Software Management

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ABSTRACT
Software management problems? In this session presenters will discuss and demonstrate how Pima Community College (PCC) reigned in control of the software on 5,550 desktop and portable computers located over six campuses, two district offices, and nine center locations.

To combat the lack of software standards and perceived legality issues, PCC developed a software plan with input from faculty, staff, and administrators. Prior to implementation of this plan, all users could purchase, download, or share software at will. During this session you will learn how PCC developed the plan and overcame many obstacles including: support issues, auditing and verification, compatibility, user adoption, license agreements, and plan enforcement. In addition, you will learn about IT staff certification and training.

Since implementation PCC has enjoyed many benefits including; bulk or volume purchasing, up to date software, college-wide site license agreements, improved standards, reduced need for helpdesk support, consistency between locations, higher user awareness, and increased IT staff credibility.

Categories and Subject Descriptors
K.6.3 [Management of Computing and Information Systems]: Software Management - *Software Maintenance, Software Process*.

General Terms: Management, Security, Standardization, Documentation, Legal Aspects.

Keywords: Software management, training, principles, audit, licenses, computers, administrative support, communication

1. BACKGROUND
Pima Community College is one of the largest community colleges in the United States boasting six main campuses, multiple learning centers, and two administrative sites. There are nearly 400 full-time instructional and educational support faculty, more than 1,000 adjunct faculty, nearly 1,100 regular employees, and roughly 80,000 students. Each campus has an IT department that reports in a dotted line to the Assistant Vice Chancellor for Information Technology, with a supervisor and several technicians. District IT includes development, technical, network, and client services. The computing environment includes about 5,500 desktop and notebook computers, of which 250 are Macintosh systems, and 250 servers, running either Windows or UNIX.

Managing software in an environment of such size requires a comprehensive plan and support or directive from the top. Ideally the best way to develop a plan that would encourage buy-in from all segments of the college would be to include members from each affected area. The development phase included faculty, all of the campus IT supervisors, representatives from the department of business services, procurement, human resources, and was chaired by the manager of Client Services.

Prior to implementing our Software Management Plan, the college's management of software licenses was not organized to its full potential and it became clear that changes were necessary.

Some of the inefficient processes we discovered included:

- IT departments at different locations were handling software license and media management differently
- Purchasers and receivers did not necessarily include IT on software purchases
- Employees could purchase software without approval of the IT department
- Computers were not locked down to prevent software installation by employees
- We lacked a formal training plan and a formal set of guidelines for employees

2. RESEARCH
Our research directed us to the two primary organizations responsible for protecting the rights and interests of software industry. They are the Business Software Alliance (BSA) and the Software and Information Industry Association (SIIA). They establish the rules for software management and copyright. The BSA focuses on educating the public. The SIIA promotes common interests of the software and digital content industries. Both serve to protect intellectual property and educate everyone regarding trends, technologies and policies affecting the industry.

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2.1 Professional Guides

2.1.1 Business Software Alliance

The Business Software Alliance (BSA) outlines a four step process in their Software Management document. This process involves:

1. Develop policies and procedures
    a. Centralize purchases
    b. Require that all software purchases be in writing with manager approval
    c. Buy only from reputable dealers
    d. Don't permit employees to buy software directly
2. Audit your software
    a. Are the most recent versions being used?
    b. Can older software be removed?
    c. Are there illegal, unauthorized, or unlicensed programs in use?
    d. Inventory software media, manuals, documentation, and licenses
3. Determine what's legal or illegal
    a. Compare installed software with licenses
    b. Remove illegal software or purchase required licenses
    c. Create a formal list of approved software for employees
4. Establish a routine audit
    a. Conduct regular audits of all systems (annually is suggested)
    b. Do occasional spot-checks of systems

2.2.2 Software and Information Industry Association

The Software and Information Industry Association (SIIA) outlines several guidelines in their documentation, including:

