# Descriptive Completions Evaluation

MicroSeismic's Descriptive Completions Evaluation Services offer the most complete and detailed description of the results of stimulation programs to help understand productivity, reduce lifting costs, and minimize exploration risk. Advanced microseismic interpretation integrated with well and treatment information allows you to better understand ideal well spacing, improve your treatment plan, and increase ultimate recovery.

MicroSeismic, Inc. is the leader in completions evaluation, having helped customers optimize production in every major basin in North America and 18 countries worldwide.
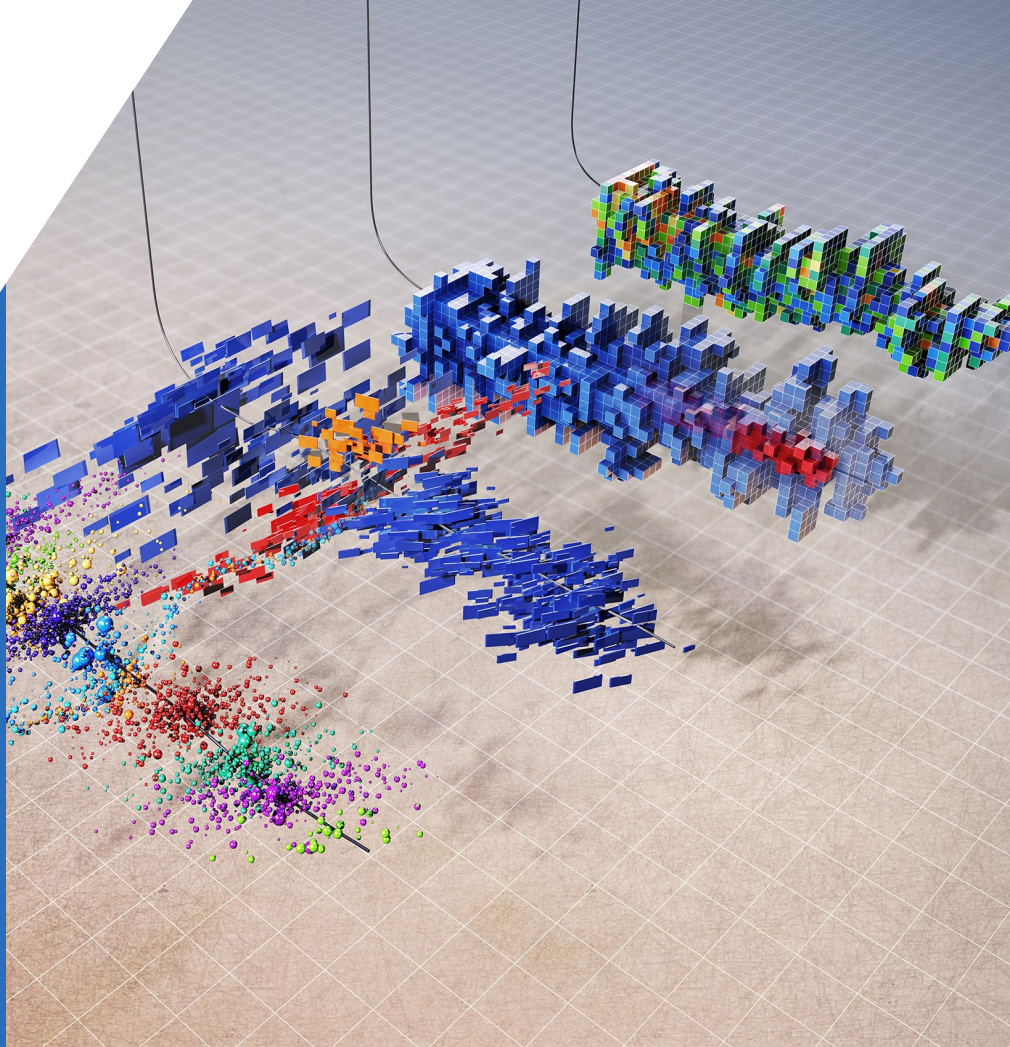
Beyond The Dots | Discrete Fracture Network

Every microseismic event has a failure mechanism that is accurately described through the full moment tensor — how the rock broke. The moment tensor provides a deterministic description of the failure, and accurately measures the strike, dip, and rake of the ground motion.

At MicroSeismic, we utilize the failure type through the full moment tensor analysis to define a realistic Discrete Fracture Network (DFN) model that describes a fracture plane for each event. The DFN model is calibrated to the actual fluid volumes pumped for a given well.

The next step is to use a mass balance approach to fill the fractures with proppant. This process helps operators estimate where the proppant is distributed throughout the fracture network in order to:

» Optimize production faster by determining ideal well spacing early on
» Maximize recovery by achieving ideal fracture coverage
» Compare and adjust different treatment designs and plans

DISCRETE FRACTURE NETWORK

100% PROPPED   50% PROPPED   0% PROPPED
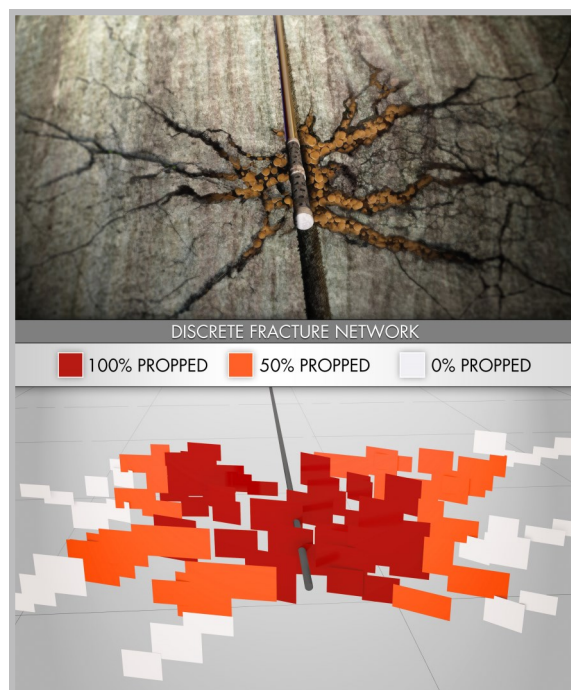
MicroSeismic

Understand Your Completion | Productive-SRV®

Once we have described the total DFN and propped DFN, a geocellular grid is superimposed to obtain the stimulated and productive rock volume.

