



UNIVERSITY of the
WESTERN CAPE

Highly Immersive Visualization Environment (HIVE)

Department of Earth Sciences

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Schlumberger



GEOVISIONARY



VIRTALIS
MAKE VIRTUAL A REALITY





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Overview

- Background
- Facility
- Petroleum Geoscience
- Future





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Background

- Established in 2011 through funding arrangement between BP and UWC, and technical support from Virtualis
- Aimed at providing 3D virtual environment to enhance **Petroleum Geoscience** research and education at UWC
- First of its kind in South Africa



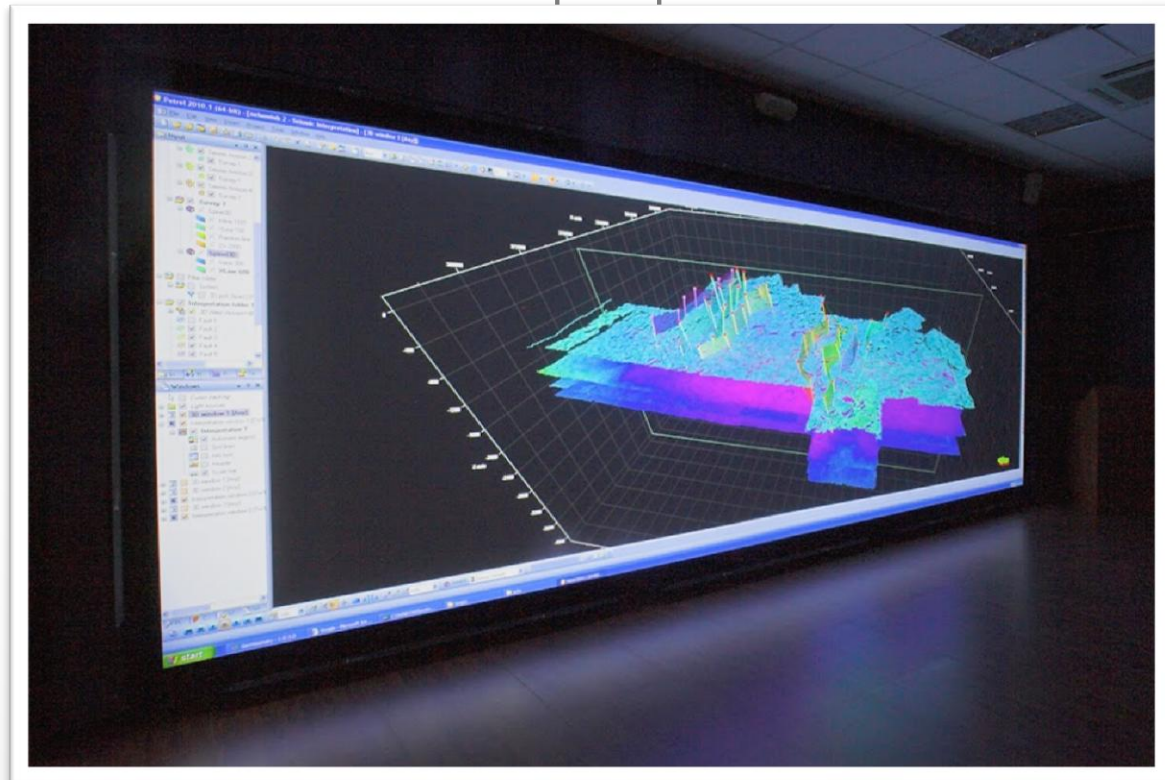
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Facility

- Currently situated in the new state of the art Chemical Sciences Building, 5th Floor, University of the Western Cape.
- Caters for 3D immersive visualization using softwares with stereoscopic applications
- Includes:
 - Visualization Room (audience of 50)
 - Meeting Room (smaller groups)

Facility: Visualization Room

- 8m x 2m Screen (Active Wall)
- Motion sensors ~ Tracking system
- Presentation visualization purposes





