Fleet Analytics and Planning: The Modern Asset Manager's Guide

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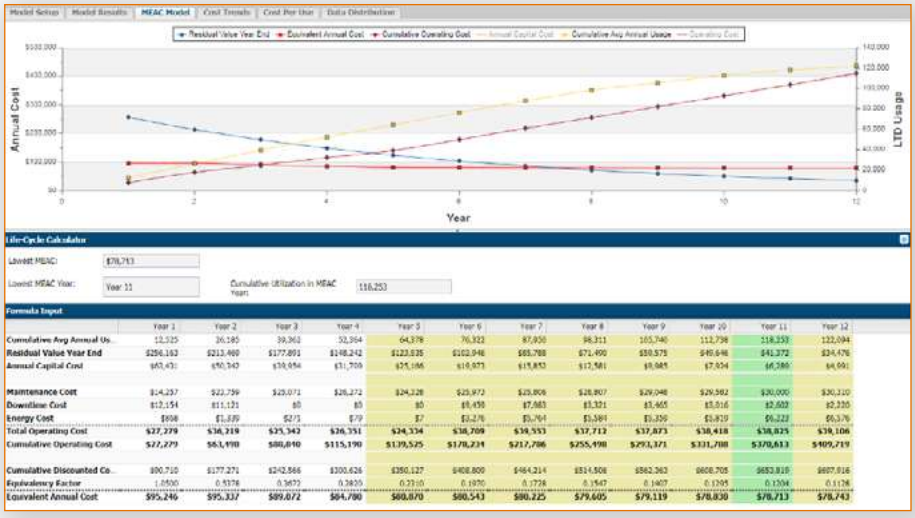
Many fleet organizations today struggle with collecting and analyzing asset data. As a result, their ability to manage the planning, procurement and disposal processes is hindered. AssetWorks' Capital Asset Management (CAM) application is the first software solution on the market that is specifically created to help you do your job in the most efficient way possible.

In total, CAM has four primary modules: Analytics, Planning and Budgeting, Procurement and Remarketing. Each module is linked to a database, which is integrated with the maintenance system. Additionally, CAM can be integrated with an Enterprise Resource Planning (ERP) system, such as SAP or PeopleSoft, to support financial and fixed asset management functions. In this white paper, we will focus on the extensive benefits and features of the Analytics and Planning and Budgeting modules.

Analytics Module

Cost analysis is key to effectively and economically managing your assets. CAM's Analytics module is designed to help asset managers with those decisions. It includes a number of specific analytic functions and an integrated reporting solution that develops custom reports and analytics based on each organization's identified needs. Within the Analytics module is the CAM data mart, which supplies data extracted from the asset maintenance system and inputs it into the various analytic functions.

Life-Cycle Calculation



The Life-Cycle Cost Model was one of the first tools to be included during the early stages of CAM's development. This tool uses cost and operating data extracted from the linked maintenance system to calculate a Mean Equivalent Annual Cost (MEAC) based life-cycle, which models costs over the life of similar assets to identify the optimal replacement point.

CAM generates two types of Life-Cycle Cost Models (LCCM): periodic Category Reference Models and on-demand Custom Models. Category Reference Models are scheduled to run monthly to update the life-cycle data and model for each asset category set up in CAM. These models use parameters and assumptions set up within the category. Custom models allow you to customize the selection of assets based on a category taxonomy, specifications, organizational assignments, and model parameters and assumptions, as needed. Model assumptions include the ability to remove data outliers and to apply trends when the model data may be incomplete.

Both types use the same LCCM engine to organize the data by month in service. The data is married with user-entered parameters to calculate the capital and operating cost curves for groups of similar assets to generate the annual mean total cost. The year with the lowest mean equivalent annual cost is the optimal replacement year.

Additional life-cycle analysis tools include:

Cost Trend Analysis: A breakdown of assets and costs based on quartiles of annual utilization. Assets are grouped into the top 25% with the highest utilization, the lowest 25%, and the middle 50%. Costs are displayed against the residual value curve to model when operating costs begin to exceed annual capital costs.

