Delivering a Data Governance Strategy that Meets Business Objectives

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Abstract

Hess Corporation has undertaken the task of developing Data Management capabilities that are in direct alignment with the goals of the Exploration and Production business units. This initiative has included the establishment of formal information governance processes and the creation of technically validated databases across the E&P value chain with the PPDM data model at the core. The activities have included the development of standards, the definition of roles and responsibilities, the evolution of a metadata strategy, the creation of the information governance process itself, and the implementation of technology that supports these activities. As a result of a partnership with Noah Consulting and Volant Solutions, the end result is a set of technically validated databases that contain approved, value-add information such as geological and geophysical interpretations.

This paper will look at the progress made to date as well as plans moving forward from here to ensure the maximum business value from our data management solution.

How Hess Got Here

Hess is a large, integrated E&P company with a global footprint and several key regional offices. Like many E&P companies, Hess faces challenges in properly managing technical information. As the ups and downs of the business cycle cause priorities to change, as mergers and acquisitions change the corporate technical information make-up, as the quantity of data in an E&P organization grows exponentially, as politics and regulations stress business capabilities to meet governmental requirements, the short-term and long-term needs of the business for timely, reliable, and accurate data and information continue to grow as well.

As with all E&P companies, Hess has experienced a rapid growth in the volume of data and information in its business and has been challenged to manage the information in the most effective and efficient manner. Additionally, the business demands for leveraging that information to find increasingly elusive petroleum reservoirs and to produce hydrocarbons safely and efficiently, and the regulatory demands for reporting that consolidated business information continue to increase.

To meet these challenges, Hess began a concerted effort that included the following key provisions:

- Institute a new attitude about Data Management, moving from one of "necessary evil" to one that recognizes proper Data Management as a critical success factor in the Exploration & Production process:
    - "Standard processes, practices and technology to support a global business"
    - "Credible data to make fact-based decisions"
- Create and institute standards in support of a growing, dynamic workforce:
    - 30% of petrotechnical workforce has <7 years industry experience
    - Over 55% of petrotechnical workforce has <7 years at Hess
- Rework the entire interpretation process (software, hardware, workflow and data), including adding a third database layer and creating a Data Management career track

These initiatives were sponsored by the business through the SVP's of E&P Technology and Global Exploration. Oversight is provided by the E&P CIO as well as the VP, Geoscience Technology, with strong support from IT/IM.

The Technical Information Lifecycle

Technical information includes a broad range of data subject areas such as: seismic, well information, operations information, geological and geophysical, reserves, reservoir and production engineering, facility and equipment information, etc. Technical information does not include most types of financial, legal, corporate, and HSE information.

After defining the scope of information to include "technical information" and communicating the key provisions to focus on, Hess determined "what was next" to improve the value of information. These include:

- Agree upon standard definitions
- Develop a "Technical Information Lifecycle" (TIL) strategy
    - Engage a consulting company with E&P experience in data and information management – Noah Consulting
- Identify needs around both information and program governance
- Define key components of a Technically Validated Database (TVDB)
- Implement concepts from TIL program with the development of an interpretation Technically Validated Database
    - Initially attempted to implement a COTS solution
    - Ended up developing our own solution with the PPDM Data Model and Volant EnerConnect middleware
- Plan our next steps in building out the Technical Information Lifecycle

The lifecycle aspect of technical information (TIL) addresses two key concepts of how information is used and leveraged in an E&P company.

The first concept relates to the information lifecycle of a particular data subject area. For example, the well lifecycle begins in planning, goes through drilling and completion, moves product through production and finally disposition through abandonment or divestiture. Another example sees the seismic lifecycle begin in planning and permitting, continues into acquisition and processing, spends time in interpretation (including re-processing, etc.), and finally ends with some aspect of releasing, selling, or losing the rights to the data. The information lifecycle concept is important because information history and lineage, application sourcing, and many other concepts related to information management can be better understood when presented within this context.

The second aspect of technical information lifecycle relates to how information broadens, is enhanced, changes in ownership, changes in priority, and moves through the E&P lifecycle. The E&P lifecycle in Hess' case is synonymous with the value chain of exploration, development, and production. This aspect of information lifecycle is important to the understanding of how information is

intertwined with the value chain. Information matures and value-add derivatives augment single data types into much more integrated sets of information that are critical to decision-making at Hess. As an example, P1 reserves volumes are created through analysis using specific applications. These reserves are based on a variety of information including simulation models, which are based on integration of a variety of interpretations from logs characteristics, seismic volumes, picks and horizons, etc. In turn, these interpretations come from various processing and raw data generated throughout the value chain. Capturing information history and lineage in conjunction with the E&P process allows for thorough and comprehensive understanding of the value to the business.

Hess engaged Noah Consulting to help create and develop the TIL Strategy, to work closely with IT/IM and a broad representation from the E&P business, to quickly fashion an AS IS and TO BE state of IM, and to work with the business sponsors to establish and communicate an IM Vision and Strategy to progress the IM/DM efforts. Noah Consulting used their IM methodology to perform the necessary work and create documentation to satisfy the goals.

The TIL Strategy efforts incorporated three parallel work tracks to establish a business-driven strategy framework, vision, and benefits summary for technical information across the E&P lifecycle. The goals of these tracks were to: a) understand the needs profile and value of technical information demand across the E&P business, b) establish a vision and strategic framework aligned to the captured needs profile, c) develop a future-state business architecture to realize the captured value, d) rationalize current and future projects/information assets against the TIL Business Architecture, and e) create a high-level roadmap to guide the path forward.

