

Enhancing geophysical best practices with open standards

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Energistics, formerly known as the Petrotechnical Open Standards Consortium (POSC), is a not-for-profit membership organization with 80 current members representing all segments of the upstream oil and gas industry, as well as government agencies, industry associations, and academia. Upstream exploration and production (E&P) is the primary area of interest for the Energistics community, including an E&P business process reference model; E&P catalogue standards; reference data standards; and XML exchange standards, design guidelines and profiles, the most prominent of which are WITSML and PRODML. Members participate in a number of Special Interest Groups (SIGs) whose efforts are concentrated around drilling, production, data management, regulatory, geophysics, and other relevant areas of interest.

The E&P industry continues to struggle with data and information management issues as the number and complexity of interactions increase significantly each year. These interactions take place between data bases, proprietary applications, third-party applications, and business processes, within and between individual enterprises. The ability to achieve significant business value and increase the potential of achieving exploration and production goals is reduced if these interactions are not well defined and commonly structured. Open industry stan-

dards and frameworks for these interactions increase the likelihood of achieving value.

Beginning in 1991, POSC's focus on petrotechnical

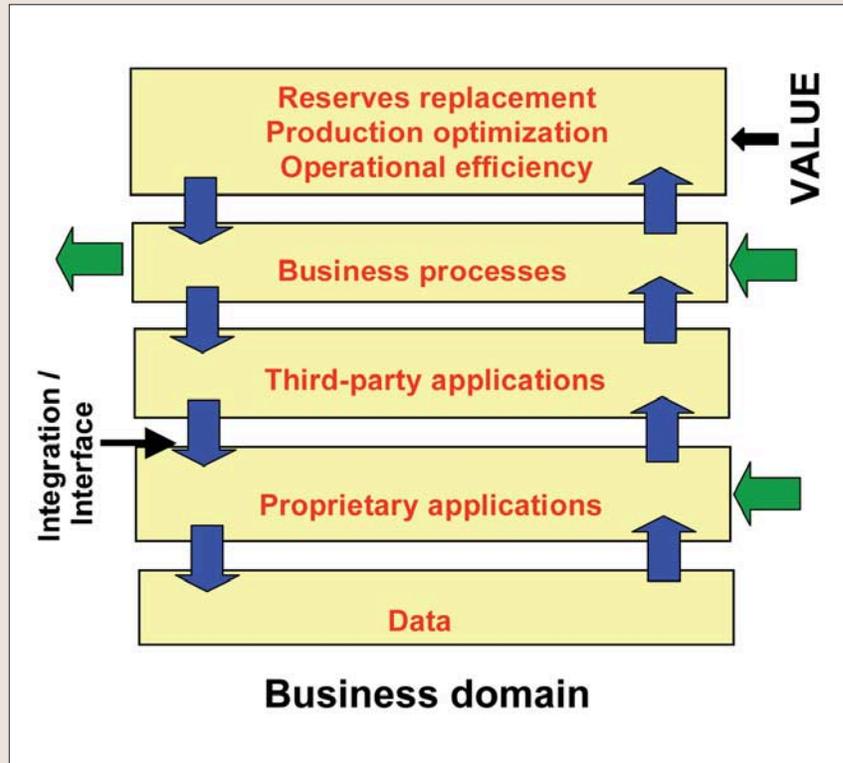


Figure 1. Real-value creation.

aspects of exploration and production brought geophysical acquisition, processing, and interpretation into a prominent position. As POSC transitioned from an integrated data model and tightly-coupled application interoperability standards to XML-based data exchange and loosely-coupled Web services standards around 2000, an early effort brought about GeophysicalML. This stand-alone solution for exchanging geophysical header data is the foundation for future geophysical standards efforts. Throughout this time, POSC, and now Energistics, have maintained a link with SEG Technical Standards Committee, where substantive geophysical data format standards have been developed and hosted for many years.

In January 2005, the Oil and Natural Gas Corporation of India (ONGC) presented a request at a POSC SIG meeting in India to form a Geophysics SIG that would promote the development and improvement of industry geophysical standards and best practices. ONGC, an Energistics member, followed with a detailed presentation on the same subject at the Energistics Asia South Region and SIG Meeting in New Delhi in January 2007.

The business case put forward by ONGC for pursuing improved geophysics standards and best practices in India is based on the increased exploration activity resulting from the New Exploration Licensing Policy of the Indian government. Organizations new to India have emerged on the scene. Working relationships among energy companies, service companies, and government agencies help focus attention on the need for standards-based information definition, use and exchange. The scope of geophysical standards that ONGC want to have addressed is very large and spans the life cycle of geophysics processes and data. Energistics intends to leverage the early development work on GeophysicalML for the benefit of ONGC and the industry.

The intended operator benefits of improved geophysics standards include: receipt of consistent geophysical data from various service companies' field crews and acquisition systems in a manner that is neutral towards geophysical application products or storage solutions, rapid availability of geophysical data for analysis and operational decision-making, elimination of the need for vendor-specific preprocessing software products prior to analysis, and preservation and easy reuse of value-added information

and knowledge from previous work steps across acquisition, processing, and interpretation.

The intended service company benefits of improved geophysics standards include: reduction of the need for software product customization for specific energy companies, ability to more easily satisfy customer needs for rapid data delivery, clarity about customer data requirements, and preservation and easy reuse of value-added information and knowledge from previous work steps across acquisition, processing, and interpretation.

Energistics defines "intelligent energy" as "optimizing the benefits of highly instrumented assets through technology by efficiently using real-time data streaming from multiple sources." One of the means to achieve this is through the creation of open industry standards for the transfer and exchange of data and information. These standards should be freely available to the industry, universally applicable in terms of technology, and enable the interaction of diverse applications and systems on a "plug-and-play" basis.

This market-based approach is necessary because standards developed but sitting on the virtual, or any other, shelf have no business value; standards developed in a collaborative fashion but not widely adopted only have potential business value, so only standards developed in collaboration, widely adopted by the industry and deployed in the oilfield have tangible business value that result in achieving the goals of reserves replacement, production optimization, and operational efficiency.

The results of this approach are that standards become an integral part of the business domain; a common industry framework is built which adapts to meet changing demands; and the resulting techno-business integration and optimization can lead to real-value creation in Figure 1.

There are clearly significant business value improvements at stake with the implementation of intelligent energy technologies, processes, and procedures, including best practice improvements in the geophysics arena. Adoption and deployment of market-driven and business-based open industry standards will decrease the friction in data exchange and enhance the opportunities to achieve real business value for the E&P industry. [T|E](#)

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