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WHITE PAPER

The six steps to accurate document and asset management software selection

What you should know

For the Energy, Utilities and Mining Industries

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EXECUTIVE SUMMARY

This White Paper will work to help you understand how all the aspects discussed in the next pages are crucial to your software selection. How the Total Cost of Ownership of many software tools cause delays, dissatisfaction among personnel and push your software and system budget to overflow. Choosing the right software can make your organization. The wrong one can break it.

Every company wants to:

- ***Be more efficient and effective***
- ***Improve longevity of both the company and the assets***
- ***Increase productivity***
- ***Protect themselves from a legal stand point***
- ***Stand up to internal and external audits***
- ***Meet client or production expectations***

You are constantly pursuing reasonably priced avenues to find the right solution for your needs.

One of those elements normally ends up being a software solution (or tool) that is *sure* to be the salvation your company requires.

But how do you know you are making the right choice; investing in the right product? Are you even sure you truly know what you need from it?

With all the choices out there, and with all the well written sales pitches that every vendor has describing why they are better than the competition, how do you break it down into what you really need?

In order to make the right choice, you must understand the key elements of your company, and find a functionally all-inclusive product that will seamlessly integrate all of those elements into one streamlined, cohesive system.

A lesser system will leave you dissatisfied and frustrated.

You need to identify your end goal and never lose focus in all the 'shining wonderments' that people say they can offer you.

One thing that people often forget is that software only does what you ask it to do. If you don't know how you want it to perform, you cannot determine if it will satisfy your needs and you will not have any substance to give the software configuring teams.

By establishing your processes, you establish your requirements. By establishing your requirements you can select appropriate software and, in turn, you will greatly increase your potential for success in your organization.

WHEN YOU FIND YOURSELF NEEDING A SOFTWARE TOOL

At what point do you sit down and think to yourself; "I need a software solution to fix these problems we have!"?

The collection of events that brought you to that point are infinite, but the common issues include:

- Unmanaged information
- Redundant files
- Missing, misfiled or out of date documentation
- Countless hours and dollars on rework
- Errors in construction due to misinformation
- Cannot meet our client or regulatory expectations
- Lost opportunities on future projects
- Lack of understanding deliverables or how to manage them
- Failed to provide documented evidence during litigation
- Documentation will not stand up in court because it does not meet due diligence or authentication standards
- Communication with clients, contractors and/or internally is lacking
- Asset Management and site Inventory needs are not being met
- No integration and chasms in information flow

WHAT, THEN, ARE THE REQUIREMENTS OF THE SOFTWARE I CHOOSE?

- Consistency in your data and information management
- Improve the quality of information and information flow
- Reduce overhead costs and human error by automating workflows
- Increase productivity and overall personnel satisfaction
- Meet or exceed industry standards and regulatory requirements
- Reduce or eliminate your unmanaged risk or downtime
- Extend the life of your assets and keep them current
- Improve communications between Business Units and departments
- Improve Just In Time responses

- Increase safety and mitigate disasters
- Management of concurrent elements; engineering, projects, maintenance, inventory and resource loads
- Ensure integrity of Work In Progress data and documentation
- Ensure the security of your information, proprietary design and modifiable/native construction data
- Manage change
- Increase monitoring abilities to ensure set standards, production and safety
- Flexibility to ensure that each individual group within the workflow has access to information that is pertinent, current, customized to their specific needs and easy to navigate
- Cross continental or international collaboration
- Easy integration with complimentary applications

YOU ARE NOT ALONE!

Document Management, and Communications and Information flow has been changing because regulations surrounding documentation creation and control are stricter, fines are much heavier, and requirements are getting tighter.

Time to step aboard.

Your increasing needs are becoming more important to the success or failure of your organization.

Step One: PROCESSES FIRST

Because too many companies sink a lot of money into 'affordable' software only to re-program it to meet their needs, this is your first step to an advantage.

However, the first step is to understand and document your workflows, your processes and your standards for information and documentation management and overall asset management. These should be based on solid industry standards and best practices. They should give you a foundation for legal and regulatory conformance, the flexibility to guide you through those odd situations that always seem to arise "out of nowhere", and provide a solid, technical and holistic performance based system.

Then you will be ready for software!

Did you know that in the event of litigation, if you have to hire lawyers to review your documentation, you can be charged between $250 and $500 Per Gigabyte of information – just to retrieve it?

That is before any documentation or emails are even reviewed.

And that is only if you have all your information on the network – what about information that is stored and then lost on someone's local hard drive or email account?

