information)



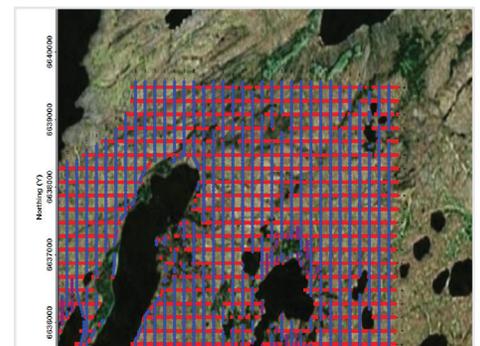
Zigzag survey created using the pattern dialog.



Digitized 2D horizon from PDF.



Streamer fold map on a dipping horizon.



Survey displayed on Bing Maps.

OMNI 3D Software Layout

Essential tools for acquisition design, editing, and monitoring

Design tools

- Use wizards to design land, VSP, streamer, OBC, and ocean-bottom node (OBN) survey geometries
- Design complex geometries using the complex tile, pattern tool, or empty survey
- Create scripts using simple or complex shooting schemes
- Edit surveys using sophisticated editing tools
- Analyze and compare multiple survey geometries
- Import and export data in all common formats
- Integrate DXF, TIFF, shapefile, and other culture data in multilayered projects
- Apply culture data properties to make survey edits
- Output complex scaled plots, including user-defined labels and annotation to any Windows printer

Target module

- Create 3D target horizon models using imported horizon data
- Calculate survey design parameters, such as bin size, maximum offset, and migration aperture required to illuminate the target horizon

Status module

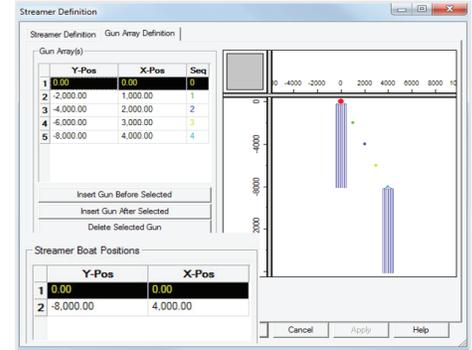
- Monitor daily seismic acquisition progress
- Detect coverage gaps with real-time binning
- Access 2D ray model module
- Build complex 2D geologic models
- Digitize horizons on imported model images, such as stacked sections
- Import models from LAS well logs
- Calculate design parameters using interactive ray tracing
- Analyze migration, absorption, and dip moveout (DMO) processing effects
- Create 2D synthetics using surface, VSP, OBC, and interwell geometries
- Model P-wave (PP), S-wave (PS), amplitude variation with offset (AVO), and multiples

Array module

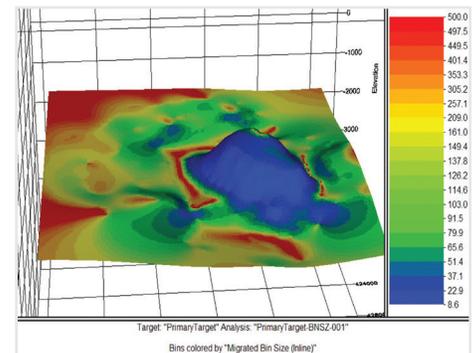
- Examine the horizontal and vertical effects of 1D or 2D geophone, shot, and stack arrays
- Calculate intra-array statics
- Analyze stack array effect on 3D survey geometries

4D module

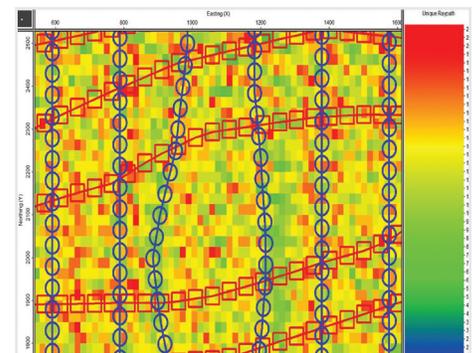
- Analyze the accuracy of time-lapse surveys using a flexible user-defined error function