Hess had recognized many of their IM needs and had already begun to take positive and deliberate action to address what they considered to be the most critical gaps with various IM projects. Noah Consulting used its methodology, knowledge, and experience to confirm/expand these IM needs. The existing IM projects were assessed against the TIL Strategy and overlaid to the future-state business architecture to help determine leverage/alignment to the high-level roadmap.

The Hess IM/IT organization has worked diligently and progress has been made with EPT-IT and business initiatives. Many of the initiatives are broad and/or global in their ultimate implementation goals. The graphic that describes the TIL Vision and Strategy is not able to be published, but the goal of TIL is to provide:

Technical Information that is…

High Quality & Complete | Easy & Consistent to Access | Auditable

…across the E&P Lifecycle

Program and Information Governance

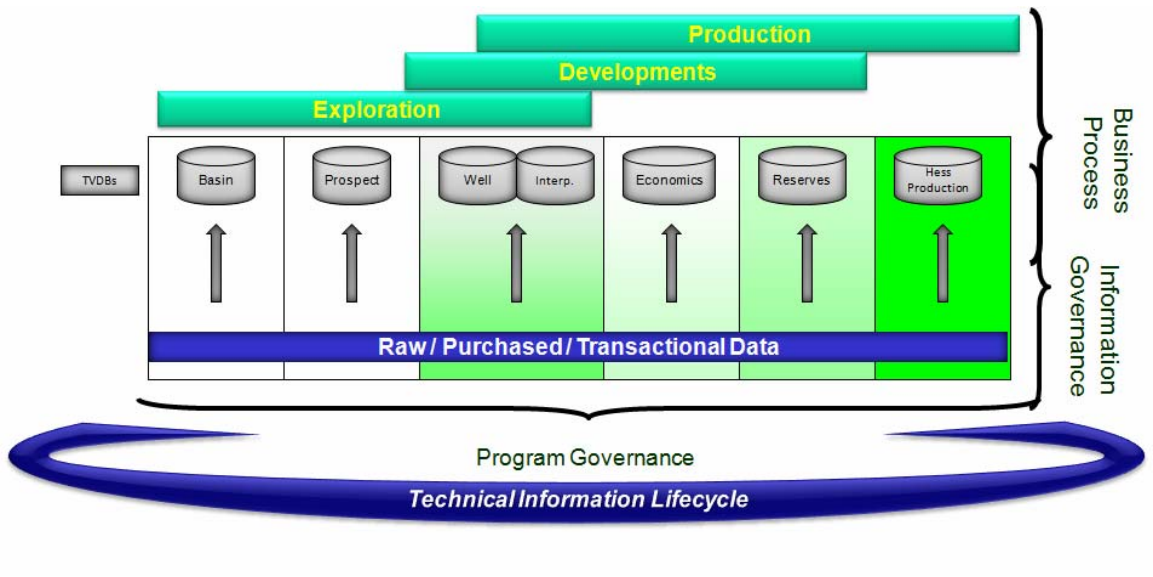
As Hess E&P continues to grow and mature as a global enterprise – multi-national, multi-regional, multi-operations – the demand for accurate, timely, cross-functional technical information across the E&P value chain continues to increase. Equally important (and valuable) is the need for consistency and connectivity of technical information across the E&P value-chain. Consistency comes in the form of definition, access and evaluation of key business elements, e.g.: Well, Facility, Seismic Interpretations. This management of data and information across Hess' business processes is referred to as the lifecycle of technical information. The name given to this strategy position is Technical Information Lifecycle (TIL).

This information lifecycle concept is important to information governance and stewardship and other concepts, such as information quality and information context, related to information management because they can be better understood when presented within the context of the information lifecycle.

Hess' TIL governance vision is to create a framework across the E&P organization by enabling the business and technology functions to partner together to put in place a mechanism to ensure high quality corporate data is managed properly, consistently throughout the systems in which it is used, and available to all who need it. As Hess began to re-align their processes and data into the Technical Information Lifecycle, it was important that it also ensured that the governance activities around the various data and processes were established and implemented uniformly.

Activities to align information governance with the TIL strategy included:

- Define the Governance model and framework, including distinctions between program governance and data governance
- Establish the governance organization which includes business and technology representation with roles and responsibilities.
- Establish the scope of the governance council to include Metadata, Master Data and Data Quality
- Define and set expectations of the governance members
- Define the governance process and communication
- Establish monitoring mechanism to review status and progress
- Establish communication channels across E&P to share status and progress



The illustration above shows the relationship of program governance, information governance, and business processes to TIL and E&P value chain.

Program governance activities can be summarized as:

- Business planning and roadmap development
- Demand management and roadmap alignment
- Portfolio alignment of IM activities to IT strategy
- Portfolio Management and oversight for all IM activities
- Budgeting and prioritization of projects in the IM project portfolio
- Program management and administration, resourcing, and handover

Information governance is the overall management of the availability, usability, integrity, quality and security of the data assets in an enterprise. Information Governance is the glue that connects various aspects of data/information categories. These categories include:

- Metadata – a simplistic description is data about data. For example – if a user is looking at grid data, then metadata for this data would include data like the grid algorithm used when creating this data, the user who created it, when it was created etc.
- Master Data – refers to ensuring that there is a commonly accepted and single identifier used for identifying data components. For example – a UWI is the only way to uniquely identify a well in Hess. Where there are others, they are vetted and mapped to the UWI.
- Data Quality – refers to developing processes to measure, track and correct data quality issues. Key business drivers drive the development of rules between the producers and consumers of data. The data stewards work with these groups to measure and track certain quality metrics and work towards improving quality.