Cost Per Use Model: Divides operating and ownership costs by utilization (e.g. operating time or distance) to determine average annual cost per use. The point where the group of assets utilization starts to decrease and costs start to increase can be a good indicator to start replacing assets. The model displays both annual and life-to-date graphs.

Data Distribution Analysis: Graphs and a supporting grid display the number of records in each year as well as the distribution of different assets based on their maintenance costs, downtime, fuel, and utilization. This can help you understand the model results and the quality of the data behind the models.

Maintenance Forecasts

Using the category reference model results, CAM can generate trended maintenance costs and Maintenance Repair Units (MRU) for each category and year in service. The Maintenance Forecast Rate Card calculates target and non-target maintenance costs as well as labor hours for each year of an asset's life and can be used in setting rental rates for equipment.

There are three separate forecast options that estimate what the maintenance costs and labor hour budgets for the following year or more will be, based on the planned age distribution of assets in each month and the estimated costs for that distribution. Planned replacements are included in the forecast to show the impact new assets will have on operating costs. Costs are forecasted for a category of assets, based on all assets assigned to a department or based on the assets assigned to a location.

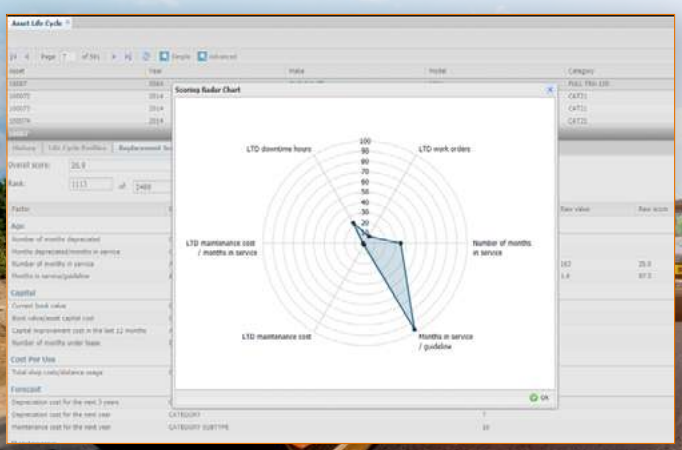
Asset Life-Cycle

CAM has several tools to help with the analysis and the evaluation of specific assets. These tools rely on an asset's historic operating and capital-cost data extracted from the maintenance system. Historical data is transformed in CAM and summarized by the asset's month in service, not the calendar month that it occurred. Maintenance history (i.e. labor, commercial, and parts) is tracked by system, component, and job reason. Reasons are used to group repairs into maintenance, non-maintenance, breakdowns, target and non-target, and similar groupings for analysis.

Asset Replacement Forecasts and Scoring

Each asset has its next replacement date forecasted based on when it meets the replacement planning guidelines set for its current category. Depending on the replacement criteria, CAM estimates the optimal month that the asset is eligible and its resulting replacement cycle for subsequent replacements.

CAM ranks assets based on your weighting of one or more of the over fifty different asset-specific measures. Each asset's calculated values are turned into normalized scores based on distribution of the values for all other assets in a comparable group. Each measure is then weighted and summarized to determine the asset's overall score. The overall scores are also normalized on a scale of 0-100. This scoring and ranking system sets the asset's replacement priority and identifies assets that are performing better or worse than others. A radar graph displays the results for each of the selected measures for that asset for easy identification of high-scoring measures.



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Repair Analysis

A cash-flow analysis comparing repair costs and capital upgrades to an existing unit (defender) with the cost of purchasing a new asset (challenger). The analysis considers capital costs, repair/upgrade costs, rental and replacement costs, along with an estimate of future maintenance and operating costs for both the challenger and defender units. By comparing the two cash flows, you can make an informed decision about the cost of extending an asset's life when faced with costly repair decisions.

