

## Introduction to 3D seismic bin grid

During acquisition of 3D seismic data a lot of effort is made ensuring that the seismic sources and receivers are correctly positioned. These are extremely expensive and valuable data sets and the need to maintain geospatial integrity during the lifecycle of the dataset is paramount in maximising the value of the data.

The geospatial awareness is at a high level in the planning and acquisition stages of the datasets lifecycle. It is, however, rapidly decreasing as the data is moved along the E&P value chain.

The value of geomatics competence seems to be underestimated in some stages of the E&P process, which results in weakening the integrity of the data, and may lead to suboptimal or wrong decisions.

Right: Seismic bin grid data with derived interpretation  
Below: Marine seismic bin grid data under acquisition

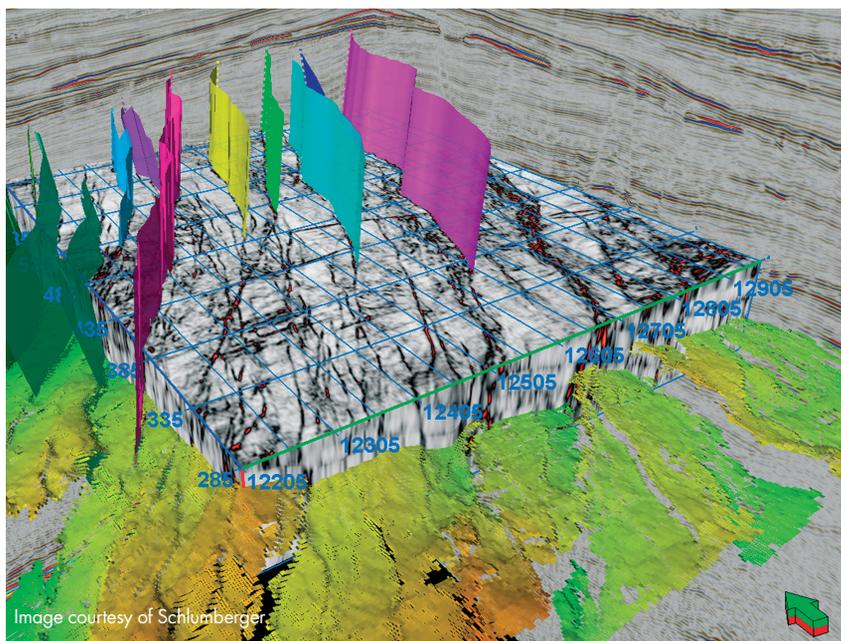


Image courtesy of Schlumberger



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The geomatics community has identified a number of stages in the workflow related to the use of bin grids where simplifying processing, visualisation and interpretation of seismic data has potentially degraded the spatial integrity:

- Traditional Workstations have built-in logic based on regular, orthogonal grids. The use of re-projected grids in such systems leads to distortions.
- Recent software developments have increased the user flexibility regarding integration of data from different origins.
- Building large regional projects with 3D datasets originated from multi Coordinate Reference Systems (CRSs) is a practise inducing severe challenges.
- Metadata related to a proper definition of the seismic bin grid is lost along the workflow.
- Different applications may handle the 3D seismic bin grids according to different principles. This is often not properly assessed when migrating data between different applications and databases. Simplifications are often made in order to serve performance.

### About OGP

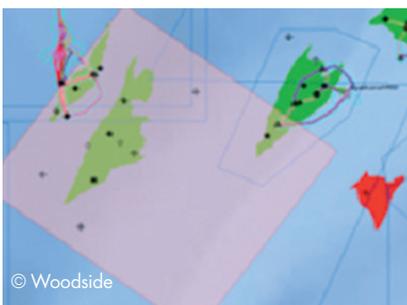
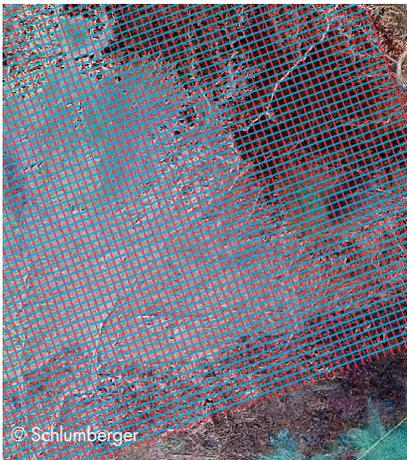
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London office: 209-215 Blackfriars Road, London SE1 8NL, UK Tel: +44 (0)20 7633 0272 Fax: +44 (0)20 7633 2350  
Brussels office: 165 Bd du Souverain, B-1160 Brussels, Belgium Tel: +32 (0)2 566 9150 Fax: +32 (0)2 566 9159  
Web: [www.ogp.org.uk](http://www.ogp.org.uk) E-mail: [reception@ogp.org.uk](mailto:reception@ogp.org.uk)

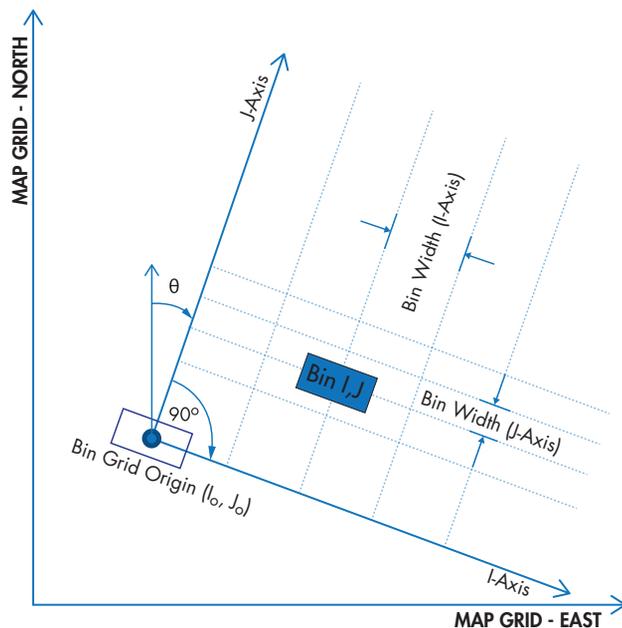
# Deliverables from the 3D seismic bin grid TF

The 3D seismic bin grid Task Force has been established within the OGP Geomatics Committee to deliver:

- A **revised P6 format (P6/11)** covering both the classical 3D bin grid definition as well as an option to exchange single bin nodes.
- **Guidelines** covering good practice for handling 3D seismic bin grids along the datasets lifecycle, including:
  - Utilisation of P6/11
  - Exchange of 3D bin grids
  - Operations within applications and migration between applications
  - Creating a mechanism to check Geospatial Integrity of the dataset from acquisition and throughout the entire data lifecycle
- **Test data and test methodology**, a possible extension of the GIGS dataset in order to perform stress testing of inter application operations and exchange between applications.
- **A GIS data model for 3D bin grids**. In order to enable visualisation in Geographical Information Systems (GIS) a GIS data model for the storage and visualisation of seismic bin grids will be developed.



Below: Relationship of bin grid to map grid  
 Top Left: Land seismic bin grid  
 Bottom Left: 3D bin grid presented in GIS



## Contact Us

For more information contact  
 Lucyna Kryla-Straszewska  
 (OGP Geomatics Committee Manager),  
[lks@ogp.org.uk](mailto:lks@ogp.org.uk)