Information Governance provides a framework of principles, policies, standards, roles and responsibilities, and processes which together enable the effective management of information. Information governance is important to the successful implementation of the Hess TIL strategy because, along with the overall IM strategy and architecture, data governance enables Hess to effectively manage data as a corporate asset. Along with contributing the framework, Information Governance specifies accountability and responsibility for data quality and data stewardship. Data Stewardship is the execution of data management processes in accordance with the governance policies, principles, and standards.

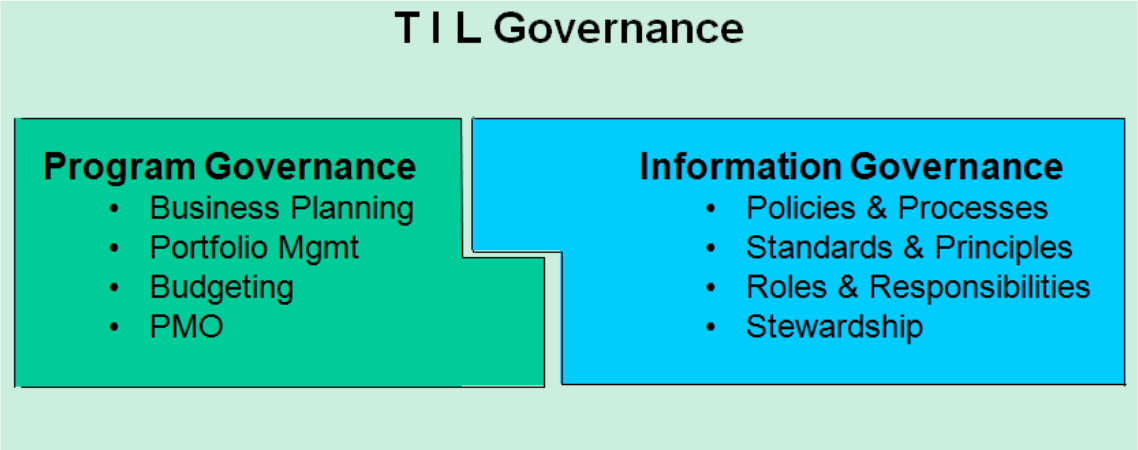
Information governance activities can be summarized as:

- Policies and processes to outline how data is acquired, stored, managed, validated, accessed, distributed, etc.
- Standards and principles that establish common understanding, business rules, data management practices, quality expectations, etc.
- Roles and responsibilities to determine and/or document who produces data, consumes data, stewards data, governs, etc.
- Stewardship to execute the information governance program

Related to information governance – what is governed?

- What data is added to which data store and when
- What data source is used for data acquisition and publishing
- Commonality of business facts - rules, data names, definitions and structures for data integration
- Availability of data – right people, right data, and right time
- Standardized business performance measures as they relate to data

Overall TIL governance and the organizational structure to support the TIL Strategy encompasses both of these types of governance.



The organizational structure of the TIL Governance has defined various roles and responsibilities. These roles align with the "swim lanes" of IM processes, including the TVDB promotion processes. They also align with the IM, IT, and business responsibilities of the TIL strategy. These defined roles in the information governance organization include:

- Data Owner
- Data Producer
- Data Consumer
- Departmental Data Analyst
- Enterprise Data Analyst
- Process Owner
- Interpreter
- Promoter
- Approver

Several of these are defined below:

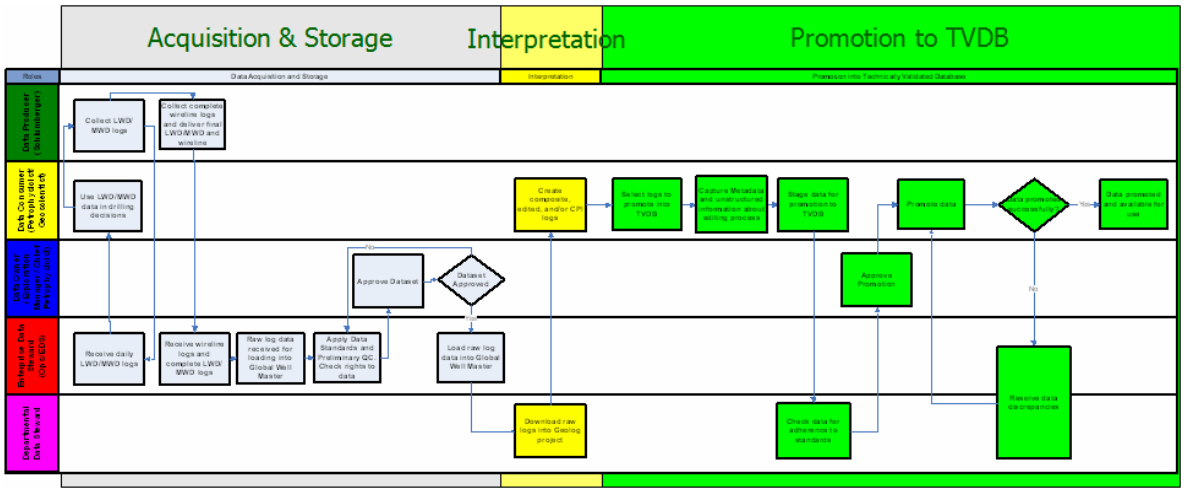
Role	Definition
Data Owner	Business area representative responsible for the overall data quality across business unit or subject area.
Departmental Data Analyst*	Functional information expert embedded within the business unit & responsible for the data within the department. Works closely with the Enterprise Data Analyst to maintain information consistency.
Enterprise Data Analyst*	Manages the data & information that spans the value chain. Accountable for ensuring that the governance principles for the data are appropriate & followed.
Process Owner	Domain experts in defined technical fields who have responsibilities for standards, processes & procedures management & maintenance