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Facility

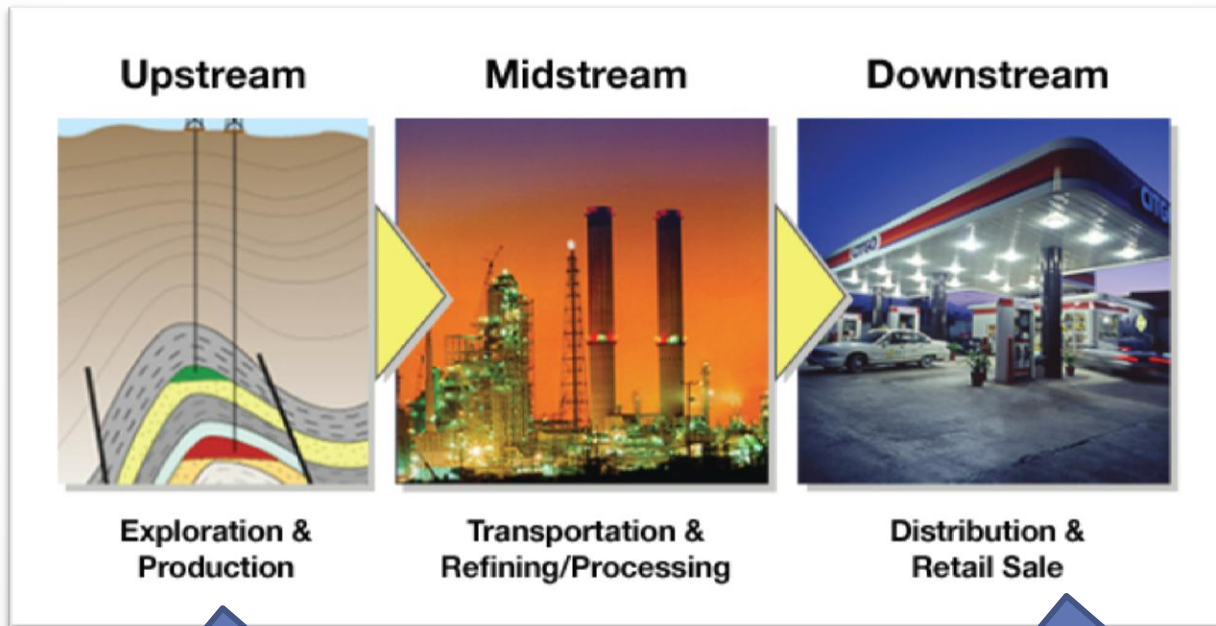
- Central Dell server with a dedicated optic fibre line linking our 20 high end 3D modelling workstations in Earth Sciences to the Hive
- Two channel tracked Active Wall for immersive stereoscopic visualization using two rear-mounted projectors
- Manipulate, model and visualize geoscience data using industry-standard softwares:
 - **Petrel and Eclipse – Schlumberger** (Donation Valued at over 6 Million US Dollars)
 - **IHS Kingdom Suite** (University grant)
 - **Midland Valley's Move 2D, 3D, 4D**
 - **GeoVisionary** by **Virtalis**





