

WHITE PAPER



**SELECTING SOFTWARE  
FOR AIM: ASSET  
INFORMATION  
MANAGEMENT**

# Selecting software for AIM: Asset Information Management

By Christian Klingspor, Product Manager, IFS AB

Any industry, enterprise or institution involved with large, complex assets needs the right technology to manage the design, construction and commissioning of these assets, and these systems need to carry over into the operations and maintenance (O&M) stages of the asset lifecycle.

This is the real goal of asset information management (AIM) software. While enterprise asset management (EAM) involves managing the asset itself, AIM deals with the management of the information about the asset. The two go hand-in-hand, for reasons we will discuss in the course of this whitepaper.

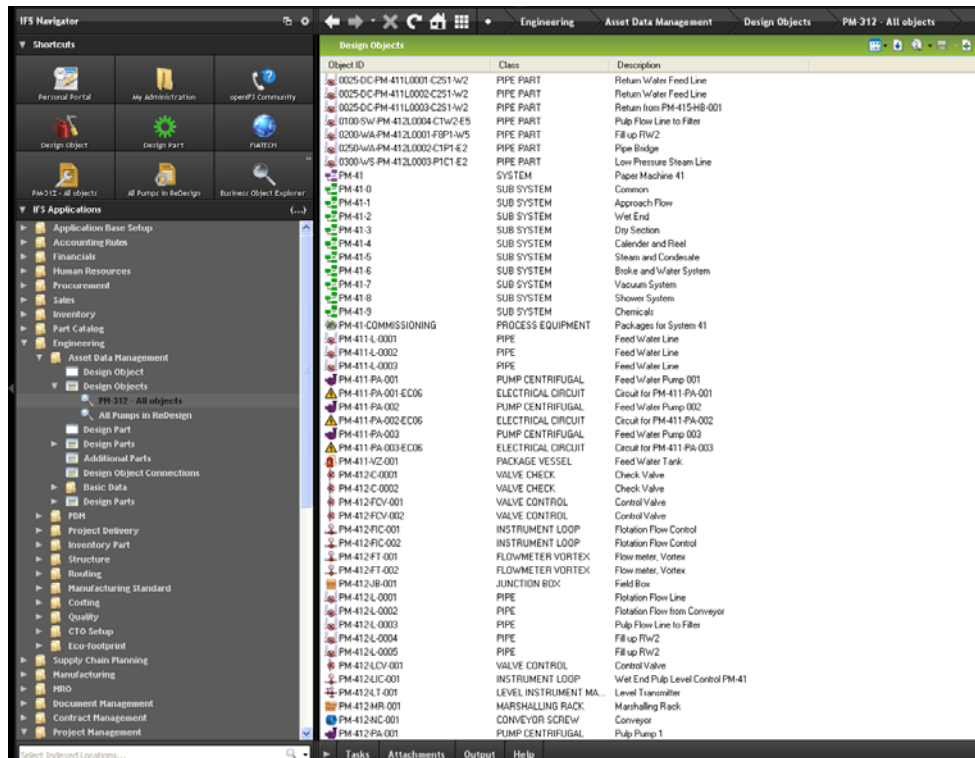
We'll address not only the importance of AIM to asset management, but define some key concepts and review the different ways the right enterprise software system can facilitate AIM.

## Alphabet Soup

As is the case in any area where business and technology intersect, analysts have created a lot of acronyms to describe key concepts having to do with Asset Information Management. To start with, let's define and demystify these acronyms.

- **DOM: Design, Operate Maintain.** This acronym refers to the three different stakeholders in asset management, all of whom access and use asset data and therefore must be included in AIM processes and systems. Design refers to those who design and redesign plants and power grids and other fixed assets. Operate refers to those involved in day-to-day operation of these assets – the people who ensure they are producing paper, electricity, natural gas, or whatever deliverable they are designed to produce. Maintain refers, of course, to the maintenance departments and maintenance contractors who make sure that these assets are in good health. Organizationally, these functions are performed by separate departments within a company or even by separate companies acting as contractors to the asset owner. For instance, some companies have internal engineering departments, but more frequently a manufacturer or other industry will have external contractors doing this work. With the exception of companies that outsource all operations and maintenance activities, operations and maintenance are separate

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Within IFS Applications, Design Parts manages detailed information about what equipment is actually installed in the plant. This information comes from the supplier or manufacturer. Design Parts could be connected to Design Objects and creates lists (Bill of Materials) of spare parts and/or lists of parts that need to be purchased for the equipment.

departments, and even between these internal groups, communication is often constrained. DOM refers to the practice of including all three of these groups in AIM practices, and ensuring that asset data can flow freely between the engineers who design the asset, the plant workers who operate the asset and the maintenance staff that keep the asset running and oftentimes modify the asset or the definition of the asset.

