

Software Assets Management – Modeling Issues and Proposed Models

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Abstract

Too often, software intensive organizations can only track the initial assignment of a software to a resource but not necessarily thereafter. In such organizations, Software Asset Management (SAM) is often a reactive process. The lack of defined software asset management processes limits the ability of several organizations to manage the whereabouts of software once it is assigned to a resource. This puts the organization in a passive role so it is important to add planning and control processes, including for the retirement of software. To improve management of assets, the IT industry can learn from other disciplines, in particular from public works engineering. Through active assets management an organization will be better positioned to make choices to optimize and tune its Software Asset portfolio while complying with corporate policies.

1. Introduction

In several software intensive organizations (SIO), a purchasing group handles software purchase orders. However, the lack of defined software asset management processes limits their ability to manage the software whereabouts. Too often, such organizations can only track the initial assignment of a software to a resource but not necessarily thereafter. In such organizations, Software Asset Management (SAM) is often a reactive (e.g. passive) process (see Figure 1): the purchasing group assigns the software to a resource (i.e. an individual, an organizational group or a server) and subsequently, on the basis of a pre-set contractual period, an invoice for a maintenance fee is received from a licensor/vendor and is paid. In such a reactive mode, decisions are taken one at a time, and the whole set of software assets is not managed from an integrated perspective: as a consequence, assets cannot be optimized and related maintenance costs cannot be minimized.

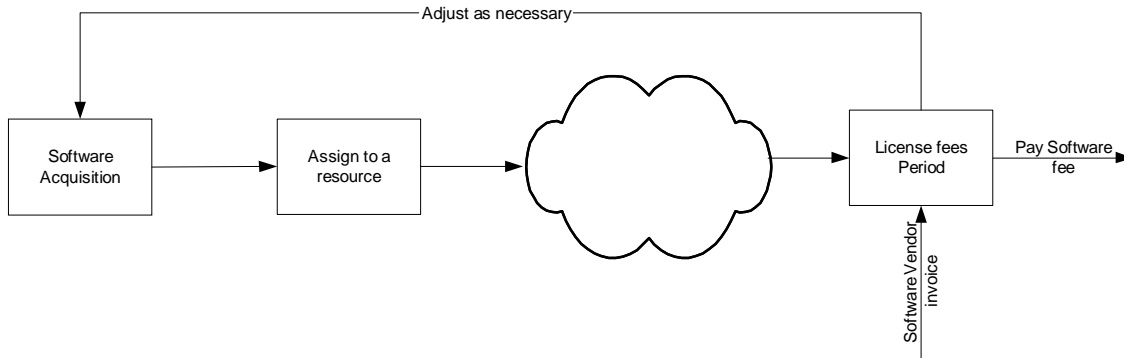


Figure 1: Reactive asset management process

This example illustrates the need to work towards a better understanding of the software asset management process and a better identification of the steps and external forces that influence these assets. Section 2 presents two related works: one found in the IS/IT industry and another found in public works engineering. In section 3, the methodology which is used to combine the two related works is described and explained. Section 4 presents the outcome of the combination between these two related works and finally, section 5 summaries the findings of this paper.

2. Related work

2.1 Information technology

Industry groups have proposed several best practice models and processes. In the field of information technology (IT), a set of best practices can be found in ITIL (Information Technology Infrastructure Library) [1]. ITIL is based on the collective experience of commercial and governmental practitioners worldwide and provides best practices for IT service management. It originated in the UK at the OGC (Office of Government Commerce) to address a high turnover of consultants. The OGC's motivation was to leverage the knowledge gathered by the outside consultants and capture this knowledge under the umbrella of a set of best practices.

This ITIL initiative is divided into two sections: Service Support and Service Development. The Service Support section identifies 5 processes and 1 service: Configuration Management, Change Management, Incident Management, Problem Management and Release Management processes and the service desk. On the other hand, the Service Development section identifies 5 other processes; Service Level Management, Financial Management for IT Services, Capacity Management, IT Service Continuity Management and Availability Management.