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Petroleum Geoscience



Visualization

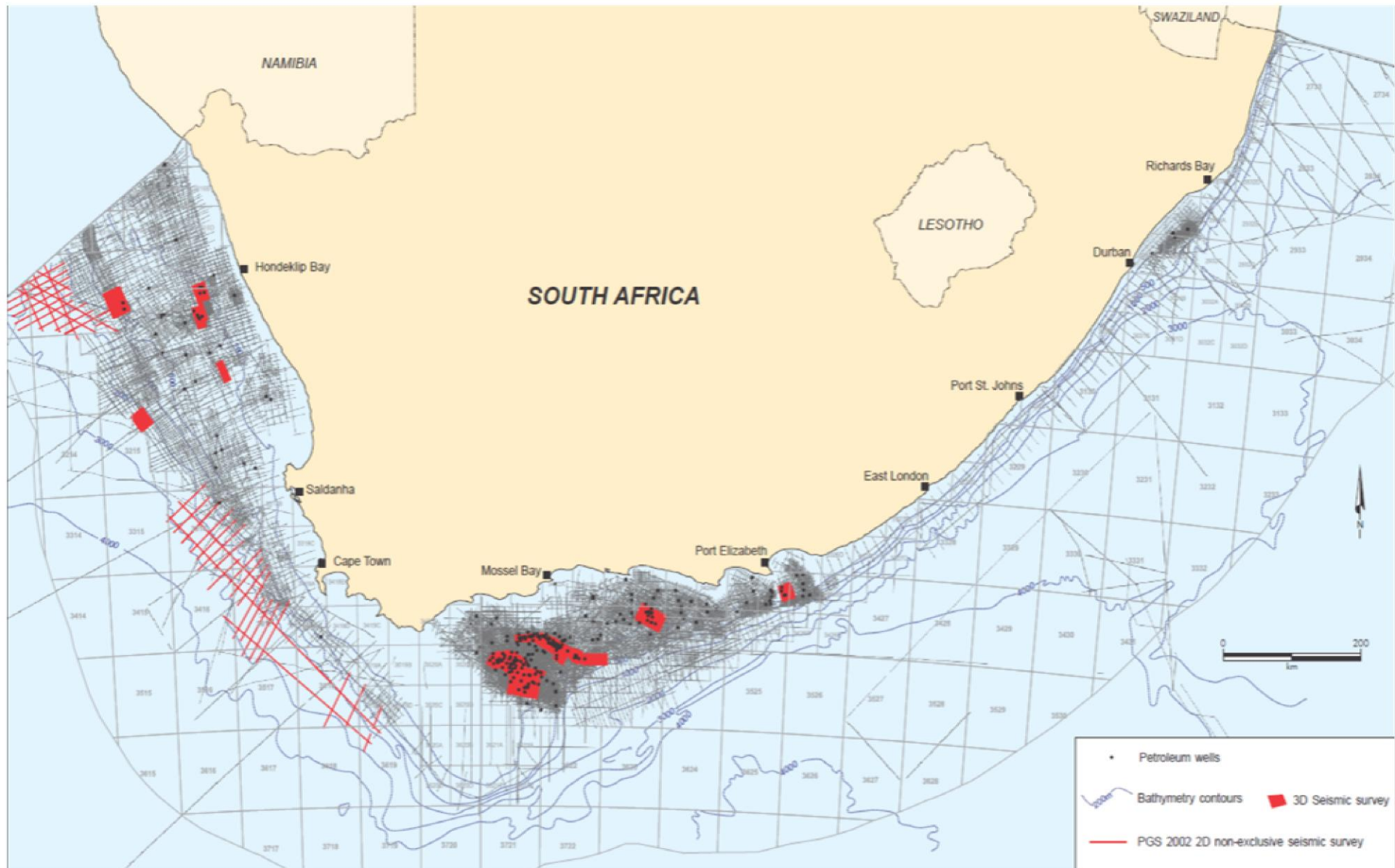


Realization

Petroleum Geoscience

- Renewed interest in Oil & Gas industry in South Africa
- A substantial database has been accumulated during 40 years of offshore exploration including well, seismic, gravity, magnetic, geochemical, geological, biostratigraphic and other data
- Currently 233 000 sq km of 2D seismic data and 210 200 sq km of 3D seismic data have been acquired
- Most of this data is held by **Petroleum Agency SA (PASA)** on behalf of the State and is accessible for academic research

Offshore Seismic Data (PASA)



