ORIGINAL

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87 pgs
Exh A-D

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN

SYMBILITY SOLUTIONS INC., a Canadian Corporation,

Plaintiff,

v.

XACTWARE, INC., a Utah Corporation,

Defendant.

DEMAND FOR JURY TRIAL

JUDGE : Hood, Denise Page
DECK : S. Division Civil Deck
DATE : 08/08/2005 @ 15:45:03
CASE NUMBER : 2:05CV73068
CMP SYMBILITY SOLUTIONS V.
XACTWARE INC (DA) SI

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SUITE 350
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MAGISTRATE JUDGE MONA K. MAJZOUB

COMPLAINT FOR DECLARATORY JUDGMENT

SYMBILITY SOLUTIONS INC., (hereinafter "SYMBILITY SOLUTIONS"), for its complaint against XACTWARE, INC. (hereinafter "XACTWARE") states and alleges as follows:

Jurisdiction and Venue

1. This is an action for declaratory relief pursuant to the laws as set forth in Title 28 of the United States Code, and particularly, 28 U.S.C. §§ 2201 and 2202. Jurisdiction in this Court is based on 28 U.S.C. §§ 1331 and 1338(a). This Court has personal jurisdiction over XACTWARE in view of its contacts with the forum. Venue is proper in this judicial district under 28 U.S.C. §§ 1391 and 1400 because activities related to this controversy occurred and are occurring in this District.

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The Parties

2. SYMBILITY SOLUTIONS is a Canadian corporation having its principal place of business located at 72 Victoria Street South, Suite 101, Kitchener-Waterloo, Ontario, Canada, N2G 4Y9.

3. XACTWARE is a Utah corporation with a principal place of business at 1426 East 750 North, Orem Utah, 84097.

Cause of Action for Declaratory Judgment

4. SYMBILITY SOLUTIONS seeks a declaratory judgment declaring that United States Patent Nos. 6,037,945, 6,810,383 and 6,816,819 (hereinafter the '945 Patent, the '383 Patent and the '819 Patent, respectively) were not obtained in a manner consistent with the provisions of Title 35, United States Code and are thus invalid and/or unenforceable. More specifically, the '945 Patent, the '843 Patent and the '819 Patent are invalid and/or unenforceable for failure to comply with one or more of the conditions for patentability set forth in 35 U.S.C. §§101, 102, 103 and 112. A copy of the '945 Patent, the '843 Patent and the '819 Patent are attached hereto as Exhibits A, B and C.

5. SYMBILITY SOLUTIONS does not make, use or sell, and has not made, used or sold in the United States or elsewhere any product which infringes, or the use of which infringes, any valid or enforceable claim of the '945 Patent, the '383 Patent or the '819 Patent, either directly or indirectly, or contributorily, and SYMBILITY SOLUTIONS has not infringed or induced any other to infringe the '945 Patent, the '383 Patent or the '819 Patent.

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6. SYMBILITY SOLUTIONS is not infringing any of XACTWARE's trademarks, and SYMBILITY SOLUTIONS is not conducting any actions anywhere that constitute unfair competition or trademark infringement.

7. XACTWARE has brought suit against SYMBILITY SOLUTIONS in United States District Court, District of Utah, Central district, copies of which are attached hereto as Exhibit D. This suite alleges infringement of the '945, '383 and '819 Patents, unfair competition, trademark infringement and copyright infringement. Therefore, an actual controversy exists between SYMBILITY SOLUTIONS and XACTWARE with respect to the validity, infringement and enforceability of the '945, '383 and '819 Patents and with respect to XACTWARE's allegations of unfair competition, trademark infringement and copyright infringement. SYMBILITY SOLUTIONS will file a motion to dismiss or transfer that action to Detroit because the Court in Utah does not have personal jurisdiction over SYMBILITY SOLUTIONS and venue is improper in Utah.

DEMAND FOR RELIEF

WHEREFORE, SYMBILITY SOLUTIONS requests the following relief:

A. Enter a judgment or decree declaring that the '945 Patent, the '383 Patent and the '819 Patent are invalid and unenforceable;

B. Enter a judgment or decree declaring that the '945 Patent, the '383 Patent and the '819 Patent are not infringed by any products currently or previously made, used, or sold by SYMBILITY SOLUTIONS;

C. Enter a judgment or decree that it is the right of SYMBILITY SOLUTIONS and any buyers, sellers, or users of SYMBILITY SOLUTIONS, to continue to make, use,

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and sell such products, without any threat or other interference whatsoever against them by XACTWARE or any person or entity in privity with XACTWARE, based on or arising out of the ownership of the '945 Patent, the '383 Patent and the '819 Patent or any interest herein;

D. Enjoining XACTWARE and any person or entity in privity with XACTWARE from prosecuting or bringing or threatening to bring any action against SYMBILITY SOLUTIONS or any buyers, sellers, or users of SYMBILITY SOLUTIONS products for the manufacture, sale, or use of technology covered the '945 Patent, the '383 Patent and the '819 Patent;

E. Enter a judgment or decree that SYMBILITY SOLUTIONS is not infringing any trademark owned by XACTWARE;

F. Enter a judgment or decree that SYMBILITY SOLUTIONS is not conducting any actions that constitute unfair competition;

G. Enter a judgment or decree that SYMBILITY SOLUTIONS is not infringing any copyrights owned by XACTWARE;

H. Award SYMBILITY SOLUTIONS its reasonable cost, expenses and attorney fees in this action, this being an exceptional case; and

I. Award SYMBILITY SOLUTIONS such other and further relief as this Court may deem just and equitable.

DEMAND FOR JURY TRIAL

SYMBILITY SOLUTIONS hereby demands a trial by jury as to all issues triable by jury

CARLSON, GASKEY & OLDS, P.C.

By: _____

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Dated: August 8, 2005

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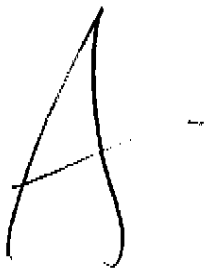

US006037945A

United States Patent [19]

Loveland

[11] Patent Number: 6,037,945

[45] Date of Patent: Mar. 14, 2000

[54] **GRAPHICAL METHOD FOR MODELING AND ESTIMATING CONSTRUCTION COSTS**

[75] Inventor: **James B. Loveland**, Orem, Utah

[73] Assignee: **Xactware, Inc.**, Orem, Utah

[21] Appl. No.: **08/991,148**

[22] Filed: **Dec. 16, 1997**

[51] **Int. Cl.**[7] **G06T 17/20**; G06F 17/60

[52] **U.S. Cl.** **345/420**; 700/107

[58] **Field of Search** 364/468.14, 512; 345/420

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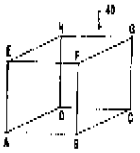
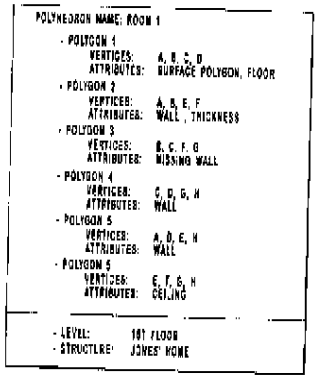
Primary Examiner—Mark R. Powell
Assistant Examiner—Jeffrey Allen Rossi
Attorney, Agent, or Firm—Kirton & McConkie; Michael F. Krieger

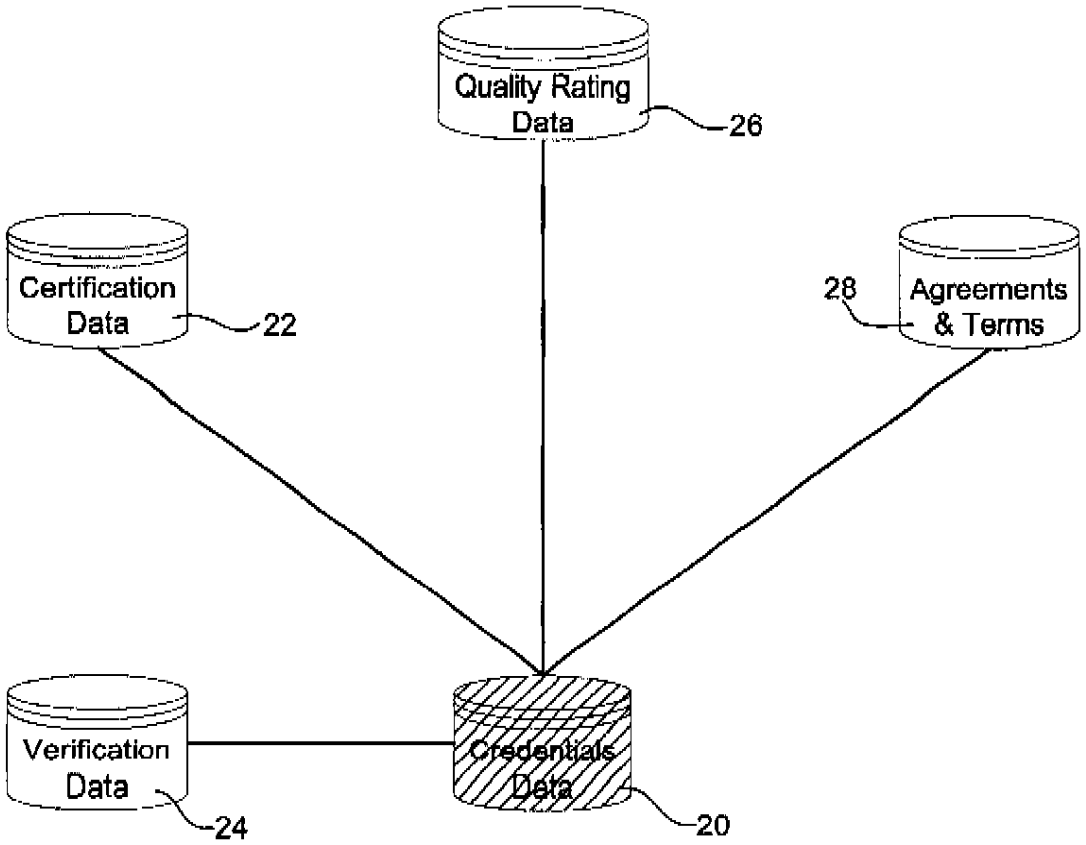
[57] **ABSTRACT**

A method and system for modeling rooms or chambers in a structure for intuitive and accurate estimation of process parameters (e.g., material and labor costs for performing the process) associated with the rooms. A graphical user interface to an estimation program enables an estimator to insert a model of a room and thereafter morph and mold the model to approximate the room undergoing estimation. The model is represented as a polyhedron having a plurality of planes that may be assigned attributes such as floors, walls and ceilings. During the morphing process, the modified and other affected planes of the polyhedron are continually revised to maintain the integrity of the closed volume represented by the polyhedron. Upon completion of the morphing process of the model, the model may be queried by the estimator for performing estimations of target processes with the assigned attributes of the various planes intelligently returning areas and other parameters associated with the estimation polyhedron employed as an approximation of the room or chamber undergoing estimation.

20 Claims, 6 Drawing Sheets







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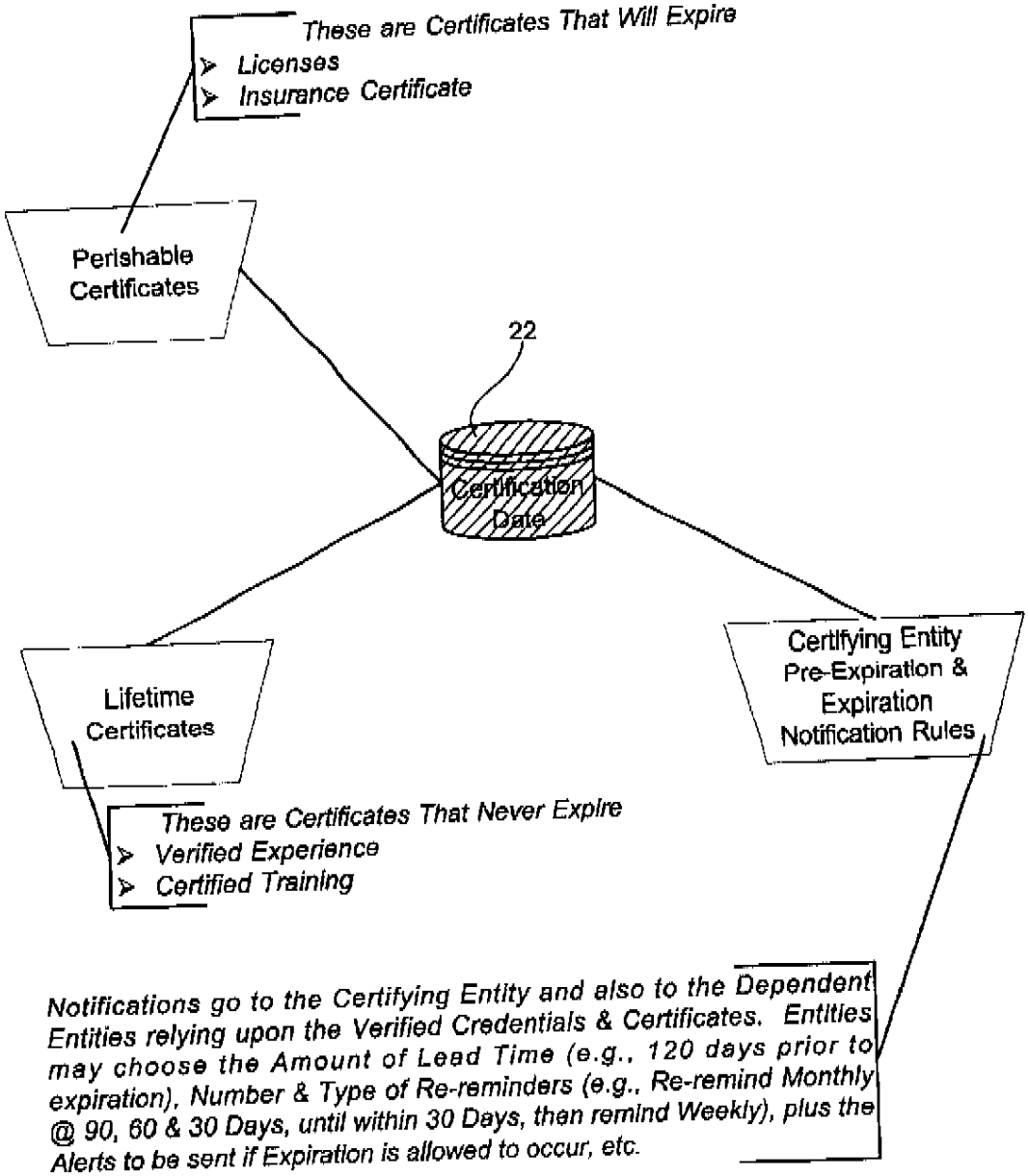

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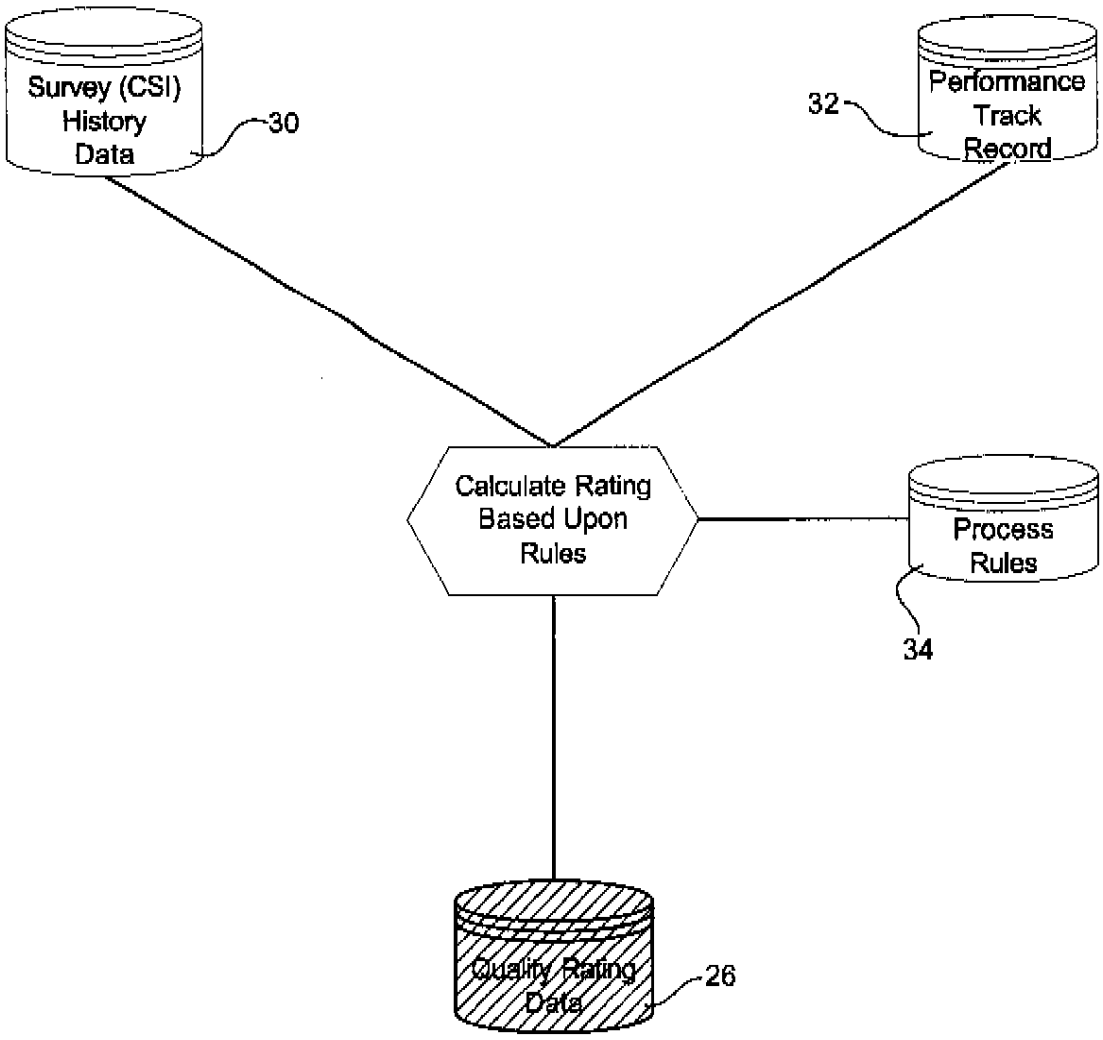