Reports & Custom Analysis

CAM has an integrated reporting tool that allows you to write and share reports. Using a wizard-based user interface, CAM Business Intelligence lets you select data from a set of specialized reporting views. You can build basic list reports or pivot tables, include links to sub-reports, and add summaries. Additionally, the charting tool allows you to add multiple charts and gauges to a report as well as create interactive visualizations of the data. Any user-developed report can be saved and shared with other CAM users, exported as Excel and PDF files, or emailed as a link to another CAM user.

Dashboards

CAM has an integrated dashboard tool that allows users to take parts of saved reports and consolidate them into a custom dashboard for easy monitoring of key performance measures and trends. Dashboards include the ability to use parameters and date controls to change the data displayed.

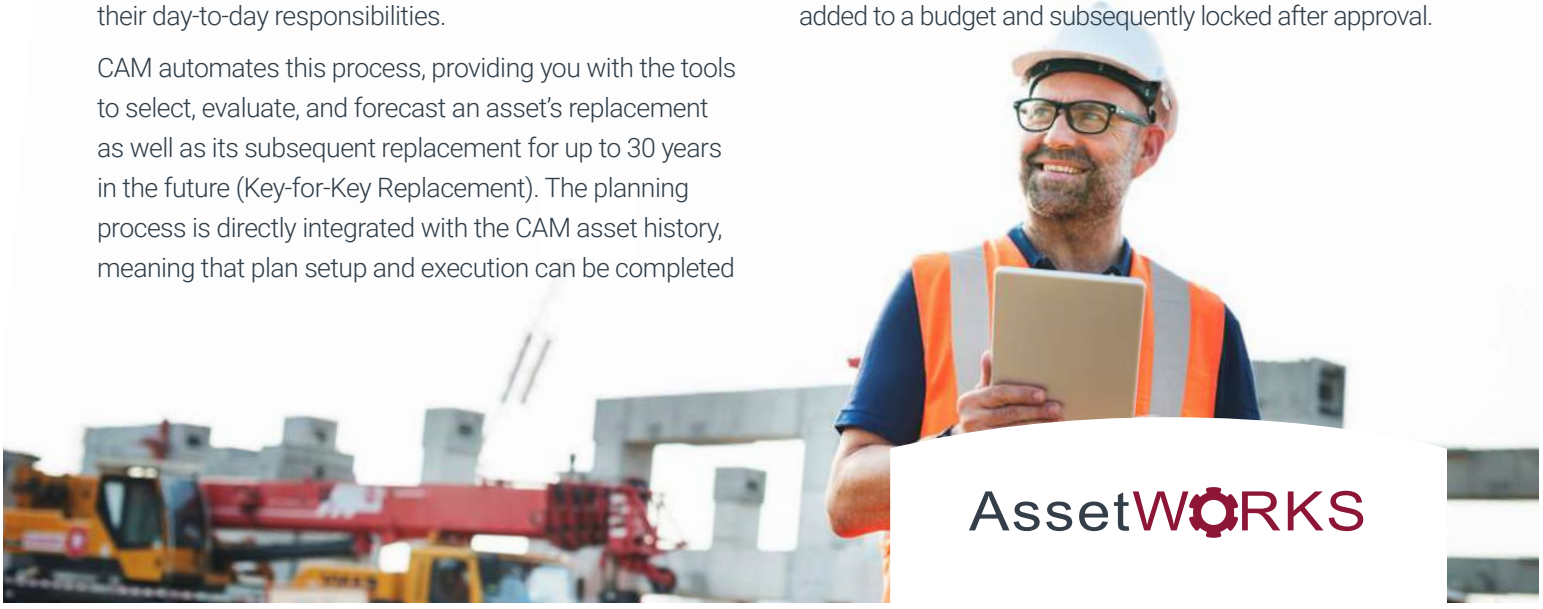
Planning and Budgeting Module

The purpose of this module is to assist asset managers with planning for the replacement of assets and managing capital budgets. The functionality in this module uses current operating cost, utilization data, and user-established replacement guidelines to identify when assets should be scheduled and prioritizes asset replacement. Capital budgets can be set up to track actual purchases against planned expenditures. The Planning and Budgeting module also supports both request-based and planned based budgets. In addition to planning for replacements, users can budget for growth, initiative, and contingency assets. CAM provides a single source of truth and an automated process for asset planning and budgeting.