Information Governance relates to the Hess TIL Strategy in general, but it also relates to the TVDB solution specifically. The Technically Validated Database (TVDB) needs to have sufficient governance mechanisms to manage it on a day-to-day and a strategic level. The three main tracks for TVDB governance are:

- Organization – to ensure that a strategic and tactical governance organization is formed, clear responsibility is assigned and communicated
- Process – the mapping and definition of the governance processes to ensure a consistency; including any tools or methodologies put in place to manage the governance process
- Communication – to ensure that clear and timely communication takes place among the stake holders and role designates so that their issues are being heard and addressed

A goal of the TVDB strategy was to create processes that are specific to data types or subject areas, yet high-level and generic enough to be implemented globally at all Hess sites.

The following is one example of a mapped out and implemented Information Governance process. This example specifically is related to well log data – from acquisition to promotion.



The "swim lanes" show 5 different roles in the process and 3 primary activities – acquisition and storage, interpretation, and promotion to TVDB. These processes, such as the one above, fit into the rework of the overall interpretation processes as described in the key provisions of "how Hess got here" on page 4.

The Technically Validated Database (TVDB)

The TIL Strategy and Information Governance framework were established to provide a foundation for Hess' overall IM goals and objectives. A key to success was a demonstrable, value-add solution to the business information needs based on these foundational concepts. What was needed was the capability to properly preserve and manage the intellectual property of the petrotechnical staff. This is the TVDB.

In the search for oil and gas, petabytes of data are processed and interpreted in order to gain an understanding of the structures and processes beneath the surface of the earth. As a prospective area for hydrocarbon exploration and development is investigated, many versions of derivative interpretations are created. While the technology used in generating these interpretations is readily available through specialized software providers, no comprehensive solution existed for saving this data from those specialized solutions as well as the information (metadata) necessary to put that data into a proper and lasting context.

The solution that was needed however was not just about technology. Rather, it was a clear representation of the people, process, and technology inter-relationship. This solution was made more difficult by the fact that the geological interpretation of the subsurface was as much a creative process as it was a scientific one. This creative process must not be stymied by having restrictive order placed upon it.

In working on a solution to this problem, certain requirements became clear:

- The technology solution must fit within the existing business processes
- A vendor/application neutral solution was required
- An information and data governance process that fit within the existing business processes needed to be created
- The resultant solution must put a minimum time burden on the geoscience and engineering staff
- The solution must comply with regulatory requirements in all of the countries in which Hess conducts its business
- The solution must have the same high degree of system performance in the remote offices as it does in the E&P headquarters in Houston, Texas
- The solution must fit within Hess' existing Enterprise Architecture

One of the first requirements for this solution was to establish a consistent definition and message for what the TVDB would be and how it fit within the overall business strategy and framework. It was envisioned that, with success, there would not be just one TVDB, but (perhaps) many TVDB's to support

major components of technical information and the major aspects of Hess' value chain – the E&P process – as shown in the illustration on page 6. With that in mind, it was established and communicated that a TVDB was:

- An authoritative source
  - Validated – data quality and auditable validation processes exist
- Documented governance processes
  - Established Roles and Responsibilities – (Analysts, Owners, Support)
  - Policies, Procedures and Processes are documented and published
  - Metadata ensures appropriate learning/knowledge captured
  - Standards are documented and enforced
- Technology that integrates consistently into Hess' technical architecture

In addition, the solution approach was not to start from a blank slate, but to:

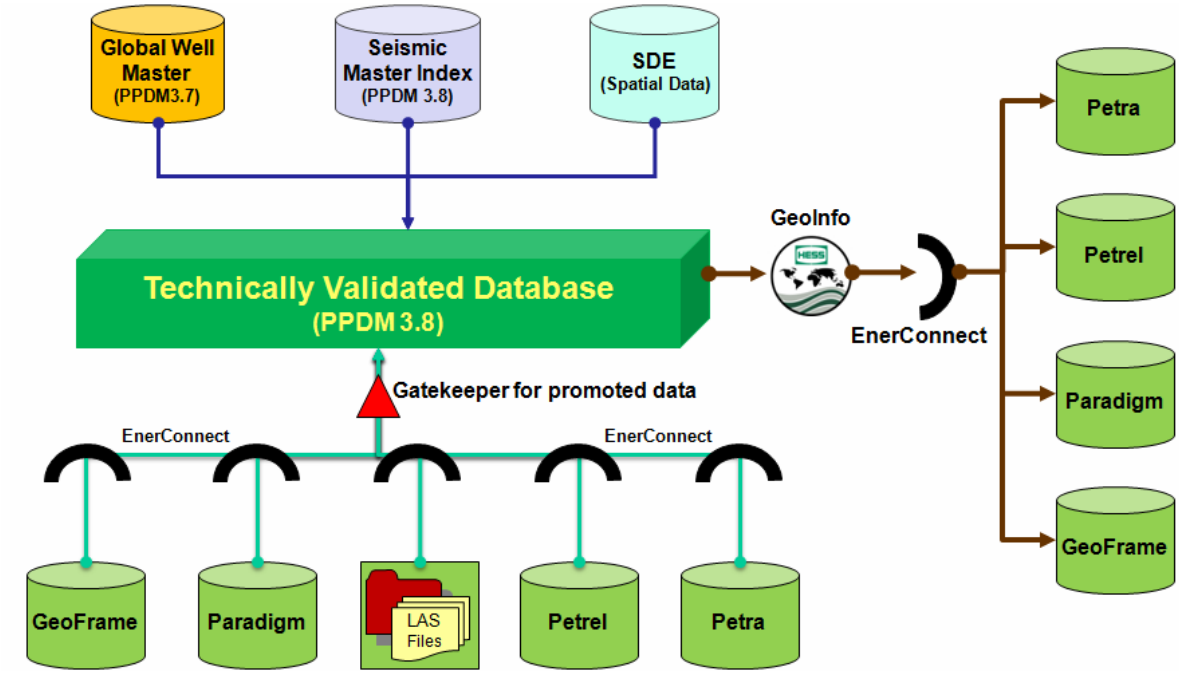
- Leverage:
  - Findings from Hess' TIL Vision and Strategy
  - Hess' E&P business processes
    - E3
    - Value Navigator
  - Established master repositories
- Create:
  - Information governance for TVDB
  - Organizational governance for TVDB
  - Metadata standards / repository for TVDB