- **CALM:** Collaborative Asset Lifecycle Management. While DOM describes the universe of people who need to have access to asset data, CALM deals with how they should communicate during their interactions. CALM would include the process of setting up and defining rules about not only about how engineering, operations and maintenance should communicate and collaborate and how asset information should be exchanged from a technical standpoint, but deals as well with the legal documentation and agreements in contracts about how services are to be delivered during the asset lifecycle.

- **ALM vs CALM:** Asset Lifecycle Management and Collaborative Asset Lifecycle Management. ALM defines how you manage the asset over its lifecycle – starting with the decision to create an asset, continuing on through its design and operation and maintenance, extending through refits and lifecycle extensions and ending with the informed decision to decommission the asset or take it out of operation.

CALM therefore refers to the practice of managing the asset collaboratively with the various stakeholders involved in the asset lifecycle. When you start to talk about CALM, the most important difference is that because part of the activities involved in the asset lifecycle are being outsourced, you need to facilitate collaboration between these companies so they can successfully manage that asset as or more efficiently than if they were all part of the same company, in the same department and on the same enterprise software system.

- **AIM: Asset Information Management.** AIM is the discipline of taking control of all the information regarding an asset. If we are talking about a single asset, or a small number of simple assets with few components, this is not very demanding. But the types of industries and utilities IFS serves are dealing with large and complex assets, resulting in an incredible amount of information that needs to be managed. This includes not only entire plants and production lines, but asset structures and data on different objects that are performing work in your plant, like pumps, valves, motors, conveyors. Each of these has an independent lifecycle and independent maintenance history and other documentation, including spare parts lists, operating instructions, technical drawings and schematics. Being in control of all of this information and being able to use it strategically to manage the asset for maximum return on investment, is the essence of AIM.

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But in real life, that plant is never a static, unchanging asset. Changes are made during ongoing maintenance, and projects both small and large are commissioned to expand, reconfigure or change the utility of the asset. As soon as you do major modifications to the plant, the need for a well-thought out AIM process and underlying technology becomes clear.

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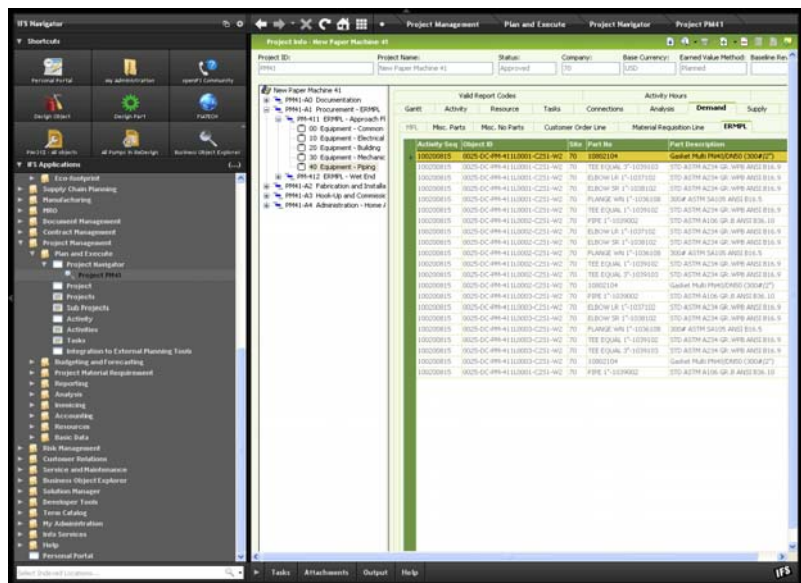
This becomes even more complicated when you extend this management process over the entire lifecycle of the asset. AIM might be a lot simpler if asset management

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involved simply procuring a new production facility. That would simply involve handing over your requirements to a contractor who would execute the project. But in real life, that plant is never a static, unchanging asset. Changes are made during ongoing maintenance, and projects both small and large are commissioned to expand, reconfigure or change the utility of the asset. As soon as you do major modifications to the plant, the need for a well-thought out AIM process and underlying technology becomes clear. Typically, you need to operate and maintain the plant while you are simultaneously completing redesign -- or you might have several redesign projects underway at the same time. Some of these projects might be short-term, relatively simple projects to increase efficiencies in a plant. Others might be longer-term, complex projects designed to increase production capacity or add new processes or product capabilities. In the midst of these myriad projects, it is still critical for those operating and working on the asset to have access to the right asset information at the right time, even as that information is in a constant state of flux.

### Technology for AIM

We have established, so far, that AIM is a demanding discipline that really requires advanced technology that not only keeps track of constant changes to the asset, but provides the right asset information to the various stakeholders involved in the asset lifecycle. But in evaluating software designed to facilitate AIM, what should executives in asset-intensive industries look for?



