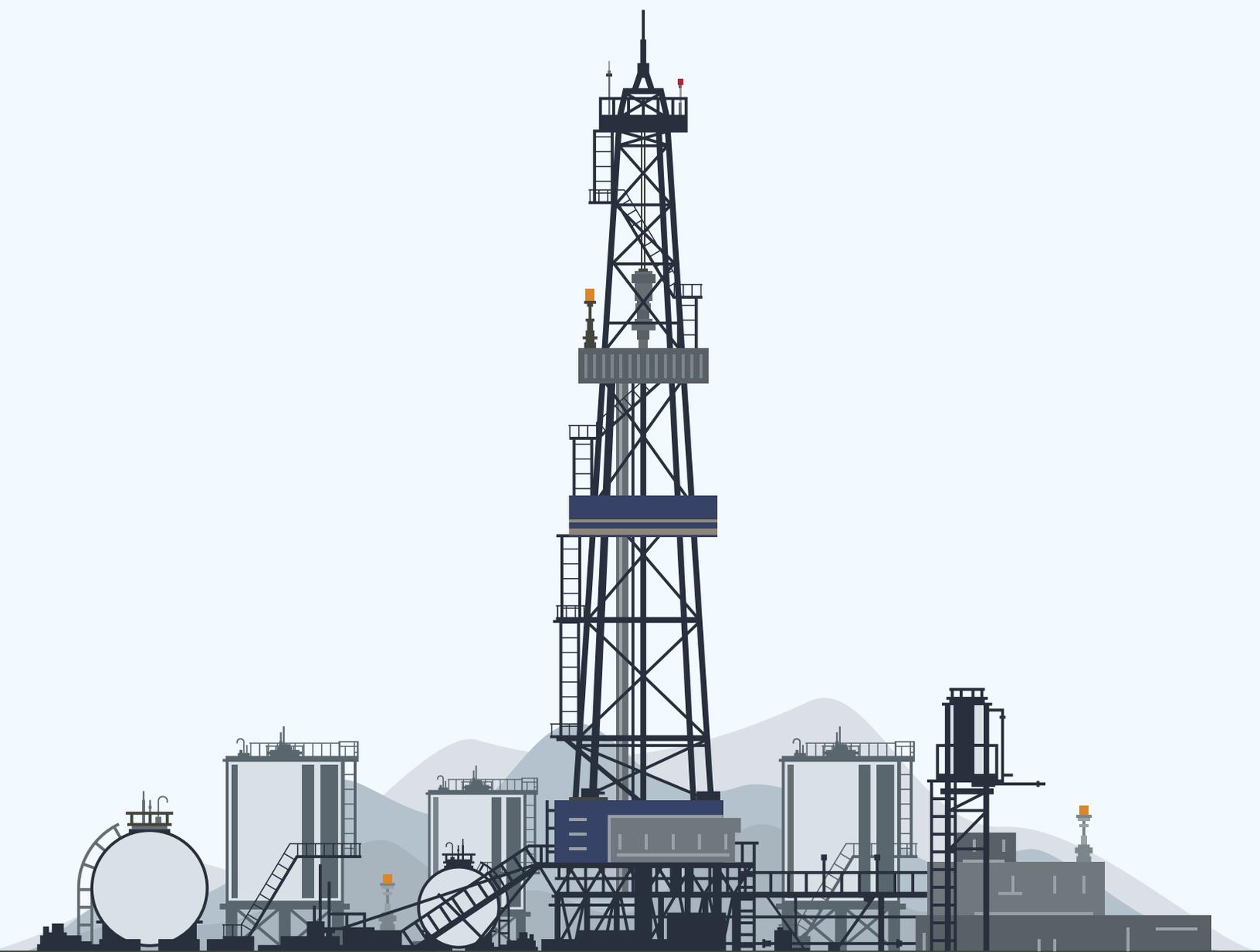


Exploration & Production Business Systems Handbook

A Candid, Independent Guide to E&P Software Alternatives



Introduction

The scope of this handbook is limited to business systems for companies whose primary business is engaged in the production of oil and gas. Exploration and production (E&P) companies are unique and cannot necessarily leverage the common enterprise resource planning (ERP) business systems designed for companies in manufacturing, distribution, and services. If you are interested in learning more about general ERP solutions for non-E&P companies, check out our State of the ERP Handbook [here](#).

E&P companies have unique complexities. This starts with how oil and gas is identified, produced, and accounted. E&P companies need to track land and royalty agreements, production, revenue, well construction costs, and operating expenses between land owners, joint venture partners, regulators, operators, and service providers. This is no simple task, particularly for E&P companies that operate thousands of wells in various basins.

Technology solution providers have developed business systems to automate and integrate the operational and business processes for E&P companies. A few technology companies have attempted to build end-to-end solutions that integrate land, production, revenue, billing, capital, purchasing, asset management, regulatory reporting, and financial reporting. Contrary to what a technology salesperson might tell you, none have built a true end-to-end solution that meets the complex requirements of most E&P companies. Therefore, E&P companies are resorting to purchasing add-on solutions for managing the Authorization for Expenditure (AFE) and Enterprise Asset Management (EAM) processes, among others.

E&P companies are left to navigate through a maze of products. The purpose of this handbook is to clear the muddy waters and provide an independent perspective of the current state of E&P business systems. Our perspective is based on our direct experience selecting and implementing E&P business solutions and feedback we have received from other E&P companies.

