# Data Mining for Specific Reservoir Facies using Co-rendered Seismic Visualization in Deepwater Angola, West Africa

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Some studies suggest that sweep efficiency and prediction of early water production may be dependant upon the proper identification of channel axis and gravel lag deposits for placement and modeling of producer/injector pairs.

This presentation shows a process for improving reservoir model building and planning for better placement of development wells based on this supposition. In building our stratigraphic framework and depositional model, we incorporate information from the Capistrano Formation, California as an analogous outcrop for these West Africa channel complex facies, specifically for defining both the gravel lag and channel axis facies.

This process involves: a) identifying specific reservoir facies in these fields from log and core; b) separating these facies by their unique impedance signatures; c) tailoring our seismic data to predict these reservoir facies; and finally d) integrating these products with reservoir models to show the impact to production.

Movies and well cross sections are used to demonstrate the power of this process. Seismic attributes of Acoustic Impedance (AI) and Elastic Impedance (EI) extracted along the well bore are integrated with the reservoir model. By selectively filtering and co-rendering 3D seismic attributes of impedance, the Oil-Water-Contacts (OWC) and distinct reservoir facies, such as thick high perm/high porosity channel axis sands vs. high perm/moderate porosity gravel lag deposits, are easily differentiated. For example, red colored semi-transparent cubes of lower impedance are used to show the well developed channel axis sands whereas blue semi-transparent cubes of higher impedance illustrate the gravel lag deposits.