

# Regional Stratigraphic Prospect Generation in Carbonate Plays

## The Challenge

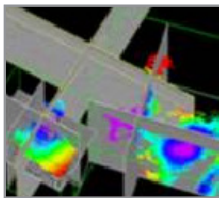
A national oil company in the Middle East wanted to perform stratigraphic prospect generation for three carbonate reservoirs which have traditionally only been exploited as structural traps. Extensive geological heterogeneity in the reservoirs introduced a high level of uncertainty and risk to the exercise.

## The Assessment

A large variety of well, interpretation and seismic attribute data was available to characterize the reservoirs but could not be easily combined into a single, readily understandable facies description.

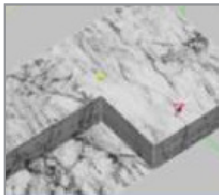
Additionally, working on the reservoirs one field at a time in a conventional workflow risked missing regional depositional trends.

### Input Data of the Workflow



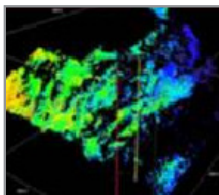
#### Regional Interpretation

- Multiple surveys, mistie corrected
- Gridded and mapped



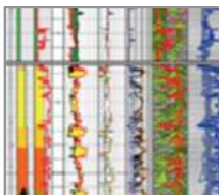
#### Complex and Geometric Attributes

- Coherence Cube technology
- Spectral decomposition volumes



#### Advanced Inversion Output

- AVO attribute volumes
- Impedance and porosity volumes



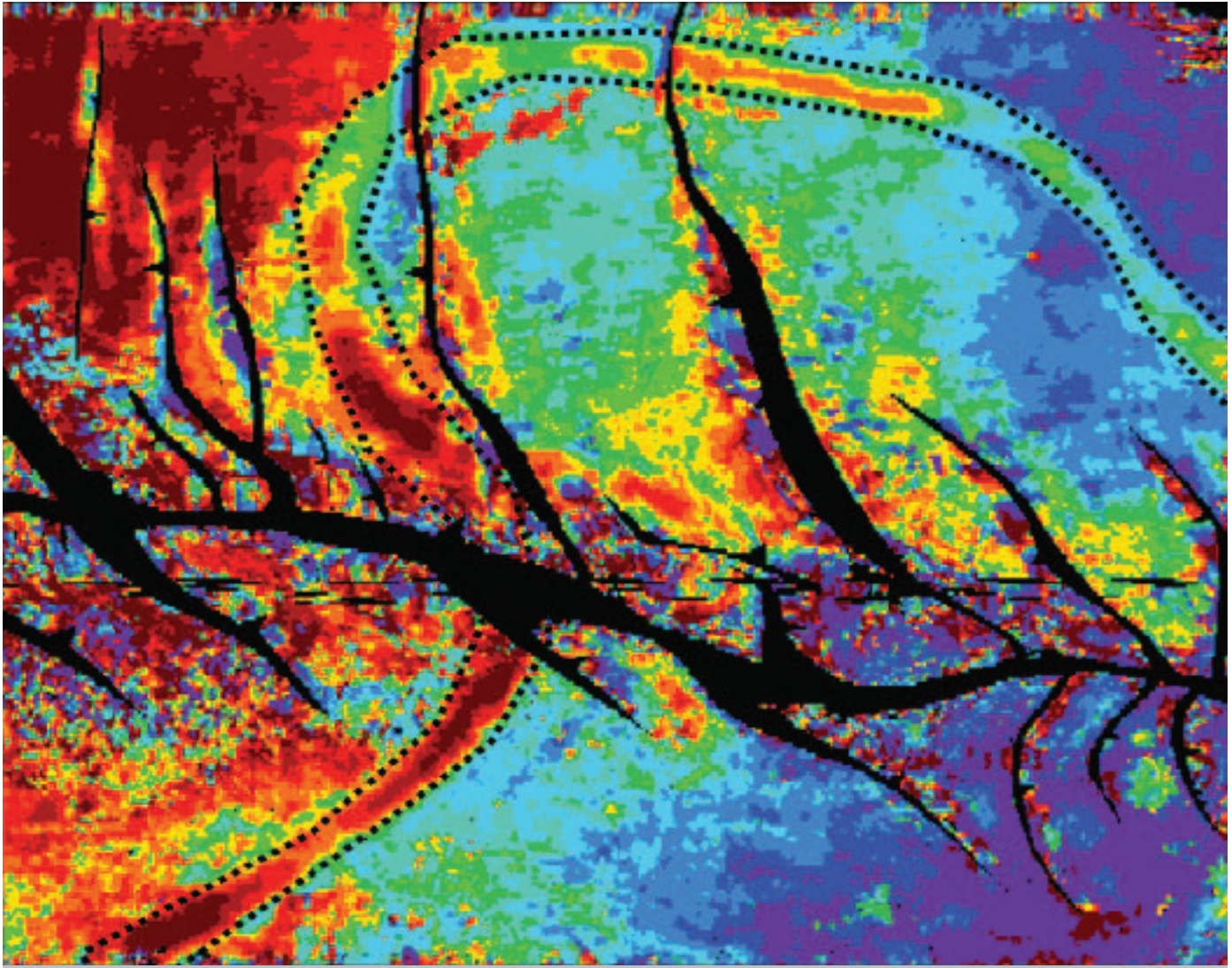
#### Well Log Data

- Multiple source
- Multiple resolution

## The Solution

Paradigm recommended the following workflow:

1. Combine attribute volumes into Paradigm's seismic facies solution. A Self-Organizing Map (SOM) based on neural network technology identifies and sorts all the information into classes that are representative of the most significant combinations of attribute values. These are referred to as seismic facies.
2. Generate a set of electrofacies from well data and calibrate them to seismic facies
3. Create a regional geological model utilizing the large amount of seismic and well data already available.



▲ Paradigm Seismic Facies map showing variations in properties along a channel system.

## The Results

By applying this solution, the customer was able to:

- Track and qualify reservoir heterogeneity on a regional scale
- Open up new stratigraphic prospects
- Optimize development work
- Minimize well placement risks