As business units diverge from central governance and into their own governance silos, problems other than strategic misalignments and IT initiative explosions can occur. One such problem arises when independent business units create their own IT inventory and control process. Ultimately, as business unit silos solidify even more with such inventories, organizations as a whole become less able to react to changing marketplace dynamics. For example, imagine if the marketing department implemented a campaign management system with a UNIX/Oracle-based CRM system and the sales department implemented a lead-generation system with an NT/Sybase CRM system. Now if the company wanted to best sell products uniquely to different demographics, the campaign management system would be a critical tool. Integrating the less critical, but necessary for success, lead-generation system will take as long as replacing it with an extended campaign management system: six to nine months. If a central asset management process was in place, CRM project leads would have been aware of the existence of another CRM system that could have been leveraged. The
result would have been an integrated system that allows a shift in corporate strategy without the six-to-nine-month wait for IT to catch up.

Without a centralized purchasing process, business units could find themselves with duplicate assets. With a lack of communication between units, the company could also find itself with unnecessary costs, poor alignment, and decreasing morale [1]. Many times, the IT department will control the inventory of all IT assets in a company. Usually, however, assets are purchased without IT knowledge during the span of IT-based projects. Because an IT PMO is an organization that is in touch with the progress of such projects, it is well positioned to aid IT in controlling a company’s IT assets. With such a centralized asset inventory control, the IT PMO could support interproject communications and, thus, reduce the frequency of redundant system purchases.

### 6.1 Inventories

The first step in controlling such redundancy is to get a handle on the current inventory of IT assets. While stronger communications between disparate projects is a good selling point for centralized asset inventory, many times executives include two additional goals to make up the three core purposes of IT asset management.

1. **Financial.** To ensure an accurate balance sheet, upper management is first interested in understanding the total cost of ownership (TCO) of its IT assets.

2. **Operational.** Business units and IT are constantly looking for ways to improve the efficiency of the IT help desk. It can be a never-ending drag on productivity if IT is slow to respond to problems with business-critical IT systems. If a centralized IT asset management system was in place and monitored, the IT help desk would be able to respond more quickly to problems and solve them.

3. **Project support.** Here the PMO can ensure that not only does the asset procurement workflow follow guidelines, but that the
project portfolio reduces redundancy with training, licensing, and help desks.

6.1.1 Static Inventories

“... The baseline inventory of IT assets is the most expensive, most visible and, therefore, most intimidating step required to implement an asset management program” [2]. Such a project is visible because every employee that is assigned IT hardware or software will be involved. First, surveys are distributed and filled out by field employees. Then, the inventory team enters the surveys into a database. To verify the data, the inventory team needs to see the equipment listed in various inventories and log onto the equipment and inventory all software. Finally, the IT PMO can support ongoing inventory efforts by requiring all new project hardware to be “viewable” by some central inventory tracking system. Compiling surveys, reconciling different inventories, and configuring autotrackers will end up taking the most time [3].

If, for example, a company has telecommuters and traveling laptops to consider, “an inventory of 900 computers can take between 60 and 120 worker days” [2]. To eat such an elephant of a task, first “understand how people use their assets and leverage the resources within those groups to get the data in the form you need it.” You can start on the operational side by understanding how the help desk gathers inventory data to “distribute software more rapidly or provide technical support to resources more readily.” Or you can begin on the financial side by keeping track of all leased and purchased assets to provide accurate financial statement numbers (see Figure 6.1) [4]. If a methodical initial inventory is conducted, and dependable tracking processes are put in place, then long, future inventory durations can be eliminated.