Modern E&P Solutions

Today's modern E&P technology solutions have evolved, and through acquisitions, the industry is being funneled into a few major players. Overall, a few E&P software providers offer a wide breadth of solutions to support as many E&P work processes as they are able. Unfortunately, the more offered, the weaker each individual component's functionality tends to be. The integrated providers are constantly struggling to maintain system improvements and continuous support among a large portfolio.

Like restaurant menus, offering more options lures the customer but lessens quality. Companies with niche offerings supporting one or two work processes are more likely to have a higher quality offering. How many five-star restaurants do you know of that have a three-or-more-page menu?

E&P Work Processes

This handbook does not address all the systems required to support all work processes in an E&P company. Rather, the focus is on core business systems and does not include geological and geophysical solutions typically offered by Halliburton and Schlumberger. Below are the work processes in the scope of this handbook.

Processes noted with a (1) can be supported with several “cross industry” common ERP solutions. Processes with a (2) are not in the scope of this handbook.

Production

A production system estimates the performance and production of individual wells and how they connect to a delivery network. Production systems are a valuable piece to oil and gas accounting to ensure a company is aware of the amount of product (oil, gas, NGL, etc.) produced and what is available to market. Production accounting should share well master data with the land and accounting departments to maintain consistency and clarity across the organization.

Revenue Accounting

Revenue accounting tracks the revenue produced by wells based on the marketing agreements and the amount paid out to the owners. Revenue solutions should be integrated with the land solution and production for clear visibility of available oil and accurate revenue distribution based on the most up-to-date ownership information.

Regulatory Reporting

Regulatory reporting is the process of filing on the state and federal level with production and revenue details on a monthly, quarterly, or annual basis. Some systems provide templates for this process while others perform this task automatically.

Land Management

Land management systems allow the user to manage contracts, leases and agreements, mineral rights, and working and royalty interest. A strong land management system will integrate with the revenue and JIB applications to automate the division of interest updates and ensure accurate and timely payments and JIB receipts. Land systems can also contain GIS data for lease location identification and function as the address book for master data management of owner and sometimes other business associate (vendors, purchases, customers, employees, etc.) contact information.

Joint Interest Billing (JIB)

Joint interest billing or joint venture accounting (JVA) captures and distributes the cost of well completion and operations among the working interest partners. An integrated JIB solution takes paid invoices from the general accounting module, allocates to JIB decks based on cost coding information and creates joint interest bills/statements to be distributed to working interest partners on a given well or lease.

Authorization for Expenditure (AFE)

An AFE is created with each new well or capital project, including budget information, owners and their ownership percentages, internal approvers, and other operational and economic information. AFE tracking and costing should be fully integrated with revenue, JIB, and general accounting data and systems to ensure accurate budget tracking and billing.

Fixed Assets (1)

Upstream fixed assets consist of standard fixed assets, oil and gas mineral rights, leases, and oil and gas reserves for the corporate and tax books. The purpose of a fixed asset solution is to manage the accounting side of an asset, track depreciation and depletion, and show the long-term value of the asset on the balance sheet.

Enterprise Asset Management (EAM) (1)

An EAM solution, sometimes referred to as an asset management solution, manages the maintenance of the physical assets of an organization from purchase to disposal. EAM solutions are particularly important for companies that operate in mature basins and own their own drilling, subsurface, injection, compression, and processing equipment. EAM solutions include maintenance work order systems to track and forecast operating and capital expenditures for servicing, repairing, and operating critical equipment.

Accounts Payable (1)

Processing of vendor payments from vendor management to disbursing approved payments via check or ACH is a process any company's business system must be able to handle. The AP ledger controls all disbursements and vendors.

General Ledger (1)

The general ledger is the aggregator of all financial transactions and considered the heart of any ERP solution. E&P companies need to be able to capture gross and net lease operating expenses along with being integrated with the revenue, JIB, inventory, and payables solutions.

Financial Reporting (1)

Larger E&P companies often require robust financial statements for internal and external reporting that cannot be supplied by the general ledger. Most companies use a niche financial reporting solution, such as Microsoft Power BI. Small producers often use spreadsheets to create financial reports.

Supply Chain (1)

Many larger E&P companies demand a robust supply chain solution to manage pricing agreements, master service agreements (MSAs), vendor catalogs, receipts, and strategic sourcing analytics. This solution is either a part of the common ERP solution or combined with a niche invoice and work order solution. These solutions often require a procurement organization to manage the process.

Inventory Control (1)

Larger E&P companies that manage and operate their own equipment often need spare parts available in warehouses or remote locations to allow for quick repairs, upgrades, and replacement of major assets. An inventory control solution allows the organization to control inventory on hand and maintain proper stock levels in the right locations.

Work Order & Invoice Routing

Work order and invoice routing solutions eliminate manual and paper processing to increase efficiency and reduce overhead. OpenTicket and OpenInvoice by Enverus are the industry standard systems for field ticket creation and invoice routing, coding, and approval. The solutions are scalable and can integrate with MS SharePoint, field data capture systems, and all ERP solutions through their open APIs.

Data Exchange

Data exchange provides the ability to automate revenue and JIB data entry and processing, reducing mistakes and reconciliation time with accurate data. Enverus, formerly DrillingInfo, provides data exchange services and has recently taken over the market with the acquisition of the four main companies that perform data exchange services—PDS Energy, Oildex, MineralSoft, and EnergyLink. Enverus intends to transition and consolidate the four platforms by utilizing the EnergyLink application for all data exchange services.

