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WHITEPAPER

DELIVERABLES MANAGEMENT

An Engineering Project Essential

A white paper for people who want to understand how controlling engineering deliverables contributes to successful projects.

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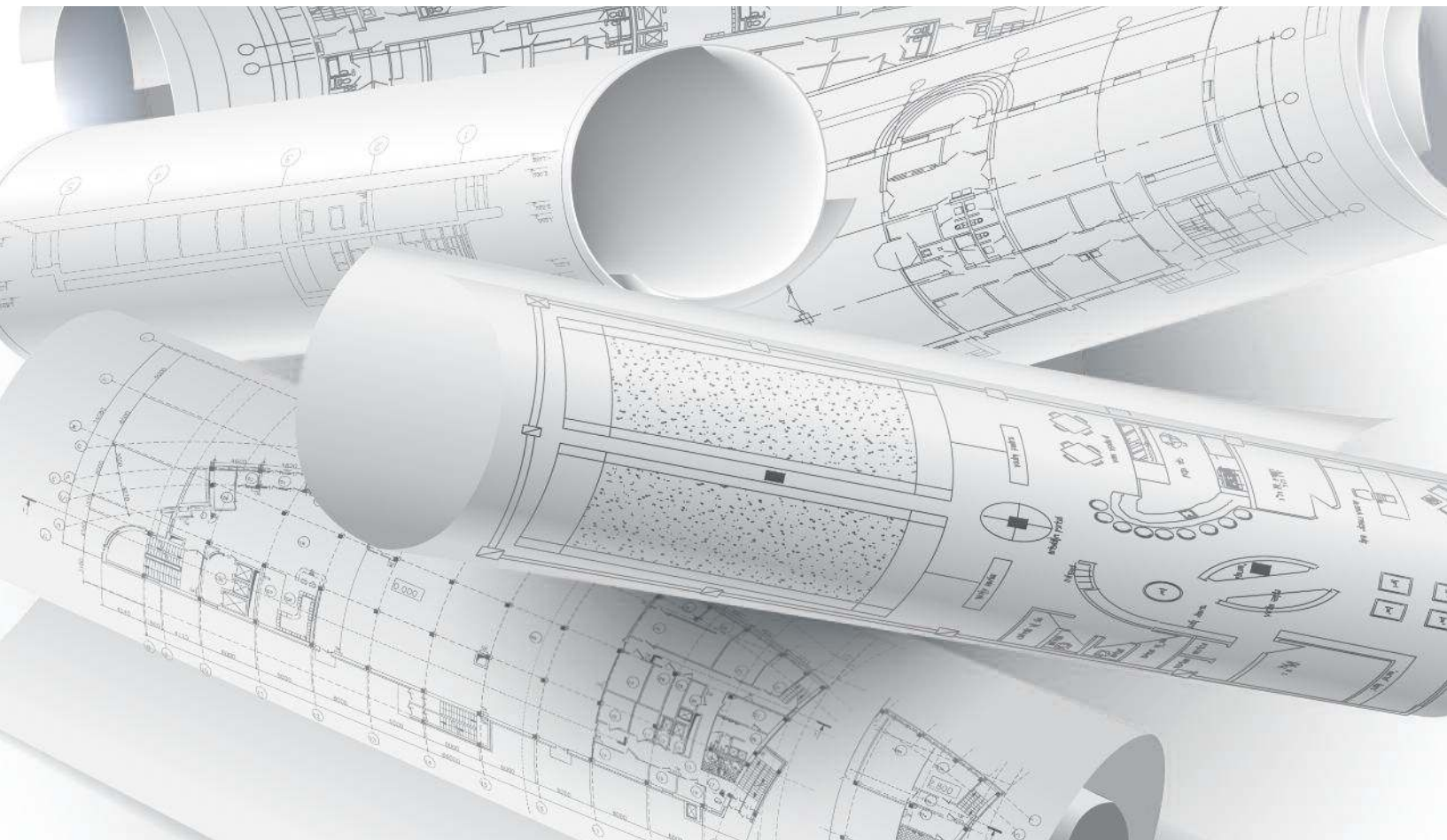


Deliverables management is the process of providing governance to ensure that the project team; including owner, contractors and suppliers, have the right engineering information in time to do their job.

Why is this relevant?

If you want to know what controlling engineering deliverables has to do with the success of engineering capital projects or you are considering your engineering document control solutions and services options, this whitepaper is for you.

As projects become larger and more organizations get involved, controlling engineering information becomes more complex. Global supply chains, the importance of handing good quality information over for operations and maintenance, and the pressure to reduce commercial exposure, project slippages and cost overruns are just some of the contributing factors.