6.1.2 Dynamic Inventories

Most companies understand the value of keeping an updated inventory. Finance can get real-time IT valuation figures, IT operations can manage efficient help desks, IT PMOs can leverage assets across projects, EIA teams can ensure architecture alignment, and the legal department can enforce lease and license compliance. So to ensure such an
inventory exists, IT departments launch expensive inventory initiatives. However, what many of these initiatives fail to consider is that while this inventory is underway, new assets continue to come in and supply ongoing projects. Even worse, while their inventory project is underway, distributed business units will continue purchasing assets to support their own technical initiatives [4]. More times than not, these purchases are nothing more than unrecorded ad hoc purchases written off as project expenses. Basing corporatewide inventory projects on such a chaotic, distributed environment can first lead to inaccurate data and, second, cause an endless cycle of yearly inventory projects. Therefore, before an inventory can take place, the organization needs to gain control of these silo-like processes. “You have to track assets every time they move and capture every hardware or software change” [2]. Gaining such control is the first step in creating an asset management system.

After gaining control of the distributed IT asset purchasing processes, the asset inventory team can start meeting the goals of a consolidated inventory project. They can learn:

- What assets exist in each division;
- What their costs were;
- How they are used;
- Why they were purchased (see Figure 6.2).
6.1.2.1 Project Inventories

Many times, an IT-based project will accumulate more hardware and software than is necessary for a successful production rollout. Some projects resolve the problem of excessive hardware by converting it to production use; others use lease arrangements; still others just give it to operations for future product upgrade development. However, it’s the hardware and software licenses that go unused that creates the biggest missed opportunities for the project portfolio. For example, the normal course of events for a software project is to first create a development environment, then a Q/A environment, followed by a production environment. In larger, more methodology-strict projects, integration and training environments may also be created. All of these environments can mean a lot of money spent on hardware, software, and networking. A central inventory needs to include such assets when conducting asset inventory initiatives. If such nonproduction environments aren’t tracked, then they can fall into the black hole of untracked IT assets.

What happens to all these assets when a project is deemed completed or cancelled? If 30 personal computers are made available from the training and Q/A staff of a completed, enterprisewide project, will the personal computers go to another project in need or will they be used to upgrade a business unit’s desktops? If a 20-server NT system is made available from a cancelled project, will the central architecture
team be notified before signing a long-term lease agreement with a UNIX vendor? In the first case, IT is losing departmental valuation opportunities, and, in the second case, the corporate architecture team is marching forward as a loose cost-center cannon. To prevent such lost valuation and EAM chaos, the less visible management of assets needs to be kept strong. And the best way to manage such a process between siloed business units is through an IT PMO. By reconciling new asset purchase orders that are submitted by projects with what IT spits out from their autotrackers, the IT PMO will be able to provide a much clearer, cross-business unit picture of all IT assets. Establishing a central inventory is one thing, but managing the dynamic inventory is another task that requires due diligence.

6.2 Enterprise Asset Management

Not only can assets get abandoned upon project completion or cancellation, but assets can get purchased that don’t align with the corporate architecture. Economists refer to the assets that result from the combination of these scenarios as stranded assets. Such assets both fail to contribute (they were abandoned) and fail to easily convert (they were unaligned). Chapter 5 shows through the creation and maintenance of an EIA team that new asset purchases can be screened before commitments are made. Such centralized screening allows the EIA team to recommend abandoned asset conversions over new purchases. It also helps the EIA team ensure that assets continue to contribute in the face of project cancellations. For example, with more than one inventory system, too many personal computers can end up being purchased, duplicate licenses can be acquired, and old systems can end up collecting dust [4]. Multiple inventory systems can also prevent efficient policing of vendor leases and maintenance commitments to signed contracts. All of this ultimately can lead to a major loss of cost control. Regaining this control is an ideal opportunity for a central, independent group that has close ties to the creation and maintenance of the EIA.

While the organization is gaining control of its asset costs, it also needs to become aware of the dependencies between its enterprise architecture, its consolidated asset inventory, and any other asset
procurement and control processes. Figure 6.3 shows how the asset inventory is molded by both the EA (ideal) and siloed business units (nonideal) as well as how the EIA is restricted by existing assets and by decisions made by out-of-touch business units. So, to increase the freedom of the EIA team to influence the flexibility of the EIA-to-market dynamics (3), restrictions need to be reduced (2). And by reducing the authority of business units through a centralized asset management system, an organization can help eliminate those restrictions. (An animated version of Figure 6.3 appears in the AARK Management PowerPoint presentation in the accompanying CD-ROM.)