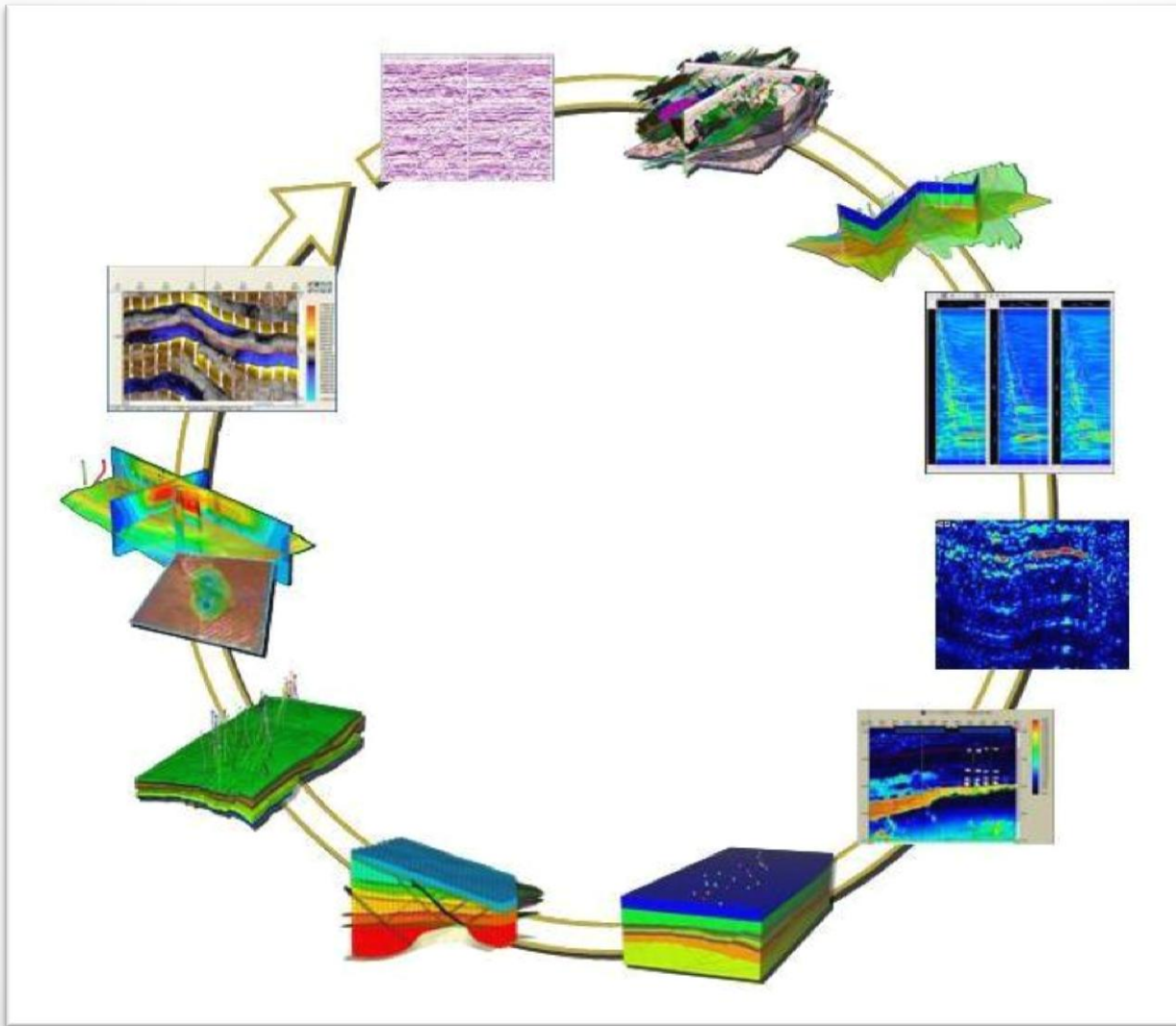
Petroleum Geoscience

- UWC offers Petroleum Geoscience up to post-graduate levels
 - MSc (Taught Masters + Research project)
 - MSc and PhD research
- Petroleum geoscience research involves large amounts of data sets usually acquired through PASA or directly from oil companies
- Processing requires adequate computing systems and, through utilizing softwares, most often produces models of the subsurface
- **Visualization** therefore forms an integral part of Petroleum geoscience research
- Commercial visualization centres have been established at **Shell** (Nigeria), and most recently at **PetroSA**, South Africa



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Petroleum Geoscience

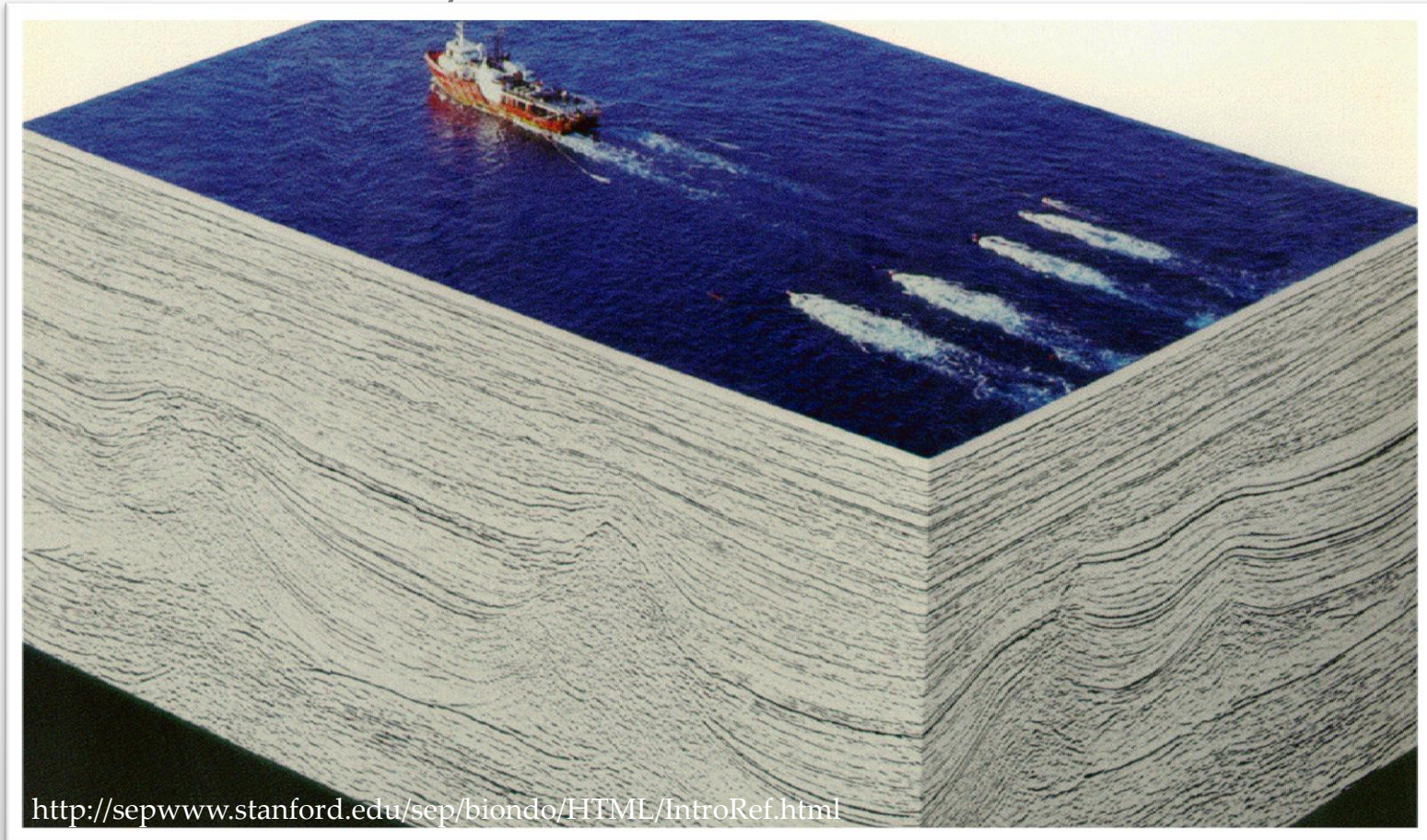




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Petroleum Geoscience Research

- Starts with seismic data (over 40Gigs for just one offshore block)

