

The evolution of land management systems



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About this guide

As an upstream oil and gas organization grows and evolves, the way its land and lease data is handled must also evolve. What once could be managed through paper and spreadsheets on one employee's desk is no longer effective.

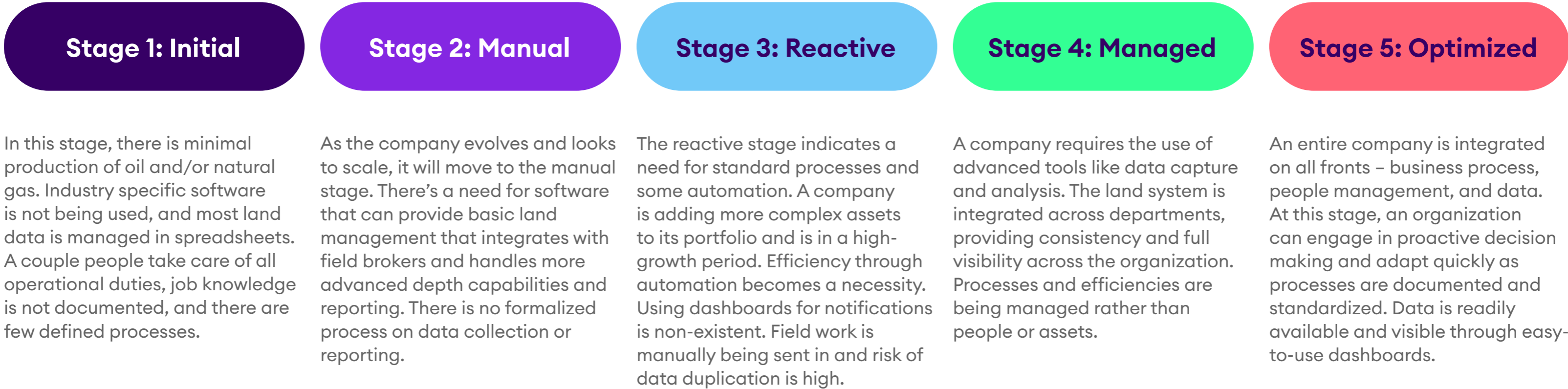
An organization's data must move through distinct stages of scale and complexity in order to compete in today's marketplace. This evolution drives the need for new integrations and processes to become more efficient and improve accuracy and efficiency, all while reducing the opportunity for errors, boosting employee satisfaction, and increasing productivity.

In this guide, we'll go through the five typical stages of evolution as they pertain to land management.



The evolution of land management systems

The five stages of evolution provide a common framework for upstream oil and gas companies as they mature in the competitive landscape. Use these five stages to benchmark your position in comparison to industry peers, and create an action plan for evolving your land department through the five stages.



Stage 1: Initial

Minimal production and manual processes

In the initial stage of an upstream oil and gas company, there is minimal production of oil and/or natural gas – a company is just getting its bearings in the business. Land systems are not being used, and most lease data is managed in spreadsheets or paper files. A couple people are taking care of all operational duties, job knowledge is not documented, and little is done by defined processes.

Hyper growth is usually experienced in this stage, and companies tend to grow fast, especially when compared to other stages. As a company grows, keeping pace with the competitive landscape becomes more difficult, and people tend to wear various hats and occupy multiple roles. To sustain growth, a company will need to scale and create standardized processes to move on to the manual stage.



Characteristics of the initial stage

Typical Operations: Small scale; a few people managing everything with no specific software other than spreadsheets. Low lease and well count.

Software: The required data comes from various places: PDFs, spreadsheets, even paper files. The tools needed to bring this data together and automate the integration of land processes are not readily available. Majority of data capture is done on paper or spreadsheets, with minimal use of software.

Processes: No defined processes or controls. Doing whatever it takes to manage tracts without any proactive measures. Collection of field information is on paper.

Automation: Little or no automation in processes.

Data and Integration: Spreadsheets and hard copies. Duplicate data entry in multiple locations and departments. Ownership, title, and partners data is kept in spreadsheets.