Marketing

Marketing solutions provide the ability to locate purchasers, set pricing, and sell product and should include integrated data with the production system. Many smaller E&P companies track their marketing data on a spreadsheet, especially if they only have a few purchasers or marketing agreements.

Drilling Information Management

Drilling information management solutions capture, track, and analyze drilling and completion activity on a rig. This information can be connected to the accounting solution to integrate spend data in order to show actual costs and assist the accounting team with the monthly accrual process. Drilling information systems are critical for engineers to be able to track daily costs by vendor, drilling progress, and forecast costs.

SCADA/Field Data Capture

Supervisory control and data acquisition (SCADA) systems are the human-machine interfaces for controlling and capturing data from PLCs (programmable logic controllers) typically connected to measurement devices. The measurement devices can either be flow meters between a well and a collection point or check meters connected to a pipeline. SCADA software also interfaces with field data capture solutions for production surveillance and monitoring.

Planning & Reserves (2)

Planning and reserves solutions provide E&P companies with information about forecasting their reserves, projected production, capital, and lease operating expenses. Many small producers keep this process simple and secure by using spreadsheets to track their forecasts and reserves. Although it's manageable to keep reservoir data in a spreadsheet, especially for smaller companies, it's important to note that the economics solutions mentioned help simplify processes and automate scenario analysis, acquisitions, production curves, pricing impacts, and support decisions about which well(s) to exploit.

Geological & Geophysical (G&G) Solutions (2)

Finding oil and gas reserves is where it all starts, and G&G solutions provide geologists and geophysicists with tools to analyze the features of deep rock formations based upon seismic data readings. Modern G&G solutions offer a wide array of visual collaboration tools for 3D and 2D survey analysis to pinpoint exactly where pockets of oil and gas can be extracted. The more accurate the subsurface information, the more likely a successful drilling program. We elected to not include the wide array of G&G solutions since this is not our area of expertise. Halliburton and Schlumberger are the two primary providers of G&G (and other) solutions in today's E&P market. Many companies have a hodgepodge of solutions from both companies depending upon the preference of individual G&G team members.

E&P Integrated Solution Providers

E&P solution providers typically fall into two categories. The Tier 1 solutions are options for independents operating more than 500 wells in more than one basin or operating region. Many small independents or non-operators may be comfortable with a Tier 2 solution. The following chart does not include common ERP platforms that might be complementary to any of these solutions in whole or part. See our [State of the ERP Handbook](#) for an overview of the solutions that fit within the common ERP platform.

Provider	Tier 1					Tier 2		
	SAP	P2 (2)	Quorum (2)	Enertia	W Energy	WolfePak	Integra	Sherware
Common ERP (1)	X		X	X	X	X	X	
Production	X	X	X	X	X			X
Revenue	X	X	X	X	X	X	X	X
Joint Interest Billing	X	X	X	X	X	X	X	X
AFE	X	X	X	X	X	X	X	X
Land		X	X	X	X	X	X	X
Marketing			X		X			
Economics			X					

(1) See E&P Work Processes for definition

(2) These also offer separate Tier 2 solutions

The Solutions

SAP, P2, Quorum, Evertia, W Energy, WolfePak, Integra, Sherware, and other niche solutions

SAP

SAP is the 100-pound gorilla in the ERP space. They have managed to dominate the major energy companies—Exxon Mobil, Chevron, BP, and Conoco Phillips to name a few. SAP offers a full suite of common ERP solutions for any industry and is the only major ERP solution provider with production revenue accounting (PRA) for E&P companies. The SAP PRA module (formerly known as PREMAS) was initially developed by Price Waterhouse Coopers in the 1990s and acquired by SAP in 1998. Along with PRA, SAP also offers complementary solutions for joint venture accounting, logistics management (midstream), and production sharing accounting commonly marketed as SAP-IS Oil.

SAP S4 HANA

SAP's S4 HANA continues to lead the ERP market. More information can be found in our [State of the ERP Handbook](#) regarding SAP's advancements. PRA is a separate module and was developed apart from the core SAP S4 HANA ERP solution. The connection between SAP PRA and SAP's core financials (FICO) is a journal entry. The integration is not an issue as competitors have a similar integration process with core financials.

SAP PRA

SAP PRA should be viewed as a generic platform/engine for production allocations and revenue accounting processing. Companies seeking to automate any unique revenue agreements or regulatory reporting have spent a significant amount of money customizing SAP PRA. The customizations are so vast and required to function correctly that several consulting firms have focused their entire company on building SAP PRA customizations and extensions for the majors. For example, CapGemini acquired SSP in 2014 and Accenture typically partners with Crawford Consulting to provide a comprehensive PRA solution. A few of the PRA customers elected not to customize PRA and maintain spreadsheets for a significant portion of their production and revenue distributions.

Larger E&P companies looking to select a new platform should note that the resources required to support SAP are higher than competing solutions. Yes, the client gets a world-class solution, but E&P companies must be mindful of the cost of maintaining SAP, particularly when oil and gas prices cannot sustain high administrative costs.

SAP is a great fit for E&P companies that can leverage SAP's power in other non-E&P and global operations.