A poor or inexperienced approach to document control could, unfortunately, mean you would be facing significant pressures on resources, spending a considerable amount of time chasing suppliers, dealing with rework, managing increasing costs and a damaged reputation. Implementing good document control is a key component to ensuring projects are completed on time and on budget to deliver expected value and profit.

There are many options from which to choose when selecting a system to manage your deliverables. We will explore these options later in this white paper. We will also draw comparisons between document control and aircraft control. "Why?", you ask. Well, very simply, the two are quite similar in nature, and everyone agrees that proper aircraft control is critical. However, not many understand the importance of proper engineering document control.

So let's take a deeper dive into the challenges and options available for an optimal solution.

Air Traffic Control & Document Control

Imagine being an air traffic controller, what would it be like? For many document controllers, on a capital project some days you feel like you are directing traffic. If the information is not right or delivered on time there could be severe ramifications.

Aircrafts carry valuable cargo like passengers from destination to destination, just like transmittal packages carry valuable engineering information between companies. If the passengers do not get to where they need to go on time, it effects future departures and ultimately makes it difficult for traffic control to manage aircrafts going back and forth. The same thing happens when documents are not processed in a timely manner, you experience schedule delays and have unhappy customers.

Going through Customs and having your luggage inspected, is like document receipt handling; you are checking the transmittal sheet against what documents are in the transmittal- ensuring there are no surprises. The document controllers, like the X-ray machines, are looking into the document for poor quality or incorrect data, in an effort to keep it out of the system. Consider what might happen if we did not have proper security at the airport; what sort of items could be let in? This could be fatal. Similarly, having bad data or using an outdated drawing could be the cause of a major safety incident.

Why Care to Get It Right?

As project managers, engineers, schedulers and document controllers, we want nothing more than to deliver projects and operate and maintain assets accordingly. We are measured against our ability to meet our organizational goals and we want to do a good job.

However, consider looking in to the future, and choosing between your project being completed on time or the safety and well-being of just one team member, which would you pick?

Human loss and suffering is immeasurable. The impact of occupational injury and illness go well beyond the facilities' walls. A serious workplace injury or death changes lives forever; families, friends, and coworkers are affected.

Therefore, it is vital that you control the quality of the information while also meeting contractual deadlines. Poor data and engineering deliverables management can impact the ability to maintain physical assets while assuring safety and optimizing productivity.

The Challenges are the Same

There are many challenges in the asset intensive industry for managing deliverables; let's explore a few.

Collaboration

Unlike the supply chains for manufacturing and retail where supply chains develop and mature over a period of years, a major capital project is a one-off that requires an enormous supply chain be put in place quickly. The supply chain reaches thousands of vendors around the globe, across time zones with different processes, standards and systems. And all of this makes collaborating to build assets and facilities successfully an extremely difficult undertaking.

The engineers that designed the new asset or facility know what they want it to be like, that is until it changes. The challenge is the communication and it is the communication that determines what is bought or built.

Technological Maturity

The level of technological maturity between organizations working on a project can differ significantly; some companies have robust document and data management systems, and others use manual processes. It's not unusual for owner operators to pass-up a contractor for a project because their document control system, or lack thereof, is not mature enough to handle their information management requirements.

Using manual processes to manage deliverables is extremely risky. The opportunity for error by manually tracking data in spreadsheets or homegrown access databases and emailing documents back and forth is immense. Effective deliverables management can be achieved through the automation of business processes supported by a skilled team of document controllers.

The ability to scale your document management system so that your system works well with a handful of documents transferred daily amongst a few suppliers or thousands of documents transferred between hundreds of contractors and vendors daily is also important. This is not limited to just your system. You should also be able to scale your document control support to manage the peaks of deliverables to avoid falling behind when document reviews are increased.

The increased complexity of capital projects, a decrease in resources and the supply chain have also put pressure on the document review process; creating challenges for contractors in receiving documentation on time, getting documents approved and reviewed efficiently, and ensuring that all documentation is complete.

Document Control Support

Even if you have developed effective document control processes, or have purchased a top-notch document control system, you will still experience challenges controlling your documents and data if you do not have an experienced and skilled team of document and data coordinators. Systems cannot check for quality of metadata. The data is only as good as the people entering it into the system.

As-building & Updating Drawings

Having a skilled team of document controllers, project managers and engineers is just as important as having a good team of drafters. What is the point of having documents being transmitted efficiently, if they are just going to get stuck in the drawing revision backlog? Having poor processes relative to how drawings are updated could be the bottleneck in an efficient review and approval cycle.

