



State of PROMISE

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Structure of collaboration



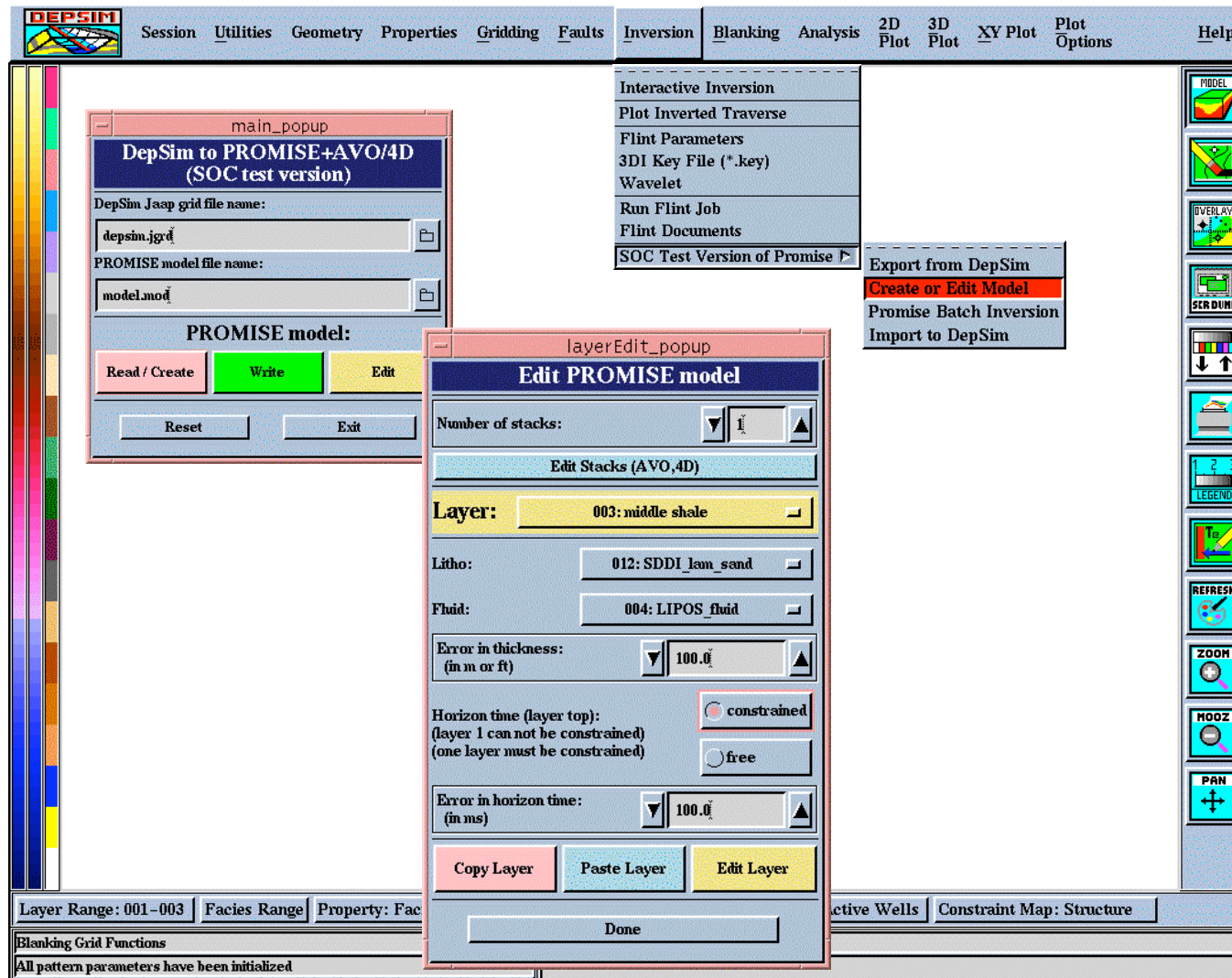
- **BTC**
 - interface with DepSim
 - rapid prototype of enhancements
 - LSF parallelisation, AVO, 4D
 - customize for Gulf of Mexico and other areas (local support)
- **RTS**
 - basic inversion engine construction and maintenance
 - enhancements and customization (distinct from BTC)
- **Common**
 - RCS (Revision Control System)
 - successful BTC enhancements can be quickly integrated by RTS and vice versa
 - regular video conferences and visits

Done to date



- **integration with DepSim**
- **AVO multiple stack inversion**
- **time-lapse inversion**
- **tested vs. FLINT**
- **applied to 4 fields**
- **LSF parallelisation**
- **read and writes VT files**
- **inversion done on business relevant time scale**
 - cycle time reduced to 8 calendar days (FRAM North Sea - Forties)
 - DepSim model built, petrophysical analysis, wavelet derivation
 - PROMISE and FLINT inversion
 - 1 day to invert 150x150 model with 7 layers (with LSF and 60 nodes)

Number of steps reduced and menus made more DepSim like



New interface for doing PROMISE inversion



Master_Menu_popup

**PROMISE+AVO/4D
(SOC test version)**

Inversion (metropolis)

Number of Realizations: 200 Number of Models: 100

Input Model File: model.mod

Input Jgrd File: deptsin.jgrd

Output Directory: trk600_post

Input Seismic: VT Output Seismic: SIPMAP

Time Range (ms)

Minimum: 2000 Above: 30

Maximum: 4000 Below: -30

Track Range

Minimum: 600 Maximum: 600 Increment: 2

Bin Range

Minimum: 2500 Maximum: 8100 Increment: 25

Load Parameters Save Parameters Edit Parameters

Ok Apply Reset Exit

Metropolis_Menu_popup

Metropolis Inversion

Distribute Inversion: Yes

Number of Traces Per Job: 10

Additional Options for the bsub Command: -q 'priority'

Entropy Step Threshold: 0.0

Ratio Log Threshold: 0.6

Maximum Number of Loops: 100

Step Size: 0.4

☐ Fitted Distribution ☒ Estimated Posterior

Ok Re

Diagnostics_Menu_popup

Diagnostics

☒ Yes JGRD Files ☐ No Synthetic Traces

☒ Yes GRD Files ☒ Yes Average Synthetic Traces

☐ No Detailed ASCII ☒ Yes Chi-squared Trace

☒ Yes Chi-squared

☐ No L&M Traces

☒ Yes Average L&M Traces

Variable Definition File: model.def

Statistical Parameter File: model.prg

Ok Reset Cancel

The future



- **sensitivity analysis**
- **spatial correlation**
- **display enhancement (multiple models)**
- **optimization**
 - matrix
 - annealing
 - time constraints
- **4D pressure changes**
- **RNMO**
- **AVF**
 - analytic theory
 - Bell and Brushy model
 - REX model of model