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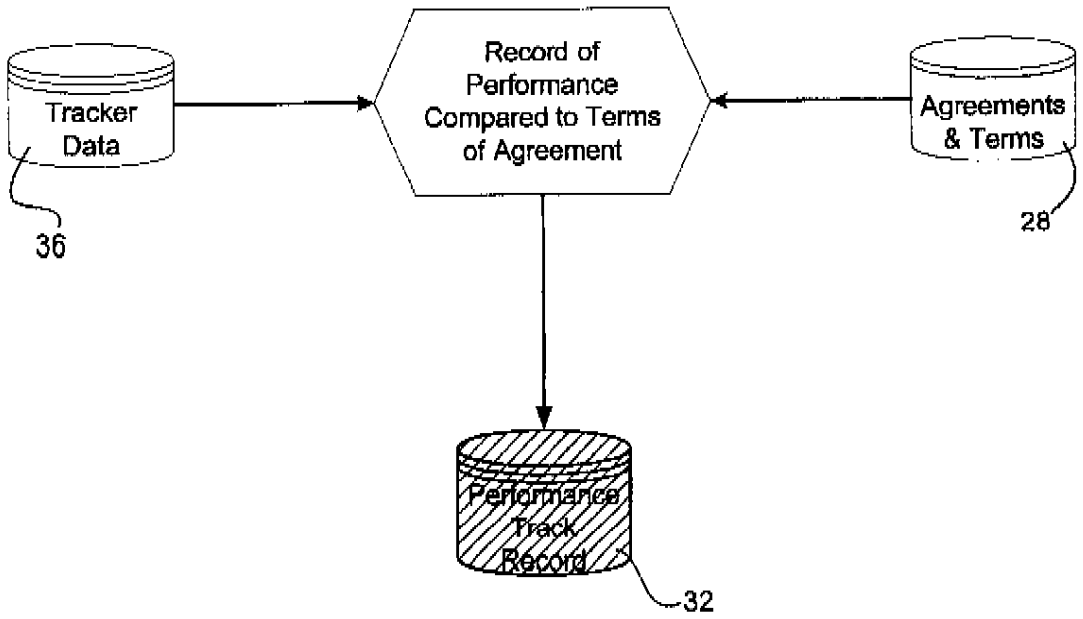

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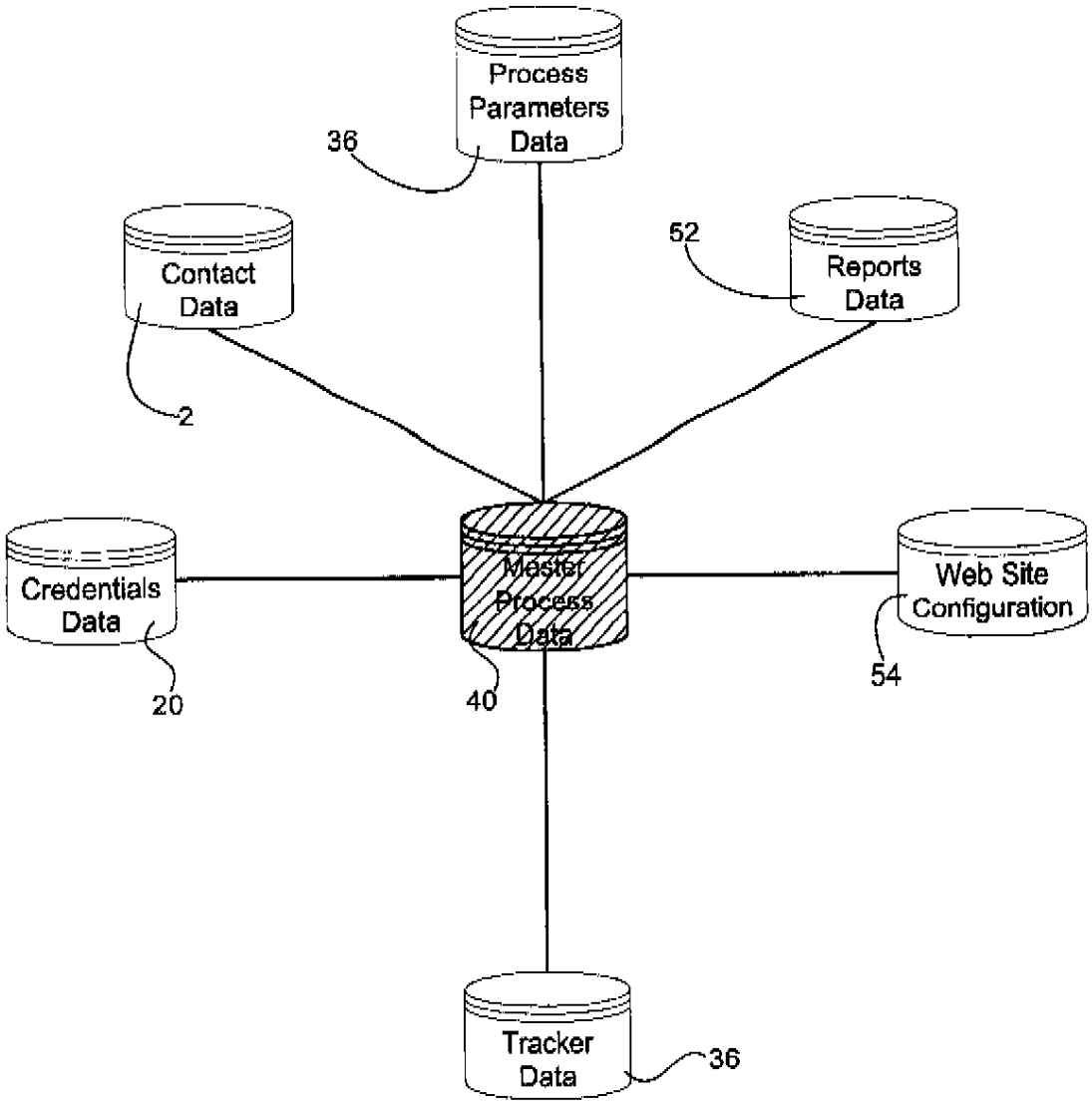

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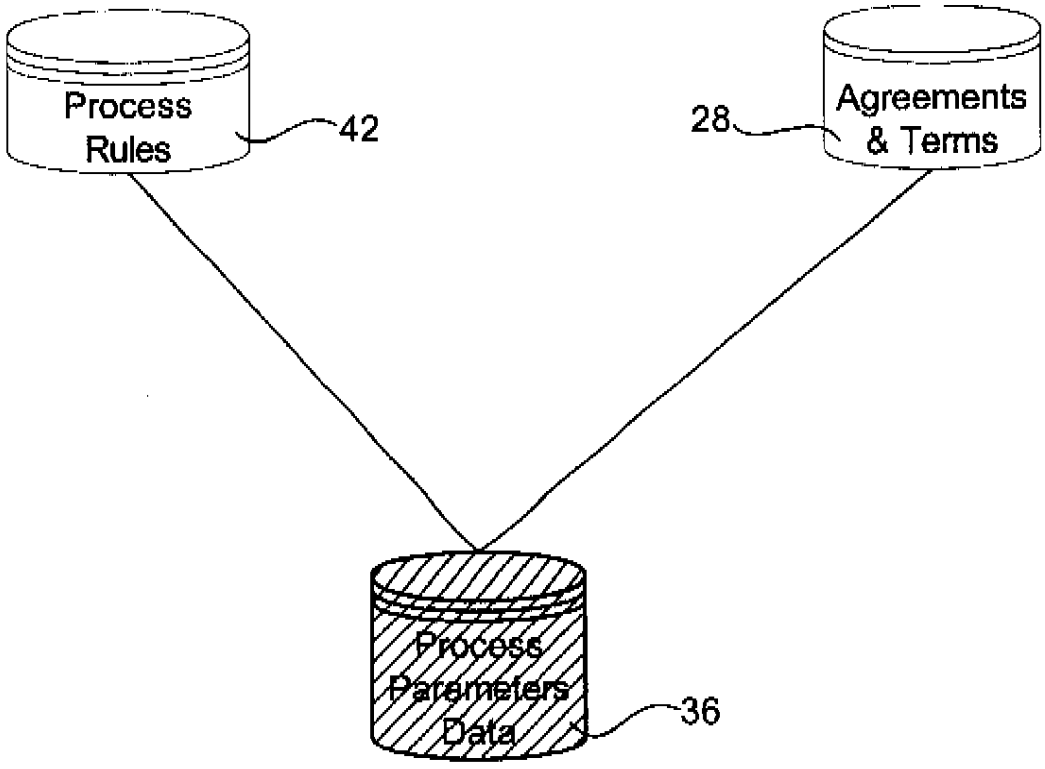

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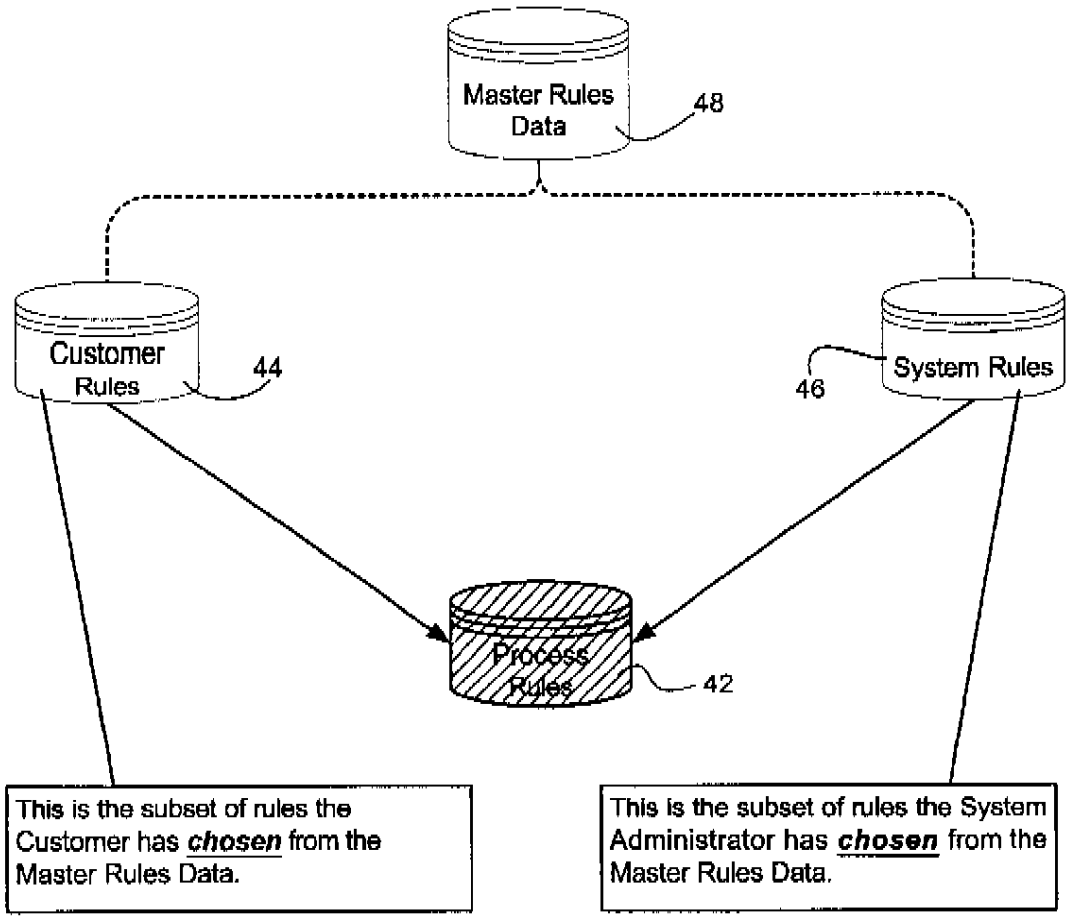

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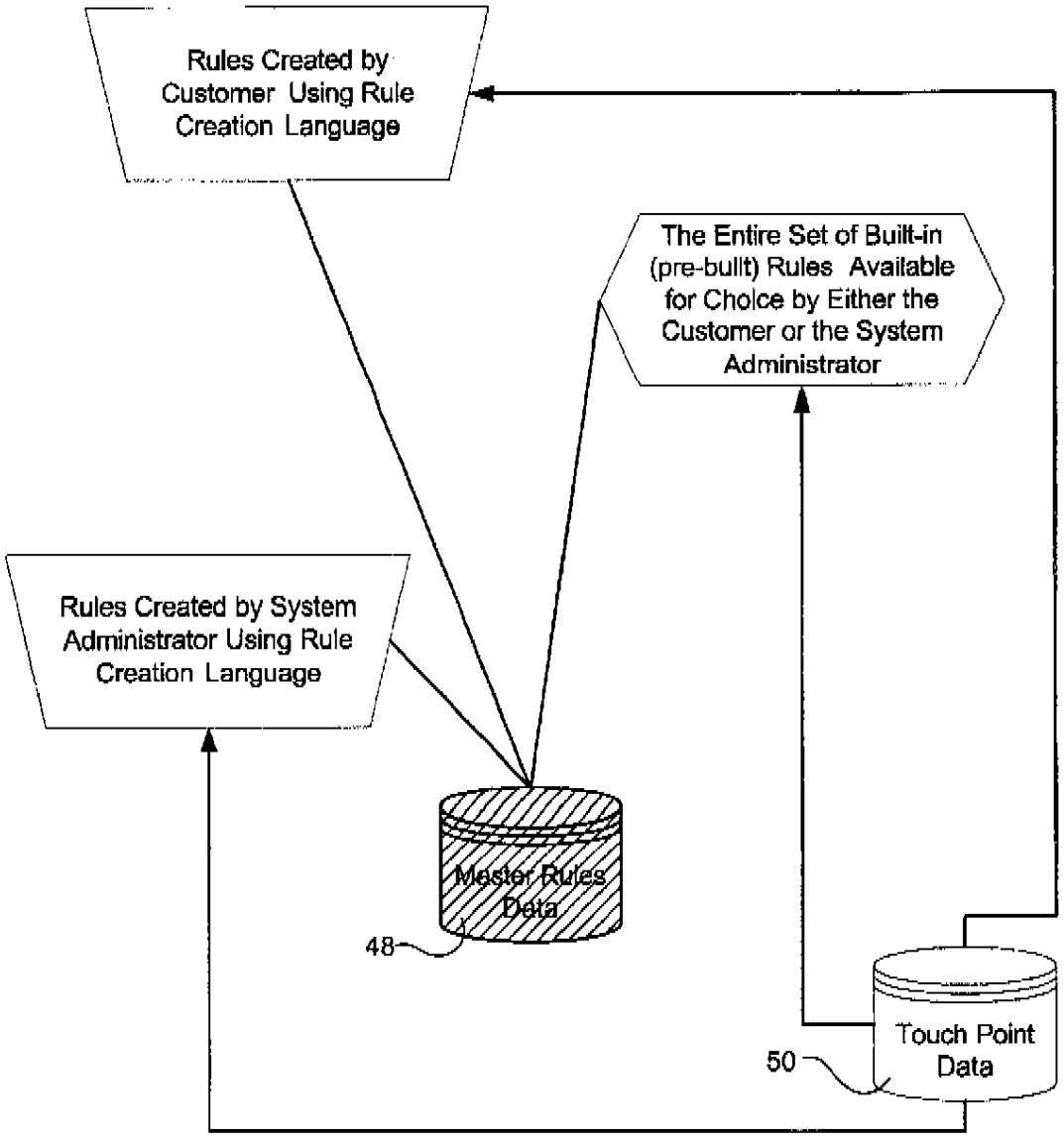

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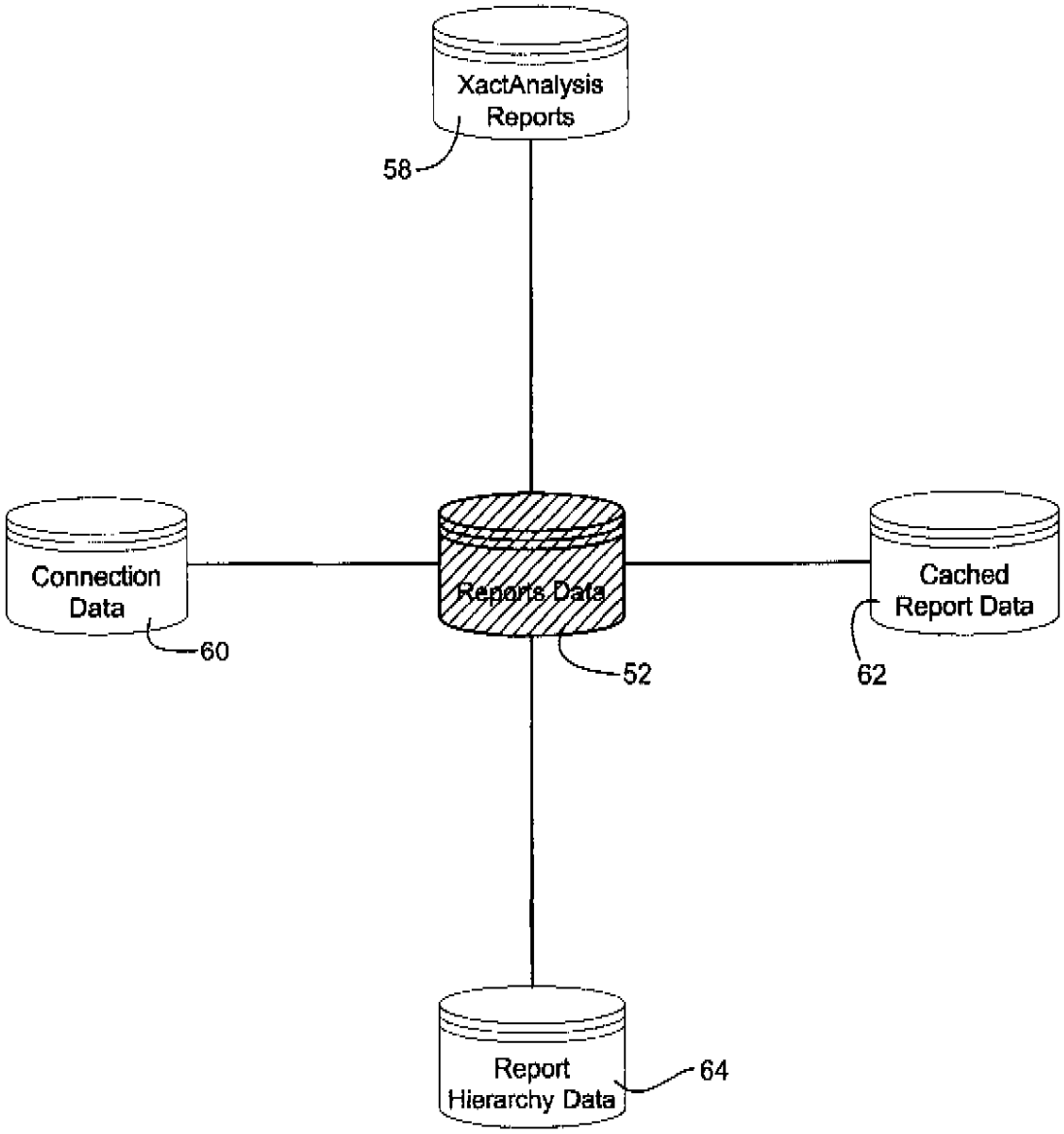

