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(54) **METHOD AND SYSTEM OF ASSET IDENTIFICATION AND TRACKING FOR ENTERPRISE ASSET MANAGEMENT**

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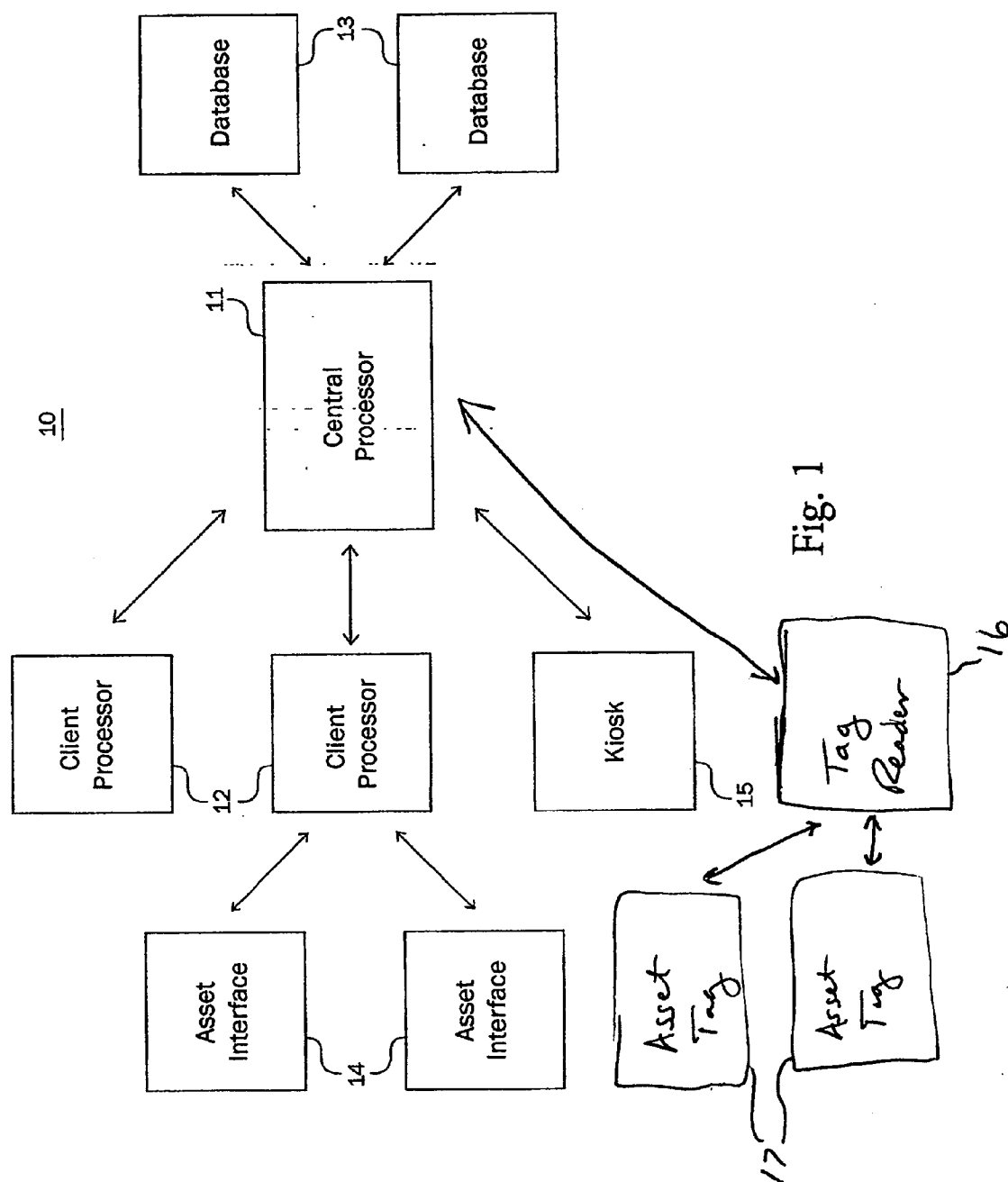
(57) **ABSTRACT**

A system and method for managing enterprise assets located at geographically distributed sites utilizing wireless tag technologies. The method includes storing in a database information relating to each asset, wherein the stored information includes cost of each asset and cost of service for each asset. The method further includes tracking and storing information relating to servicing of the assets, including the cost of servicing. Information relating to the assets is then displayed to a user of the system.