The details and specification of the TVDB solution included:

- TVDB Solution:
  - PPDM based
  - Process focused
  - Business oriented
  - Volant technology
- Specifications:
  - Validated data
  - "Just-in-time" headers in TVDB
  - Versioning
  - Promotion – not archive
  - Design for future

The resultant solution was a combination of an industry-standard database schema, an expansion of the capabilities of an existing middleware offering, a global architecture, software built with existing development toolkits, new information and data governance processes, and the creation of new roles within the existing organizations to ensure the capture of this added-value data and information.

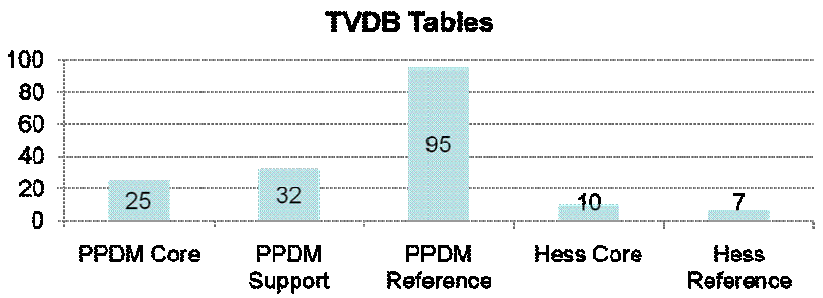
The TVDB design can be illustrated as follow:



As can be seen from the illustration, the data repository is at the heart of the TVDB. A well established, mature, and industry-standard data model was chosen. This was the PPDM data model, version 3.8, as described:

- Well header and well data for 4 data types
- Seismic header and seismic data for 3 data types
- Use PPDM 3.8 as 'purely' as possible
- Leverage populated reference tables to enhance data standards
- Extensions only for specific needs
    - Requirements associated with promotion process
    - Tie data and tables to promotion metadata – promo-job-id
    - Simplify well log sub-model
    - De-concatenate attached document URL

More specifically, related to the well header and well data types:



As the seismic data types are implemented we anticipate the number of PPDM core tables and Hess core tables will double and the other table types will increase slightly. Most of the PPDM support tables will remain the same:

- PPDM Supporting Tables
  - Area
  - Business Associate
  - Coordinate System
  - Project
  - Records Management

As described above, Hess-specific table extensions were created for specific reasons and only when necessary:

- Hess Extensions
  - HES_PROMOTION
  - HES_PROJECT
  - HES_WELL
  - HES_WELL_DIR_SRVY
  - HES_WELL_LOG
  - HES_WELL_LOG_MAN_STEP
  - HES_SEIS_WELL
  - HES_STRAT_WELL_SECTION
  - HES_RM_DOCUMENT
  - HES_RM_PHYSICAL_ITEM

Interacting with TVDB

Any Information Technology or Services project is made up of components from three main areas: People, Process and Technology. In this case, the business problem that was presented was the need to save and preserve Hess intellectual capital, which in this instance presented itself as interpretations of the subsurface of the Earth as well as the metadata which supports those interpretations; do so in a manner that is compliant with the governmental regulations in all countries in which we operate; and make the data and information available anywhere in Hess when the need arises.

In order to develop a solution that solves this complex business problem, it became apparent that we needed to first define a process, then identify the roles within that process, and last, but certainly not least, create a technical solution that supported those processes and roles.

The business units that generate this information have well-established business processes with checkpoints, or gates, where technical reviews of projects are conducted. It was not our intent to define any new business processes, but rather, to implement an information governance process that sits on top of and complements these existing business processes at these certain key points in time. At each of these gates, a review of the technical work is conducted. Previously, the information being reviewed would remain within the working project of the application in use, thereby making Hess totally dependent upon personal knowledge to retain or retrieve this information. Now, at the end of a technical review, the executive or manager facilitating the review will identify certain data and information elements that should be captured and qualified. This information is then promoted into the technically validated database, TVDB.

