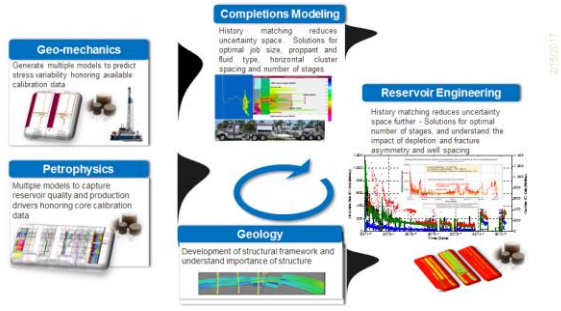
Timing of Decisions

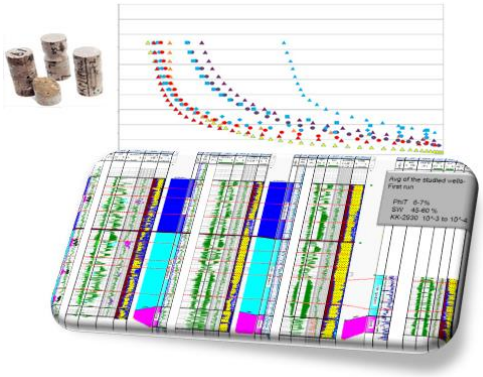
Customer Need

Time is money. After what period will my parent well (lease holding) compromise in-fill well performance? If I stack laterals wells will the sequence of my operations and timing influence fracture geometry?

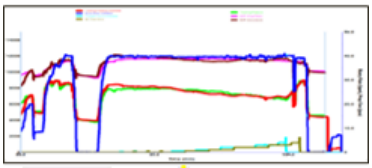
Methodology

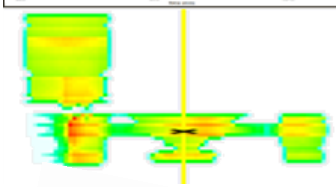


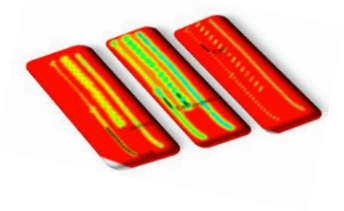
The Premier workflow was developed to handle a broad range data sets (seismic, logs, micro seismic, well bashing, fracturing, production, etc…) to reduce uncertainty via feedback cycles, which enable development decisions with operational relevance.



Geoscience domains (Petrophysics & Geomechanics) build models at a high resolution (using high resolution core measurements capturing properties at the chemofacies level) to capture the thin beds that are missed at the log resolution level and ignored at the engineering level (due to upscaling).







Fracture pressure history matching is performed to understand fracture geometry and cluster effectiveness as well as pinch points that could influence vertical connectivity. Production history matching validates the fracture geometries, helping understand which geomechanical units challenge vertical connectivity over time and enables computation of *in-situ* stresses when infill wells are completed alongside a depleted well. Now the calibrated model can be used to determine the optimum lateral landing, cluster spacing, number of clusters (based on effective fracture length), optimal fluid system (Hybrid vs. Crosslink vs. Slickwater), proppant type and proppant ramp and changes required to minimize asymmetry or changes to spacing.

Results of the Analysis

Infill completions can create stronger connections to the parent well. Waiting too long to in-fill can reduce in-fill EUR. The change in vertical connectivity influences offset in vertical spacing. Operational activities (zipper/top-down/ wine-rack) can influence asymmetry.