Step Two: **WHAT SHOULD MY SOFTWARE DO FOR ME?**

The majority of you will say that you need a central repository, believing that alone will solve the majority of your problems.

In a simple answer, yes, you are right. But you can achieve that through the use of a folder structure on your network drive as well. Maybe not to the full extent that software can provide, but it still can be done.

But this will not change the quality and consistency of what goes in to your central repository, nor will it assist in what happens to the data you place in the repository.

Next that the added function of automated workflows is on the list. Again, yes, you are right.

Workflows create an environment of minimal human interaction to get documented information started along a path of review, use or approval. Most software can provide you with a certain level of automation in this regard, but can they integrate with other systems/software well enough to prevent walls that cannot be overcome; requiring a complete stop of automation and a high level of manual assistance to move it to the next step? How will this aid in collaboration with other companies or other locations both nationally and internationally?

Another concern you face is to what extent the workflows are customizable, and how the software will intuitively know what workflows are required for your particular business or culture. By the way, it won't know. You have to tell it. More about that tidbit later on.

Step Three: **OK, SO I HAVE A CENTRAL REPOSITORY AND GOOD WORKFLOW CAPABILITIES. WHAT NEXT?**

What other elements do you need in a software tool?

Security and user permissions! Absolutely! There is information that needs to be kept under lock and key, and there is information that should not be accessible to everyone regardless of read only/modification rights.

So, fine grained securities and permissions. Got it.

What sort of files are you going to keep in your central repository? I can guess that you will have some or all of the following:

- Scanned to pdf signed and/or authenticated documentation (published documentation) and all previous versions for traceability
- Word and Excel files of documents (Native files) – those that are the most recent (Originals), perhaps those that are old versions (Superseded), those files of documents in the process of being updated (Work In Progress)
- Native Drawing and/or 3D Modelling files (commonly AutoCAD, SolidWorks, NavisWorks) –

which also come with reference files of varying complexity which makes you feel like you are herding cats trying to manage them

- Corporate Standards, Procedures, and other company documentation, forms and templates
- All the above in a mixture of in-house and third party creations
- Lastly, the likely need of sending someone a pdf copy of a file that is Work In Progress (called a Rendition) so that they can see the direction the design is taking in order to progress with the scheduled work

But wait! Some of these files listed above don't just simply require a "read only" or "full access" setting; some of them must to be controlled AND people need to be able to work on them. How are we going to accomplish that feat?

This is where the ability to control who has modification rights over any given file comes into play. Just like a library that contains only one copy of each book, an individual will sign the book out for themselves and when they are done they have to sign it back in again for the next user.

It can get tricky when the complexity of file ownership expands; for example, when a contracted engineering and design company is performing modifications to drawing files for their client, theoretically that client owns the modifiable (or native) files.

They sign that (or those) file(s) out from the client.

The contractor must assign authority to one individual or group internally to ensure someone is accountable for the security and chain of custody of those files (this is typically the Document Management group). That group is the one that requests a sign out of the drawing from the library (client) and keeps it safe. They then need to ensure the individual or group who will be performing the modifications (the Drafting and Design team) gets the drawing, and no one outside of that group can access it.

It then goes back to the contractor's Document Management and then back to the Client for sign in once everyone is done with the file. Not to mention having to send copies of the native files at various issue stages to the client for Update (a copy just for the client's records while the modifiable file still remains in the contractor's possession) - Phew!

It would be so great if we could take this whole process and create an automated sign in/out workflow that will stand up to the most scrutinizing of audits.

Because it gets a little much when you start talking about a few hundred or a few thousand files to transfer, spreadsheets to update to track history, emailing files back and forth, putting the files in a safe place, making sure you get them all back to the client safely and *particularly* if there is another contractor chomping at the bit to get their hands on the files because they too have work in the same area or in the same facility.

This is now getting into the realm of concurrent projects, concurrent engineering, or completely concurrent functions such as site maintenance alongside expansions with a little sprinkling of retrofits.

Step Four: WAIT, NOW WE ARE TALKING ABOUT GETTING SITE INVOLVED WITH THIS AS WELL?

Yes! Yes we are! Who are the individuals and groups that will be running and keeping the facility or site operating at its peak? And what do you think they need to do their jobs safely, timely, efficiently and effectively?

You've got it. They need the documentation and information that pertains to all the equipment, pipe, steel, pressure and design information, safety and quality, parts and lead times for replacement parts, specifics of each valve or tank or electrical system, or heat system. The list goes on and on.

