PETRIS

WhitePaper

Integration via the Web –
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The Problem

I suggest to you that here is the paradox in which we live in today: although we have more information available today than ever before, we don't actually know that much more as a percentage of the whole, than we used to.

The percentage of information being turned into knowledge today is probably much less than a century ago. For all our technical advances and sophisticated computer applications we are no where near where we should be in converting information into knowledge.

Let's talk a little about the following terms: data, information, knowledge and intelligence. What is data? Data is nothing more than a fact about something. For instance lets say that a document contained the fact that Petris Technology drilled a 10,000-foot well in the ABC basin. While this may be true by itself, this fact has limited value. Now if we were to include drilling reports, well logs, maps, well tests, etc. about this well, we could say now that we had information about this well. Information is data gathered together to allow one to analyze and understand its implications. Knowledge, on the other hand, exists only in our head. It is the processing of information that leads to knowledge.

So what is intelligence? Intelligence is what finds and processes information. The crisis we face today is the enormous amounts of information available to us has made it more difficult to acquire knowledge. The world is awash in information. More so than ever, opportunities open and close in a matter of days. Information management is at the heart of this intelligence.

I'm not speaking here of an IS function within an organization but rather a process that is owned by the users of the data. Knowing what to do with the data collected, how to use it, what is important and what is not, what can be discarded or what must be preserved. How to make sure that the valuable information is accessible and visible throughout an organization. How to capture the intellectual capital that is applied to this data. A systematic and stable approach to the management of data is especially important in our business.

Our business is about analyzing data, about locating opportunities, evaluating the risks, analyzing possible outcomes and finally acting on that analysis. Our business can only survive by the proper process of collecting, managing and analyzing information. Our challenge is how to take this enormous amount of valueless data and turn it into knowledge. This is what some refer to as intelligence; collecting, managing and analyzing information gives us knowledge.

In our business today we have had a breakdown in intelligence. The massive amounts of information have overwhelmed the traditional methods of collection and analysis. Most information is lost or wasted or is never really turned into knowledge. These best of breed applications utilize information very well, however, we must establish a process to collect, identify, manage and analyze the data that is to be used by these applications.

The Challenge

The challenge then, is how to facilitate the creation of knowledge from information throughout an organization. If a company is to be successful, knowledge must permeate throughout the organization. It must be present when data is collected and throughout the dissemination of the analysis.

But still, there are questions. How can we identify our data across the enterprise? How can we share information dynamically? How can we integrate the vast amounts of information into our applications and processes? How can we provide visibility of our data throughout an organization? How can we enable the creation of knowledge?

One possible solution - The WEB

As E&P companies constantly seek out the best of breed applications. As application vendors leap frog each other each year with new features. As we begin to settle into this information age. As these products (applications) change we must develop a stable intelligent process of collecting, identifying, managing and transporting the information to these products. I suggest to you that integration via the web will emerge as that stable process.

Our business today is undergoing yet another dramatic transformation. Successful businesses in the next millennium will be flexible, agile, and above all customer driven. With this new business model comes Web based enterprise computing. The Web is bringing with it a new paradigm, one that allows seamless information exchange across corporate boundaries. As employees disperse and virtual organizations rise and fall overnight, as customers, vendors, and internal organizations request and receive access to mission critical information over the Web, the speed, quality, and most of all accessibility of that information determines the success or failure of an opportunity.

The explosive growth of the web has changed user expectations concerning the delivery of information. It is therefore essential for the enterprise to establish a process that enables integration at the desktop, regardless of the platform. Data no longer needs to reside inside the boundaries of the Enterprise for it to be accessible. It must however, be visible to the enterprise.

With both the business model and the computing paradigm shifting for the new millennium, the enterprise requires a new business model that enhances customer satisfaction by providing increased and improved access, identification and quality of information. At the same time, IT organizations within the enterprise require a new technology framework that supports universal access to heterogeneous data sources, object and application integration, optimal use of existing information resources, and the ability to embrace new technologies as they become viable.

This new technology framework must allow the enterprise to identify, develop, deploy, integrate, and most importantly manage information in order to facilitate the creation of knowledge.

