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LTE and other wireless technologies are revolutionizing oil field communications with fast, inexpensive broadband connectivity. >>

Mobility in the Oil and Gas Industry

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Several years ago, the oil and gas industry started serious pursuit of a viable ICT solution for advanced, low-cost communications infrastructures that could efficiently and automatically handle the massive amounts of data required as oilfield operations became digitized and smarter.

“Smart drilling,” for example, uses three-dimensional seismic maps and cables equipped with fiber-optic sensors to let oil companies know where to drill and in what direction to steer underground. These map and sensor operations generate massive amounts of Big Data that furthers the capacity for production companies to find and tap new oil and gas reserves previously hidden from older exploration technologies. Access to this new technology requires fast data transmission, massive computing power, and an integration path for interfacing with current and future ICT systems and industry operations.

Mobility is the Key

Mobile infrastructures have become the preferred ICT option for industry. The advantages of mobility are understood to include:

- Speed of execution. Simple architectures are inexpensive to install.
- Clear paths exist for connecting legacy equipment to large ICT infrastructures.
- Fast transmission of field data to monitoring facilities near and far.

As mobile systems mature, new standards for ease-of-use have become integral to digital oil field operations.

The traditional method for remote wellhead monitoring and management — smart drilling — has been to use Very Small Aperture Terminal (VSAT) satellite links. In addition to LTE devices being much less expensive and faster to deploy than a VSAT terminal, satellite circuits introduce a half-second uplink/downlink penalty that is out of bounds for the millisecond latency standards of modern broadband networks. Wireless technologies enable drilling rigs to be connected at optical-fiber speeds to corporate networks hundreds and thousands of miles away.

Smart drilling over mobile infrastructures enables the oil and gas industry to bring new wells online much faster. Besides greater levels of efficiency, the combination also reduces travel time

for field technicians to remote sites and improves their safety in rugged environments.

Upstream and Downstream Mobility

A large number of applications dependent on two-way interaction have been developed in the last fifteen years to facilitate critical operational processes such as:

- Real-time monitoring of drilling rigs and remote operational sites and construction offices.
- Protecting the environment by meeting increased regulatory monitoring requirements and creating data archives.
- Workflow efficiency for process automation operations, resulting in cost savings and the reduction or elimination of travel time, distance, and duplication of effort.

Given the growing number of oil and gas companies that are actively building out new mobility infrastructures, it is just a matter of time until the competitive environment convinces the entire industry to adopt mobility solutions for access to critical production information anywhere, anytime. ▲