Optimize Performance. Engineer Success.
Smart Transform℠ Approach: Unlock the Full Value of Your New E&P Technology

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In today’s deepwater assets, unconventional plays, and mature fields, oil and gas companies face increasingly complex technical, financial, regulatory, and environmental challenges. Addressing tougher challenges requires better, faster, more informed decisions at every stage of the reservoir life cycle. Meanwhile, the industry talent pool is undergoing the “big crew change” from seasoned geoscientists and engineers to a new generation with considerably different ideas and approaches to work. To maximize the collective decision-making capabilities of their E&P professionals, upstream organizations often turn to new and evolving E&P technologies—software applications, data-management systems, cloud services, real-time drilling, and intelligent production operations solutions.

Benefits associated with the successful rollout of E&P technologies, especially smoothly integrated multidiscipline solutions, are well known. In addition to boosting the interpretation capabilities of individual E&P specialists, asset teams improve crossfunctional communication and collaboration, and enhance or streamline complex technical workflows. Overall, effective adoption of new technology can transform both the speed and accuracy of today’s complex business decisions.

There is, however, a catch. The deployment of any new E&P technology inevitably requires people to change something about the way they are currently working. If end users understand the potential value of a new technology and how to properly leverage it to ease their own pain, they may be receptive. But any change can be disruptive. Unfortunately, many technology deployment initiatives falter because new E&P software applications, data-management systems, and computing platforms are rolled out without clear goals and requirements, or good planning, communication, change management, and support. As a result, users resist change. They partially adopt new tools, or merely scratch the surface of their complete technical capabilities.

In these cases, oil companies fail to realize the full value of their investments. Worse yet, they may fail to make optimal decisions at critical points in exploration, field development or production. For these reasons, asset managers, CIOs, VPs, and other E&P executives today are looking for better ways of introducing new E&P solutions to transform their business and decision-making processes, and encouraging asset teams to embrace them wholeheartedly.

At Landmark, we are particularly interested in helping operators unlock the full potential of our integrated geoscience and engineering software, data-management systems, workflow solutions, and collaborative computing environments. Over the years, we have seen customers launch almost every imaginable technology deployment scenario—not all of them successfully. In response, we have developed an approach aimed at empowering your teams to adopt and apply Landmark solutions more rapidly and effectively. Ultimately, our goal is to enable your organization to make safe, faster, more accurate decisions—whether they are reservoir decisions or operational decisions. Making the right decisions at the right time, with confidence, is critical to success.
Before we describe our particular approach, let’s consider some of the reasons change is so challenging and why a more systematic and sustainable process is necessary.

**Tackling the Technology Adoption Challenge**

Every E&P company approaches technology adoption based on its unique organizational character and motivations. Some companies, for example, are so large that it is difficult to change anything very rapidly. Others are small and nimble, embracing change as a competitive advantage. Some are more risk averse than others. Studies of the various characteristics of technology adopters yield a normal distribution, or bell curve, from innovators and early adopters to late adopters and laggards (Fig. 1). Interestingly, similar characteristics hold true for individual users within a company. Understanding where your organization lies on the technology adoption curve—and who your visionary users are—can dramatically improve your ability to overcome barriers to change.

The following are widely recognized categories of technology adopters and common characteristics that apply both to companies and individuals:

**Technology Adoption Life Cycle**

![Technology Adoption Life Cycle Diagram]

*Figure 1: Successful technology adoption must find a way to “cross the chasm” between early technology enthusiasts and more mainstream users.*

- **Innovators.** These are technology enthusiasts who want to be the first to reap the benefits of any new technology, and influence its future development. They tend to be risk-takers, agile, and adventurous.

- **Early Adopters.** These are technology visionaries and thought leaders, well-respected opinion leaders, and risk takers. They have a positive attitude about technology and seek both early benefits and a competitive edge.

- **Early Majority.** These are technology pragmatists. They are willing to change and keen to deploy new technologies, but only after they have been tested and proven by innovators and early adopters to create value.
• **Late Majority.** These are technology conservatives, who tend to be risk averse and slow to let go of old technology. They resist change, adopt only under peer pressure, see technology as a cost of doing business, and may only partially realize the benefits.

• **Laggards.** These are the technology skeptics, the last to adopt, and only when absolutely necessary—often too late to gain real value.

