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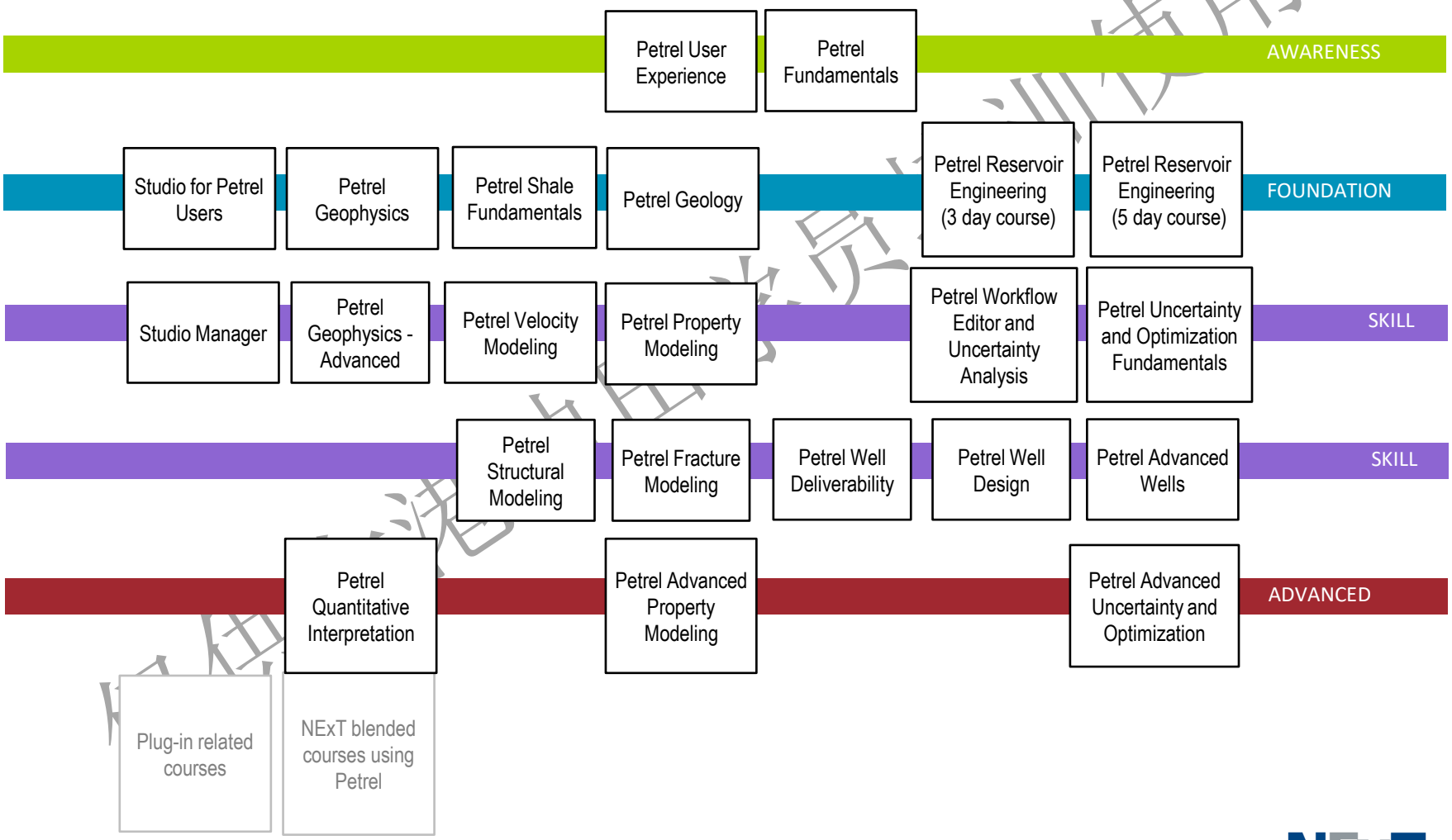
Petrel 2017 Property Modeling
Module 1: Introduction

Petrel training courses



Course agenda

Day 1

Input data preparation and QC

- Data preparation
- Scale up well logs
- Quality control tools

Univariate and bivariate geostatistics

- Basic statistics
- Variogram analysis
- Data analysis
- Horizontal variogram modeling