P2 Energy Solutions

P2 Energy Solutions' predecessor companies started in the 1990s with plans to become an Internet company for the oil and gas industry. In the early 2000s, P2 transformed into an E&P software company, starting with the acquisition of Excalibur. At the time, Excalibur was one of the leading business solutions for the E&P industry. In 2002, P2 acquired Novistar (formerly Oracle Energy), which is now known as Enterprise Upstream (EU). Since their first merger, P2 has continued to acquire solutions to build out a robust suite of products. The following is a brief timeline of P2's acquisition history:

2004: P2 acquires Tobin to create P2 Tobin Data

2011: P2 acquires WellPoint Systems' BOLO solution

2015: P2 acquires Merrick Systems to create the P2 Merrick Suite

2019: P2 acquires iLandman, a cloud land solution

Today, P2 is the largest independent provider of business software solutions for the E&P industry. P2 has successfully integrated each system they've acquired. Unfortunately, P2 solutions lack out-of-the-box integration with third-party systems, encouraging clients to implement only P2 solutions, regardless of whether or not another solution is better. Additionally, P2 has implementation resource constraints. A customer recently lamented they had to wait for an E&P competitor to complete their project before P2 could engage.

Enterprise Upstream

Enterprise Upstream (EU) provides core functionality for E&P accounting, including production revenue accounting and joint venture accounting. Several major independents leverage P2 EU along with Oracle's eBusiness suite, including Southwestern Energy, Noble, BHP, and Oxy. Although Oracle provides robust cross-industry solutions for financials, supply chain, and enterprise asset management, the solution is expensive and E&P customers have made extra efforts to make the Oracle solution work in the industry. In some cases, our E&P clients have resorted to leveraging niche solutions for enterprise asset management and supply chain since they were not confident in the Oracle eBusiness solution.

Making matters worse, P2 is in a constant catch-22 with Oracle when either solution provider chooses to provide new releases. Clients have reported issues with managing new releases between Oracle and P2. However, this alone should not cause a company to shy away from P2 EU. P2 EU's core revenue and joint venture accounting solution is one of the most robust and scalable in the market today. There are plenty of large E&P companies that leverage P2 EU alongside other common ERP solutions. Any major E&P company assessing new systems should consider other common ERP solutions outside of Oracle as viable alternatives. For example, Infor and IFS offer robust supply chain and enterprise asset management capabilities and the integration points between P2 EU and other common ERP solutions may be minimal.

Although EU is the most robust option in the market today, their customers have reported a lack of consistent support for EU versus other solutions in the P2 suite of products. It's speculated this is due to P2's priority and focus on their more commonly used applications, such as P2 Land and Merrick.

If P2 can solve the EU integration and support issues, there's no reason why they cannot become a dominant force in the market and regain market share.

P2 BOLO

P2 BOLO offers similar modules as P2 EU, but with the additional functionality of a common ERP. BOLO is marketed to smaller E&P companies and can be implemented quickly. BOLO offers a nice suite for land, core financials, asset management, revenue accounting, and production. BOLO is not scalable for the larger, more complex E&P companies and offers limited required functionality for more complex E&P operations.

P2 Excalibur

P2 Excalibur offers the functionality of a common ERP system along with the E&P accounting solutions. In addition to the financial accounting module, Excalibur offers further modules to track volumes, gas contracts, revenue distribution, joint interest billing, AFE, and land management. According to E&P customers, the support and modernization of Excalibur has taken a back seat to P2 EU, P2 Land, and P2 Merrick implementations, causing customers to shift to other solutions. Our customers report that Excalibur is difficult to navigate and the technology seems outdated.

We would not recommend Excalibur be included in a short list for a replacement solution and are skeptical that Excalibur would follow in the path of P2's retirement of the JD Edwards oil and gas solution.

P2 Merrick Suite

P2 Merrick Suite is P2's integrated production solution which offers three main modules: ProCount for production accounting, eVIN for field data capture, and Carte for reporting and analytics.

ProCount is P2's hydrocarbon accounting solution used to manage production allocations. ProCount is preferred in the industry over other solutions for its user-friendly interface and ease of use in the field. ProCount is an easily scalable solution for enterprises of any size, onshore or offshore. We have seen companies implement solutions and request ProCount to be integrated along with the revenue accounting modules of Enertia, SAP PRA, and OGsys.

eVIN leads the upstream industry in field data capture and operations management. P2's eVIN is preferred over other field data capture solutions for its ability to be easily adopted in the field.

Carte provides a detailed look into allocations and allows users to visualize production data in a variety of formats. Flexible reporting allows production data to be viewed by well, field, or across

all assets. The Merrick Suite is the industry standard for an integrated production solution, is properly supported and enhanced, and remains a priority for P2.

P2 Land

P2 Land is a comprehensive land management solution that is compatible with EU out of the box. P2 Land is also known in the market as Tobin since the application was built on the old Tobin platform and backend that was acquired in 2014. Tobin is no longer fully supported by P2 and has been replaced by P2 Land completely.

P2 Land was developed with a land administrator standpoint to manage month-to-month activities of tens of thousands of leases and provide flexibility around mass change. Our clients have had challenges scheduling P2 resources for implementation and it's highly recommended to leverage a third-party firm to assist with process design, data migration, validation, and integration with other accounting systems.

P2 recently acquired another land system, iLandman, earlier this year for businesses smaller in size that plan to grow through acquisition. iLandman is meant to integrate with smaller accounting solutions like P2's BOLO, Excalibur, or other competitors like OGsys. The main strength of iLandman is its lease acquisition functionality. While the system does have the capability to produce division order decks, they should be managed and maintained in the revenue accounting application. Should a large company expect to grow through acquisition, iLandman lease acquisition data can feed directly into P2 Land, giving full visibility to the user in a full integrated land management solution.

