HOW TO USE PROJECTS TO MASTER ASSET MANAGEMENT

WHITE PAPER

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By Ulf Stern, Co-Founder, IFS AB
Jeffrey Kessler, EAM Implementation Manager, IFS North America

In this whitepaper, we will discuss how project-based software solutions are essential for asset-intensive industries, and explore the specific ways that project, maintenance and financial functionality must be integrated in an enterprise software tool in order to control the many variables executives at these industries need to manage. You want to be able to manage the future—not only the past. We will address how this information can be leveraged in the company on a macro level for strategic decision-making in the board room as well as on a micro level to facilitate technical activities in the maintenance department.

The enlightened manager of an asset-intensive industry knows that his or her role, at its core, consists of maximizing the amount of value gleaned from a capital asset. Whether that asset is a nuclear power plant, hydroelectric dam, distributed network, pulp and paper plant, chemical process manufacturing plant, coal-fired power plant or some other type of heavy industrial complex, it is the responsibility of management to ensure that between plant start-up and retirement that maximum value is realized and that cost is minimized.

So on a macro level, management of this capital asset can be seen as one large project, and the technology used to operate and administer such an industry must allow for full asset lifecycle management (ALM). However, during that lifecycle, there are numerous other projects that feed into this master schema. From a complex task like a seasonal shut down for maintenance and refit to a small task like the rebuild of a single pump, everything that happens to this asset must be managed and accounted for in an enterprise asset management (EAM) tool, and that EAM tool must tie into the general ledger of the enterprise and with the overarching ALM technology used to administer the asset.

Maximizing the return on a corporate investment in capital assets requires a manager to pay attention to a number of dynamics, including:

- Cost. Downtime represents cost, and must be used to its best advantage. Inventory and maintenance are also necessary costs and must be intelligently managed to yield the highest return.
- Time. Production is the source of the return on a capital investment in any industrial facility. Production time can only be maximized by minimizing and making the best use of down time and operating the asset to maximize equipment efficiency.
- Resources. A manager of an asset-intensive industry must make the best use of the materials, tools, facility and staff at his or her disposal. Particularly careful decisions need to be made regarding outsourcing or in-sourcing facilities management and maintenance activities.
- Cash. Even when an asset is delivering a positive return in the intermediate term, business still operates on a month-by-month, quarter-by-quarter basis. Real-time information on what it costs to operate the asset allows an executive to manage the present rather than adjust for the past.
- Risk. Poor access to asset information across organizational boundaries, and a lack of control over cost, time, resources and cash exposes the asset-intensive company to tremendous risk. Only the right asset management technology can help executives mitigate this risk.

Macro View: The asset as a project

If you think of the lifecycle of an asset as one long project—a project that might last for as long as 20 or more years—it becomes apparent that the project starts with the engineering and construction processes. The project then comes to include the cost to maintain, operate and refit, and culminates with a well-informed decision to decommission and replace the asset. In the absence of fully functional, flexible and integrated EAM and ALM systems, managing the lifecycle of the asset from cradle to grave is a challenge.

Even though asset management technology has made enormous leaps in recent years, in some ways it may have been easier to manage major assets 30 years ago than it is today. This is because years ago, industries tended to have their own in-house engineering departments that designed major refits as well as new construction.

Today, this work is outsourced, which makes it challenging to keep all of the information necessary for ALM in one place and in a format that supports executive decision-making.

Even if lump sum information on the cost of initial construction can be tracked and entered into an EAM tool, specific granular analysis that can aid in decision-making will be absent. Particularly in the case of a more complex asset, specific production lines, process lines or pieces of equipment may need to be tracked as separate assets in order to support replacement and decommissioning decisions. Therefore, it is critical that at the very least, asset owners obtain detailed structured data during the design and construction phases and at the conclusion of a capital project—structured data that that can form the basis of a detailed asset management system. Records of how the asset was designed and how it was built can then be augmented with information as to how it was operated and maintained. This in turn allows for true cradle-to-grave ALM that supports very granular executive decision-making. As maintenance costs increase on a specific part of an asset, this comprehensive view of information allows an executive to make an informed decision of when to replace a specific asset, or whether to order a refit to extend the life of the asset.

In order to effectively make the big, macro decisions, corporate management needs visibility to the micro-level details of much it is costing them to maintain the asset in real time. They also need to be able to see detailed projections of maintenance and operational costs into the future, and be in a position to understand the relationship between asset value and productivity, operational throughput, maintenance cost and the cost of total or partial asset replacement. To a certain extent, many enterprise-wide software systems including enterprise resources planning (ERP) might offer some of this type of information, with the exception of maintenance activities, which are often managed on a completely separate system. This separate silo for maintenance activity not only hides vital asset information from corporate management, but can lead to a situation where maintenance is seen as lacking in strategic importance, devaluing the very activities that can prolong the life and increase the productivity of the asset.

