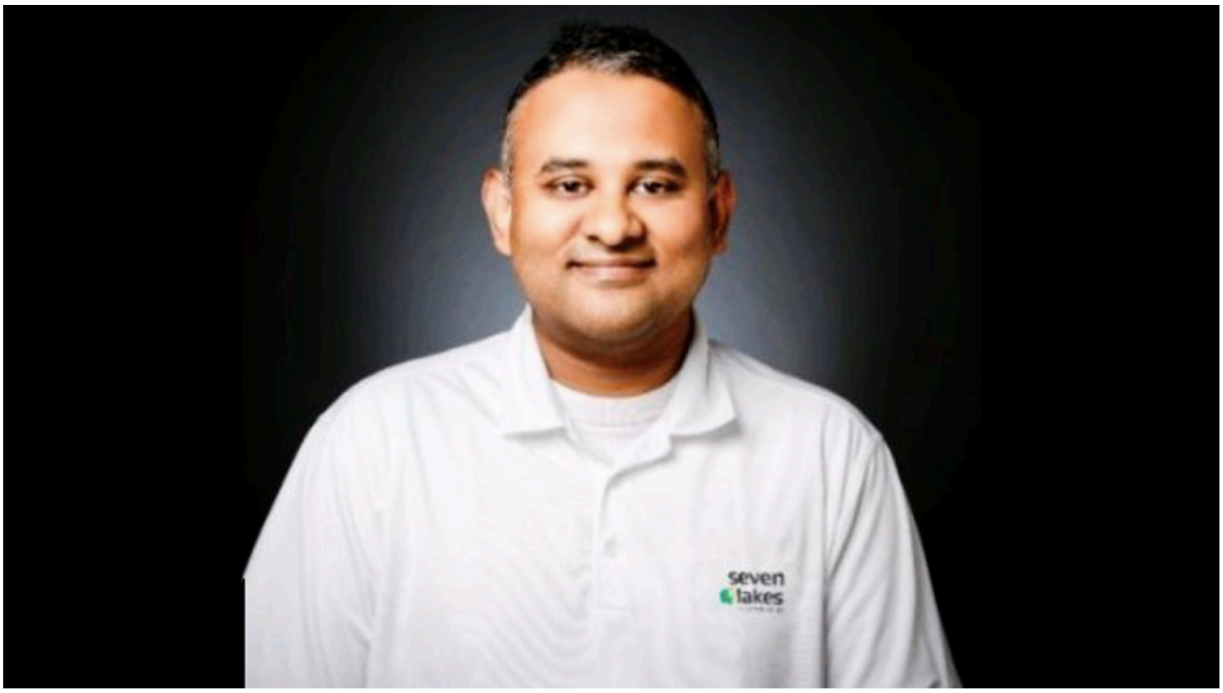


# ACHIEVING LAST MILE CONNECTIVITY TO PUMP BY EXCEPTION

The oil and gas sector has begun its journey to digitization. A growing number of firms have started making investments in automation technologies, like SCADA systems, but too few are truly capitalizing on those investments. Now is the time to put technology to work to achieve last mile connectivity and gain productivity advantage.

The first step is to move past the antiquated paper-based, manual processes that hinder mobility in the field. That time-consuming communication loop, which means lease operators have to maneuver several apps and hardware devices for each kind of activity. Be it production data entry inputs, emergencies, SCADA automation alerts, flow techs, work orders, plunger lift, or other tasks, the relentless back and forth equates to less time for the field workers to do work that we need them to do — pump oil. Effective digitization can streamline all these processes.

The second step involves arming field personnel, the production company's first line of operational defense, with the right tools. In most oilfields, field personnel cannot fully benefit from their proximity to operational challenges due to a lack of up-to-date information. If they are supplied with intuitive, real-time data on production volumes, compliance issues, and a rundown of all the costs of doing business, they gain the power to make the right decisions for their assets and the company as a whole. By giving operators the information they need, when they need it, producers can enable last mile connectivity and pump by exception.

**Falling In the Last Mile**

Last mile delivery is a critical part of oil and gas production but it hasn't innovated in recent decades. Similarly, outdated processes throughout the oilfield have created negative effects on the efficiency of last mile delivery. Holistic intelligent connectivity strategies, however, solve problems on both sides of the equation.

Too often, when a major oil and gas company takes the step to invest in large instrumentation, it does not see its production cycle speed up as anticipated. Some elements, however, have a greater impact on production than others. Artificial intelligence can identify the highest priorities, unify them by purpose, and increase the speed of operations by cutting down inconsequential actions.

This wasn't possible decades ago because complex web interface architectures, increased labor, and operational costs stood in the way of exponential growth and productivity. However, technology that enables pump by exception allows oilfields to break this cycle. Technology can equip each field worker with the data they need to accomplish the highest priority tasks.

However, there are a variety of reasons that investments in automation have failed to deliver. Complexity, over-engineering, and poor usability form roadblocks on the path to efficiency. But if companies can overcome these barriers, it will enable workers to pump by exception. To understand how this really works, the following is how technology can help:

**1. Established Route Management**

Decades of centralized route management has created entrenched rituals in the oilfield: the same set routes, the drive around, and the strenuous stock-taking back at the station, day after day, month after month. Those companies that have invested in mobile technologies have succeeded in making field data capture more intuitive. But this is only one part of the bigger problem. Operators are still chasing job orders coming from different systems, filling out forms, looking at different apps for SCADA alerts, and updating excel sheets, all of which is time-consuming and unnecessary.