Quorum

Quorum Software was founded in 1998, leading with the TIPS solution for gas plant accounting. Quorum has grown through acquiring a variety of oil and gas solutions along with developing solutions in-house. Today, with a suite of more than 20 products, Quorum provides a span of solutions for enterprise-level companies to small producers. In 2021, Quorum announced their acquisition of Aucerna.

MyQuorum Accounting

MyQuorum Accounting, Quorum's integrated oil and gas accounting software, combines core financial accounting modules with essential E&P features through the familiar Microsoft technology interface. The accounting modules were developed in house and have matured nicely over the past 15 years.

Quorum's strength on the land management side and integration with their revenue accounting solutions make them a viable enterprise competitor versus SAP, P2, and Enertia. Quorum's complementary solutions for economics, reserves, AFE, and drilling are a strength and have the potential to offer customers a true single well master. Unfortunately, many niche drilling, reserves, economics, and AFE solutions offer greater functionality for the more complex E&P companies. Also, Quorum offers a business process outsourcing solution which is a benefit when E&P companies need to scale up or down.

OGsys

Quorum's recent acquisition of OGsys has expanded the opportunity for current OGsys and Quorum users to access and integrate with a wider range of solutions. Since 1982, OGsys has been improving their software and providing great user support. OGsys offers an oil and gas accounting system used by smaller E&P companies with OGsql as on-prem or OGpro as the cloud option. Since OGsys caters to clients on a much smaller scale and is more affordable than the similar MyQuorum Accounting, Quorum will be able to expand their client reach.

OGsys offers a plug-and-play solution that is ready out of the box. Their solutions don't offer all the shiny features, but they get the job done for smaller, simpler E&P companies. Also, OGsys is limited from a legal entity financial reporting perspective. Today, OGsys, also known as OGsql, is advancing to OGpro using OGsql as its base with improved technologies and cloud capabilities. Using OGPro, clients will have a smaller IT footprint and less need for internal IT support. OGpro includes stronger reporting features and minimizes the learning curve, leading customers to the most logical next step in their processing.

The transition from OGsql to OGpro is seamless with limited downtime, allowing customers to test data before fully cutting over to the new system. OGpro is now offered as OGsys by Quorum in the small business solution suite with other on-demand products for production, drilling, and land management. OGsys customers have cautioned that although OGpro has basic accounting covered, additional cloud modules, including land, are still in development for OGpro.

Aucerna

Quorum's 2021 acquisition of Aucerna gives Quorum a much-needed competitive advantage against their Tier 1 competitors. Aucerna is best known for their AFE Navigator solution (now known as Aucerna Execute). AFE Navigator is hands down the number-one solution for automating the complex AFE approval, workflow, and management processes. The Aucerna acquisition has added more capabilities to Quorum's portfolio. Planning Space is a petroleum economic evaluation and financial modeling solution. Portfolio is an analytic tool to optimize assets and compare strategic alternatives. Enersight is an asset planning forecasting and development solution. ValNav is competing for market share in reserves and economic modeling previously dominated by Aries. PetroVR is allowing Quorum to step further into the G&G market with their full-cycle asset exploration and development simulation tools.

TIPS

TIPS offers gas plant accounting and is considered the industry standard in addition to the standard oil and gas accounting solutions. TIPS serves 80% of the total U.S. gas plant processing and is the only software of its kind to perform these processes. With its individuality comes a hefty price tag.

Quorum Land Systems

Quorum Land System (QLS) is the SAP-recommended land solution with proven integration to SAP PRA. QLS is used by a very small number of E&P companies and, similarly to P2, has a limited number of resources to provide assistance with installation and support. The solution is often used as a bolt-on rather than a fully integrated system.

Enertia

Enertia was founded in 1983 and provides a full suite of E&P business solutions, including accounting, land, marketing, production, purchasing, and inventory. Enertia software is unique because it's the only provider that built all core applications in house. This should give customers confidence that the interoperability of their software and upgrades is smoother than the competition. Enertia has heavily invested in keeping their technology up to date by leveraging the Microsoft platform. An Enertia cloud solution was announced earlier this year, making Enertia a contender as a cloud provider in the E&P industry. This new cloud solution will provide integration for existing clients and new clients in need of a flexible implementation.

More recently, Enertia introduced Enertia Now, a preconfigured, hosted version of the company's software that can be immediately available to new and existing clients. This preconfigured version of Enertia improves implementation efficiencies and provides full configuration without the need to code for a client. The solution is projected to decrease the implementation timeline down to just a couple of weeks.

Enertia is unique in other respects, too. Their sales process is not as slick as the usual software sales approach. Their down-to-earth and scrappy sales approach tends to throw customers off. Potential evaluators should not dismiss Enertia for their seemingly lack of sales elegance.

Enertia has been proven to be scalable for some of the larger E&P companies and competes head-to-head with SAP and P2 on regular basis. Our customers have reported that getting attention from the right Enertia resources is a challenge. We recommended getting firm commitment of implementation resources with names to become a part of the contract. It's a minor annoyance that Enertia lacks integration with other niche solutions and their common ERP solutions are not very robust. Frankly, this should not be a deterrent since their competitors have similar challenges.

Although a double-edged sword, one advantage is that available enhancements to the Enertia system are applied to all customers. For example, Enertia does a great job of keeping up with regulatory reporting requirements in each state. However, these imposed enhancements may also require undesirable and unforeseen business process changes for some customers.