Planning

For years, asset managers used spreadsheets to plan for new and replacement assets. This process is not only time consuming but difficult, putting unnecessary pressure on managers to make critical financial decisions on top of their day-to-day responsibilities.

CAM automates this process, providing you with the tools to select, evaluate, and forecast an asset's replacement as well as its subsequent replacement for up to 30 years in the future (Key-for-Key Replacement). The planning process is directly integrated with the CAM asset history, meaning that plan setup and execution can be completed in minutes rather than hours. CAM also allows for plan-specific replacement criteria adjustments and scoring, and can link plans to allow for the easy generation of scenarios and alternative plans. When plans are finalized, they are added to a budget and subsequently locked after approval.



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Plan Setup

Users have tremendous flexibility in how plans are set up. Options include:

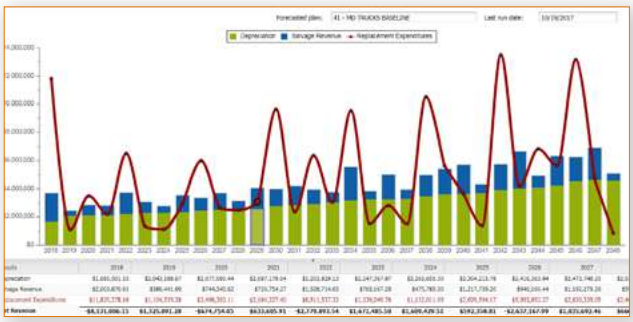
- Determine if the plan is a replacement, growth/initiative, or contingency plan
- Select the assets to be included in the plan based on any level of the category hierarchy
- Select assets that belong to a particular business unit and all of its child departments
- Determine the length of the plan, from a few months to 30 years
- Determine the tactical length of the plan that will be included in a budget
- Create a baseline plan that can be linked to other plans for comparison purposes
- Create a parent plan and link children plans that roll up to the parent plan
- Use the standard category-planning parameters or customize the parameters just for the plan
- Use the standard Asset Scoring settings or customize the scoring just for the plan
- Determine which users and departments can have access to the plan to view and/or update

Once the plan is setup, depending on the length of time and the number of assets being tracked, the finalized plan can be completed within minutes. Plan settings can be modified and regenerated, as needed.

Plan Types

CAM supports plans that can have several different use cases, as illustrated in the following examples.

Baseline Plans



These plans are used to determine what the current replacement requirements are based on the backlog of assets that are overdue for replacement as well as when assets will be due again over a long-term horizon. The purpose of this plan is to inform management of the current replacement program and to identify what level of funding is needed to replace assets on an optimal schedule to eliminate backlog. Baseline Plans are not assigned to a budget, as the first year backlog is more than most operations can afford. It is primarily used to show a before and after situation in comparison to other plans.

Strategic Plans

After running the Baseline Plan and determining the size of the backlog, a near-term (3-5 year) strategic plan is constructed by adjusting the forecasted replacement dates of assets to smooth out the number and cost of assets to match expected funding levels. The goal is to address the backlog and prioritize replacements over the strategic horizon to level out replacement peaks and valleys. A 5-year Strategic Plan may only have a 10-15 year total horizon to see what long-term ripple effects the smoothed plan will have in the future. Scoring is incorporated to help prioritize assets, with the highest scoring assets falling into the early months of the plan. A Strategic Plan can be linked to a budget, but often these become the basis for Tactical Plans during the first years of use.

Tactical Plans

Tactical Plans are linked to a budget, and assets on these plans that are replaced within the same fiscal year as the budget will be added as lines in the budget. A Tactical Plan could be a three-month quarterly plan or a multi-year plan. Typically, the total length of the plan is one to X years beyond that tactical window to allow assets to be moved back or up based on scoring and funding levels. A Tactical Plan can be its own standalone plan or linked to a Strategic Plan. Child plans are Tactical Plans that can be linked to a parent plan. When an asset on a Tactical Plan is added to a budget and the budget is approved, the replacement date for the asset is updated and locked, and the asset being replaced is linked to its replacement. This prevents assets from being replaced multiple times and will slot the replaced asset into future plans.

