Method and System for Integrated Asset Management

This non-provisional application claims priority based upon prior U.S. Provisional Patent Application Serial No. 60/342,031 filed December 18, 2001 in the names of Shawn Thomas, Gregory Gray, Michael Woodfin, Warner Mizell and Brian Thomas, entitled "Method and System for Deploying, Tracking and Managing Technology-Related Resources."

BACKGROUND

The present invention relates generally to a method and system for integrated asset management. More particularly, the present invention provides a means for aggregating information into a centralized computerized database and using that information to schedule and complete asset transition events. In addition, information from the asset transition event is added to the centralized computerized database to maintain an up to date aggregation of information regarding the asset. Thereafter, changes to the asset are monitored on an ongoing basis and information regarding changes thereto are incorporated into the centralized computerized database. As a result, information is available in the centralized computerized database by which future asset transition events can be managed.

Computer-related technology is advancing at a remarkable rate. New technologies are being introduced daily that add new functionality or features to pre-existing technology. As these new technologies are introduced, the prices of devices that incorporate those technologies drop. As prices drop, more and more users are upgrading systems and adding new devices. Consequently, sales of computer-related devices is currently at an all-time high.

This trend most heavily impacts corporations with large investments in computer-related assets. Often times,

a large corporation is unable to manage its computer-related asset inventory. In most cases, there is no centralized system for monitoring and maintaining an up to date database containing all of the information necessary to make sound decisions. Companies typically have a mix of outdated equipment, relatively current equipment and state of the art equipment in their facilities. However, there is no good way to effectively track, monitor and report on all of the equipment at any one time.

In most cases, a physical inventory is taken to determine what assets the company has in inventory and the current status of those assets. Typically, a computer technician would access the existing asset and make either handwritten notes of the user's setting and preferences or input the information into a computer and save it to a diskette. This process is expensive and time consuming and yields a static result in which the data becomes stale as soon as the asset returns to service.

Effective asset management using existing methods is further limited because the information that is collected is not collected in such a manner that it is can be compiled, managed and updated in the future. Under existing methods, once the computer technician re-installs the information on a new machine, he destroys any records that he may have kept relating, for example, to the specific versions of software installed, the serial number of the computer on which it was installed or the date of installation and, if the information is saved, it is usually not accessible in an organized, easily-accessible manner. Consequently, when the new machine is ready to be upgraded, relocated or decommissioned, the computer technician must start anew to gather information about it and the user's settings and preferences.

There is a need, therefore, for an improved method and system for integrated asset management.

SUMMARY

The present invention addresses the need for an improved method and system for integrated asset management. The present invention provides a method for asset management in which information concerning the asset and the user are aggregated from a variety of sources into a computerized centralized database. Thereafter, asset transition events are scheduled. Information from the centralized computerized database is used in the performance of the asset transition events and information relating to the asset transition events is added to the centralized computerized database. Subsequent changes to the asset are also recorded into the centralized computerized database. As a result, a plethora of information is available within said database for the purpose of managing future asset transition events.

THE DRAWINGS

The disclosed invention will be described with reference to the accompanying drawings, which show important sample embodiments of the invention and which are incorporated in the specification hereof by reference, wherein:

FIG. 1 is a flow diagram of a typical asset management workflow process;

FIG. 2 is a workflow diagram showing the preferred method for asset management according to the present invention;

FIG. 3 is a screen display showing user information aggregated during the method for integrated asset management;

FIG. 4 is a screen display showing current asset information aggregated during the method for integrated asset management;

FIG. 5 is a screen display showing new asset information aggregated during the method for integrated asset management;

FIG. 6 is a screen display showing software application information aggregated during the method for integrated asset management;

FIG. 7 is a workflow diagram showing the application management process;

FIG. 8 is a screen display showing system inventory information collected during the application management process;

FIG. 9 is a screen display showing the application dictionary; and

FIG. 10 is a screen display showing user software information collected during the application management process.