Communication: No standard communication procedure. All communications are one-off phone calls, emails, or texts.

Reporting: No standard reporting. Manually tracking acres, payments, obligations, and ownership on paper and in Excel. Reporting is limited to bare minimum requirements.

Scale: Not able to scale. Often times still in the planning phase with no assets.

Resources: Little specialization of roles. Some jobs may be combined. There's a small number of employees and users; one or two people are managing the leases. Multiple production and revenue-related duties are often combined into one person's job responsibilities.

Challenges at the initial stage

Localized data

Data may be stored on someone's computer, or in paper files, making it hard to get to information. Working from spreadsheets poses the risk of viewing an outdated version when the spreadsheet gets shared.

Numerous paths of communications

People are communicating changes or updates to data through email, text messages, and phone calls. Communication handled manually creates opportunities for inconsistencies and errors.

Little to no focus on efficiencies

Focus is on accomplishing day-to-day tasks, instead of long-term efforts to reduce manual processes.

Siloed data

Lease data is managed in spreadsheets, simple databases, or other non-oil and gas software.



Stage 2: Manual

Scalability and standardized processes

As a company evolves, requires an increased focus on scalability, and obtains leases with complex ownership and depths rights, it moves to the manual stage. There's a need for software that can provide basic land management that integrates with field data capture and handles more advanced allocation capabilities and reporting. Manual processes are still in play, and there is no formalized methodology for data collection or reporting.

This stage comes post hyper growth and requires the company to stabilize and build operational efficiencies. There is an increased need to address how things get done each month, create standardized processes, and keep up with the increase in assets. Many tasks and processes are based on institutional knowledge; if one person seeks another opportunity, for example, it can interrupt operational continuity.



Characteristics of the manual stage

Typical Operations: Manual processes using spreadsheets, nothing formalized, each month is different; electronic data is transmitted personally; for example, the emailing of a spreadsheet. Assumptions made about mineral leasehold and net acreage. More risk is incurred as more wells are being managed – part of that risk includes missing obligations and losing a lease.

Software: There is a limited focus on creating efficiencies to help mitigate the workload as more wells are added. Obligations are managed through personal calendars, approval processes are limited to email, and some files are being digitized. Complex spreadsheets still handle the more detailed allocation and processing scenarios.

Processes: The focus is more on the delineation of land team vs. admin, with processes being defined for managing operations. Many tasks are still done by hand, and unique requests are handled on an ad-hoc basis. An organization is starting to implement ways to improve processes and gain efficiencies, but on a limited basis.

Automation: Little or no automation in processes.

Data and Integration: Data is shared between land team and admin, but data can be siloed between departments. No validation to ensure accounting has received information.

Communication: There are still disparate systems in place which can lead to a lag in communication.

Reporting: Reporting is often done in Excel or exported to Excel from the land system. It is then worked into a meaningful format for the end consumer. Recurring events like lease payments and obligations are often printed on paper and circulated to applicable parties for a physical signature. Little focus on the cause of downtime and how best to categorize planned vs. unplanned, equipment vs. downhole, etc.

Scale: Managing leases in one or two geographic locations. Able to take in new leases a few at a time. An acquisition or leasing project would require outsourcing or hiring additional staff.

Resources: Some role sharing exists. In-house land, accounting, and engineering employees are focused on business development and rely on outside contractors to manage day-to-day activities associated with their assets.

Challenges at the manual stage

Manual processes

During this stage, repeatable processes are being implemented, but manual entries remain the norm.

Unable to scale

Manual processes do not easily support large amounts of additional data, making it difficult to scale and meet business needs.

Work done in silos

More tools are available to get the job done, but they're not used consistently or cohesively. Processes aren't standardized.

Workforce

Acquiring and managing additional leases would require hiring more people or outsourcing certain tasks.



Stage 3: Reactive

Integration and data management

During this stage, a company requires the use of advanced tools within a land system that simplify data capture and analysis. The land system is integrated across departments, providing consistency and full visibility across the organization. Processes and efficiencies are being managed rather than people or assets.

