

Emergence of New Data Types in Unconventional Plays

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Objective: The evolution of shale plays in the U.S. and internationally drives initiatives for standardized methods of storing and accessing critical data types for reservoir management workflows used by multidisciplinary asset teams. Some of these data types are newly derived, such as the True Stratigraphic Position of a horizontal wellbore relative to a drilling target, or have become more critical as specific plays mature, such as the geospatial location of water takeout and disposal locations for hydraulic fracturing. The proliferation and use of these datatypes will serve as a validating test of the adaptability of data management tools and processes included in data management maturity initiatives.

Procedure: This paper uses recent site assessments at U.S. shale plays and recent advances in providing intelligent indexes to reservoir management to track the changing taxonomies of data types as they are used by asset teams in new plays. Recently adopted best practices for integrating these data types into existing and emerging data flows are analyzed to determine their impact on the maturity of data management solutions. Case studies are presented of the inclusion of these data types into search taxonomies and standardized data models and procedures, at different stages in the evolution of the unconventional plays.

Results: This study identified new mission critical data types that are neither strictly defined nor well handled in current data management applications for reservoir management. Suggestions are made for methodologies to incorporate these data types into workflows for asset teams working across geotechnical disciplines. The best practices are based on industry accepted benchmarks for improving the maturity of data management applications and methodologies. They include the use and extension of industry standard data models and use of the data types as facets in search taxonomies.

Conclusions: Some standardized data models and processes can be adapted for use in new unconventional shale plays, and robust workflow modeling tools can be customized for these environments as the new plays expand. Geologists and geologic data managers should be aware of these new data types and how they can be utilized in asset team applications in order to create, customize, and optimize workflows for organizations. Efficient and proper handling of these new data types can provide a competitive advantage for operators in unconventional plays.