But granular asset information kept in a powerful EAM application can have application well beyond the board room, where executives are making decisions on a corporate basis. But it is certainly true that in order to be effective, corporate executives need access to ALM technology and information that allows them to treat the entire asset lifecycle as one long project.

Design, Operate, Maintain

Comprehensive asset management and EAM tools also provide vital information to managers involved in the day-to-day operation of a plant. For these constituencies as well it is important that these technologies encompass information on the entire lifecycle of the asset, including design and construction. Put yourself in the shoes of the Director of Facilities of a major industrial plant that has just been started up for the first time. As pressures and temperatures start to come up to spec and product begins flowing, a head pressure problem develops in a critical compressor unit. Maintenance is dispatched to the site but quickly finds that it lacks the information to diagnose the problem.

The necessary data, it turns out, is not yet available in the asset management system, but instead is part of an as-built document sitting in a file drawer. Because of this informational gap, the plant experiences unplanned downtime, and total throughput suffers, affecting the quarterly bottom line. Even if data on the asset had been entered in the EAM package already and the unplanned stoppage diverted, efficiencies are lost unless the facility engineering information is visible to maintenance and operations professionals even before construction starts. As specifications for a new facility or facility expansion are decided upon, the project owner can begin ordering replacement parts and other supplies that will be necessary to maintain the new asset. If certain production machinery will be decommissioned or replaced, the maintenance department can de-prioritize preventive maintenance and divert attention to other areas of the plant.

The line between the construction of an asset and the operation and maintenance of the asset is an imaginary one, as the information on the asset still needs to be used immediately after construction and fabrication are completed. Lacking systems that can bridge the engineering and manufacturing operations world, the necessary result is unplanned down-time.

Or what about the director of maintenance who finds that a new production line suffers from unplanned stoppages caused by the same design features as the line it replaced? Data contained in years of maintenance records could have revealed that design changes that are necessary, the system engineers did not have access to as-maintained or as-operated data that would help them improve the design. Unless asset data can flow from the asset owner to the designer freely, an outsourced engineering firm might now know that maintenance engineers had upsized several pumps on the line they are replacing—a change not included in the as-built information on the pre-existing line. Lacking a powerful and flexible EAM system, it

may also be difficult to get information to design engineers on areas where the existing asset design could be improved upon. If certain maintenance tasks took longer because of a lack of adequate service access, that should be apparent from maintenance records if they can be accessed and communicated in a usable format for the design engineers.

Like ALM, Design, Operate, Maintain (DOM) is a way of thinking about an asset as a project as well, ensuring that good and complete information flows between all of the parties who have hands-on, daily involvement with asset data. Information on new facilities must be made to populate an EAM application right from the start of operation to facilitate optimal performance and reliability. And at the end of the lifecycle, an EAM application must be able to harness the decades of user experience and use that experience to facilitate continuing improvement in facility design, allowing an even greater return on the enterprise's next capital investment.

Major Stoppages

Preventing unplanned stoppages is one goal of implementing an EAM software product, because the functionality of these programs can allow facilities managers to engage in predictive and preventive maintenance. In many production environments, downtime is planned periodically to allow maintenance and refit of substantial portions of a facility.

In order to allow for major refits and larger maintenance projects, power plants, power transmission and distribution utilities and other primary process industries plan periodic plant outages when backup capacity is available.

Consider for a moment the situation faced by the chief executive and maintenance director at a coal-fired power plant that has one stop per year for major overhauls. There is a pressing need to meet the project timeline because each day of downtime is worth millions of dollars, and there is a significant degree of project complexity as outside contractors are hired, equipment is rented and perhaps additional maintenance shifts are added. Robust project management functionality that is integrated on a very granular level with a powerful EAM application can help manage the resources necessary to complete the required tasks in the time allotted. While the ability to manage to meet the deadline is one strong argument for integrated project and EAM functionality, even greater benefit can be realized of project and EAM functionality are tied into an overarching ALM system and the general ledger. The ability to look at a plant shutdown from an ALM and financial perspective can help determine if it makes sense to bring in additional outside resources in order to

shorten the amount of down-time. To what extent will the outside cost of hiring contractors and equipment increase total return on the asset in the intermediate to longer term? The use of outside contractors for maintenance activities has increased worldwide specifically because of this thought process. Fully integrated project, maintenance, ALM and finance functionality can allow more informed decisions on how to reduce down time, and can therefore be a real competitive advantage for the asset-intensive industry.

Many asset-intensive companies do not have in place the proper tools to efficiently optimize the activities associated with a plant shut down, and certainly do not have the right tools to proactively reduce planned downtime. Companies that get the right tools in place and leverage them to their full extent will have lower overhead and greater productivity, while their competitors fumble to keep up.

