The Hype, The Hope and the current Reality and future Challenges

By Jim Crompton

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Abstract:

First the Hope. Rising production from North American shale producers (mainly in the Permian Basin of west Texas) as well as new OPEC production and new contributions from several basins around the world provide welcome headlines but unclear demand trends, key infrastructure constraints (lack of pipeline space and LNG export facilities) and geopolitical sanctions are creating an uncertain price future. While the short term looks better, the long term is unclear for today’s oil producers’ executives and planning staffs. The answer for many seems to be to count on greater productivity. ‘I want to grow my production but not grow my staff or increase my operating and capital costs,’ is the new mantra for the industry.

More for less is not a new theme, but the answer of how to accomplish that business plan lies with the belief in the impact of emerging technology, automation and greater insight from the data the industry is collecting by using advanced analytical techniques. Many companies have created corporate and divisional centers of analytics bringing together newly hired data scientists, domain experts and data handling support staff. The good news is that we are seeing some interesting developments (at least the ones that companies are willing to share) ranging from a well designed by Al algorithms in the Permian Basin by Shell as part of their comprehensive iShale program, to ‘pump by exception’ techniques, where an Al algorithm helps to improve the productivity of artificial lift units in North Dakota, in a partnership with Equinor and the Al company, Ambyint.

Many companies are using artificial intelligence and machine learning techniques to deploy predictive maintenance approaches to critical oilfield equipment, by taking data from process control systems (SCADA) and getting more useful life and uptime from existing assets and lowering opex. Other operators are finding ways to visit the wellheads and production pads less often through better logistics (taking a lesson from FedEx) and using data from the field for remote surveillance. Cheaper drilling,
more effective completions and lower production costs fit right into the ‘produce more for the same costs’ assumptions coming from the C-suite message to the shareholders and bankers.

Now for the Hype, and there is plenty of this. First to take a step back, it is important to recognize the growth of the digital economy, and I am not just talking about Uber and AirBnB. We are getting tired of hearing about that comparison. In an article in a recent Economist, the picture of the impact of high tech firms falls into perspective.

“Rarely in stock market history have so many investors made so much money from so few shares going up for so long. Some 37% of the rise in the value of all firms in the S&P 500 Index since 2013 is explained by six of its members (Alphabet, Amazon, Apple, Facebook, Microsoft and Netflix). About 28% of the rise in the Chinese equities over the same period is owing to two firms (Alibaba and Tencent). Managers and investors have bought into a tale of effortless disruption by an elite of firms led by the world’s brainiest people.” (The Tech sell-off, Schumpeter, Economist Nov 3rd, 2018)

Our industry executives and tech managers are not immune to this siren song of opportunity and promise. Management consultants constantly berate our industry for slow adoption of digital technology. Oil and Gas is often rated as a laggard and needs to get on the bandwagon before we are left behind. There are hundreds of high-tech vendors knocking on our doors with a new technology and a new promise of solving all our problems, even before they know what they are. Trips to Silicon Valley to worship at the feet of Google and others is a mandatory step in the development of business plans and in management development plans. Corporate digital acceleration and innovation programs have been launched. Digital Boot Camps and specialize training in Python or R programming are held. New investments and partnership are formed. Pilots and proof-of-concepts projects are numerous and expectations are high.

But what is the Reality? Most companies really are trying to see how the new ‘digital’ coat fits. It is not that modeling, simulation and automation projects are new to the oilfield. We have been doing them for years and seismic acquisition, processing and interpretation has been a “big Data” program since the 1970s. We have had our digital oilfield/ integrated operations, smart field, integrated field, intelligent field or what ever you want to call it programs around for nearly two decades now. We have learned quite a bit about workflow optimization, remote decision support and real-time operations. Some projects have gone well and created a lot of value. Others we don’t talk about as much.

The barriers are using not the technology. The wise advice is to think about people, process and technology when starting down this path. I would add some consideration around your data foundation as well. The technology is the ‘bright shiny object’ that gets too much attention. The trouble spots are often in difficult access to relevant data, uncertain data quality (especially when used outside our infamous functional and asset silos), a resistant organizational culture that still values experience over new statistical models and often a lack of digital literacy in the organization.
Biography:

Jim retired from **Chevron** in 2013 after almost 37 years with the major international oil & gas company. After moving from Houston to Colorado Springs, Colorado, Jim established the **Reflections Data Consulting LLC** to continue his work in the area of data management and analytics for Exploration and Production industry.

Jim was a Distinguished Lecturer for the Society of Petroleum Engineers in 2010-2011, speaking on the topic of “**Putting the Focus on Data.**” He is a frequent speaker at SPE conferences on Digital/Intelligent Energy and the Data Foundation. His interests lie in the full spectrum of the information value chain from data capture, data management, data visualization, data access, modeling and analytics, simulations and serious gaming.

Jim graduated from the **Colorado School of Mines** (BS in Geophysical Engineering in 1974 and MS in Geophysics in 1976) before joining Chevron in Denver, Colorado. He later earned an MBA degree (1996) from **Our Lady of the Lake University** (San Antonio, Texas).

In 1999, Crompton was elected to the position of chair of the general committee of **PIDX** (Petroleum Industry Data Exchange), the API electronic commerce subcommittee. Jim was able to influence the direction of the standards setting activities towards emerging technologies, such as XML, and new electronic business models in the energy industry. Crompton worked on the IT merger integration organization study team in 2001 as part of the Chevron & Texaco merger which developed the IT organization structure and IT strategic direction for the corporation where he received a President’s Award for this activity.

In acknowledgement of his contributions in applications of information technology to business problems and in working to develop industry standards in electronic data exchange, Jim was named a **Chevron Fellow** in 2002 and served as the chair of the Fellows Network from 2006-2008.

In 2017, Jim was named as the **PNEC Cornerstone** award winner for career accomplishments in data management. Jim was also selected to be on the board of the **SPE Digital Energy Technology Section (DETS)** and is chair of the Digital Transformation committee under DETS.