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A Discussion of Drilling and Well Control Simulators: past present and future

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In recent times, drilling and well control simulators have become popular and effective tools for training experienced and new crews and are critical for safety and performance. They are also useful for emergency preparedness and making critical Well control decisions. Currently, digitalization is the keyword for all industries including Petroleum, however digitalization has been slowly perceived as a solution for drilling applications. This paper aims to review the current types of Drilling and Well control simulators into three categories namely, hardware, software, and cloud-based, and discusses the technology advancements and their application in Drilling and Well control training. It further highlights the unique features of these simulators and elaborates on their mode of training delivery, challenges, and opportunities for future development. Consequently, the analysis generated in this paper may contribute to the future design and application of Drilling and Well control simulators in the ongoing discussion regarding fidelity and virtual reality in the oil and gas drilling industry. The paper will further discuss how can we learn from the simulator world and move forward with digital transformation of our industry.