



Introduction

Decades ago, Oil and Gas operators and service companies started accumulating wireline logging data; the amount of data acquired since then has grown exponentially with the development of seismic surveys, measurement while drilling, and with the “digital oilfield” revolution in which operators increasingly add sensors inside producing wells.

Several data interchange standard formats have emerged from organizations such as Energistics, PPDM, and other bodies represented in the industry’s Standards Leadership Council (SLC). Technically, those help move data between different software applications; yet there have been obstacles to sharing data among industry players, including concerns about confidentiality. Upstream operators have begun to realize that they need higher-level process and information models to integrate operations, improve efficiency, and respond in real time. Processes and data that can decrease lost time and safety incidents are an example of where common standards should trump confidentiality concerns.

Ongoing research on digital energy highlights the tremendous potential for improved operations through the use of this data. Booz Allen Hamilton predicts that big data analytics can enable a 6-8% boost in production from data-driven oilfields. It also calculates a 13% increase in facility uptime in offshore environments. This could amount to as much as US\$1bn annual savings for a single E&P company.*

Value Proposition of Object Management Group Standards

The Object Management Group® (OMG®), an international, open membership, not-for-profit technology standards consortium, has a rich history of leading the development of model-based technologies that have been widely adopted in vertical markets such as healthcare, finance, space and manufacturing. There is a vibrant community of tool developers and consultants that support various OMG standards relevant to Upstream Oil and Gas such as:

- **Data-Distribution Service™ (DDS™)** is a successful, quality-of-service based, interoperable publish-and-subscribe mechanism for data acquisition and exchange. With the proliferation of sensors and growing data volumes in SCADA systems, DDS provides intelligent real-time data management.
- **Systems Modeling Language™ (SysML®)** is broadly used to model complex hardware and software systems. With the increasing complexity and interconnection from sensors to analytics, applying systems modeling using a standard language is crucial.
- **Business Process Modeling Notation™ (BPMN™)** can be used to document and teach processes, or serve as the basis to analyze and improve them, and possibly automate them through Business Process Management software. The Oil and Gas industry is still too dependent on paper-based processes that use non-standard and ambiguous language.
- **Case Management Model and Notation™ (CMMN™)** addresses the management of unpredictable sequences of events, for example in incident response.
- **Unified Modeling Language™ (UML®)** is used to analyze and design software to systematize software construction and reduce the risk of errors.
- **XML Metadata Interchange™ (XMI®)** allows models to be exported from one modeling tool and imported into another using the self-documenting XML language.

* Booz Allen Hamilton Whitepaper, 2015: “Securing and Enabling Data Driven Oil Fields: A look at the Key Drivers and Critical Success Factors of Operationalizing Digital Oil Fields”

Work In Progress

OMG is in the process of developing a model for **Operational Threat and Risk Modeling**, which will apply to all types of risk including but not limited to cyber threats. The Oil and Gas industry is constantly managing diverse and sometimes severe risks to assets and people, and should greatly benefit from such a standard model. OMG has also completed a study and published a discussion paper on **Data Residency**, outlining the issues with transborder data flows and the potential need for new standards in that area. The relevance to Oil and Gas is obvious, especially for the “majors” and other multinationals that often need to move data from the wellhead to a data center or a customer’s office in another country.

Related Object Management Group Standards Efforts

OMG has a long history of enabling collaborative standards development work among competing organizations, in spite of their legitimate need to protect proprietary information and processes.

OMG is also involved in liaisons with other industry and international standards bodies, such as ISO, resulting in the promotion of its specifications to the status of international standards. OMG is part of the Oil and Gas SLC, where it collaborates with the other eleven members of the Council.

Through multiple Domain Task Forces and Special Interest Groups, OMG members have established methods and demonstrated the benefits of modeling and exchanging information and process models in industries such as finance, healthcare, manufacturing, space, and more. Some of the standards help highly regulated or safety-conscious industries meet their regulatory obligations. This experience can directly inform the work of newly formed Task Forces in other domains such as Oil & Gas.

In a context of “lower for longer” oil prices, the Oil and Gas industry must improve the performance of equipment and people, reduce its operating costs, and still operate with the utmost levels of safety. Secure ways to combine industry-wide data to enable better decision-making and integrated operations, using broadly accepted standards and models, will play a key role. OMG standards have paved the road toward this goal.

Next Step

We are happy to discuss how OMG membership will benefit your organization! Please explore our website at www.omg.org and when you are ready, please contact bd-team@omg.org or call +1-781-444-0404 to get started.

About OMG

The Object Management Group (OMG) is an international, open membership, not-for-profit computer industry standards consortium with representation from government, industry and academia. OMG Task Forces develop enterprise integration standards for a wide range of technologies and an even wider range of industries. OMG modeling standards enable powerful visual design, execution and maintenance of software and other processes. Visit www.omg.org for more information.



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