Figure 6.3 Effects of distributed and consolidated asset inventories on the enterprise architecture.
A consolidated inventory system allows for improved EIA control and flexibility by reducing the imposed restrictions and the influences of distributed inventories. As Chapter 4 showed, EIA flexibility ensures EBA flexibility and, in turn, strategic flexibility. This IT flexibility chain not only allows the company to more quickly adapt to market changes, it also supports the operational and financial goals of the various business units (see Appendix 6A for an example). While an IT PMO can prove it achieved these goals through before and after snapshots, how can it show real reductions in cost?

There are two ways an asset management team can prove that its efforts add monetary value to the company: by realizing stranded assets (short term) and by increasing asset reuse (long term) (see Figure 6.4). With stranded assets tracked, more accurate balance sheet numbers can be calculated. The asset management team needs to make sure that snapshots of before and after values are made to best illustrate its impact on the bottom line. Long-term asset management return can be attempted by converting stranded assets to reduce future and ongoing project costs. This cost savings will only be realized in the long term,

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**Figure 6.4** Long-term and short-term benefits of a consolidated IT asset inventory.
after the architecture team has been given access to a well-maintained asset inventory system.

However, such long-term benefits, though attractive and possible, can be elusive. “It is hard to share assets across projects because of the way work is budgeted and people are rewarded” [5]. For example, assets are difficult to reuse with COTS software environments due to support agreements. That is, vendors of COTS products will drop support for an installation if an unapproved third-party software is installed on the COTS servers. Also, the ability to reuse assets varies widely among business units in the same company. For example, defense contractors may be unable to use the same hardware on different projects because project timelines don’t allow for revalidation of security. As another example, shrink-wrap software houses may find that the reuse of a common class library across products increases productivity (i.e., there are no security concerns). With an almost fanatical focus on time to market, these types of companies sometimes specifically design or purchase software and hardware for their reusability. A good general rule when going down this path is the three-strikes rule: don’t develop or purchase an asset to be reusable unless three or more projects in the company agree to use it within a specified time period [5].

6.2.1 Financial Asset Management

Financial departments are always interested in ways to improve the IT valuation information they get. Many times their zealouslyness causes IT to conduct reactionary IT asset inventory projects. But without an understanding of all aspects of asset lifecycles and without an existing asset management system, any valuation numbers that result from such inventories will be inaccurate.

There are several phases to the lifecycle of an IT asset. Before any asset can even be requested it should go through an EIA assessment. The tasks for such an assessment include [6]:

- Is the asset already in the enterprise’s inventory?
- Is the request for a standard product listed in the enterprise’s approved product catalog?
- Is the asset compatible with your environment?
Do you need to review the pricing and negotiate with the vendor?

Should the asset be added to the standard catalog?

Many times, because IT capital needs to be acquired quickly, such reviews can tend to just add bureaucratic slow downs to a project with tight deadlines. Here, an IT PMO can ensure rapid review by applying risk levels rather than outright rejections to an asset request. Then, as this process is proven to be speedy, the IT PMO can be given some teeth to reject only the most ludicrous of requests.

Once an asset passes such a review, it enters a life cycle of tasks that are traditionally managed by the PM and IT operations:

- Requisition—request for an asset by the PM;
- Approval—approval by the project sponsor and notification to IT support;
- Procurement—purchase order sent to vendor and notification to IT support;
- Receipt—shipment received and turned over to IT support;
- Deployment—installed by IT support and tested by the project team;
- Tracking—viewable by autotracking tools, status sent to asset management;
- Disposal—shut-down status sent to asset management.

But many IT departments lose control of their IT inventories because they don’t get wind of new assets until the last three steps. An asset management system that resolves this chaos must “not only track hardware and software assets, but must also manage software licenses, equipment contracts and leases, and networks from cradle to grave” [4]. Otherwise, independent business unit purchases will force a never-ending cycle of costly reinventory projects.