KPIs (key performance indicators) are starting to be identified and measured. Processes are being documented and shared within the organization. There is increased pressure in assessing and optimizing efficiencies. As an organization works toward standardization, disparate functions or systems might still pop up and have the potential to cause operational challenges.



Characteristics of the reactive stage

Typical Operations: A more standard process, but not all contingencies are covered, so there is still significant change as challenges arise. Some automation and standard software, but no data integration; each department (land, accounting, production) has their own silo of data.

Software: Data is not easily accessible to make proactive decisions around rig schedules or obligation dates. Automated reminders or dashboards to monitor important dates don't exist. Field work is still manually being sent in house causing duplication of data entry, and mapping is generally standalone.

Processes: Several repeatable actions that help drive efficiencies have been created, but many processes are still manual based.

Automation: If a company is using a standalone land system at this point, automation comes in the form of canned reporting. There may be payment and expiration reminders generated from lease and tract information in the system.

Data and Integration: Each group has the software they need to manage their respective information, but the systems don't communicate with one another.

Communication: Handwritten notes and spreadsheets are still used to manage important items, slowing down productivity. Research is still done by sharing physical lease files, with only the file log displaying who last checked out a file. All domains have access to asset information from cross-domain data sources for informed decisions.

Reporting: Reporting is done within the land system on an ad hoc basis to answer needs as they arise, and decision making is reactive.

Scale: A lease management system is in place and capable of receiving new leases from an acquisition. Additional employees are needed to quality check incoming data and manage date-sensitive obligations.

Resources: Much of the contracted work has been transitioned in house. A team responds with "all-hands-on-deck" when important issues arise taking away from other responsibilities.

Challenges at the reactive stage

Segregation of data

Data is entered into multiple systems, creating extra work and causing consistency issues. Dual entry also takes time away from other essential tasks.

Information access

Without all lease data in one database, finding and sharing key information takes more time due to tracking down physical or digital files.

Delayed response time

Responses to requests are reactive and create a distraction in the day-to-day flow of work. A backlog of tasks begins to grow.

Lack of focus

Operating reactively decreases the time and effort needed to make proactive and strategic decisions.



Stage 4: Managed

Centralized data and data efficiency

During this stage, a company requires a centralized repository of data, as well as tools that are integrated into a land system built specifically for upstream oil and gas. These tools are integral for all processes, plus data capture and analysis.

The land system is integrated across departments, providing consistency and full visibility across the organization. Processes and efficiencies are being managed rather than people or assets.

Business processes are also integrated and flow from the field to the back office. There is a breakdown of silos as the company moves toward a fully integrated system. There is a single view of reporting, business processes are enforced through automation, and data is modified in a system of record ensuring that all systems stay in sync. Dedicated employees use analytics and metrics to help drive efficiencies.



Characteristics of the managed stage

Typical Operations: Standard processes are used to address all contingencies while leveraging software designed specifically for the land management lifecycle. Significant automation is in place and there is integration across groups to manage master data in one system of record.

Software: A land department uses advanced tools integrated into a single platform for all processes and data. The platform is used across the department and the organization and is integrated across systems to ensure a single point of entry – providing consistency and integrity throughout.

Processes: The land team is leveraging a solution built for upstream oil and gas companies, and many processes have been automated through the software. Data can be accessed through dashboards and mapping analytics.

Automation: Acquisition data is clean, so calendars, reports, and reminders can automatically generate accurate results. Building on this reliable data, maps are able to automatically generate layers to answer questions like: “Where are upcoming expirations? Where is my NRI the highest? And at what depths?”

Data and Integration: Some systems are integrated so key data stays in sync. Others may be integrated through more simple methods like flat file transfers making it harder to target source issues when errors occur.

Communication: Collaboration and coordination tools assign work and connect the field and back office. Tasks can be assigned, worked, and reported on from the land system increasing productivity and visibility. Online obligation calendars and the digitization of files allow team members to view the same information at once.

Reporting: All recurring reports have been saved and canned reports can provide quick answers to specific needs. Customizable dashboards automate reporting and deliver alerts, notifications, key business indicators, and working lists.

