CDW PEOPLE WHO GET IT

MOBILITY FUELS PRODUCTIVITY IN FIELD SERVICE OPERATIONS

Oil, gas and utility companies use technology and real–time data access to enhance processes and boost customer satisfaction.

Executive Summary

Dynamic forces continuously challenge oil, gas and utility companies in their efforts to produce, sell and distribute energy. Already at the mercy of unpredictable regulatory activity and a fluctuating global economy, growing competition has these companies digging deep to improve the way they produce, sell and service their products.

As part of these efforts, energy businesses are reviewing their IT strategies and solutions, including their field service mobility strategies. According to Oil and Gas IQ, an energy website, employees in the oil and gas sector are already ahead of this trend, with 71 percent of workers using mobile devices for work purposes.

With a choice of mobile devices, capable of anytime, anywhere access to data, IT decision–makers view field service mobility as the perfect vehicle for improving field operations, increasing customer satisfaction and transforming it from a cost center into a differentiating asset — or better yet, a profit center.

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Situation: Energy Outlook

Companies in oil, gas and utilities have always faced some challenges (both manmade and natural) not present within other industries. And the past several years have thrown a few more in their path.

Take the supply chain, whose links start with exploration and end with the consumer. The energy supply chain's size and complexity arguably outrivals that of any other industry. Upstream, a single large producer in this space can link thousands of suppliers, contractors and its own field workforce, continuously moving people and materials to and from sites, offshore and on, in every corner of the world.

Downstream is a diverse mix of buyers and sellers that store, refine, produce and distribute energy and byproducts to commercial and government entities, and finally, individual consumers. On the demand side, private- and public-sector customers and residential consumers are increasingly knowledgeable about price points, energy source pros and cons, and their carbon footprint. They also have access to a growing pool of providers and energy types.

Also at work are powerful global influences, from unstable economies, political shifts and regulatory constraints to cyber espionage groups that find energy companies very attractive targets. In the utilities sector, there are drawn-out and costly battles over deregulation. And for oil and gas companies, new and renewable energies such as biofuels, solar and wind power present increasing competition.

Then there's all that technological innovation. Legacy industrial control systems (ICSs) in the expanding smart grid are migrating to newer ICSs and other sophisticated monitoring technologies. Monitors that report on electricity consumption share two-way communication with smart meters.

The pace of innovation, combined with uncontrollable external forces and unchecked competitive challenges, spur energy companies to revamp their business models. They seek to gain the flexibility to react quickly, better attract prospects and retain customers, and obtain visibility into their processes and operations. Energy businesses see transformative technologies as a way to get there, and mobility solutions for the field workforce plays a major role.

Field Force

How can a smart field service mobility strategy and technologies help companies to compete? By using cutting-edge tools to boost productivity and influence profitability.

Just compare the new mobility paradigm and its accessories with the traditional field service toolset. That's usually a clipboard, which could be called a platform, albeit one that secures reams of unorganized paperwork that in turn holds large quantities of critical data.

Then consider the range of mobile form factors — from smartphones to tablets to rugged notebooks capable of weathering extreme climates, harmful elements and precarious field conditions. Loaded with processing power and mobile apps to harness it, these devices offer the opportunity to increase productivity and lower operating costs over time.

Companies in the energy sector have just begun to harness the potential that mobility can bring to their field operations, but they know it's significant. Mobile field service technology isn't just nice to have, it's imperative for those who hope to remain competitive, much less become a market leader.

Mobility empowers energy customers, too. Mobile access to account information, payment options and service apps has raised customer expectations of service availability and quality. Consumers expect to connect with their energy providers through a mobile-optimized website or downloadable mobile service apps so they can report outages, schedule onsite support or track appointment status without having to talk to someone. They also expect the service interaction they have with field employees to be as streamlined, automated and nondisruptive as possible.

Mobile strategies can also change the customer's mindset. With a mobile device at the ready, field service workers don't need to return to their trucks to grab billing paperwork after fixing a problem or ask customers to pay invoices later because they can't accept credit cards.

They can easily generate a virtual invoice to show the customer the final bill, then run the customer's credit card, get a digital signature and generate a receipt that closes the transaction. This kind of automated service does much to impress today's customer. It provides an opportunity for the service worker to showcase the company's professional approach to service, which lets customers know they're valued.