The more systems and back office personnel the field has to comply with, the less time the field gets to actually pump by exception. Mobile and cloud technologies can liberate them from routine, stone-chiseled routes and chasing multiple systems by making workflows simpler with seamless integration. Utilizing technology investments fully to do away with traditional route management, companies can do more with less and therefore scale growth better.

**2. Overengineered Central Dispatch Centers**

Whether you call it a back office, field office, or an operations control center, the role of a central dispatch is fundamental to oilfield operations. Central dispatch centers maneuver every field activity remotely, directing the next stop for each worker as they go about their activities. They hold the key to defining the priorities that will control efficiency across the oilfield. However, given the complex web of information they must navigate, their ability to get the right resources to address the most critical tasks with speed is limited.

By better utilizing artificial intelligence in central dispatch centers, oil and gas companies can maneuver better. Artificial intelligence continually learns from all the data it is provided to develop a picture of the oilfield, simultaneously seeing the health of all wells and the status of every worker. This level of visibility, which a human dispatcher could never achieve, allows the system to dynamically and intelligently match every task to the right resource.

### 3. Complex Back Office Systems and Unfriendly Interfaces

EAMS (Enterprise asset management systems), ERP (Enterprise Resource Planning), production accounting, and many other systems — each with a different access and interface, spread out in multiple touch points — suffocate productivity. Each system operates in a silo, with a maze of paperwork to go through in order to facilitate follow-ups or communication between one another. These inefficiencies can take up two hours of a field worker's day, every day.

Last mile connectivity requires solution to this productivity void in the oilfield. It calls for synthesizing disparate data streams from multiple systems into one platform with mobile connectivity. It requires dismantling silos and reduction in complexity by offering feedback and resolution through real-time communication between the back office and the field.

### 4. Internal IT "Build It Yourself" Approach

This modern approach to oilfield management does not require expensive in-house IT teams that, all too often, fail to deliver. There is no need to go at it alone and try to reinvent the wheel. Expert production and capital planning solution providers have learned from experience and offer tailor-made, proven, scalable products that can revolutionize oilfield productivity. They offer quick installation and integration with current systems, thereby improving return on investment for the digital transformation.

## Breaking Down Roadblocks to the Productive Oilfield

Intelligent, connected technology is revolutionizing every other industry. It promises to sense any environment, learn from the data to propose action, and communicate results to all stakeholders in real time. In the oilfield, that means gauging the health of all wells, identifying those where worker attention would garner the greatest benefit, and dynamically coordinating field workers to be where they are needed most. This technology represents the future of the oilfield, and here are four ways oil and gas companies can use it.

### 1. Resource-To-Task Matching

This is the same technology that created Uber. It helps connect people to information that will get them to where they want or need to be, with visibility and simplicity. It draws information from every source to identify the ideal solution for each situation and the overall objectives of the stakeholders. Be it Uber or an oilfield, artificial intelligence engines assess work record, job success, location at the time of an event, and other information, then match resources to the most critical task based on priority, skills, and proximity.

### 2. Integrate Intelligent Task Workflows and Work Orders

This is the same technology that defines Amazon: a system where activities are tracked, completed, and communicated seamlessly, and in a fraction of the time that manual dispatching would take. Whether delivering consumer products or managing an oilfield, automated workflows streamline each activity by breaking it down to executable tasks, putting them all in one place, and connecting everyone in the field and the office.

This means field workers can access every task in one place, on a mobile device, without interrupting the task at hand. They are also able to update their status instantly or create a follow-up task to ensure the loop is closed, but without losing precious time. An intelligent workflow speeds up the process, connects everyone, and takes away the back and forth of manual dispatching. Furthermore, as machine learning continuously refines the workflow, it leads to more intelligence and greater efficiency.

**3. Synthesize SCADA Data on One Platform**

More technology does not always mean more productivity. In fact, where technology adds complexity, it can often slow down processes. When field workers juggle different systems, chase several competing alarms, followed by central dispatch phone calls, adoption drops and changes in behavior plateau. New technology, in the oilfield or elsewhere, needs to prioritize simplicity and usability in order to encourage adoption and garner benefits.

In the oilfield, an important simplification comes from synthesizing data from all SCADA and other IoT systems in one platform. An artificial Intelligence engine is able to prioritize alerts and intelligently navigates workers in the field by maintaining visibility of all systems. In addition, triggered alerts, based on predefined risk matrices or specific geofencing, further enhance safety in instances of hazardous spills or leaks.

**4. Scale with a Cloud-Based Platform**

These modern production planning solutions feed on data to improve processes. But as the data grows, storage can become a problem. For those firms with internal storage, this means regularly buying new hardware and dedicating physical space for it, but for those utilizing cloud storage, space will automatically scale with data as it grows.

Oilfields need a cloud-based platform with inbuilt scalability to manage thousands of terabytes of data every second. Synthesized and harmonized data, irrespective of volume and velocity, translates to clear insights for informed action in real time. Cloud-based platforms also allow easy access to insights on a device of choice, whenever and wherever it is needed. The best cloud solutions ensure that oilfields own their data and have unhindered access to it to improve the accuracy of their decisions.

**Varied Capabilities, One Platform**

While oilfields may be attempting to get these capabilities in bits and pieces or scattered across systems, it is the ability to bring them all together in one platform that makes pump by exception a reality. The strength of artificial intelligence and the precision of machine learning makes the terabytes of data reveal the secrets of an intelligent oilfield, working almost on auto-pilot, with minimal manual intervention. Thus, freeing up resources to do what they must — pump more oil.

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