Fig. 1

22

Import information
on tag into
System

20

Associate an
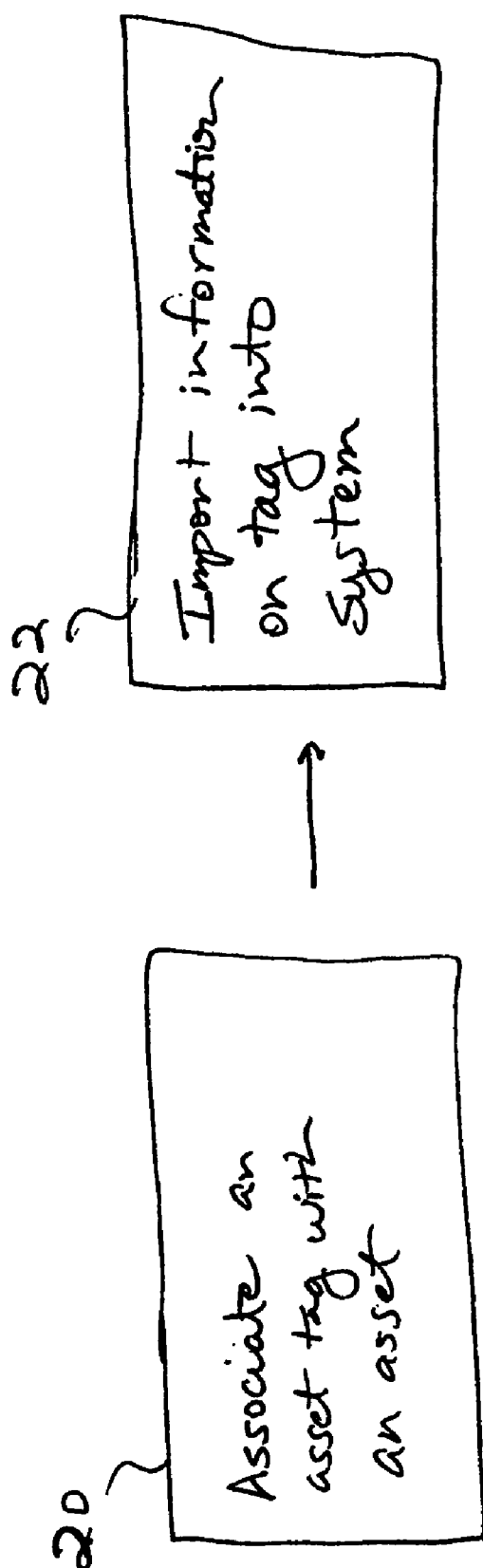asset tag with
an asset

FIG. 2

Fig 3

WorkSpace   Filter Definition

Sites | Service & Maintenance | Asset Types | Service Providers | Manufacturers | Reports | Messages

> All Work Orders >> Summary > New Work Order

New Work Order

45

Site Name	T-0664
Requester	Terry Haughton
Asset Type	Dane Quickart 4000
Verisae Tag Number	1854
Work Order Name	Lack of Power, Batt.
Work Order Description	Lack of Power, Battery appears not be recharging
Due Date	02/01/2001
Service Provider	Western Electric
Technician	

Save   Cancel

Active Call

Site	
T-0664	
Requester	
Terry Haughton	
Description	
Lack of power. Battery appears not be charging	
Reason Type	
Out of Service	
Asset Type	
Dane Quickart 4000	
Asset Number	
1854	
Serial Number	
0059	
Action Type	
Create Work Order	
Status	
Open	

Save   WO   New

Verisae Enterprise Asset Management & Maintenance System

Fig. 4

61

Stores In Hennepin County Minnesota

WorkSpace   GIS Mapping

Please click on the map to select a store. (The YELLOW points are sites which meet your criteria)

There are 10 stores located in the Hennepin County. Of which, 2 stores meet your criteria.

Qualified Sites

T-0664 [M] [Select]
T-0100
T-0664

Verlase Enterprise Asset Management & Maintenance System

Active Call

Site
Minnesota
Asset Type

Cart
Operand
Equals
Number of Assets
1
Affiliation
Greatland

Submit

60

Fig. 5

METHOD AND SYSTEM OF ASSET IDENTIFICATION AND TRACKING FOR ENTERPRISE ASSET MANAGEMENT

CROSS-REFERENCE TO RELATED APPLICATION(S)