Accounting & Finance provide the functionality of an ERP with additional modules for JIB, AFE, and revenue accounting and offer integration with CDEX. The joint interest billing module runs complicated processes, and the revenue accounting feature offers multiple ways to process transactions. The flexibility is a blessing and a curse. If the user can get past the complex revenue module, the functionality is all there and will get the job done.

Field Data Capture can be integrated with Enertia's Accounting & Finance system for production and regulatory reporting functionality. Field data capture can run allocations, track

products, and move reports on or offline with synchronization. Additionally, all these features can be conveniently tracked in Enertia's mobile app. These features sound great on paper, but in our customers' experience, the system is not easy to set up and not intuitive to navigate. Our customers have reported that the field modules aren't user friendly, making it difficult to train field personnel to use it, see the value, and accept the system functionality. In our customers' experience, production managers have preferred to incorporate a third-party production accounting solution when implementing Enertia.

Land & Contracts is integrated with the accounting solutions and Enertia offers a comprehensive land system which has received nice reviews from our customers. Land and Contracts are integrated with Enertia Mapping to display leases, tracts, and contracts.

W Energy

W Energy is a relative newcomer to the upstream enterprise business solutions market. W Energy began as Waterfield Energy in 2009 planting their roots in the midstream space. They are quickly advancing into the upstream sector, replacing legacy systems and competing head-to-head with all major players. They have fully developed land, division order, AFE, JV accounting, marketing, production, revenue, and general accounting capabilities in a unified platform. W Energy has recently been awarded several upstream contracts competing with Quorum, Enertia, Oracle, and SAP. Some of the more sizeable deals have thousands of wells, giving W Energy a chance to prove themselves as a short-list maker for any size upstream deal as a Tier 1 solution.

The W Energy suite is a unified platform, which offers a distinct competitive advantage regarding technology support and making future upgrades simpler. This advantage makes implementation efforts less costly since data is consistently managed across their applications.

W Energy offers a full Software as Service (SaaS) solution for their customers. This means that customers don't need to worry about securing hardware or arranging separate hosting or application service provider contracts. Doubtless, SaaS is the future and W Energy is leading the pack here, especially since their applications were built with the cloud in mind.

Land & Division Order functionality is tightly integrated with revenue and financial accounting modules in W Energy. This simplifies synchronizing data and workflows but requires more discipline and coordination between accounting and land.

Accounting & Finance – W Energy has the capabilities to provide JIB, financial, revenue, marketing, property, and production accounting for an upstream organization. They have also incorporated financial forecasting and reporting capabilities within their solution. Another competitive advantage is the integration of their marketing and transportation accounting capabilities, which is advantageous for upstream companies with significant midstream assets.

Production & Field Data Capture – W Energy had the forethought to build out mobile field data capture capabilities and a mobile app to further streamline production data capture and production allocations. W Energy has some change management work to do to convince traditional production teams to migrate from the tried-and-true legacy production applications.

Given W Energy's newness in the market, we have little empirical information about the nuances and challenges with specific functionality within the systems, particularly with companies who have adopted multiple modules across the upstream value chain. The bottom line: for upstream companies looking to make a true transformation, W Energy should be on the short list.

WolfePak

WolfePak was founded in 1986 and offers business solutions for E&P, midstream, and oilfield services companies. WolfePak offers a common ERP accounting solution along with the core revenue, JIB, and AFE functionality. WolfePak's recent acquisition of DocVue expands their capabilities into a full invoice approval workflow solution. WolfePak has also acquired LandPro, incorporating lease, contracts, and GIS solutions into their offerings. WolfePak has breathed fresh air with these acquisitions and has become SOC 1 Type 2 audit compliant. Recently, WolfePak has been able to transition several OGsys customers to their platform.

Integra

Integra Energy Management System by Avatar Systems has been operating since 1983 with the vision to streamline production accounting, land, and operations, all with a common ERP functionality. Integra offers an existing interface with AFE Navigator and OpenInvoice and would be able to integrate with others though further customization. The system delivers efficient revenue processes and can export data to Excel but has limited functionality across the board compared to competitors.

Sherware

Sherware offers E&P accounting without the base of a common ERP. Instead, the software integrates with QuickBooks to track distribution. Sherware has been providing smaller E&P companies with revenue accounting capabilities for more than 25 years. Although revenue accounting is their focus, Sherware also provides some reporting and land functionality.

Other Niche Solutions

It's difficult to find an E&P company that has fulfilled business requirements with a single vendor solution. For example, engineers often have high standards and want fit-for-purpose solutions to meet their unique requirements. Many niche players offer more robust solutions geared toward specific needs, providing E&P companies with a best-in-breed environment. Below are some key areas in which E&P companies frequently seek niche solutions.

Production

Avocet, a product of Schlumberger, is a production operations solution that has proven integration with other Schlumberger products to provide a single view of asset performance. Source code is not provided for the system, so code changes are provided by Avocet as patches or upgrades. The system is much simpler to run than P2 Merrick, but not as cost effective.

Peloton ProdView offers a comprehensive field data capture, analytics, allocations, and production surveillance solution for the E&P market. Peloton a leader in the production market an also offers drilling information management and land solutions.