The Web-enabled enterprise brings with it a unique scenario. Everyone in the enterprise becomes a customer. The ease of use that is associated with web applications entices the customer to interact. The customer becomes anyone who interacts with the enterprise. In today's world with the enterprise expanding, the customer is anyone who interacts with the enterprise at any point in time; vendors, royalty owners, auditors, land owners, regulatory agencies.

Customer satisfaction is the same thing it has always been: quality product, timely product delivery, and friendly service. It is not the definition of customer satisfaction that has changed; it is the product and the delivery mechanism. Today, and for the foreseeable future, the key business product is information.

The speed, quality, timeliness, and flexibility of access and most importantly exchange of information determine customer satisfaction levels.

Some Examples

Anadarko Petroleum Corporation

Several years ago, Anadarko recognized that no commercial software was available which would provide rapid access to large amounts of seismic, log and other scientific data stored in a wide range of application databases.

Like many other E&P companies they used many proprietary scientific applications, external data sources as well as many commercial applications. They decided to develop a platform independent, Web-Based solution to enable their geo-scientists to search, browse and copy data into applications in order to improve their prospect evaluation process. Anadarko's vision was to have all their geo-scientist sharing data across their organization.

In the past geo-scientists moved data into their project files and once the project was completed the information and the value added by that geo-scientist was basically loss. It existed only in the geo-scientist's project file and typically no one else knew it was there. Any number of Oil and Gas applications can use most E&P data. Anadarko's vision was to provide to its customers the software that would allow this interaction to take place with as little effort as possible.

As in most E&P companies Anadarko's large inventory of applications required massive amounts of data. This data was difficult to locate and consumed an enormous amount of the geo-scientist's time. The collection of data by the geo-tech that would ultimately move to the geo-scientist's project file caused copies of data to be duplicated over and over.

Anadarko was focused on the use of the data throughout their enterprise. They knew if they could increase the visibility of their data and reduce the effort required to find and transfer the data they could facilitate the creation of knowledge from this process. Their secondary objective was to provide an enterprise-wide data management tool that was platform independent.

In partnership with Petris Technology, Anadarko Petroleum Corporation developed a web-based application that is capable of building a meta-data catalog of the various data types located in each of their databases throughout their company. The application uses nomenclature from the Openspirit consortium, as well as POSC and PPDM data models for its mapping conventions. However, a company's specific data model can also be used.

The application builds this meta-data catalog based on an organization's various data sources. Data types such as seismic, well header, log curves, production, lease ownership, cultural, contour, images, etc. The application allows for spatial and textual searching of this catalog. The application uses smart adapters to copy data from one source to another applying rules during extraction, transformation and insertion phases of the copy.

The application contains a list of the available applications at Anadarko. The list may be searched based on application functionality and any application may be launched from the application.

The most impressive feature is its synchronization process. The application collects information during the copy process that updates the meta-data catalog. The next time a search for the same data is initiated the user will see a second copy of the data and its location, as well as who copied the data and when it was copied. The synchronization process can also be scheduled to run at a rescribed period against a particular database or manually initiated by the Admin when new data is loaded into a database via tape or other media.

Part of Anadarko's vision also included the need for their product to be commercialized. This allowed for: a broader scope of adapters for commercial applications to be built; adapters to be built faster; the burden of maintaining the application out of Anadarko's hands. It is Anadarko's hope that by making their application commercially available, the application will gain a broader perspective in the market place.

J.M. Huber Corporation

At J.M. Huber Corporation there existed a need to disseminate the enormous amount of data collected in their integrated database management application.

Not only did this database contain financial information, but also contained virtually all-operational data. All production was collected and allocated in this system. Operating expenses and AFE costs were budgeted, allocated and actuals recorded. All comparison reports were generated from their database application. All lease management information resided in this database.

The main users of this system consisted of accountants and lease analysts. While the database did an excellent job of collecting and processing the data, it was difficult for a casual user to understand the reporting process or to navigate through the numerous menus to find a report. Therefore it was difficult to get anyone to utilize the information. Engineers and non-financial managers relied on monthly voluminous reports. The reports were bounded in a notebook and passed to each engineer. The reports were never really looked at because the engineers kept their own set of information collected by their staff. Their data, they suggested was more accurate and timely.