Three roles became apparent in this process. The Interpreter role is clear. The Approver role falls to the facilitator of the technical review. One new role was required. A Data Analyst was needed to help steward the process, check the data for compliance with corporate standards, ensure that the associated metadata was complete, and perform a validation against data already existing in the TVDB for consistency and correctness.

The brevity of the descriptions of the people and process portions of this effort should not be mistaken to be a fair representation of the efforts required to derive and devise these roles and processes. They will both be further addressed as the technology itself is examined. It should also be pointed out that an exhaustive examination and trial of existing products put forward by solution providers as the answer to our TVDB needs was conducted. Over a period of fifteen months, commercially available offerings were piloted. It became apparent that Hess needed a contingency plan that provided a

technical solution that was more fit-for-purpose based on business requirements. Hess needed to fall back to “Plan B”, which in fact was to build our own solution.

Specialized software used to interpret the subsurface of the Earth is available from a number of vendors, including Halliburton, Schlumberger, and Paradigm, to name a few. Each of these product lines have tools, processes and data handling capabilities which are designed to operate tightly together within a given Vendor’s product line. Some of these product lines will pass information to other vendors, but this is not always the case. Even where it is possible, the user of the product may only transfer or access that data which the vendor made available for transfer. While very good at the scientific part of their job, these software packages are lacking when it comes to storing metadata about the information being generated. As a result, users tend to engage in cryptic naming conventions in order to capture the extra information about their data. The first technical challenge then was the ability to move both interpretive data and metadata between disparate applications into a vendor- and application-neutral repository.

The PPDM 3.8 database schema was chosen as this repository. The Professional Petroleum Data Management (PPDM) Association is an association based in Calgary, Alberta Canada dedicated to the improvement of data management processes in the energy industry. One of the association’s primary offerings is an Exploration and Production data model created, enhanced and evolved over the past twenty years. This data model required very little modification or extension for our uses and is not associated with any particular software vendor. In order to move the data both between the disparate applications and the database, a middleware solution was required. Existing commercially-available middleware solutions do not support all of the core functionality and interpretation software packages in use at Hess nor do they support metadata to the degree that was needed. A Houston-based company, Volant Solutions, had part of the solution Hess was looking for as well as the ability and desire to expand their offering to meet the TVDB needs. Volant’s product line was created in a services oriented manner, thereby allowing the use of the middleware in a variety of ways that could accommodate Hess’ unique business requirements. We defined the data types that needed to be moved as well as the metadata to accompany it. Working with Hess and Noah Consulting, Volant expanded their middleware offering to meet these requirements.

Although a demonstration is the very best way to see the TVDB solution in action, the following screen shots should provide some understanding of the promotion process and capabilities. EnerConnect is a browser-based application that supports the ability to exchange geotechnical information between various databases and software applications. In the case of EnerConnect implemented at Hess, the primary business processes supported by EnerConnect are Promotion (to the TVDB) and Transfer (from the TVDB).

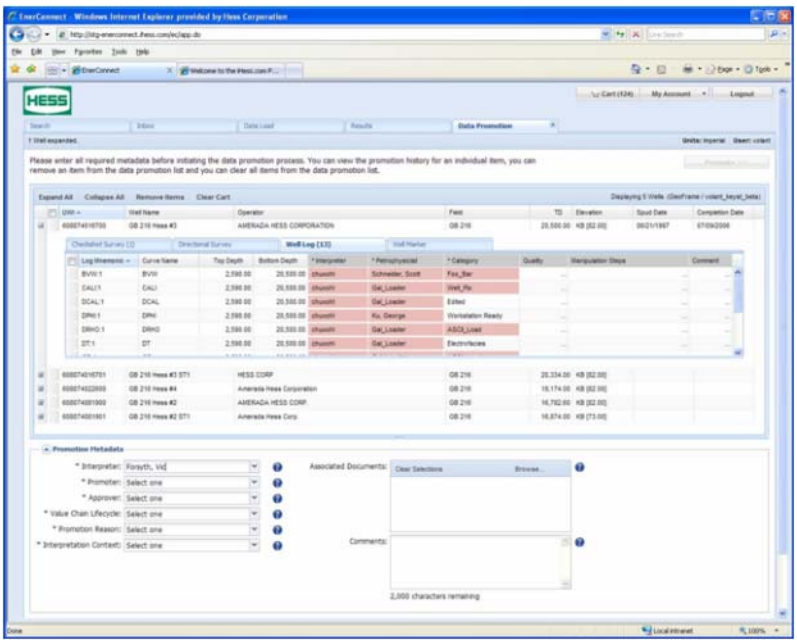


Figure 1: User retrieves data from an Interpretation Project and specifies Metadata

After a business review, the interpreter will access the data in their project through the EnerConnect interface. At this point they can select the data to be promoted as well as add the appropriate metadata at both the individual data element and job levels. The ability to select data from a project database honors the security and permissions of the interpretation application in which the data resides. After selecting the data and metadata, the promotion job is forwarded to the data analyst and notifications are sent to the promoter, approver and data analyst.