6.2.1.1 Autotracking Tools

Many software tools on the market can drastically ease the gathering and tracking of an organization’s IT asset inventory. Such tools can link
into internal financial software for purchase order generation, external vendors for license reconciliation, operations for asset health alerts, and the PMO for interproject communications. They can also track the status of an asset anywhere in its workflow through natural integration points with other departments. For example, such a tool can print expenditure reports, interface with accounting, link with facilities support software, and even track vendor compliance with lease and licensing terms. With such a tool, a more aware IT help desk will be quicker in providing solutions to problems.

While the cost of setting up an asset management system can be high and therefore difficult to sell, the long-term costs of an asset management system can be easier to sell. For starters, ongoing asset management of up to 10,000 assets, including about 1,000 personal computers and several workstations, can require the equivalent of one-and-a-half full-time employees with about another nine people using the asset management tool off and on. In addition, annual reconciliation inventories can end up costing up to $30 per personal computer [3]. When combining such personnel costs with the costs of installation and maintenance of the asset management tool, the asset management team needs to provide ROI numbers as soon as possible.

Reconciliation inventories are those that compare a random sampling of field assets to those that are recorded in the asset management database. As these smaller inventory endeavors show more and more errors between actual and recorded numbers, a full-scale, item-by-item inventory becomes more necessary. With a solid inventory management system supported by a robust autotracking tool, however, such reconciliation errors will increase at a slower pace over time. With real-time asset valuation reports, the asset management team can show that running a complete inventory can be a lot more costly than maintaining ongoing measurements [7]. As well as continually monitoring the autotracking software over the network, the asset management team will need to update the system as computers are installed or moved, as software is updated, as hardware is added or replaced, and as users are connected to the network [2]. With the rigid asset workflow process that an automation tool provides, the asset management team should be able to
show before and after snapshots that prove reduced stranded costs and increased balance sheet accuracy.

Before such tools can be effective, the asset management team needs to gather support—not just for the initial financial cost, but also for the continued organizational costs. As a company shifts between siloed and centralized forms of governance, asset management, like the IT PMO organization, must shift its strategy to best maintain effectiveness. “IT asset management is an iterative process that needs to be reevaluated as business objectives evolve” [6]. Quicker help desk response via autotracking tools, supported by effective reconciliation inventory teams, will establish a flexible asset management foundation. Then, by showing ongoing financial ROI and organizational flexibility, support for the asset management wing of the IT PMO continues regardless of the governance shifts.

6.2.1.2 Centralization

Centralized monitoring of business unit (or project) asset purchases not only reduces the need for full inventory projects, it also supports tighter cost controls for projects. For example, budgets for assets “tend to be approved at the project, not enterprise, level. That’s why they are expensed rather than depreciated” [5]. A central asset management team would allow for software purchases for these environments to be capitalized and for hardware purchases to follow Internal Revenue Service–mandated depreciation models (e.g., five years for computers and three for printers using the straight-line method under the assumption of no salvage value) [5]. With a PMO in place, projects will benefit from a clearer understanding of the corporation’s accounting standards so that new equipment purchases don’t end up being an unnecessary drain on project budgets. This could “free up millions of dollars in firms that do their licensing on a project-by-project basis” [5]. Other benefits of changing to a centralized asset management system include:

- Vendors would be more responsive because you became a larger client.
- You could simplify procurement by negotiating some form of centralized ordering.
You could ask your legal department to negotiate improved license terms and conditions.

Centralized management of project-level asset purchases provides particularly noticeable legal support. While the IT PMO asset managers focus on how to purchase and leverage licenses, the legal department can focus on improving license contracts and vendors’ accountability to those licenses. The legal wing will also be able to more clearly prevent vendors from dictating unneeded upgrades and new technologies. They’ll be able to monitor for pirated software and be able to ensure vendor compliance to maintenance caps and renewal dates [4]. This added clarity of the asset inventory will allow the legal department to become a cost-reducing member of the extended virtual IT PMO.

