Dr. Cesar Bravo and Suryansh Purwar are global practice managers of Landmark’s growing production services organization, Intelligent Operations Solutions. They have spent the past fifteen and ten years respectively, solving engineering and organizational challenges on the frontier of oil and gas production. Over this time, they have witnessed and affected the adolescence of technology in the oil patch. They have seen the remote operations of oil and gas companies evolve from being offline to requiring 4 gigabytes of data throughput per second and growing (Rignet, 2015). What have they learned? How far are we towards the promise of fast and safe decision-making in production?
**Question:** Cesar, Sury, how do you define the “digital oilfield?” Has the industry’s definition changed over the years?

**Cesar:** Today people of different generations and with different business models all use the phrase and each of us means something different by it. When people first started referring to the “digital oilfield” it was comprised of rudimentary sensors in a producing field. Today, not only is hardware much smarter, but software must turn the huge volume of data coming out of the field into something useful. Really this is just the modern oilfield. Internally at Landmark we talk about managing the lifecycles of the reservoir, the field, and the well—the iterative cycle of communication, engineering, analysis, and execution that is involved in modern production. The technology, or digital, aspect of all this is implied because it is the fundamental enabler.

**Question:** You say the technology is more advanced than it used to be. What have been the biggest strides our industry has made during your career so far?

**Suryansh:** Consider the big advances in production from the past three decades. In the 1990s, the earliest form of field automation was mastered. Landmark’s software like WELLPLAN™ and DSS™ performed well modeling and surveillance that allowed operators to set simple limits on hardware. In the 2000s, managing the requisite data became a bigger challenge because there was more of it. Information technology made great strides as companies figured out how to integrate and manage data from multiple sources. This is when Landmark built databases that are still used broadly in E&P—OpenWorks® and Engineer’s Data Model™ (EDM), for example. In 2014, Landmark released the DecisionSpace® Platform, the industry’s first enterprise platform. Now, in 2015, we have all of the right ingredients to enable intelligent production, thanks to advances in our industry and others. This decade will be marked by the synchronization of production applications and the analytics and automation of business processes it enables.

**Question:** Automating business processes can be complex, even with many enabling technologies in place. What are the biggest challenges that remain?
**CESAR:** One of the biggest challenges is that there’s no standard production data model. Landmark supports **PPDM** and **PRODML**, but many of our customers use one or the other. Our production products frequently have to be configured given a company’s unique data management practices. There are also few standard workflows in production, though this is starting to change. Well integrity, for example, is managed differently at most companies. Landmark has built a world-class services team to deliver the right technology and knowledge given a company’s specific needs.

**SURYANSH:** Today there are still some business processes that are too difficult to automate because they cross domains; segregated humans and data make communication between different steps in a process difficult. This is changing too, though. Landmark’s DecisionSpace® Platform exists for this reason. It is designed so that all business processes refer to a single integrated asset model, and data can be easily transferred across domains.

**QUESTION:** Landmark is historically known for its leadership in geoscience software. Why did you chose Landmark as the place to build a production business?

**CESAR:** Landmark’s early prominence in **geology and geophysics software**, then its extended prominence into **reservoir management software** and **drilling and completions software**, represents how our industry’s focus on insight and efficiency has expanded over time. Landmark has been a thought leader in **production software** since the 1990s. As one example, a paper I co-authored in 2013 called *Best Practices and Lessons Learned After 10 Years of Digital Oilfield Implementations* details some of our past work. Our manager, Gerardo Mijares, was the Real Time Production Operations Manager for Landmark in 2007 and led work on the seminal *Chevron Agbami* and *Petrobras MOP-TR* projects.

**SURYANSH:** The R&D team at Landmark is executing on a vision that makes production optimization possible. Landmark’s expertise in data management has resulted in a platform that serves as the rails for all we want to do in production. The domain expertise, the ability to build killer apps, is here too, and that’s why we are market leaders in domains like drilling. Of course, it’s also beneficial to be part of **Halliburton**. For comprehensive production pro-
jects like the Kuwait Integrated Digital Field, we deliver systems of hardware and software that are integrated.

**QUESTION:** What does the future hold for Landmark, with regard to production?

**CESAR:** Our recent alliance with Petroleum Experts, a leading provider of petroleum engineering software tools, shows a glimpse into the future of production for our industry. Our joint solutions with Petroleum Experts will enable operators to manage and improve full field planning to optimize performance and costs. These solutions will be delivered more quickly and cheaply than ever before. Imagine subsurface and surface models being linked and in communication with economic models, and you’ll see that we have an exciting future ahead.

**QUESTION:** What does the alliance with Petroleum Experts mean for your customers today?

**SURYANSH:** It’s a good situation for customers. Before, they had to chose between an IT-centered solution from Landmark and an engineering-centered solution from Petroleum Experts. Or they bought both and used one system for this, and another for that. Not only will our integrated solutions offer the best of both worlds, but now Landmark’s global services organization is trained to support Petroleum Experts’ products too.

**QUESTION:** Do you have any final thoughts?

**CESAR:** With our new DecisionSpace® Platform architecture and alliance with Petroleum Experts, Landmark production services is in high growth mode. We’re on the look-out for people experienced in production engineering optimization.