**Optimizing the Human/Machine Partnership: Getting the most out of your investment in data**

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Abstract

Everyone is aware that data is expensive and time-consuming to acquire, process and analyze. Nevertheless, we are collecting unprecedented amounts of it in the not unrealistic hope that we will make better, more effective decisions and the investment will pay off. Luckily, we have machines that can do all the analysis and give us accurate recommendations at the press of a few buttons. …if only that were true…

In reality, it is more difficult than ever to integrate all our data and deliver complete, accurate, thorough and meaningful predictions of how to map reservoir sweet spots, or where to drill the next well to maximize the amount oil and gas we can expect to produce. Machines can give us results for certain types of analysis, but quite often, those results are biased by inaccurate assumptions or incomplete models, hindered by unrealistic extrapolations from known to unknown relationships and correlations, and sabotaged by shortcuts, either obvious (inputs) or not so obvious (algorithms). Eventually, all these problems may be addressed and resolved, but in the meantime, humans need to be in charge, guiding the right amount of machine involvement, in the right direction, and evaluating the inputs and outputs at every stage. The optimum partnership balance depends on the human, the machine and the data.

This presentation proposes workflows that use computer algorithms to do the heavy lifting, but humans to make the judgements at key points in the assumptions and workflows. Seismic and well data examples are shown to illustrate both the problems and the possibilities of big data integration – in time to influence decisions.