EMBODIMENTS OF THE INVENTION

The numerous innovative teachings of the present application will be described with particular reference to the presently preferred exemplary embodiments. However, it should be understood that these embodiments provide only a few examples of the many advantageous uses of the innovative teachings herein. In general, statements made in the specification of the present application do not necessarily delimit any of the various claimed inventions. Moreover, some statements may apply to some inventive features, but not to others.

FIG. 1 illustrates a typical asset management workflow. The initial step is to aggregate information **120**. Information can be derived from a number of different sources. For example, information necessary in the asset

transition may include ownership information **101**, usage information **102**, user information **103**, legacy asset information **104**, new asset information **105**, software application information **106**, financial information **107**, site information **108**, event history information **109**, and logistical information **110**. The initial assessment of available data sources dictates the process that will be used to acquire this information. In general, it is generally desirable to utilize existing data sources provided by the user. Because of the volume of information required, it is often difficult to obtain thorough information regarding the assets in question. In such cases, it is often necessary to proceed with an asset transition without all available information or to delay the asset transition until such time as the information is available.

Once information regarding the assets in question has been aggregated, a company will typically schedule an asset transition **130**, such as an asset installation, asset relocation, asset disposition or asset maintenance activity. The scheduling activity is typically conducted on an *ad hoc* user by user basis, with little thought given to sequencing the asset transition services occurring between individual users and between individual assets. This results in a costly and inefficient asset transition.

The next step is to perform the asset transition **140**. Even though great effort may have been expended in order to aggregate the information, little effort is typically made to retain, manage, or update that information for future use. Generally, records may be kept of the asset transition activities, but no effort is made to keep the information current on an ongoing basis.

The preferred method for integrated asset management according to the present invention is shown in FIG. 2. As

in the prior art, the first step is to aggregate information **220**. Once again, the type of information aggregated includes ownership information **201**, usage information **202**, user information **203**, legacy asset information **204**, new asset information **205**, software application information **206**, financial information **207**, site information **208**, event history information **209**, and logistical information **210**. Once aggregated, the information is stored, for example, in a relational database.

Under this preferred embodiment, it is critical to obtain accurate information in each of the foregoing instances. When accurate, up-to-date information is available, that information may be included within the information that is aggregated. If accurate and up-to-date information is not available, it is necessary to match multiple data sources and utilize discovery technology to build an accurate information repository. Although additional time is required to gather information anew, it is critical to have accurate and complete information in the repository. This information can be acquired in a number of ways. For example, the typical sources for user information are either the human resource system or e-mail. Typical sources for legacy asset information include fixed asset schedules and legacy asset management systems. Software application information may be found through an electronic discovery process and site information can be derived from the human resource system, fixed asset system, facilities information, IP address schemes, or internal address books.

It is instructive to examine the type of information aggregated as part of the preferred embodiment. For example, user information **203** provides details about each end user who will be involved from a service delivery

standpoint. Such information includes the user's name, contact phone numbers, mail addresses, e-mail addresses and organizational information, such as manager, department and cost center. User information **203** may also include information regarding the user's role in the organization, if they have the IP status and if they are a remote user.

Legacy asset information **204** includes such information as configuration, serial numbers, manufacturer, make, model, internal components, and attached devices. This information is typically gathered through use of an electronic discovery technology. Other legacy asset information **204** includes details about the physical location of an asset within a building, cube number, office number, jack number and IP address.

New asset information **205** is the information used for procurement or order placement. The details for each new asset are derived from an integrated configuration catalogue. The catalogue contains the basic system information as well as details about specific configuration options for each new asset. This information is then sent to the manufacturers to acquire the appropriate new assets for the technology implementation. New asset information may include such information as scheduled install date, new workstation type, workstation description, workstation costs, and attached devices. For application information **206** identifies which software applications are being used by, or are resident on, a given asset. For application information **206** can be obtained by scanning the shortcuts or an in-depth scan of all executable files on the computer. The results of the scan are then filtered against an application dictionary. The application dictionary contains a profile of each application in it, its current status, ownership and readiness for deployment. The application filtering process yields a definitive list

of the applications that need to be installed on the new device. A detailed description of the preferred embodiment for collection of software application information is described later.