An Irrefutable Chain of Evidence

Effective deliverables management will provide documented evidence in the form of audit records that may be enough to tip the scales in your favor in a contractual dispute or to demonstrate that you took all possible actions when defending a lawsuit.

There can be a number of risks related to engineering deliverables management. Failure of a partner or vendor, impacts on HSE or quality can cause regulatory noncompliance. While deliverables management is not the cure-all for a legal dispute, it can play an important role in helping to mitigate risk and improve your organization's ability to withstand in a dispute or litigation.

You Have Options

Organizations need tools that enable them to manage enormous amounts of information involving numerous organizations in a consistent, efficient and reliable way. There are many options; and here are a few.

Option A: Build Your Own Customized System

When there is no system, many companies use a manual process based on spreadsheets and databases where administrative assistants or engineers log the arrival of documentation and then disseminate the documents to the project teams. These systems often start small and without solid understanding of all the tools that are needed. The document control role doesn't exist and the technological maturity of the organization is generally low.

Customizing a system is an option, but it can be very expensive as often the requirements are not well defined. When new functionality is required, testing the boundaries of the system rather than the needs of the business becomes the focus. In the process the result is a brittle system.

Beware of "repeatable solutions" or customizations created for other customers. While these solutions have the benefit of previous experience from other implementations, that does not mean they benefit from a product roadmap or commitment to upgrade to changes in the underlying document management system.

Option B: Buy or Rent a commercial off the shelf (COTS) software application

Purchasing or renting a COTS software application, when designed correctly, offers more tractability and scalability and can get you up and running more quickly. Applications built for purpose should be configurable to meet requirements such as document naming and numbering conventions, revision codes and workflows.

COTS software is becoming an ever-increasing part of organizations' total IT strategy for building and delivering systems. A common misconception is that because the vendor developed the software, much of the responsibility for testing is carried by the software vendor. However, that is not always the case, as the test activities are not necessarily reduced, but shifted to other types of testing not seen on some in-house developed systems.

COTS applications should be supported by product roadmaps providing enhanced functionality, training, and technical support.

Cloud, On Premise or Hybrid

Whether the system is deployed in your data center, the software vendor or a third party data center; if it is connected to the internet it can provide a project-based collaboration platform that can be used by internal and external teams to review and approve documents.

On-premise systems more easily provide tight integration with internal systems and processes. Wheras with cloud systems, vendors take more responsibility for system support and upgrades.

However, there is also an option to have both on-premise and cloud systems working together to provide a more flexible, and hybrid approach to controlling documents and data through the asset lifecycle.

Option C: Document Control Outsourcing

A third approach is to outsource the complete engineering deliverables management service; in other words, the people (document controllers and drafters), process, and systems. The project gets a set of services provided to satisfy an agreed scope and method of access.

This method can alleviate much of the pain involved in recruiting, training and retaining document controllers (particularly in remote locations with high turnover), and setting up document control systems. However, it is critical to work with a qualified and experienced consultant to ensure security and to align and integrate internal systems for the ongoing life of the asset.

Well, there you have it – your choices. So, what is the optimal solution?

The Optimal Solution

The ever-increasing challenge of delivering major projects coupled with a scarcity of skilled resources and financial constraints, has created the need to look harder at how to achieve efficiency and make quality assurance gains.

An effective deliverables management solution should support the design phase of the project and later the construction, commissioning, operations, maintenance, upgrades and turnarounds and potentially transfer of the asset to another operator. Throughout these stages, consistency in the processes is vital; providing easy access to and supporting the re-use of information.

A deliverables management system should be flexible and support the asset lifecycle from conception and beyond. It should be scalable and automated to incorporate best practices, and should have a comprehensive review and approval workflow. The solution should be easy to navigate, from anywhere; desktops, phones, tablets, so that the information is easy to access.

The solution should not require heavy customization or coding, as this would make the system brittle and difficult to maintain and upgrade. It should be a hybrid solution with cloud access so external parties can collaborate, but deployable on premise for secure inter-organizational collaboration.

Consider too, the importance of the data held within the documents. Think P&IDs that contain hundreds of equipment tag numbers. The solution should have the capability and provide the tools to allow you to assess and verify this data, and ensure you know what related documentation should be expected. Without this, your transition to the operational state will be painful, fraught with inaccurate or missing equipment data.

Don't forget that the ideal solution should include users that are proficient in using the system; as well as, a document control team that can manage the processes for quality assurance.