- Create a software policy for employees
- Provide training for employees
- Design appropriate budgeting for software license quantities required
- Ensure that all software purchases are approved by IT
- Do not allow software purchases through corporate credit cards, petty cash, or travel/entertainment funds
- Ensure that IT registers software
- Ensure that only IT can install software
- Store software licenses and media in a safe, secure environment

2.3 What Do Other Institutions Do?

In addition to examining local higher education institutions, a small group did a benchmarking trip to Dallas, TX, to talk with our peers at the Dallas County Community College District. Although DCCCD is a multi-college system, while we are a multi-campus system, some of the unique challenges they faced were similar to our own. Some of the things we learned were:

- Audits were conducted twice a year.
- The decentralized nature of their system required that academic software audits be conducted per location, but with results sent to the central office.
- Administrative software audits were conducted by the central office.
- One location used a "software vault" that required software to be signed out by technical staff prior to installation.

2.4 How Can We Best Support A Plan?

Many of the practices that were in use at Pima had been "entrenched" for quite some time. We knew changes to our system were important, but we also accepted that it would be difficult to change and maintain the established college culture.

Administrative support was identified as a key factor. To ensure success, any proposed change required endorsement from the administration. How would we receive such backing?

The obvious answer was to provide the appropriate data, which fully supported making changes. This included discussing our current practices, the legal ramifications of non-compliance, the results of our research of licensing requirements and the experience of other institutions, and a general recommendation on our next steps.

3. PLAN DEVELOPMENT

3.1 Fundamentals

Those next steps included establishing the fundamental parameters that would drive the plan. The criteria were developed based upon these principles:

- Auditing organizations define the rules
- Pima Community College is one College, all processes apply to everyone
- Federal and State laws govern copyright and licensing
- Computers are property of the College, all software must be College owned
- We are ONE college, one legal entity

Those principles became the foundations that led to the development of procedures and guidelines for software purchases, software and media management, and an employee education plan. We initiated a college-wide self-audit with the intention of scheduling periodic audits on all computer systems.

3.2 Formal Training

In order to fully understand the complexities and responsibilities of developing and implementing sophisticated software asset management, we needed formal training. We scheduled a seminar with LicenseLogic LLC, the only company authorized by the Software and Information Industry Association (SIIA) to offer the Certified Software Manager (CSM) certification. The components of the seminar include the ability to:

- Identify the components of an effective plan
- Understand the aspects of buying software
- Understand complex software licensing agreements
- Eliminate the liability of copyright infringement
- Negotiate favorable software license agreements
- Launch a self-audit
- Earn the CSM title

The IT manager, several IT supervisors, and a campus director of administrative services attended the first of what would become standard training for those primarily involved with installing software. Those who attended the one-day seminar were also required to pass a stringent exam on the information presented during the seminar to earn the certification of the Certified Software Manager. Results of the training gave the IT staff the credibility and authority to enforce the processes developed to guarantee that we became and remained compliant with all licensing agreements.

3.3 Produce Initial Plan

3.3.1 Definitions

Based on the classification of the software we developed software definitions and procedures for the acquisition, installation, management and maintenance of software. Definitions for Commercial, Shareware, Freeware, and Public Domain were courtesy of the Software Publishers Association. Definitions for others such as open source, textbook, Internet downloads, internally developed, student developed, contract work, and discontinued software were characterized by the committee.

3.3.2 Software Manager

A key component of the plan was to designate a software manager for each major campus, whose responsibilities included purchasing review and approval and maintaining a software library. The libraries contain all media, license and registration materials. The software manager became responsible to ensure that software is installed per each license agreement and logs information on the installation of all applications.

3.3.3 Computer Use Statement

A computer software use statement was created, based on college policies in the student handbook and employee personnel policy statement. The information in the statement was used to support the acceptable use agreement that all faculty, staff, administrators, and temporary workers must sign prior to network or email account activation.

3.3.4 Establish Criteria

Criteria were established about site or volume licensing, software agreements, and desktop management. The only way to assure strict adherence to the ethical use and management of software was to remove administrative rights to the desktop, which limits the rights to only those proven the need to be a local administrator (i.e. IT). We standardized the basic computer image and identified the tools to lock down systems, such as DeepFreeze and Group Policy.

