



# WHY ENTERPRISE CONTENT MANAGEMENT SYSTEMS ARE INSUFFICIENT FOR ENGINEERING CONTENT

THE ADVANTAGES OF ACCRUENT MERIDIAN



## TABLE OF CONTENTS

Unique Characteristics of Engineering Content	4
Multi-CAD and BIM Integration Requirements	5
Specifics of Engineering Related Business Processes	6
Managing Complexity of Asset-Document Relations to Prove Full Control	7
Summary	8



## ABOUT THIS E-BOOK

In the world of document management, there is a wide range of systems available, whether it be for general or more specialized purposes. For many organizations it can be a huge challenge attempting to manage their engineering information with off-the-shelf Enterprise Content Management (ECM) systems. Even though these systems are primarily built to manage documents that undergo very little change (e.g., legal and financial information), organizations can end up utilizing a one-size-fits-all strategy for all electronic documentation management, including ever-changing and complex engineering information.

Engineering information is more complex to manage than generic documentation, as oftentimes these files are quite large and have existing relations with other files with very specific requirements for managing them. The lifecycle of a file or record consists of a dynamic phase and a static phase. In the dynamic phase, the file is created, approved, updated and then made available to the organization. The static phase is the process of archiving the file. In the case of production facilities, like oil rigs, power plants, chemical factories, etc., technical documentation has to reflect the actual on-site situation throughout the entire life of revenue generating assets. Because the technical documentation must reflect the on-site situation, the dynamic phase is typically quite long, while the static phase is relatively short.

The asset information at production facilities is updated frequently. Modifications may be initiated from maintenance activities or optimization projects, resulting in plant changes, from medium change to large revamp projects. Some engineering drawings and documents may be needed in multiple change projects concurrently, while at the same time still needed for daily operations and maintenance. This means that the document lifecycle, asset lifecycle and project lifecycle are tightly integrated and an Engineering Information Management (EIM) system must be able to facilitate the management of all three lifecycles.

This e-book is intended to provide guidance on the differences between generic enterprise content management systems and a purpose-built EIM system. After providing information on the differences between both types of systems, there will be an overview of the benefits of utilizing an EIM throughout the asset lifecycle to ensure compliance, control engineering project costs, improve safety, protect brand reputation and extend the lifespan of decade old assets.



# UNIQUE CHARACTERISTICS OF ENGINEERING CONTENT

Enterprise Content Management (ECM) systems have an extremely expansive scope, comprising all the documents in the form of electronic files for the entire organization. These types of systems are built for managing unstructured information like:

- Legal documents
- Financial documents
- Marketing collateral
- Scanned posts

Typically, these documents are single records with metadata to be managed within the business processes of the organization. An ECM solution works best with documents that do not undergo a lot of change and rely primarily on people to keep the system up to date versus automatic updates.

When organizations use an ECM system to manage their engineering documentation, they are attempting to treat their dynamic and complex engineering information in the same manner as any office document. By using generic ECM tools to manage engineering information, organizations are forced to purchase:

- Costly third party add-ins
- Timely and cumbersome customizations
- Expensive outside consulting efforts

Since engineering content requires specific management features and needs to support business processes and workflows with internal and external stakeholders participating in the process, EIM is a purpose-built solution to manage engineering drawings and documentation. It is built for managing more structured information like CAD files, BIM models, drawings, schematics, etc. Engineering information can be significantly interrelated and interdependent. EIM systems are able to support this connection and support the many objects that represent the logical and physical aspects of the plant.

*„We’re now able to retrieve a relevant drawing quickly and have confidence it’s the right version. It’s also easy to track and exchange documents for electronic approval and updates with external parties following a clear workflow process.”*

– Kurt Lauvring, Project Manager, Sund Baelt

## MULTI-CAD AND BIM INTEGRATION REQUIREMENTS

For most enterprises, content management solutions have significant technical limitations that prevent it from being used as an engineering document management solution. Many of these solutions do not support CAD drawings files, have not invested in CAD authoring tools integrations, or do not support Building Information Management (BIM) systems. These limitations can force companies to purchase costly third-party “add-ins” that require consulting efforts to determine the cumbersome process to make these “add-ins” work together. In addition, the majority of these solutions do not support integrations with BIM systems.

With EIM software, users globally can store, maintain and review CAD drawings as part of the change management process. From its inception, an EIM system is built with CAD document management in mind.

### WITH ACCRUENT MERIDIAN, ORGANIZATIONS:

- Utilize a fully CAD-platform solution of their choice for drawings management, allowing users to easily store, manage, render and visualize both 2-D and 3-D content from major CAD systems.
- Keep their master data up-to-date while organizing their change processes in isolated work areas with workflows.
- Give non-CAD users, such as operations and maintenance, access to engineering drawings to streamline their internal business processes and increase productivity and efficiency.
- Reduce time spent searching for drawings and related documents and eliminate delays while trying to access large files.

The value of a BIM solution extends beyond design and construction and into an asset’s operational lifecycle. It delivers information that an owner or operator can use for facilities management, operations, maintenance, refurbishment and extension, right through to eventual demolition. An EIM solution can automate and streamline special data and documents handover from the CAPEX project lifecycle to the OPEX asset lifecycle. At the end of the CAPEX project, enhanced models and documents should be ready to be handed over.

Accruent Meridian’s Common Data Environment (CDE) manages and consolidates models, data and documents gathered during all phases of the project lifecycle. Meridian CDE oversees models, data and documents according to BIM Level 2 standards (i.e., IFC, COBie and 2D PDF).