Site information **208** includes information about each individual site where a service will be performed. Site information **208** includes basic information, such as address and type of site, as well as detailed information about the logistics of the site, such as network infrastructure, special considerations regarding accessing the site, and contact resources.

The foregoing examples are intended to illustrate the types of information to be collected as part of the initial step of aggregating information **220.** The information is stored on a storage medium distinct from the asset in question. Information may be stored on the remote storage medium in a centralized computerized database. Information may be transmitted to this centralized computerized database, for example, through the Internet or through a local area network. Also, it may be desirable to transmit such information by means of a secure, encrypted transmission. Alternatively, it may be desirable to change the file into formatted data files prior to transmission or to incorporate a means for removing unwanted or redundant information prior to transmission.

After all information has been aggregated, the next step is to schedule the asset transition **230.** Assets involved in the asset transition may be, for example, desktop computers, laptop computers, handheld computers, printers, scanners, networking devices and storage devices. In the preferred embodiment, users are grouped together by site and proximity that will be the makeup of a scheduled implementation. Scheduling is facilitated through a series of automated processes that reconcile the activities of

software, labor and equipment components necessary for the asset transition. As the transition activities are scheduled, a series of readiness checks are performed to ensure that the new assets and applications are ready for deployment. If certain assets or applications are not ready, the schedule is instantaneously modified in order to minimize activity disruptions during the asset transition process.

The next step is to perform the asset transition **240**. Depending upon the specific transition to be performed, a tailored web page or series of web pages to guide the technician through the process. The use of automated functions simplifies and streamlines the transition process. Examples of the types of automated processes used to perform asset transition **240** include a central repository of the aggregated information, an auto discovery agent that detects all relevant aspects of a networked device and its resident applications, an automated application to backup and restore user data from an old device to a new device, an automated application to backup and restore personality settings from an old device to a new device, an automated application to detect an asset's serial number, an application dictionary as previously described, and an automated application that invokes the downloading of a user's application from a remote database. These integrated technologies are inherent in the preferred embodiment and are critical to support an efficient workflow process, maintain an up-to-date central repository, reduce technician time, reduce technician error, capture and track the results of a technician's work as he performs tasks and make accurate information available to interested parties.

The specific process performed by the technician as he performs asset transition **240** may have multiple steps. Use

of the web page system allows the ability to capture information about each step such as time, number of units installed and increments. This information is used for ongoing asset management. For example, the information captured during the process notify the actual minutes required to perform a task, the actual number of data files and sizes backed up and restored, and the duration of time involved.

The next step is to engage in continuously monitoring asset events **250**. This step is critical to maintain a vibrant and robust repository of information. As new asset transition events occur, information from those events must be added to the information repository in order to keep the most current information available to interested parties.

The final step in the process is the management of asset inventory **260**. As the information repository contains accurate, up-to-date information regarding the assets, those assets can be managed in on a real-time basis. Assets may be managed at a very high level, for example, in an executive summary, down to a detailed task level. Information available to assist in asset management may include, for example, status by location, status by group, hardware mix by site, user detailed software reports, warehouse status by group, technical status, asset reconciliation, asset disposition and user survey satisfaction. Management may include project management, installation management, relocation management, lease management, exception management, scheduling management, workflow management and resource management. In addition reports may be generated based on the aforementioned management activities, including such reports as project reports, asset reports, lease reports, activity reports, exception reports and consumer satisfaction reports. As part of the overall management function, a means may also

be provided for monitoring, updating and controlling versions of the software installed on different devices or a means for translating information in the centralized computerized database into a common language.