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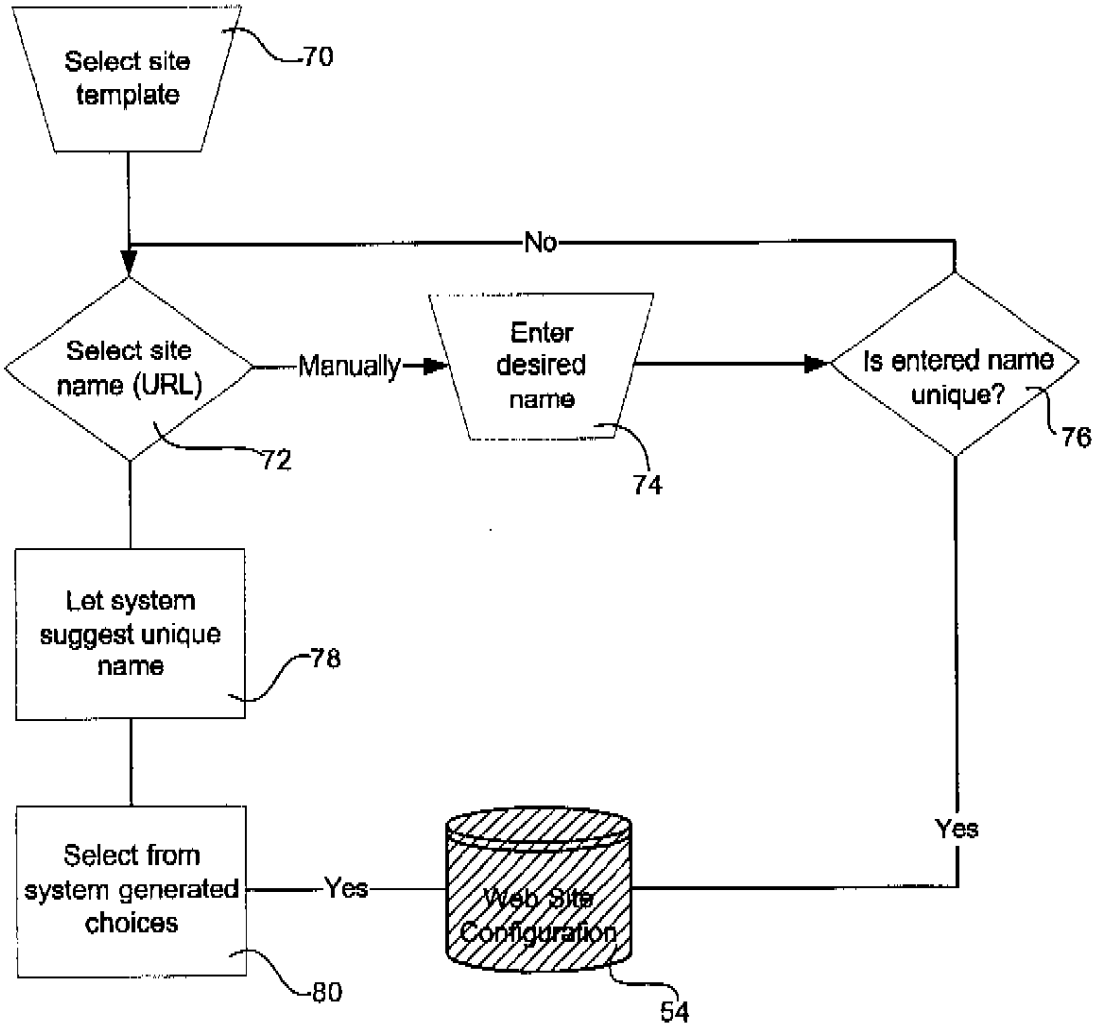

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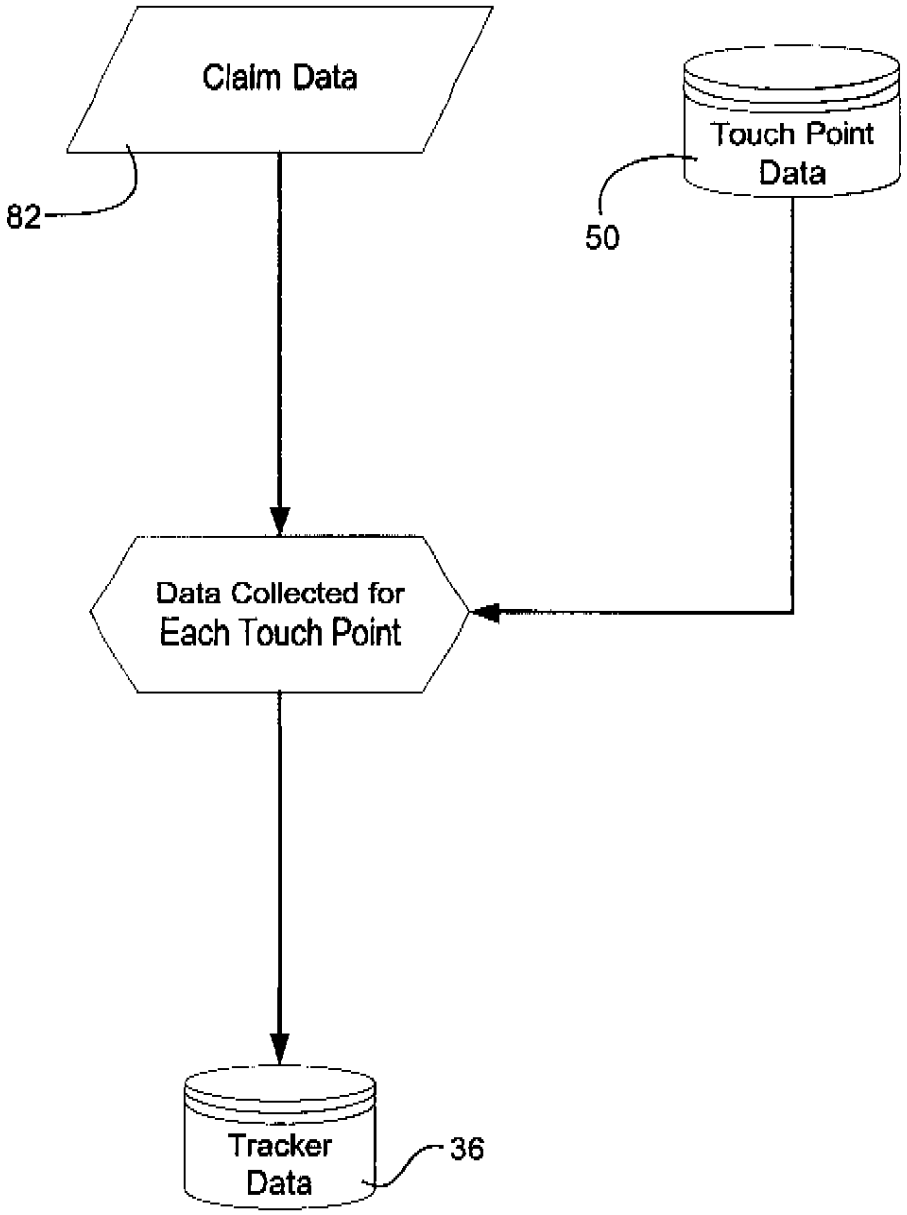

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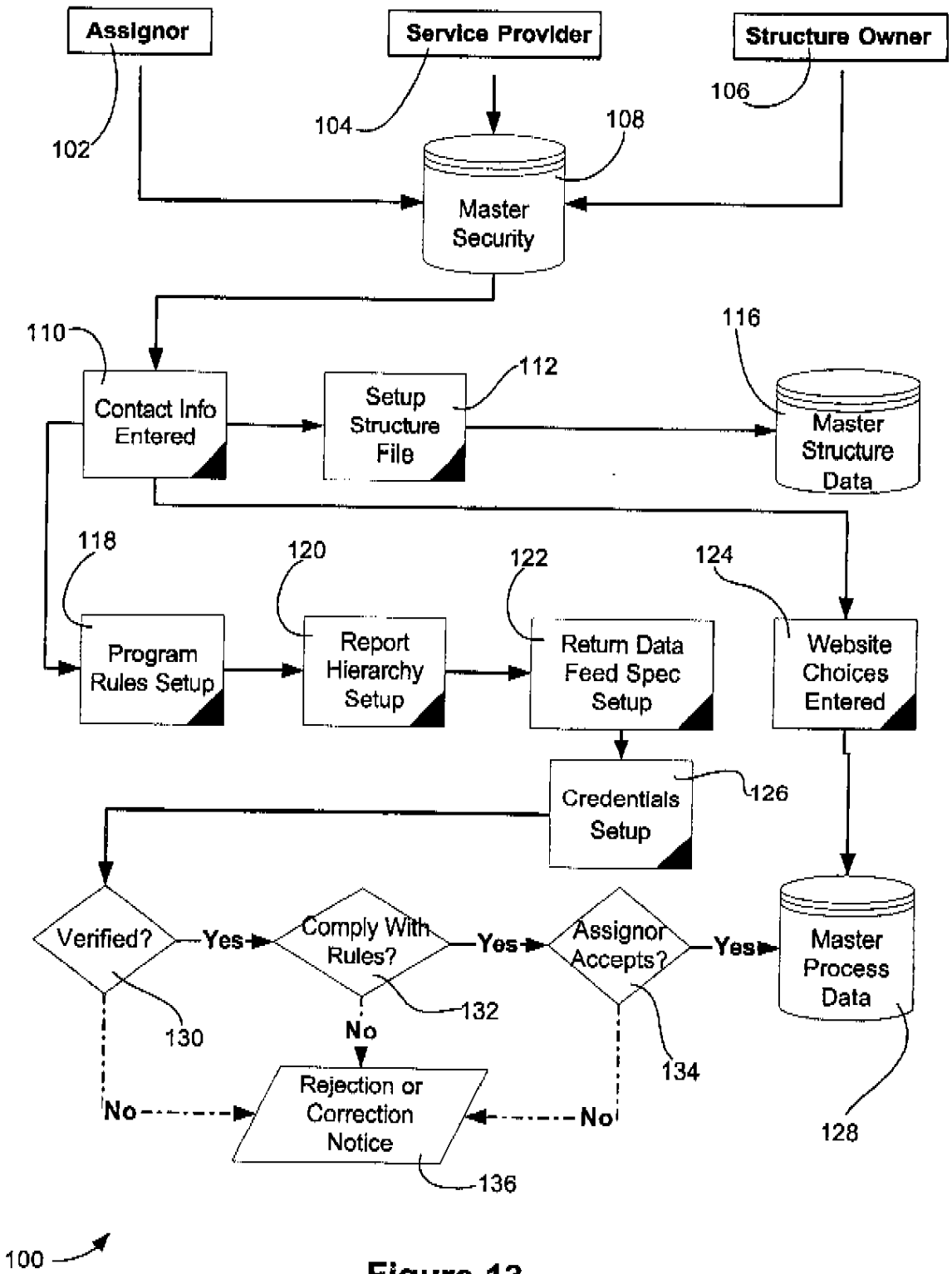

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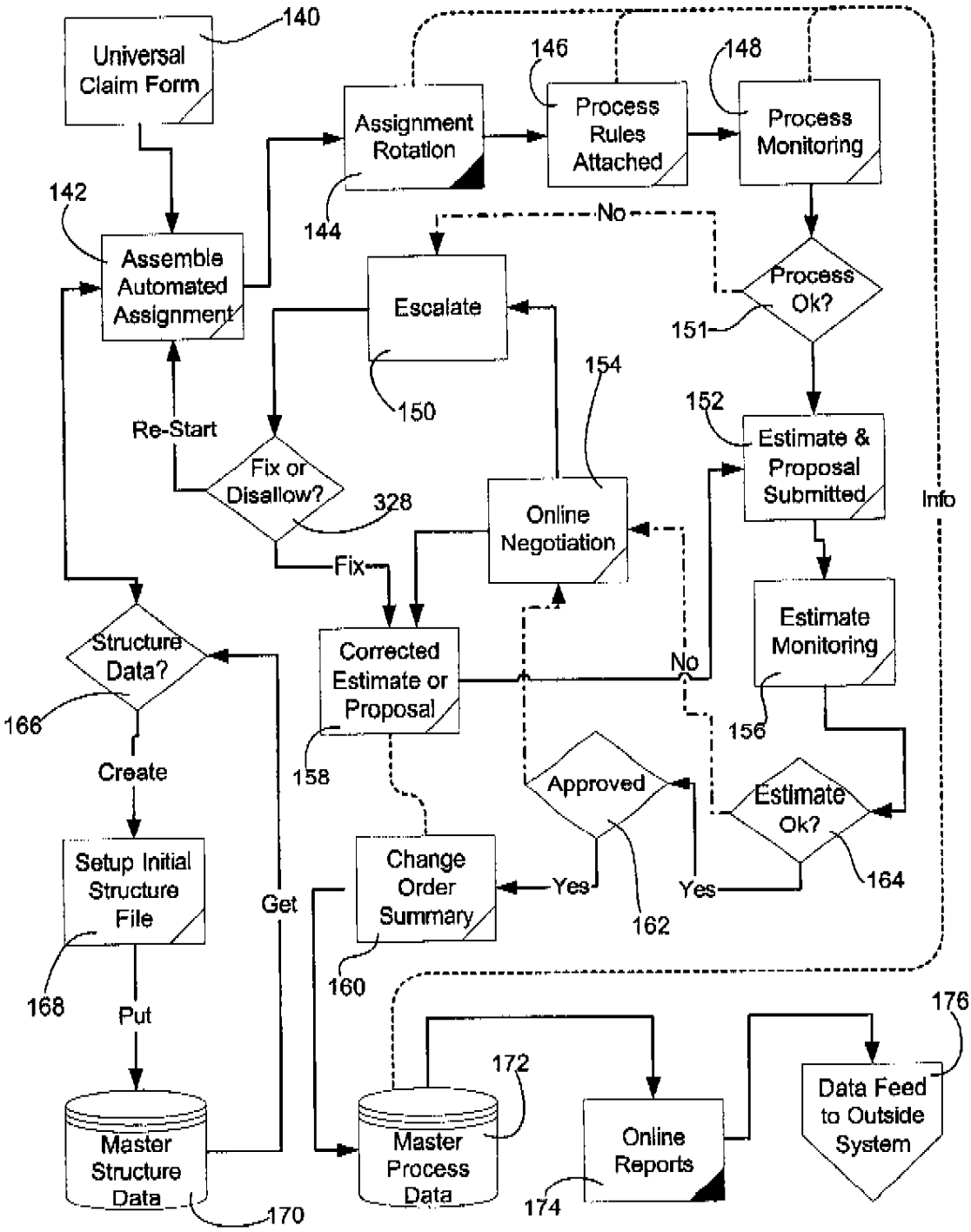

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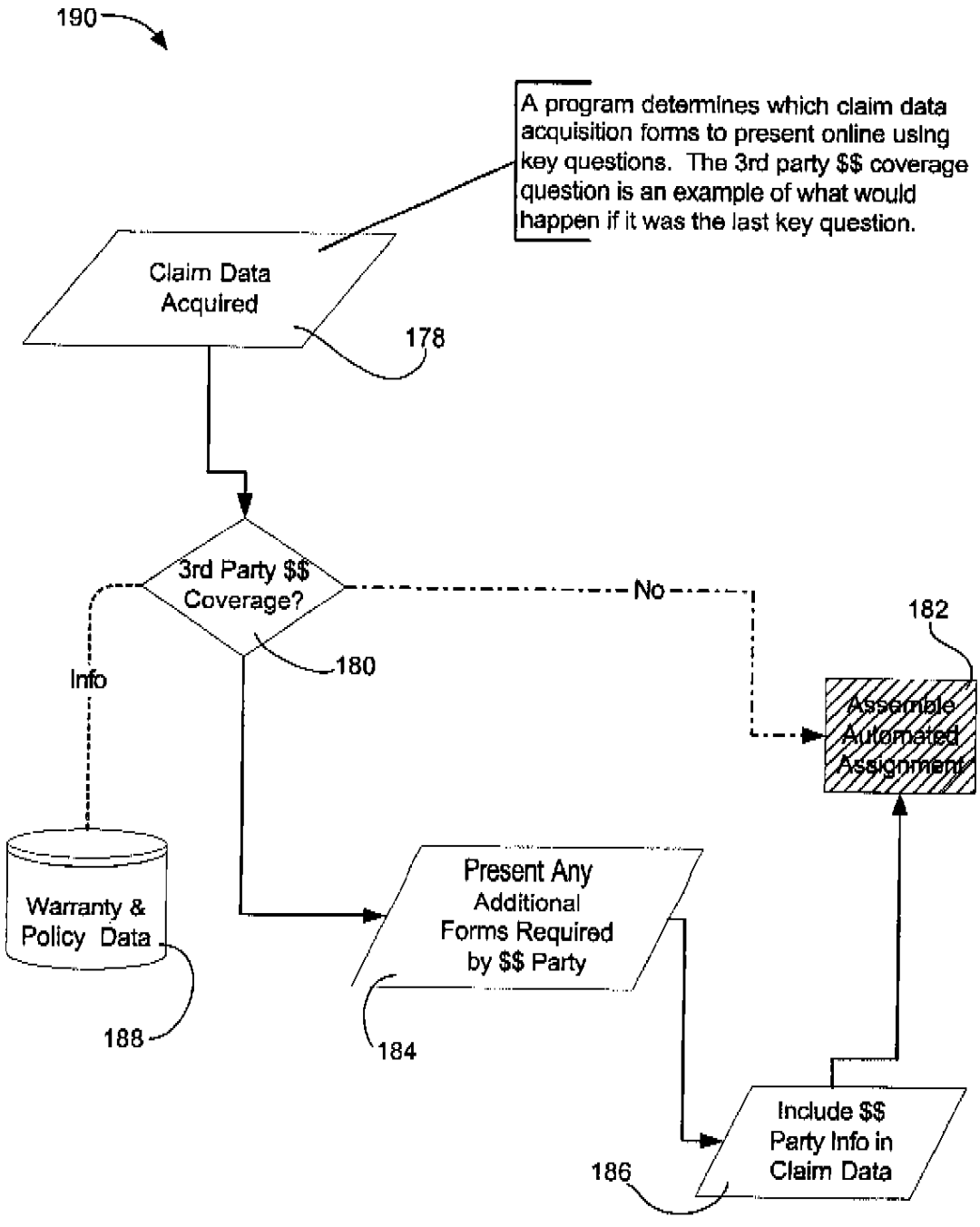