Day 2-3

Facies modeling

- Data analysis
- Facies modeling overview
- Sequential indicator simulation
- Object facies modeling
- Truncated Gaussian simulation
- Facies modeling using secondary variables

Day 3

Petrophysical modeling

- Data analysis
- Petrophysical modeling overview
- Kriging in petrophysical modeling
- Gaussian simulation in petrophysical modeling
- Petrophysical modeling using secondary variables

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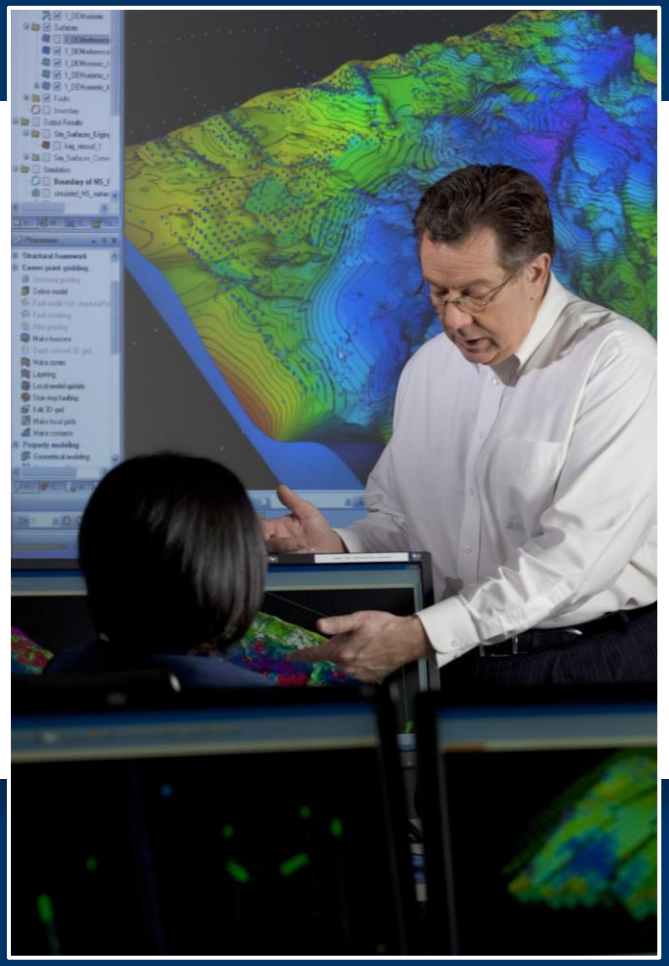
Course objectives

- Understand the 3D Property modeling workflow
- Explain the geostatistical concepts for data analysis and modeling techniques
- Describe how to prepare reservoir data properly for Property modeling (facies and petrophysics)
- Capture and use geological features to build a realistic facies model
- Understand how to use secondary variables to condition primary properties
- Populate petrophysical properties conditioned to a high quality facies model or constrained to seismic data, trend data, or both