FIG. 3 illustrates a screen display in which the technician is prompted to impute user information. User information will provide detail about each end user who will be involved in the process. User information includes new names, contact phone numbers, e-mail addresses and organizational information, such as the manager's name, user's department and cost center. Other user information may include the user's role in the organization, whether or not the user has VIP status and whether or not they use the system remotely.

FIG. 4 illustrates a screen display which the technician may use to impute Legacy Asset information. This may include such information as the configuration, serial numbers, manufacturer, make, model, internal components and attached devices. Other Legacy Asset information may include details regarding the physical location of the asset within a building, office number, cube number, jack number and IP address.

FIG. 5 illustrates screen display which a technician may use to impute new asset information. Such information is primarily used for the procurement of the new asset. Details for each new asset are generally derived from integrated configuration catalog. Such catalog contains basic information, as well as specific details, regarding specific configuration options for each asset. Such information is then forwarded to the selected manufacturer acquisition.

FIG. 6 illustrates a screen display which a technician may use to impute software application information. Such information may include the name of the application, the

status of the application, whether the application has been registered or not, whether the license for the application is an enterprise license, the order in which the application should be installed, and the version of the application.

FIG. 7 illustrates a work flow diagram showing the application management process. Initially, an electronic auto discovery tool identifies applications on the desktop. The equipment is scanned to identify the application used, information such as the names of executable files, manufacturer, version and path are captured, and the auto discovery results **701** are sent to the data dictionary **700** in the form of an XML package. The auto discovery results **701** are then processed against the data dictionary **700**. The data dictionary **700** was created from electronic auto discovery processes with previous updates of non-discovered information. The data dictionary **700** therefor contains details about all available applications. Such as, for example, the status, the media on which it was installed, and authorized installers. The auto discovery results **701** are processed against the data dictionary **700** in order to control the discovery process, rationalize the results, control the installation process and control the quality of the installation.

A user software page **702** is then created based on the information in the data dictionary **700**. During the creation of the user software page **702**, the system will analyze the software page **703** against the information contained in the data dictionary **700**. During this analysis, an assessment will be made of whether the applications discovered or selected are contained within the data dictionary and whether the applications are available in the image. The analysis will determine the difference between the applications on the user's software

page **702** and those in the data dictionary **700**. A report can then be generated of the differences. In addition, a mechanism can be incorporated to define an import missing applications into the dictionary. Once the user's software pages **702** have been established, the next step is to update the software status **704**. Each software application can be classified as just for example "discovered" in which it doesn't appear in the technician's installation or quality control pages, "install" in which it appears on technicians and quality control pages, "do not install" in which it doesn't appear in technician or quality control pages or "install later" in which it doesn't appear in technician or quality control pages. In addition, non-packaged applications can be identified and installed or marked for later installation. Once the software status has been updated, **704**, those software applications designated for installation will be installed **706**. Thereafter, there will be a quality control function performed on the software **707**. During this step, the applications are quality controlled against the intended list.

FIG. 8 illustrates a screen display showing system inventory information which may be generated from the Auto Discovery results. System inventory information contains such information as the names of executable files, the manufacturer of the product, the internal name of the product and the path. This information is subsequently forwarded to the data dictionary.

FIG. 9 illustrates the information contained in the data dictionary. The data dictionary contains information from the auto discovery results such as the software applications discovered and the applications available in the image.

FIG. 10 illustrates a screen display showing user software information. User software information includes

such information as the name of the software application, where the application was installed and the status of the application.

FIG. 11 illustrates the preferred embodiment for a system for integrated asset management. In this system, assets **1101, 1102 and 1103** connected to a centralized, computerized data base **1100**. The system provides a means, **1111, 1112 and 1113** for aggregating information from the assets, **1101, 1102 and 1103** into the centralized, computerized data base **1100**.