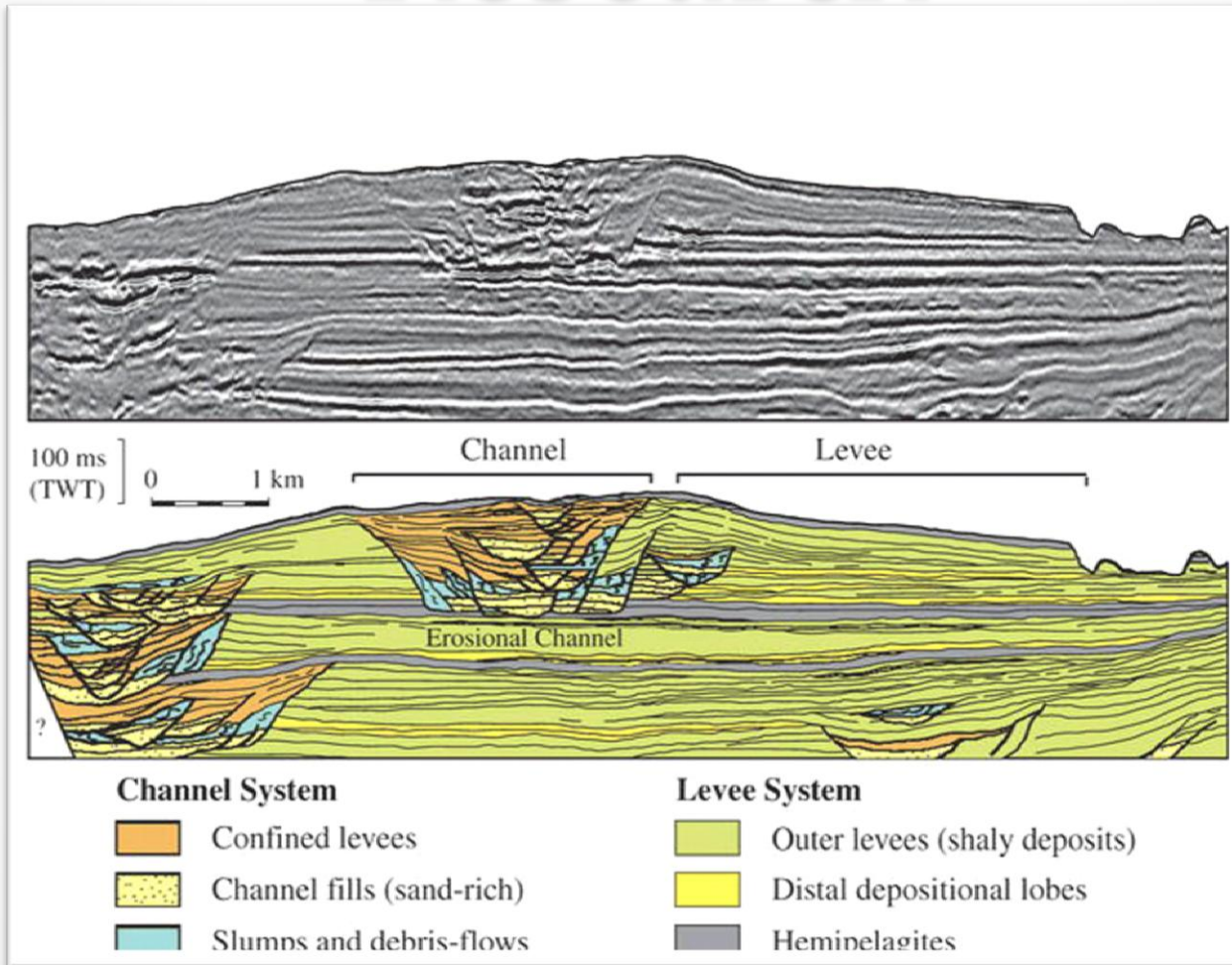


• <http://sepwww.stanford.edu/sep/biondo/HTML/IntroRef.html>



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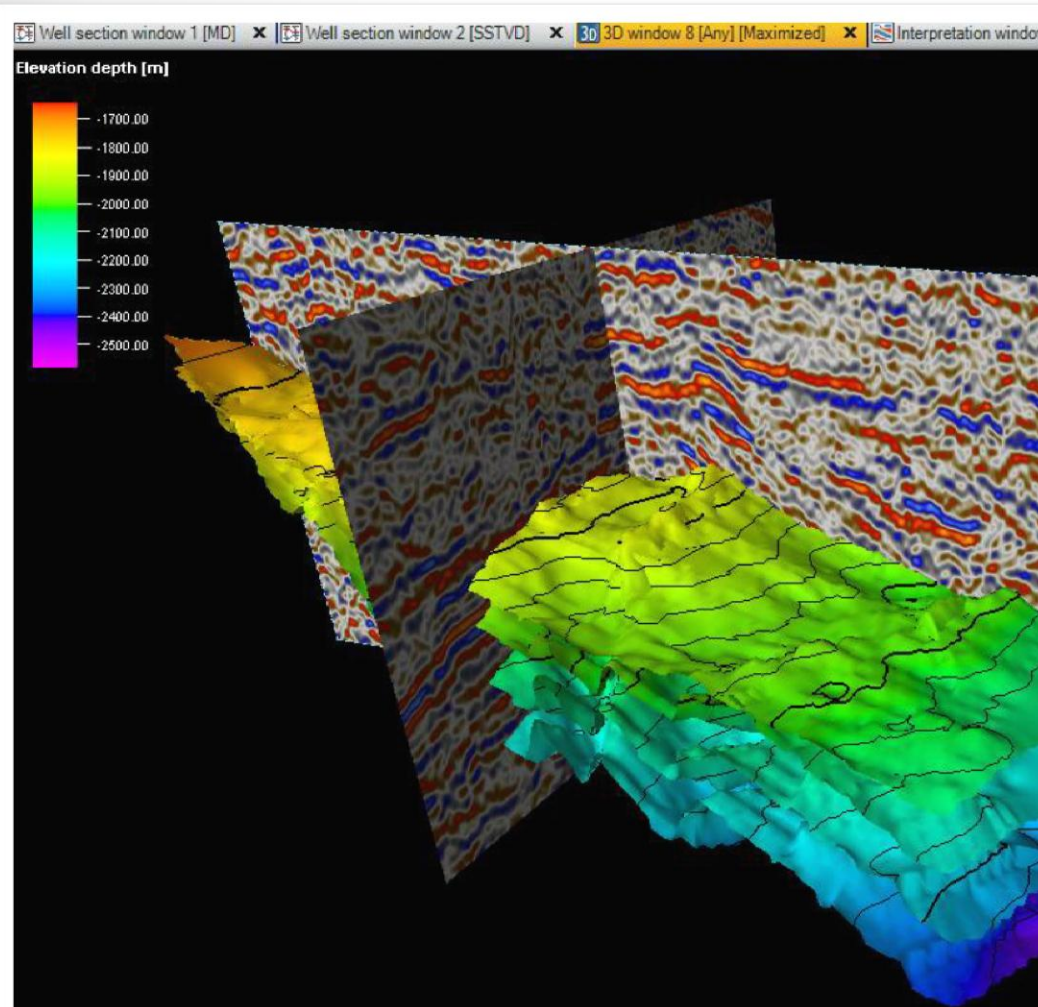