Lesson 1: Petrel workflow tools



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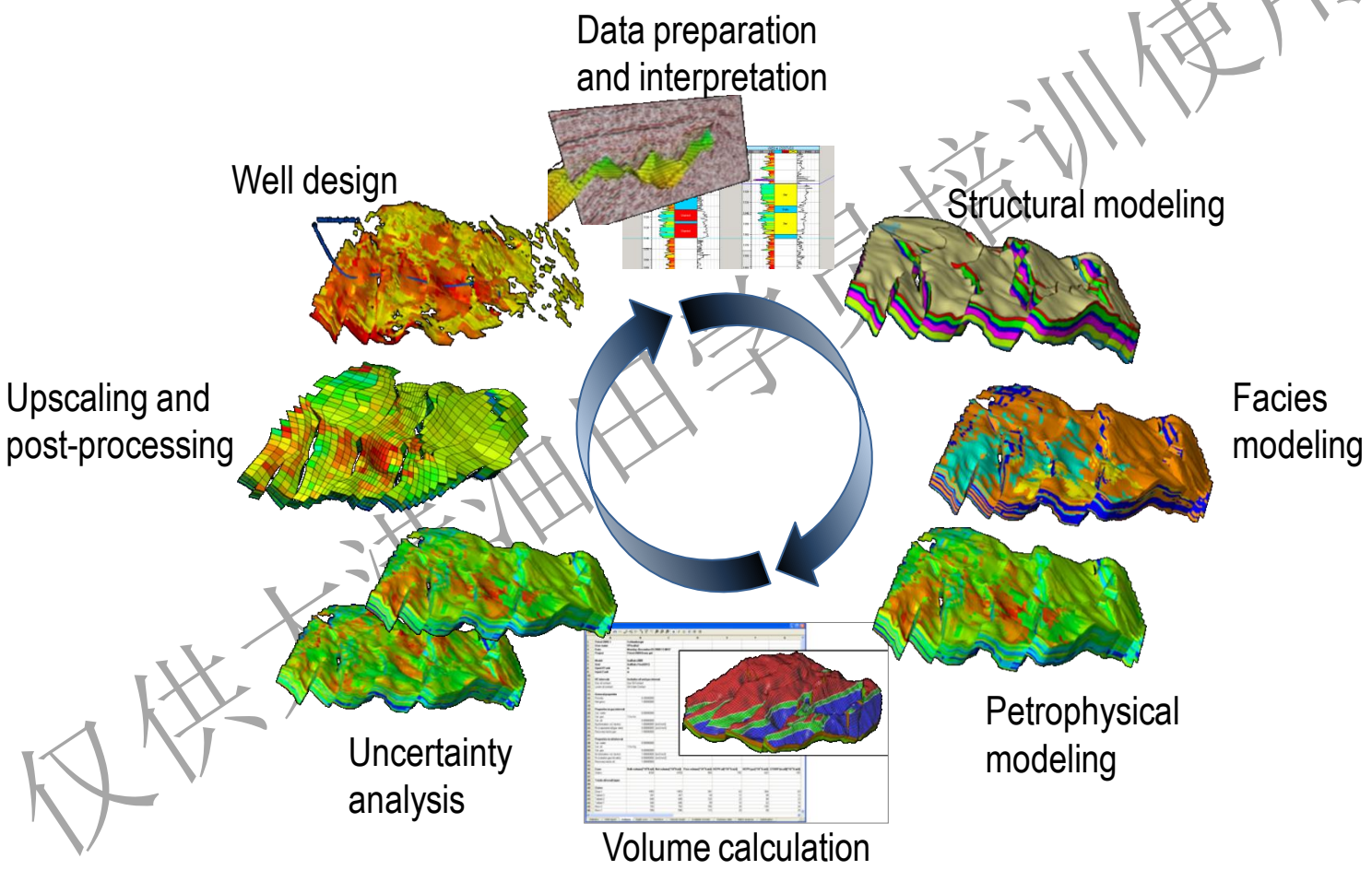
Petrel Reservoir modeling workflow



