THE VALUE OF A DOCUMENT MANAGEMENT SYSTEM FOR EFFECTIVE PRODUCT DEVELOPMENT

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High-tech product development is rife with opportunities for inefficiencies and delays. Products are complex and, as businesses scale, development teams get bigger and more diverse. Without a controlling framework underpinning your procedures, your business can experience issues that cause late releases and damage to your reputation.

The way you work is a reflection of your organisation. That's why a lean document management system (DMS) that provides control, visibility and security is fundamental for creating successful, sustainable product development.

The high tech industry relies on clarity, order, and precision. The development process is often subject to multi-million pound decisions at various points. Without proper governance and control, that process is at risk of confusion, miscommunication, and duplication of effort which can affect the people, the processes, and the outcomes.

Simply put, a smart DMS can provide the rigour for sustainable product development.

So how does a document management system provide value to the high tech product development process? The main purpose of this ebook is to explore the potential of a DMS as a sustainable product development management tool. We'll look at which areas of consideration should be taken into account when evaluating your options. Each business has different needs, and with many options on the market, some are better suited than others.

THE RISKS OF A LACK OF GOVERNANCE

Without central control mechanisms - standardised folder structures, file naming conventions, version control and an enforced document approval process - development programmes can suffer from document anarchy.

The result is a lack of consistency, order and clarity.

Document anarchy is an obstacle to productivity, efficiency and cost control. It can disrupt the product development process, not to mention many areas of an organisation.

A lack of governance has a knock-on effect that can negatively impact the entire product development process, resulting in the issues outlined below.

Unstructured information

Unstructured information is defined as data that does not have a pre-defined data model or is not organised in a pre-defined manner.

While the term is usually applied broadly to data without a defined structure (text, images, video, audio, email, etc) that often sit inside objects that do have structure, like files and documents, it also includes those files and documents if they are organised poorly. Lack of an overarching file system or naming conventions are common ways that organisations develop large amounts of unstructured information.

As organisations grow, so too does the proliferation of unstructured information. Without information governance, file naming, versioning and location is left to the individual doing the storing. But how do others who need to access that information know what they are looking for or which is the correct version? A lack of naming convention and controlled file structures can result in wasted time searching for information and wasted effort working with the wrong information.

Duplication and inconsistencies

Engineering documents in complex product development can be some of the most difficult to manage. They typically undergo many revisions from multiple team members as design and development progresses.

'Wrong version' pitfall refers to the scenario where the the next development step is advanced off of a version of a file that isn't the latest or isn't the correct one.

For example, even a small change to an early design can have significant effects on the development and manufacture of the product. If development work is based on a version of the design made prior to that change, much of it could be unusable.

Depending on how much work is done after this misstep or how fundamental the missed revisions are, this can be a very costly mistake.

Were the latest changes saved with an inconsistent file name or somewhere unexpected by accident? Without a central repository of information and an enforced naming and revision acceptance process, a lack of governance makes it harder for employees to collaborate with consistency and a common language.

Wasted engineering effort

Engineering time is expensive. It must be managed and used efficiently. When time is wasted, it slows the entire product development process. The implications of wasted engineering effort are increased costs and delayed time to market.

In the previous section we described a scenario that could result in significant wasted engineering effort. But even something as seemingly inconsequential as extra time taken to hunt for a correct file can slow a project when it compounds across many team members and many file hunts.

Product delays

Often product development programmes have tight target windows for final release. Perhaps there is a customer waiting or a big launch event scheduled. Delays to a product release not only carry financial consequences for an organisation but can be damaging to a brand and company reputation.

As readers of this document no doubt know, high tech product development is a complex process involving many teams across many stages. A properly structured DMS with the right features can help make the entire development process smoother and more controlled. The structure and governance applied through a strong DMS can remove the risk of wasted effort, delays and inefficiency. Correct versions are quickly located and the approval process at each stage is transparent.

Reputational damage and opportunity costs

Delays to delivery or the release of a substandard product can cause lasting reputational damage or missed commercial opportunities.

If customers are expecting the release of a product by a certain time, they won't thank you for missing the deadline. If this happens regularly, the market could come to view you as unreliable. You don't want a reputation as a business that does not deliver on time. This erodes trust and could get customers looking for other suppliers who are able to make good on their promises.

Also, without reliable release dates, you may miss opportunities you weren't even necessarily aware of. Perhaps a potential customer chooses a different supplier because you don't have a product (yet) that meets their requirement. Or a competitor leapfrogs your release with a similar offering, gaining "first mover advantage".

Having a smart DMS that provides governance, reviews, approvals and managed workflows can remove the challenges we've been describing that can contribute to development delays.