[0001] This patent application is a continuation-in-part of U.S. patent application Ser. No. 10/768,957, filed Jan. 30, 2004, which claims the benefit of U.S. Provisional Patent Application No. 60/444,091, filed Jan. 31, 2003, and which a Continuation-In-Part of U.S. patent application Ser. No. 09/883,779, filed Jun. 18, 2001, which claims the benefit of U.S. Provisional Patent Application No. 60/212,234, filed Jun. 16, 2000 and U.S. Provisional Patent Application No. 60/288,827, filed May 5, 2001, the contents of which are each incorporated herein by reference in their entirety. The present application is also a Continuation-In-Part of U.S. patent application Ser. No. 10/429,619, filed May 5, 2003, which claims the benefit of U.S. Provisional Application No. 60/432,120, filed Dec. 9, 2002, and the present application is a Continuation-In-Part of U.S. patent application Ser. No. 10/734,725, filed Dec. 12, 2003, which claims the benefit of U.S. Provisional Patent Application No. 60/433,179, filed Dec. 13, 2002, and the present application is a Continuation-In-Part of U.S. patent application Ser. No. 10/771,090, filed Feb. 3, 2004, which claims the benefit of U.S. Provisional Patent Application No. 60/444,437, filed Feb. 3, 2003, and the present application is a Continuation-In-Part of U.S. patent application Ser. No. 10/922,364, filed Aug. 20, 2004, which claims the benefit of U.S. Provisional Patent Application No. 60/496,432, filed Aug. 20, 2003, the contents of which are each incorporated herein by reference in their entirety.

FIELD OF THE INVENTION

[0002] This invention relates to a method and system for managing enterprise assets. More particularly, the invention relates to a method and system for the comprehensive management of enterprise assets dispersed over a plurality of distributed sites utilizing wireless tag technology.

BACKGROUND OF THE INVENTION

[0003] It is frequently useful to track the disposition of enterprise assets and further monitor and manage various aspects of those assets. For example, it is useful to track the total cost of asset ownership for accounting purposes and for making future purchasing decisions. However, tracking specific assets and asset characteristics in a large, distributed environment (an enterprise that has many facilities at differing locations, as well as one or more central headquarters) can be a difficult task.

[0004] A large retail store chain, for instance, may wish to determine the total cost of ownership for each cash register it owns. A highly distributed retail chain may have tens of thousands of cash registers, and in order to calculate a reasonably accurate determination of the total cost of ownership the retail chain must accurately track all the costs that are incurred for each cash register. The purchase price of an asset, repair costs, and maintenance costs are the main components of the total cost of ownership and so these costs need to be tracked, in some instances other factors such as energy costs may also need to be factored into the calculation.

[0005] However, tracking costs incurred in repairing and maintaining these assets can be an onerous task. In a typical procedure to service assets, a store manager first calls a service provider to perform a task on an asset. The service provider performs the task required, seeks approval for the work, and then fills out work order papers in triplicate. The work order papers are typically distributed (one copy each) to the enterprise headquarters, the store, and the service provider. The service provider then creates an invoice and sends it to the enterprise headquarters. If the accounts payable department of the enterprise headquarters can locate the work order papers, the invoice may be entered into the system and paid. If the work order papers cannot be found, the invoice may be sent to the store manager for approval, returned to the enterprise headquarters after approval, and then entered into the accounts payable system.

[0006] Tracking part and labor costs and any other asset characteristics in highly distributed enterprises thus becomes very difficult using the existing process described above. Matching paperwork with assets may become exceedingly difficult due to the sheer volume of assets and the large amounts of paperwork generated in servicing and maintaining the assets.

[0007] Another potential problem with the process described above is that service providers may be able to overbill for service calls or parts without full knowledge by the enterprise of the nature of the service call. The lack of overview on a regional or national level may prevent an enterprise from determining if the costs incurred by distributed sites for an asset is reasonable.

[0008] Because it is time consuming and expensive to collect paper work from numerous sources to even have the capability of accurately calculating the total cost of ownership for an asset, the cost of ownership of many assets is frequently a guess that may vary greatly from the actual cost of ownership. Thus, enterprises frequently determine the cost of ownership for an asset to be the purchase price of the asset, which is typically considerably less than the actual cost of ownership. Moreover, in a highly distributed environment, there are many assets to manage, and current systems do not provide feasible and efficient methods and systems for managing such assets. In particular, current systems do not provide for an efficient manner to determine the costs of servicing and maintaining assets or the total cost of ownership of an asset.

[0009] There is a need in the art for a method and system for managing enterprise assets over numerous distributed sites that is user friendly, cost and time efficient, and that may be used to accurately generate the cost of ownership for one or more assets of an enterprise. A need also exists for a common platform that may be used to set up information systems and gather accounting information for managing these assets including total cost of ownership accounting.