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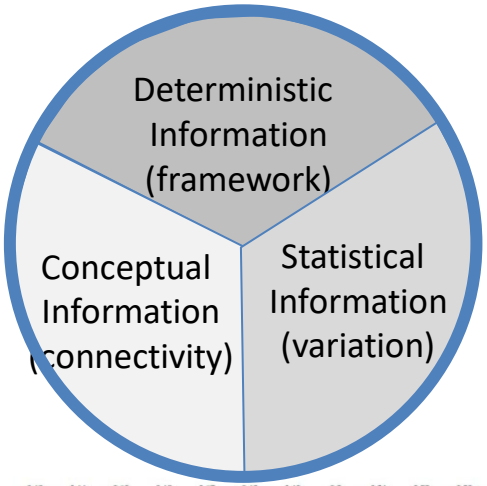
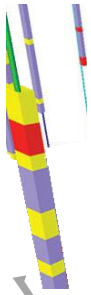
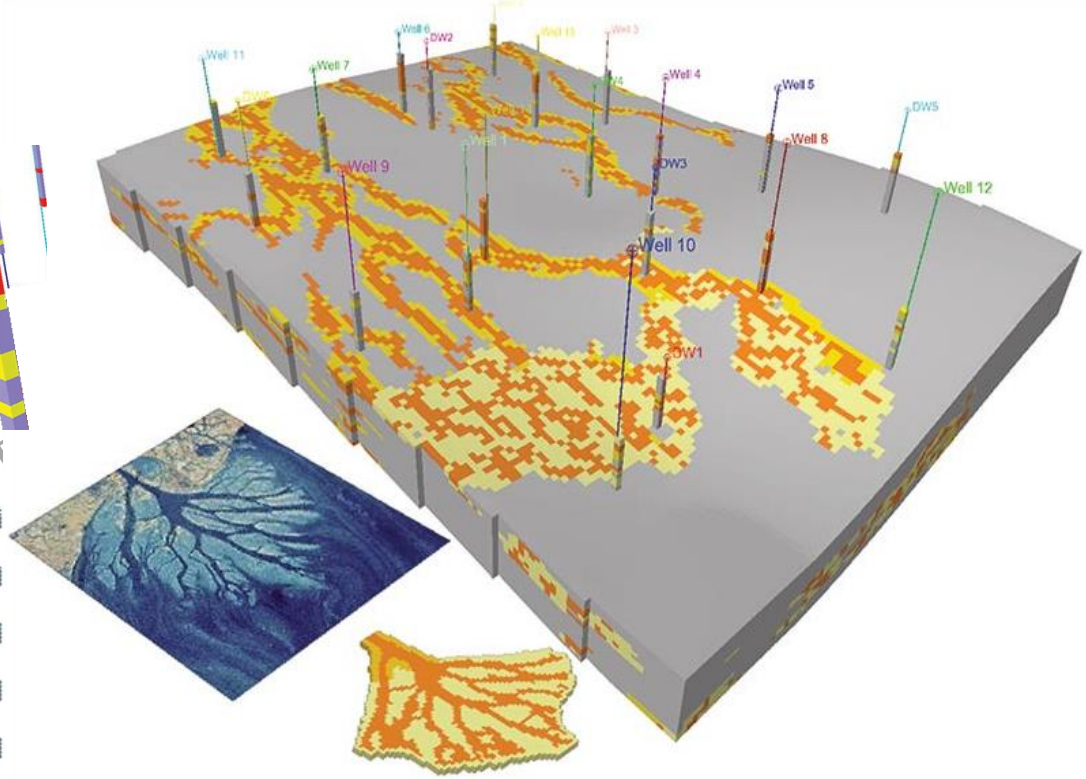
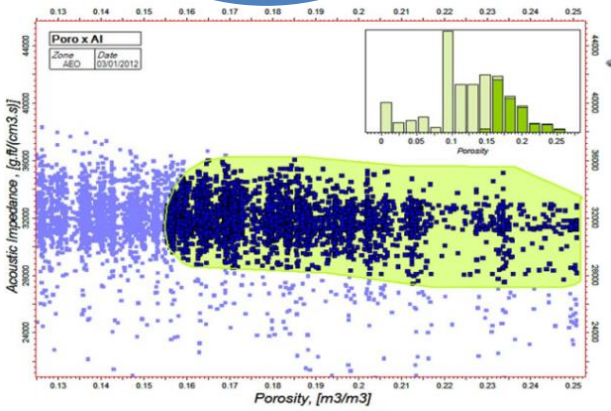
Introduction
You are making big decisions based on limited data!









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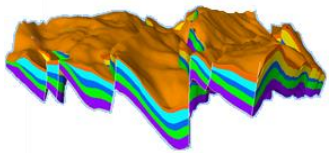
Petrel 2017 Property modeling