Once information has been received from the assets **1101, 1102 and 1103**, asset transition events can be scheduled information relating to those asset transition events can be stored in the centralized, computerized data base **1100**. Thereafter, the assets **1101, 1102 and 1103** can be tracked on an on-going basis so that information regarding future activities effecting the assets are recorded in the centralized, computerized data base **1100**. Accordingly, future asset transition events can be scheduled using information contained in the centralized, computerized data base **1100**.

It should be noted that the centralized, computerized data base **1100** may reside in a remote location separate from the assets. Information may be stored in the centralized, computerized data base **1100** in a relational data base. Information may be transmitted from the assets **1101, 1102 and 1103** through the centralized, computerized data base **1100** through, for example, the Internet or a local area network. Moreover, it may be desirable to make such transmissions in a secure, encrypted manner.

The assets in the system may, for example, be desktop computers, laptop computers, hand-held computers, printers, scanners, networking devices or storage devices. Information transmitted between the assets **1101, 1102 and**

1103 through the centralized, computerized data base may include such information as user information, legacy asset information, new asset information, software application information, financial information, site information, event history information, logistical information, ownership information and usage information.

The previously described asset transition events may include such events as asset installation, asset relocation, asset disposition and asset maintenance. When information is conveyed from the assets **1101, 1102 and 1103** to the centralized, computerized data base **1100** the information may be first converted to a formatted data file for ease of storage and transmission and transfer. In addition, certain information may be filtered prior to transmission in order to remove unwanted or redundant information.

Information has been incorporated into the centralized, computerized data base and the assets **1101, 1102 and 1103**, are being monitored, it may be desirable to manage activities of the assets. Management activities may include project management, installation management, relocation management, lease management, exception management, scheduling management, work flow management and resource management. In addition, it may be desirable to generate reports from the information contained in the centralized, computerized data base **1100**. These reports may include project reports, asset reports, lease reports, activity reports, exception reports and consumer satisfaction reports. It may also be desirable to use the foregoing system to monitor, update and control versions of software resident on the assets **1101, 1102 and 1103**. The system can also accommodate the translation of information in the centralized, computerized data base **1100** to a standard language.

WE CLAIM:

1. A method for integrated asset management comprising the steps of:

aggregating information into a centralized computerized database;

scheduling an asset transition event;

using said information in performing said asset transition event;

recording information from said asset transition event into said centralized computerized database;

monitoring changes to said assets and recording said changes into said centralized computerized database; and

managing future asset transition events through information available in said centralized computerized database.

2. The method of Claim 1 wherein said information is selected from the group consisting of user information, legacy asset information, new asset information, software application information, financial information, site information, event history information, logistical information, ownership information and usage information.

3. The method of Claim 1 wherein said centralized computerized database is a relational database.

4. The method of Claim 1 wherein said asset transition event is selected from the group consisting of asset installation, asset relocation, asset disposition and asset maintenance.

5. The method of Claim 1 wherein the assets involved in said asset transition event are selected from the

group consisting of desktop computers, laptop computers, handheld computers, printers, scanners, networking devices and storage devices.

6. The method of Claim 1 wherein said centralized computerized database is located remotely from the location of said asset transition event.

7. The method of Claim 1 wherein said information is transmitted to said centralized computerized database through the Internet.

8. The method of Claim 1 wherein said information is transmitted to said centralized computerized database through a local area network.

9. The method of Claim 7 or Claim 8 wherein said information is transmitted to said centralized computerized database through secure, encrypted transmission.

10. The method of Claim 1 wherein said information is converted to formatted data files prior to said transmission to said centralized computerized database for ease of storage and transfer.

11. The method of Claim 1 wherein said information is filtered prior to transmission to said centralized computerized database to remove unwanted or redundant information.

12. The method of Claim 1 wherein said monitoring is conducted on a continuous basis and said changes are made to said centralized computerized database on a real-time basis.

13. The method of Claim 1 wherein said management includes activities selected from the group consisting of project management, installation, relocation

management, lease management, exception management, scheduling management, workflow management and resource management.

