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FRAUNHOFER INSTITUTE FOR INDUSTRIAL MATHEMATICS

ISIM – INTERACTIVE SEISMIC IMAGING AND MODELING

Objectives

- Salt dome modeling in real-time
- Interactive migration
- Visualization and geobody surface editing

Method

- Application based data compression by slantstacking and event picking
- Fast and interactive ray/beam migration
- Triangulated salt dome surface
- Interactive velocity model editing
- Desktop solution for editing and parametrization
- Cluster connection for migration, achieving high parallelization
- Modularized application interface

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Statoil

Statoil has initiated the development of a combined beam-stack migration with an interactive salt model editing functionality. This is to aid exploration in complex salt prone areas, where the salt modeling phase is often a time demanding excercise. This development is an underlying component of Statoil's ambition to become one of the leading oil companies in the field of seismic imaging and interpretation.
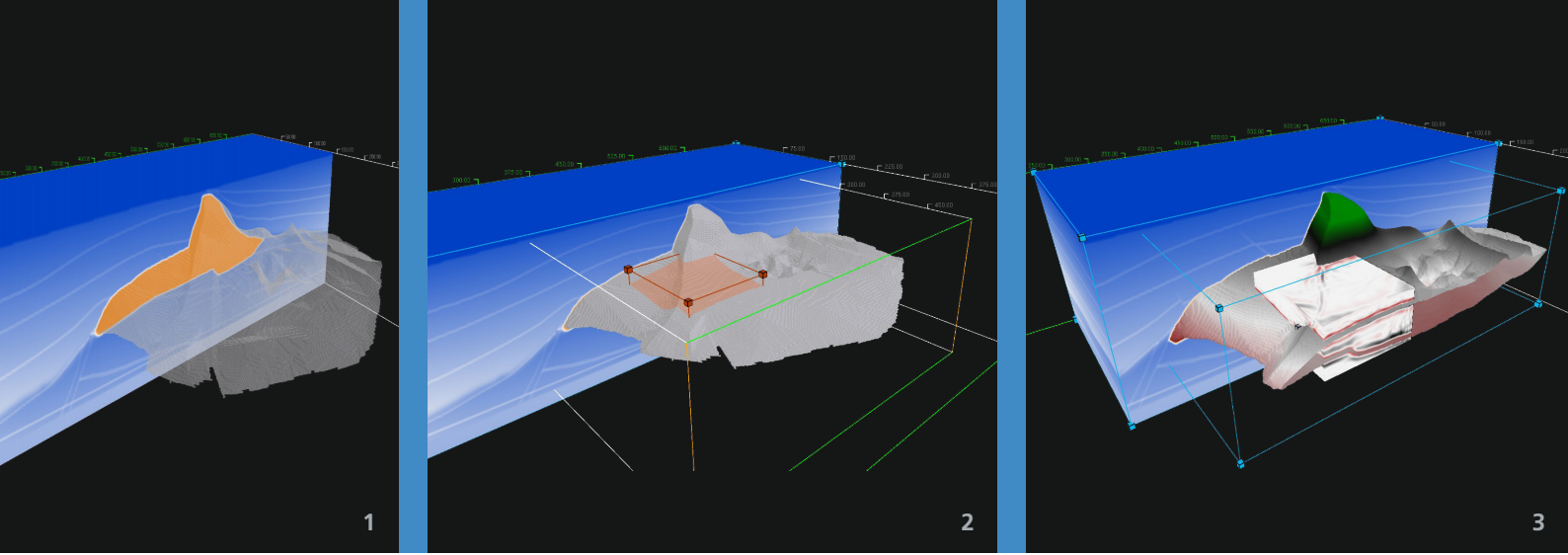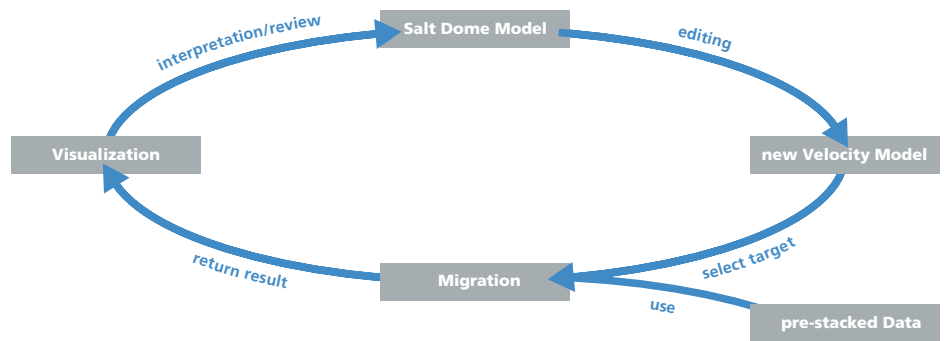
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Interactivity

- Real-time working cycle
- Migration result reacting on salt dome changes
- Salt dome edges visible in velocity and in seismic representation
- Multiple object visualization

Beam-Migration

Objectives

- Very fast migration tool
- Application for repeatable migration procedure
- Controlled accuracy
- Investigation of major subsurface reflectors in no time

Method

- Pre-migration summation by local slantstacking
- Adjustable compromise between image quality and completeness versus speed and image sparseness
- Event mapping or interpolation in slant-stack domain
- Automated event selection by slantstacks
- Beam focussing and data compression
- Isotropic, VTI, and TTI models
- High level parallelization