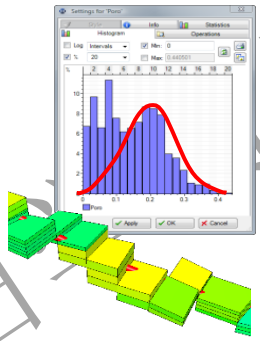


Intro

Petrel Property Modeling objective and workflow

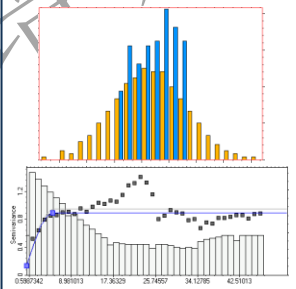
Property modeling data preparation

Scale up well logs

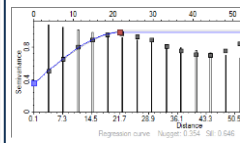


Univariate and bivariate geostatistics

Basic statistics

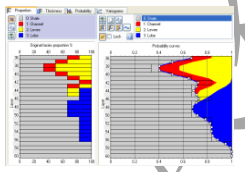


Variogram modeling

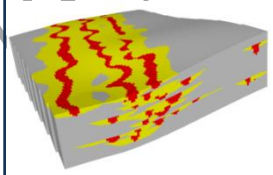


Facies modeling

Discrete data analysis

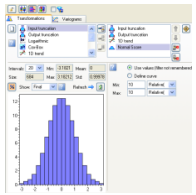


Stochastic facies modeling

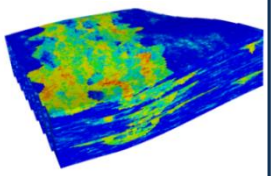


Petrophysical modeling

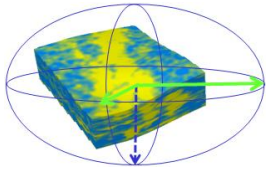
Continuous data analysis



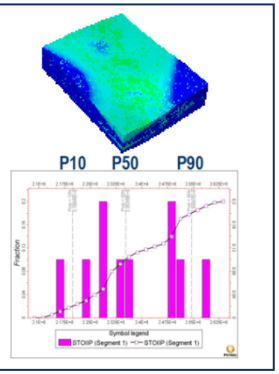
Stochastic and deterministic petrophysical modeling



Use of secondary information for property modeling



Volume calculation and Uncertainty analysis



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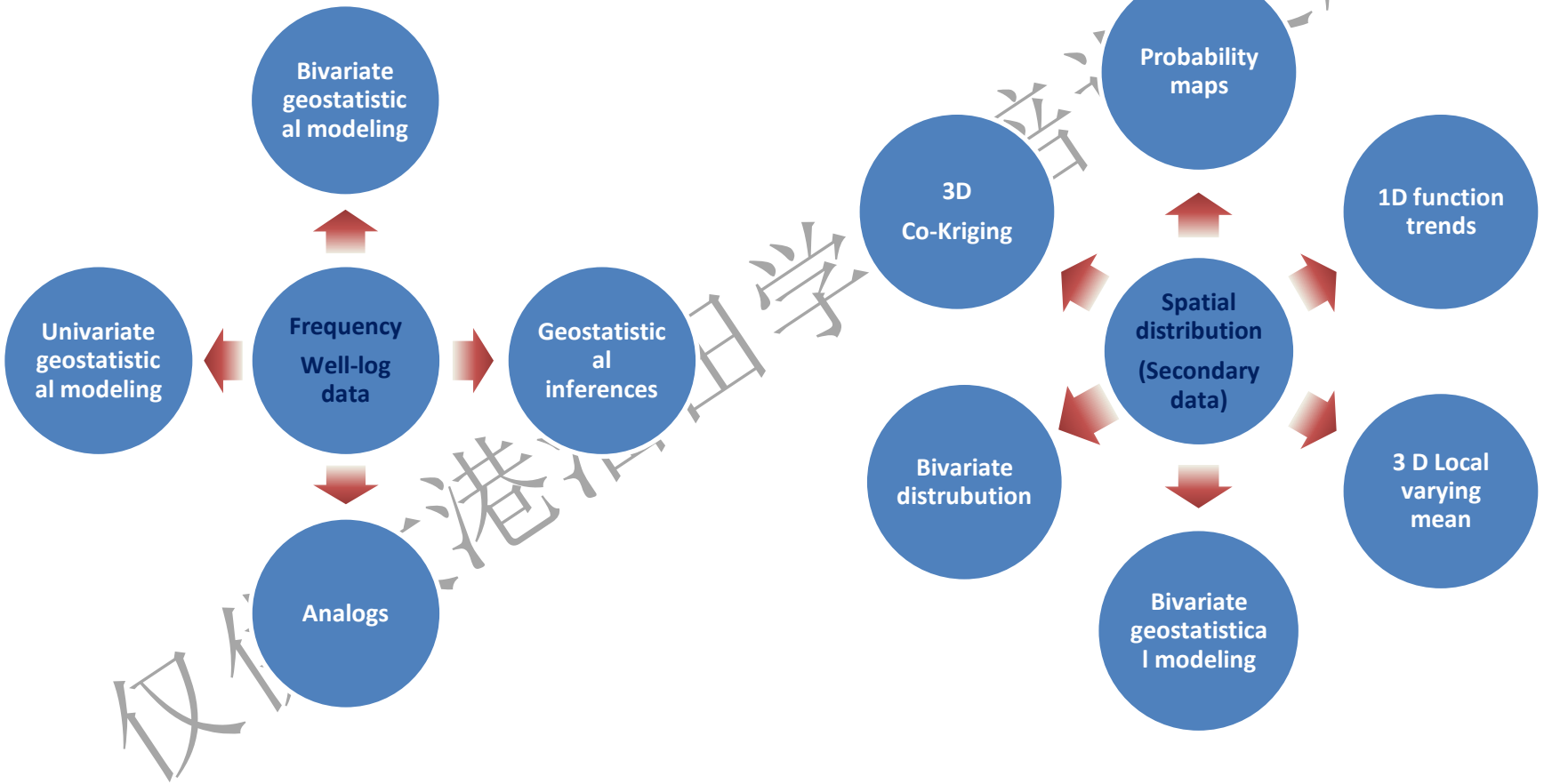
Modeling characteristics



