

*Expand Capacities
Making Sense
Finding Ways
Fitting Solutions*

OUR VISION

FITSIMM offers numerical and reservoir solutions to issues raised by fractured reservoirs (conventional and non-conventional). Our experience (over 45 years), coupled to innovative methods, provides for the first time a multi-scale, integrated, non-intrusive methodology, answering the problem of fracture complexity at the stage - well - pad - field heterogeneity level.

We consider this nested learning approach as the best way to lower field development costs for primary, re-fracturing and EOR operations, including updated environmental regulatory constraints since drainage volumes are better apprehended along with water needs management.



GOALS

- ✓ *Shorter learning curves - "agile" field developments*
- ✓ *Cross-methodology studies integrating multi- scale pertinent data*
- ✓ *Improve re-fracturing candidate selection - EOR and optimization schemes*
- ✓ *Better completion design, accounting for environmental constraints*
- ✓ *Stage design studies - Integral leak-off simulated*
- ✓ *Proven practical models validating a SRV geometry*
- ✓ *Proppant placement being evaluated*
- ✓ *Multi-phase production matched and predicted*
- ✓ *Drainage patterns are better understood*
- ✓ *Improving child/parent and hit frac problems issues*



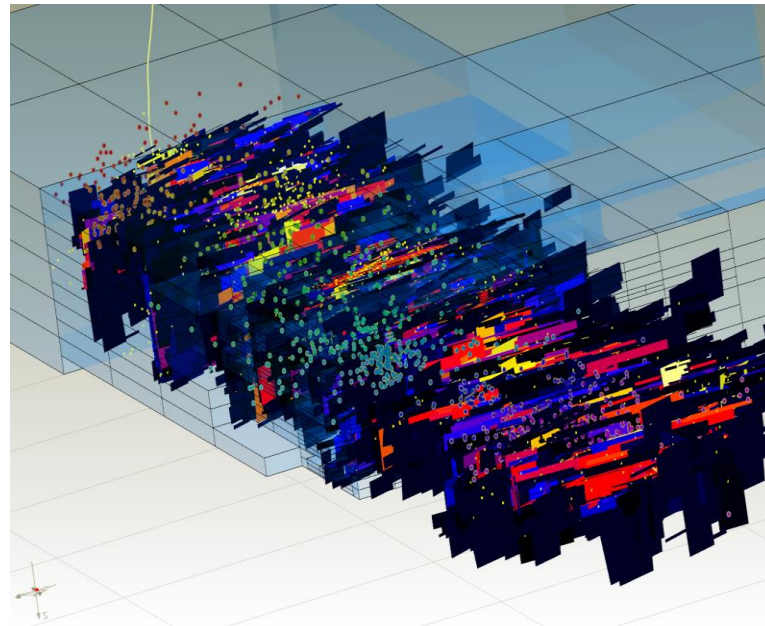
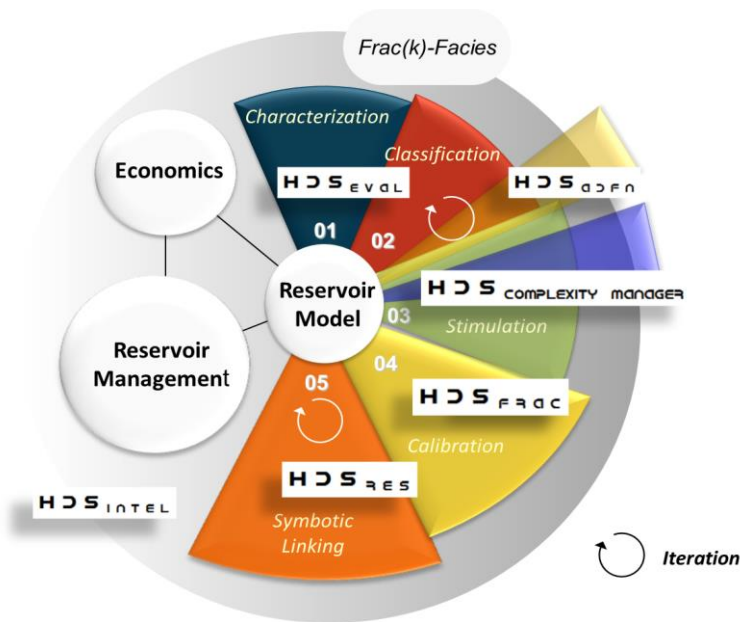
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Code allowing in-house studies
Ready in March 2020

Customized versions – 3 to 6 months.
Needs pre-sale commitment

Full release – End 2020

POSSIBLE STUDIES (Operational in March 2020)

- ✓ Proof of Pertinence (Demonstrative) studies
- ✓ Leak-off studies (XLOT)
- ✓ One full well study
- ✓ History match of stimulation
- ✓ History match of stimulation + sensitivity
- ✓ Re-fracturing study
- ✓ Multi-Well Studies (Optimization)
- ✓ Zipper or any “zipper - like” study
- ✓ Impact study of changing stimulation program
- ✓ Vertical vs. Horizontal fracture conformance
- ✓ Interference analysis
- ✓ EOR (future capacity development)
- ✓ CCUS (future capacity development)

SOFTWARE PACKAGE

(All non-invasive to your modeling capacities)

HDS_{eval}

- ✓ Data Transfer – Data Integration – Data Library
- ✓ Analytic Reservoir Production Analysis
- ✓ Decline Curve Analysis
- ✓ Brittleness - Frackability - Log - MicroSeismic Analysis
- ✓ Fracture Density - Connectivity & Shadowing Evaluation

HDS_{adfn}

- ✓ Natural and Induced Fracture Model Integration (DFN)
- ✓ Generation of the adaptive fracture network (ADFN)
- ✓ T-fracture complexity and proximity fracture density parametrization (future)

HDS_{complexity manager}

- ✓ Tailored Meshing (Matrix and Fracture) - Multi-porosity

HDS_{frac}

- ✓ Individual stage and full well stage fracturing capacities
- ✓ Proppant model (including fluid viscosity)
- ✓ Near well tortuosity - Adaptive M-F interaction
- ✓ Geomechanical coupling (reversible and non-reversible fracture dynamics)
- ✓ Multi well - Refracture – Multiple injection schemes – Aperture distribution and “back-bone” analysis

HDS_{res}

- ✓ Symbiotic link to any reservoir simulator
- ✓ Drainage Analysis - Interference and Conformance

HDS_{intel}

- ✓ Economical module - Field development guidelines