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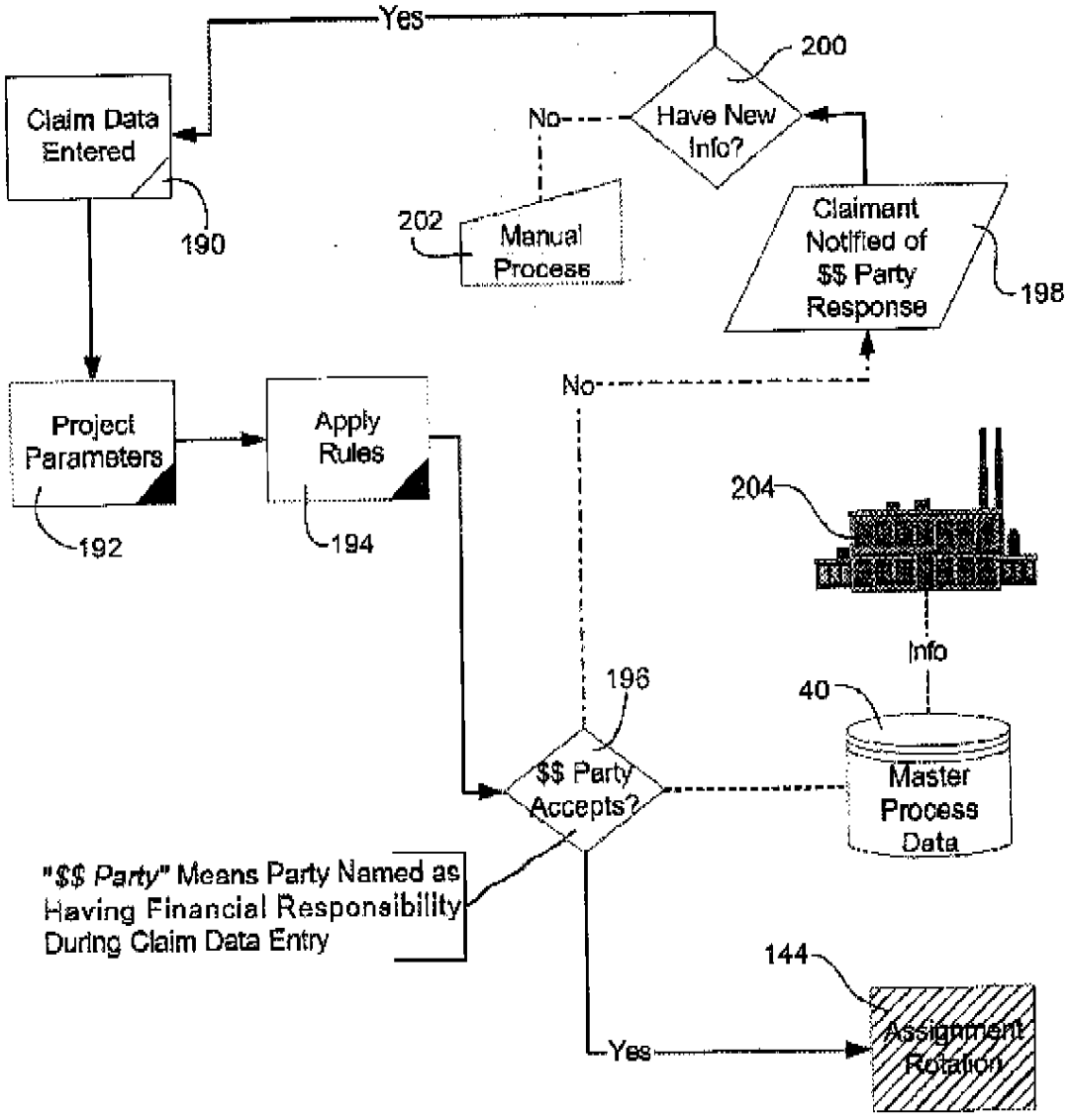

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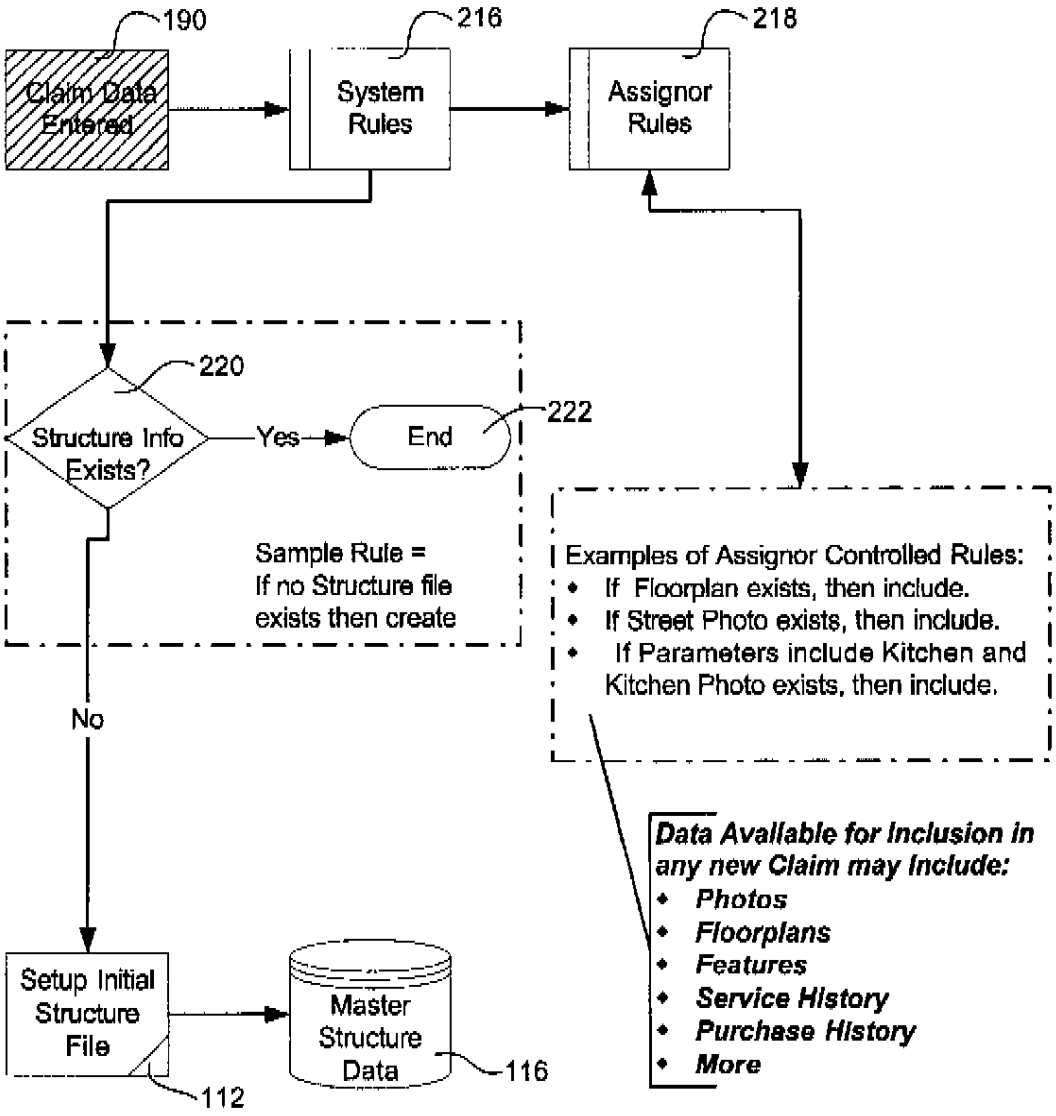

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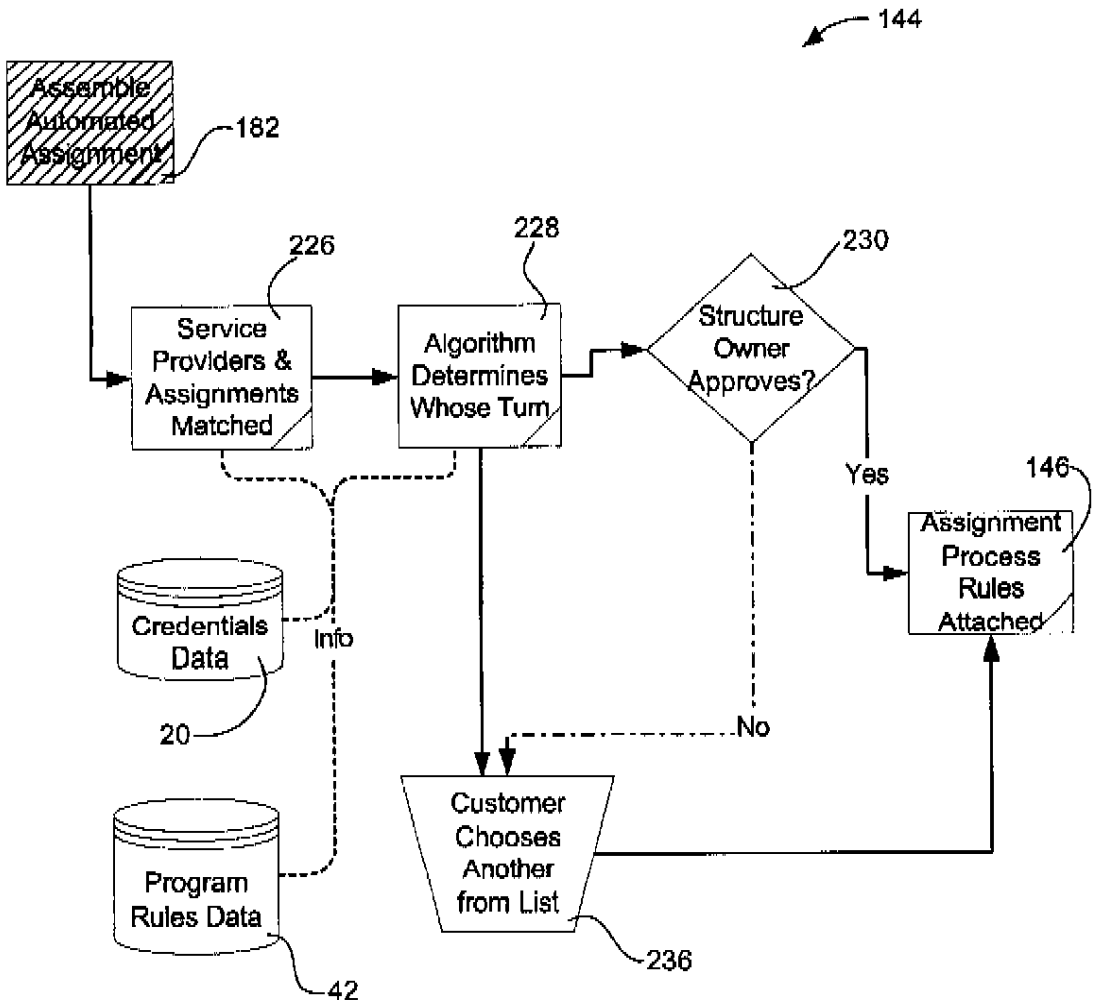

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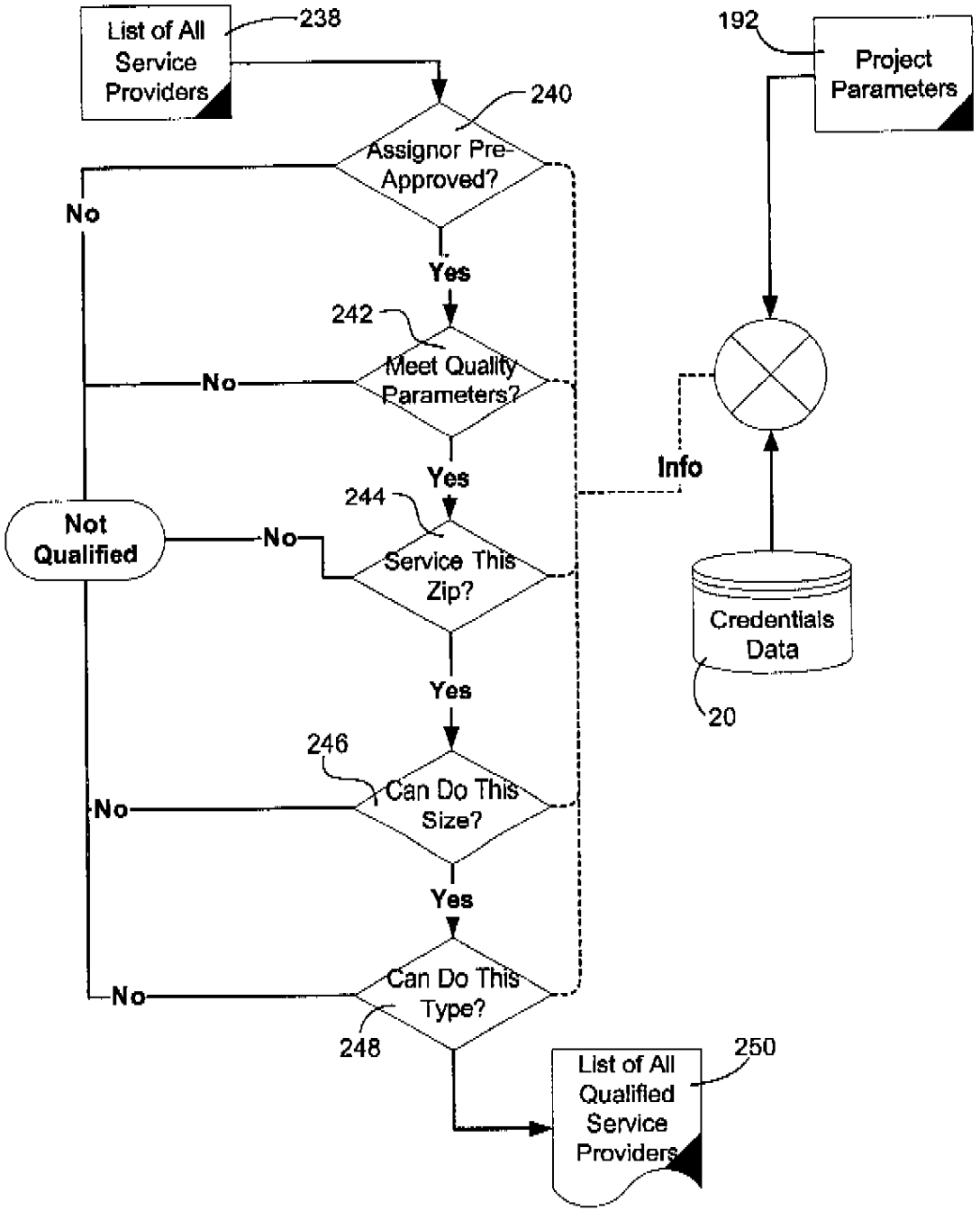

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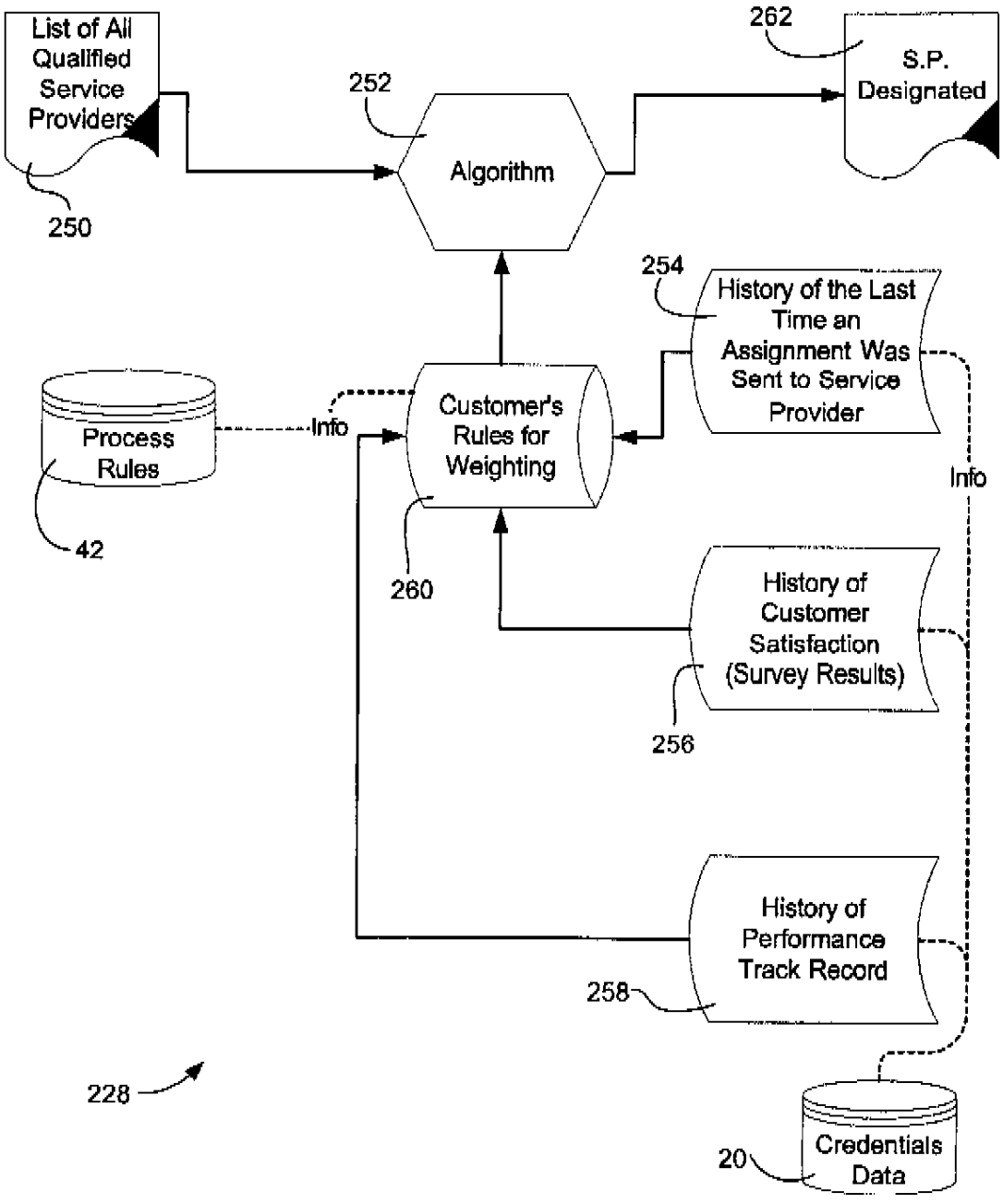