Petroleum Geoscience Research





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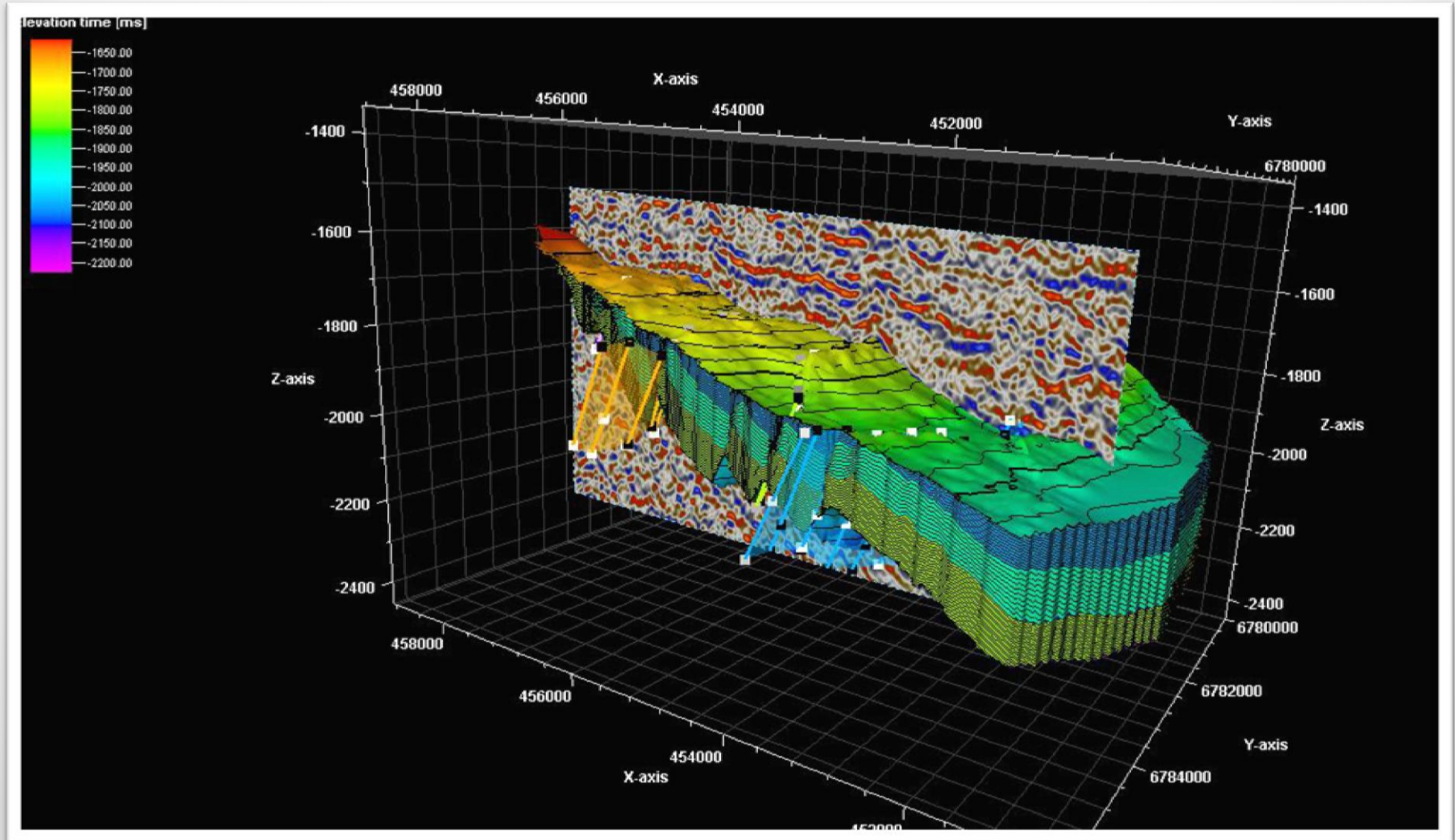
Petroleum Geoscience Research





