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Value of Information in the Oil and Gas Industry: Past, Present, and Future

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Summary

An important task that petroleum engineers and geoscientists undertake is to produce decision-relevant information. Some of the most important decisions we make concern what type and what quality of information to produce. When decisions are fraught with geologic and market uncertainties, this information gathering may such forms as seismic surveys, core and well test analyses, reservoir simulations, market analyses, and price forecasts--which the industry spends billions of US dollars each year. Yet, considerably less time and resources are expended on assessing the profitability or value of this information. Why is that?

This paper addresses how to make value-of-information (VOI) analysis more accessible and useful by discussing its past, present, and future. On the basis of a survey of SPE publications, we provide an overview of the use of VOI in the oil and gas industry, focusing on how the analysis was carried out and for which types of decisions VOI analysis has been performed. We highlight areas in which VOI methods have been used successfully and identify important challenges.

We then identify and discuss the possible causes for the limited use of VOI methods and suggest ways to increase the use of this powerful analysis tool.

Introduction

One of the most useful features of decision analysis is its ability to distinguish between constructive and wasteful information gathering. VOI analysis evaluates the benefits of collecting additional information before making a decision. Such information gathering may be worthwhile if it holds the possibility of changing the decision that would be made without further information. VOI attributes no value to "uncertainty reduction" or "increased confidence" per se. Rather, value is added by enabling the decision maker (DM) to better "tune" his/her choice to the underlying uncertainty. Thus, information value is forever an entanglement of uncertainty and decision making; one cannot value information outside of a particular decision context.

