

# **INTEGRATED GEOMECHANICS-TO-STIMULATION WORKFLOW FOR UNCONVENTIONAL GAS EVALUATION AND DEVELOPMENT**

**Vincenzo De Gennaro<sup>1</sup>**

<sup>1</sup>Schlumberger

## **ABSTRACT**

This presentation provides an overview of the integrated unconventional evaluation workflow adopted for completion design and hydraulic fracturing of unconventional gas wells in tight sands and shales.

Relevant data acquisition tailored for tight formations and integration of logs data and core data from laboratory testing are first discussed. The importance of anisotropic measurements from borehole sonic data using Sonic Scanner logging combined with laboratory geomechanical tests is emphasized. The relevance of these measurements is discussed with regard to stress modelling and wellbore stability analysis. Other features such as: influence of natural fractures, rock heterogeneity, changes in stresses due to fracturing and production, completion model calibration based on microseismic monitoring are also discussed.

The integrated geomechanics-to-stimulation workflow embraces single well and reservoir geomechanics modelling, hydraulic fracturing modelling and production modelling. The delineated approach leverages various state-of-the-art technologies to unlock unconventional resources, namely: horizontal drilling, multi-stage hydraulic fracturing, complex fracture network modelling, geomechanical coupling and microseismic events prediction. Some examples are presented to highlight the importance of data integration at various scales in order to address fundamental aspects related to well placement and hydraulic fracturing design.