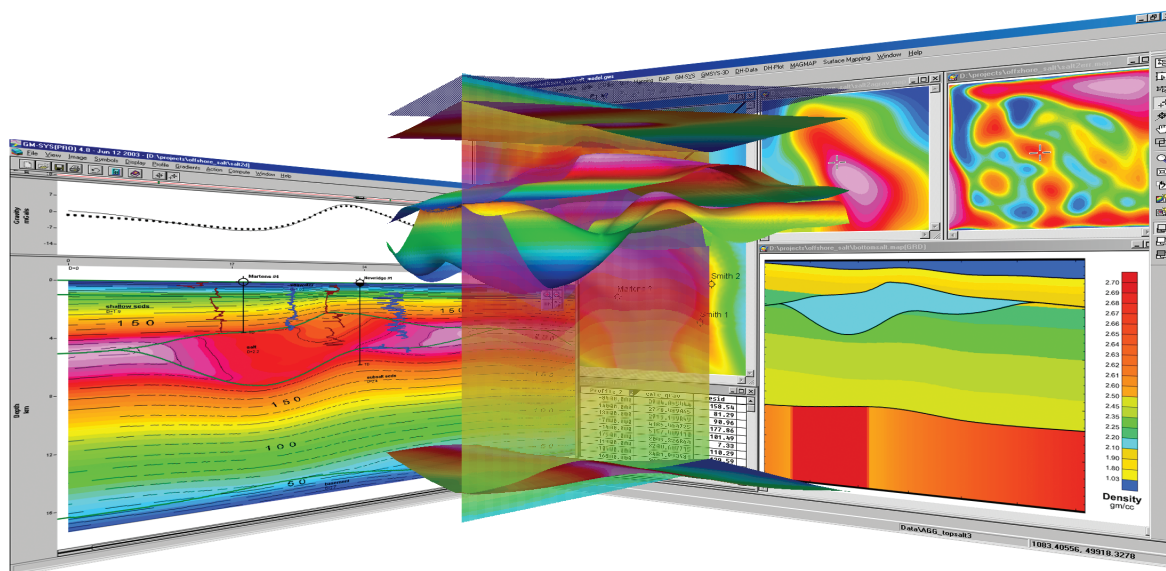# GM-SYS 3D

Powerful 3D insight from gravity and magnetic modelling

GEOSOFT®

Advanced Software for Potential Fields

GM-SYS is the industry-leading solution for gravity and magnetic modelling, supporting the work of international government surveys and the exploration programs of the world's most successful energy companies. GM-SYS 3D Modelling is gravity and magnetic modelling software for layered-earth models which provides the ability to model complicated 3D subsurface structures of any size or scale.

- Create insightful 3D models by integrating gravity and magnetic, and seismic data
- Plot 3D displays of the model in one simple step, while retaining control over each element in the 3D visualization
- Automatically update 3D visualizations during inversion and structure editing
- Add wells, seismic sections or volumes, or other vector or raster information to 3D model visualizations.
- Create a well-constrained model with the inversion tools
- Access the VALEM high performance computing (HPC) inversion service for recovering the base of salt in complex salt geometries

Full Featured and Adaptable

3D Layer Properties	Define property distributions within a layer as constant, horizontally varying, as a function of depth, or varying in 3D.
Viewing Model	Display models as individual 2D horizon maps, arbitrary 2D profiles, and 3D visualizations.
Integrate Gravity and Magnetics	Calculate the gravity and magnetic response grid for your model at any elevation surface above the model.
Integrate Seismic	Import and visualize seismic data to constrain your model.
On-the-fly Projections	Advanced projection engine allows for on-the-fly projections that can handle over 2000 datums and projections.
Editing Grids	Interactive grid editing tools.
Model Manipulation	Edit models to exactly your specifications, using inversion and other tools.
3D Inversion	Flexible and precise tools giving complete control over the inversion process.
Time-to-depth Conversions	Build models in time and convert to depth for gravity and magnetic calculations.
Compatibility	Export a GM-SYS 3D model to common formats including Geosoft voxels, UBC, and Gocad.
Unlimited Size and Quantity	Create realistic model structures with no limit to the number of layers or size of models.
Oasis montaj Integration	Access to plotting, projection, grid manipulation, filtering routines and complete Esri GIS data integration.
Support for Closed 3D Surfaces in GM-SYS 3D Models	Using closed 3D surfaces, you may represent arbitrarily-shaped bodies of any complexity in the models. Accurately represent geologic units that aren't easily represented by subhorizontal grids, such as convoluted and discontinuous allochthonous salt, dikes & plutons, or cave systems.

VALEM for GM-SYS 3D

High performance computing service for inversion modelling

VALEM is an inversion modelling service, offered as an integral part of the GM-SYS 3D workflow, that resolves the base of salt from gravity data bound by the constraints of seismic modelling. It leverages a unique hybrid approach that incorporates grids, geosurfaces, and 3D voxels to produce a more accurate representation of salt geometry and sub-salt density distributions versus traditional modelling methods. VALEM harnesses the power of Geosoft's advanced 3D inversion technology deployed in a high-performance computing (HPC) cloud.

Resolves Base of Salt	Improved, interactive solution for base of salt and sub-salt interpretation that resolves the base of salt from gravity data bound by the constraints of seismic modelling. Structural inversion optimizes the salt geometry to improve the fit to gravity data and improves imaging of base of salt/sub-salt environments.
Streamlined Inversion Workflow	Streamlined gravity inversion workflow saves significant time compared to traditional methods.
Hybrid Calculation Techniques	VALEM uses hybrid calculation techniques to do joint inversion on layers and voxels for more accurate representation of salt geometry and sub-salt density distributions.
High Performance Cloud Computing Service	Utilizes Geosoft's advanced 3D inversion technology deployed in a high- performance computing (HPC) cloud to speed up space-domain calculations.
Integrated with GM-SYS	Tight integration with the GM-SYS 3D workflow allows for the creation, and importing, of geological models and grid surfaces for constraining model results. VALEM results can be assimilated back into GM-SYS 3D models.

Integrated workflows within Oasis montaj

Fully integrated with the Oasis montaj platform, GM-SYS leverages Geosoft's wide range of capabilities for gravity and magnetic data processing, mapping, modelling and interpretation.

Explore more effectively

Create integrated 3D visualisation and models for Oil and Gas explorers identifying and characterizing potential reservoirs.

Use all your data assets

Optimized environment for integrating, viewing and comparing large volume geophysical, geochemical and geological data.

Make confident decisions

Accelerate data analysis to support effective interpretation and target selection in daily decision making.

Make successful discoveries

Maximize the accuracy of final interpretations, thus helping to improve the potential for successful discoveries, reduce risk and minimize costs.

Collaborate across disciplines

Effectively share and progress your results with team members and knowledge experts. Work together to better manage project risk, costs and timelines.

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