

## PPDM Manages Oil & Gas Data Better, Faster

By Yogi Schulz, Dave Fisher and Trudy Curtis

Oil and gas exploration and production companies experience many difficulties with data, difficulties which the Public Petroleum Data Model (PPDM) can reduce.

Even the best software for seismic modeling can be incompatible with a company's existing applications and databases.

Delays and errors in data transfer between databases and applications are a constant source of complaint and inefficiency.

Consider geologists resorting to using spreadsheets and hand-drawn cross-sections for horizontal wells when their database is not designed to handle multiple picks for the same formation in one well. Or even, a default on a lease payment for a key parcel acquired in a corporate merger two years ago which occurred because of imprecise data definitions. The 'payment due date' from the incoming lease records was incorrectly loaded into 'expiry date' in the land database. Default could cost the lease.

The above examples illustrate problems in the following areas:

- Inadequate application integration.
- Lapses in data quality.
- Excessively long cycle times for business processes.

Utilizing the Public Petroleum Data Model (PPDM) as part of a data management strategy can reduce these difficulties, respond to the demands of the uncertain environment and improve professional productivity.

### The Hidden Foundation

Just as you cannot build a house without a foundation, you cannot make informed business decisions without the support of a data model such as PPDM. A data model defines the structure and relationships of your data. It is the hidden foundation or enabling technology for all methods of storing and retrieving information. Even when you create file folders on your PC, you are creating a data model. Application software can find what you want in a database only if it understands the structure of the data. Applications can only talk to each other ('inter-operate') if they can share the exact meaning and structure of the data.

The PPDM has grown in scope and global acceptance since its initial development 11

years ago. International cooperation in building a data model that is open to the whole oil and gas industry is the foundation and enduring concept behind the success of PPDM. This saves time and money. It enables oil and gas companies to focus their efforts and investments on interpreting data and exploiting its full value, rather than on data modeling.

### You Need PPDM If...

- You can benefit from using PPDM if you have encountered these dilemmas:
- The only way you can integrate your subsurface interpretation processes is to buy all your software from one vendor, even though this solution is expensive and some modules are not 'best in class'.
- The productivity of your explorationists is disappointing because too much effort is being absorbed by data loading, re-formatting and accuracy verification.
- Retrieving the SEG-Y data for a seismic line takes two days because there is no online index, order and delivery system compatible with your existing archive.
- A vendor offers much better quality and coverage for well test data, but their data definitions and formats do not match your database.
- Your preferred software vendor has told you that a new surface facilities application will take two years to develop because they must first build their own data model.

### The PPDM Way

PPDM is developed through a methodology known to members as 'The PPDM Way'. This international cooperative process is centered on work groups of experts in:

- Business processes - engineers, geologists, landmen and others who use information to make decisions.
- Information technology - analysts and database specialists who design and operate application software to store, deliver and analyse information.
- Data modeling - analysts who define the logical data model and its physical schema for a relational database management system.

The PPDM Association enables and supports its work groups by providing project management, data model construction,

model testing, marketing and distribution. The PPDM Association consists of over 100 member companies around the world - producers, software developers, data vendors, governments, and IT consultants.

PPDM is called 'the business driven model' because:

- The PPDM Way ties the product closely to real, current business processes. As the first major stage in developing a new subject area, the work group creates the Business Requirements Document that defines the required information and processes in which it is used; it is the basis for designing the data model.
- PPDM's architectural principles and modeling expertise ensure that the Model is practical to implement in today's database technology.
- New subject areas are nominated and developed through the commitment of resources from the membership. This ensures that model development is tied to business priorities.

### Model Subject Coverage

PPDM is focused on the needs of the upstream oil and gas community. The subjects included in the current production model version 3.4.1 (figure 1) are:

- Wells
- Production
- Seismic
- Land mineral rights
- Data management
- Lithology
- Support

### Today's Positive Reality

The PPDM has been the foundation of many corporate databases and software applications for ten years. Its popularity continues to grow as it expands in scope and functionality. Most of the oil and gas industry's data vendors use PPDM for data management and delivery. Most browsing/mapping applications have been developed to access PPDM. Most oil and gas industry data repositories contain data models adapted and expanded from PPDM.

PPDM is today's positive reality because it offers positive outcomes:

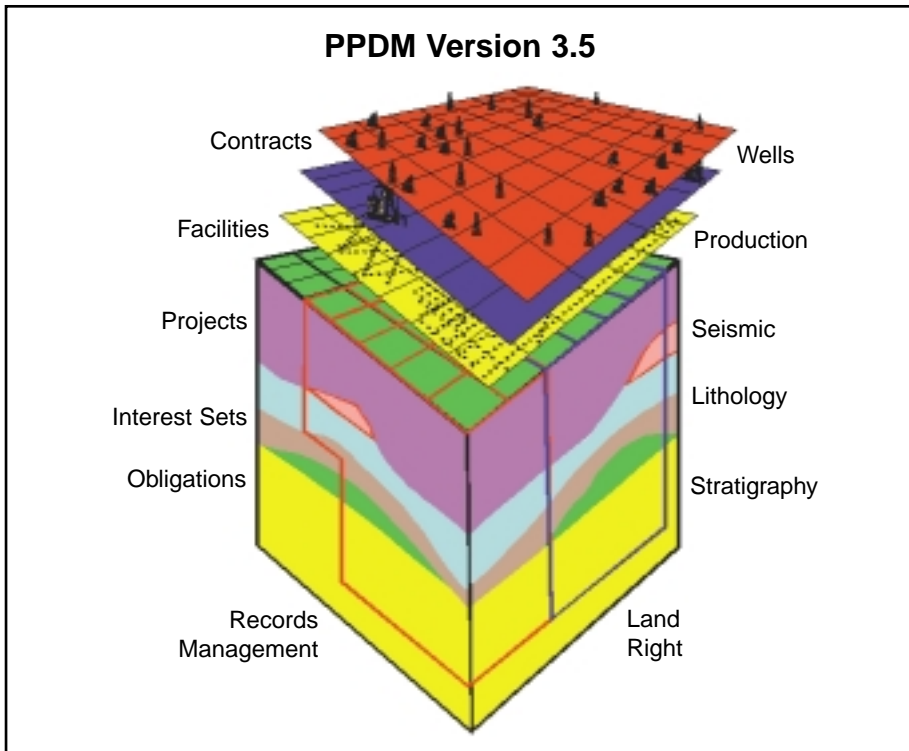


Fig. 1 - PPDM covers a wide range of subject areas.

With many software vendors producing competing products based on PPDM, you can choose the one most suited to your purposes. You don't have to settle for the only one that is compatible with your other systems.

Where two data vendors offer data in PPDM, you can buy the best from each and load the data into a single PPDM database.

You can reduce delays and errors in data transfers between databases and applications, and in the consolidation of data from a purchased asset, by using PPDM as the common definition of data content and format.

You can accommodate even complicated data sets from around the world - locations, tests, formation picks, completion data and production time series.

Your software development cycle is reduced in time and cost by starting with PPDM as the data model.

This wide acceptance is based on accessibility and performance. PPDM is easy to understand and implement. PPDM is designed to meet business needs using the power and limitations of current technology. PPDM is the de facto business-driven standard.

### PPDM Benefits

Oil and gas companies that have incorporated PPDM into their data

management strategy are experiencing the following benefits:

- Access to and reduced take-up time for a wide selection of software packages, data and consulting services;
- Enhanced integration of business processes and data,
- Improved communication among explorationists, partners and regulatory agencies,
- Reduced data maintenance costs. The operator can manage data and transmit to partners reliably and consistently;
- Reduced cost, elapsed time and ambiguity caused by data transformations.

Software vendors, with products ranging from technical and interpretation to data management, who have incorporated PPDM into their data management strategy are experiencing the following benefits:

- Reduced time to market because little effort is required for data modeling;
- Reduced systems development costs and risks because data modeling costs are widely shared;
- Enhanced market appeal of the software because oil and gas companies can more easily implement it;
- Reduced implementation cycle at client sites that are using PPDM.

For example, software packages based on PPDM are available for the following disciplines:

- Production engineering;
- Exploration economics;
- Geologic interpretation;
- Seismic interpretation;
- Mapping;
- Well log analysis including cross-section creation.

In summary, these benefits arise from shared definitions of business concepts that are consistently expressed in terms of the associated data.

### PPDM Association Benefits

Oil and gas companies are no longer willing or able to fund or staff their own data management, data modeling and software development initiatives. Yet the need to improve efficiency in data management and enhance functionality in application software continues and is, in all likelihood, accelerating.

The solution to this dilemma that most oil and gas companies are embracing is the shared cost approach to:

- Data management through outsourcing the acquisition, delivery, and maintenance of data;
- Data modeling through membership in the PPDM Association;
- Application functionality through software package licensing.

To support the shared cost approach that many of the stakeholders in the oil and gas industry are embracing, the PPDM Association has developed its highly cost-effective development process. The PPDM Way has produced a data model with a superior return on investment today.

Beyond sharing the effort and expense of data model development, members of the PPDM Association receive the benefits of collaboration. These benefits include access to:

- Business experts in various domains;
- Technical experts in oil and gas data and databases;
- Implementation and software package experiences;
- PPDM workshops and conferences.

## Background

The PPDM Association had its start as a committee in 1988. At that time the leading participants were Gulf Canada Resources, Applied Terravision Systems, Finder Graphics (subsequently acquired by Geoquest) and Digitech Information Services (subsequently acquired by QC Data). The committee was incorporated as the PPDM Association in 1991 with nine founding members.

At present, the Association has approximately 100 members. About half are software and data vendors. About 40% are exploration and production companies. The balance are government institutions and consultants. In terms of geographic distribution, half of the members are headquartered in Canada, but the international constituency continues to expand. Due to their larger size, exploration and production companies provide most of the membership fees that form the operating fund for the Association.

