

# EPIM ReportingHub (ERH) — an information exchange solution for drilling and production reporting on the Norwegian Continental Shelf

*“Drilling costs represent nearly 50% of the total annual operational costs for the North Sea oil and gas operators. ERH is an important step towards enabling these companies to realize the potential of integrated operations — accelerated and increased production. Working with EPIM, TopQuadrant implemented and runs ERH as a key instrument for both transfer of experience across companies and for optimizing drilling and production operations.”*

— **Thore Langeland,**  
Strategic Adviser, EPIM

## PRODUCTS USED

**TopBraid Live™** — an intelligent business applications server. ERH is a Software-as-a-Service application developed using the TopBraid platform. Key TopBraid technologies used in ERH are SPARQL Inference Notation (SPIN) for data validation and transformations, SPARQL Web Pages (SWP) for user interface and report generation and XML conversion capabilities to make reported XML data available for semantic processing.

AllegroGraph RDF database

## BENEFITS

Through a formal RFP process EPIM determined that TopQuadrant had the technology and expertise to realize their vision of the first in a suite of semantic, model-driven knowledge applications to provide their consortium members with:

- Lower cost of reporting information to regulating authorities
- Shared drilling and production report data with license partners on the Norwegian Continental Shelf
- Strong semantic analysis of report data to allow history-based querying and trend identification
- New possibilities for both operators and partners to easily view and analyze data across different fields and licenses

## Background on EPIM

Exploration and Production Information Management (EPIM) is a non-profit association of oil and gas operators and partners on the Norwegian Continental Shelf (NCS). EPIM's main objective is to facilitate the flow of information between its users and to authorities. EPIM meets the challenge of increasing data volumes efficiently, securely, and cost-effectively through the standardization of requirements and processes. By doing so EPIM provides the oil and gas industry with tools that promote substantial advantages and simplifications to their day-to-day business operations:

- Reduction of cost in key parts of the company's value chain
- Improved efficiency
- Secure and predictable delivery mechanisms

## Challenges

The operators of NCS production licenses are required to report exploration and production activities to the government authorities. Because licenses are shared, operators must also report business activities to their partners as defined in their Joint Operating Agreements. Most operators must also provide substantial reporting to their home offices and to other regional and global organizations.

EPIM decided to use the World Wide Web Consortium's (W3C) Semantic Web standards due to the flexibility they provide for working with heterogeneous data and their growing adoption. They also decided to base their solutions on a relatively complex standard, ISO 15926, which was developed to support

