EXPLORE, DEVELOP, AND PRODUCE—SAFELY AND EFFICIENTLY

New methods to efficiently extract oil & gas from harder resources (such as shale) or more extreme field conditions have made safe well development and sustainable production increasingly complex. The Optimized Subsurface Development Industry Solution Experience, powered by Dassault Systèmes 3DEXPERIENCE® platform, provides integrated analytics, workflow management, and multi-physics simulations in a collaborative project management environment. Optimized Subsurface Development helps streamline well development and long-term production processes in order to manage and develop subsurface resources more viably.
Key Benefits:
• Reduce time-to-market and cost of market expansion
• Deliver innovative products to market faster while ensuring full regulatory compliance
• Advance your regulatory strategy: spend less time, reduce risk of non-compliance, and improve traceability
• Enhance decision making through real-time views across the lifecycle of innovation
• Ensure a consistent approach to quality, compliance, and regulatory activities across your extended ecosystem

INTELLIGENT INSIGHTS
By using advanced analytics to evaluate field characteristics against a library leveraging earlier project historical information from earlier projects, companies can identify challenges that have already been encountered and resolved. Insights into the viability of new fields and better decisions are then possible, including assessment of the suitability and costs of possible remedies.

INTELLIGENT PROJECTS
Using real-time business dashboards enables project management to drill down and get true accessibility for information integrated across disciplines and stakeholders. All data (such as digital representations of the field, multi-physics simulation results and data, analytics, and workflows) associated with a given field are captured so that a complete view of the field can be available in real time. Capabilities for monitoring execution progression help keep projects on budget and on schedule.

INTELLIGENT RESERVORIES
As oil is extracted from a field, issues can occur from unexpected variations in production. By simulating the connection of oil flow and extraction and the geomechanical response of the subsurface, the behavior of the oil reservoir and its surrounding regions during the field’s lifetime can be predicted. Such assessments can help prevent extraction failures and environmental concerns, and help ensure optimal production during field life.

INTELLIGENT WELLS
Drilling and Completion technologies using sophisticated fracture and failure methods have seen significant improvements. Oil and gas can now be extracted from fields that were once uneconomical or even impossible to access, and combining analytics with advanced, realistic multi-physics simulations can now help in securing well sustainability. Prediction of the integrity of a well, taking into account stress changes and potential fractures in the region near the well bore over a 20 to 30 year period, helps planning of optimal solutions—ranging from well trajectory optimization to optimal selection of equipment or completion methods.

INTELLIGENT PRODUCTION
Advanced analytics can help identify key parameters from masses of data to help understand the root cause of production issues that can most affect production or cause failures. Then realistic workflow simulation can be run to fully understand an issue and identify possible solutions. This combination provides unprecedented understanding of production operations, opening the door for knowledge capture and reuse so that never fields can be developed in a much more intelligent and optimal manner.

These images show the porosity distribution for a field reservoir and the potential subsidence that will occur over time. The top image shows the porosity in the reservoir at the start of production (no subsidence at this stage). The bottom image uses Intelligent Reservoir to show simulation predictions of the porosity distribution in the reservoir after three years of production and the resulting subsidence at the top surface. (Courtesy of Baker Hughes)