The Need for a Field Workforce Mobility Strategy

There are two mobile workforces representing the average company in the energy sector. First are the traveling professionals who use either a personal or a company-provided device to access business data and stay connected. Then there are the field service workers who do everything from drilling on a rig and repairing power lines to delivering home heating oil to customers.

These teams can't do their jobs effectively and efficiently if they're saddled with traditional tools or are reliant on manual processes. They need mobile devices suited to their job functions and their work environments. While business- or consumer-grade tablets and smartphones may suffice in many field situations, some tasks call for rugged devices that can withstand harsh conditions, especially if it's on a daily basis.

Mobile devices need network access so field technicians can connect with the home base and collaborate with managers, partners, suppliers, customers and each other. The devices must run a host of mobile apps that support general business processes as well as highly specific field functions. To meet access and availability demands for roving workers, mobile software solutions — mobile apps, mobile device management (MDM), mobile application management (MAM) and field service management suites — are best deployed as cloud services.

Through automation that pushes paper out of some processes, IT departments can work with field service operation leaders to review workflows, with a goal of identifying field and office inefficiencies (such as manual data entry) that can be eliminated to streamline workflows from end to end.

Unlike paper-based workflows, automated workflows provide transparency into activity, enabling personnel to get a status view at any point in the workflow. It's yet another way that field service mobility strategies improve individual employee and organizational productivity.

Other desirable features include the ability to easily capture critical data or accept digital signatures that are automatically uploaded to databases, as well as access to real-time data from centralized systems. With this access, employees can check warranties on the equipment they're about to work on to see if they are covered, and perform jobs based on the most accurate, up-to-date information available.

Mobility improves the quality of operational data when staff send updates as they finish tasks and begin new ones. And with mobile service apps and databases, workers can manage their own schedules and ensure they stick to them by using GPS to determine the best route.

Delight Customers and Increase Profitability
Mobility Transforms Field Service

Best-in-class companies achieved:

90%
First-contact resolution/ first-time-fix

51%
ROI within two years

↑**15.5**%
Workforce productivity gain over the last 12 months

↑**15.7**%
Service profitability gain over the last 12 months

63%
Leading service organizations that said investment in mobile tools is a key strategy for improving performance

Source: Aberdeen Group, *Field Service 2012, Mobile Tools for the Right Technician*

Door-to-Door ROI

The capabilities enabled when energy companies adopt field service best practices and mobile technologies make a strong business case. IT investments in field service are easier to justify than some in other technology areas because they can be tied to return on investment. Companies can save a lot of money by reducing system downtime, optimizing workforce logistics, improving case-closure rates and pushing the paper out of a few processes through re-engineering.

It's no surprise that better field service yields better customer satisfaction scores. Loyalty to a provider typically makes for a continuing relationship, which means a continuing revenue stream at the least, and may encourage additional spending on products and services over time. Loyalty also leads to word-of-mouth marketing — a one-to-many exchange, thanks to social media — as well as referrals.

Meanwhile, when armed with a toolkit that lets them showcase their jobs, service technicians are more engaged in their work and more likely to stay with the company. This reduced turnover means techs are continuously improving their skills and increasing customer satisfaction.

What's more, with access to a customer's spending and service history, they become extensions of the sales team. With pop-up windows that present cross-sell and upsell recommendations, a field tech can turn a good service outcome into a chance to sell new products and services.

Mobility in the field also yields faster time to revenue. A technician can generate invoices on the spot, which kick-starts the billing cycle. Or better yet, workers can accept payment at the point of service, generating a receipt — and instant revenue.

Real-Time Information Access

Successful field service organizations become that way thanks in part to IT decision-makers who equip personnel with the right technologies and access to real-time data. Cutting-edge providers that successfully execute on their field mobility strategies rely on three primary elements:

- Real-time information access
- State-of-the-art mobile devices
- Cloud collaboration

Mobile devices are critical to an energy company's mobility strategy, but only if employees can use them to access real-time data. Field workers depend on remote access to perform job functions during a normal shift, as well as during unplanned outages, site emergencies or larger events such as natural disasters.

If an event brings the company's own data center down and operations must be moved to a redundant facility, IT staff should have contingency plans and processes in place for field workers to receive network access.