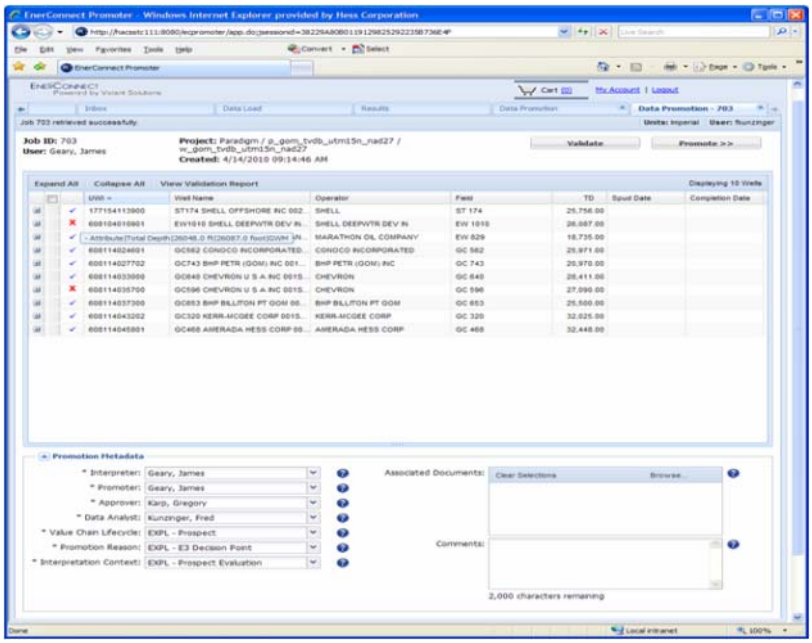


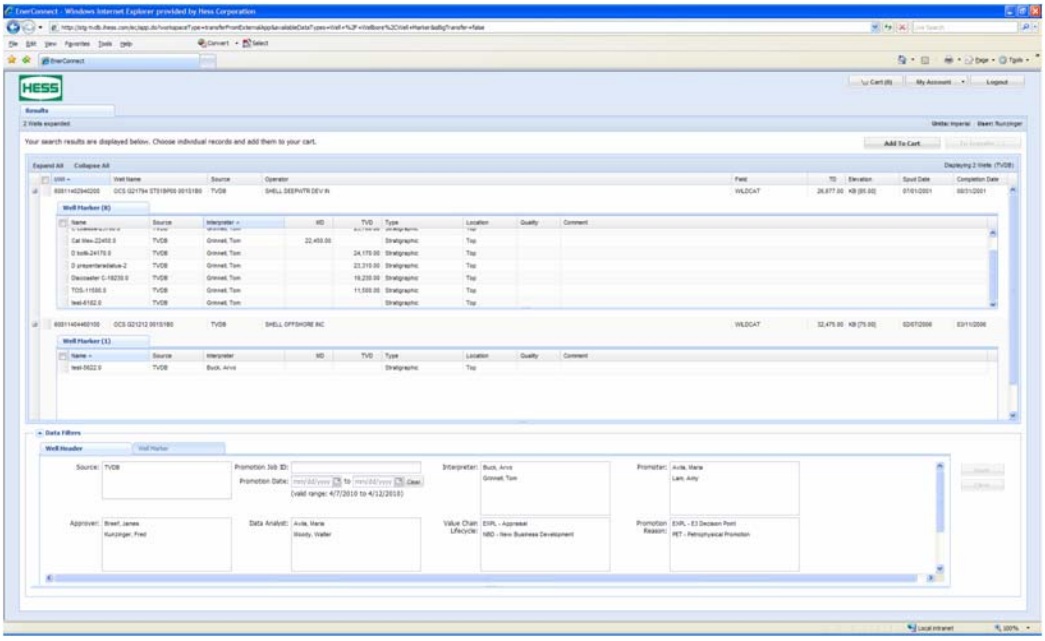
Figure 2: User Enters Metadata about the Promotion Job

After the interpreter submits the data package for promotion, the Data Analyst receives a notification and can open the job. At this point, the details are checked for completeness and compliance with standards, and a validation is performed. The validation compares the header information in the data from the project with that in the corporate database. Those items that successfully validate can be inserted into the TVDB. Those items that fail validation need to be reconciled before the promotion can be completed. Once the promotion is completed, notifications are sent to the original interpreter, the Data Analyst, and the Data Owner who approved the promotion to begin with.

The promotion of technically validated data is only part of the solution. It is important to make this information available to other geoscientists to aid them in their own interpretation work. They may be working in the same or an analogous area, but never-the-less, access to validated information is a critical component to a reliable, accurate interpretation.

A data retrieval interface based on ESRI's ArcGIS Server technology was created, allowing individuals to browse not only the TVDB, but all of the technical databases, through a web-based map interface. The user can browse, select, and examine data before ever asking for it to be downloaded or delivered. With the services-oriented nature of ArcGIS and the EnerConnect middleware, Hess was able to connect the two, thereby allowing an individual to browse and select data and have it directly loaded into the specialized software package of their choosing.

The user is able to view and select individual Wells that are presented via the ESRI-based map software. Once the user has identified that high-level data objects to be transferred to his interpretation project, the user can simply choose the Transfer button and the data will be sent to the EnerConnect application for further refinement. Additionally, the metadata that was captured during the promotion is now mapped and delivered to the software packages, thereby giving the geoscientist more information about the data with which they are working.



The data sent from the mapping software is displayed within the EnerConnect application in a similar presentation method to the promotion process so the users are able to utilize the transfer functionality with minimal training. The user can apply further filtering within EnerConnect based on the metadata provided during the promotion process. Once the TVDB data to be transferred has been identified within EnerConnect, the user chooses the target interpretation project and initiates the transfer of data. EnerConnect then retrieves the requested data from TVDB, applies relevant business logic and rules as specified by Hess and delivers the data to the specified interpretation project. No further interaction is required by the user – simply access the relevant geoscience software and continue with the interpretation process.