Lost revenue

The bottom line result of everything we have discussed above is the risk of lost revenue. When an organisation is spending significant sums on activities that rely on the revenue from product sales, any delays to the release of that product represent lost revenue. If you can't ship product, you can't get paid for it.

All the talk of inefficiencies, document anarchy and wasted engineering effort ultimately boils down to less (or delayed) revenue.

THE VALUE OF DOCUMENT MANAGEMENT AND CONTROL IN THE PRODUCT DEVELOPMENT CYCLE

Having a central information repository and management system that everyone uses creates a more controlled, consistent and precise workflow. A DMS that provides version control, gate release, access control and security, among other features, will provide value at every stage of the product development process.

The sheer beauty of a capable DMS is the agility element. A document management system can be aligned with how your business already operates, without impacting on the organisations agility, or triggering a widespread a resistance to change.

Valuable time is used more efficiently and collaboration and control is made easy.

When operating in the midst of document anarchy, the probability of roadblocks and risks is heightened. Smart document management is a solution for this. Let's look at the value of information governance at various stages of the high tech product development cycle.

Ideation and concept stage

Product Management and Engineering (and perhaps an Executive sponsor) are involved at this stage to establish the scope of a new product with a business case and requirements documents.

Collaboration takes place insofar as one department is responsible for creating and ultimately approving the final version of the document, but other departments are able to review and provide comments on each version. So version control and a structured process for managing comments/ reviews is essential. Governance can be overlaid in the form of a gate whereby the whole programme doesn't move to the next phase until all of the required documents are approved.

A DMS helps at this stage because review and auditable approval is essential. Information is required from different teams to contribute to the phase. A DMS enables real time comments on documents that can be reviewed by the wider team.

Feasibility stage

Can the product be built technically? How will it be built? What will it cost? How long will it take? What are the risks? This stage is where the meat starts getting put onto the bones of the programme.

A Programme Manager likely takes control here. They establish the schedule, quality plan and budget. A good DMS will allow them to create the framework for the entire programme - which files and documents will be needed and approved for each stage.

If new information emerges that affects documents from the previous stage - perhaps the new budget impacts the business case - those documents can be updated accordingly at this stage. But the approved version of the budget from the previous concept stage still exists, locked in. In this way, the history of the programme's progression is preserved. The business can look back at any point to understand what decisions were made based on what information.

Design and development stages

At the design and development stages, the programme becomes more complex and the teams and documents multiply. This stage is fraught with opportunities for miscommunication and 'wrong version' pitfalls. For some organisations, decisions at this stage cost millions so ensuring they are correct is crucial.

More and more people are required to offer their updates, comments, amendments and approvals. "Document" types expand to include drawings, schematics and even code. Perhaps the bill of materials is being developed for manufacturing. Or your software teams need their output reviewed and approved.

At this stage, documentation management and gate control is critical. A good DMS is able to integrate with the way your teams need to work.

Release management

This is an important stage in the product development process and must be handled with precision. Are you sending build packs to an outsourced manufacturer? Does a key customer need access to early release information?

The best document management systems offer fine-grained access control that manages the entitlement of third parties to any and all content. This way security and correct versions are guaranteed when releasing information to third parties.

BENEFITS AND USE CASES: WHAT CAN BE ACHIEVED?

We have seen some of the benefits and potential use cases of a smart DMS for product development which have been described in previous sections of this document.

Project governance

Most (all) programme managers or project leaders will introduce a programme plan to organise and direct the development. A smart DMS will let you create the framework for that plan, with all of the documents (perhaps as templates) in each stage.

The framework will allow the manager to put gate release controls in place whereby the programme doesn't move to the next stage until the gate for the current stage is approved. And that can't happen until all the documents in the current stage have been approved individually.

Of course, each document within the programme plan framework will be subject to proper document management mechanisms, like version control, review/approval cycles, access control and auditability.

This level of governance helps avoid wasted engineering effort, delays and lost revenue.

Multi-format document management

We briefly described above scenarios where the output from hardware and software teams was able to be included in the project repository for review and approval. This example can be extended to countless format types, from CAD to code to videos.

Many document management solutions will have integrations with systems used by product development teams or will have an API to allow you to create integrations. For example, software teams with a mature development methodology will have integrated software configuration management (SCM) tools with their continuous test, build and integration process.

A smart DMS will allow them to take it a step further by integrating with leading SCM tools to automatically create versions of the software product (in source or binaries) for release. They can be reviewed, approved and then published to a web portal for customer download.

