

Expediting 4D seismic spectral decomposition analysis of the Sleipner field, through an innovative lightweight application architecture

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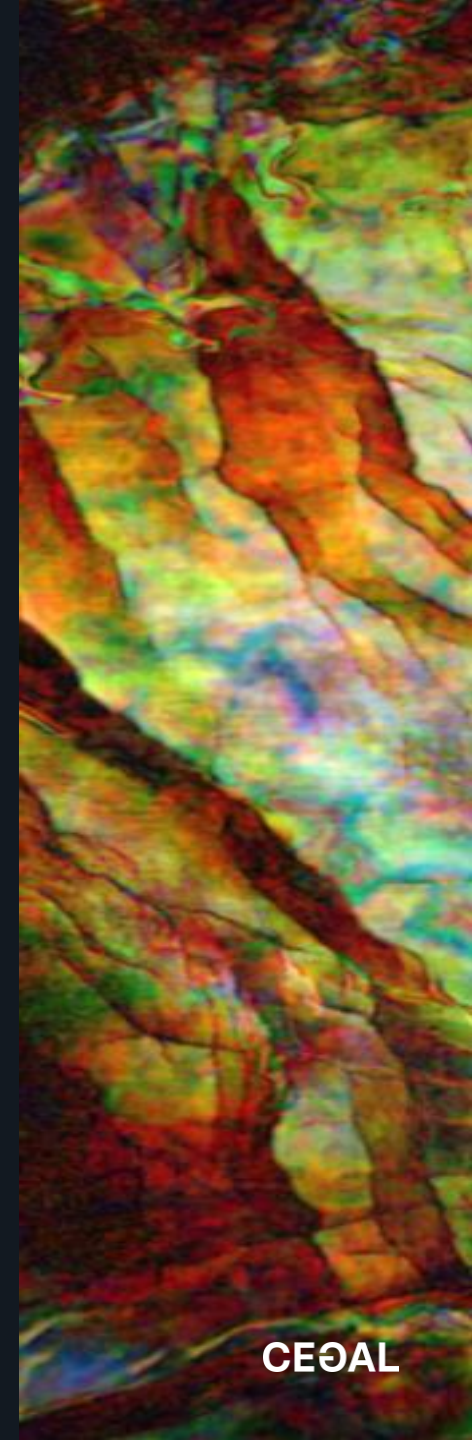
The Cast: Sleipner and Avary

- **Sleipner 4D** : The Sleipner 4D Seismic Dataset is a reference dataset from the Sleipner CO2 storage site. Several seismic surveys have been carried out at the site with the baseline survey being undertaken in 1994, prior to the commencement of injection.

Thanks to **Equinor**!

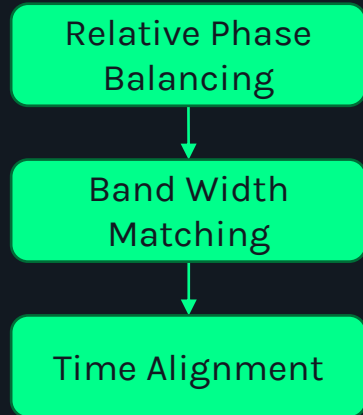
- **Avary**: An innovative software to efficiently analyse large poststack seismic datasets (i.e.: multiple angle stacks, multiple vintages, multiple frequencies).

Avary has been developed in collaboration with AkerBP and is now commercially available.

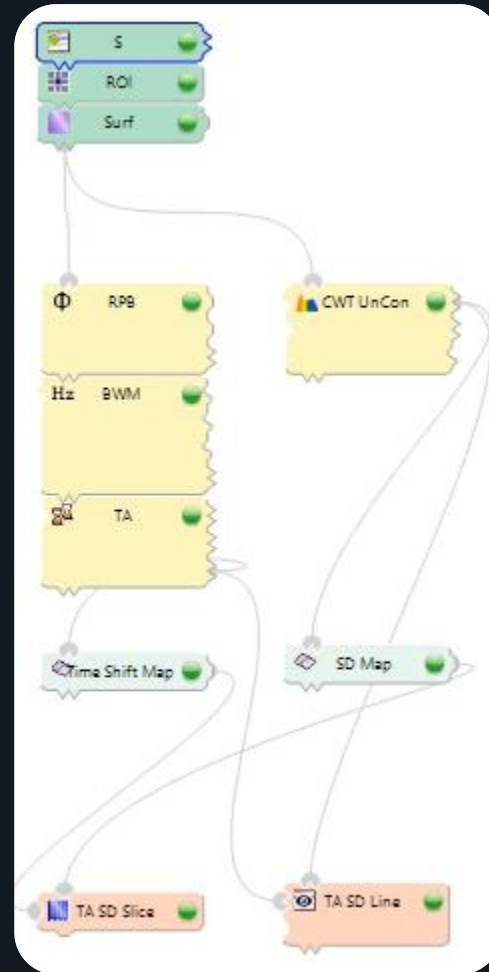


Chapter 1: Introduction

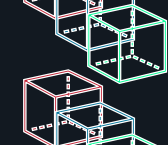
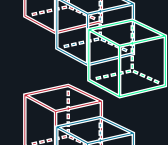
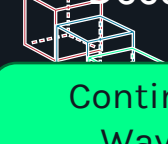
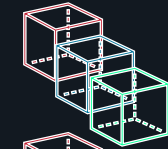
WF1: Seismic Data Conditioning



Avary's workflow design



3 Stacks
x7 Vintages=
21 Input volumes



WF2: Spectral Decomp



Max Freq

Max Mag

F1

F2

F3

F4

F5

F6

Time Strain

9x21 =
189
Seismic products

Chapter 2: The challenge

189 Seismic products

Assumption – 1 GB input volume

x189 =

189 GB

of seismic data to store, load, visualise, and analyse.