Secure portals that enable business-to-business customers and consumers to access their account information and usage is also increasingly important in driving engagement and satisfaction. The opportunity to review their energy consumption encourages consumers to use electricity, natural gas and heating oil more efficiently.

Consumers and companies alike understand the benefits of smart energy utilization. And private or public sector organizations that have good green practices can publicize their efforts to inform and impress their own customers and constituents.

Providing access to this kind of information is good for energy providers too, as customers and regulators demand more transparency. Providing that visibility, in turn, encourages better energy stewardship through the industry.

On the hardware side, the state-of-the-art devices deployed with leading-edge programs should be chosen for the work they facilitate. One employee's state-of-the-art might not work for a colleague. For example, those who need to see snippets of transactional data might require a device with a larger, high-definition screen for viewing detailed images.

Data-Rich Repository

Service workers in the field may need to access some general business data from back-office systems, but the majority of what they need can be ported to a central repository. To ensure availability regardless of worker location, IT teams should consider running a repository in the cloud. A cloud-based repository should host a variety of things, including:

- Supplier parts catalogs
- Forms
- PDF files
- GPS data
- 3D images of equipment
- Schedules
- Service contracts
- Equipment and parts warranties

A bi-directional data flow between the remote worker's device and the repository ensures that data stays synchronized and accurate. Forms, maps and other files should be downloadable so they can be used either online or offline.

Newer cloud-based repositories include mobile functionality to support not just online access, but other contact channels. These open frameworks enable field service techs to perform the same work they do online via voice or through an email interface.

Mobile technologies also shine in reducing paper from workflows. According to a 2013 survey by AIIM Market Intelligence, 66 percent of the IT respondents in organizations that had replaced paper-based processes with electronic workflows saw payback in 18 months, with 50 percent achieving that payback within a single 12-month budgeting period.

Moreover, respondents believe that, on average, eliminating paper from workflows via mobile capture enables them to respond to employees, suppliers and customers four times faster than with a paper-based system.

State-of-the-Art Mobile Devices and Peripherals

If clipboards and pens are the hardware of the traditional field workforce, then state-of the-art mobile devices and peripherals are the new world order. These come in several form factors, from those designed for the average mobile employee to those capable of functioning in harsh environments.

More field service organizations are providing their employees with tablets rather than handheld devices because they like the larger screen real estate for working with complex applications and viewing maps. But field service personnel aren't that different from other employees today — many supplement larger devices with their smartphones.

A VDC Research survey from 2013 finds that by 2017, four out of five field service workers across all industries will use either a tablet or a smartphone for offsite work. Not all field service jobs require a ruggedized device. But in the energy space, perhaps more than others, it's a good idea to equip users with devices that can withstand harsher conditions regardless of their job. Some situations may just require that cases be rugged, while others may demand that devices themselves be able to withstand exposure to dust, liquids and other elements.

The devices available for field service work today have business-grade capabilities and can connect to a number of peripherals, including monitors, printers and external drives. The mobile hardware being deployed in the field includes:

- **iPads and other tablets:** Apple iPad devices and other manufacturers' tablets are widely used in the field, primarily in less harsh environments. For example, utility service workers armed with tablets can check meters to gauge electricity consumption. Using Apple's AirPrint utility, workers can use their iPads or iPhones to print from their mobile printer without installing drivers or downloading software.

▪ **Rugged notebooks and tablets:** For employees who require a more ruggedized form factor, Panasonic offers the Toughbook in a range of screen sizes. The firm also offers its Toughpad ruggedized tablet. Several other vendors also manufacture rugged devices, and some models are available with touch screens.

▪ **Phablets:** These devices combine the functionality of tablets and phones in a larger form factor than a smartphone. This design gives users the larger screen size and signature-capture capabilities of a tablet with the voice capabilities of a smartphone, in a single device.

BYOD in the Field

The bring-your-own-device (BYOD) movement is as alive and well in the field as it is everywhere else. However, this may be to a lesser extent because consumer-grade devices sometimes aren't up the task — and some employees aren't in a hurry to put them to the test.

Others are so attached to their smartphones that it's second nature to turn to them for work as well as play. Staff perform business tasks efficiently because they're used to the touch screen's look and feel, its navigation and features and its computing capabilities. They often run consumer mobile apps for some business functions because they're user-friendly and frequently upgraded.