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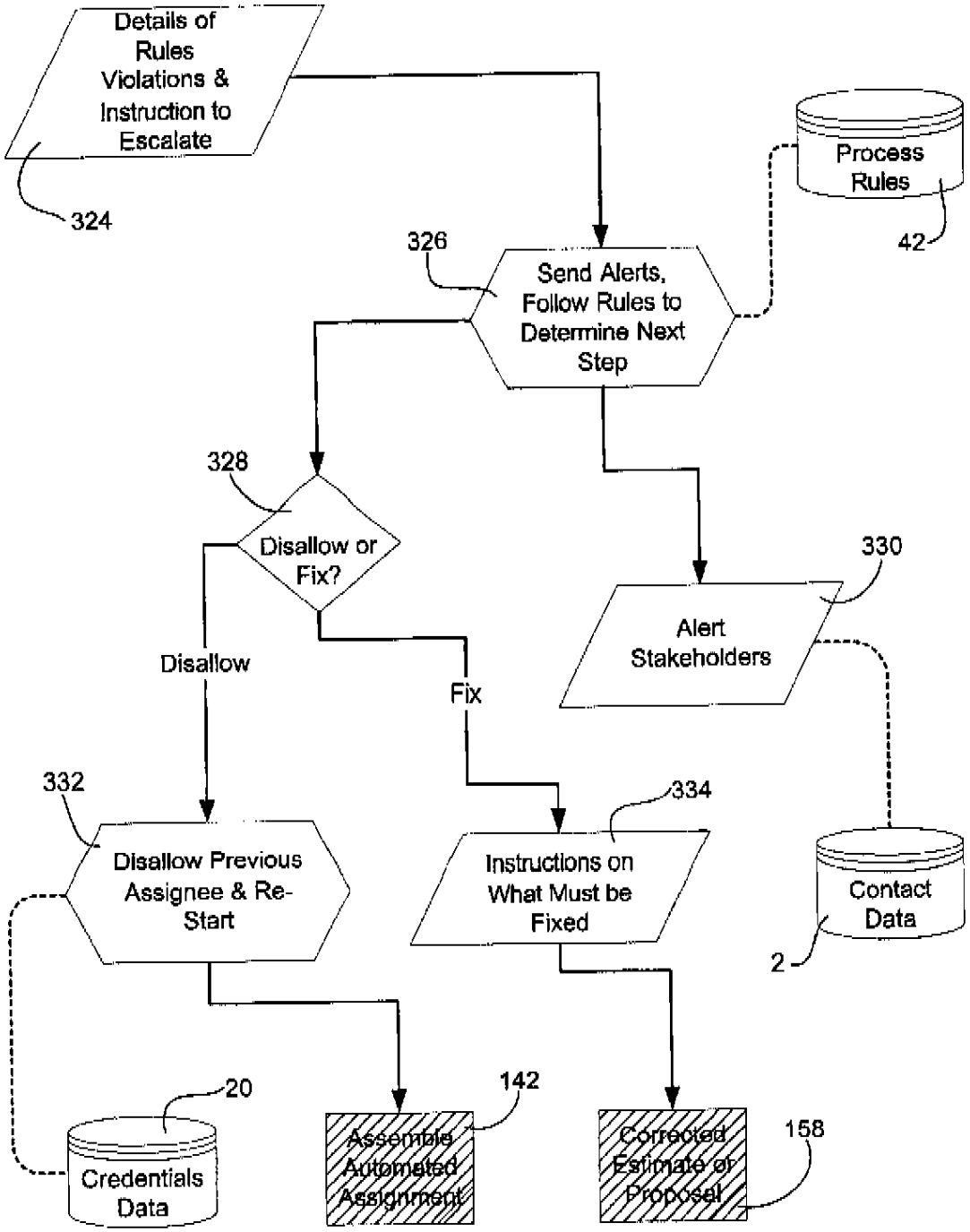

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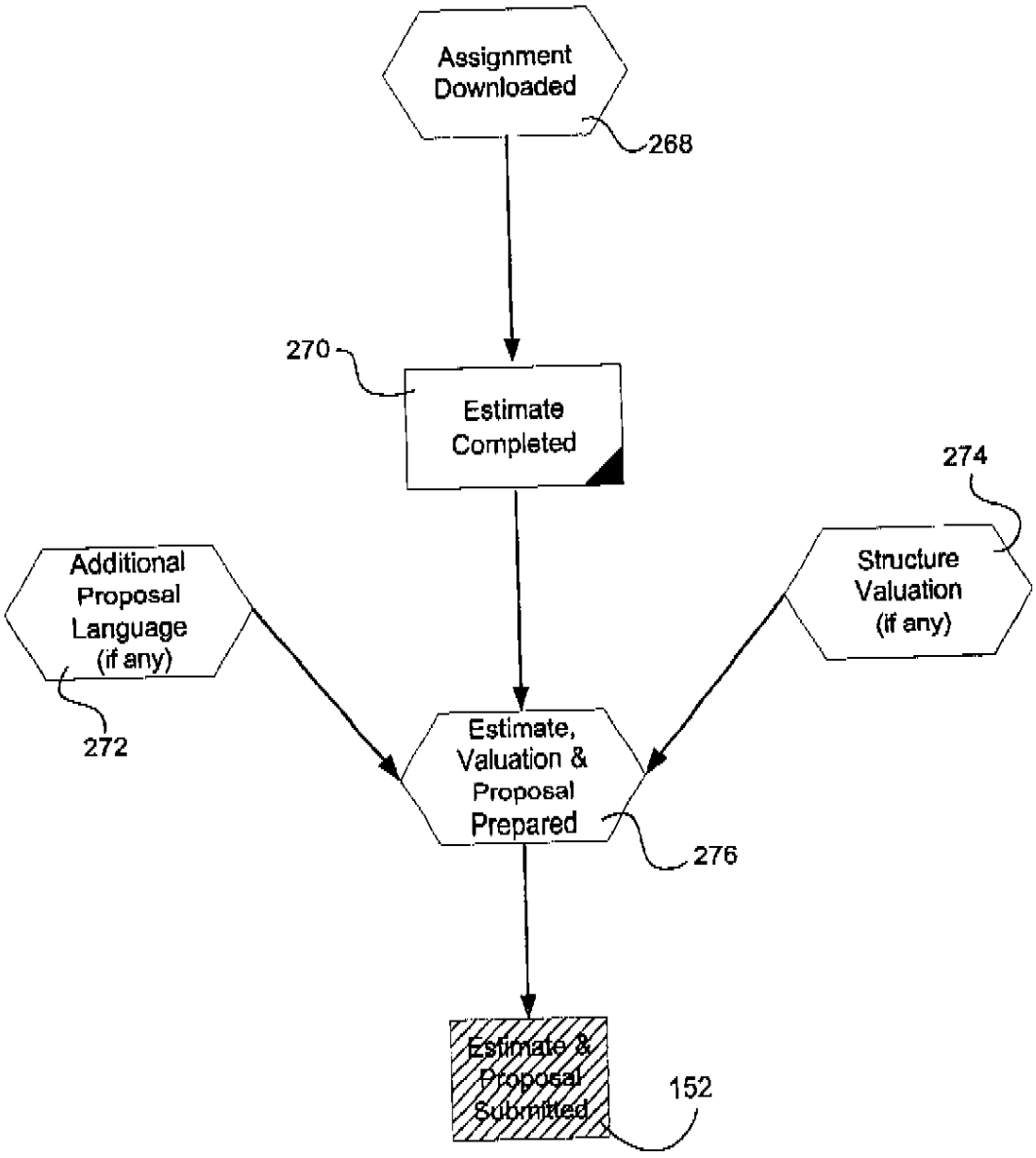

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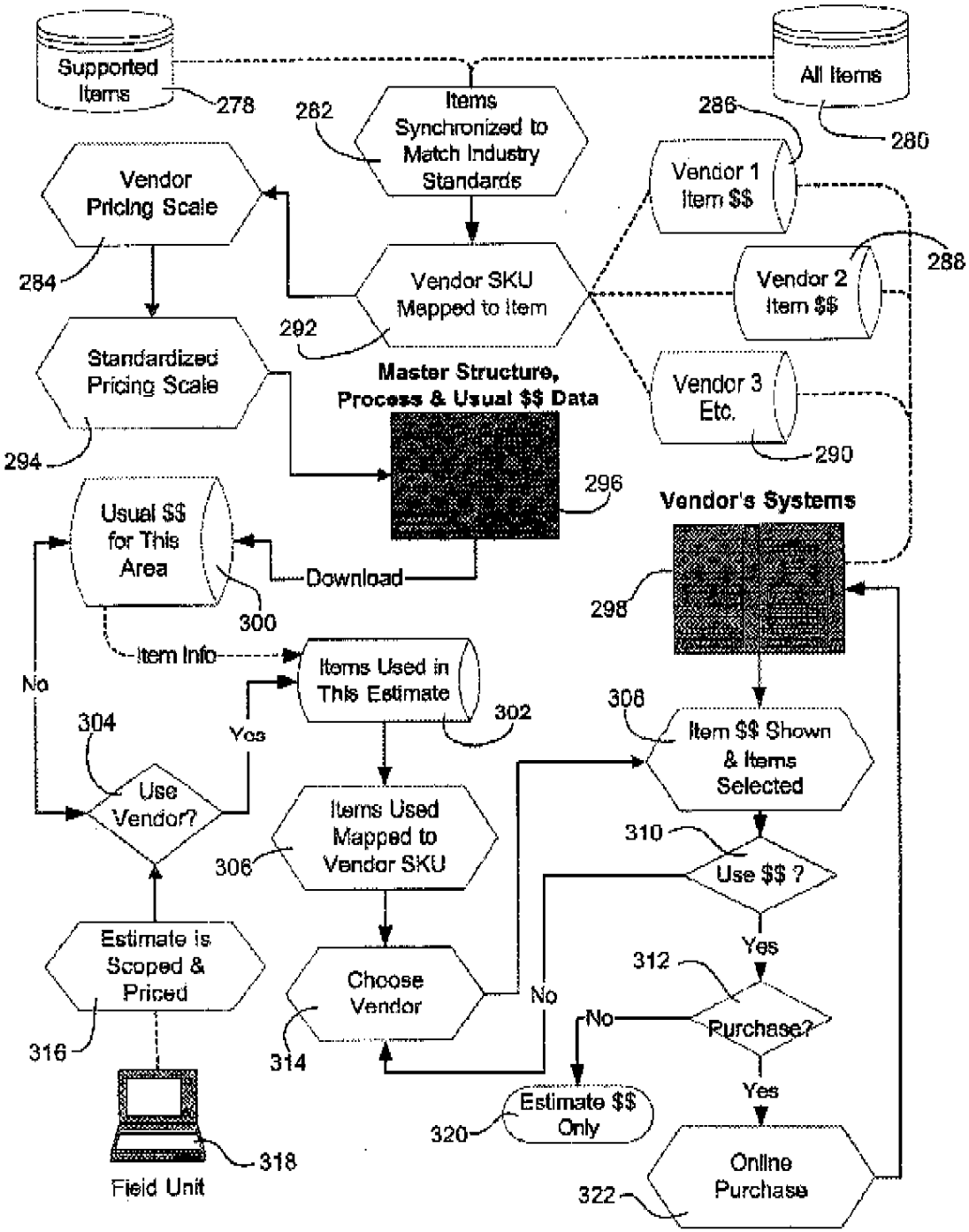

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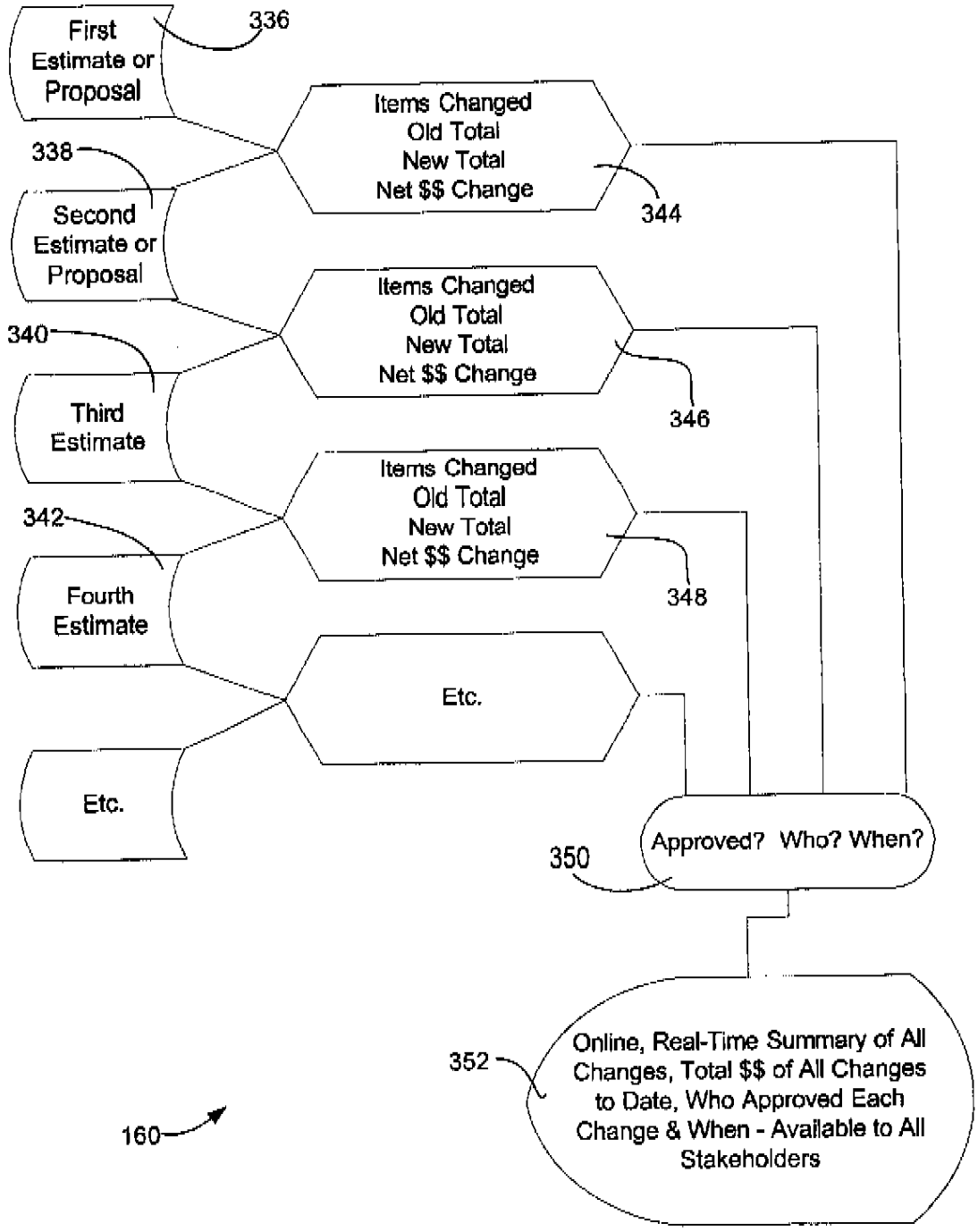

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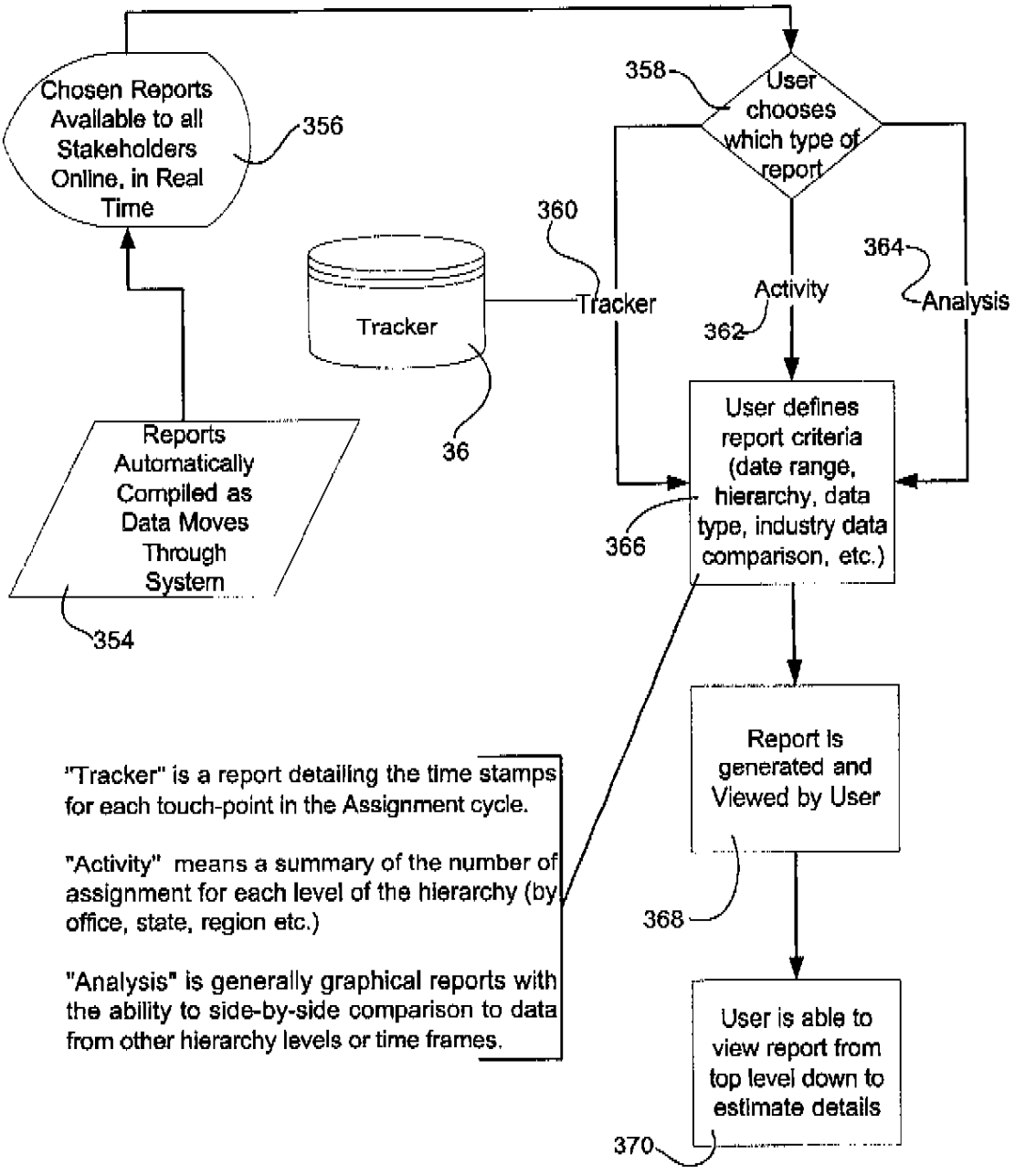

Figure 25

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AUTOMATED TASK MANAGEMENT AND EVALUATION

This application claims the benefit of 60/177,425 filed Jan. 21, 2000.

THE FIELD OF THE INVENTION

The present invention relates to methods and apparatus for automated assignment of tasks to service providers, automated implementation of rules governing the performance of tasks, monitoring of rules compliance by providers and evaluation of the providers overall ability to efficiently accomplish such tasks. It also includes an automatically updated database which matches willing and complying task service providers to interested task assignors.

The system of embodiments of the present invention serves to coordinate and communicate between service consumers, service providers and insurers, warrantors, liability holders or other interested parties. When a task is entered into the system, the task is identified by type and a database of service providers is accessed so that a capable service provider, willing to comply with established rules of task performance, may be assigned that task. When a qualified service provider is found, the task is automatically assigned to that service provider. Tasks may be reassigned when service providers do not comply with established system rules. Task assignment may be performed electronically through telephone, fax, cell phone, pager, e-mail, radio or by many other communication means.