3.3.5 Auditing Tools

We needed an all-inclusive inventory, a tool to determine the totality of our hardware and software assets. It was essential to know and understand our liability as it relates to license compliance. Three tools were selected to help us collect information: Microsoft SMS, EZ-Audit, and Track-It!

3.4 Plan Communication

Once we had what we considered a comprehensive plan, it was presented to the Assistant Vice Chancellor for Information Technology (now the Vice Chancellor). Upon her approval, we presented our plan to administrators and directors from the areas of Finance, IT, Administrative Services and Facilities. With their acceptances, we had the green light to move the plan from conceptualization into realization.

4. TRAINING

4.1 Information Technology Staff

We looked for tools to guarantee that our IT staff completely and willingly understood issues surrounding the ethical use of software. All IT staff who install software have been required to become Certified Software Managers. Recently, we have encouraged the Advanced Software Manager certification for those in IT leadership positions. It was much easier to get support and acceptance once they fully understand their responsibilities relating to proper software management.

4.2 Tools

One of the more effective tools to understanding the seriousness of proper software management is a video entitled “It Could Have Been So Easy” that was first introduced to us during the CSM class. It has become an integral part of our employee training.

4.3 Site Visits

Armed with the knowledge and support from top level administrators, we were prepared to educate faculty, staff, and administrators across the district. Once the plan was approved, we scheduled visits with all departments, required attendees to sign-in, and informed them about the new processes. Since then, the software management plan has been incorporated into all new employee orientations, department chair retreats and new faculty workshops.

5. PLAN IMPLEMENTATION

5.1 Address Storage and Security Needs

Storage space was set aside at each location specifically for software. This space needed to be a) located in IT and b) secure. Most often this space simply consisted of locked filing cabinets, with sufficient room for licenses, documentation, and media, as well as a process for documenting installations.

5.2 Train/Instruct IT Staff

In addition to bringing technical staff up to speed on the new procedures, key personnel at each location attended Certified Software Manager training to become certified. Those key personnel included some of the campus It supervisors, the Client Services IT manager, and a director of Administrative Services.

5.2 Communicate New Guidelines to Buyers and Receivers

The decentralized nature of the college required a two-pronged communication approach, since our campus buyers and receivers reported locally to each campus and not to the central office.

We approached the central procurement and receiving departments first, sharing the plan with them, inviting comments and questions, and ultimately gaining their acceptance of the new plan and processes. Then we approached the buyers and receivers at each location, communicating the same information and while this approach meant more legwork, it improved the chances of a successful implementation. In hindsight, the separate approaches were more efficient and helpful as each group had different questions, concerns, and perspectives to be addressed.

5.4 Present Plan to Each Location

Presentations were prepared for the cabinets at each location. The purpose was to appraise administrators of the plan, answer any questions, and ultimately gain their support.

The software video, "It Could Have Been So Easy" was also included in the presentation to demonstrate the liabilities companies face by not following proper software license compliance.

6. CHALLENGES

6.1 Textbook Software

The actual process is now being structured with procedures for alerting the IT department at the point of the textbook order. Typically, the faculty member that orders a textbook with accompanying software and wants to use the software in the classroom, lab, or the instructor' computer station, notifies IT of the need as well as provides the licensing information from the publisher of the text, with specific instructions on how many computers it can be installed, if it was not already given at the time of the textbook purchase.

When the IT Department is notified it becomes the department's responsibility to get the information about the duration of the text and use of the software. This helps to determine how to maintain the software.

6.2 Continuous Training

Every IT technician, Specialist, and Supervisor is certified as a Certified Software Manager or Advance Certified Software Manager. Certifications are good for two years and updated at expiration. Each technician is trained to use the Software Management Database and instructed on the process for receipt and installation.

6.3 Location Specific Licensing

We have site licenses for the widely used Microsoft Products, operating systems, and design software. We also have a contractual licensing program for the popular multimedia products, such as Adobe and Macromedia. Some specific licensing became campus/course dependent; therefore, reducing the effort to meet licensing requirements.