ITIL does not include asset management as a core process even though the need to interface with asset management is recognized. It is noted only that some organizations start with asset management before moving on to configuration management. This is because configuration management is considered to be a more complex process since the

relation between assets are stored (i.e. technological dependencies), while asset management does not necessarily store this information.

Furthermore, in ITIL, the assignment process of software to a specific resource (Fig. 1) is part of release management with information about the software stored in the Definitive Software Library (DSL). This DSL, which, if properly maintained can be a good source of information for asset management, contains all the software (and versions of the software) in use. In summary, ITIL does not identify asset management *per se* as a core process, the asset management process is not described and its components are not described anywhere in this best practices compendium.

2.2 Other disciplines

Other disciplines, such as public works engineering, have developed mature processes that are built exclusively for the management of assets. Some of these processes have become international standards such as the IIMM (International Infrastructure Management Manual) [2] which puts significant emphasis on assets planning.

At the heart of the IIMM is the Lifecycle Management Plan (LMP) that must provide background data on a variety of aspects such as Asset Capacity/Performance, Asset Condition, Asset Valuations and Historical Data.

Since IIMM focuses on planning, it includes several detailed plans: a Routine Maintenance Plan, a Renewal/Replacement Plan and a Disposal Plan. The Routine Maintenance Plan refers to the regular ongoing day-to-day work necessary to keep assets operating, including instances where parts of the asset fail and need immediate repair to make the asset operational again. The Renewal/Replacement Plan reminds the user that actions should be taken to ensure that the asset is either renewed (i.e. contractual) or replaced according to a pre-determined plan or agreement. The Replacement Plan is also required because if the asset is not renewed or needs to be replaced, a disposal plan should exist to explain how the asset will be disposed of.

3. Methodology used to build the model

As illustrated in figure 1, simply purchasing software and paying maintenance fees as bills are received is a very passive and reactive mode.

To be more proactive, planning is required. The IIMM applies these principles very well and it would make sense to apply these same principles to the management of software assets.

Figure 2 depicts (in the column on the left) what happens in the case of software purchasing: the software is ordered, allocated, recorded and a maintenance bill is received. This passive mode of operation has no planning and no control mechanism.

On the other hand, the IIMM spends a significant amount of time focusing on planning and outlining the importance of a good plan. But a plan is not of much use if it is not updated as required. This implies that there is a control mechanism to monitor and report on differences when they occur. This is illustrated in the right side of Figure 2, under “Engineering”. The differences identified by the control process help adjust the plan to better meet the corporate SAM requirements.