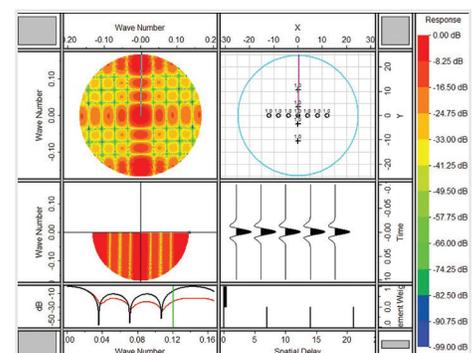
Staggered marine design dialog.



Map of migrated bin size on target horizon.



Map of 4D survey showing quality of repeatability.



Response of combined shot and receiver array.

OMNI 3D Software Workshop

The complete package

Advanced analyses module

- Assess 3D geometry effects on DMO, poststack time migration, multiples, and noise
- Analyze potential 3D geometry artifacts (footprints) using existing 2D seismic traces
- Estimate poststack time migration illumination using Fresnel zone binning
- Generate synthetic SEG Y data using survey geometry and a 3D model
- Build a depth cube of stack fold to analyze illumination at depth
- Analyze illumination on a subsurface horizon using any survey geometry
- Estimate trace quality using 5D interpretation
- Investigate AVO response with data statistics and QC displays

3D ray model module

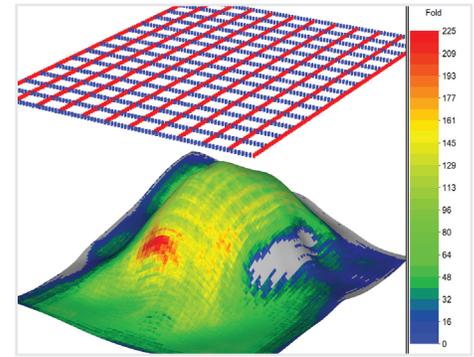
- Investigate parameters such as bin size, offset, resolution, and imaging (migration) effects
- Build multilayer 3D models, including surface topography
- Create horizons using theoretical parameters or imported horizons
- Model diffractions, reflections, and exploding horizons

Elastic wave equation module

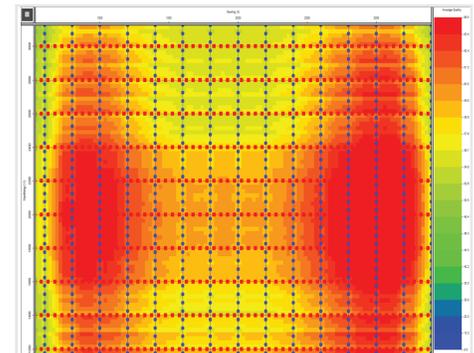
- Calculate elastic or acoustic wave equation response using a finite-difference solution
- Create full-waveform 2D synthetics using surface, VSP, OBC, and interwell geometries
- Import model parameters from 2D ray models
- Add user-defined velocity gradients and heterogeneity
- Output real-time movies of shot wavefronts in Microsoft AVI format
- Monitor calculations interactively
- Work on multinode clusters
- Spread work across your LAN with the built-in cluster manager

3D grid modeling module

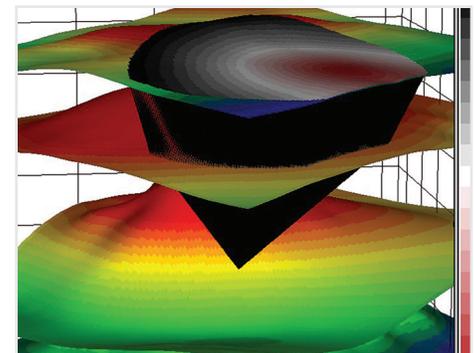
- Investigate parameters such as bin size, offsets, resolution, and imaging effects
- Build velocity cube with the target reflecting horizon
- Model diffractions, reflections, and shot-receiver ray paths
- Execute eikonal finite-difference ray tracing