6.4 Changes to Auditing Framework

With no electronic auditing process previously established, research began on products and/or services that would meet the requirement for auditing computers at an enterprise level and integrate the reporting with the SQL software database already in place. Once in place, a comparison was completed for a self-audit to determine alignment of installed software versus purchase orders or hard copy licenses.

6.5 Addressing Different Software Types

Software is divided into several categories for licensing that include the various types of software used in an educational environment. These types range from single user license purchases, site licenses, and volume purchases to freeware, shareware, downloadable products. For each of the types of software, a license statement is required in the database.

6.6 Delegated Software License Management Responsibilities

Distributed processing for some labs requires a process that allows the software to be kept in the lab. In these instances a contract is signed by the Dean of the department and IT approval on the separate responsibilities for installing, tracking, and licensing the software.

7. CONCLUSIONS

7.1 Discoveries

7.1.1 Importance of Training

The training that the IT technical staff received regarding software management helped them understand the consequences of unethical or illegal installations of software. It gave them the tools to respond to those types of requests and enabled them to educate the end-user.

Administrators and supervisors took on a much more responsive and supportive role, no longer tolerating or ignoring the illegal use of software. When the leadership of the college clearly understood the liabilities to the institution and their own personal liability, they began to recognize the importance of properly licensed applications.

7.1.2 Software Savings

The thorough audit of software allowed us to determine where to focus our purchasing. We have been able to standardize on applications in both the academic and administrative arenas. We have engaged in more site licensing agreements, required maintenance on most software purchases, and encouraged discussion between and among campuses and various departments prior to any major purchase.

7.2 Next Directions

7.2.1 Use of a database with barcodes to track software

Currently, the Downtown Campus software library is designed with a barcode system initially configured to just cross-reference the physical location of software in the library to the electronic location in the database.

As far as we have progressed in the design of the barcode function, we felt it would be more efficient if the barcode system was designed as an electronic check out/in log. This would allow coordination with an assigned work order created in Track-IT!, providing a system trail in the event an installation or licensing issue arises.

7.2.2 Self-audit interface with college work order inventory system

Recent updates to the enterprise wide work order inventory system provided a more robust method of reporting installed software, to include software titles, program names, publisher and versions. Using this report as a guideline we can compare the results from this report to our local SQL software database.

REFERENCES

[1] Ayer, Adam. LicenseLogic LLC, www.LicenseLogic.com, adam@licenselogic.com

[2] BSA (The Business Software Alliance), 1150 18th Street NW Suite 700, Washington, DC 20036, 202-872-5500 (voice), 202-872-5501 (fax), 1-800-688-2721 (piracy hotline), E-mail: piracy@bsa.org, www.bsa.org

[3] E-Z Audit ©, AT Consulting LLC., P.O. Box 8176, Stamford, CT 06905-0176. http://ezaudit.com

[4] Pima Community College Personnel Policy Statement for College Employees, 2002/2003, P16, Use of College Resources (L3), Computer and Electronic Systems and Services, Users are responsible to (a) adhere to departmental, College, and service/software providers' acceptable use policies and procedures; (e) respect copyright and intellectual property rights as well as license agreements and contracts.

[5] Policy References: Student Handbook, 2002/2003, P21, Student Code of Conduct Violations, #9, Violation of copyright laws as they apply to print, audio/video, and computer software.

[6] SIIA (Software Information Industry Association, formerly SPA), 1730 M Street NW, Suite 700, Washington, DC 20036-4510, 800-388-7478 (voice), 202-223-8756 (fax), E-mail: piracy@spa.org, http://www.siia.net

[7] SIIA Resource eStore, "It Could Have Been So Easy", (1997). 1090 Vermont Ave, NW Sixth Floor Washington, DC 20005-4095 +1.202.289.7442 Fax +1.202.289.7097 http://www.siia.net/estore.

[8] Software Publishers Association (7.1 ed). March 2000. Software & Information Industry Association

[9] Track-It!, Numara Software Inc.™, http://www.numarasoftware.com