Together, the Early and Late Majority are often known as the Mainstream. Between the Early Adopters and the Mainstream lies what Geoffrey Moore calls “the chasm” (Moore, 2002), a point along the technology adoption cycle where the entire process can, in effect, fall off a cliff and never climb out without taking the right approach. At this point, it is necessary to alter the strategy that worked well with technology enthusiasts in order to win over the more pragmatic or hesitant mainstream. In particular, it is essential to achieve early wins, and demonstrate real bottom-line value, before any E&P solutions will proliferate more widely throughout an organization or industry.

Any technology adoption initiative may be met with resistance from those most affected by the change, even though they may have the most to gain. However, user resistance is only one factor in the failure of technology projects. Why do so many adoption initiatives fall short or fail completely? The following are the most common reasons:

• **Lack of Executive Sponsorship.** Failure to deliver clear objectives and requirements for the initiative.

• **Poor Planning.** Failure to define realistic strategy, scope, time line and budget, including sufficient training, support, and change management.

• **Poor Communication.** Failure to involve and inform all affected parties, especially technology enthusiasts and mainstream users, from project planning through delivery.

• **Lack of Alignment and Commitment.** Failure to align the competing goals of management, IT, and users by providing a common understanding of value and desired outcomes, with incentives to buy in.

• **Poor Delivery.** Failure to ensure high-quality implementation, with appropriate design and testing to meet objectives.

According to The Standish Group, only 37 percent of technology projects succeed, 42 percent are late, over budget, and/or with less than the required features and functions, and nearly 21 percent are cancelled completely (The Standish Group International, 2012). Another key element in successfully delivering transformational projects is stakeholder satisfaction. A recent Gartner survey shows that 30 percent of respondents identified stakeholder satisfaction as a key to project success, although few organizations track stakeholder satisfaction. Only end-user acceptance had a slightly higher response rate at 33 percent as being the most important measure of a project’s success. A project must pass user acceptance and testing for a solution to be considered successful. However, stakeholder satisfaction is a leading indicator of use and adoption. Waiting for data on use and adoption is probably too late to fix stakeholder issues, whereas satisfaction can be trended throughout the project, and corrective action taken [Gartner 2012].
In the long run, technology is merely an enabler. By itself, no technology provides a complete solution. Instead, the introduction of new software and systems presents an E&P company with the chance to transform its business and technical processes. What, then, is the best way to take advantage of such an opportunity?

Unlocking the Potential of Landmark Technology—the Smart Way

Technological change of any kind can be complex and time consuming, since it may touch many different people, processes, and established systems within an organization. However, it need not be overwhelming. Most of the usual hurdles can be handled by incorporating effective change-management techniques, including stakeholder analysis, early in the game—rather than bringing them in at the back end, after things go wrong. Effective change may require managers and leaders to relearn the “ROPES,” a mnemonic device we use for the major questions to keep in mind before launching any new technology initiative:

- **Roles and Responsibilities.** How are E&P professionals’ functions likely to change going forward?
- **Organization.** What is the best way to organize geoscientists, engineers, and asset teams: centralized or globally distributed?
- **Processes.** What new business or technical processes and workflows might be incorporated to enhance the way individuals and teams work?
- **Employees.** Who are the technology “champions” and early adopters in the organization? How will mainstream users develop the skills required to take full advantage of new E&P solutions and working environments?
- **Systems.** What is the optimal way of harnessing and deploying new technology, both to influence and sustain changes intended to meet the organization’s strategic objectives?

Only by answering such questions about people, processes, and technology, both can asset managers, CIOs, VPs, and other leaders succeed in creating a truly transformational ecosystem that will provide maximum return on investments in Landmark technologies, such as the DecisionSpace® platform.

To assist our customers in overcoming obstacles to adoption, optimizing collaboration across complex workflows, and ultimately transforming the decision-making capabilities of asset teams, Landmark Services developed the Smart Transform℠ approach. Not only does it take into account the characteristics of different participants in the technology adoption cycle, but it also directly addresses the most common reasons for failure.

We combine extensive domain expertise in geoscience, engineering, data management, and information technology with proven methodologies and unique intellectual property to ensure the success of your roll out. Our consultants include project managers with experience in change management, E&P workflow optimization experts, onsite mentors who specialize in Landmark
software applications, and technologists with in-depth knowledge of business, IT and E&P systems. We provide classroom, online and custom training, as well as access to the knowledge base of our global Landmark services community, including best practices and lessons learned.

Landmark’s Smart Transform approach (Fig. 2) to solution deployment consists of three distinct phases: Smart Vision, Smart Deploy and Smart Sustain. All three phases are backed by expert project management, practical change management methods, and deep domain knowledge with repeatable processes, tools and templates to guide the teams.

