Highly Immersive Visualization Environment (HIVE)
Department of Earth Sciences
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Overview

• Background
• Facility
• Petroleum Geoscience
• Future
**Background**

- Established in 2011 through funding arrangement between BP and UWC, and technical support from Virtalis

- Aimed at providing 3D virtual environment to enhance **Petroleum Geoscience** research and education at UWC

- First of its kind in South Africa
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:
  o Visualization Room (audience of 50)
  o Meeting Room (smaller groups)
Facility: Visualization Room

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

Visualization

Realization
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
  o MSc (Taught Masters + Research project)
  o 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
Petroleum Geoscience
Petroleum Geoscience Research

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

http://sepwww.stanford.edu/sep/biondo/HTML/IntroRef.html
Petroleum Geoscience Research at the HIVE
Petroleum Geoscience Research
Petroleum Geoscience Research at the HIVE
Petroleum Geoscience Research at the HIVE

• 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
Future

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