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W. Lynn Watney[1], John H. Doveton[1], John R. Victorine[1], Geoffrey C. Bohling[1], Saibal Bhattacharya[2], Alan P. Byrnes[1], Timothy R. Carr[1], Martin K. Dubois[1], Glen Gagnon[1], Willard J. Guy[2], Kurt Look[2], Mike Magnuson[2], Melissa Moore[2], David R. Collins[2] (1) Kansas Geological Survey, University of Kansas, Lawrence, KS (2) Kansas Geological Survey, Lawrence, KS

Geo-Engineering Modeling through Internet INformatics (GEMINI)

Assembling expertise and managing information and software applications are essential, but limiting tasks in development of geological/petrophysical and engineering reservoir models. GEMINI (Geo-engineering Modeling through Internet Informatics) combines online access to digital data with web application software to offer new options for collaborative petrophysical analysis and construction of tailored, real-time, quantitative reservoir models.

GEMINI retrieves data from a host website to define a project, uploads user information, and runs Java servlets and applets to build and analyze variable-sized three-dimensional petrophysical data volumes. Model components include: 1) individual and multi-well petrophysical log analysis focused on quantitative characterization of pore types and petrofacies, integrated with relational digital core catalog and DST analyzer, 2) volumetrics and material balance calculations, and 3) delivery of essential reservoir parameters suited to conduct fluid flow simulation. System informatics, consisting of the network, software, data, and tutorial components, permit development of projects with varied spatial scales and complexity and incorporate user expertise. The goals include: 1) building a simple, validated petrophysical reservoir model, 2) assembling key parameters for reservoir simulation and, 3) keeping mature petroleum provinces like Kansas competitive.

Participating major and independent companies involved in GEMINI development provide information and expertise to insure that the site is practical and useful. A tutorial module instructs clients on theory, application of analytical tools, and operation of GEMINI.