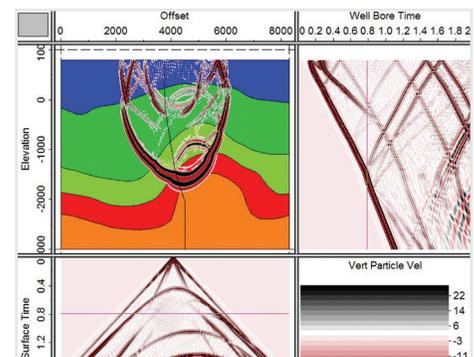
Illumination results viewed in 3D.



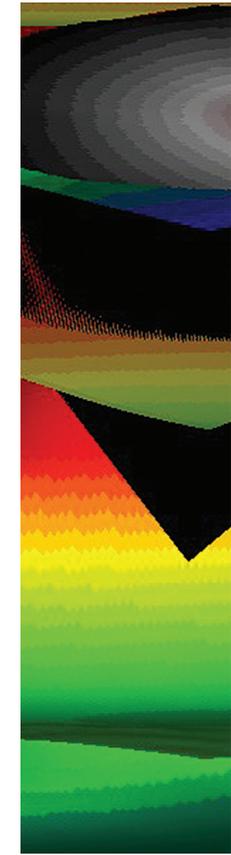
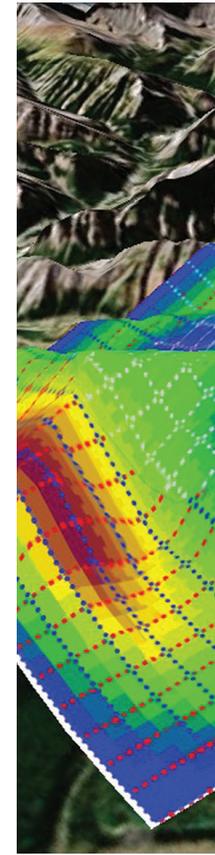
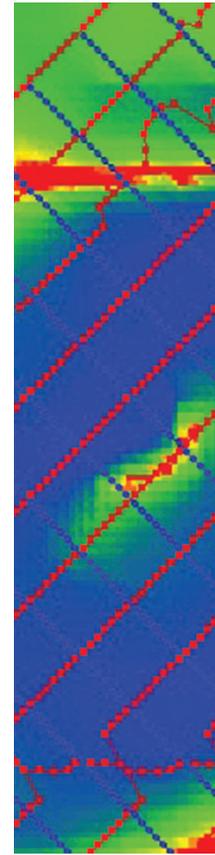
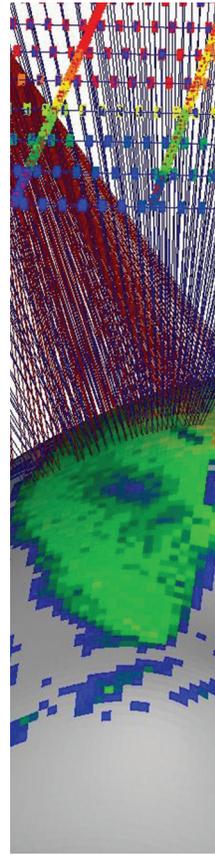
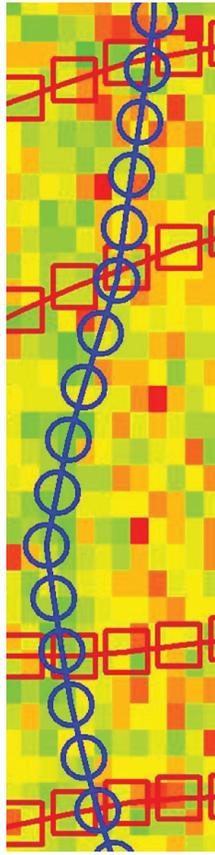
Map of trace quality with 5D interpretation.



Diffraction wizard on a 3D ray model.



Elastic wave equation model with surface and wellbore responses.



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