Figure 2: Landmark’s Smart Transform approach takes a comprehensive view to the strategy, planning, implementation, and optimization of Landmark solutions.

Phase 1: Smart Vision. Success begins with identification of objectives and potential barriers, definition of a clear vision, cost-effective strategies to meet your business and technical needs, and a road map to guide the company from initial strategy through sustainable long-term transformation. Experienced Landmark consultants work closely with your IT and E&P teams to:

• Define stakeholder and leadership commitment, governance and ownership before, during and after technology deployment

• Establish value-creating business objectives and requirements, including the desired future state

• Establish a proactive change-management and communication programs to set end-user expectations and encourage early involvement and buy-in

• Determine how to address potential issues before they arise

• Perform gap analysis to identify current-state limitations and best practices for change

• Create a road map of initiatives and metrics to assess progress and ultimate deployment success, including post-project sustainability and governance
An important focus of the Smart Vision phase is to ensure alignment of all parties involved in the change process—before the rubber meets the road.

**Phase 2: Smart Deploy.** No matter how carefully you plan ahead, rolling out a new solution to an existing community of busy E&P professionals and training them to use it effectively will cause at least some disruption to day-to-day activity. Getting asset teams through this inevitable “valley of pain” and accelerating the adoption curve to greater productivity requires a well-orchestrated deployment plan. Success factors at this stage include rapid development of new user skills while minimizing nonproductive time, and quick realization of value—for example, streamlining workflows, reducing risk, saving time, improving collaboration across disciplines, and enhancing collective decision-making processes. To achieve these goals, Landmark’s Smart Deploy phase offers three distinct processes—Smart Start™, Smart Flow™, and Smart Skills™—covering E&P data, systems, workflows, and people.

- **Smart Start Process.** To make sure your technology roll out meets optimal performance requirements right from the beginning, our consultants work alongside your IT department to conduct data access and system checks prior to Landmark software installation. We validate your technology infrastructure through a series of best practices, benchmarks, and tests developed in collaboration with early adopters worldwide. The Smart Start process is designed to be evergreen, to ensure your ability to take full advantage of Landmark software upgrades and new hardware specifications. It provides an effective method to leverage enhanced system performance, integration features, and software functionality.

- **Smart Flow Process.** As part of the change-management process, we engage your geoscientists and engineers early in the project to smooth the transition from existing practices and workflows to the enhanced capabilities of the new technology. The Smart Flow process begins with mapping current workflows and data flows, identifying bottlenecks and inefficiencies, mapping your workflows to the DecisionSpace environment, and providing end users a better understanding of efficiency gains and best practices based on your workflows. Not only does the process optimize workflows, but it also identifies key topics for subsequent user training, mentoring, and skill development. This ensures both rapid absorption of new technology and greater sustainability over time.

- **Smart Skills Process.** Finally, Landmark E&P domain experts bring advanced tools and techniques to ensure that your asset teams develop the knowledge and skills necessary to succeed with our technology. We understand that busy professionals prefer to learn only what is directly relevant to their work, and they are more receptive when training is provided in short sessions followed by one-to-one mentoring and support. Our Smart Skills program provides flexible learning options, from traditional instructor-led classes, to Web-based online tutorials, and short, interactive workflow-focused workshops (which we call “Workflow Nuggets™”) and on-the-job mentoring activities. Your geoscientists and engineers will learn what they need when they need it. This progressive learning approach takes them quickly through the valley of pain to a level of fundamental expertise in Landmark applications and data-management solutions. Additional levels of training close the productivity gap, culminating in proficiency at advanced analyses and decision-making processes.
Phase 3: Smart Sustain. Many traditional technology deployment projects begin well, but value begins to plateau once new software and systems are in place and activities reach a so-called “steady state.” To ensure ongoing success, it is critical to sustain momentum and maximize value creation beyond initial deployment, process improvement, and skill development. The ultimate goal is to create a “transformational E&P ecosystem” in which technology adoption and workflow optimization continue to spread throughout the organization—dramatically reducing cycle time, mitigating risk and uncertainty, and lowering costs. To that end, our consultants continue to work closely with your IT and E&P teams to provide support and guidance, review and validate workflow enhancements, fill remaining gaps, identify evolving needs, enable feedback loops, provide ongoing change management, and determine additional requirements for the future. We seek to ensure that, as your E&P professionals develop new best practices, their knowledge and efficiency gains are captured, confirmed, and replicated throughout the company.