BRIEF SUMMARY OF THE INVENTION

[0010] The present invention, in one embodiment, is a system for managing a plurality of assets of a plurality of distributed enterprises and allowing a user to access asset information. The system includes a central processor, a database, a tag reader in communication with the central processor, and an asset tag. The database is a database for storing asset information for the plurality of assets of the

plurality of enterprises and is in communication with the central processor. The asset information includes information relating to ownership, maintenance and repair of the plurality of assets. An asset tag is associated with each of the plurality of assets and includes specific information regarding the asset to which it is associated. Further, the tag is configured to communicate with the tag reader. The central processor tracks information relevant to managing each of the plurality of assets

[0011] The present invention, in another embodiment, is a system for collecting information relating to equipment located at a site. The system includes a first database, a server, and a tag reader. The first database includes legacy data relating to at least a portion of the equipment. The server includes software for importing the legacy data into a specified data structure and for exporting the specified data structure and a survey process. The tag reader is for receiving the specified data structure and the survey process and for guiding a user in collecting the information and further is configured to receive information from individual equipment tags. The specified data structure includes a set of equipment categories and a set of attributes relating to each category.

[0012] In another embodiment, the present invention is a method of tracking service of an asset in a highly distributed enterprise. The method includes providing at least one server computer in communication with a computer network and a database operably coupled with the server computer. The database contains asset information and service provider information. The method further includes receiving a service request at the server computer for an asset and automatically selecting an appropriate service provider based on the asset to be serviced. In addition, the method includes generating an electronic message to the appropriate service provider requesting service, whereby a service technician is scheduled to provide service. The service technician has an identification tag associated with the service technician. Further, the method includes tracking a location of the identification tag of the service technician with a tag reader.

[0013] While multiple embodiments are disclosed, still other embodiments of the present invention will become apparent to those skilled in the art from the following detailed description, which shows and describes illustrative embodiments of the invention. As will be realized, the invention is capable of modifications in various obvious aspects, all without departing from the spirit and scope of the present invention. Accordingly, the drawings and detailed description are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a block diagram showing the various components of the enterprise asset management system, according to one embodiment of the subject invention.

[0015] FIG. 2 is flow diagram of a survey method, according to one embodiment of the present invention.

[0016] FIG. 3 is a flow diagram of a service request, according to one embodiment of the present invention.

[0017] FIG. 4 is an embodiment of a web page for inputting a service request, according to one embodiment of the present invention.

[0018] FIG. 5 is one embodiment of a GIS map produced by the subject invention.

DETAILED DESCRIPTION

[0019] The present invention relates to a method and system of asset identification and tracking utilizing wireless technology. For example, according to one embodiment, assets can be identified and tracked using radio frequency ("RF") technology. More specifically, the present invention can incorporate radio frequency identification ("RFID") technology to identify and track assets.

[0020] In one aspect of the invention, the method and system relate to providing a wireless tag associated with an asset for purposes of tracking or managing the asset. According to one embodiment, the wireless tag can store information about the asset such as, for example, identification, location, and other information, and communicate with an asset management system to provide for tracking and management of the asset. In a further embodiment, the present invention provides a wireless tag that is associated with a user of the asset and/or the asset management system such that the user's interaction with the asset or system can be simplified or tracked or otherwise managed. The wireless tag, in one example of the present invention, is an RFID tag.

[0021] In an asset management system, according to one embodiment, all of the assets may need to be inventoried and an asset identifier created for each asset to give it a trackable identity. In such an embodiment, the wireless tag can be used to track the identity. That is, information about the asset can be stored on the tag and utilized to track and/or manage the asset. According to another embodiment in which the asset management system is used to track the costs of assets and to facilitate the servicing of assets, the wireless tag can be used to store information about the asset cost and service events and can also be used to help the service provider locate the particular asset to be serviced.

[0022] According to one embodiment, the asset identification system of the present invention is used with a system and method of asset management such as that system disclosed in U.S. application Ser. No. 09/883,779, filed on Jun. 18, 2001 and entitled "Method and System for Managing Enterprise Assets" ("'779 Application"), which is incorporated by reference herein in its entirety. That system provides for, among other things, tracking the costs of assets and facilitating the servicing of assets, including assets in an enterprise.