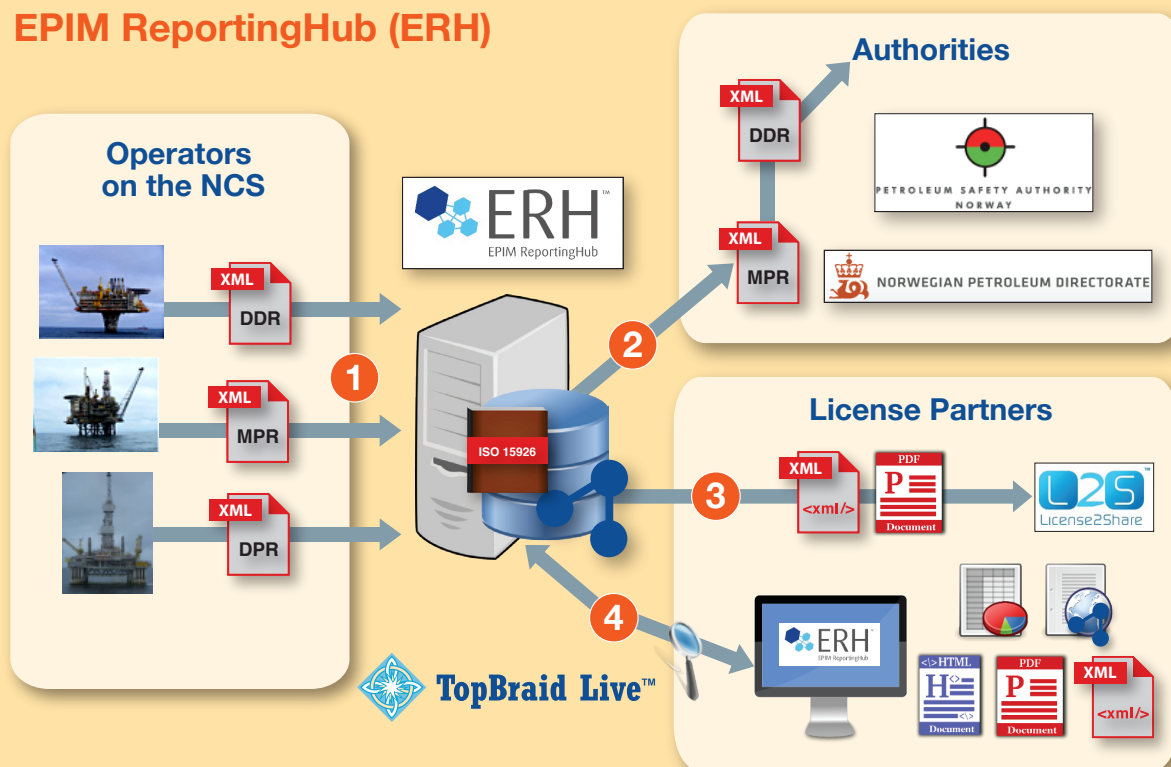


TopQuadrant's standards-based solutions enable a semantic ecosystem among people, applications and data—lowering the cost of ownership and realizing intelligent, data-driven action. TopBraid Live is a Semantic Web and Linked Data platform through which organizations can deliver powerful, yet flexible, solutions in a variety of industries and disciplines. With TopBraid Live, semantic application components, such as Extract-Transform-Load logic, can be created by domain experts, rather than only by software engineers.

For more information visit [www.topquadrant.com](http://www.topquadrant.com), or contact us at [info@topquadrant.com](mailto:info@topquadrant.com) or by phone at +1 919 300 7945.

Ask us about scheduling a demo to explore how TopBraid Live, TopBraid Enterprise Vocabulary Net™ or TopBraid Insight™ meets your specific requirements.

## EPIM ReportingHub (ERH)



### Legend

1. Data in XML format is collected directly from the platforms on the North Sea, semantically processed, validated and stored according to the ISO 15926 standard
2. Daily and monthly reports for each operator are transmitted to the regulatory agencies through web services
3. Snapshot reports in XML and PDF formats are stored in a content management system called License2Share for access by partners according to agreements
4. Accumulated data is used by the operators to run ad hoc reports and analysis with access control ensuring users only see business appropriate subsets of data

strong semantic representation and analysis of asset lifecycle information. EPIM wanted to ensure that their suite of solutions would have a comprehensive semantic foundation and that future integration of new data and applications would be less costly.

With TopQuadrant's assistance, EPIM has successfully blended the W3C Semantic Web and ISO 15926 standards, and has been a significant force in moving the ISO 15926 community towards practical use of Semantic Web technologies. Using TopBraid, the development of complex ISO 15926-based Extract-Transform-Load (ETL) processes can be created by domain experts, not software engineers, thereby reducing development time and costs.

### Solution

ERH provides a single point of interaction for operators to communicate drilling and production data to partners and authorities. They upload daily and monthly data once, and different reports are created and transmitted according to agreed formats. Along with pre-defined reports, ERH offers an easy way for users to create custom reports by extracting the exact data they need. Information from all reports can be extracted and combined in many different ways. This service provides new possibilities for both operators and partners to easily view and analyze data across different production fields and licenses.

Operators transmit daily drilling and daily and monthly production data in XML directly from the platforms on the North Sea using a secure network. Transmitted feeds are validated against reference data such as company name lists and licenses. Once validated, merged information is saved in an RDF warehouse for future reports and analysis. XML reports are automatically filed with the government. Standardized PDF reports about licenses and business area arrangements with partners are generated for secure sharing and filing.

TopQuadrant's David Price, Director of Oil, Gas and Engineering Solutions, worked with EPIM and the ISO 15926 community on this project. He observed: "The project pushed the envelope with respect to the use of Semantic technology and ISO 15926 to the point where we're on the cusp of more practical, widespread adoption of this approach. It has already led to new parts of the ISO 15926 standard being created so that the lessons learned in ERH are available to the wider community. The POSC/ Caesar Association (PCA), the key standards-making consortium in the ISO 15926 community, has aligned its processes to use this improved approach and has adopted TopBraid as its tool of choice."

### Results

EPIM and the Norwegian oil and gas industry have a long-term vision of an information management hub that enables sharing of information provided by government agencies and NCS operators and partners. The scope of that vision includes the large engineering assets on the Norwegian Continental Shelf. To realize the vision, the data needs to be semantically well-founded in standardized forms that are readily sharable and built with extensibility and flexibility in mind. The technologies chosen for ERH have brought considerable business value to the management of EPIM assets, because data is a key asset to both large engineering organizations and government regulators.

Using TopBraid technology for ERH has proven to be so successful that EPIM has chosen it for two subsequent applications: environmental reporting and logistics tracking. The EPIM vision of a suite of flexible, semantically well-founded knowledge bases is becoming a reality and will continue to serve its members for years to come.