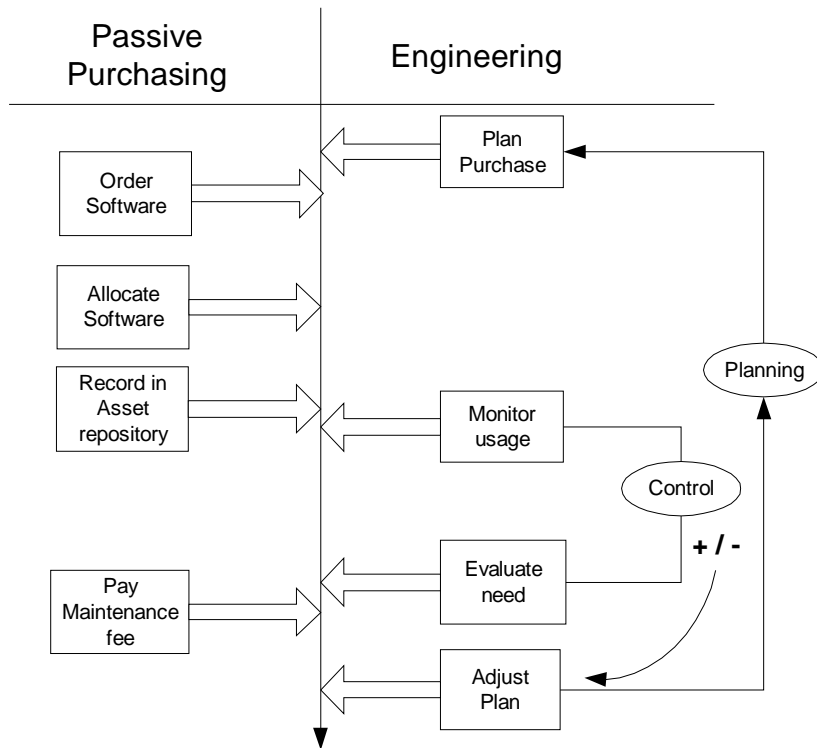


Figure 2: Adding planning and control to software purchasing

Adding planning and control to a passive process is only one element of the model. In the IIMM model, choices have to be made before adjusting the plan. These choices affect the very nature of the asset; to be operational, the asset must not only be maintained or upgraded but it may also need to be completely removed from the company’s asset portfolio. Retiring software assets in a planned and controlled manner is not well documented in the IT industry whereas such a retirement process is quite common in public works engineering. To improve its SAM, the IS/IT industry can learn from public works engineering on how to plan for software retirement.

4. Proposed model

To provide adequate management of software assets, it is necessary that all relevant processes be included. Our proposed improved model of software asset management has been constructed by combining the strengths of both ITIL and IIMM frameworks. This approach has led to the identification of a 5 step approach to SAM (see also Figure 3):

- Step 1: Corporate planning
- Step 2: Planning and purchasing of software
- Step 3: Assignment and monitoring
- Step 4: Reconciling needs and asset holdings
- Step 5: Asset portfolio tuning and optimizing