[0023] An asset management system 10 utilizing wireless tag technology is depicted in FIG. 1, according to one embodiment of the present invention. This embodiment is comprised of a central processor 11 located at a central location, one or more databases 13 to store asset information, a plurality of client processors 12 located at a plurality of remote locations, and at least one tag reader 16 located at a remote location or locations. The central processor 11 allows access by the client processor to various network resources and includes software programs or instructions that run on the server-side to process requests and responses from a client processor 12. The system 10 can also include one or more databases 13 for storing asset information. These databases 13 may be integral to the central processor 11 or they may be accessible to the central processor through a computer network or other suitable communication link. In

one embodiment, the system **10** also includes asset interfaces **14** connected directly to particular assets, and one or more kiosks **15** acting as a client processor **12**.

[0024] The term "asset" as used herein shall mean any physical item, including any piece of equipment or component thereof, that may be tracked and/or managed for inventory, location, maintenance, or repair purposes. For example, the "asset" can be, but is not limited to, a computer, a refrigerator, a container such as, for example, a refrigerant container, an HVAC unit, a piece of furniture, a forklift, a vehicle, or some component of any of these items.

[0025] The client processor **12** may be any computer or computer systems used by those skilled in the art. Client processor **12** can be used to place work orders, view asset information, input asset information, change the operational parameters of an asset, exchange data with the central processor, and/or to view and manipulate asset information. Some client processor **12** can be configured as kiosks **15** and located at one or more remote sites. The kiosks are adapted for use by service providers onsite, to access the central processor **11** to view asset information or service requests. As shown in FIG. **2**, these kiosks can include a preconfigured menu which allows service providers to access the central processor **11**, to enter and receive information concerning work orders **20**, to check if a particular work order has been approved **21**, and to check for messages **22**.

[0026] In some embodiments, asset interfaces **14** are attached to assets with communications capabilities in order to monitor and/or control its performance. The asset interface **14** can be configured to communicate with the asset and to provide a communication link between the asset and a client processor **12** or the central processor **11**. Communication technology, such as a cellular modem, any other wireless communication system (such as Cellular Digital Packet Data (CDPD) technology), and/or a landline communication system may be used to form a communication link between the asset interface and a client processor **12** or the central processor **11**.

[0027] As shown in FIG. **1**, a communication link exists between a client processor **12** and the central processor **11**. Upon specification of a link by the user, the client processor **12** makes a TCP/IP request to the central processor **11** and receives information, which may be a "web page" that is formatted according to HTML which also includes links to other pages of information. Users can also access other pages on the same or other database server by following instructions on the screen, entering certain data, or clicking on selected icons. In one embodiment, the subject invention is a web-site hosted by at least one computer in communication with the internet. This embodiment allows the subject invention to be accessed through a client computer **12** by various types of users located at geographically distributed sites. To limit access to authorized users, in one embodiment, the subject invention allows for various types of users and users at various distributed sites to have distinct levels of access.

[0028] The tag reader **16** as depicted in FIG. **1** can be any known device for communicating with a tag. For example, in embodiments in which the tag is an RFID tag, the reader **16** is an RFID reader **16** known in the art. The tag reader **16** is communicatively coupled to the central processor **11** via a communication link as shown. Alternatively, the tag reader

16 is coupled to a client processor **12**. When information is transmitted from the tag **17** to the tag reader **16** and the tag **17**, that information can then be transmitted to the central processor **11** for storage in a database **13** or other use. Alternatively, according to embodiments in which the asset tag **17** can receive and store data and the tag reader **16** can also write to the tag **17** (that is, the component is a tag reader/writer **16**), information can be retrieved from the central processor **11** and transmitted to the asset tag **17** by the tag reader/writer **17**.

[0029] Any type of information regarding the asset can be stored on the tag. For example, the asset information can include a unique designation to identify the asset (also referred to herein as a "unique identifier"), asset type, asset brand, asset use, asset location, and any other information that it may be desirable to track. In one aspect of the invention, the asset information can include servicing or maintenance information (such as, for example, the date of the last servicing of the asset), authorizations relating to location and servicing of the asset (such as, for example, whether the asset can be moved to different locations and which service providers are allowed to provide service to the asset), and any other relevant information.

[0030] In use, the subject invention can be used to track the costs of assets and to facilitate the servicing of assets. As an initial procedure, the assets of an enterprise may be inventoried (also referred to herein as "surveyed") and an asset identifier created for each asset to give it a trackable identity. According to one embodiment as depicted in FIG. **2**, the survey method can include associating an asset tag with an asset (block **20**), wherein the asset tag includes a unique identifier for the asset. In one example, the asset tag is an RFID tag. The asset tag is read by the tag reader and the information from the tag is thereby imported into the system such that the unique identifier is imported into the system for storage and processing (block **22**).

