

How The Internet Of Things Is Redefining Oil & Gas Business

• By Amar Balutkar, Director of Engineering - IoT Practice, Digital and Hi-Tech at Mobiliya, a QuEST Global Company



According to a market intelligence report by BIS Research, the global market for IoT in the Oil & Gas industry is expected to reach to \$30.57 billion by 2026, growing at a CAGR of 24.65 per cent during the forecast period from 2017 to 2026. This is phenomenal, considering that the sector is perceived as the least “digitally mature”. This development also reiterates the inevitability of digital technologies like IoT, AI, Machine Learning and Deep Learning for future business evolution and growth. Already, IoT is enabling the heavy-duty Oil & Gas sector to increase efficiencies, minimize losses and drive further innovation. With global crude oil prices plunging from \$100/barrel in 2014 to a new equilibrium of almost \$70/barrel, Oil & Gas companies are now facing arguably the biggest challenge of maintaining their top and bottom lines. IIoT, with its improved apps, platforms and solutions, now promises to become the key driving force that can help unravel new opportunities across the Oil & Gas value chain.

IoT: Connecting Oil Rigs to Profits

IoT enables machine-to-machine connections, smart sensors and big data analytics. For the Oil & Gas industry this directly translates into key benefits like increased active rig time, a better-connected supply chain, reduced cost inflation, and fewer delays in new projects.

Optimizing Upstream, Midstream & Downstream Channels

Broadly divided, the Oil & Gas industry has three major sections – upstream, midstream and downstream. The upstream section mainly comprises companies that focus on oil exploration and production. Midstream companies transport the oil and gas through pipelines and also manage

storage while downstream companies are the refiners and retailers. Traditionally, companies in every segment have been facing unique challenges. IoT offers targeted solutions that can help companies overcome pain-points specific to their role.

For oil production and exploration companies, IoT-driven solutions help in improving output significantly. As wells mature, liquids often accumulate, hindering the flow of hydrocarbon. To address this problem, companies use the plunger-lift technology to remove the accumulation and resume production. However, the plunger lift efficiency is dependent on well pressure and temperature, data that, for wells that are several decades old, is provided only once per hour or day. With IoT technology, it is easier to connect to sensors throughout the well and to sample readings more frequently. Using edge analytics on sensor data, producers can optimize the plunger lift cycle and increase production by up to 30%. In addition, producers have the data needed to rank their wells by production efficiency, information that is critical for effective asset portfolio management.

Also, sensors can collect data on surface materials, temperatures and how equipment perform in different environments. These readings help oil producers find new hydrocarbon deposits, determine new spots for drilling and even find ways to optimize already-operational rigs.

Midstream companies have for long battled the problem of oil spills, fuel leaks and thefts. It is estimated that companies suffer annual losses of \$10 billion approximately due to fuel leaks and thefts in the US alone. IoT can emerge as the most effective solution to counter this challenge. By equipping oil & gas pipelines with sensors installed inside and outside,



companies can track potential pipeline breaches, dents, cracks and corrosion precisely and efficiently.

Downstream refiners and retailers probably deal with the most commercially challenging part of the energy value chain as they deal with a highly commoditized version of petroleum products. Thus, it is critical that refineries run at the most efficient and optimum level, with minimal unplanned shutdowns. However, despite refineries having strict maintenance schedules, unplanned downtimes are still high and cost companies dearly. Research shows that between 2009 and 2013, there were more than 2,200 unscheduled refinery shutdowns in the United States alone, an average of 1.3 incidents per day. These shutdowns cost global process industries 5% of their total production, equivalent to \$20 billion per year. By connecting machines with digital sensors, refineries can now accurately track the operating status of every machine. Integrated device and asset management solutions help maintenance teams by sending timely alerts for each machine and predict an impending failure well beforehand. This allows teams to schedule maintenance well in time and avoid shutdowns to a great

extent. Also, maintenance teams need not spend time checking machines that do not require any repair.

Driving New Business Models

By digitally connecting machines and devices, IoT has now allowed companies to tap into device data which was inaccessible before. This has led to companies getting unparalleled insights and information. This information becomes even more powerful when companies are able to combine this data with real-world demand fluctuations. IoT solutions are allowing companies to collect data across all touchpoints in the energy value chain and integrate it in a single platform. Using big data & BI tools, this data can then be used for further analysis and forecasting market demand. Equipped by this data, companies can now strategically plan their next drilling operation. With the new “low-price” equilibrium for oil & gas, this strategy becomes even more crucial to maximize returns.

The Road to Success

The future belongs to companies that not just incorporate IoT, but who do it really well. While it is critical to invest in IoT apps or build proprietary tools, it can significantly slow down the pace of development for the company. Companies that can create a great collaborative model have the best chance of becoming market leaders.

About the Author



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As the Director of Engineering - IoT Practice, Amar is responsible for the engineering delivery & overall strategy for IoT Practice at Mobiliya, A QuEST Global Company. Well versed with technology, he also has broad experience in building & managing diverse international teams to meet customer expectations. He has over a decade of experience in software for mobility having served at companies like Azingo (acquired by Motorola), Motorola Mobility at various capacities during his career.