Companies operating in the energy sector should therefore include BYOD in their field service strategies in some capacity. They have to be on top of the usual BYOD issues, as well as some specific to their industry, including:

▪ Security

▪ Regulatory compliance

▪ Device support

▪ End-user support

Field service and IT execs should keep total cost of ownership (TCO) issues in mind when mapping a BYOD plan. That's because productivity losses, associated with mobile device failure caused by conditions in the field, significantly impact TCO. While field service workers may prefer nonrugged tablets, notebooks and other devices based on their lower price and familiarity, these devices have proved to be problematic for employees who spend the majority of their time in the field or in transit, especially under inhospitable conditions.

A 2013 study conducted by VDC Research found that while upfront costs of nonrugged tablets and notebooks were lower, their TCO was 80 percent higher due to lost productivity, IT support and replacement costs caused by failure in the field.

▪ **Smartphones:** Field service personnel using their own iPhones or Android devices take advantage of mobile field service software optimized for these devices. This practice has more companies in the energy industry purchasing device-agnostic packaged apps and designing homegrown mobile apps to run on multiple mobile operating systems.

▪ **Mobile printers:** Printers, like computing devices, can now go wherever field service techs go. Mobile computers speed and streamline processes by allowing workers to send files to their offices or update a database rather than travel there to hand off paperwork or key it in themselves. Similarly, mobile printers eliminate the need for field service workers to go to a physical location to retrieve paperwork they need for the day.

Service workers can use mobile handheld printers to print their work orders, schedules, maps, instrumentation diagrams, schematics of substations or large resource-extraction equipment, installation information and labels for marking equipment at different sites. And if they can process payments using their mobile devices, they can print receipts or invoices for later payment. Mobile printers are also available as add-ons to mobile devices, and some don't use ink or toner that might melt or freeze in extreme conditions.

Secure Communication

For field service mobility to work, IT needs to ensure secure communication. Not surprisingly, security is one of the leading concerns surrounding mobile field service energy sector companies. They're right to be cautious, not just because it's good governance, but also because their industry is subject to strict regulatory oversight.

It's not just customer data privacy at stake. (However, of course, that's paramount). The energy industry is considered particularly vulnerable to cyberattack, especially large companies with a global presence. Critical infrastructure assets are prime targets for state-sponsored cyberattacks and espionage, a situation exacerbated by the sheer number of industrial control systems connected to the Internet.

ABI Research found that in 2012, 40 percent of all cyberattacks on critical infrastructure assets in the United States targeted the energy sector. Furthermore, the Industrial Control Systems Cyber Emergency Response Team (ICS-CERT) estimates that by 2018, cyberattacks against oil and gas infrastructure globally will cost these companies about $1.8 billion. The intellectual property of energy companies presents another appealing target for cyberespionage.

Given what's at stake, forthcoming strategies for field service mobility must make security a priority. If an organization doesn't have the resources to take on the task, it should turn to IT security specialists for help.

VDI Lends a Hand

The good news is that IT teams can get a leg up on their mobile security efforts by tapping client virtualization. It may make sense to adopt a virtual desktop infrastructure (VDI) model for the entire enterprise, but to fast-track a field service mobility program, IT can start with field operations and continue with other departments in a phased rollout.

VDI separates the software from the hardware it would normally run on, and centralizes it in the data center where the software can be better protected. The traditional "fat" client — in this case, a rugged notebook, tablet or other mobile device — becomes a thin client that doesn't run any data or applications, thus making it less vulnerable as it travels from point to point with a field service worker.

When employees need to use an application or work with customer information or other data, they can use their device as they would normally. The difference is that instead of the mobile device handling the computing load, the device simply accesses a personalized virtual machine in the data center or a pool of desktop images on a centralized server, which streams the data to the device.

Virtual Client, Meet Cloud

Energy companies moving to VDI for field service mobility can take advantage of several new features in Citrix Systems' XenDesktop product that make client virtualization even more effective as part of a mobile security strategy. XenDesktop 7 not only serves up a service team's Windows desktops as a cloud service, it allows them to use any of their Windows applications via their mobile device — even those not developed for the mobile platform — as if they were native.