The final aspect of the technology is the synchronization of the technically validated data throughout the Hess organization. Each location that needs a technically validated database receives the Oracle database as well as the file structure for storing the data elements that do not get loaded into the database tables. The Oracle database is synchronized using Hess proprietary real-time synchronization tools built using dynamic PL/SQL. The PL/SQL packages are stored in the Oracle database, making their management or extension an easy task. The files not stored in the database are synchronized on a weekly basis using NetApps folder synchronization. Doing this allows for the real time synchronization of the database elements and metadata, followed by weekly synchronizations of the larger files in off hours so as not to disrupt the normal WAN traffic. This allows geoscientists anywhere in the company to know what validated data is available to them as soon as the data makes its way into the database as well as local access to the data files (except if the file is requested in the week before it's synchronized, in which case the file will have to come across the WAN). Many times this high-priority type of access is needed as opportunities present themselves with a short decision time frame.

Going Forward

The combination of new processes and roles, combined with new middleware, web services, user interfaces, and synchronization technologies, provides Hess with an industry first technically validated database which has stored information in vendor-neutral formats and provides LAN performance regardless of a user's geographical location in the company.

Hess has implemented TVDB and is moving forward on several parallel fronts with expanding the global rollout, broadening the TVDB solution to new interpretation applications, broadening the TVDB solution capabilities to new data types, and enhancing the solution based on user feedback.

There have been challenges with the TVDB project and implementation as with any and all IM initiatives. Some of those were:

- Technical Challenges
    - Mapping from application data models to PPDM
    - No master cross-reference as part of this solution
    - Lack of required attributes in application data models
    - Lack of consistency between application data models
- Approach Challenges
    - Foundation work being implemented as 'part of TVDB'
    - Governance relies on roles that are just now being filled
    - Behavioral Change

These challenges have been overcome or are being addressed. IM best practices have been implemented as part of the TVDB solution. At all level of Hess, TVDB is seen as a success. We realize that there continues to be work to be done but we have observed certain keys to sustainable success related to the TVDB solution and implementation:

- Business and EPT partnering in continuous growth and improvement of our information assets
    - Populate the key data analyst roles in both the business and EPT
    - In some cases these will be new positions; in others, a new role for existing personnel
- Established information assets (TVDBs), processes and standards that are well known and followed
    - Possible organizational adjustment to facilitate and oversee the information governance process
- Business ownership and stewardship of key data and information
    - EPT role is to ensure compliance, not act as information police

As is described in the previous section, the TVDB solution is thought to be innovative for several reasons:

- TVDB is a globally synchronized, application independent database for storing approved subsurface interpretations from a variety of sources and the corresponding metadata that puts interpretations in context.
- The use of a web-services architecture combined with traditional software development toolkits to facilitate the movement of data and information between disparate software platforms and data repositories that previously did not share such information
- The integration of information governance processes with existing business processes without disrupting the aforementioned business processes to improve E&P decision-making capabilities

About the Presenter & Co-authors

Fred Kunzinger – Hess Corporation - Sr. Manager, Global Data Management

Fred is the Senior Manager for Global Data Management at Hess Corporation. The Data Management organization has global responsibility for technical data management, GIS, and the systems that support the previous two groups. He's been with Hess for over 20 years, working in the Tulsa, London and Houston offices.
A member of the Board of Directors of the PPDM Association, Fred has a B.S. in Geology from the University of Notre Dame and an M.S. in Geology from Old Dominion University. Prior to Hess, he worked in Exploration for Phillips Petroleum, the Department of Geodetics for the Defense Mapping Agency, and at Intergraph Corporation assisting in the development of new terrain mapping systems.
When not at work, Fred can usually be found either on the golf course or at a Habitat for Humanity build site.

Paul Haines – Noah Consulting – Senior Principal & Upstream SME

Paul has been consulting in E&P Information Management as a subject matter expert for the past 3 years. Before his entry into consulting, he was with Kerr-McGee (Oil & Gas) for 5 years. There he was Manager of Data Management and Integration. This role included responsibilities over E&P structured data, ECM, MDM, and physical assets for Kerr-McGee technical data; including responsibilities over creating and implementing Kerr-McGee's technical data warehouse and BI environment.
Prior to mid-2001, Paul spent 23 years with Schlumberger. His career with Schlumberger began as a wireline field engineer in the US Gulf of Mexico. During these 23 years, he gained a broad understanding of the oil industry and the data associated with the E&P industry. He held a variety of positions in areas of operations, technique, sales, marketing, and management.
Related to accomplishments, some would say it is a significant accomplishment to have remained employed in the E&P service industry during the 1980's.
Paul has been active in writing and presenting papers, primarily technical in nature, and has gained some recognition over the years in that capacity. Paul has been a presenter and contributor at PNEC conferences frequently over the years.

Scott Schneider – Volant Solutions - President

Scott Schneider is the President of Volant Solutions, Inc. Scott has been involved in the software technology industry for over 25 years, spending the last 20+ years delivering software solutions to the Upstream Energy business. Scott has held technology and management positions with companies such as Sierra Geophysics, Landmark Graphics and Tobin International. In 2003, Scott started Volant Solutions for the purpose of delivering innovative integration solutions, specializing in the Upstream Energy market. Scott holds a Bachelor's degree in Electrical Engineering from Bucknell University and a Master's degree in Computer Science from George Mason University. Outside of the office, Scott can be found spending quality time with his wife of 23 years, his two children and two grand-children… or occasionally chasing a golf ball around the course (only in a scramble format, though).