The Landmen received their information from the lease analyst. The lease analyst was being asked for information about acreage position that was easily attainable by running a few reports. However, the Landmen wanted the data in a specific format and divided by specific areas. The essence of the problem was that all the data that engineers, managers and landmen wanted existed in the database, was the most accurate (since it represented the financial information) but appeared inaccessible. The integrity of the data suffered due to a lack of visibility of that data throughout the organization.

On the other hand, engineering information needed by financial accounts was locked up in various MS Access databases throughout the company. This data was less accessible to others since it required expensive application licenses to access it. The applications were very complicated to use by a casual non-engineering type person.

There was also a lot of data collected a stored in Excel files that should have been entered into the database. This data was more accessible to its collectors via Excel than through the database. This caused delays when data was to be gathered for presentation. One had to gather data from many sources and try to synchronize the data before it could be presented. This usually involved several individuals and a lot of time.

The IS manager set out to find a solution. He wanted to create synchronized data visibility and accessibility. He wanted to integrate well information via an easy to use interface and a platform independent application.

Once again, the Web emerged as the optimal vehicle for providing the best solution. Petris Technology and J. M. Huber collaborated and created a web application called the Well Query. The application allows one to search for a well or group of wells based on state, county, prospect, field, well type, engineer, play, well number or well name. Once the result or results are returned the user can view any of the following information: general static well information

1. Joint interest billing information as well as the names and addresses of partners
2. Revenue division of interest
3. AFE summary and detail information
4. Operating expenses for a well or its entire field
5. Production data for the last twelve months
6. Economic and reserve information
7. Information about leases held by that well

The data comes from five different databases and three types of databases; Oracle, MS Access and Unidata. Reports are initiated from the web browser but executed on the machine in which the database is located. It is so easy to use that even the Landmen use it.

Chevron

The Central Basin Group at Wilcrest uses the Catalyst database to collect daily well volumes. The data is entered into hand held units and uploaded daily into the catalyst database. An intricate system of collection points and allocation meters, as well as individual well head meters had been set up in the database.

Several reports were created in order to provide information to management about the well volumes. While the reports provided accurate individual meter volume data, there were no reports that summarized the data. Management needed to view the data in both detail by meter and summary by beat and by asset teams. It was also necessary to compare data from one day to another, one week to another, one month to another and one year to another.

Once again, both in detail by meter and in summary by beat or asset team. While it was possible to create these reports from the application, it was costly and simply added to the voluminous number of existing reports. There were only one or two individuals that were relied upon for reports and downloads to Excel.

The Central Basin manager directed his Data Integration manager to find a solution that would provide the analytical and reporting capabilities they needed. He wanted the data to be visible throughout their group, which extended from Laredo to North Texas to East Texas. He wanted the application to be platform independent and to be flexible enough to provide for consolidation or expansion. He wanted to create an environment where anyone on his staff could access and analyze the oil and gas volumes.

Once again, the Web was selected as the vehicle to transport and analyze the data. A web application was built that provides information by collection point, by beat and by asset team. Since the Catalyst database was so well structured the web application was completed in ten days.

Closing

The process we in the E&P industry go through to identify, collect, analyze, manage and monitor well information has become increasingly difficult. In the last decade so many applications that process specific well data and create enormous amounts of detail information have emerged. It is nearly impossible to collect and analyze all the data about a property.

The E&P industry has created and sustained these "islands of information" for years. This of course was not done intentionally, but driven by the quest for "best of breed" applications. We are currently faced with the dilemma of having all the information necessary to make management and economic decisions but unable to easily bring that information to our internal and external customers.

Our customers should have every piece of information they need to make informed decisions. As we all must do more with less we must shorten the

cycle time between collection of data and knowledge about that data.

We must take advantage of this emerging technology. Data and information are quickly becoming a commodity…….and the Web is emerging as the ultimate transport for this commodity.