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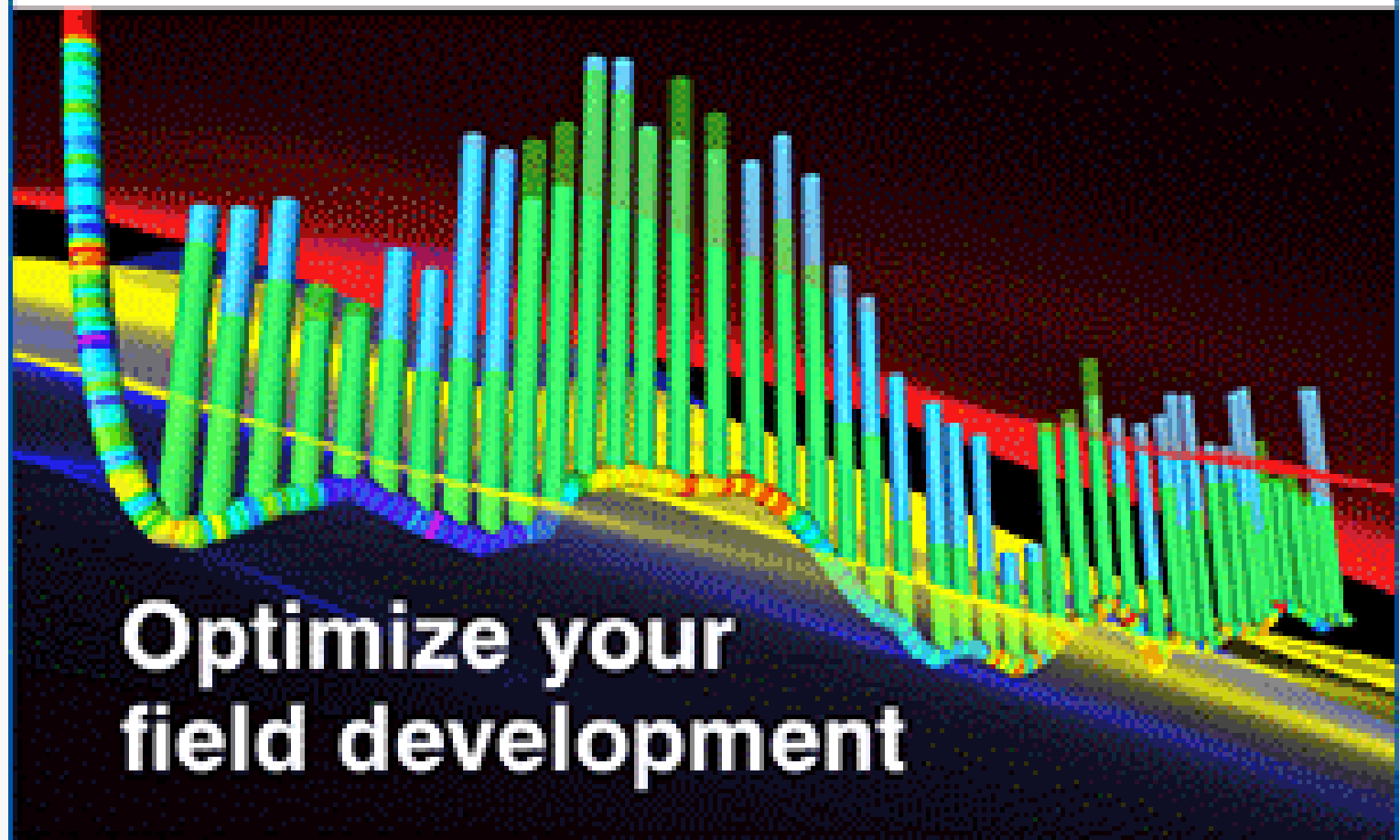
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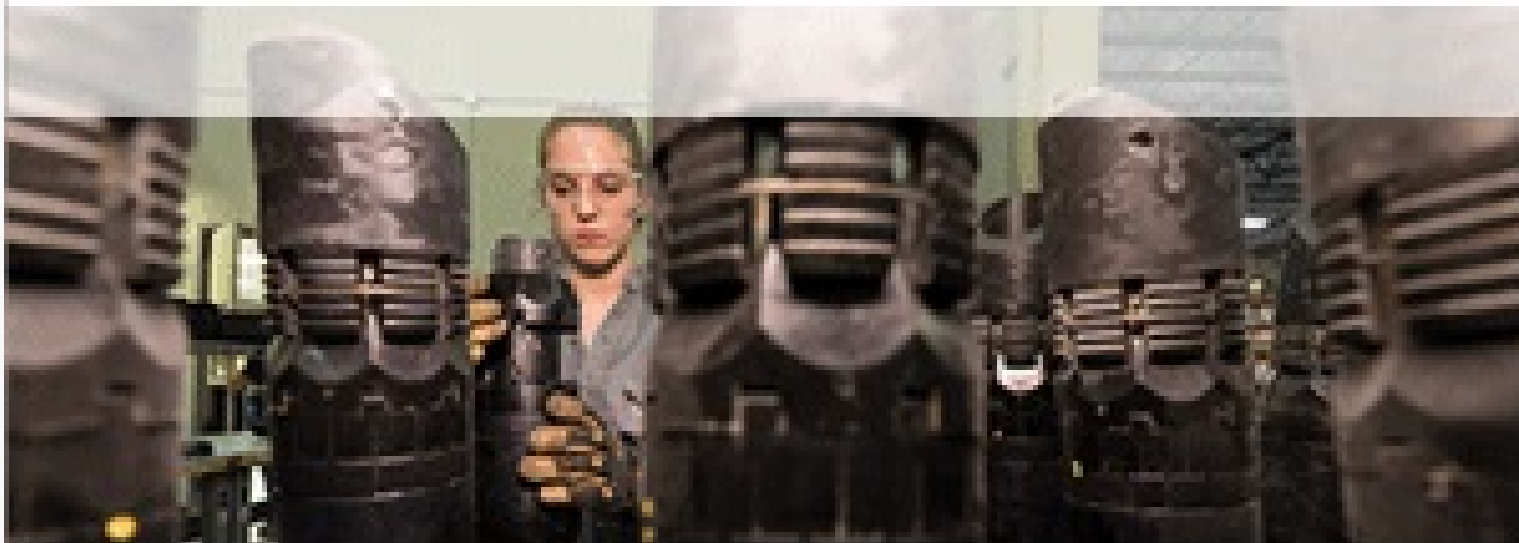
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