Task progress and service provider quality are monitored and reported as the task is completed. Reports, including graphical reports, may be generated to show multi-tiered trending analyses and other analyses at any level, from industry-wide down to specific line items associated with a task.

BACKGROUND

Insurance providers, warrantors, maintenance managers, construction contractors, factory managers and many other service consumers who must repetitively assign tasks to other parties can benefit from a system which automatically assigns and monitors tasks. As a non-limiting example, insurance providers must process claims for damages to insured property. When a claim is made, the insurance provider often desires to contact a professional to make an estimate of the cost to repair the damage. Once the estimate is received, the insurance provider will often make adjustments, negotiate with service or product providers or otherwise evaluate the estimate. When the estimate is acceptable, and the rules of task completion are established, a service provider is authorized to complete the work.

Repair work on automobiles, residences, commercial buildings and other structures can often be an extensive and lengthy process. Work must often be monitored over a period of time to ensure that proper repairs are being made and that funds are being spent properly. Payments may be made in draws contingent upon completion of specific tasks. Events during the repair process must be monitored and tracked continuously to ensure a smooth and efficient process.

Service consumers who employ independent contractors and other service providers can benefit from a thorough knowledge of the provider's history, reputation and past work experience. After several contacts, a service consumer begins to get a feel for the quality of work and service that a contractor provides. However, some managers deal with far too many service providers to keep track of each one of them. A system that monitors and evaluates service providers by keeping track of their performance can be invaluable.

SUMMARY AND OBJECTS OF THE INVENTION

Some embodiments of the present invention comprise a task input system which collects task information for processing. An exemplary embodiment in the insurance industry may comprise a claims collection system where insured parties may file claims on insured property. A preferred embodiment uses an Internet-based claim filing system wherein insured parties may access and fill out web-based forms to input claims information. Information input to the forms is automatically compiled and analyzed so that the claims may be processed. In addition to a web-based forms approach, selected third-party software users may input claims information into their third-party software and send formatted data streams directly to a user's receiving server. Task or claim information may be text based, graphical, audible or in other formats.

Task or claim information may be augmented by internal files or databases of embodiments of the present invention which may contain task requestor data. In the case of an insurance claim, the internal data may comprise insurance policy limits, policy expiration dates, prior claims made, and other data.

When task information is sufficiently complete, the task may be automatically assigned to a service provider whose information is located in a database which is maintained and managed through the systems and methods of the present invention. The service provider database, in an exemplary embodiment, contains service provider names, addresses, phone numbers, e-mail addresses and other contact information as well as information regarding the provider's experience, types of tasks completed, quality ratings, bonding or insurance limits, costs of tasks completed and other information. A service provider in this exemplary embodiment may be a building contractor who is hired to repair fire damage on an insured residence.

Once an embodiment of the present invention has determined that task information is complete, a service provider is selected. This selection may be based on the type of claim made including the type of work involved in satisfying the claim, the estimated claim cost, the quality rating of the service provider, the location of the service provider and many other factors. When a service provider is selected, that provider will be notified automatically through the methods and apparatus of the present invention. This notification may occur via telephone, cell phone, e-mail or other communications media.

A notified service provider may then be required to respond to the notification within a prescribed time period. If no response is received in compliance with the system's rules of escalation, the system will either automatically notify the service provider's quality control agent such as a franchise organization if (where applicable), or the system may simply select another service provider who will then be given a period to respond. A task or assignment will automatically be transferred to another service provider either until a compliant response is received or until all automated options have been exhausted. Upon exhaustion of all options for automated assignment, the system automatically alerts the entity owning the assignment of the actions taken, the entities involved and rules broken, and then awaits addi-

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tional escalation instruction. These rules of escalation may be based upon response times and methods or other parameters and may be established or changed by service provider management, the system user, the task requester or others. Alerts may be sent to any interested parties through any available communications media.

When a provider has been selected and assigned a task and a proper response has been logged, the provider may then respond by submitting an estimate of the cost of completing the task. This estimate may be based on a site visit by the service provider or may be based on information provided to the service provider through the system of embodiments of the present invention. Graphical information such as digitized plans and photographs and other descriptive information may be provided to the service provider through the systems and methods of embodiments of the present invention. This information may be augmented by a site visit by the service provider.

A service provider may calculate an estimate through proprietary methods. However, the system and method of embodiments of the present invention also provide an electronic method of estimation in an on-line format so that properly formatted estimates may be forwarded to the system user or other designated parties. This estimate may then be evaluated relative to the costs of similar tasks performed in the past, or it may be evaluated relative to an automated estimating system. This evaluation process may be automated or, alternatively, may be performed manually by an expert evaluator. If the estimate conforms with the parameters of the evaluation process, whether automated or manual, the provider who supplied the estimate may be authorized to perform the task. Password protection may be used to keep sensitive information confidential.

Authorization will preferably be performed automatically and electronically by one or more of several means. Preferable authorization means include, but are not limited to, conventional telephone, cell phone, e-mail, pager and radio.

Selected embodiments of the present invention will track the provider's progress and report to the task requestor/consumer, user, financer or other parties as the task is completed. This event tracking may be used to authorize partial payments to the service provider as events comprised within a task are completed. Event tracking may also be used to evaluate a service provider's performance.

Event tracking and other monitoring aspects of embodiments of the present invention may be used to generate a quality rating for service providers listed in system databases. Quality ratings may also be based on other input from service consumers, claimants and other parties. In a preferred embodiment of the present invention, a customer survey is implemented through web-based forms, direct consumer contact or other means. A consumer satisfaction factor is calculated based on this data. This consumer satisfaction data is augmented with service provider performance data obtained through the system of embodiments of the present invention. Performance data may be based on provider response data such as, but not limited to, time of response, type of response, estimate quality, estimate amounts relative to automated estimates, time to complete task and other performance factors.

Embodiments of the present invention may also have the ability to perform analyses on the information gathered by the system and other information otherwise input into the system. These analyses may be performed on task data, service provider data, task requestor data or other system information. Reports may be generated to help a user

analyze and predict trends in their industry. These trending analyses may be multi-tiered allowing the user to generate reports, including graphical reports, based on industry-wide data, single task specific data or anything in between. For example, and not by way of limitation, an insurance company may generate a "type of loss" report for the entire company which lists occurrences for each loss type in graphical form. This report may be further broken down by region, state, city or even down to specific claims as needed by the user. Other reports may be generated at any level to help a user understand key aspects of their business and these reports may be customized for a specific business or business type.

Accordingly, it is an object of some embodiments of the present invention to provide a system and apparatus for automated assignment of tasks.

It is also an object of some embodiments of the present invention to provide a system and apparatus for monitoring and reporting task progress.

Another object of some embodiments of the present invention is to provide a system and apparatus for quality control.

A further object of some embodiments of the present invention is to provide a system and apparatus for alerting a user regarding the response of a service provider.

Another object of some embodiments of the present invention is to provide a system and apparatus for trending analysis.

These and other objects and features of the present invention will become more fully apparent from the following, description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the manner in which the above-recited and other advantages and objects of the invention are obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** is a diagram illustrating details of contact data;

FIG. **2** is a diagram illustrating details of credentials data;

FIG. **3** is a diagram illustrating details of certification data;

FIG. **4** is a diagram showing details of quality rating data;

FIG. **5** is a diagram illustrating details of performance track record data;

FIG. **6** is a diagram illustrating details of master process data;

FIG. **7** is a diagram illustrating details of process parameters data;

FIG. **8** is a diagram illustrating details of master rules data;

FIG. **9** is a diagram illustrating details of master rules data;

FIG. **10** is a diagram illustrating details of reports data;

FIG. **11** is a diagram illustrating details of web site configuration;

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FIG. **12** is a diagram illustrating details of tracker data;

FIG. **13** is a diagram illustrating details of an information setup procedure data;

FIG. **14** is a diagram illustrating details of exemplary processing methods;

FIG. **15** is a diagram illustrating details of task data acquisition and assignment;

FIG. **16** is a diagram illustrating details of an automated assignment method;

FIG. **17** is a diagram illustrating details of system and assignor rules;

FIG. **18** is a diagram illustrating details of assignments and rotation;

FIG. **19** is a diagram illustrating details of service provider selection;

FIG. **20** is a diagram illustrating details of service provider selection;

FIG. **21** is a diagram illustrating details of rules execution;

FIG. **22** is a diagram illustrating details of an estimation and proposal process;

FIG. **23** is a diagram illustrating details of an estimation, pricing and purchasing process;

FIG. **24** is a diagram illustrating details of a change order summary process; and

FIG. **25** is a diagram illustrating details of reports and report generation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The figures listed above are expressly incorporated as part of this detailed description.

It will be readily understood that the components of the present invention, as generally described and illustrated in the figures herein, could be arranged and designed in a wide variety of different configurations. Thus, the following more detailed description of the embodiments of the system and apparatus of the present invention, as represented in FIGS. **1** through **25**, is not intended to limit the scope of the invention, as claimed, but it is merely representative of the presently preferred embodiments of the invention.

The currently preferred embodiments of the present invention will be best understood by reference to the drawings, wherein like parts are designated by like numerals throughout.

Embodiments of the present invention may be used in many different industries which include, without limitation, insurance providers, warrantors, maintenance managers, construction contractors, factory managers and many other service consumers who must repetitively assign tasks to other parties. While embodiments of the present invention may be used in many applications, an application in the insurance industry is thought to be illustrative of many of these embodiments and is used herein as a non-limiting example of these embodiments.

Some embodiments of the present invention comprise a task input system which collects task information for processing. An exemplary embodiment in the insurance industry may comprise a claims collection system where insured parties may file claims on insured property. A preferred embodiment uses an Internet-based claim filing system wherein insured parties may access and fill out web-based forms to input claims information. Information input to the forms is automatically compiled and analyzed so that the claims may be processed. In addition to a web-based forms approach, selected third-party software users may input claims information into their third-party software and send formatted data streams directly to a receiving server of an embodiment of the present invention. Task or claim information may be text based, graphical, audible or in other formats.

Task or claim information may be augmented by internal files or databases of embodiments of the present invention which may contain task requester data. In the case of an insurance claim, the internal data may comprise policy holder addresses, contact information, records of insured property, insurance policy limits, policy expiration dates, information regarding prior claims made, and other data.

When task information is sufficiently complete, the task may be automatically assigned to a service provider whose information is located in a database which is maintained and managed through the systems and methods of the present invention. The service provider database, in an exemplary embodiment, contains service provider names, addresses, phone numbers, e-mail addresses and other contact information as well as information regarding the provider's experience, types of tasks completed, quality ratings, bonding or insurance limits, costs of tasks completed and other information. A service provider in this exemplary embodiment may be a building contractor who is hired to repair fire damage on an insured residence.

The systems, methods and apparatus of embodiments of the present invention comprise databases which store various information used by these embodiments. These databases may be stored as a single database file with information organized for selective access or may be stored as a combination of files which are completely distinct or organized in some type of file hierarchy. Some database files may be stored on a network server accessible to all users, other files may be protected by selective and controlled access. Some database files may also be stored in a divided format with portions located on one physical storage device while others are located on another storage device. The databases and files of embodiments of the present invention may be combined or arranged in any number of formats that achieve the function of those embodiments. Any storage method which provides the function of embodiments of the present invention is to be considered within the scope of embodiments of the present invention.

In reference to FIG. **1**, embodiments of the present invention comprise a contact database which contains information needed to contact a service provider which may be available for task assignment. Contact database **2** comprises primary company contact data **4** including, but not limited to, the name, address, phone numbers, e-mail addresses and other information for contacting a service provider. This information may exist for individuals or for larger business entities. Contact database **2** also comprises notification method data **6** which is a record of a particular service provider's communication contact preferences. A service provider or other contact may identify what communication methods are preferred for communication of assignments, authorization or other information. As a non-limiting example, a service provider may prefer to be contacted with an initial assignment by pager and business telephone, but prefer to receive alert information by e-mail. These preferences are recorded in notification method data **6** to improve communication efficiency and ensure prompt contact.

Communication with service providers may also be modified by rules of notification **8** which are used to adjust communication parameters according to time of day, work

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priority, success of the primary contact method or some other factor. As a non-limiting example, a service provider may want to be contacted by telephone during business hours and by pager at other times. In another non-limiting example, a service provider may wish to receive typical assignments by e-mail, but receive emergency assignments by pager, cell phone or some other method or combination of methods.

Systems of embodiments of the present invention also comprise a credentials database **20**, as shown in FIG. **2**, which comprises information related to a service provider's qualifications and prior agreements including, but not limited to, quality ratings, certificates, agreements, qualification verification and other information.

In a preferred embodiment of the present invention, credentials database **20** comprises a certification database **22**, as shown in FIG. **3**, which may contain records regarding certification of service providers. Certification database **22**, may comprise records of service provider certifications such as contractor licenses, business licenses, insurance company approvals, specialized training certificates, bonding certificates, and other documents relating to service provider approval, acceptance and certification by other entities. Certification database **22** may comprise information regarding perishable certificates which must be renewed periodically to maintain a certified status. Certification database **22** may also comprise information regarding permanent certificates which remain valid for the life of a certificate holder. Certification database **22** may further comprise notification rules for notifying certificate holders, parties who have assigned tasks to certificate holders, certifying agencies and others of the status of perishable certificates. Alert messages may also be delivered under these notification rules to alert parties of impending certificate expiration.

Some embodiments of certification database **22** may also provide for automated renewal of perishable certificates for subscribing service providers.

Notification rules may also comprise rules for multiple and repeated alert and notification of parties who select this function. Notification and alert messages may be communicated through any electronic communication media including automated phone messages, e-mail, conventional mail messages, beeper messages and others. Certification database **22** may also comprise records of parties who rely on a specific service provider's certification so that these relying parties may also be notified of certification expiration or related information.

Certification database **22** may also comprise information regarding a service provider's experience. This experience information is typically related to an amount of time worked in a given field or on a type of project. This information will generally need to be updated regularly to accurately reflect a service provider's current experience. Embodiments of the present invention may automatically update time based information. For example, and not by way of limitation, certification database **22** may be automatically updated annually to reflect a service provider's total work experience as of that year. Particular types of work experience may also be maintained according to the types of jobs performed by a service provider.

In select embodiments of the present invention, credentials database **20** may also comprise verification data **24**, as shown in FIG. **2**, which comprises data related to verified credentials. For example, and not by way of limitation, a service provider may be required to be bonded for a specific monetary amount. This bonding requirement may be directly verified by a bonding company who has issued a policy or bond to the service provider. Verification database **24** may comprise the name and address of the verifying entity, the certification being verified, the time period for which the certification is being verified, contact information and other related information. Automated verification may also be performed through access to a verification database or similar system maintained by the verifying entity.

In some embodiments of the present invention, credentials database **20** may also comprise quality rating data **26**, as shown in FIGS. **2** and **4**, which comprises information related to a service provider's performance and quality of work. In reference to FIGS. **4** and **5**, quality rating data **26** may comprise information related to a service provider's performance track record **32** as compared with performance terms **28** defined in agreements, schedules, industry standards, typical client expectations and other performance factors. This quality rating data **26** may be compiled and stored as a numeric score or other quality rating to reflect a service provider's overall quality or data may be stored as specific data related to work performance and quality such as, but not limited to, contact promptness, budget compliance, scheduling compliance and other factors.

In order to compare a service provider's performance with agreed-upon terms, specific events in a service provider's project may be selected and tracked **36** to establish a performance track record **32**. Performance terms **28** may be compared to tracker data **36** to determine compliance with terms **28**. When a service provider meets or exceeds the performance terms **28**, his performance track record **32** will reflect that positive performance.

In some embodiments, a service provider may also be required to report compliance with specific rules, or agreement terms in order to determine compliance with related rules or schedules.

Quality rating database **26** may also comprise survey data **30** provided by a party having knowledge of a service provider's performance and work quality. A party providing survey data may be an entity for which a task has been assigned, for example an insurance company may complete a survey regarding a service provider's performance. Survey data **30** may also be provided by an insurance claimant or other party associated with the provider's work. In a preferred embodiment, a survey form is automatically sent in an electronic format to one or more parties associated with a service provider's work. When the form is completed, it is returned and automatically processed by the system of the present invention so that quality rating data **26** may be processed automatically.

In reference to FIG. **2**, credentials data **20** may further comprise agreement and term data **28** which may be accessed by many portions of embodiments of the present invention. Agreement and term data **28** may be used to determine a service provider performance track record **32**, as shown in FIG. **5**, it may also be used to help define process parameter data **36** as well as other aspects of embodiments of the present invention. Agreement and term data **28** may comprise the entire text of agreements between the service provider and a customer or other associated parties or it may comprise relevant portions of the text of these agreements. Data **28** may also comprise a record of agreement acceptance such as an electronic signature, a digitized copy of the signed agreement or some other agreement acceptance verification.

Agreements and terms data **28** may also comprise rules which a service provider has agreed to perform. These rules

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may include an obligation to submit standardized information during task performance such as, but not limited to, the completion of automated surveys during or at the completion of a task. These rules may also comprise escalation report rules which involve obligations to contact parties within a specified time period or to decline or reassign a task when it can not be completed according to specified parameters. These rules may also comprise pre-escalation rules including rules governing acceptance and acknowledgment of task assignments as well as others.

Contact data **2** and credentials data **20** may form a part of master process data **40**, as shown in FIG. **6**, which further comprises other elements in a preferred embodiment. One of these other elements is process parameters data **36** which may contain agreements and terms data **28** as well as process rules **42**, as shown in FIG. **7**. Agreements and terms data **28** are described above.

Process rules **42** may be further explained in reference to FIG. **8** where elements of some embodiments are shown. Process rules **42** may comprise customer rules **44** which are rules which are established by a customer for a specific task. A customer will establish these rules prior to a task assignment to ensure that a service provider will meet the customer's scheduling or other needs. These rules may be selected by the customer from a set of pre-defined rules which are stored in the system of embodiments of the present invention, preferably in master rules database **48**. Alternatively, a customer may create custom rules to meet specific needs using a rule creation language which may be accessed by the customer over a network connection such as through the Internet or by some other means.

Process rules **42** may also comprise system rules **46** which are defined by a system administrator to govern the execution of a task. Similar to customer rules **44**, system rules **46** may be selected by the system administrator from a set of pre-defined rules preferably stored in master rules database **48**. When custom rules are desired, the administrator may also use a rule creation language to define and set custom rules for specific tasks.

In reference to FIG. **9**, master rules database **48** of a preferred embodiment of the present invention will comprise all rules created by a system administrator using a rule creation language and any rules created by a customer using a rule creation language. Master rules database **48** will also comprise a complete set of pre-defined rules which may be selected by either the system administrator, a customer or another party with authority to create and modify rules. These rules may be organized hierarchically such that a rule may operate upon the result of another rule.