## Model Development

Over the years, the model has grown in quality and quantity (Figures 2 and 3). This growth is best illustrated through the following table:

## Direction

The PPDM Association continues to expand the Model according to the PPDM Way - a business driven, cooperative and practical approach to data model development. Work group participants and the membership of the PPDM Association fund development. Version 3.5, due to be released early in 2000, adds modules for detailed stratigraphy, projects, bibliographical references, contracts, obligations, interest sets and surface restrictions. New subject areas that will likely be added over the next two years include reserves, surface rights, facilities, joint ventures and seismic processing.

The greatest benefit of any standard is achieved through compliance - everyone using the same version according to the same rules. As the Model design becomes more rigorous and the subject areas more comprehensive in supporting all the business requirements, more software will be able to use the Model without modification. The Association's strategy is to promote the benefits of compliance, and to provide practical means to measure and validate the compliance of any software product or database.

The PPDM Association is actively widening its product and service suite beyond the Model. Products that are being considered include populated reference tables, software to ease the migration from an older version of the

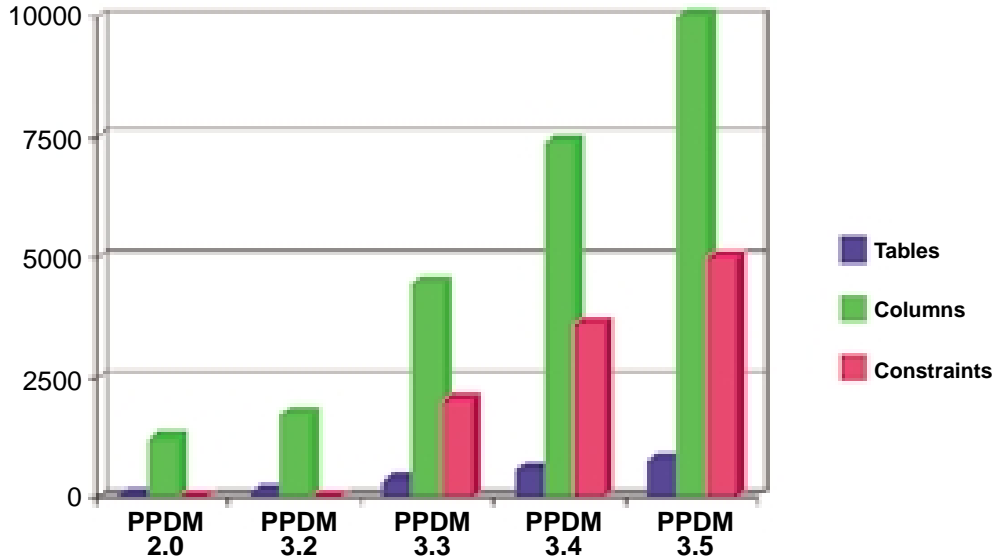


Fig. 2 - Growth in the number of columns in the PPDM model.

model to the current version, and middleware to simplify access to the data. Services being considered include formal training, technical support and professional services.

## Your Action

Your organisation has probably encountered many of the challenges that members of the PPDM Association are successfully addressing through shared cost development and collaboration. We invite you to:

- Join the PPDM Association, if you are not already a member.
- Participate in work groups - the fastest way to a good ROI. Your staff learn how to use PPDM, they ensure that new modeling will meet your business requirements, and they become connected to a virtual community of information specialists.

- Consider the benefits of PPDM-based products when shopping for software and data.
- Attend the PPDM Association's fall (late October in Calgary) or spring (May in Houston) conferences, or propose a meeting in Australia.
- Contact the Board of Directors to discuss strategies and business opportunities.
- Contact the PPDM Association for more information: ([www.ppdm.org](http://www.ppdm.org), [info@ppdm.org](mailto:info@ppdm.org)).

Model Version	Release Date	Subjects	Tables	Columns	Constraints
PPDM 1.0*	1989	1	56	800	0
PPDM 2.0	1991	1	73	1,218	0
PPDM 3.2	August 1993	5	132	1,728	0
PPDM 3.3	December 1995	8	354	4,438	2,022
PPDM 3.4	December 1997	12	567	7,405	3,626
PPDM 3.5*	In Testing	19	780	10,000	5,000

\* Still in testing; numbers are estimated

Figure 3: Growth in the PPDM Model

## The Authors

Yogi Schulz works as an Information Technology consultant with oil and gas firms to select and implement financial, geotechnical, and land and contracts systems. Mr. Schulz has managed project teams for oil and gas producers and data vendors to design, build and implement databases using the Public Petroleum Data Model (PPDM). He is a member of the Board of Directors of the PPDM Association.

David Fisher is a geologist with experience in the Canadian upstream oil and gas industry and in related data systems. He recently retired from Shell Canada Ltd but continues to pursue his interest in making effective use of information assets. Mr. Fisher has served on the Board of Directors of the Public Petroleum Data Model Association since 1993, including four years as Chairman.

Trudy Curtis is vice-president of an Information Services company that provides data modeling, data management, facilitation and project management services to oil and gas companies and vendors internationally. Ms Curtis has provided the PPDM Association with technical services, data modeling and project management since 1996.