



*Abstract – November 2005*

## **Geophysical Workflows for Visualizing Surfaces Mapped from Seismic Data Using EnvisionVSX**

**by Dragan Ivancevic and Dave Birnie, GEOSEIS Inc.**

The use of Desktop Visualization Systems is valuable for timely and effective communication of: a) geological and geophysical interpretation and b) oil & gas exploration, exploitation and development opportunities. There is a number of systems in the market today representing a new wave of seismic interpretation toolkits. One example of such is Divestco's EnvisionVSX. As an integrated approach, WinPICS (or any external mappable data conditioned therein) will still be used to build a project and do the two-dimensional interpretation and mapping tasks. EnvisionVSX is to aid and view interpretations and gridded data in three-dimensions, and gain a greater insight into how all geological & seismic data within the project area fit together.

GEOSEIS Inc. has developed a process to visualize quality time and depth structure maps, resulting from interpreted 2D-seismic lines and 3D-seismic volumes, through a variety of technology modes. The identification process is of value to anyone interpreting seismic data to understand how it relates to the geological model of an area. The process of visualizing mapped surfaces is designed to be straight-forward and less technically demanding than regular exploration tools, using a mix of GEOSEIS' in-house tools to prepare both – mapped surfaces and seismic data. Any seismic interpretation software of choice can be used for mapping sub-surface events, which are eventually ported back to WinPICS, or they can be created directly in EnvisionVSX. EnvisionVSX's power and ease of use to view and interpret any surface, from any viewpoint and to rotate the dataset to look at it in 3D, facilitates a thorough understanding of the geometry in the sub-surface. Foreland Basins, for example, are one the most significant fields for deploying a visualization application, since such areas have sparse well control, insufficient seismic data or additional exploration information available. Using EnvisionVSX, other features can also be visualized: well bores (deviated and straight), well tops, consistency slices and "cloud formations" (distribution of seismic reflection strength in a three-dimensional sense). By linking well tops with interpreted horizons, assigning a global velocity function or from existing time-depth charts, EnvisionVSX generates it's time-depth information to effectively provide insight in both domains, time and depth.

GEOSEIS' integration workflow is intended to be effective regardless of where the input data originates. It is intended for Geoscientists, Engineers as well as Exploration Managers to support decision making. Projects are transportable to Client/Project locations for most effective use/need. Trends are indicating that visualization applications will go mainstream in a few years from now and become the ultimate tool to replace traditional two-dimensional interpretation systems.

[ivand@geoseis.ca](mailto:ivand@geoseis.ca)

[dbirnie@geoseis.ca](mailto:dbirnie@geoseis.ca)