SELECTING ENTERPRISE ASSET MANAGEMENT (EAM) FOR DESIGN, OPERATE, MAINTAIN
Process manufacturing, power generation, the upstream oil and gas industry and other industries are by nature asset-intensive. To a large extent, success depends upon intelligent management of big ticket capital assets. As executives at these asset-intensive companies face increased pressure to spread investments in fixed assets further and squeeze from them greater and greater returns, technology is playing a role in asset management. Powerful enterprise asset management (EAM) software has become a requirement rather than a luxury.

But yet, most EAM software fails to offer broad enough or thorough enough functionality to truly maximize asset output while minimizing asset cost. In this whitepaper, we will analyze the reasons that this is the case and offer advice for navigating an EAM software selection cycle that delivers the functionality today’s executive requires. Software analysts have advocated for a total asset lifecycle approach to EAM, encompassing the three phases of Design, Operate and Maintain, giving birth to the acronym DOM. IFS holds that DOM is the gold standard in asset management, and is what an executive team ought to strive for in evaluating and selecting enterprise software like EAM.

Most organizations’ ability to achieve DOM is hampered by the fact that EAM typically encompasses only the analysis and work management practices necessary to achieve preventive maintenance and avoid unplanned shutdowns. Much of the lifecycle of a capital asset—be it the drive table on an offshore oil rig, nuclear power plant or process manufacturing equipment—requires involvement of outside parties. That asset was engineered and fabricated by outside parties. Outside contractors often perform upgrades or lifecycle extensions to that asset. At some point it will be retired, and another designed and fabricated to take its place. True control over the asset hinges on the ability for data about the asset to flow efficiently between the asset owner and these outside entities. The handoff of asset information between parties represents an opportunity to eliminate costly mistakes and non-value-added work. Achieving DOM promises to eliminate the pitfalls that result when outside parties handle asset data while allowing the asset owner and outside contractors to discover new ways to get more from capital assets.
WHY DO M IS NECESSARY NOW

More pressure is placed on executives today to maximize the output of and return on capital assets than ever before. And DOM offers a real opportunity to lower total asset cost, reduce downtime and maximize return.

Consider the conundrum placed upon an executive as a new process works comes online at a solvent manufacturing company. A head pressure problem develops in a critical compressor unit. Maintenance is dispatched to the asset but quickly finds it lacks the information to diagnose the problem.

Some of the necessary data, it turns out, is buried in a stack of CDs and binders left by the consulting engineers that designed the asset. Other data is contained in as-built documentation left by the contractors. Tracking down the information on the compressor and the elements up and down stream is now necessary, costing man hours and dollars the company can ill afford. This lack of communication leads to unplanned down time as the necessary information is located and the problem diagnosed.

Consider, as well, the maintenance engineer who finds that a new asset suffers from unplanned stoppages caused by the same design flaw as the asset it replaced. Although data contained in years of maintenance records would have revealed the design changes that were necessary, the system engineers did not have the ability to review that data in a meaningful way. As a result, an opportunity to increase productive capacity and lower cost is lost simply because of inefficient handling of asset data.

Or, imagine the situation faced by an engineering, procurement, construction (EPC) contractor that logs hundreds of hours on a design for a lifecycle extension to an existing asset, only to find out later that maintenance engineers have upsized the pumps on the line that is to be replaced—a change not included in the as-built information on the pre-existing equipment. This miscommunication results in time and money spent engineering a suboptimal system that drains profit and delays projects.

Technology can offer only a partial solution to the problems caused by inadequate communication between designers, operators, and maintenance managers. Integrated asset lifecycle management (ALM) tools that encompass all three disciplines will do only so much good in the absence of a commitment to communicate with and engage the outside designer. Involving a designer and even a fabrication or construction contractor early in the planning stages for the asset, ensuring they have full access to a portal containing data on the state of existing or previous assets as they are maintained are two essential steps. It is also important to provide access to a user-friendly and flexible enterprise software suite that allows outside contractors to work on the same database and data that will follow the asset through its lifecycle.
DOM is more than a software tool, but is rather a way of thinking that assumes that designers and those who operate and maintain facilities must work closely with the asset owner if efficiency and business profitability are to improve. While communication between these various entities has been difficult (if it happens at all) modern enterprise resource planning tools (ERP), Enterprise Asset Management (EAM), and CAD packages are moving toward a point of integration that facilitates greater communication between these disciplines.

Particularly when engineering is outsourced data created by an internal department may not be leveraged fully. Breakdowns in communication between external engineers and contractors and the asset owner are almost universal. Previously, consulting engineers have been free in their design simply to meet a particular specification. Design data is developed separately (often on different systems) from those used by manufacturing, operations and maintenance personnel who will live with the industrial design. Currently, an ISO data standard for this information is being developed (ISO 55000), and that should improve communication between in-house staff and outside design consultants.

A proactive approach is doubtless the most important factor in implementing DOM processes in your organization. Technology can only facilitate and standardize your proactive, cooperative approach, and in some cases, can automate parts of the DOM process. Here are three steps that can help you select EAM software that enables you to realize the benefits of DOM.