Within IFS Applications, Design Objects and its Design Part lists can be transferred directly into a project. This is achieved in a tab called ERMP (Engineering Register Material Planning). This is really useful functionality for engineer, procure, construct contractors.

### **An information supply**

**chain.** One general characteristic of a quality AIM software tool is the ability to deliver the right asset information to the right asset stakeholder, in the right format, at the right time. In referring to this capability, we at IFS have been using the term information supply chain. As is the case with the manufacture of a product, the asset information is being produced somewhere and should be delivered to specific indi-

viduals, for instance to an internal department engaged in developing as-maintained documentation on a production line, or to the supplier or to the outside contractor working on that production line refit. Later, you will deliver that asset information from the design engineers back into the maintenance system and to the various SCADA systems and control systems involved in running the plant. Down the road, it may also be necessary to hand that information off to yet another contractor when the plant is redesigned or expanded.

There are various technologies that can comprise this information supply chain ... document management being perhaps among the most important. After all, what we are talking about when we discuss AIM is hundreds of thousands of documents that are constantly being revised and have a lifecycle of their own, starting as preliminary drafts and eventually becoming obsolete.

**Asset Management.** To put these documents into context, an enterprise application ought to include some type of asset management system. Asset management functionality will organize asset information by the different equipment and organizational structures that make sense for that plant, connecting assets to the correct documents for easy retrieval, tying, for instance, each piece of equipment with things like spare parts list, repair history, and as-designed, as-built and as-maintained documentation.

**An open architecture.** It is also important that an AIM application be open from the standpoint of being able to easily exchange data with other systems, either by import, export or integration. After all, your AIM application is not just a matter of having a tool to manage and maintain the information. It should also allow you to standardize how you are defining and structuring information and how you are identifying the different characteristics of your assets is also important. And then, you should be able to share that structured data with engineering and maintenance contractors or other stakeholders involved in your asset lifecycle.

**Data Standardization.** Standardization of asset information is the key to true asset lifecycle management. Standardization initiatives have been around for several years starting back in the early eighties with domain-specific and regional initiatives like SSG - Pulp & Paper industries in Scandinavia, STEP AP212 - Electrical Engineering in the energy sector, and NORSOK - Norwegian Offshore Standard. Other efforts include various STEP-initiatives, like AP221 -- which attempted to achieve broader coverage but never gained any real momentum -- and most recent initiatives like ISO 15926, which appears to be moving towards global acceptance.

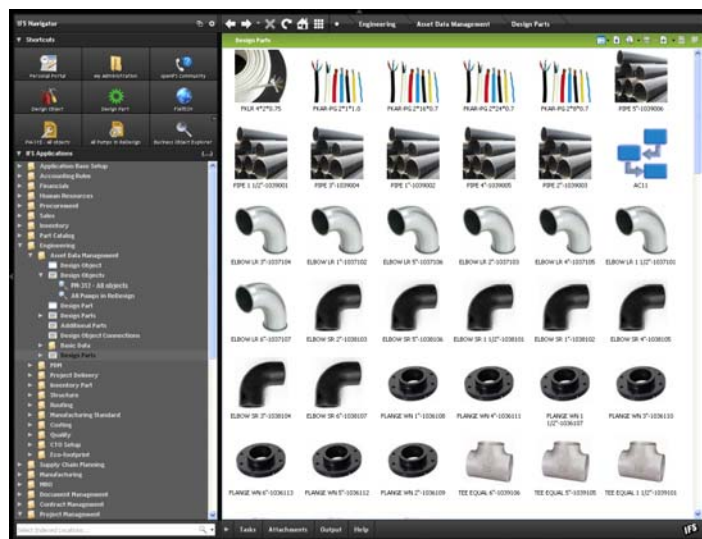
If end users like owner-operators and engineer, procure construct (EPC) contractors enforce the standards and require software vendors to provide tools that comply to the standard, handover to/from engineering and operations will become much simpler, and all stakeholders will benefit. ISO 15926 that consists of seven parts. Parts 1, 2 and 4, which standardize lifecycle data for process plants, formalize how assets are identified and how asset information is structured so the same terminology can be used consistently, are already in finalized form. This will ensure that owner-operators and their contractors are speaking the same language, thereby preserving the value of data as it flows between their organizations and enterprise software environments. Some companies, including those affiliated with asset management organization FIATECH, have already adopted parts of ISO 15926 and are working towards accelerated, broad adoption.

Customers are already asking IFS if IFS Applications supports this standard. Our response is that there are several levels of compliance, the first being the ability to configure the software according to the reference data model and classification defined in part 2 and 4 of the ISO standard.

We can certainly support ISO 15926 from this standpoint.

