Oil and gas: Enterprise of the future

wipro

The future of field surveillance in oil and gas

What if a production manager would walk into his office and open his laptop to engage with a virtual Petroleum Engineering Assistant providing him with an account of how his wells have been performing in the last 24 hours or if he is required to pay attention to a piece of equipment or schedule a maintenance job on a separator?

Yes, that is where the future of field surveillance lies-an Artificial Intelligence-driven virtual assistant with the superhuman capability of crunching all the data from the field and providing insights on performance, possibilities and predicting failure.

Why do we need this assistant now more than ever?

The fields of the future are becoming a reality, the industry is slowly inching towards the fully automated field which has been envisioned for more than four decades now by the visionaries and thinkers in Oil and Gas. However, it is not coming alone. With it are coming a bunch of other problems to deal with, the biggest among them is the deluge of data. Oil and Gas assets all across the world have been generating tons of data on a daily basis providing us with more ammunition to resolve our operational issues but also leaving us with an enormous task of managing this huge volume, variety and fragmented location of data. We have players overwhelmed with data already and struggling to keep up with the changing paradigms in the modern world.

The Cloud seems to be answering the problem of consolidating data at one place, well supported by the concepts of Big Data, data management, migration and integration. All of these work well only if we have a fully automated system for field data capture which assures quality and eliminates errors at the doorstep. Errors in the data capture step multiply exponentially as they progress through the system and make the task even more difficult.

Since the focus of this article is the future of Oil and Gas Field surveillance, let me shift my attention back to the surveillance part of it. Therefore, assuming that the data is in its place and is accurate and readily available, we still need engineers to evaluate this huge volume of data and utilize advanced analytics tools coupled with predictive maintenance algorithms to draw useful insights to manage their operations on a regular basis. This is by itself is a huge task considering the scale of operations and the amount of data the engineer needs to work with.

Additionally, the number of data sources has increased enormously with our ability to deploy sensors in every part of operations and our ability to generate data every few seconds.

In the new set up, the engineer has more variables to take into account and with it increases the complexity of calculating the KPIs required for surveillance.

All of the above calls for an automated system which has the super human capability to evaluate this enormous data set, provide insights based on a pre-input set of KPIs and work with an algorithm which enables it to self-learn and become more and more accurate with time and experience. With this virtual assistant spending time analyzing the data, the engineer gets a set of insights when he gets in to decide his next steps. All he needs to do now is prioritize and actionize based on what he feels is more critical for his business.

He would then utilize this same virtual assistant again to set up meetings, create work orders or change system settings of his equipment as per the already provided set of recommendations.

How do we get there?

The future lies in that one integrated virtual assistant to manage the business. However, the journey towards building such an assistant looks steep and needs a lot of thought and even more hard work for the current crop of engineers, data scientists, AI experts and visionaries involved.

We would need to think big and start small. The first step would be to build an interactive bot to manage performance for every part of the business. For example, a bot to evaluate equipment performance in terms of both regular monitoring and troubleshooting would be a great start. Similar bots would be needed for well monitoring, inventory management, oil hauling, etc. We are already doing some of the surveillance from an analytics perspective using real-time data captured through sensors and aggregated in systems like data historians or the Cloud in some cases. The additional input would be a Machine Learning algorithm which would become more and more accurate as it gains experience.

As these bots become more and more accurate, we would work towards using their inputs to fuel the decision-making process of an integrated bot which I would like to call the 'Virtual Petroleum Engineering Assistant.'

With such an assistant, we would be able to have a consolidated view of the business and work together towards business excellence as a whole and not try to work in separate teams which have conflicting objectives sometimes.

About the author

Amit Prakash
Consulting Partner - Upstream

Amit Prakash heads Upstream go to market in Wipro US region and is a deep domain SME in the Oil and Gas Industry with extensive experience in Digital Technologies. Over a period of 19 years, Amit has led various Business transformation programs leading globally placed multi-vendor teams and has delivered highly complex engagements successfully to clients across geographies.

In his current role at Wipro, he is responsible for building market-focused solutions on new age platforms and advising clients on utilizing new age concepts to improve their oil and gas operations. He has a Petroleum Engineering degree and has also worked in deep-sea field operations as a Production Engineer.

Wipro Limited

Doddakannelli, Sarjapur Road,
Bangalore-560 035, India

Tel: +91 (80) 2844 0011
Fax: +91 (80) 2844 0256
wipro.com

Wipro Limited (NYSE: WIT, BSE: 507685, NSE: WIPRO) is a leading global information technology, consulting and business process services company. We harness the power of cognitive computing, hyper-automation, robotics, cloud, analytics and emerging technologies to help our clients adapt to the digital world and make them successful. A company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, we have over 160,000 dedicated employees serving clients across six continents. Together, we discover ideas and connect the dots to build a better and a bold new future.

For more information, please write to us at **info@wipro.com**