14. The method of Claim 1 wherein said method includes the generation of reports derived from information located in said centralized computerized database.

15. The method of Claim 14 wherein said reports are selected from the group consisting of project reports, asset reports, lease reports, activity reports, exception reports and consumer satisfaction reports.

16. The method of Claim 1 wherein said method has the ability to monitor, update and control versions of software resident on said computer-related hardware device.

17. The method of Claim 1 wherein said method provides a means for translating said information in said centralized computerized database into a common language.

18. A system for integrated asset management comprising:

a centralized computerized database;

assets electronically connected to said centralized computerized database;

means for aggregating information into said centralized computerized database;

means for scheduling an asset transition event;

means for using said information in performing said asset transition event;

means for recording information from said asset transition event into said centralized computerized database;

means for monitoring changes to said assets and recording said changes into said centralized computerized database; and

means for managing future asset transition events through information available in said centralized computerized database.

19. The system of Claim **18** wherein said centralized computerized database is located remotely from the location of said asset transition event.

20. The system of Claim **18** wherein said centralized computerized database is a relational database.

21. The system of Claim **18** wherein said information is transmitted to said centralized computerized database through the Internet.

22. The system of Claim **18** wherein said information is transmitted to said centralized computerized database through a local area network.

23. The system of Claim **21** or Claim **22** wherein said information is transmitted to said centralized computerized database through secure, encrypted transmission.

24. The system of Claim **18** wherein the assets involved in said asset transition event are selected from the group consisting of desktop computers, laptop computers, handheld computers, printers, scanners, networking devices and storage devices.

25. The system of Claim **18** wherein said information is selected from the group consisting of user information, legacy asset information, new asset information, software application information, financial information, site information, event history

information, logistical information, ownership information and usage information.

26. The system of Claim **18** wherein said asset transition event is selected from the group consisting of asset installation, asset relocation, asset disposition and asset maintenance.

27. The system of Claim **18** wherein said information is converted to formatted data files prior to said transmission to said centralized computerized database for ease of storage and transfer.

28. The system of Claim **18** wherein said information is filtered prior to transmission to said centralized computerized database to remove unwanted or redundant information.

29. The system of Claim **18** wherein said monitoring is conducted on a continuous basis and said changes are made to said centralized computerized database on a real-time basis.

30. The system of Claim **18** wherein said management includes activities selected from the group consisting of project management, installation, relocation management, lease management, exception management, scheduling management, workflow management and resource management.

31. The system of Claim **18** wherein said method includes the generation of reports derived from information located in said centralized computerized database.

32. The system of Claim **31** wherein said reports are selected from the group consisting of project reports, asset reports, lease reports, activity reports exception reports and consumer satisfaction reports.

33. The system of Claim **18** wherein said system has the ability to monitor, update and control versions of software resident on said computer-related hardware device.

34. The system of Claim **18** wherein said system provides a means for translating said information in said centralized computerized database into a common language.

35. A method for application management comprising the steps of:

inputting results from an electronic discovery application into a data dictionary;

generating the user's software pages;

analyzing said user's software pages against information in said data dictionary;

updating the status of software applications in said data dictionary based on the results of said analysis;

installing applicable software on said user's device; and

verifying that said applicable software has been properly installed on said user's device.

36. The method of Claim **35** wherein said results from said electronic discovery application includes information selected from the group consisting of executable files names, manufacturer's names, application versions and the relative path.

37. The method of Claim **35** wherein said data dictionary also retains information other than said results from said electronic discovery application.

38. The method of Claim **35** wherein said user's software pages are generated based in part on information contained in said data dictionary.

39. The method of Claim **35** wherein said method of analyzing said user's software pages includes a means for comparing said user's software pages to said data dictionary and generating an analysis of the results.

40. The method of Claim **35** wherein said method of analyzing said user's software pages includes a means for updating the status of said software applications listed in said data dictionary based on said results.