Marketing

EMK3 Senergy provides an end-to-end marketing solution for companies that buy, sell, transport, gather, and process gas, NGL's, and oil. Senergy offers a variety of modules for supply, transport, contracts, revenue, and marketing activity that can be pieced together to fit the specific needs of an E&P company. EMK3 has proven integrations with Merrick's ProCount, has negotiated contracts with Opus, Plats, and Argus to feed data into EMK3, and is the industry standard marketing solution. EMK3 is known to have a more robust revenue accrual module than their competitors and has flexible security measures for creating permissions.

Endur is an ETRM (Energy Trading and Risk Management) software by Openlink, providing large enterprises with customized marketing solutions. Customization of the solution should be limited to prevent the software from becoming difficult to maintain.

Allegro manages trading, logistics and operations, accounting and compliance, and energy trading and risk management for crude oil marketers. Allegro is one of the leading commodity trading solutions in the market today.

Supply Chain

Supply chain solutions for the E&P industry encompass sourcing, catalog management, inventory, invoice processing, and vendor work ticket workflows.

SAP Arriba has the largest oil and gas sourcing network, which provides visibility into prices across hundreds of vendors and all basins. SAP Arriba is expensive and their pricing is complex, so customers are unable to truly predict what the solution will cost. It's important to note that SAP Arriba is not necessarily integrated with the SAP core financials any more than other core financial solutions.

Smart GEP is strong in manufacturing and industrial, it's an up-and-comer in the oil and gas supply chain space, and it's making significant investments in the market. Their end-to-end sourcing and catalog management solutions are robust. Smart GEP has the most mature OCR technology and customers report its ease of use as a major benefit.

OpenTicket (OT) and **OpenInvoice** (OI) by Enverus excels at connecting work tickets, vendor invoicing, and approval workflow. OI has the largest invoice network in the oil and gas space and is highly regarded in the industry. Most oilfield service companies already use this platform, making it easy to implement for E&P companies. OT/OI is easy to integrate and they have pre-built integration to OpenWells and all other Enverus products, providing a full picture of well costs and reducing dual entry of invoices and work tickets. Enverus is investing more in the newly acquired OpenTicket and OpenInvoice solutions versus their legacy products.

Coupa is strong in commercial services, tech, manufacturing and most recently in the oil and gas upstream and downstream industries. They continually compete with SAP and GEP by offering a modern, cloud-based purchase-to-pay interface at a lower subscription cost. Coupa demonstrates well by promising automation of invoice data entry and by showing a highly-configurable and easy-to-use interface. To their claim, they do provide an impressive stack of automated invoice entry options: supplier portal, PO internal receipts acceptance, file upload templates, OCR, and manual entry. Where they fall short is industry experience and the oil and gas supplier network. Once they obtain a larger client base and supply chain network, they'll have far and above the best technology.

Enterprise Asset Management (EAM)

Asset management solutions are offered by most ERP solution providers, but most providers aren't sufficiently meeting E&P-specific requirements. Although Oracle (w/ P2 EU) and SAP (w/ SAP IS-Oil) offer EAM solutions, two other providers are leaders in the asset management space:

Infor is used by several oil and gas companies and has been a long-time leader in the asset management space. They offer robust work order management, preventative maintenance, labor management, equipment, and materials tracking functionality. Their cloud-based solution is relatively easy to scale for larger organizations and customers report their solution to be user-friendly and fairly easy to learn.

IFS is an ERP solution provider supporting industrial companies with EAM solutions across a variety of asset intensive environments. IFS offers robust maintenance scheduling, work order management for reliability-centered asset management, and integration with procurement, workforce tracking, risk management, and financials. IFS is a strong contender for complex E&P companies looking for a common ERP solution to integrate with existing E&P solutions.

Authorization for Expenditure (AFE)

Aucerna Execute (recently acquired by Quorum) is the leading niche solution for managing expenditure approvals, controls workflows, and capital tracking. Aucerna Execute is easy to implement and integrate with common financial systems through their proven APIs.

WolfePak's DocVue also offers workflow capabilities marketed as an AFE solution. However, this is likely more suited to smaller E&P companies using Tier 2 E&P business systems.

Drilling Management

WellView by Peloton is the industry standard drilling information management solution. WellView is easily scalable, accommodating clients with up to 300,000 wells in the system. The solution is highly acclaimed by users when implemented correctly and has out-of-the-box integration with Peloton products as well as AFE routing, accounting systems, and other custom integrations. Prior to implementing WellView, we recommend clients fully document and incorporate their reporting requirements.

OpenWells by Halliburton has the same basic functionality as WellView but is offered at a higher price point. The solution is user friendly for engineers and has out-of-the-box integrations with OpenInvoice and AP ledgers. OpenWells offers weaker reporting functionality, thus requiring other BI tools for analytics.

Reserves and Planning

Aries by Halliburton provides enterprise power to handle an unlimited number of wells and projects. Aries provides all the necessary features of an economics solution and is, therefore, the market leader for large E&P companies.

PHDWin is an integrated economics and decline curve software that provides a simpler solution and is known for its ease of use. The solution offers the ability to create custom reports, estimate and track reserves, and provide what-if scenarios.

ValNav by Quorum is gaining market share for reserves, engineering, and economics in the E&P industry. The solution is comparable to the leading competitors (Aries and PhDWin) and has an advantage with built-in interfaces with other Quorum products. They also offer a fixed fee implementation along with a low subscription price for this cloud-based software solution.

Reporting & Analytics

Efficient and meaningful reporting and analytics in E&P companies is not for the faint of heart. There's an enormous amount of information that can be extracted from a single drilling project or producing well. The data is captured in a variety of systems, and analytics requires quickly combined information from production, accounting, drilling, AFE, and economics systems for decision support.