But this standard also includes implementation methods for the integration of distributed systems defined in part 7 that, when finalized, will create an industry-wide standard for asset information as it passes between asset stakeholders. When this part is finalized and becomes widely adopted, enterprise systems vendors like IFS will be able to support it in the core application.

That means that for the time being, asset owners will have some collaborative up-front work to in defining the format of data they exchange with their suppliers and how they go about exchanging it. This communication will encompass the definition of the AIM system that is in place, including the types of equipment classes will you use (pumps valves, etc.) and characteristics for technical data like pressure, dimensions and weight, to make sure all parties are speaking the same language. This helps



Within IFS Applications Design Parts can be opened in Thumbnail view, which makes easy to find information on specific parts. Design Objects, Design Parts, Documents and Bill of Materials can be exported/imported using AIIIM and sent to third part engineering systems in an XML document or XLS document.

ensure that information delivered from a contractor using Intergraph or Bentley can be successfully imported to the owner's EAM program, and vice versa, making vendor-independent integration a lot easier even in the absence of a final ISO standard.

**Flexibility.** How flexible is the AIM system? Can it be configured to comply with either your existing company standard for taxonomy of your asset and structures? This will definitely be important if you have existing plants that already have their own numbering and documentation systems. If you are choosing and implementing AIM for a new asset, you have a little more freedom to set up the equipment structures in a completely new way. The more flexible an application is, the better it will handle the various situations you may find yourself in over the years ... situations ranging from migrating an existing plant onto the new AIM system, setting up a system for a completely new plant or entering new industries or disciplines that require the AIM software to be reconfigured, expanded upon or changed.

**Complete functionality.** An asset management system consists of several parts, the most indispensable being an asset register or engineering register with document management. Because they are responsible for maximizing asset value over time, the asset owner will have more complex needs and will therefore require a more complete solution than others involved in the asset lifecycle. More complete solutions also offer functionality for:

- Contract management. This will help handle communication and legal matters between the asset owner and other entities involved in the asset life cycle including engineers, construction contractors and subcontractors and maintenance companies.
- Project management. The entire lifecycle of the asset can be considered one long project, and project management tools can help with big-picture asset decision making. Project management tools will also help track and follow up the many projects being undertaken within a plant or on other assets on an ongoing basis.
- Maintenance. If you are an asset owner, you will want maintenance functionality like work orders and tools for predictive and preventive maintenance.

## Conclusion

While the asset owner typically needs a more robust AIM solution than others involved in the asset lifecycle, this might be changing. As some asset owners move towards outsourcing maintenance to service providers, that vendor then needs deeper maintenance and asset lifecycle functionality so they can maximize the value they deliver over the asset lifecycle. If the asset owner is in a position to open up their enterprise system to this vendor through portals or integrations, that can be one way to avoid the communication challenges that can stem from outsourcing. Extending an enterprise system to encompass a maintenance vendor can, for instance, ensure the vendor has access also to real-time information on fault reporting, and that equipment history and as-maintained documentation stays with the asset owner.

Engineers and EPC contractors' core need will be for the asset register – but rather than a running repository of asset data, they will use it more as a placeholder as they identify and define the different elements of the project. If they employ sub-contractors on their projects, they will also want contract management functionality, and a sales contract management solution will help them with job estimating.

More and more EPC contractors are expanding into aftermarket service, and upon delivering an asset like an offshore oil rig, might remain involved as a maintenance and support contractor. This means that the data contained in their engineering register will be invaluable as it will give them inside knowledge of the asset which amounts to a competitive advantage.

Some EPC companies may even structure their initial engineering and fabrication project to produce calculated loss because they know that change requests and aftermarket services will deliver enough revenue to make up for the shortfall. In this case, even an EPC contractor needs comprehensive, cradle-to-grave asset information capabilities.

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IFS, the global enterprise applications company, provides solutions that enable organizations to respond quickly to market changes, allowing resources to be used in a more agile way to achieve better business performance and competitive advantage.

IFS was founded in 1983 and now has 2,600 employees worldwide. IFS has pioneered component-based enterprise resources planning (ERP) software with IFS Applications™, now in its seventh generation. IFS' component architecture provides solutions that are easier to implement, run, and upgrade. IFS Applications is available in 54 countries, in 20 languages.

IFS Applications provides extended ERP functionality, including supply chain management (SCM); enterprise asset management (EAM); maintenance, repair, and overhaul (MRO); product lifecycle management (PLM); customer relationship management (CRM); and corporate performance management (CPM) capabilities.

IFS has over 500,000 users across seven key vertical sectors: aerospace & defense, automotive, high-tech, industrial manufacturing, process industries, construction & facilities management, and utilities & telecom. IFS also provides a cross-industry solution for retail & wholesale distribution.

More details can be found at [www.ifsworld.com](http://www.ifsworld.com). For further information e-mail [info@IFSWORLD.com](mailto:info@IFSWORLD.com)

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