6.2.1.3 TCO

Who controls the costs of services for and the value of the IT asset inventory? Most of the time, business units will own the IT assets they acquire to support their IT projects. The IT department will then provide support for those assets on a time and material cost basis. That is, the IT department will charge the various business units for support of their installed IT assets. This may handle the cost of services, but how would a company value the accumulation of IT assets in the company? Sometimes the IT department is asked to value the entire corporate IT asset inventory, and other times the business units just include the cost of new IT assets in independent profit and expense statements. The IT PMO can support the IT department in the former scenario and the business units in the latter scenario. With the awareness of the state of every project in the portfolio, the IT PMO’s asset management team provides an additional view into what assets have become abandoned and which assets are about to be acquired.

Once the inventory is developed and managed, how can the asset management team attach a cost value to it? A common way to get cost numbers on IT assets is by implementing a TCO formula. Keep in mind that this is not a valuation approach because it doesn’t include revenue figures in its calculation. The lack of revenue in determining TCO is one of the reasons many don’t use it as a valuation tool [8]. Nonetheless,
TCO can be based on the narrower, technology-based sticker price of hardware and software, or it can be based on the broader people-based definition [7]. When determining the costs of IT assets based on this latter definition, more factors need to be included. These can include “the direct costs of user support, hardware maintenance, software updates, training, lost productivity while users try to fix a problem, security, downtime, [and] administrative costs” [7]. The Gartner Group’s TCO model tends to be the standard definition many follow. This model takes the elements described here and categorizes them into four quadrants: capital costs, administrative costs, technical support, and end-user operations. The accounting numbers provided by splitting the costs of the IT asset inventory into such categories will allow IT and finance to better manage how assets are distributed.

This model provides just a framework on which a company can base its own customized TCO definition. For example, different companies allow for different levels of complexity on their desktops. The more freedom given to end users to configure their personal computers, the more costly the support requirements. So, a TCO model must, in turn, put more weight on support variables when end users have greater control over the content of their personal computers [7]. Also, to communicate the subjectivity of these measurements more clearly, probability distributions can be used. Probability distributions are used in statistics to show the probability that a value is between two other values (i.e., as illustrated in a bell curve). “Companies can then calculate confidence intervals for TCO numbers, which basically pair a range of numbers with a confidence rating” [8]. For example, a company could be 99% confident that its server TCO is between $10,000 and $20,000 and 89% confident that the TCO is between $12,000 and $18,000 [8]. Complete inclusion of such soft costs in TCO measurements can be rather subjective. Because these subjective costs are difficult to measure and can add up quickly [4], there needs to be a way to communicate them effectively within each company.

Dependable TCO numbers rely just as heavily on accurate autotracking tool results as they do on the people who verify these results. This is another reason why many don’t agree that TCO is a good
valuation approach. While many IT departments use tools to proactively ping for existing hardware and software assets, these assets won’t be seen if the IT help desk isn’t notified of their installation. For example, a misconfigured switch is all that would be needed to hide a project’s entire development lab. But, with an IT PMO aware of which assets will be purchased throughout the life cycle of every project, the IT help desk will have one more level of insurance that some IT asset won’t pop up for support unannounced. “Three-quarters of a typical business’s desktop TCO results from management issues [e.g., integrating into help desk support] rather than technology problems [e.g., hard disk failure]. It’s about the management of people [e.g., help desk training] as much as it’s about the management of IT” [7].

6.2.2 Operational Asset Management

By keeping the IT asset inventory current, an asset management group essentially reduces the restrictions on the EIA group. If the EIA needs to shift to some new corporate strategy, a well-managed IT asset inventory will allow for more flexibility. This link of asset data to organizational, strategic, and technical changes improves the quality and agility of the IT operations staff. To give IT operations a real boost, however, real-time asset data needs to also be linked to IT problem management (e.g., service level, service request, and disaster recovery) [4, 9].

As with TCO initiatives, tools exist to help IT operations streamline their problem management duties. The most common are the autodiscovery tools such as Hewlett-Packard’s HP OpenView and Microsoft’s Systems Management Server. As explained earlier, because such automatic inventory tools can be unreliable, they need to be complemented with continual field audits and workflow processes dictated by an IT project PMO [3].