Rules within master rules database **48** and other logic within embodiments of the present invention may operate of data logged as touch point data **50**. Touch point data **50** comprises data which is automatically stored during the processes of embodiments of the present invention. This data may be used as operators, variables and other process modifiers upon which rules may operate. Rules may comprise boolean logic, mathematical equations and other logic which requires variable input. This input may be acquired through standardized data gathering or touch point processing which stores touch point data **50** for further processing or for direct access by users or processes. Touch point data **50** may comprise, for example, and not by way of limitation, the date and time a claim is filed or a task is requested, the date and time the claim or task is accepted, the date and time an assignment is sent, the date and time a customer is contacted by a service provider, the date and time an estimate is received form a service provider, the occurrence of rule violations or other data relevant to the events of the processes of embodiments of the present invention. Touch point data **50** may comprise raw data such as times and dates as well as data which has been processed by logical processes or otherwise transformed.

Master process data **40**, as shown in FIG. **6**, may also comprise report data **52** which comprises information relevant to reports generated by embodiments of the present invention. These reports may be automatically generated by the processes of the present invention and automatically transmitted to parties with proper communication connections.

Report data **52**, in a preferred embodiment, will comprise connection data **60**, as shown in FIG. **10**, comprising the types of reports to be transmitted directly to subscribing parties along with report formatting information, reporting frequency information and other report parameters. Report data **52** may also comprise connection and communication parameters for configuring and establishing communication connections with receiving parties.

Report data **52** may also comprise report hierarchy data **64** which establishes a relationship between parties who may receive reports. Reports may be generated with varying levels of scope. These levels may relate to data for an agent, adjustor, estimator or other individual or may be tailored to relate data for a particular office in which these individuals work. Likewise, reports may be generated by company, region, state and country as well as by type of individual, type of coverage and other factors. The relationships between individuals, geographical regions, types of work and other parameters are recorded in report data **52** so that reports may be automatically generated and transmitted for specific applications.

In some embodiments of the present invention, report caching is used to provide quicker and more convenient report access. When this is the case, report data **52** will comprise cached report data **62** for selected reports. When a party needs priority access to report data, that party may request that a report be cached. The report will then be designated for caching and stored in a format that will speed access. Caching may comprise methods such as memory caching where the report is stored in high-speed memory or may comprise methods with high-speed data transmission connections or other methods to speed report delivery. Caching may also comprise pre-processing techniques which assemble data into specific report formats which are stored for direct access as opposed to assembling the report from raw data when the report is requested. E-mail or other notification methods may also be employed to alert a user that a report has completed caching or generating.

Report data **52** may also comprise analysis report data **58** which allows for user customization of reports and establishment of report hierarchy as well as real time report generation. Analysis report data **58** provides a user with a menu from which a user may select the type of report desired. A user may select from pre-formatted report types or may create a customized report format by indicating the desired data fields and the scope of the report. Report hierarchy may also be established and revised by a user through methods comprised in analysis report data **58**. A user may designate relationships between individuals and companies, regions or other hierarchichal subdivisions. Analysis report data **58** may also comprise a method for selecting reports for real-time processing and caching. Users who need up-to-date, real-time data may select their reports

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for real-time processing so that current data is always reflected in their reports. These reports may be made available on-line so that users may access the reports at any time. Some forms of caching may also be selected for quicker access, however cached data must be updated regularly for real-time reporting.

Some embodiments of the present invention may also comprise web site configuration **54** as part of master process data **40**, shown in FIG. **6**. Web site configuration information **54**, as shown in FIG. **11**, may allow a user to select a pre-formatted site template **70** which is suited to reflect information desired by a user. A user may also select a network address or URL for a site **72**. The URL may be input manually **74**. As conflicts may occur, the system of embodiments of the present invention may verify **76** that the selected URL is not in conflict with previously established URLs. A user may also allow the system to suggest one or more non-conflicting URLs **78** and select from the system generated choices **80**. Once a site is configured, a user may visit the site to obtain the desired data.

Master process data **40** may also comprise tracker data **36** in some embodiments, as mentioned above. In reference to FIG. **12**, tracker data **36** comprises data acquired from initial claim input **82** such as the time and date of the claim filing, acceptance and other processing. Tracker data **36** may also comprise information retrieved from touch point data **50** which has been gathered by the touch point processes of the particular embodiment of the present invention in use. As mentioned above, tracker data **36** may be used as a comparison standard to evaluate service provider performance. Tracker data **36** may also be used for report generation and other uses.

Use of embodiments of the present invention requires initial setup and configuration to initialize and populate the various databases and/or other information storage resources. In reference to FIG. **13**, an information setup procedure **100** is described for a preferred embodiment of the present invention.

Preferred embodiments of the present invention will provide organizational and informational benefits to assignors **102**, service providers **104** and structure owners **106**. Assignors **102** may include, without limitation, insurance companies, warrantors, or other parties which carry some liability for maintenance, repair or other task completion. Service providers **104** may include, without limitation, painters, plumbers, electricians, masons, water and smoke damage mitigators, mechanics and almost any other type of contractor, repairman or maintenance or service provider. Service providers **104** may also include suppliers of goods and materials. Structure owners **106** may comprise any person with an interest in a structure. It should be noted that a structure owner **106** may also be an assignor **102**. This would be the case, for example, when a building owner **106** needs a service performed for which there is no warranty or insurance coverage. In this case, owner **106** would act as assignor **102** by assigning the task and compensating the service provider **104**.

Multiple assignors **102**, service providers **104** and owners **106** may be input for a given structure or multiple structures. All information for assignors **102**, service providers **104** and owners **106** need not be input during initial information setup **100**, however more functions of embodiments of the present invention will be enabled when complete information is provided.

Information input from assignors **102**, service providers **104** and owners **106** is directed through master security **108** which controls and limits access to information. Master security **108** limits access to parties with approved user IDs and passwords. Once a party has gained access to the system, that party is limited to specific information relevant to the accessing party. Accordingly, a particular user ID and password will provide only limited access to system information. Administrative or master security IDs may provide unlimited access when necessary for system administration. Sensitive information may also be encrypted for further security. Encryption techniques and protocols are designated in master security **108**.

A party will generally begin information setup by designating contact information **110** as explained above in reference to FIG. **1**. Once contact data **110** is input, a party may proceed with structure file setup **112**. Structure file setup **112** comprises the input of information which communicates the physical characteristics of the structure and appurtenances to the structure as well as the liabilities, such as insurance policies, warranties and others, related to the structure and its appurtenances. Structure file setup **112** may comprise the input of an electronic model of the structure such as a computer-aided drafting (CAD) file. Some embodiments of the present invention include CAD functions for the creation of a CAD file. These CAD files will generally communicate accurate physical attributes of a structure, its contents and appurtenances such as physical dimensions and locations. In a preferred embodiment of the present invention, the electronic model comprises an accurate three-dimensional CAD file with icons displayed in each room or division of the structure which represent the contents of the structure. These icons may be selected to view information regarding structure contents such as manufacturer, warranty data, insurance data and other information. Information related to structure contents may also be input at any time after structure file setup **112**.

Once structure file setup **112** is complete, this structure information is compiled and stored as master structure data **116**. This data may be remotely accessed later by the owner and service providers or others who need accurate structure information. In a preferred embodiment, master structure data **116** will be connected to the Internet thereby allowing remote access by interested parties, such as service providers, who wish to perform estimates or bid on projects which have been identified by the owner or assignor.

Information setup may also comprise program rule setup **1118** wherein a party may select or create rules, such as process rules **42**, as shown in FIG. **8**, which may govern the execution of alert notices, assignment escalation, service provider selection or other functions of embodiments of the present invention. Rules may be set up by assignors **102**, service providers **104**, owners **106**, administrators or other parties with an interest in the structure, its contents and appurtenances or an associated task.

A user may also define a report hierarchy **120** during the information set up process **100**. This is typically done by an assignor **102** who will receive reports as a task progresses, however, other parties may also receive reports and establish report hierarchies. During report hierarchy set up **120**, a party will define a number of hierarchy levels and may designate standard or custom report formats and schedules for each level. Common hierarchy levels include, but are not limited to, branch offices, company headquarters, regions, states, countries and individual representatives. The relationships between hierarchy levels may also be established during this set up phase.

Embodiments of the present invention may also output data directly to a participating party through various com-

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munication connections. Return data feed setup **122** may also be designated during information setup **100**. In return data feed setup **122**, a user establishes whether a direct data feed is desired. If desired, a user may choose the communication method and protocol to be used. Common methods currently being used include, but are not limited to, FTP, Push/Pull from secure web site, Winsock application over secure line, such as a value added network line (VAN) and others. A user will also designate a data type and format which may include electronic image files such as JPEG, GIF, and others, custom data file formats, proprietary data formats or other information configurations.

If a user chooses to receive information through the Internet via the World Wide Web (WWW), the user may wish to set up a dedicated web site to receive this information. When this is the case, a user may perform website setup **124** during information setup **100** or at another time. In website setup **124**, a user will designate a unique Internet address or URL for an information retrieval web site. A user may also define web site parameters to configure the site for the specific information to be received. Information may be received in any standard graphics or text format or custom data formats depending on user preference. Embodiments of the present invention will transmit data to selected web sites or URLs through standard communication techniques.

Information setup **100** also comprises credential setup **126** wherein service provider information may be entered and stored in the system of the present invention. This information may be entered for individuals as well as service companies and suppliers of goods. Typically, a service provider, or another party, will provide contact information and preferences **110** before providing credential data, however these may be performed at essentially the same time. In credential setup, a party will enter available credential data **20** for a service provider including perishable and permanent certificates **22** as well as verification information **24**. Information regarding agreements and terms **28** may also be input as well as initial quality rating information. Credential data **20** may be text data input from a keyboard or data file transfer or may be graphical data such as scanned certificates and documents. Agreement and term data **28** may comprise agreements between a service provider **104** and assignor **102** which qualify a service provider to perform work for which an assignor is liable to pay. In an example with an insurance company as assignor, this information may be used to qualify a service provider **104** to perform work covered under insurance policies held by the owner **106**.

When a particular task has been defined and a service provider has been given an initial assignment, the service provider's credentials will be verified **130** to determine compliance with any rules regarding service provider qualifications. If these requirements are met, the service provider will proceed with initial contact with the structure owner and generate cost estimates. These initial contact and estimation events must be performed according to rules **132** established by the interested parties or a service provider may be rejected **136**. Alternatively, to avoid a rejection, a service provider may correct a rule violation **136**. If all rules are complied with or violations corrected, a service provider will be authorized to complete the task according to other established process rules **134**. Master process data **128** may contain these further rules of compliance. Rule compliance will continue to be monitored by the systems and methods of embodiments of the present invention.

The processes of preferred embodiments of the present invention may be better understood through an example in which the assignor is an insurance company and an embodiment of the present invention is used to process claims against insurance policies.

In reference to FIG. **14** and subsequent figures, a policy holder or owner would initiate claim processing and task assignment by filling out a universal claim form **140** which, in preferred embodiments would comprise an Internet-based web form with input fields for required claim data. An interactive data input form may be used to determine the extent and type of claim data required for a specific claim. In other embodiments, an owner may communicate with an agent or other representative who may fill out the form or use another software package to supply a formatted data stream which would achieve the same function as the form input.

Regardless of the data input method, once the claim data is input, the automatic processing of these embodiments may commence. After initial claim data has been input, additional information may be requested to determine policy coverage parameters. For example and not by way of limitation, the system may request information about third party coverage under additional policies or warranties **180**, as shown in FIG. **15**. Some of this additional information may be entered manually by prompting a user, however, in a preferred embodiment, warranty and policy information **188** will be stored in the system for automatic access. This information will generally be stored for a structure, its contents and its occupants. When this is the case, third party coverage request **180** will be automated and transparent to the user. When third party coverage exists, additional forms or information requests required by a participating third party may be presented **184**. When all initial claim data has been acquired, the coverage data is merged with the claim data **186** and the claim proceeds to automated assignment **142** as shown in FIG. **14**.

Details of the automated assignment process are illustrated in FIG. **16** where, once claim data is entered **190**, project parameters **192** are defined. To determine the project parameters **192** associated with a claim, the claim data is analyzed to determine the particular type of loss, such as a malfunctioning appliance under warranty, flood damage to a residence, fire damage, earthquake damage or some other loss. The approximate amount of the loss may also be determined. The geographical area in which the loss has occurred may also be a project parameter. When initial project parameters have been established, process rules **42**, which have been defined during the information setup stage **100**, may be applied to determine how further claim processing will take place.

Among these rules are system rules **216**, as shown in FIG. **17**. System rules **216** are established by a system administrator to handle variables and options available in embodiments of the present invention. For example, and not by way of limitation, a system rule might account for the use of an optional structure file or portion of a structure file **220**. If a structure file exists, the system will access that file for structure information **222**. If no file exists, the system may direct a user to initial structure file setup **112** to set up master structure data **116**. Assignor rules **218** are also applied to claim data and project parameters **192**. These rules, established by an assignor, may limit assignor liability, project scope, project budget or other factors. They may also trigger notices to an owner indicating that certain project items may not be covered by a given policy or warranty. They may also regulate the information retrieved from a structure file. For example, they may direct the system to retrieve stored photographic images of a particular portion of a structure when that portion is included in the scope of a project. They

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may also regulate the use of structure model data such as floor plans or structure features. Service history, purchase history and other data items may also be accessed to further define project parameters and facilitate automated assignment.

In further reference to FIG. **16**, an assignor or other party with financial responsibility for a project will be given a project acceptance option **196** once the project parameters **192** have been defined and appropriate rules applied **194**. If the financially responsible party does not accept, the claimant may be notified **198**. Claimant, then, has the option to opt out of the automated process **202** or make changes to the project **200** and enter new information. New information may comprise assumption of some financial liability by the claimant, downsizing project scope or other modifications. If the financially responsible party accepts the project as defined, the project will proceed to assignment rotation **144**. Master process data **40** and other information resources **204** may be automatically accessed to determine automated acceptance or notification procedures as well as other processing.

Assignment rotation **144**, as shown in FIG. **14**, is described in more detail with reference to FIG. **18**. During assignment rotation **144**, service provider and assignment matching **226** occurs. Credential data **20** and program rule data **42** are accessed to determine which service providers are qualified to perform the project.

Matching **226** is illustrated in FIG. **19**, wherein a list of all service providers **238** is filtered to find a service provider qualified to perform the project at hand. The list of service providers **238** will generally be compiled from providers found through an on-line registration program, research of advertising and public documents, suggestions from assignors and owners and through other methods. This list **238** will then be stored in the system for access and filtering for specific projects.

The example parameters for filtering the list shown in FIG. **19** are merely exemplary and are not to be construed as limiting the scope of the present invention. In this example, the list **238** is first filtered to remove any service providers which are not pre-approved by the particular assignor **240** associated with the project. Quality parameters **242** are then evaluated to remove any service provider which have received poor quality ratings or complaints. The geographical location of the service provider may also be evaluated, as by zip code **244** in this example, to determine if the service provider is in close enough proximity to complete the project without undue travel expenses and mobilization costs. The ability of the service provider to accomplish a project of the same magnitude as the proposed project **246** may also be considered in filtering the list. Finally, the type of work involved in the proposed project is matched to the service provider's known scope of experience **248** to filter the list of candidates. After filtering according to these parameters, a list of qualified service providers **250** is generated for further selection.

The list of qualified service providers **250** is further prioritized through a turn sequencing process **228** shown in detail in FIG. **20**. Process rules **42** are accessed to determine owner and assignor limitations **260** on service provider selection. These rules are applied to data stored in credential data **20** related to times and dates of prior service provider assignments **254**, the customer satisfaction history of a service provider **256**, the performance track record **258** of a service provider and other data relevant to a service provider's work record and qualifications. These rules are enacted through an algorithm **252** which is applied to filter the qualified list **250** and make an initial selection **262** of a single service provider to which the project may be assigned. A ranked list of alternate service providers may also be generated.

After initial selection **262** is made through process **228**, shown on FIG. **18**, the selected service provider is proposed to the structure owner for approval **230**. If the owner does not approve of the initial selection, the owner may choose another service provider from the list of alternates **236**. When the owner approves of a service provider selection, process rules **42** which apply to project execution are attached to the project **146** and the project is assigned to the selected service provider. These rules will dictate requirements to which a service provider must adhere during project execution. Service provider progress is monitored **148** during project execution to determine compliance with rules. If a rule violation is detected **324** during process monitoring **148** an assignor, owner or other party will be notified of the violation and the service provider's performance record or quality rating may be adjusted accordingly.

In reference to FIGS. **14** and **21**, significant rule violations **151** during initial project steps will trigger an escalation procedure **150**. Depending on the particular violation and the process rules **42** established for the project **324**, alerts or other notification **326** will be communicated to inform parties of the violation. Automated alerts may be communicated to stakeholders or other parties **330** based on the contact information stored in contact data **2**. If the violation can be remedied to the satisfaction of the interested parties **328**, remedial instructions will be issued **334** and a corrected estimate or proposal **158** will be generated. When the violation cannot be remedied, the assignment will be disallowed **332** and a new automated assignment process will begin **142**.

Process rules **42** will generally direct a service provider to perform an initial owner contact and interview or site survey prior to making a project estimate. If the initial contact process proceeds without significant rule violations **151** (FIG. **14**), an estimate will be prepared by the service provider **270**, as illustrated in FIG. **22**. The estimate may be augmented with additional proposal language **272** to modify the project description, if necessary, after a site visit. Structure valuation data **274** may also be combined with estimate **270** so that an assignor may make any judgements based on structure value such as repair vs. replacement decisions.

Estimate **270** may be prepared using an automated, on-line estimation process of some embodiments of the present invention explained with reference to FIG. **23**. Typically, a database comprising all significant goods and services **280** needed for a particular task area is maintained. These goods and services are stored along with cost information so that a cost estimate can be generated. Items among goods and services **280** which have been specially selected for their superior or exemplary attributes such as warranties, certifications or other qualities are stored in a database of supported items **278**. In some embodiments of the estimation system, items within these databases are synchronized to match industry standards **282** by correlating equivalent products or services.

Vendor information **286**, **288** and **290** is made available from several vendors so that each item can be mapped to a particular vendor SKU identification **292**. Vendor pricing schedules **284** which may be related to particular outlets or geographical regions are also compiled for items within the systems of these embodiments. A standardized pricing

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schedule **294** may also be used for rough estimation purposes or for comparison with vendor data **284**.

The estimation systems of these embodiments may be accessed from a remote computer **318** comprising software of embodiments of the present invention which allows a service provider's estimate to be scoped and priced **316** in a standard format for analysis and comparison with system data. A user may select whether to use vendor pricing or standardized pricing **304** for the estimation process. If vendor data is not selected, a standardized pricing schedule is used for estimation purposes **300**. This schedule may be accessed remotely from remote computer **318** over a network, Internet or dial up connection or the data may be downloaded from master data **296** to the remote computer where the estimation processes will be executed.