Bring your partners and customers into the development process

Increasingly, organisations are working with a wider ecosystem when developing products. Rather than maintaining some functions inhouse, many are looking to expert partners to provide some of the value in the chain of development. Perhaps they bring in an industrial design house or use an outsourced manufacturer for production. And some will get a key customer involved at various stages to advise on requirements and influence development.

When this happens, it's crucial that information is managed and controlled appropriately. A reputable DMS will provide fine grained access control for every version of every document, including who can see them and what rights they have to comment on or change them.

A related use case is the release of documents to third parties. Once each document in a set, say a final build pack, is approved, that set can be released to a manufacturing partner.

Painless ISO compliance

Document control procedures are a crucial requirement of ISO 9001, ISO 13485, ISO 27001, and most other quality certification standards. You don't need an electronic document management system to comply but having one makes it far easier to achieve compliance.

Companies can use it to store information about audits, change control, corrective and preventive actions, product quality, and more. With a robust, controlled document repository, processes and procedures are able to be easily audited and conformance becomes automatic.

The right DMS underpins quality and becomes a main focal point for the entire QA process.

WHAT TO LOOK FOR IN A DOCUMENT MANAGEMENT SOLUTION

Before you invest, some of the questions you may wish to consider include:

How robust is their security?

You're going to be storing and centralising your most valuable data and files on platform, so it has to be rigorously secure.

How is user access authenticated? Are all actions logged? How much control does it offer in terms of individual access rights - how fine grained is that control? If a cloud solution, how is it set up? Do you get a dedicated service like a virtual private server or are you sharing resources? Are files encrypted when in transit? What about data centre security, backup and redundancy?

How much document control does it give you?

Depending on your requirements, you should probably looking for high levels of control over the documents you store in a DMS, especially in complex product development environments. How does the platform handle version control and reviews and approvals? Is it robust and transparent? Is it easy to audit? Can you control access rights down to the individual user and document?

How easy is it to share and collaborate with third parties? Is that functionality still secure and controlled?

Capabilities and flexibility

This may seem like a no-brainer but does the document management solution do what you need it to? Does it have the capabilities to support your general and specific requirements? For example, you may operate in a regulatory environment that means you need your DMS to be on a server on your own premises, rather than in the cloud.

How easily will the solution adapt to your company's particular way of working? A good DMS will adapt to your organisation's existing operations and workflows, without dictating changes to the way you work. We've already discussed the importance of agility with a capable document management system, and this is something that makes the entire adoption process utterly painless.

How easy is it to set up and use?

Will it take significant time and resources to get the DMS set up and running? Will you have to hire specialist consultants or get one of your employees specially trained? Or, is it straightforward and quick?

And, once set up, is it easy for the organisation to use? How intuitive is the solution? Will employees adopt it with little effort? History tells us that solutions that have a steep learning curve often don't get fully utilised. And, in some respects, it could be more chaotic if only part of the organisation is using the new solution and the rest are still doing things the old way.

Costs

The question of cost should include both the charging model as well as the total cost of ownership. Some points for consideration are:

- What is the price of the solution?
- What other costs will be involved?
- Will you need external consultants to advise on implementation, and guide you through the process?
- How quickly will you start seeing the operational benefits from the DMS?
- Will there be costs to get it set up and deployed?
- Is there an ongoing maintenance charge or will you have to pay for product upgrades?
- Are there different pricing tiers and how will that impact the costs as you grow?

Support / Service

How good is their support? Are they responsive to requests and queries? What level of support will they provide? Will it scale with the growth of your organisation?

Along those lines, what is on their product roadmap? Are they actively developing the tool? Will it continue to improve?

CONCLUSION

Maybe you downloaded this ebook because you are thinking of purchasing and implementing your first DMS (document management system). Or perhaps you already have a solution which isn't quite meeting your expectations.

Either way, this ebook was written to target those in need of control, order and clarity - all of which contribute to effective and exceptional standards of working.

High tech product development can be chaotic when not controlled and managed with proper procedural control and governance. Projects rely on multiple collaborators, multiple revisions and approvals. Granular visibility is essential to delivering products on time and to the right quality standards.

As proponents of smart document management, we believe in contributing value at every stage of the product development. And we also believe that a document management system should just work. It shouldn't be difficult to manage, navigate, or use.

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LEAN DOCUMENT MANAGEMENT

CogniDox helps teams in Engineering, Marketing, Sales, Operations and other departments to capture, share and publish product and design documentation.

This easy-to-use tool helps break down the barriers to find information, share solutions and enjoy a faster, more productive development workflow inside your company. In addition, CogniDox helps you manage and publish documents and other content to licensed customers. It reduces technical support load and accelerates your customers' time to market.

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