Growth/Initiative and Contingency Plans

The purpose of these plans is to create budget placeholders for new assets in the case of Growth or Initiative Plans, or slots for unplanned replacements in a Contingency Plan. Growth Plans represent additional units to accommodate growth in business operations, where Initiative plans are used to track new asset initiatives such as electrification or bringing a new business operation. In either type of plan, a new asset record is linked to a category and assigned to an owning and using department. The asset is assigned a planned delivery month and its capital cost is estimated using the category budget.

Contingency Plans are set up in the same way but with the expectation that once the contingency asset is put into service, a replaced asset number will be assigned to the asset and the asset that it replaced cannot be put onto another future plan. A Contingency Plan is utilized when a stockpile, reserve, or bailment pool is used to manage replacements as assets are written off, as opposed to pre-selecting assets for planned replacement.

Plan Adjustment

After the plan is generated, the Plan Adjustment screen is used to finalize it. The screen displays one record for each asset, along with its current assignments, category, replacement category, score, age, and replacement date. To the right are columns for each year in the planning horizon, with a cost in the column serving as an indication as to whether the asset is being replaced in that year. If the plan is long-term Strategic or Baseline, there will be costs displayed in each subsequent year indicating that it is to be replaced again. You can change the Replacement Category and the Planned Replacement Date. Changes to either of these columns will update the cost within the year of next replacement. An inflation factor on the category is used to adjust the cost in future years.

Because the number of records in a plan can be extensive, you have functions available to filter any of the columns in the plan and sort by one or more columns, as needed.

As an alternative to allowing asset end users and operators permission to make updates, the plan can be exported into an Excel worksheet and import the changes back into CAM, which automatically updates the plan with the new information. When the plan is completed and ready for budgeting purposes, the export feature allows the plan to be converted to an Excel worksheet and forwarded along with the budget packet as supporting documentation.

Plan Forecast

The Plan Forecast screen provides three different summarized views of the plan. The first summary is the bar and line chart displayed above in the Plan Type examples. This is a graphical summary of the plan's annual expenditures and includes an estimate of the incoming depreciation income for the assets owned in that year and the salvage value of the assets that will be replaced annually.

The next forecast is a summary by category. Here, the category hierarchy is used to summarize the number of assets to be replaced, the replacement cost, depreciation revenue, salvage revenue, and net expenditures.

The final forecast is categorized by department. In this forecast, each leaf on the department tree displays the summation of the children units below, allowing you to drill down through the organization hierarchy to view plan expenditures and revenues at each level.

Budgets

The Budget Module gives users the ability to set up capital budgets to plan and track asset purchases. Budgets are set up for one or more fiscal years and can be adjusted to match how the user manages budgets before using CAM. Budgets can be fleet-wide or broken up by assets type, business unit, and/or funding source. Budgets have an authorized amount, and as assets go through the procurement process, the capital costs are tracked against the budget, providing instant insight.

Budgets can be plan or request based. Plan-based budgets have one or more Tactical Plans assigned to the budget. The assets that are planned for the same fiscal year assigned to the budget are automatically added to the budget. Approving the budget creates Asset Requests to begin the procurement process. This automates much of the planning and procurement process, saving organizations both time and money.

Request-based budgets do not require plans. Rather, assets start as an Asset Request and the request is assigned to an existing Budget. This process is useful for managing new, contingency, and write-off assets where the assets that are being requested are not known during the planning stage. It can also be used to incorporate assets budgeted or on order before CAM was implemented

The Analytics and the Planning and Budgeting modules of AssetWorks CAM provide an extensive array of reports, graphs, automated calculations and more to help you get the upper-hand over your data. With a new mastery of this information, optimized asset replacement and procurement (and planning and budgeting for these occurrences) is just a few clicks away.

To learn more about AssetWorks Capital Asset Management, please visit assetworks.com/fleet/cam.

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