Micro View: Day to Day Maintenance

In a large-scale project environment like an asset-intensive industry, an effort to track the cost of operating and maintaining the asset is dependent on effective cost tracking on thousands of smaller projects. On this micro level, integrated project, finance and EAM functionality is critical. When working in a properly-integrated enterprise application it is much easier to structure a maintenance project to collect all of the cost, including procurement, manufacturing-related activities that are completed with shop orders and work orders that are used to collect technicians' time. Integrated functionality will also allow analysis of project cost by different breakdown structures, and each activity a can be assigned a different funding line.

Moreover, because a number of different departmental and functional activities can be tracked against a single project or in the aggregate, it becomes much easier to identify the periodicity of failures in specific pieces of equipment. This can be invaluable information as a maintenance director communicates with senior management during the capital budgeting process. Thorough information on what a specific piece of capital equipment costs to operate can inform a refit or replace decision. But these decisions are much harder to make when the true cost of maintenance is lost to inefficiencies in administrative systems.

Specifically, what are these inefficiencies that can hamstring your asset management efforts? Consider the challenge faced by maintenance teams engaged in a more complex maintenance project, like replacing a boiler system, without integrated EAM, projects and work order capability. This project likely involves internal staff time, contractors, inventory parts and materials purchased specifically for the project.

If this team is using a standalone project management system, they will at the very least have to retrain their maintenance technicians to use projects to capture materials and time rather than using the work orders normally used by technicians for other work. Even if you were to engage in this retraining initiative, project cost reporting capabilities may suffer and senior management still won't have a clear idea of the project cost. Furthermore, forcing maintenance technicians to abandon their familiar work orders in favor of project management software can result in lost asset data. Work orders allow the technician to report how and why they did things at a given time. This information can be used to track the frequency and cause of equipment failure—crucial data that might be lost if work orders are abandoned on larger maintenance projects.

Another advantage of integration between work orders and project functionality is that engineering can still use a projects application to track their work, report time and buy materials like they are used to and maintenance staff can still use work orders like they are used to, reporting work, time and expenditures, and in the end it winds up on the same project line item for later analysis.

Long after that boiler is replaced, the project history contained in work order documents will comprise valuable details for the equipment objects in your EAM system. The details of that initial install are important to technicians engaged in ongoing maintenance, and will provide insight on challenges encountered during the install, why the boiler was installed in a particular way and why a piece of equipment is running at a certain speed.

And even if project and EAM functionality is integrated and this asset data is preserved, but these systems are not integrated with other systems company-wide like purchasing and finance, there will be a disconnect when allocating inventory to the project and sharing analyzing total project and asset management cost.

Today, most companies still operate separate project and work order software, and as a result double-entry is required to get information into both parallel systems. Of course this is a drain on administrative time and creates opportunities for errors and lost asset data. Integration eliminates this—information can be entered on the project or the work order and it all ties back to the same project.

Conclusion

Managing asset intensive industries really consists of optimizing the lifecycle of an industrial facility, and that lifecycle can be viewed as one long decades-long project. When better asset information is available to senior managers, they can have better control over the project and manage the future—not only the past. This leads to

better decisions—decisions that can comprise a competitive advantage. However, the data necessary to make decisions about this asset lifecycle project is comprised of data from thousands of smaller projects completed by maintenance technicians, engineers, contractors and other parties. That is why integration of project, EAM and other technology tools used company-wide is so crucial for the asset-intensive company.

When planning EAM projects for your asset-intensive business, here are three things to keep in mind that can help you get the most out of your technology and your asset data.

- Almost every department in an asset-intensive business, from production to human resources to purchasing to engineering to maintenance, is working hands-on with information on the cost of operating the asset. That means that true ALM systems need to incorporate all of these functional areas in order to provide accurate cost and benefit information so that executives to manage for profit.
- Pay special attention to how project functionality used in engineering and capital projects is tied in with maintenance and EAM functionality. Strong integration between tools used to undertake major projects and tools used to maintain the asset will help automate the transition of asset data from capital projects into the EAM system. It will also provide better, more consistent and reliable information on the cost of operating the asset. Lacking this integration, some cost data that falls outside of the auspices of the maintenance department may be misclassified or go unreported.
- EAM software needs to be integrated tightly with financial management software, not only to accommodate tracking of asset cost, but in order to allow for strategic decision-making about maintenance and the asset. This tight integration allows senior management to determine, for instance, if it makes financial sense to outsource more work to maintenance contractors in order to shorten the duration of a planned shutdown, and can help maintenance directors justify much-needed capital spending as the cost to maintain specific pieces of equipment becomes apparent.

About IFS

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 more than 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.

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