[0031] In one aspect of the invention, the surveying and importation of asset data can be accomplished according to the methods and systems disclosed in U.S. application Ser. No. 10/771,090, filed on Feb. 3, 2004 and entitled "Site Equipment Survey Tool" ("'090 Application), which is incorporated herein by reference in its entirety. According to one embodiment of the present invention, the assets surveyed in the '090 Application are each associated with an asset tag and the survey tool disclosed in the '090 Application is a tag reader.

[0032] The use of the tag reader to input asset information has numerous advantages over manual input. Tag reader-based input is faster, more efficient, and more accurate than manual input of information.

[0033] According to another embodiment, the wireless tag-based system of the present invention provides accurate tracking of asset disposition. That is, the system and method of the present invention provides for tracking the physical location of and any movement of an enterprise asset, such that all assets at a particular location can be monitored such that movement of any existing asset out of that location or any importation of a new asset into the location can be monitored. In one aspect of the invention, the tag reader of the present invention can be an RFID portal through which all assets are transported into and out of an enterprise location. For example, a piece of equipment having an asset

4

tag providing the unique identifier A1 can be imported into a location through an RFID portal that reads the tag and transmits the information about the importation of the piece of equipment into the location into the asset tracking system. Further, if the piece of equipment is later transported out of the location, it can be transported through the portal such that the movement of the asset out of the location is recorded by the system. According to another embodiment, the movement of the asset can trigger the asset tracking system of the present invention to transmit a message to an appropriate user. The message can prompt the user to confirm that the transport of the asset is authorized. Alternatively, the message can inform the user that the asset is being transported to the user and requesting confirmation of receipt. In a further alternative, the message can provide any appropriate information relating to the asset and/or its transport.

[0034] The tag reader, according to one embodiment, can utilize and provide certain information relating to the asset tags without utilizing its connection to the central processor of the system. More specifically, the tag reader can provide automatic alarms or notifications that are triggered at the reader, not at the central processor or any other part of the system. For example, in one embodiment, when an asset that is not authorized for removal is transported through or past the tag reader, an audio and/or visual alarm associated with the tag reader is triggered by the tag reader. This occurs because the tag associated with the asset includes information that the asset is not to be removed from the site and the tag reader "reads" the information on the tag and the alarm is automatically triggered by the tag. Alternatively, any information can be included in the tag that can trigger an automatic alarm or any other known action at a tag reader for any known purpose.

[0035] The asset tracking of the present invention as described herein provides for checking an asset in or out at a location or site. Further, the system allows for highly accurate equipment inventory tracking, including tracking unauthorized removal of equipment from a site. In one embodiment, a tag can be associated with an asset (that is, the asset can be "tagged") by a manufacturer or supplier prior to delivering the asset to the location. In accordance with another embodiment, the wireless tag-based system of the present invention can be used to track a mobile asset and its movement within a location. For example, the system can be used to track the movement of such equipment as a pallet jack, a forklift, a rolling rack, or any other mobile piece of equipment.

[0036] In accordance with an additional embodiment in which the system and method of the present invention relates to tracking and management of refrigerant for HVAC systems, the system and method provides for associating a wireless tag with each refrigerant container. Each tag for each container includes a unique identifier for each container, thereby allowing for monitoring the inventory of all such containers. Due to the nature of the industry, cylinders are often moved between the refrigerant supplier and the HVAC system operator and are often re-used. With the existing technology, each supplier and operator typically places a service tag or identifier on the cylinder upon periodic servicing or refilling of the cylinder such that the end-result is multiple identifying marks on the cylinder. These multiple stickers or tags make it difficult to identify the single appropriate reference. With the wireless tag-based

system of the present invention, visual ID reference is unnecessary when identifying and monitoring each cylinder. According to one embodiment, the wireless tag technology of the present invention can be utilized with the system and method of refrigerant tracking disclosed in U.S. application Ser. No. 10/429,619, filed on May 5, 2003 and entitled "Refrigerant Loss Tracking and Repair," which is incorporated herein by reference in its entirety.

[0037] According to another embodiment, the tags could also be used to track an asset that is shipped off-site for maintenance or repair, including tracking the asset at the maintenance or repair location. In a further embodiment, the location information relating to any asset can be provided by the system to a service provider to assist the provider in locating the asset. For example, the system can provide the service provider with the specific site where the asset is located and further provide the specific location of the asset at the site. In one embodiment, the wireless tag-based system of the present invention can be used with the system and method of tracking asset repair and maintenance costs and monitoring asset servicing as disclosed in the '779 Application which is incorporated herein.