Maximizing the Value of Your E&P Technology Initiative

Transformational change is much more than continuous improvement or an extension of previous technological capabilities. It often implies a break with old ways. The deployment of DecisionSpace technology, vSpace® cloud solutions, or Landmark data-management or intelligent operations systems can dramatically alter traditional ways of making critical decisions at every stage of the reservoir life cycle. To reach this desired future state from your current state in the shortest possible time requires a strategic approach to technology adoption (Fig. 3).

![Figure 3: Comparison of Landmark’s Smart Transform approach with more traditional deployment approaches. Landmark’s Smart Transform increases ultimate value and accelerates time to value.](image)

With the Smart Transform approach from Landmark, we begin by developing a vision, strategy, roadmap, and business case to get your organization up the value curve faster and achieve superior results. In the deployment phase, we work closely with your people to accelerate
adoption, minimize the valley of pain, enable asset teams to realize the benefits of Landmark technology, and reach business objectives sooner. Together, we optimize and automate existing workflows bridging the disciplines and maximizing operational efficiencies. Finally, we help your E&P professionals collaborate more effectively and transform your decision-making capabilities across the entire organization.

Landmark Services has experienced consultants on the ground, committed to seeing you gain the greatest value from your new Landmark solutions. We have done this quite successfully for customers of all sizes worldwide. Here are just a few examples.

A Transformational Intelligent Operations Initiative. The Field Development, Well Surveillance, and Production Operations departments of a national oil company had been working in silos, analyzing issues unilaterally, which hampered collaboration across disciplines and caused inevitable delays in critical decisions affecting mature-field optimization and recovery. Landmark consultants were brought in to design and deploy an intelligent production-operations solution. We used our complete Smart Transform approach to tackle the challenge. In addition to installation of advanced surface and downhole surveillance and control instrumentation, Landmark Services developed a dozen automated workflows using DecisionSpace Production™ technology. We designed and delivered a state-of-the-art collaboration decision center featuring flexible meeting and working areas with reconfigurable walls and workstations, along with other innovations, which fostered more efficient teamwork between local and remote team members.

As a result, the NOC was able to break down silos, accelerate decisions, and optimize waterflood operations in complex, multilayered carbonate reservoirs. Due to better collaboration and optimized workflows, the company boosted production by 52,000 bbls per day and shrank nonproductive time by 33 percent during the pilot phase alone.

An Integrated E&P Data-Management Solution. An international oil company needed to replace its legacy, in-house data-management system with off-the-shelf technology that could provide greater consistency across recently merged operating units. User access and data sharing were especially problematic. The company engaged Landmark Services to use the full suite of the Smart Transform approach to deploy an integrated data-management solution.

• In the Smart Vision phase, our consultants actively engaged the client’s executive management sponsors, data-management staff, and E&P users to identify requirements and objectives. A strategic roadmap was developed outlining all processes necessary to meet project goals.

• In the Smart Deploy phase, we began by checking that the company’s technical infrastructure was adequate to leverage enhanced performance, integration features, and advanced functionality. Landmark’s workflow and data-management specialists held interactive workshops with company personnel to model “current state” workflows and develop faster, more consistent workflows using the new technology. Training helped users gain the skills required to maximize its value.
In the Smart Sustain phase, the capture and sharing of key workflows and best practices among asset teams further optimized workflows, and quickly established the new unified data-management system across the global organization.

Replacing an ad-hoc proprietary system with a fully-integrated commercial solution provided superior user access and data sharing enterprise-wide. The company eliminated the time, effort, and costs previously required to maintain and support multiple in-house systems. Streamlined processes considerably improved interactions between data managers and E&P professionals. Ultimately, Landmark’s unique approach to technology adoption accelerated the client’s time to value and increased its return on investment.

Bibliography

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About Landmark Services

Landmark Services works with companies to improve business processes, optimize operations, deliver innovative solutions, and accelerate adoption of Landmark software. We are experts in E&P, engineering, technology, and learning, and have methodologies designed to help companies like yours succeed. Our consultants work worldwide, spanning five practice areas: Intelligent Operations, Information Management, Cloud Services, Technology Adoption, and Education. Our goal is to help you transform your business and maximize assets by enabling the safe, fast, and accurate decisions needed to find and recover every last drop of hydrocarbons.

For more information, contact your Landmark account representative or send an inquiry to Landmark@Halliburton.com.