



# FESAus Monthly Technical Meeting

## *“Petrophysical Properties and Fault Networks from Seismic”*

Wesley Emery (iRPM) and Ralf Oppermann (OPptimal Resource Solutions)

### Abstract:

The Oil and Gas Industry has traditionally used conceptual, statistical three dimensional modeling, often constrained to Seismic attributes to predict reservoir properties. Rarely if ever are deterministic relationships used between the Seismic attributes and the reservoir quality, with direct links to the Petrophysical interpretation results without the use of averages. This presentation outlines a different methodology which uses mathematical relationships between the Seismic Impedance property and the Petrophysical interpretation results based upon the law of physics without any cognitive conceptual biasing and shows the accuracy of using these deterministic relationships from an existing well, blind test the predictions against several other existing wells and also populate these predictions into the three dimensional space in the Wheatstone Field in the North West Shelf and also in the Petrel field in the Timor Sea.

New seismic volume interpretation workflows will be presented that allow to reliably visualize fault networks in seismic data at extremely high resolution. The results challenge widespread perceptions of what is seismically resolvable from 3D seismic data, and offer groundbreaking new insights into the spatial distribution of fault and associated fracture networks and how they can affect the drilling, exploration and production of resources. Fault penetrations are often found to be directly linked with drilling problems (e.g. fluid losses, borehole instability), as well as production issues (water production along fault planes, cross-flow between wells) or production opportunities (access to productive natural fracture networks, 'sweet spots'; or different reservoir compartments). It will be demonstrated that a step-change in the understanding of drilling, exploration and production issues can be realized, and that a focused application of the new technology workflows delivers increased exploration and development success, and also results in safer, cheaper and more successful drilling operations.

### About the Presenters:

Since 1990, Wesley (left) has worked 6 years as a Wireline Logging Engineer, completed Post-Graduate studies in Petroleum Engineering at Curtin University and 20 years as a Petrophysicist for various Operating and Service Companies, before founding his own company iRPM specializing in 3D Petrophysics from Seismic in 2015.

Ralf (right) is a Geoscience Consultant with 27 years experience in the oil and gas industry, working internationally with major IOCs prior to founding OPptimal Resource Solutions in 2008.

In 2016, Ralf & Wesley founded the Resource Technology Network, a unique global Consulting Network that brings together independent and highly-experienced Experts to provide unbiased Advice, Services and Training.



**DATE:** Tuesday 14<sup>th</sup> November 2017, 12:00 – 1:30 PM **VENUE:** Hotel IBIS- 334 Murray Street, Perth

**COST:** Members \$30.00; Non Members \$40.00; Students/Retirees \$10.00

Online registration at [www.fesaus.org](http://www.fesaus.org)

Note: limited seats for unregistered attendees may be available: \$50.00 cash door charge