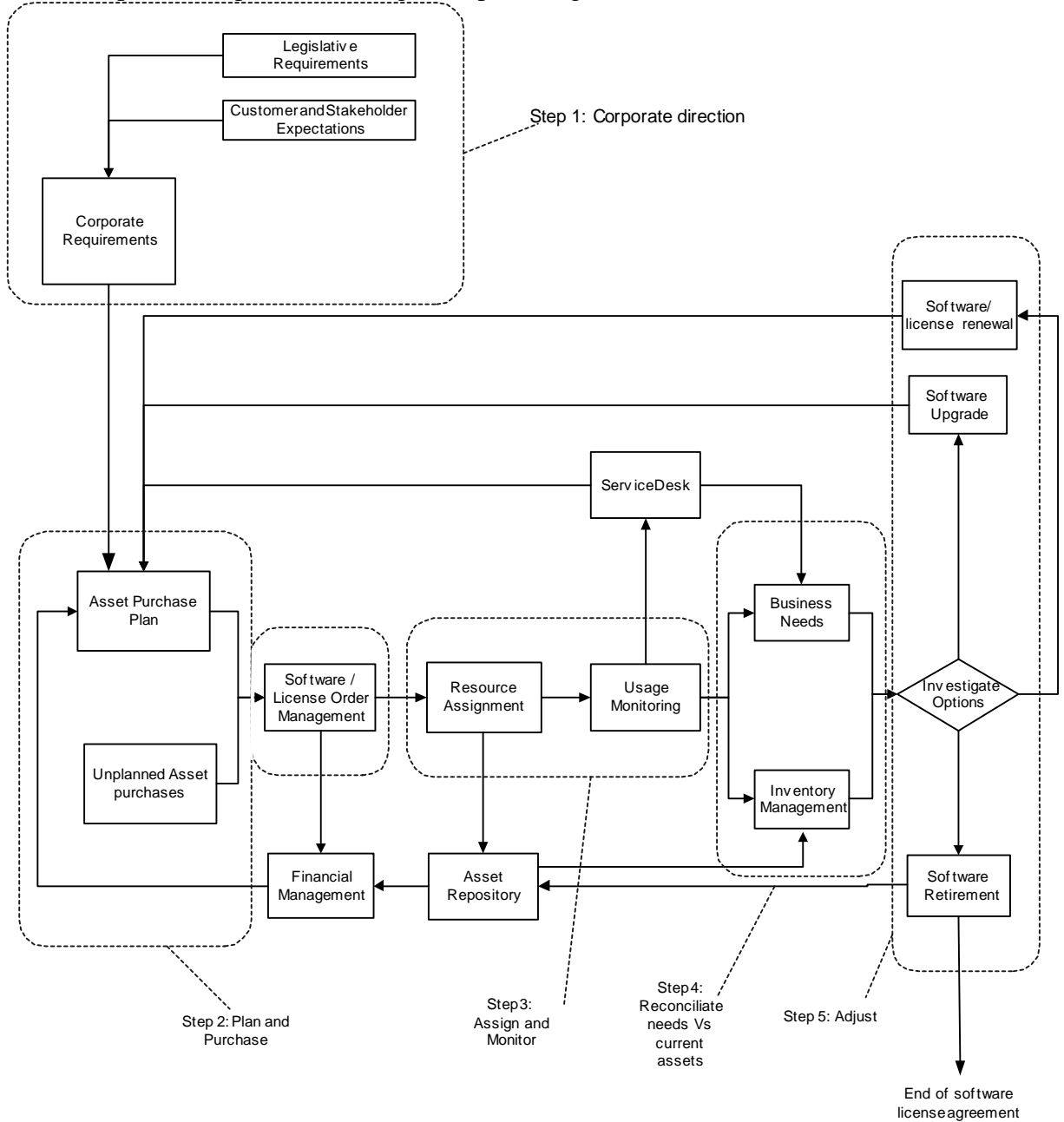


Figure 3: Software asset management (SAM) process

Step 1: Corporate planning

Planning plays an important role in the asset management process as is highlighted in IIMM [2]. It is important to decide upfront how much effort and budget will be assigned to asset management. This is the responsibility of senior management and the outcome is usually a tactical plan to help achieve the organization's long term goals.

This tactical plan plays a key role in determining corporate SAM requirements. These corporate requirements are also based on external input: it is important to take into account customer expectations (such as expected level of service and expected revenues from these services) as well as legislative requirements (such as financial and environmental constraints). This tactical plan, in addition to identifying how much to spend on software, will also specify how much formalism and tracking will be necessary to maintain control on software introduced and how it is to be used within the organization.

Step 2: Planning and Purchasing of Software

Guided by senior management input, an asset management plan is prepared to manage software purchases. It will feed purchase order management and provide guidance as to the type of software, the volume and the licensing scheme to buy.

In this planning process it is important to consider that in practice not all software purchases will have been included in the high-level plan, nor be fully aligned with the tactical orientations from senior management. Unplanned purchases may still be acquired in-between planning cycles but, once identified, must become integrated within the next asset purchasing plan.

Order management or purchasing is where the actual software purchase order takes place. These purchases will have a financial impact not only because of the purchase price but also because of the licensing costs which might include maintenance and upgrade costs. For this reason, it is important to feed IT financial management with any new licenses and contracts agreement with software vendors.

Financial Management as defined by ITIL [1] may include budgeting and IT accounting and charging. It is also the finance department that determines the budgeting rules and monitors and reports on the budget plans. It is therefore important to maintain alignment with the financial management process to ensure that purchases adhere to financial directives and that spending be kept under control.

Step 3: Assign and monitor

Once bought, the software is assigned to an owner-stakeholder: an individual or a corporate entity. Currently, this initial assignment is usually well recorded. However, any subsequent assignment to another individual or server may not be recorded. This explains how organizations risk losing track of the software. This inability to keep track of software might lead to unplanned overspending and at the end of the licensing period organizations then find out that they still are paying for a software they did not know they still had and, in many cases, that they might not be using anymore.

To minimize the risk of losing track of reassigned software, it is important to record any movement of software, server and related individuals within organizations. This tracking requires a formal asset repository where all information about the software, server and owner-stakeholder is recorded. This repository bears some resemblance to the DSL described in Release Management of ITIL, but its content and level of detail must be aligned with corporate requirements.

