

Industry 4.0: Blockchain — What is it, How Does it Apply to Oil and Gas, Who is Using it and How Can I Apply it to My Workflow

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Abstract

With the designation of Industry 4.0 in approximately 2012 companies have increased their focus and awareness of this somewhat silent integration of technology into the ways in which we conduct commercial interactions. Punctuated steps in commerce have infiltrated large- and small-scale transactions in both the corporate and personal levels of our society. These changes are not limited to commerce transactions but also apply to data and dataset management. Industry 4.0 is comprised of an estimated 12 components, of which blockchain is only one. Arguably, blockchain can be considered the thread of authenticity that allows all other components to function at a level where information becomes verifiable, secure, and distributed. These technologies, with a focus on blockchain, can be and already are being applied to the oil and gas industry. Applications including the physical trading of commodities increasing accuracy, efficiency, and acceleration of transparency and working capital cycles. Additional advancements in sensor enabled invoicing, pipeline and facility inventories, and contract execution are also being established. With a firm grasp on chain of custody, industries like oil and gas will have improved abilities to ensure environmental compliance, tracking losses, and decreasing fraud and abuse. In this analysis a brief introduction and history of blockchain's role in Industry 4.0 is provided. Current applications in the oil and gas industry are examined through pilot projects, case studies, and implementation. Final discussion will highlight how an individual or small-scale company can implement blockchain technologies to enhance and secure their data as

well as looking at the actual computer codes used to construct a personal blockchain with distribution instructions.

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