[0038] In one aspect of the invention in which the system is used to track repair and maintenance costs and to monitor the servicing of assets, the subject invention includes a system and method for managing the servicing and maintenance of assets by third-party service providers or in-house personnel. As shown in FIG. 3, the method generally comprises generating a service request from a client computer (block 40), receiving a service request at the central processor 11 through the web site (block 41), determining a service provider (block 42), automatically transmitting to the service provider the service request and any additional asset information which may be needed by the service provider, including the asset location information previously inputted into the system by the tag reader (block 43), and awaiting a response to the service request (block 44). If no response is received within a predetermined period of time, the electronic message is resent (block 43).

[0039] As shown in FIG. 4, a service request from a user will generate an electronic work order 45 containing information such as the asset to be repaired, location of the asset site, location of the asset at the site, the reported problem, and the asset identifier. Typically, a service request is initiated by enterprise employees located at a remote site through the use of a client computer 12. In some instances, a particular asset may have self-diagnostic programs that can determine a malfunction and generate an error signal. These assets may have asset interfaces 14 interfaced thereto enabling them to generate service requests automatically through a client computer 12.

[0040] In one embodiment, an identification of authorized service personnel is maintained in a database and linked to particular assets. Once a service request is processed by the central processor 11, a service provider is determined automatically by determining which service provider is linked to the particular asset and a particular geographic location, and the service provider is notified automatically via an E-mail message or other form of electronic messaging. If the service provider does not respond to an E-mail within a specified period of time, additional E-mails may be sent automatically. The E-mail can include the type of asset requiring

service, the reported failure, location, contact person, and prior service history of the asset. In addition, the service provider may also obtain additional information on the asset by accessing the central processor **11** via the internet or a kiosk **15**.

[0041] According to one embodiment of the present invention, the wireless tag-based system and method of the present invention can be used to track the service completion. In this embodiment, a tag can be associated with the service provider technician such that the person's movements can be tracked during the completion of the service request. More specifically, in accordance with one aspect of the invention, the service technician passes through or by a tag reader such as an RFID portal when the technician enters the site to complete the service request. The RFID portal reads the information on the tag and thereby verifies the presence of the technician at the site. In a further embodiment, the system can not only verify the presence of the technician but can also confirm that the technician has authorization to enter the site and provide service to the asset needing service. Further, the system can be used to monitor the technician's movements within the site and also confirm the exit of the technician from the site.

[0042] After a service request is completed, information pertaining to the repair or maintenance of an asset may be gathered from service providers through the web site or through a client computer **12** or a kiosk **15** and stored in the database **13**. In one example, the client computer **12** is any wireless handheld device. According to one embodiment, the system of the present invention allows the technician access to the client computer **12** or kiosk **15** using the wireless tag technology. That is, a tag reader located at the client computer **12** or kiosk **15** reads the technician's tag when the technician is in appropriate proximity with the computer **12** or kiosk **15**. The tag reader provides information stored in the tag to the system of the present invention and the system uses the information about the technician to determine if the technician has authorization to access the computer **12** or kiosk **15**. If the technician has authorization, the system configures the computer **12** or kiosk **15** such that the technician can use it to input information about the repair or maintenance into the system. In one example, the cost of replacement parts may be inventoried in the database of the system and the service provider may choose, while at the remote location of the facility, the type of replacement part that is used. The cost of this replacement part, therefore, may be allocated to the asset that was repaired. In addition, the cost of the service charge may be ascertained based on the length of the visit of the service provider and this cost of service may be allocated to the repaired asset. The submission of information relating to the service provided can also be used to trigger payment for the service.

[0043] Alternatively, after a service request is completed information pertaining to the repair or maintenance of an asset can be written into the asset tag associated with that asset. According to one embodiment, the system of the present invention allows the technician or another user to utilize a wireless writing device such as a handheld RFID writing device to write information into the tag about the service performed. The information can include the date of the service, the details of the service performed, the cost of the service, including any costs for the service, including costs for replacement parts or additional parts, and any other relevant information. Subsequently, this information can be "read" by any tag reader, including, for example, a wireless handheld tag reader used by a service provider or other user

who is scanning various assets to determine the last date of service of each asset or to determine other service-related or asset-related information. In one embodiment, the service information stored in the tag can also be read by a tag reader that then transmits or loads the information into the central processor.