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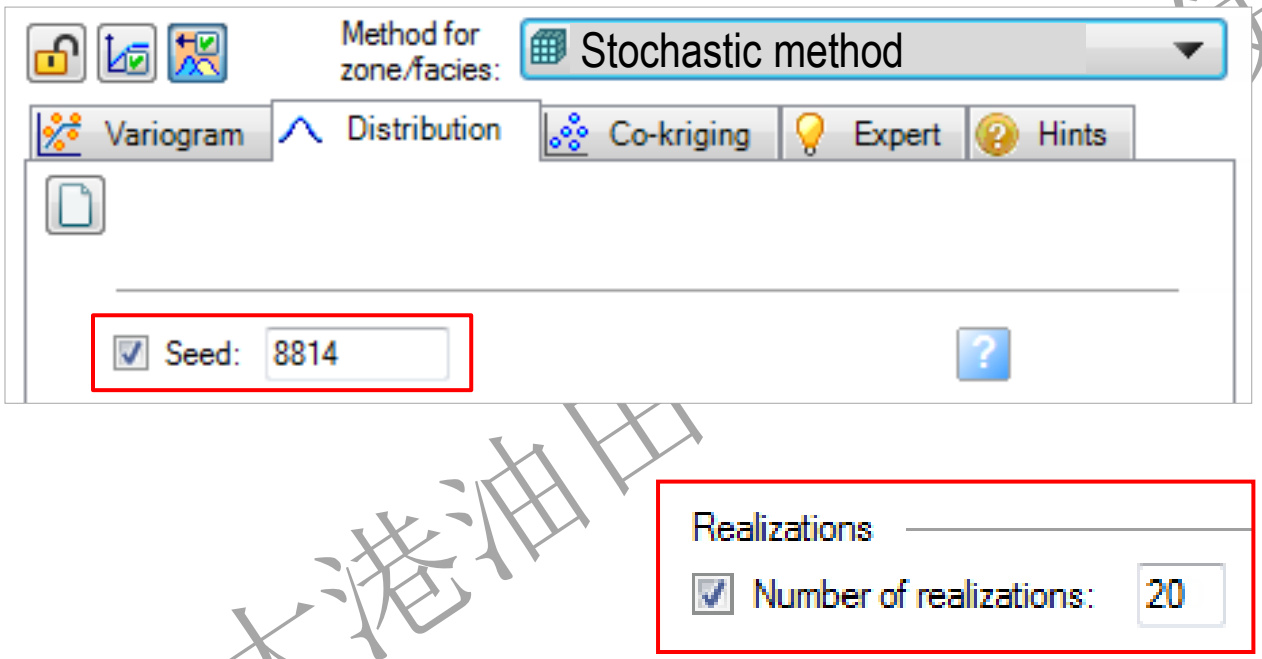
Stochastic vs. Deterministic



Equiprobable multiple realizations!