MicroSeismic's multi patent-pending Productive-SRV technology combines engineering data with microseismic results to determine what proportion of the total stimulated rock volume (SRV) is propped and should, therefore, be productive. Rather than relying on a single average fracture model, this proprietary approach can help you fully and accurately capture the variable fracture geometry and fracture intensity over the entire length of the wellbore – providing a better production forecast and improved well spacing.

- » Productive-SRV is based on a magnitude calibrated discrete fracture network that yields the most accurate fracture volumes in the industry
- » Client-specific data, such as proppant properties, are used in conjunction with the discrete fracture network to determine proppant placement
- » Productive-SRV yields only the volume of the reservoir drainage area expected to be productive in the long-term
- » Use Productive-SRV with the fracture intensity to directly and explicitly describe the reservoir volume
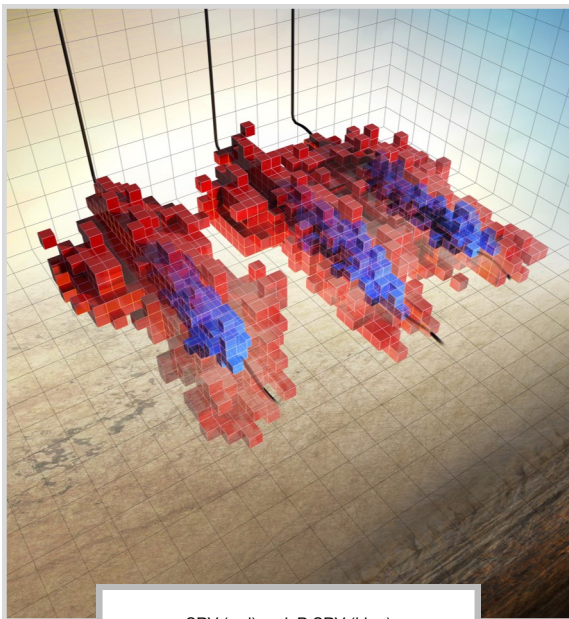
SRV (red) and P-SRV (blue)
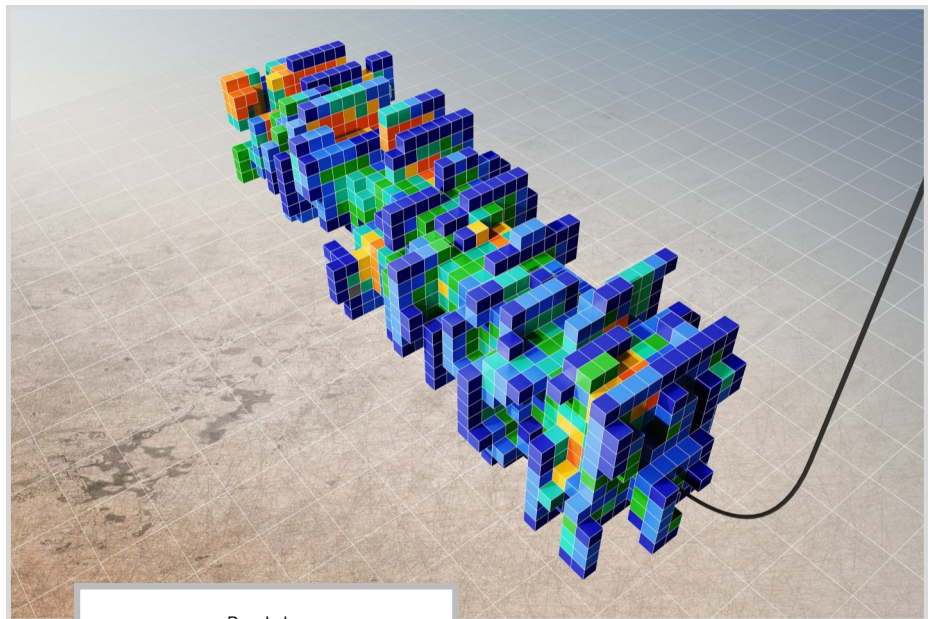
PermIndex

Accurately Quantify Permeability Enhancement | PermIndex®

To understand the reservoir drainage, it is important to quantify the permeability enhancement achieved through hydraulic fracturing; fracture volume by itself does not tell the whole story. Permeability enhancement is directly related to two factors — the fracture intensity and the proppant distribution within the fractures. Both of these factors are captured through MicroSeismic's PermIndex.

What is PermIndex?

PermIndex is a microseismic-based permeability tool that provides data-driven estimates of enhanced reservoir permeability using DFN and Productive-DFN models. The tool provides a stage-by-stage or well-by-well estimate of the permeability enhancement within the Productive-SRV volume.

PermIndex delivers a comparative metric between stages and wells to access effective completion techniques and productivity.