With a layered architecture of your asset management system, you are in control of what and when information should be available to design/engineering and maintenance/operations. Both document management and asset management solutions can be configured to comply to your company standards. This puts you in control of the technical attributes and requirements regarding different pieces of equipment, and allows you to adopt the data to your system. The system provides dynamic links between information on assets, equipment and facilities.
1. Select a flexible application built on open standards

Whether they are used by you or your consulting engineering firm, proprietary data standards are barriers to communication. If you keep your operation and maintenance information in an open, easily-accessed format, you can import and export information in a secure way and have application program interfaces (APIs) to handle export and import. If the asset information management solution you are using supports flexible and configurable import and export from standardized file formats such as Excel, XML, etc, you have a greater possibility of success.

To operate in a DOM modality, it will be important to use an asset management system with a layered architecture. This will enable you to view information on projects during the design phase and track them throughout their design and construction. At each step of the process, different departments can view any layer of a project that is relevant to them and provide feedback. This function automatically collects asset information during the design phase of a project and ensures the outcome meets your needs. This early access to information detects conflicts sooner in the planning process in order to keep projects on schedule and reduce the amount of rework by designers. Additionally, data is collected for the preventive maintenance program allowing its use the day the new production facility goes into operation.

2. Watch for integrated functionality with projects, purchasing and other systems

DOM necessitates not just streamlined communications with external parties working on an asset, but internal ones as well.

That is why a truly flexible EAM solution can either be implemented as a full-blown enterprise application including financials, human resources, manufacturing and other functionality or integrated with an existing ERP tool. The EAM functionality in IFS Applications, for instance, can be implemented as ERP and EAM or EAM with as much ERP functionality as is desirable. IFS Applications also includes standard interfaces to SAP, Oracle applications and other products. Meanwhile, a best-of-breed “niche” EAM vendor may offer some degree of integration with a broader ERP package, but the inventory management and control, document management, project management, human resources and purchasing functions are not as tightly linked with other applications because the underlying functionality in the EAM tool is not as robust.

Lacking very tight integration with other applications used within the company, an EAM package will create non-value-added work as some data has to be manually transferred from the EAM system into an ERP system. Furthermore, when EAM software does not integrate with other functionality like an ERP solution, what results is a suboptimal or redundant system when it comes to ordering spare parts because most purchasing functions are undertaken outside the EAM system. Maintaining good information on spare parts in inventory and avoiding over-buying
of components is extremely difficult, particularly if some items to be purchased are used in both the manufacturing process and the maintenance process. Personnel scheduling is also hobbled by a stand-alone EAM tool because the scheduling functions in a best-of-breed maintenance application are not integrated with Human Resources software where information about vacations, employee qualifications and other data is housed.

From a DOM perspective, integration with systems outside of what is normally considered EAM is critical because all of these other systems contain data on what is going on to sustain the asset. How will staffing levels need to change as the asset ages? Is there increased hiring that will be necessary to facilitate decommissioning? What is the impact on plant shutdowns for lifecycle extensions in terms of productivity?

3. **Insist on the ability to facilitate bi-directional data flow over the asset lifecycle**

Just as information needs to flow from design into your asset management systems, data needs to flow from your maintenance and operational history into the design process.

Opening portals to your suppliers is one efficient way to do this, and an EAM application ought to offer this capability. With or without a project-specific or partner-specific portal, it is important to agree upon a data interchange format for use with engineers, EPC contractors and other parties involved in the asset.

The ideal DOM workflow involves a collaborative process in which maintenance and operational histories are freely available to design and planning. Specifications should be easily accessed by operators and maintenance personnel even as a project is being planned. Imagine the improvement in productivity when you are rebuilding your asset, and the plans are integrated into the asset management system. When you see that new pumps and compressors are being planned to replace existing assets, it may make sense to forego maintenance on the equipment that is about to be decommissioned.

Moreover, because you know the new specifications, you can begin ordering spare parts and other supplies for the equipment being installed before installation begins. Better yet, when the old pumps are being sold, the EAM system should alert the inventory manager that some spareparts will no longer be needed and should be sold with the outgoing asset. This optimizes resale of the pump, reduces inventory carrying costs and saves space. The day the new asset goes into production, you will have an excellent understanding of its performance and what it will take to maintain it.
CONCLUSION
DOM was initially coined by analysts at ARC Advisory Group as an approach to managing the entire asset lifecycle in an optimal way. Today, executives have a greater need to optimize the asset lifecycle than ever before, and that means that the time for DOM thinking in asset management is now. The above points will help you ensure that an EAM software product you select is equal to this challenge.

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ABOUT IFS

IFS is a public company (OMX STO: IFS) founded in 1983 that develops, supplies, and implements IFS Applications™, a component-based extended ERP suite built on SOA technology. IFS focuses on agile businesses where any of four core processes are strategic: service & asset management, manufacturing, supply chain and projects. The company has more than 2,000 customers and is present in 50+ countries with 2,700 employees in total.

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