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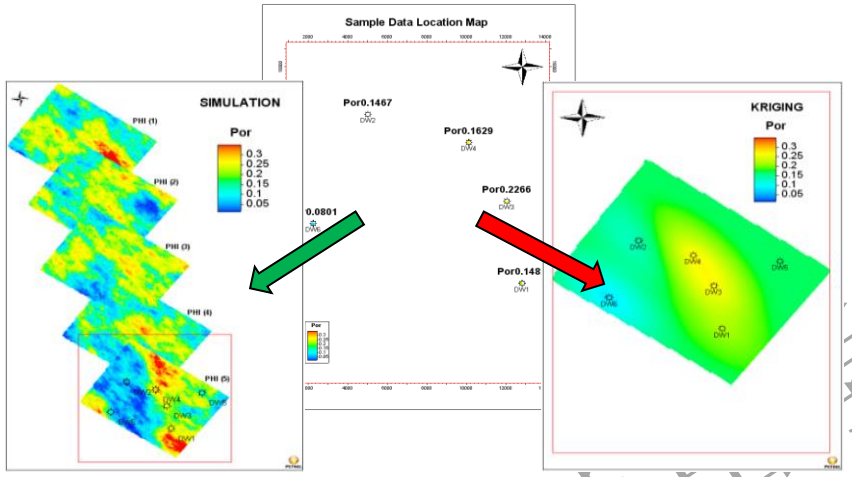
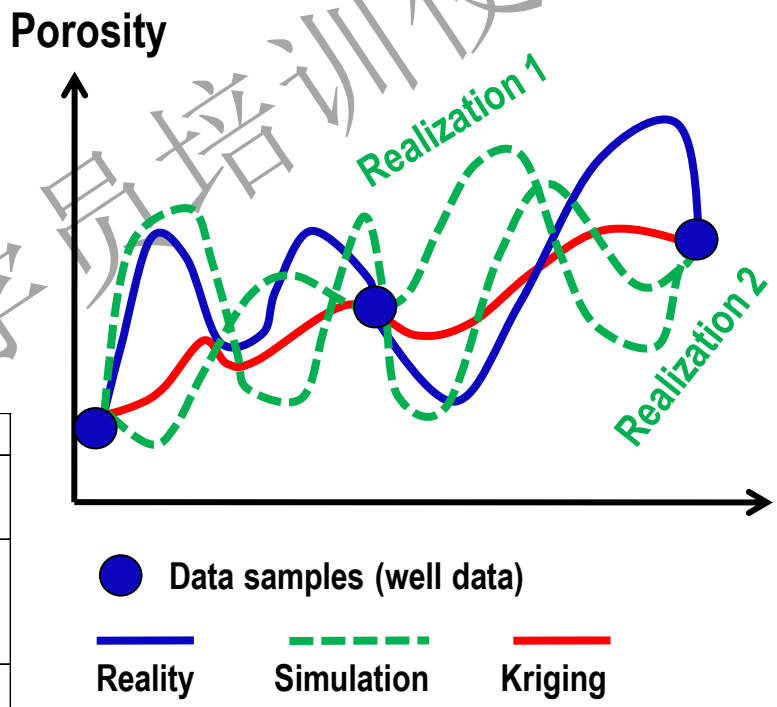
Simulation vs. Kriging



	Simulation	Kriging
Output	• Multiple Equiprobable Realizations	• One Deterministic Model
Properties	• Honors Wells • Honors Histogram • Honors Variogram	• Honors Wells • Honors Variogram
Image	• Fuzzy, pixeled • Same variability everywhere	• Smooth away from wells
Use	• Flow Simulation • Uncertainty Calculation	• Mapping • Volumetrics



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