*„By enabling users to easily compare drawing revisions and highlight what has changed, Meridian has improved the efficiency and quality of our engineering projects.”*

– Janet Hart, Technical Services Manager,  
Generation Operations & Engineering,  
Seattle City Light



## SPECIFICS OF ENGINEERING RELATED BUSINESS PROCESSES

Generic content management tools usually do not provide out-of-the-box functionality to manage workflow interrelations and do not have the ability to manage concurrent updates during an engineering project.

For many organizations, it can be extremely difficult to track their mission-critical engineering documents properly. While engineering updates are occurring simultaneously, other departments are continually making changes. This is one example of concurrent engineering, where independent changes from different parts of the organization are performed at the same time.

When these changes overlap, they generally have common interdependencies. This is another example of concurrent engineering, where the same documents, piping, instrumentation designs, general arrangements, process guidelines, etc., must be reformatted as part of two or more separate initiatives. The complexity of multiple changes to engineering documents at the same time can put a strain on engineering teams.

In addition, maintenance teams will often make changes in the field to ensure smooth and efficient plant operations. These changes are typically marked up on engineering drawings that the technicians have printed for reference. Later, these marked-up printouts are handed over to the engineering team to incorporate these changes into the current documentation set.

Accruent's EIM system Meridian, was purpose-built to facilitate the information handover process between internal and external stakeholders. Different documents can have different workflows within Meridian. For example, a piping and instrumentation design can have one workflow while a datasheet has another. Within Meridian, users can apply business rules and provide a connection between the project workflow and the documents inside of the project. This ensures that users do not get ahead of themselves and end up wasting time and money. An engineering content management system provides a structured workflow process that can be orchestrated to ensure that changes are executed and approved.

## MANAGING COMPLEXITY OF ASSET-DOCUMENT RELATIONS TO PROVE FULL CONTROL

Another key business challenge is the silo-based setup of engineering and maintenance teams. Although these teams need each other's information, they often use separate systems. These disparate departments are normally not set up to share information in an easy and reliable way and the separate systems lead to multiple inputs of similar information, extensive search times or delays in reviews and approvals. Most enterprise content management solutions cannot overcome these data silos between these disparate departments because these systems rely on individuals manually keeping each system up-to-date versus automatic updates.

Instead of uploading or linking documents manually against each asset in an EAM solution, integrating with Meridian reduces the effort for managing tag-doc relationships. In this way, operations and maintenance are always working with up-to-date technical asset information.

Assets, such as pumps, valves, vessels, process lines, etc., are represented on documents and drawings. To ensure that all documents are shown when searching by asset tag number, the tag-doc's relation must be established. This process is simplified through tag extraction. The document is scanned for all tag numbers and checked against existing tag numbers in the database to confirm the reference exists.

Tag extraction can be completed as a background process, or by the user. The user interface helps to easily manage all tag-doc relations during plant modification projects.

Meridian manages engineering information for organizations throughout the entire asset lifecycle. All asset-related data is stored and made available to the extended enterprise as a single point of truth. This allows operations and maintenance teams to work safely and efficiently, while engineering executes plant modification projects. Collaboration with internal and external stakeholders is managed through the same system, so that engineering processes are harmonized, and regulatory compliance is assured.

*„The assets and documents in both applications are 100% identical. As a result, our people have a better view of the as-built environment and, therefore, work more efficiently. Consequently, management costs have been reduced.“*

– René Baron, Maintenance & Engineering,  
BASF



## SUMMARY

When an enterprise system attempts to address all the concerns of a departmental system, they often fail because they are trying to be all things to all people. An enterprise content management solution is purpose built to manage documents that undergo very little change, and there tends to be negative consequences when organizations attempt to use ECM systems to manage their dynamic and complex engineering information. It can become very costly for an organization to spend large amounts of money trying to get ECM systems to address the specific requirements of a department, before finding that the functionality does not exist in the core product without customization. Then, schedules are not met, and the original objectives become less clear. Before you know it, too much time and money has been spent without the actual objectives being met. The project itself may be canceled, with the blame falling on the software.

When an ECM system needs to address the requirements of workgroups and departments, it greatly increases the complexity of the data model. Much more information must be tracked that is often only relevant to a particular department and not the enterprise as a whole. This can add overhead to the system and use valuable disk space and network bandwidth unnecessarily. In a workgroup, there are often several designs or versions before the official documents will be released. For those organizations who rely on engineering drawings and documentation enterprise content management systems provide little value. The enterprise system should only store and manage the information that is critical to the enterprise.

An engineering information management tool like Meridian is able to provide global access to engineering data for an engineering department. For many organizations, more and more projects are extending beyond a specific facility or plant, meaning that engineers must be able to work more closely together and have access to their engineering information across multiple assets. In addition, as engineering work is increasingly outsourced to contractors, an organization must be able to share documents securely with their contractors. If they are using generic enterprise content management solutions, there may be a lack of IT support concerning the sharing of documents via email, file share or Dropbox because of the lack of control and the lack of audit capabilities. An EIM system may also be needed to set up naming conventions for their engineering documents.

The lack of enterprise systems can lead to redundant inputs, data stored on personal computers, and an overall lack of data quality.

Accruent realizes that our customers are working with several popular applications and that it is crucial for us to construct our product in such a way that users can interface between multiple applications in an efficient manner. That is why we offer an extensive list of out-of-the-box integrations for our customers.

Accruent Meridian manages engineering information throughout the entire asset lifecycle. All mission-critical engineering documentation is stored within a single system which can be made available to the extended organization. Our solution connects operations and maintenance departments seamlessly to engineering to work safely and efficiently. Meridian provides a full EIM solution that ensures 24/7 access to technical documentation, so users can break down information silos, integrate your departments, and increase operational excellence.



**WATCH THE VIDEO TO DISCOVER HOW  
MERIDIAN CAN HELP YOUR ORGANIZATION**

**CONTACT FOR A DEMO**

**Onset Design**

info@onset.com.au | +61 3 9803 9727