Apps and Field Workforce Mobility

Mobile field service technology has come a long way in a relatively short time. Some energy companies have kept pace, adopting mobile devices suited to their mix of field jobs and environments. They've deployed off-the-shelf mobile apps and developed their own for tasks and processes not readily available in commercial offerings.

Many others, though, still have an army of field service personnel carrying the pre-mobility toolkit — clipboard, paper, pencil or pen — and manually performing follow-up tasks. That's where field operations can get into trouble.

Say a company is in the business of providing transmission line installation services to oil rigs. A team installs a new line to replace a faulty one. Using a requisition form, the team's supervisor documents the work performed and the parts used.

To bill the company that owns and operates the rig, they hand off the paperwork days later to an accounting employee, who inputs the data to generate an invoice. The accounting system kicks off the automated processes that ensure its delivery to the customer, but there's nothing automated about the field data capture, the paperwork transfer or the data input.

The problem with supporting fieldwork with paper-based workflows is that manual processes typically offer ample opportunities to introduce errors. If the supervisor makes mistakes when documenting the parts used or incorrectly codes the services provided, it's up to another person in the chain, whether it be a field service operations director who signs off on the project or the accounting employee who handles the invoice, to catch the mistake.

To compete today, energy companies need to equip their field workforce with mobile devices, remote bi-directional connectivity to central databases and mobile apps that automate a variety of general business, energy industry and field service processes.

Build, Buy or Both

Industry studies estimate that the energy industry will spend $8 billion on oil-and-gas-related mobile apps by 2015. For general business functions, commercial mobile apps should suffice. For field service-specific operations, custom apps are often the best solution. Some companies have the resources to develop their own mobile apps, which allows them to build high-performance native apps for specific devices, or go with browser-based apps accessible across platforms.
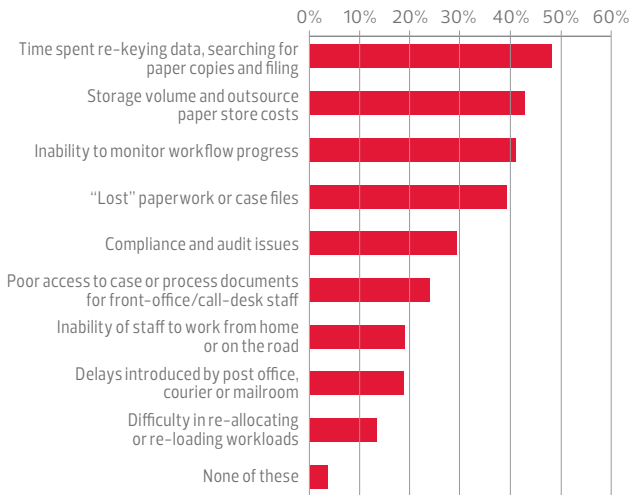
Collaboration Through the Cloud

Workers out in the field need to be able to collaborate via the devices they carry and share content about any number of things related to their jobs, both in real time and later. The optimum way to do this is to through a hosted or on-premises cloud-based portal where data is uniform and up to date, and every user has access to the same data to share content and collaborate.

With cloud-based solutions like Microsoft's SharePoint, Office 365 or Yammer, field service workers can share and collaborate on documents and take advantage of unified communications through mechanisms such as video conferencing and phone-based communication. Data is organized to enable employees to easily find and work on documents based on their privileges.

In SharePoint 2013, Microsoft has enhanced workflow and added improved management tools. In its workflow arsenal are templates that allow companies to automate business processes, and access better authoring tools and browser-based forms.

Paper Chase: The Biggest Challenges of Paper–based Processes

| | 0% | 10% | 20% | 30% | 40% | 50% | 60% |

Time spent re-keying data, searching for paper copies and filing

Storage volume and outsource paper store costs

Inability to monitor workflow progress

"Lost" paperwork or case files

Compliance and audit issues

Poor access to case or process documents for front–office/call-desk staff

Inability of staff to work from home or on the road

Delays introduced by post office, courier or mailroom

Difficulty in re-allocating or re-loading workloads

None of these

Source: AIIM, 2013

But many companies in the energy industry are choosing custom apps developed by vendors with energy–industry expertise. These vendors offer device–agnostic apps with frequent upgrades, security updates and platform support.

