



FESAus February 2021 Talk - CoreDNA: Combining the analysis of ultra-high resolution images with continuous direct measurements to identify rock types – Dr Thomas Richard

CoreDNA solution combines a selection of transdisciplinary, high resolution, non-destructive measurements on whole cores that enable an early yet objective and comprehensive description of cores and the rapid estimation of properties of formations days after opening core barrels. Whole cores, which may still be in their half-open liners, are mounted the test bench and submitted to a battery of tests, all sharing the same depth reference and compatible resolution ranges. Technologies including ultra-high resolution pictures, pXRF elemental composition, grain size analysis, but also the direct measurement of geomechanical properties such as strength and acoustic velocities, are all deployed along the entire core on the same 3cm wide mini-slab surface. Ultra-high resolution panoramic pictures (1.8 μ m/px) are processed to extract textural and colour features but also continuous grain size distribution from wavelet analysis. The grain size distribution profile calculated from the images are backed-up by analysis of 3D topographical images accurately measured with a laser scan.

Results of these fast tests (3ft per hour) are analysed real-time and turned into high resolution, continuous profiles of properties (petrophysical, geomechanical and geochemistry) fed into (unsupervised) machine learning algorithms for the automated identification of lithofacies. It enables a more detailed understanding of reservoir architecture and the design of tailored plug selections and the programming of subsequent steps in core analysis programs, even remotely. Such a detailed and comprehensive knowledge of the distributions of core properties under one unique format for all discipline eases interdisciplinary core analysis work, from the QCing of standard core testing to the upscaling of core data and the calibration of robust predictive models from well logs.

Thomas Richard Epslog, SA
Geomechanical Engineer from Paris
Msc and PHD in Rock cutting and Drilling Mechanics from University of Minnesota
Epslog Director and Lecturer at Curtin University

DATE: Tuesday February 9, 2021 - 12:30 – 1:30 PM (WAST, GMT+8)
VENUE: Ibis hotel (Perth), on the web (rest of the world)
COST: Members \$30.00; Non Members \$40.00; Students/Retirees \$10.00; Remote access also available.
Online registration at www.fesaus.org by Friday 5th February at 11.00 am

