Strategies for Master Data Management

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Summary

Albert Einstein once said: *"Know where to find the information and how to use it - That's the secret of success[4]"*. Imagine a work place in which information is complete, correct, current and consistent. Information is stored once, and re-used by anyone who needs it. This, properly implemented, is Master Data Management.

In order to achieve this ideal, our industry needs many standards. Standards have been around for a long time. They allow us to communicate freely and clearly and force processes and products to have consistency. The Romans used standards to develop their communication networks millennia ago; we're still using some of them today. Techstreet describes standards as "the bridge that link global trading partners[2]".

Standards exist at many levels, from personal to global. Until recently, toothbrush standards have been the flavor of the day; individuals or groups of users agree to follow a prescribed set of rules for a business process or function. Usually, the more global or universal the standard employed, the more benefits you get from using them. The Oil and Gas industry has a rich set of standards that add value to our information management practices.

The Importance of Information

Reliable information has always been the key to success. The Roman Empire grew on a foundation of accurate information about roads, troops, provisions and surveillance. Information was not only considered to be an asset, it was essential, encouraging the Romans to devise methods for storing and managing information. The Roman census of citizens[1], for example, was the foundation upon which rested the systems of taxation, military service, marriage and even the right to enter into contracts.

Our industry has been keeping records about its activities since oil was first collected in oil seeps. In the last few decades, we've used databases, spreadsheets, documents, maps, contracts, technical software and even handwritten notes to capture detailed information about exploration and production all over the world. These records fill warehouses and server banks with millions of documents and files!

Knowing this, it should not come as a surprise to us when we discover that our corporation has many copies of the same information – and that none of them can be easily reconciled with the others! To compound this, every user has a semantic bias that comes from our professional experience, education and even from the tools we use.

The Value of Standards

In the Oil and Gas Industry, standards have historically been created on an individual or departmental basis. Some of these standards govern how data is captured and managed. Low level standards, such as departmental procedure manuals and vendor specific data stores, work well for local integration, but typically don't position companies well for growth or integration.

Information is a corporate asset. To many companies, this has been a revelation. In its own way, it's as essential to the operations of an oil and gas company as tangible things like a well or a processing facility. Just as a well or facility has a cradle to grave life cycle, information assets have similar life cycles. Information is created, managed and then destroyed. During that time, information should be consistently and reliably available to whatever application or user needs it.

As we strive to integrate our departments and divisions corporately, and position ourselves to exchange information freely within our industry, we must continue to drive our standards creation and adoption to an increasingly higher level. Techstreet, a company that disseminates standards across many industries, describes standards as "the bridges that connect global trading partners[2]".

As corporations globalize, more and more companies find that standards are useful and helpful, particularly when building systems for Business Intelligence. International standards, such as the data management standards created by the PPDM Association[3], provide strong benefits to the entire industry. As we move towards fully integrated Master Data Management systems, our use of standards will inevitably increase. We need global standards for data management, data storage systems, best practices, data content and more.

Master Data Management

Albert Einstein said: *"Know where to find the information and how to use it - That's the secret of success[4]".* Imagine a work place in which everyone has agreed how information is named, described and defined. We know who creates each kind of information, who is responsible for validating it, how it may change or evolve over time, who needs access to it, where it is, and how to get at it. Each kind of information is stored once and used when it's needed. If errors are found and corrected, everyone has immediate access to the corrected version. The source of each kind of information is known, and business rules have been created that govern how it's to be managed throughout its life cycle. That would indeed be a recipe for success!

Sounds like a substantial improvement over life in the 1990's, and it is. But getting there is a lot of work - it's complicated and it takes time and money. Simply put, this is a description of Master Data Management (MDM). A true MDM system is composed of many elements. MDM systems take many forms, but all are used to bind many systems together into functional units that allow information to flow freely to wherever it's needed. There are many ways to build a Master Data Management strategy; each is strongly dependent on standards for success.

Knowledge management systems (such as MDM systems) are dependent on clearly defined names, definitions and procedural standards and methodologies. These are often called Architectural or Design Principles. These principles should be publicly laid out for review and consumption by all business and IT project teams.

Information standards and their accompanying documents need to be easily understood by users and developers, with correct semantics across all functional oil & gas disciplines. These definitions should be provided for all services and must be created consultatively so they reflect the consensus of all stakeholders.

Conclusion

It's all about accurate information, as the Romans knew. It also takes soldiers, generals and the quartermaster to make the best use of the information we have. With these things, the Romans conquered the world.

It's about how to capture information and how to use it. It's not good enough just to know your troop strength; you have to know where and how to deploy them. Think of the MDM as the quarter master, responsible for managing and deploying information to users and managers.

In our business, it's no good just having well or facility data; you must know which business processes want this data and you must be able to get it to them; in a format and semantic language that is useful to the end-user.

The task of providing 'the right data to the right people at the right time' is daunting, but an MDM built on standards is a great tool. Use it and conquer the world!

Acknowledgements

References

1. http://en.wikipedia.org/wiki/Roman_citizenship
2. http://www.techstreet.com/myth1.html
3. http://www.ppdm.org
4. http://thinkexist.com