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Petroleum Geoscience Research



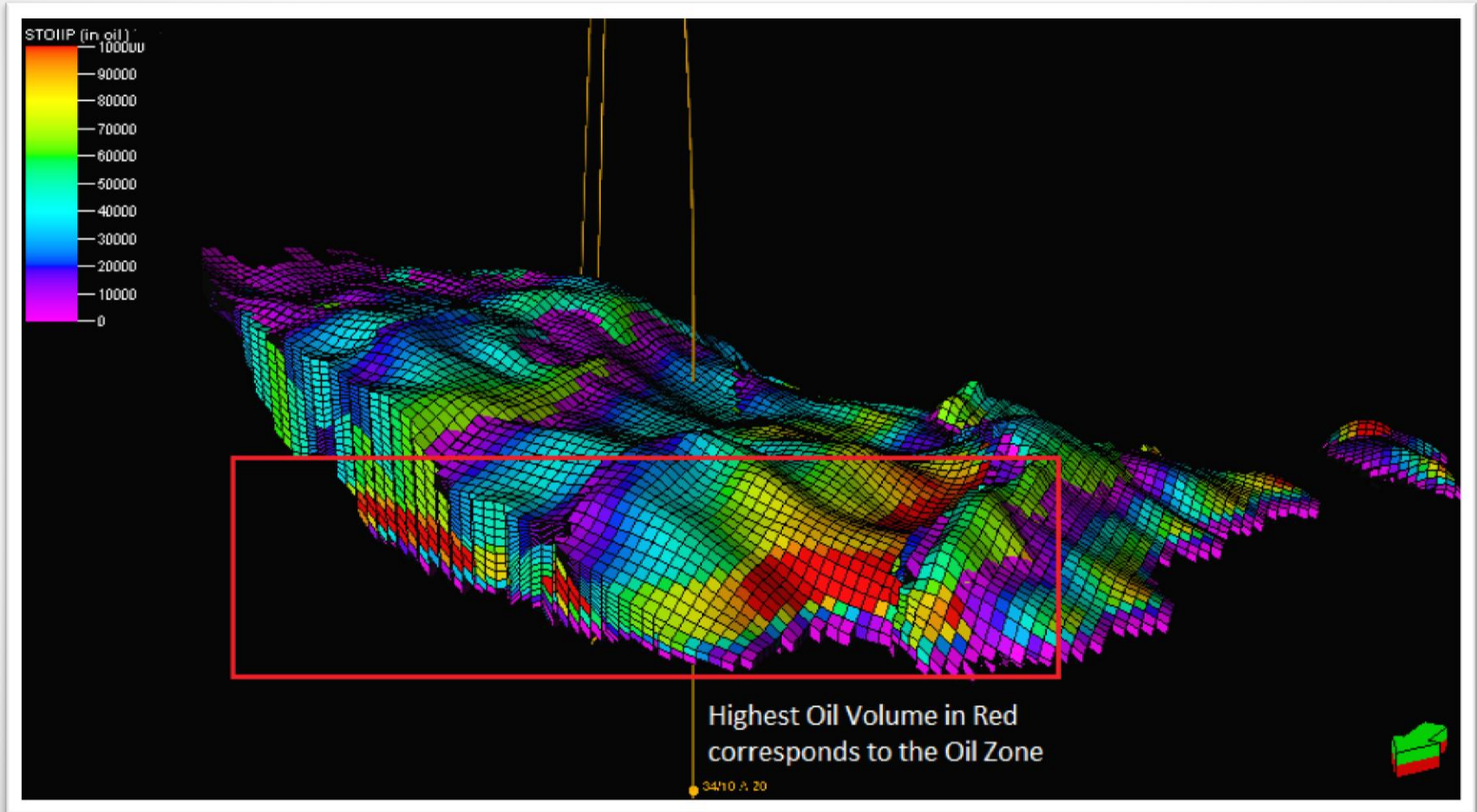


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Petroleum Geoscience Research at the HIVE



