

Collaborative, Web-based Petroleum Reservoir and Play Characterization and Modeling in the Public Domain

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Interactive, real-time analysis of digital data resources that are increasingly available in the public and private domain offer new opportunities to cost-effectively identify and model subtle and bypassed pays at field scales and beyond in mature petroleum provinces. GEMINI (Geo-Engineering Modeling through INternet Informatics) is a DOE-funded, public-domain web application that dynamically analyzes and models petroleum reservoirs and plays utilizing on-line databases (<http://www.kgs.ukans.edu/Gemini/index.html>), directed toward smaller petroleum independents. GEMINI creates a virtual project by assembling digital logs, core analysis and photos, and production and test data, presenting to the user a suite of web-based analytical tools. Tools include interactive rock catalog, log analysis, spatial analysis, volumetrics, and material balance functions accessed via a standard workflow design. PVT calculator and DST analyst provide additional tools to analyze the reservoir. GEMINI aids petrophysical and petrofacies modeling used to derive effective pay and flow units, display "marked" wireline logs from LAS files, and delineate and analyze flow units through mapping and volumetrics. Kansas Hydrocarbon Association Navigator (KHAN) utilizes what is learned about the petrophysical data to predict hydrocarbon pay or other constituents at a play- or field-scale. GEMINI accommodates distant collaborations using secure password protection and assigned access. Charts and maps are output from GEMINI to include in reports or the data can be exported for further analysis in other software applications. Step-by-step procedures, concepts, and case studies help the user negotiate the program.