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An interactive means to visualize and communicate risk. (Source: Copperleaf)

ADDING ASSURANCE TO ASSET MANAGEMENT



By Boudewijn Neijens, Copperleaf

Modern asset management revolves around four key elements: value, alignment, leadership and assurance. First and foremost, assets should contribute value to the organization. If not, they become liabilities. Therefore, asset management actions must be aligned with the strategic objectives of the organization.

CONTROLLED PROCESSES

In the utility and power sectors, assets such as hydro turbines, steel structures and power transformers generally have long lifecycles, often measured in decades. Asset managers select the optimal maintenance, refurbishment and replacement strategies for their assets to balance risks, performance and costs. These strategies must ensure that assets are capable of fulfilling their function without exposing the organization (or the public) to unacceptable risks — and for the lowest possible cost. The assurance element of the management system helps guarantee to internal and external stakeholders that the right processes and checks are in place to consistently deliver on these strategies.

RISK MANAGEMENT FRAMEWORK

Whereas most organizations are clear on their performance objectives, the same is not always true when it comes to risk tolerances. Yet, as assets age and the risks of failures rise, it becomes increasingly important to have a clear definition of what risks are acceptable. This way, organizations facing severe

financial and resource constraints are able to make the right decisions about which assets need investment and when.

Ideally, an organization will have a systematic process of identifying and quantifying all asset-related risks, and it will regularly review how these risks evolve over time. Management can then focus on the highest risks and ensure that plans are in place to mitigate them. The Institute of Asset Management has published useful guidelines on risk management and frameworks.

MANAGING INVESTMENT LIFECYCLES

Much of an asset manager's time is devoted to ensuring that proper plans are in place to manage all stages of every asset's lifecycle. This typically

includes many decision points, such as when funds and resources are needed that require oversight or approvals. Maintenance and routine interventions are often part of a preapproved budget or plan, but larger, more complex decisions (typically associated with capital investment) might require multiple consultation and approval phases with different stakeholders.

Much like assets, every candidate project or program has a lifecycle. The information requirements, stakeholder involvement and formal approvals will evolve as a candidate's project progresses through stage gates. For example, at an early stage, a candidate project might only be visible to its creator and contain rough estimates of costs, benefits and timelines. These first rough estimates might be enough to obtain an approval for a formal feasibility study, with the expectation that more-detailed information will be presented to a wider group of stakeholders in future phases.

ENFORCING PROJECT GOVERNANCE

Management and standardization ensure that decision-making for each candidate project is consistent and auditable. They also prevent projects from flying under the radar screen and getting approved by default. Most organizations have predefined workflow rules, establishing what stakeholder involvement and approvals are necessary, based on specific criteria. For instance, capital projects over a specific spend amount might require approval by general management (such as replacing a large power transformer at a cost of \$2.5 million), whereas smaller projects under \$100,000 can be approved at a local level. Such workflow rules should be documented and enforced to ensure that all candidate projects are submitted to the right level of scrutiny and approval stage gates, at the right moment in their lifecycle. Leading utilities have adopted Asset Investment Planning and Management (AIPM) solutions that automatically

enforce the appropriate business logic in each case.

DECISIONS IN A CONSTRAINED WORLD

Since most organizations operate under yearly budget cycles, a candidate project will, at some point, be put in competition with other candidate projects. Because funds and resources generally are limited, organizations need to decide which projects to resource, and which projects to defer or reject. This leads to the concept of investment portfolios, which include all candidate projects competing for funds and resources for a specific budgetary cycle. The organization needs a method to compare and select the most valuable projects.

This could be a simple ranking exercise for small portfolios or it may require more-advanced mathematical optimization techniques, such as multicriteria decision analysis for larger, high-value and high-cost portfolios. A recent joint research project by the University of Southampton and Copperleaf demonstrated that optimization always yields 7 to 20 percent higher portfolio value compared to prioritization. Copperleaf has certainly seen this benefit in its own client base. A major utility in the U.S. compared the results of using Copperleaf's C55 optimization to the results from their prioritization process, and found that the recommendations from C55 increased the value from their portfolio by \$42 million.

Many organizations have matured to the point where they now expect project sponsors to submit multiple options for a large investment, allowing decision-makers to select the optimal alternative for certain projects. Ideally, the same logic will be applied to entire portfolios of competing projects — often with surprising results. In the end, the optimal project considered in isolation might not be optimal when it is compared to other projects.

There often will be a conflict between the priorities of the individual asset manager (trying to maximize the whole life value contribution of the assets under her or his supervision) and the organization as a whole, which needs to maximize the value delivered by the corporations' entire asset portfolio on a continuous basis.

IMPLEMENTING A CAPITAL DECISION-MAKING FRAMEWORK

Reconciling these priorities can be an arduous process, and it underlines the importance of implementing a rigorous, systematic, transparent and defensible capital decision-making framework. This is particularly true for utilities and power producers, which often have been in business for many decades and need to sustain millions of aging assets. This significantly complicates the decision-making process, since it means that deferring a sustainment project typically carries a clear cost and risk, both of which increases with time.

Hydro-Québec, Tennessee Valley Authority, Manitoba Hydro and ONE Gas are among the utilities that have adopted AIPM solutions. It addresses the challenges of optimizing and managing complex, time-sensitive project portfolios and building defensible, long-term asset plans. Not only do these solutions contribute significantly to the assurance aspect of the asset management system, they also can help identify the value and risk frameworks of the organization, and help ensure that every decision is aligned with corporate objectives.

BOUDEWIJN NEIJENS is CMO at Copperleaf. He holds a master's degree in mechanical engineering from the University of Brussels, and an MBA from INSEAD. He works with large, asset-intensive corporations to refine their asset management practices in the areas of investment planning, decision analytics and risk-based models.