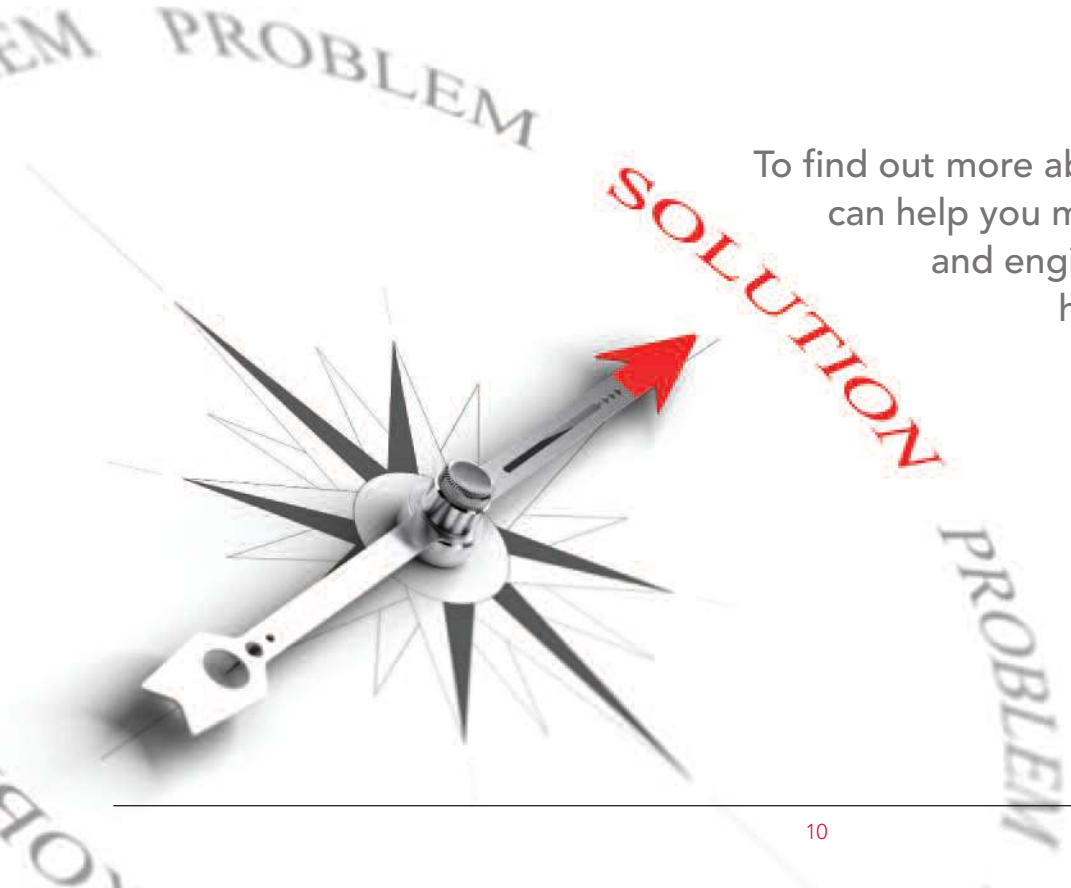
The Good News Is…

The case for providing a solution to manage engineering deliverables is clear; without the controlled flow of reliable technical documentation, projects cannot be delivered successfully. Without a solution, no one can be sure what was agreed to for supply or construction or how systems should be commissioned, operated or maintained. And, without a skilled team of document and data controllers, you just can't trust the quality of information in your system.

This necessity leads companies to spend a great deal of time and money on:

- Finding document control managers and personnel with the right abilities and experience;
- Looking for commercial-off-the-shelf software applications and then customizing them and/or developing homegrown document tracking tools;
- Developing the best possible business processes around the limitations of the 'selected' tools;
- Developing large dedicated teams to support the process;
- Training and managing these dedicated teams, and
- Supporting the document tracking software.

The good news is that there are partners out there that specialize in engineering deliverables management, so you don't have to!



To find out more about how Kinsmen Group can help you manage vendor document and engineering deliverables visit http://Kinsmengroup.com

About The Author

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Jessica Bianchessi is VP of Business Management Services at Kinsmen Group and is passionate about delivering services to help customers govern, change, adjust to and control engineering information throughout an asset lifecycle. With over a decade of firsthand experience working on both megaprojects and asset operations for companies such as; ExxonMobil, Chevron, Shell, BP, Quanta Power Generation, Teck Resources Limited and Canadian Natural Resources Limited, Jess is fully grounded in document and data control and has also held several key roles in the software industry such as business consultant, consulting manager and director of industry solutions.

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