They need to know that their lives are not at risk. Everyone wants to do a great job, but EVERYONE wants to get home at the end of the day.

Throughout the project there is a lot of effort put into 'on time' and 'on budget'; and these things are absolutely 100% important. But how valuable will it be for each site I we ensure that:

- Everything starts up correctly
- Every spare part that will be needed is either in the warehouse or available to site when they need it – and that everyone knows it
- Regulatory bodies have all the documentation and support they need to certify the site
- You can sleep at night knowing that everything possible has been done to ensure the safety of the design and the integrity of the equipment and material
- The facility or site has mitigated risk of unplanned shutdowns
- The site or plant is being monitored and those who are responsible for the monitoring have all the information they need to do so beyond adequately
- IF something were to happen, either small or major, you not only have the plans in place, but you have the systems to ensure that everyone can FIND those plans and take appropriate action

If you have heard of the Black Swan, you will know that "Something has worked in the past, until – well, it unexpectedly no longer does."*

The theory goes on to state that while you should not avoid the risk of crossing a busy road, just don't do so blindfolded. It is important to remove the blindfolds we have on.

Let's put aside the unplanned for a moment though. Let's go back and take a look at the planned.

Time to talk about site/asset maintenance. We have variables such as product type, age of infrastructure, types of materials used, natural elements, corrosion and typical Manufacturer's recommended life along with other things such as maintaining fluid levels or any other TLC that is required. All these aspects need to be considered when planning for regular scheduled maintenance.

*The Black Swan Second Edition 2010

A project could last a year, or a few years, or many years. But what will outlive all those projects is the life of the plant or site. So why would we focus on getting something built if we were not going to manage its health afterwards? Asset Integrity Management is of the utmost importance, yet we often forget, or don't know how, to create an environment apposite to this phase.

Step Five: I UNDERSTAND NOW; I WON'T OVERLOOK WHAT THE SITE WILL NEED. WHAT ELSE MUST I HAVE COVERED?

The number one aspect that I teach all Document Controllers is QUALITY. We, as a function, are the last line of defense in ensuring that (with the exception of technical content) the quality of the *drawing or document* is there. We certify the quality of the drawing numbers, the revision sequences, the clouding of changes, the authentication requirements, the traceability and notes, the title block or cover page standards, and ensure that no duplication or confusion is transmitted. As this support service gains technical momentum and the respect and tools that are befitting its importance in our industries, so too does the workload.

Intelligence is a critical element in your software requirements. Software that can improve the effectiveness and efficiency of the quality checks and actually automate some of them is invaluable.

One aspect for example, is whether the software has the capability to look into your drawing or document and not only populating the system's metadata** but also check that the fields of information fall within the standards that have been set out in your procedures.

**MetaData is "data about data" or "data about a file". It refers to the fields of information that are attached to the file it refers to. You may have a file that is named "drawing1.pdf", but you also need to know the location, the equipment, the engineering discipline or the type of drawing that this file pertains to. It is too much information to put into the file name, so we tag that information to the file, making it searchable information.

Or the ability to mask the drawing or document numbers that are assigned to files, which will allow users to communicate directly with the software, reducing bottlenecks in the processes.

The ability to create dropdown menus for fields that must contain specific data, and integrating the software with other software so that those

dropdown menus are automatically updated when something is inputted into its source software – for example, if you are to use one piece of software for materials management and accounting, and in that software you have the management of asset tagging, you need to have those tag numbers appear in your Document Management software so that the documentation stored within that system can be relatable to the Asset Tag number.

Depending on your company's needs, you will most likely have other software suites for different functions within your organization. On a large scale, having one piece of software that can "do it all" is ludicrous. It is not possible to have one piece of software that is expertly fitted for each aspect of your company – it is not likely to be an amazing company and project accounting tool and a complete procurement and materials package that also performs fully functioning document control, and lastly, perfect asset and inventory management.

For smaller companies it is feasible to choose software designed for small companies; software that has a module for each function and works perfectly within those specific requirements.

All the software that is used within your organization should be compatible. They should fill all the gaps that they can, and have understood parameters of function to avoid duplication and confusion, but MUST absolutely be able to integrate with each other. If not, you have wasted money and are going to cause inefficiencies and lost capital.

This integration is also integral in achieving and maintaining quality information.

Step Six: DIDN'T YOU MENTION MY NEMISIS: CONCURRENT WORK?

Oh yes, one of the tough ones. And one of those unavoidable and deal breaking events that happen through necessity and happen often.