Scale: Automated tools like online calendars and dashboards are in place to keep up with growth, and reporting tools easily showcase prospects for sale. Employing an IT-focused land expert to handle custom reporting needs and system testing could be beneficial.

Resources: Land, accounting, and engineering each has its own team. People and processes are established ensuring critical items are covered when employees are out.

Challenges at the managed stage

Complex operations

As assets become more complex and the volume of assets increases, proactive decision making using an analytical set of data becomes crucial. With that said, an organization does have leniency to be picky about the types of assets it acquires. General focus at this stage: profitability.

Complacency

With automation helping create greater efficiencies, there can be more of a focus on overall process vs. individual accountability. This can lead to a lack of initiative, innovation, and drive to increase profitability.

Information overload

If automated alerts – on top of real-time data – are not adequately filtered and triaged, they may be ignored because of the increased rate of notifications.



Stage 5: Optimized

Complete integration and proactive decision making

An entire company is integrated from the business process, people management, and data perspectives. An organization can engage in proactive decision making and adapt quickly as processes are documented and standardized. Data is readily available and visible through easy-to-use dashboards.

With enhanced integration, there's greater visibility and opportunity to optimize communications and insights and prevent downtime and deferrals. There is one master system that governs information, which is never out of sync, making data consistent across the entire business.

With greater availability of data and resources, people can make informed business decisions. Processes are continuously being reviewed to ensure accuracy, and instead of collecting and disbursing data, more time is spent on research and analysis. Metrics around processes are captured and checked to ensure optimal productivity.



Characteristics of the optimized stage

Typical Operations: All data and processes are integrated and connected from the field through financials. All processes are standardized, documented, and continuously reviewed.

Software: Rather than entering data into multiple systems, data is stored and managed in a master system and is never out of sync. Data is consistent across the entire business.

Processes: Processes are documented and reviewed on a regular basis to ensure accuracy. Teams identify processes that could be improved.

Automation: There are integrated workflows and alerts throughout the organization. Data such as addresses, payments, invoices, and leases are automatically sent between relevant systems. Maps display live data from multiple sources. External information like production data is tied to relevant leases; statuses auto-update to match the wells. Obligations and notifications are automatically generated from well status updates.

Data and Integration: Information flows seamlessly through the entire organization. This includes production, land brokers, land administration, accounting, field AFE management, and others. Data is automatically transferred using web services, and errors are easy to find with smart error messaging that can identify the source problem.

Communication: Not only is a company leveraging the internal communication capabilities within the land system, it is also using a universal platform, or shared file structure, to store data.

Reporting: In addition to fully using each system's internal reporting, a business has universal reporting software that consolidates information and provides powerful business intelligence.

Scale: Fully scalable. Live data accessible through web access from any location. Ability to import, test, manage, and divest all aspects of the lease and asset lifecycle.

Resources: Industry subject matter experts educate on best practices. During this stage, the focus is on operational excellence. The existing team is able to manage large amounts of data because of automated and integrated systems.

The evolution of land management systems

Stage 1: Initial

In this stage, there is minimal production of oil and/or natural gas. Industry specific software is not being used, and most land data is managed in spreadsheets. A couple people take care of all operational duties, job knowledge is not documented, and there are few defined processes.

Stage 2: Manual

As the company evolves and looks to scale, it will move to the manual stage. There's a need for software that can provide basic land management that integrates with field brokers and handles more advanced depth capabilities and reporting. There is no formalized process on data collection or reporting.

Stage 3: Reactive

The reactive stage indicates a need for standard processes and some automation. A company is adding more complex assets to its portfolio and is in a high-growth period. Efficiency through automation becomes a necessity. Using dashboards for notifications is non-existent. Field work is manually being sent in and risk of data duplication is high.

Stage 4: Managed

A company requires the use of advanced tools like data capture and analysis. The land system is integrated across departments, providing consistency and full visibility across the organization. Processes and efficiencies are being managed rather than people or assets.

Stage 5: Optimized

An entire company is integrated on all fronts – business process, people management, and data. At this stage, an organization can engage in proactive decision making and adapt quickly as processes are documented and standardized. Data is readily available and visible through easy-to-use dashboards.

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