Petroleum Geoscience Research





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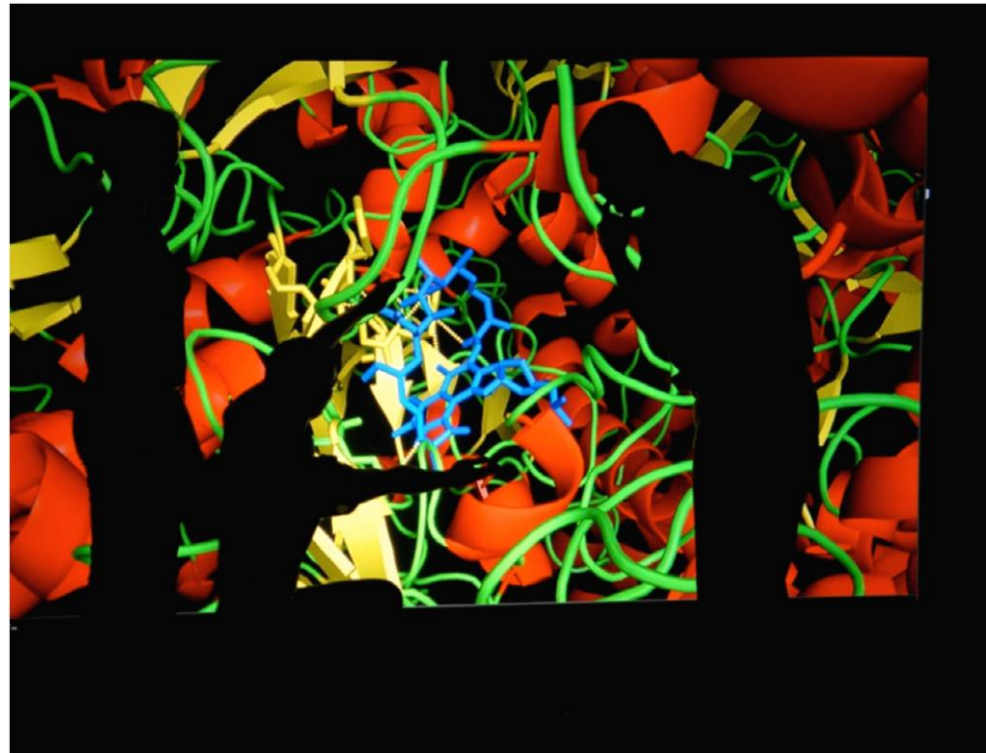
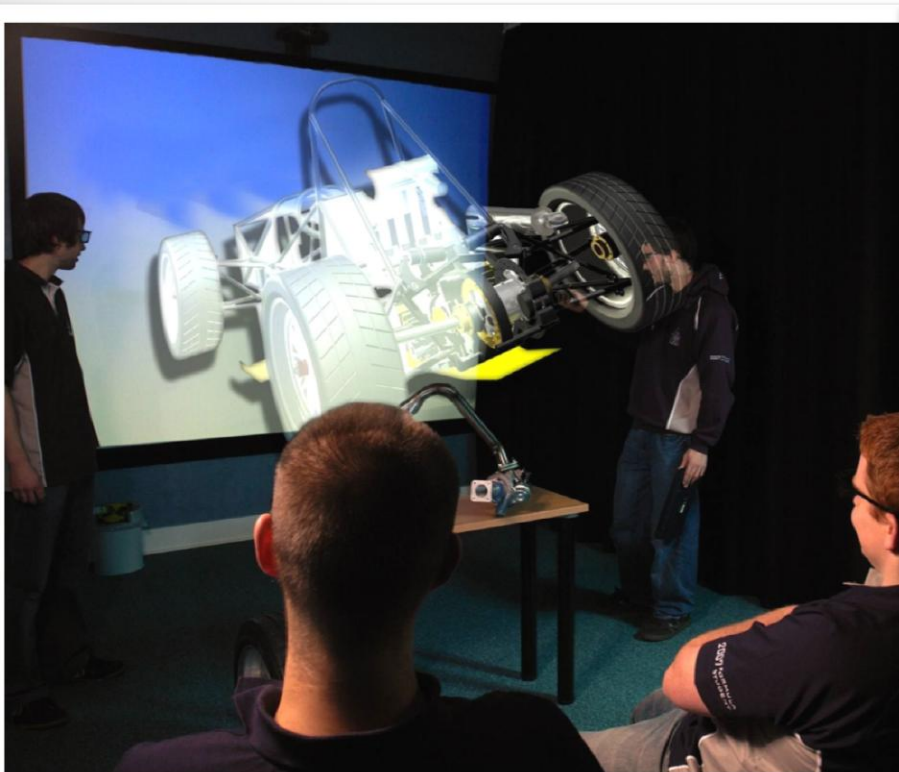
- Improved student understanding of subsurface processes
- Enhanced research capabilities and reduces risks involved in exploration and production of oil
- Equipped students for emerging oil and gas industry in South Africa
- Engaged with local companies
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Future

- Multiple disciplines utilize 3D visualization
- Any software with stereoscopic applications can be used at the Hive



Thank you