You need to be able to control modification rights, but still allow access to all parties involved in the work (which could be any blend of contractor or engineering house, engineers, integrity and quality folks at the client office as well as the maintenance crew physically out at site), work that includes expansions, maintenance, site updates, retrofits and complete add-ons. You must have all those groups working from basically the same system. The problems include the scheduling (which while you can program software with parameters, you will still have to perform Project Management), security of allowing absolutely everyone into your firewall and network (a big no no), network access from remote locations (even if you are lucky enough to have fiber optics run), and multiple fingers in the proverbial honey pot.

Concurrent work is difficult, but it does not need to be out of control. There are two main paths you can take when heading down this road, and both of those can be greatly aided by a software tool; in its sign in and out capabilities and securities, but mostly in its ability to share outside a firewall, over low bandwidth, while conserving the integrity of the controlled area.

A collaboration portion is absolutely a requirement. You may have large files to share, many thousands of files to have accessed, all while maintaining the custody and modification rights, quality and resource load in keeping information up to date. This is where a piece of software can really shine.

TO CONCLUDE

In conclusion to all this, there are a few things I want you to take away.

If you want everyone involved in a site, project, pipeline, mine or facility to have the access that falls within their scope to quality, legal and authentic documentation and information when they need it to perform the work that will lead your project to success, then you cannot take the easy road with regards to your software selection.

The easy road is having people who are not looking at the whole picture; those with tunnel vision, doing a quick internet search and a few meetings with some software companies.

The right path to go down is one where you look at your company, identify where you are headed, take the time and get the help you need to set up good solid processes based on your vision, and from there you spend the amount of energy in reviewing and selecting your software that it deserves.

Remember this: Why oh why would you spend a medium amount of money on a piece of software that is at 40% of what you want, and then spend five times that original amount to 'make it work' - which really means get it to about 80% of what you need and then deal with it by creating manual gap fillers.

The better idea would be to spend potentially twice that original amount and get software that is 70% of the way there, then spend another half the original amount to take it to 90% or 100% of what you need.

Beware of products that require many multiple add-ons to be able to perform basic workflows. This is where your costs will soar, or alternatively you will only misguidedly decide to opt for a portion of what you should have – requiring more work around than the solution is worth. Certain add-ons make for more affordable products, allowing you to choose the right fit, but look to work with a company that has your best interests at heart and not just the sales figures.

Last point: Even if you do happen to get your hands on the Rolls Royce of software with minimal effort, it will only do what you ask of it. So make sure you know how to get the most out of your software. You can do this by establishing those oh so important written processes, procedures and standards based upon solid best practices and forward thinking efficiencies. Procedures does not mean handcuffs. Not if they are written well.

A BIT ABOUT THE AUTHOR

Bernadette Bosse has over 12 years of experience with the energy and mining sectors as a Purchaser, Inventory Controller, Expeditor and Document Controller.

She has been involved in all facets of the progression of a project, and has created and implemented Document Control, Drafting, Project Management, Procurement, Quality and Asset Management systems and processes.

Being a part of, and assisting others with, adequate project scoping and estimating regarding information, deliverables and flow of documentation within all departments, as well as working closely with Project Cost Controls gives her the holistic viewpoint that is required to establish thoughtful and well planned processes.

Bernadette currently owns and operates a consulting company of Subject Matter Experts that specializes in Information, Documentation and Communication Management. dms360 Ltd. performs analyses of companies and their practices, and works with them to create and implement customized processes, procedures and systems based on best practices and regulatory requirements.

dms360 Ltd. is leading the Document Management consulting field primarily in the Oil and Gas Industry in Western Canada, and as such their focus is on the entire communication and information flow in an organization. They set high standards while maintaining efficiency, and assist companies in achieving great success in their projects, in their corporate structure while helping to protect them from loss of evidence complications in the event of litigation.

dms360 Ltd. is also an APEGA group member service provider.

Evaluating systems and processes, establishing standards and procedures, resource placement and training, implementation plans and follow-up consulting make these services a long awaited must have. With a vast range of knowledgeable personnel, dms also strives to bring the same level of excellence to Drafting/Design, Procurement, Project Controls and Project Management.

Their focus is to assist companies in understanding the processes that suit their specific needs, setting up and documenting those processes, migrating data and educating internal personnel to set them up for continued success, and then handing over the reins to the company for their sustained internal progress.

Bernadette also teaches the Project Document Management course at SAIT; a technical and applied course which she wrote to enable growth of the industry as it pertains to Document Management.

You can visit dms360 Ltd. at their website, www.dms360.ca or email Bernadette at bbosse@dms360.ca