[0044] Since the maintenance and repair costs as well as purchase price comprise a majority of the total cost of ownership of an asset, a relatively accurate calculation can be obtained by summing up the three. Other factors such as energy costs, performance costs, and other can also be factored into the calculation if these factors are stored for the particular asset. To calculate the total cost of ownership, the total costs for maintenance and repair and the purchase price for an asset or a group of assets is compiled using the filtering procedures above and the values are summed together. In one embodiment of the present invention, the calculation is pre-programmed into software located in the central processor **11** and the calculation is done automatically by simply selecting the function and inputting the asset identifiers.

[0045] In a distributed business environment, assets may be distributed over a large geographic region in a large number of separate facilities. As shown in FIG. **5**, to track these assets geographically, one embodiment includes an application for creating a Geographic Information System (GIS) map locating a particular asset or a particular group of assets. A set of queries **60** are displayed on a client processor **12** pertaining to an asset or group of assets such as a particular asset type and a desired location. The central processor **11** then generates a map **61** based on the responses to these queries.

[0046] This embodiment can also include a mapping system displaying a single enterprise facility. Icons representing certain types of assets may be dragged and dropped onto a GIS map of a particular facility in order to display the location of assets within a facility on a scaled map. According to an alternative embodiment, the tags of each asset can be monitored wirelessly in order to determine the location of each asset at a site using a tag reader.

[0047] While the subject invention has been described with reference to several embodiments thereof, those skilled in the art will recognize various changes that may be made without departing from the spirit and scope of the claimed invention. Accordingly, this invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims, nor is the claimed invention limited in applicability to one type of computer or computer network. Any numbering or ordering of elements in the following claims is merely for convenience and is not intended to suggest that the ordering of the elements of the claims has any particular significance other than that otherwise expressed by the language of the claims.

What is claimed is:

1. A system for managing a plurality of assets of a plurality of distributed enterprises and allowing a user to access asset information, the system comprising:

(a) a central processor;

(b) a database for storing asset information for the plurality of assets of the plurality of enterprises, the database being in communication with the central pro-

cessor, wherein the asset information comprises information relating to ownership, maintenance and repair of the plurality of assets;

(c) a tag reader in communication with the central processor; and

(d) an asset tag associated with each of the plurality of assets, the asset tag comprising specific information regarding the asset to which it is associated, the tag configured to communicate with the tag reader.

wherein the central processor tracks information relevant to managing each of the plurality of assets.

2. The system of claim 1, further comprising a client processor in communication with the central processor through a communication link.

3. The system of claim 2, wherein the client processor inputs, queries, and downloads asset information from the central processor through a web browser.

4. The system of claim 2, further comprising a second tag reader associated with the client processor, the tag reader configured to identify any user having a user tag and determining based on information contained within the user tag whether the user has authorization to use the client processor.

5. The system of claim 4, wherein the central processor allows the user to access the client processor if the user has authorization to use the client processor.

6. The system of claim I, wherein the database stores asset information in the form of pages which in turn contain links to other pages.

7. The system of claim 1, wherein the central processor automatically generates an E-mail message to a service provider in response to a service request by the user.

8. The system of claim 1, wherein the tag reader is an RFID portal positioned at a site, wherein the portal is configured to communicate with an asset tag associated with any asset being moved into or out of the site.

9. The system of claim 1, further comprising an automatic alarm component associated with the tag reader, wherein the automatic alarm component is configured to be automatically triggerable by the specific information in the asset tag.

10. The system of claim 1, further comprising a tag writer configured to transmit information to the asset tag for storage.

11. The system of claim 1, wherein at least one of the plurality of assets is a portable asset.

12. The system of claim 1, wherein at least one of the plurality of assets is a refrigerant container.

13. The system of claim 1, further comprising a user tag associated with any technician authorized to examine any of the plurality of assets.

14. A system for collecting information relating to equipment located at a site, the system comprising:

(a) a first database including legacy data relating to at least a portion of the equipment;

(b) a server including software for importing the legacy data into a specified data structure and for exporting the specified data structure and a survey process; and

(c) a tag reader for receiving the specified data structure and the survey process and for guiding a user in collecting the information, the tag reader configured to receive information from individual equipment tags,

wherein the specified data structure includes a set of equipment categories and a set of attributes relating to each category.

15. A method of tracking service of an asset in a highly distributed enterprise, the method comprising:

providing at least one server computer in communication with a computer network and a database operably coupled with the server computer, the database containing asset information and service provider information;

receiving a service request at the server computer for an asset;

automatically selecting an appropriate service provider based on the asset to be serviced;

generating an electronic message to the appropriate service provider requesting service, whereby a service technician is scheduled to provide service, wherein the service technician has an identification tag associated with the service technician; and

tracking a location of the identification tag of the service technician with a tag reader.

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