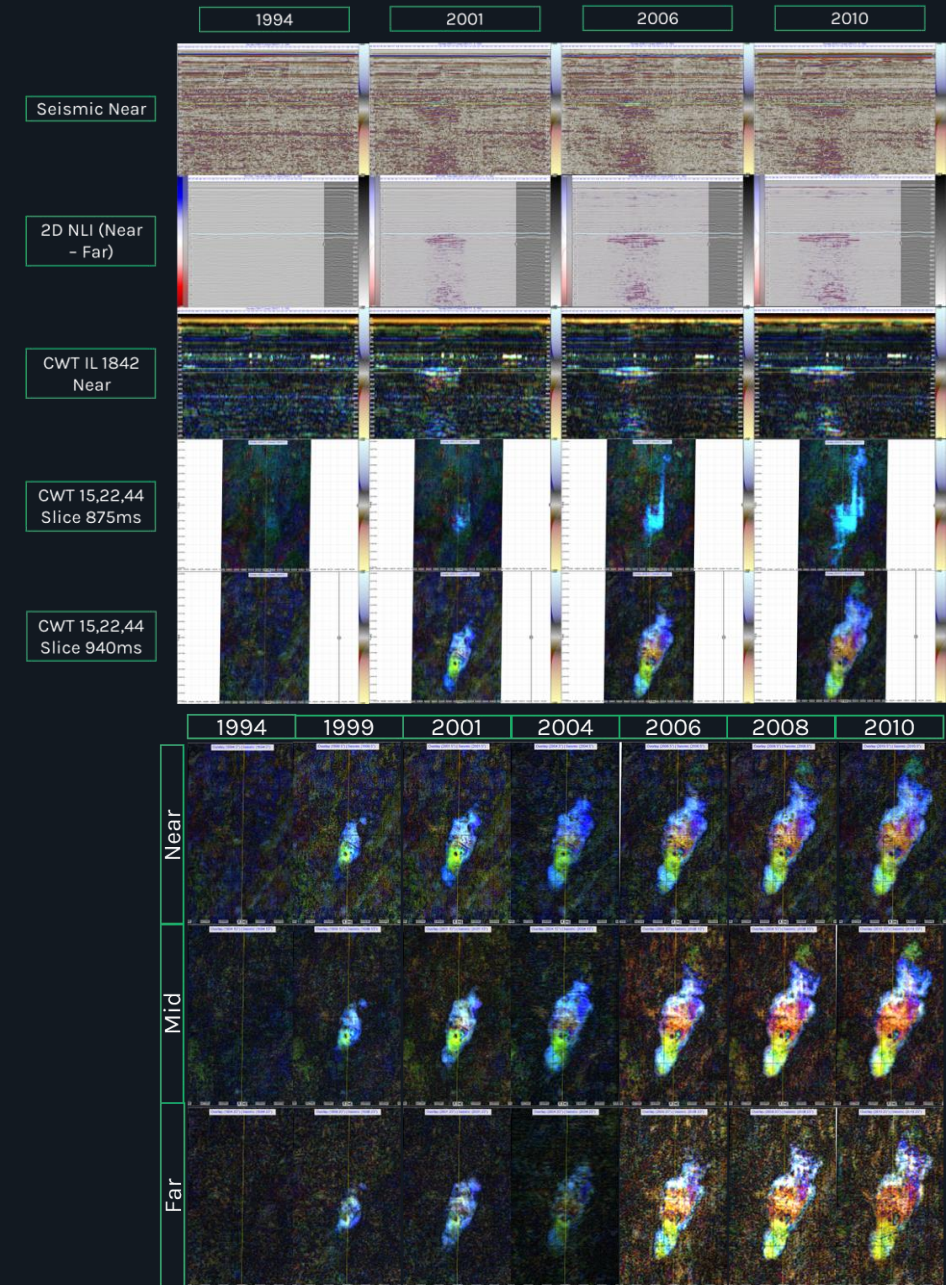
Geophysicists need solutions that drastically reduce the time spent generating, visualising and analysing seismic data, while limiting its storage overhead.



Chapter 3: The solution

Synopsis

- Avary allowed us to generate and interact-with 189 seismic products to better image the 4D behaviour of the Sleipner gas plume, in hours.
- Only the workflow and QC views where stored and cached.
- Avary's reimagined software architecture allows to:
 - Expedite the generation of high-quality seismic attributes.
 - Interact with 100's of seismic products virtually.
 - Save time and money.
 - Avoid the generation of unnecessary seismic data.
 - Improve decision making in E&P settings, e.g.: to drill or not to drill?



Avary changes the way we work with seismic, interactively and across domains.

Øyvind Kjøsnes, Lead Geophysicist, Aker BP

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