For example, Canvas, a cloud–based software service, has a mobile business app store that includes apps for the oil and gas industries, including health, safety and environmental management, derrick and substructure inspection, occupational health and safety, and general training.

How Oil and Gas Field Workforces Benefit from Mobility

According to a 2013 survey of CIOs in oil and gas companies conducted by Oil and Gas IQ, mobile technology finished second only to cybersecurity on respondents' top 10 list of IT priorities. Nearly 75 percent of the CIOs surveyed called out mobile technology as a priority, while 55 percent said it would greatly enhance their operations.

Yet, only 16 percent of the CIOs in the Oil and Gas IQ study said they have a mobile strategy in place. Given the competitive advantage gained when workers in the field have everything they need on their devices or through a few taps of a touch screen, these numbers are undeniably low. But then again, those in the oil, gas and utility sectors tread rougher terrain than most industries.

Still, mobility is making its mark in this sector, even if the majority of IT leaders haven't officially developed the strategies that would lead to the investment and infrastructure to support a mobility program. Employees across these companies are buying into BYOD in a big way, according to Oil and Gas IQ, with 71 percent of workers — primarily from field operations and technology positions — using their personal mobile devices for work. If this BYOD boom is any indication, there's clearly a lot of opportunity, provided CIOs take the right measures to secure mobile devices and data.

A few ways they'll benefit from field workforce mobility programs:

- **Field data capture:** A mobile device rollout would allow field service workers to easily capture data they generate and collect while in the field.

- **Real–time operability:** With mobile device in hand, a worker can send a stream of data on an intensive operation to a central data center server, where managers can view it and quickly make key decisions based on what they see.

- **Streamlined business processes:** When an organization moves from paper and stand–alone tools such as spreadsheets to mobile platforms, they get the benefit of automated, streamlined processes and the latest data for decision–making as it flows from mobile devices to integrated back–office systems.

- **Geolocation:** Today's smartphones and tablets have GPS capabilities with location awareness to pinpoint the location of colleagues and similar devices. These capabilities can be extremely valuable to oil and gas companies, which have operations in some very remote areas.

- **Maintenance:** Potential problems in the field can be logged on devices and sent to the right personnel to analyze and take appropriate action, such as dispatching a team of technicians.

Is Your Field Service Sluggish?

Answer these questions to determine if your field service needs a boost:

- How does your field service team currently collect and access data at customer locations?

- What, if anything, is being done to increase the efficiency and productivity of your field workforce?

- Is your field service operation a cost center? If so, is it a cost center that's adding value? Have you considered what it might take to turn it into a profit center?

- Have you looked at ways to go paperless? Have you considered digitizing low–hanging fruit (such as repair manuals and warranty paperwork) to make it accessible through a field service portal or similar repository?

- Have you considered how you might enable your field services team to upsell customers at the point of service? What kind of training would you offer? What incentives?

CDW: A Mobility Partner That Gets IT

Oil, gas and energy companies face challenges in mobilizing employees. That's where CDW can help with quickly rolling out mobile technologies. We maintain partnerships with leading wireless vendors, including network providers and device manufacturers, to offer a complete line of IT products and services.

At CDW you'll find a one-stop shop of integrated mobility solutions consisting of software, hardware and cellular wireless activation services. Regardless of the mobile platform customers choose, CDW's dedicated experts can step in to help with activation and configuration services.

CDW's App Marketplace, a key component of our Total Mobility Management service, offers packaged apps for field service functions and mobile app development solutions that enable customers to quickly develop their own apps through prebuilt functionality.

Our account managers and solution architects are ready to assist with choosing and leveraging the right mobility solution.

The CDW approach includes:

- An initial discovery session to understand your goals, requirements and budget

- An assessment review of your existing environment and definition of project requirements

- Detailed manufacturer evaluations, recommendations, future design and proof of concept

- Procurement, configuration and deployment of the final solution

- Ongoing project measurements to meet service-level agreements (SLAs)

- Complete product lifecycle support

- Consolidated device and solution management platform

Working with your CIO, management team or IT department, we can design, plan, implement and support comprehensive mobile solutions built around your organization's needs.

To learn more about CDW's mobility solutions, contact your CDW account manager, call 800.800.4239 or visit CDW.com/mobility

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