We have intentionally excluded solutions from this report. Organizations on the SAP S4 Hana ERP platform often prefer SAP NetWeaver Business Warehouse tools for reporting. A few E&P organizations on the Oracle Fusion platform use the OBIEE solution. Typically, both tools are limited to reporting from their native ERP, so companies on other ERP platforms don't use them.

Although there are hundreds of tools that E&P companies use for reporting and analytics, we are focusing on a select few that are starting to dominate the market.

Microsoft's Power BI is beginning to dominate the market for reporting and analytics. Our E&P clients have used the highly scalable platform to integrate and report detailed well-level data from production, drilling, and accounting systems. This includes lease operating statements, daily production reporting, AFE cost reporting and accruals, and supply chain analytics, among others. Power BI is part of the Microsoft 365 suite and requires a small software investment, particularly if implementing in the Azure Cloud. Power BI is easy to use and can meet the needs of the largest E&P companies and the budgets of smaller producers. Once the Power BI data model or "materialized views" are set up, it's easy to build and save custom reports, charts, graphs, and columnar models for analysis.

TIBCO Spotfire has second-to-none visualization capabilities and analytics dashboards. However, it is considered to be a visualization tool as opposed to a reporting tool. Most engineers have used Spotfire at least once in their career. The desktop version is easy to implement and includes real-time analytics from live applications. Spotfire's GIS integration is its differentiator in the E&P industry, enabling location and mapping analytics. Unfortunately, many Spotfire implementations are one-off projects where data is pulled directly from source applications and there's no full data warehouse strategy.

Tableau has been a cross-industry market leader for years. Tableau competes head to head with Microsoft Power BI on scalability, functionality, and ease of use. Tableau can consume large amounts of data and quickly allow the business to gain insights. Tableau is well known for its data modeling capabilities used to build forecast models, which is an advantage over Power BI. The major drawback of Tableau versus Power BI is cost and adding another vendor to the plethora of existing IT systems.

2021 Oil & Gas Upstream Technology Landscape

Although this handbook focuses on E&P business systems, the technology offerings for the entire upstream value chain include hundreds of software providers. We have included our Upstream Technology Landscape below to illustrate how the business systems we are reviewing fit into the overall upstream technology environment. E&P business systems often need to be integrated with other technologies, and this is an important consideration when selecting the right software solutions.

Production Operations & Accounting			Resource Management			
Planning & Reserves	Production Operations	Data Exchange	Land			
HALLIBURTON PHD-A Schlumberger	AVATAR Microsoft SAP W	ENERGETICS POSENERGY PIDX	AVATAR Microsoft SAP W			
Revenue, JB, & Regulatory Reporting		Production Allocations	GIS	Geological & Geophysical		
AVATAR Microsoft SAP W		AVATAR Microsoft SAP W	Chetu esri GEOSINT LIGHTBOX	HALLIBURTON Schlumberger		
Core ERP Financials & Supply Chain			Field Operations			
Enterprise Asset Management	Expense Management	Field Data Capture (SCADA)	EHS	Field Service Management		
IBM office ORACLE SAP	AEP C E SAP W	AVIVA K W V	enablon IFS INTELEX HBA ORACLE SAP Schlumberger	esri IFS W		
Extended Supply Chain		Core Financials	Rental Management	Customer Management	Laboratory Testing	
Microsoft ORACLE SAP W		AVATAR Microsoft ORACLE SAP W	Rentl ORACLE SAP	ORACLE SAP	Schlumberger W	
Extended Financials			Transportation & Logistics			
Reporting & Analytics	Financial Planning & Analysis	Marketing	Pipeline & Plant Operations	Energy Trading		
IBM ORACLE SAP W	Anaplan ORACLE IBM P SAP W	omni W	omni W	Chetu eca E		
Reporting, Tax, & Auditing Tools		Governance, Risk, & Controls	Business Productivity			
Bloomberg ORACLE SAP W		axio DFIN omni enablon GEP IBM ORACLE SAP	Productivity	Augmented Reality	Workflow	Process Automation
Microsoft SAP W		Microsoft SAP W	Microsoft SAP W	VERTIVO	X A UI W	Microsoft SAP W
Document Management		Data Integration	IT Operations			
AVATAR opentext Microsoft SAP W		ORACLE talend SAP S&S W	IT Service & Operations Management	Database Software		
AVATAR Microsoft ORACLE SAP W		Microsoft ORACLE SAP W	Microsoft ORACLE SAP W	IBM ORACLE SAP W		
Capital Management			People Management			
Authorization for Expenditure			HR & Payroll			
AVATAR Microsoft ORACLE SAP W			ORACLE SAP W AEP C Ultimate			
Drilling Planning & Well Engineering						
ectatum CARDO HALLIBURTON Microsoft SAP W						

Copyright © 2021 Trenergy Incorporated. All rights reserved.

Conclusion

Solutions for E&P companies continue to be consolidated by the major software providers while niche providers continue to perform well in the market. Every E&P company has its own set of unique circumstances driving them toward a single-solution provider or a best-in-breed model.

Treney has extensive experience helping E&P companies evaluate software alternatives and find the best fit solution or integrated solutions. We operate independent of all the providers in this handbook and we serve as our client's advocate all the way through the implementation process. To learn more about how Treney can help your organization, please contact us at info@treney.com or visit treney.com.