Such asset awareness can lead to quicker help desk call resolutions, which is a continual cost reduction focus of IT management. More advanced systems integrate the asset base with other systems, such as human resources. For example, by typing in an employee’s name or identification code, a help desk employee can see a profile of all equipment and training that an employee has. This “reduces call time because help desk staffers don’t have to ask as many questions” [4].
Other advanced asset management systems can include electronic software distribution and automated backups. Such control of desktop configurations just adds to the benefits of asset management for IT operations.

### 6.3 Organizational Support

According to Carl Wilson, CIO of Bethesda, Maryland–based Marriott International, “We’ve been actively involved in asset management now for almost two years, and one of the biggest lessons we’ve learned is that support from senior management to implement and monitor the program is a must. For us, it’s been a top-down directive to proceed with asset management; without that, we wouldn’t be as successful as we are” [4]. That is, the process can only be enforced if it is supported by all levels of management. And to get support, “Early, clear and complete communication with managers and end users is crucial” [2]. To ensure complete organizational support for the new centralized approach, the inventory team needs to first understand and control duplicate asset procurement and management processes and then be aware of any other software and hardware surveys that other business units may be undertaking. Once this is done, a moving inventory can begin that logs incoming assets while it is tracking existing assets.

### 6.4 Summary

As business units become more autonomous, they also tend to develop their own asset management procedures. These individual IT asset inventories, supported by custom IT architectures, can make a company less flexible to market changes. Centralized IT asset management, via an IT PMO, allows a company greater contract negotiation power over IT vendors. Figure 6.5 shows how the IT PMO fits into such a centralized IT asset management system.

1. *Architecture alignment.* As initiative ideas form and business cases get reviewed, the asset management team of the IT PMO
leverages the EIA committee for support. The EIA committee will analyze architectures and the supporting asset proposals for risks and deliver their findings to the initiative proposer.

2. *Rapid asset change notification.* An inventory that is connected to an asset autotracker and that is verified by a field inventory team will allow the IT help desk to respond to requests quickly. The asset management team has the opportunity to ensure that the help desk is promptly notified of any changes to the asset landscape anywhere in the project portfolio pipeline.

3. *Contract centralization.* As business cases are approved and asset purchases begin, the legal department can play a key role. By keeping a clear communication pipeline between individual projects and the legal team, the asset management team allows for a consistent vendor-relationship plan. Furthermore, redundant purchases and varying contract terms can be reduced.
4. **Stranded assets.** While the IT department will continue to be responsible for overall valuation of the IT asset inventory, the asset management team needs to validate their results. Too often an inventory initiative will overlook nonproduction IT assets. This leads to stranded assets that could have been used by future projects to cut costs.

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Establishing a good asset tracking system is just one step in effectively managing IT assets across the portfolio of IT projects. Many times, after conducting an initial hand audit, IT help desks will be provided a list of assets to monitor. According to Atwell Williams, director of Enterprise Service Management at BMC Software, “We’d gotten really good at managing and monitoring our infrastructure” [10]. However, as Williams became more familiar with the workings of the other business units, he found that certain parts of the business architecture were more vital to the success of the company than were other parts. For example, he found out that if a currency conversion system became unavailable during a deal, the company could lose tens of millions of dollars.

From these types of lessons, Williams realized that while the asset tracking system was strategically aligned with the goals of the company, it wasn’t tactically aligned with the substrategies (or macrotactics) of the various business units. To resolve this, he simply created a prioritization of assets to be monitored. Similar to levels of customer support, this new system would involve higher levels of escalation in shorter amounts of time for problems with those systems deemed critical.

As initiatives get funneled through the IT PMO approval process, an architecture review committee needs to work with the business case writer to understand where in the priority list the project’s assets will need to fall. Sure, most project sponsors will try to place their assets at the top of the list. However, by putting new initiatives in the perspective of other project’s assets and other in-place system assets, the architects will be better able to negotiate a reasonable monitoring priority for any particular asset.