Knowing who has a specific software and where it resides is, however, only part of the required information for SAM. Software vendors offer a variety of licensing schemes and determining which one is the most appropriate is not easy. This is where monitoring how the software is used can contribute and help make better decisions later on.

Furthermore, usage monitoring helps the service desk to determine the appropriate number of support staff to be assigned and to validate that the purchased licensing scheme is appropriate. Indeed, the service Desk as defined by ITIL is the single point of contact for customers and for operational needs to resolve incidents. This means that the Service Desk is also aware of software that causes the most problems and which ones are most requested for installment.

Step 4: Reconcile needs and assets holdings

Software licensing compliance is important but it should not be the only goal of software asset management processes. It must also include cost control to ensure that the appropriate license scheme is selected and is aligned with corporate objectives such as growth, flexibility and security. This means that the appropriate combination of quantity, license scheme, is purchased and maintained throughout the fiscal year with the right number of support people.

If software licensing compliance were the only goal, the organization might keep buying more and more software in order to avoid paying penalties for potential breaches of contract. When the organization is clearly buying too much to avoid non-compliance problems, the organization is paying more than the optimal amount because it lacks the information to determine the appropriate amount. To avoid this, software usage must be monitored and compared to business needs. A snapshot of current software asset is

obtained through inventory management which can be conducted by monitoring the software used on a network and by performing scans on the network's computers to identify all software residing on individual computers (of course, additional procedures must be planned for computers which are not part of the scanned network). The list of software obtained through inventory management should be compared and matched to those in the asset repository. If a discrepancy is observed, corrective measures should be applied to reconcile the two views.

Aligning inventory management with the asset repository ensures that an organization knows what software it owns, but it does not tell about the adequacy of the licensing scheme, nor about the appropriate number of licenses required or even if the appropriate software is being used. For instance, business needs can be identified from corporate requirements and by analyzing what kind of calls the service desk receives for each software type. From this exercise, the company may need to make adjustments to its existing software portfolio.

Step 5: Asset portfolio tuning and optimizing

Once an organization has identified its assets portfolio, the question is what choices are to be made, and how to optimize and tune its Software Asset portfolio while complying with corporate policies. The decision for each individual software will usually be one of three major choices: keep the software (renew license), upgrade to a new version of the product or simply remove/retire the software and stop paying licensing costs.

Although there may be some variations, these three choices cover several cases. When a software is deemed satisfactory or if no alternative is found, this software is often kept and the licensing costs are renewed. If business needs or server requirements change, an upgrade is required and a new licensing scheme is usually necessary. Such upgrades occur following significant changes in requirements or business needs, and do not have to be with the same vendor. Finally, the software may no longer be needed and in order to stop paying, licensing fees must be retired. It is then particularly important to update the asset repository that, in turn, feeds financial management which pays incoming bills. This last item is often overlooked; when not properly managed organizations end up paying licensing fees for software they do not use anymore.

5- Summary and next steps

To better understand and identify what influences asset management processes and enable better software asset management, two related industry frameworks were investigated. By combining two such standards, ITIL[1] and IIMM[2], an integrated model was designed to include several enabling processes.

The next step includes validation of its content by experts who will verify completeness and relevance. Once this validation step is completed, it will then be tested in an industrial environment. This initial version of this asset management model is therefore subject to change and adjustments as more research is carried out and lessons are learned.

This model also addresses a need formulated by the industry and that is being worked on by ISO who is planning a Software Asset Management standard for 2006 [3].

References

- [1] (OGC), "IT Infrastructure Library (ITIL)," 2001.
(see <http://www.ogc.gov.uk/index.asp?id=2261> for details.)
- [2] (IPWEA), "International Infrastructure Management Manual," 2002.
(see <http://www.ipwea.org.au/> for details).
- [3] (ISO/IEC), "Software Asset Management", TC JTC1/SC SC7/WG 21 WD 19770-1, International Organization for Standardization - ISO (Geneva), www.jtc1-sc7.com, Date: 2003-05-13 N006 ."