If vendor data is selected **304**, item quantities in the estimate **302** are mapped to vendor SKU codes **306** so that actual vendor prices may be related to each item. Prices may be calculated and displayed for several vendors and a user may select a specific vendor **314** and specific items **308** from that vendor's selection. Alternatively, a user may allow embodiments of the present invention to automatically select **314** a vendor for each item according to designated parameters such as lowest price, lowest price for a specific brand or other parameters.

When a final estimate amount is accepted **310**, a user is given the option to purchase the items from the participating vendors. If a purchase is desired, the purchase may be made using typical on-line purchase methods **322**. If a purchase is not desired at the time of estimation, an estimate only **320** option may be selected and only the estimate results will be generated from the process.

Estimates created by the above methods may be saved and made available to interested parties. These estimates may contain specific item information including SKU identification codes, item specific pricing, item manufacturer identification, and other information which parties may review and modify to meet specific requirements.

Once this estimate and proposal are submitted **152** (FIG. **14**), an estimate monitoring process **156** begins. If the estimate complies with process rules and is approved by the owner **164**, the estimate will be forwarded to the assignor or other financially liable party for final approval **162**. If any of these parties does not approve of the estimate, online negotiation **154** may ensue during which estimate and proposal modification or correction may take place. If online negotiation **154** is successful, a corrected estimate or proposal will be generated to reflect the agreed-upon changes made during negotiation. If online negotiation is not successful, escalation procedures may be triggered **150** and a new service provider assignment may be made **142**.

During task execution and negotiation, a change order summary **160** is maintained by embodiments of the present invention. Change order summary **160** comprises a record of each version of the estimate and proposal as it transitions through the negotiation and execution processes. Change order summary **160** also keeps a record of specific changes and revisions which have been made to the estimate between versions including, but not limited to, changes in goods and services such as quantities, the total price prior to changes, the revised total price, the difference in total price and other information.

In reference to FIG. **24**, a first estimate or proposal **336** is stored as a record. A first set of revisions **344** which have been made to the estimate during negotiations **344** is also recorded and the revised second estimate and proposal **338** is also recorded in revised form. During task execution, some problems may arise which require estimate modification. For example, and not by way of limitation, a contractor repairing a burned building may discover some previously undetected structural damage during reconstruction which must be repaired. Changes in the amount of work performed and the amount of goods used as well as the prices of all changes are recorded in revision data **346**. A third estimate **340** is also generated which reflects the changes in revision data **346**. Further changes may be required as work proceeds. An owner or assignor may also request changes during task execution and record these changes at revision data **348**. A newly revised estimate **342** will be generated and recorded. As changes are requested, the approving authority is recorded **350** and the date and time of approval is noted. This change order summary **160** may be made available to any interested parties as a real-time updated estimate document which is accessible through an Internet site as well as other electronic and hard copy versions.

Information recorded from change order summary **160** and other task monitoring may be stored as master process data **172** for use in on-line reports **174**. On-line reports may be accessed through an Internet site from which data may be downloaded **176** or data may be exported directly to client computers for further processing.

In a preferred embodiment, with reference to FIG. **25**, customized reports may be generated automatically. These reports may be automatically compiled **354** as data is made available during the task execution and negotiation processes. Reports may be made available to all interested parties **356** which have been authorized by the assignor or owner. Typically, a user will designate the report format desired for each recipient and the data which will be included **358**. Often tracker data **36** compiled from touch point data processing **50** may be compiled into tracker reports **360**. Activity reports **362** which provide a summary of the number of assignments on a hierarchy level basis and analysis reports **364** containing graphical data for comparison may also be selected and compiled into a customized report format **366** with selectable criteria including date range, hierarchy, data type, industry data, data comparisons and other information.

These reports may be automatically generated and sent to a party or may be made available, such as through a web site, for access at will. A system user may also access the systems of embodiments of the present invention and generate custom reports **368** as needed. Reports may be configured to reveal data from a top level overview down to specific estimate details **370**.

Embodiments of the present invention will allow a user to select both textual and graphical report formats. Textual reports which are commonly used by assignors and service providers in the insurance and building construction industry include, but are not limited to: average value reports, contractor response time reports, contractor volume reports, contractor utilization reports, price comparison reports, loss value range reports, policy number listings, type of loss summaries, unit price deviation reports, value range reports and zip code related reports. Graphical reports allow a user to compare multiple data sets and commonly include, but are not limited to: estimate/price list differences, estimate inclusion issues, estimate items not in a price list, estimate items by quality, estimate scoping overlap, estimate tax usage, estimate type of loss by dollar value, estimate type of loss by percentage, estimate minimum usage, estimate subroom usage, percentage breakdown of estimate by trade, average depreciation by trade, estimate depreciation usage, estimate

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overhead and profit usage, price list alignment and price list comparison. Other report formats and data sets are available through the report customization methods of embodiments of the present invention.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative, and not restrictive. The scope of the invention is, therefore, indicated by the appended claims, rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

I claim:

1. A method for selectively assigning third party professional tasks to independent contractors and other third party service providers, the method comprising steps for:

electronically receiving a request from a third party for performance of a building construction or maintenance task;

automatically associating the performance of the building construction or maintenance task with a first independent contractor based on:

(i) task type;

(ii) experience level of the first independent contractor to perform this type of task;

(iii) a dependability or quality rating of the first independent contractor in performing building construction or maintenance tasks for third parties;

(iv) availability of the first independent contractor; and

(v) physical proximity of the first independent contractor relative to the job site;

automatically initiating contact with the first independent contractor to request the performance of the building construction or maintenance task;

if a response to the contact with the first independent contractor is not received within pre-established limits, performing at least one of the steps for:

automatically notifying a quality control agent of the first independent contractor that the response was not received within pre-established limits; and

automatically associating the performance of the building construction or maintenance task with a second independent contractor and initiating contact with the second independent contractor to request the performance of the building construction or maintenance task;

receiving an estimate for the performance of the building construction or maintenance task; and

selectively authorizing the performance of the building construction or maintenance task.

2. The method as recited in claim 1, further comprising a step for monitoring the performance of the building construction or maintenance task.

3. The method as recited in claim 1, wherein the step for monitoring the performance of the building construction or maintenance task comprises steps for:

tracking events toward a completion of the construction or maintenance task; and

reporting progress toward the completion of the construction or maintenance task.

4. The method as recited in claim 3, wherein the step for reporting progress toward the completion of the construction or maintenance task includes a step for generating a graphical report.

5. The method as recited in claim 1, wherein the estimate is received from one of (i) the first independent contractor and (ii) the second independent contractor.

6. The method as recited in claim 1, further comprising a step for evaluating the performance of the building construction or maintenance task.

7. The method as recited in claim 1, further comprising a step for requesting approval of the estimate received.

8. A computer-based method for using a computer system to selectively assign third party professional tasks to independent contractors and other third party service providers, the method comprising steps for:

receiving a request across a network at a first computer system, wherein the request is from a third party for performance of a building construction or maintenance task;

automatically associating the performance of the building construction or maintenance task with a first independent contractor of a database that includes a listing of a plurality of independent contractors, wherein the step for automatically associating is based on:

(i) task type;

(ii) experience level of the first independent contractor to perform this type of task;

(iii) a dependability or quality rating of the first independent contractor in performing building construction or maintenance tasks for third parties;

(iv) availability of the first independent contractor; and

(v) physical proximity of the first independent contractor relative to the job site;

automatically initiating contact across a network with the first independent contractor to request the performance of the building construction or maintenance task;

if a response to the contact with the first independent contractor is not received within pre-established limits, performing at least one of the steps for:

automatically associating the performance of the building construction or maintenance task with a second independent contractor of the database; and

initiating contact with the second independent contractor to request the performance of the building construction or maintenance task;

receiving at the first computer system an estimate for the performance of the building construction or maintenance task; and

selectively providing an electronic authorization to perform the building construction or maintenance task.

9. The method as recited in claim 8, further comprising a step for monitoring performance of the building construction or maintenance task.

10. The method as recited in claim 8, further comprising a step for allocating a quality rating related to at least one of:

(i) the first independent contractor; and

(ii) the second independent contractor.

11. The method as recited in claim 8, further comprising a step for maintaining a change order summary corresponding to the building construction or maintenance task.

12. The method as recited in claim 8, further comprising a step for providing a customized report related to the building construction or maintenance task.

13. The method as recited in claim 8, wherein if the response to the contact with the first independent contractor is not received within pre-established limits, further performing a step for automatically notifying a quality control agent of the first independent contractor that the response was not received within pre-established limits.

14. A computer program product for implementing within a computer system a method for selectively assigning third party professional tasks to independent contractors and other third party service providers, the computer program product comprising:

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a computer readable medium for providing computer program code means utilized to implement the method, wherein the computer program code means is comprised of executable code for implementing the steps for:

automatically associating a first independent contractor of an independent contractor database with a request received from a third party for performance of a building construction or maintenance task for the performance of the building construction or maintenance task, wherein the step for automatically associating is based on:

(i) task type;

(ii) experience level of the first independent contractor to perform this type of task;

(iii) a dependability or quality rating of the first independent contractor in performing building construction or maintenance tasks for third parties;

(iv) availability of the first independent contractor; and

(v) physical proximity of the first independent contractor relative to the job site;

automatically initiating contact with the first independent contractor to request the performance of the building construction or maintenance task;

if a response to the contact with the first independent contractor is not received within pre-established limits, performing the steps for:

automatically associating the performance of the building construction or maintenance task with a second independent contractor; and

initiating contact with the second independent contractor to request the performance of the building construction or maintenance task;

receiving an estimate for the performance of the building construction or maintenance task; and

providing an authorization for the performance of the building construction or maintenance task.

15. A computer program product as recited in claim 14, wherein the executable code further implements at least one of the steps for:

requesting approval of the estimate;

monitoring the selected service provider's performance during execution of the project;

allocating a quality rating related to at least one of (i) the first independent contractor and (ii) the second independent contractor;

maintaining a change order summary related to the building construction or maintenance task; and

providing a customized report related to the building construction or maintenance task.

16. A computer program product as recited in claim 14, wherein the computer program code means is further comprised of executable code for implementing a step for if a response to the contact with the first independent contractor is not received within pre-established limits, automatically notifying a quality control agent of the first independent contractor that the response was not received within pre-established limits.

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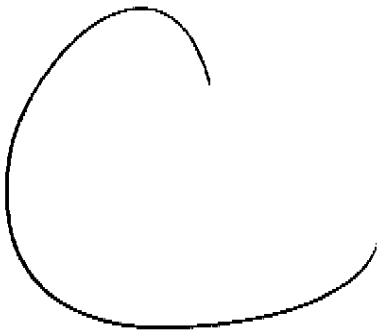

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(12) **United States Patent**
Loveland

(10) **Patent No.: US 6,816,819 B1**
(45) **Date of Patent: Nov. 9, 2004**

(54) **GRAPHICAL METHOD AND SYSTEM FOR MODELING AND ESTIMATING CONSTRUCTION PARAMETERS**

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(73) Assignee: **Xactware, Inc.**, Orem, UT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) **Int. Cl.**[7] **G06F 17/50**; G06F 7/48; E04B 7/04; G09G 5/00

(52) **U.S. Cl.** **703/1**; 703/7; 345/619; 345/646; 52/93.2; 52/272

(58) **Field of Search** 703/1, 7; 345/619, 345/646; 52/93.2, 272

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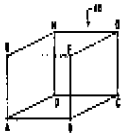
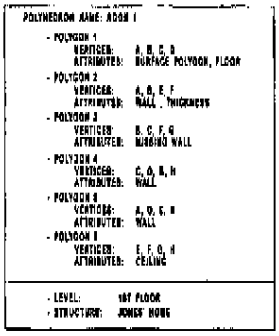
(57) **ABSTRACT**

A method and system for modeling rooms or chambers in a structure for intuitive and accurate estimation of process parameters (e.g., material and labor costs for performing the process) associated with the rooms. A graphical user interface to an estimation program enables an estimator to insert a model of a room and thereafter morph and mold the model to approximate the room undergoing estimation. The model is represented as a polyhedron having a plurality of planes that may be assigned attributes such as floors, walls and ceilings. During the morphing process, the modified and other affected planes of the polyhedron are continually revised to maintain the integrity of the closed volume represented,by the polyhedron. Upon completion of the morphing process of the model, the model may be queried by the estimator for performing estimations of target processes with the assigned attributes of the various planes intelligently returning areas and other parameters associated with the estimation polyhedron employed as an approximation of the room or chamber undergoing estimation.

21 Claims, 8 Drawing Sheets





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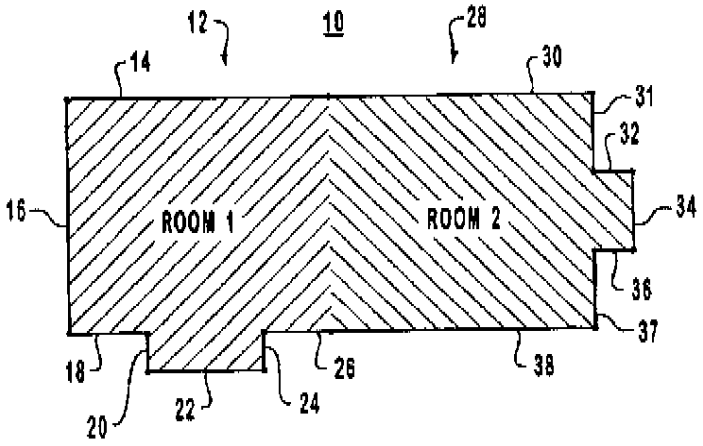
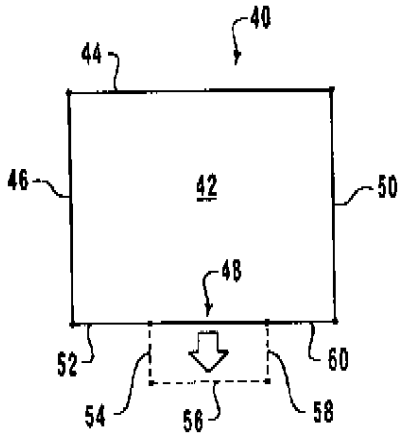


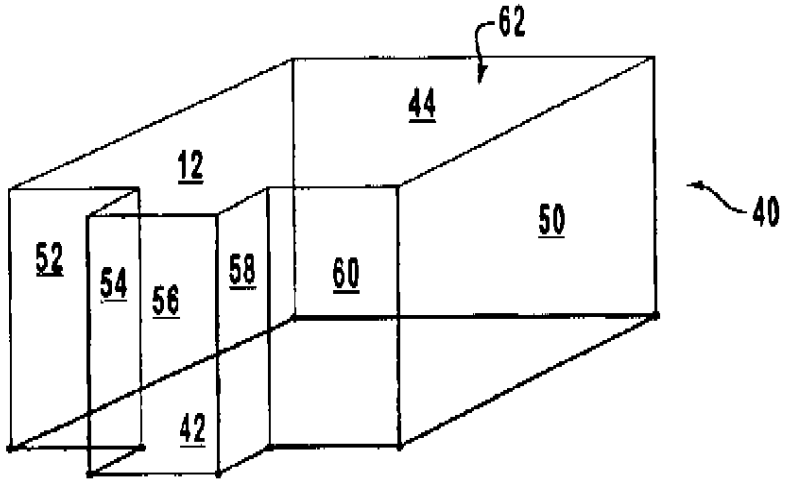
No.	Element
10	remodel area
12	first room
14	line segment of first room
16	line segment of first room
18	line segment of first room
20	line segment of first room
22	line segment of first room
24	line segment of first room
26	line segment of first room
28	line segment of second room
30	line segment of second room
31	line segment of second room
32	line segment of second room
34	line segment of second room
36	line segment of second room
37	line segment of second room
38	line segment of second room

FIG. 1
(PRIOR ART)



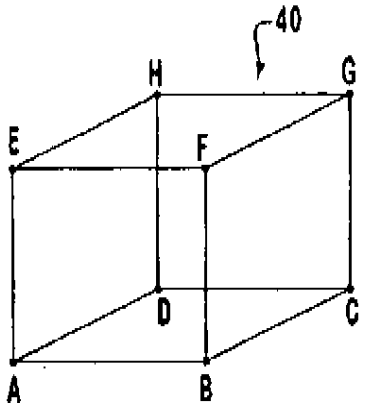
No.	Element
40	polyhedron
42	surface plane
44	wall plane
46	wall plane
48	wall plane
50	wall plane
52	additional wall plane
54	additional wall plane
56	additional wall plane
58	additional wall plane
60	additional wall plane

FIG. 2



No.	Element
40	polyhedron
42	surface plane
44	wall plane
46	wall plane
48	wall plane
50	wall plane
52	additional wall plane
54	additional wall plane
56	additional wall plane
58	additional wall plane
60	additional wall plane
62	ceiling plane

FIG. 3

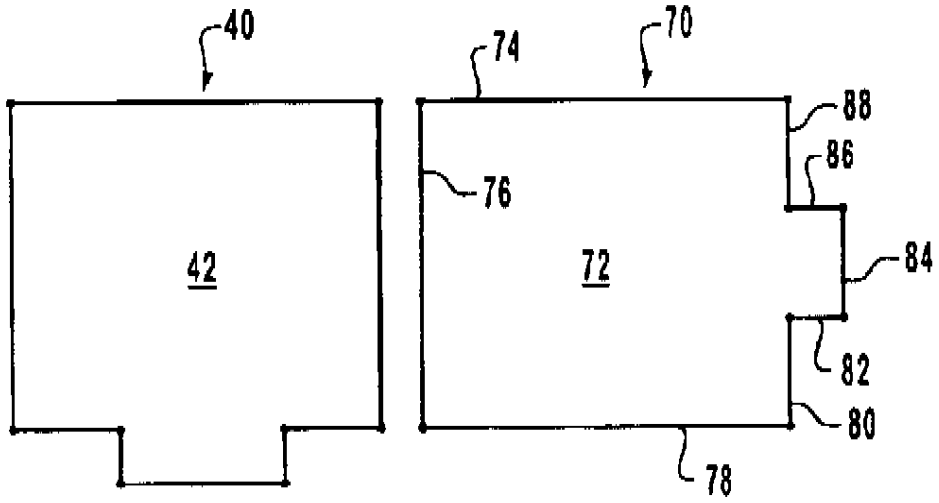


POLYHEDRON NAME: ROOM 1

- POLYGON 1
  - VERTICES: A, B, C, D
  - ATTRIBUTES: SURFACE POLYGON, FLOOR
- POLYGON 2
  - VERTICES: A, B, E, F
  - ATTRIBUTES: WALL , THICKNESS
- POLYGON 3
  - VERTICES: B, C, F, G
  - ATTRIBUTES: MISSING WALL
- POLYGON 4
  - VERTICES: C, D, G, H
  - ATTRIBUTES: WALL
- POLYGON 5
  - VERTICES: A, D, E, H
  - ATTRIBUTES: WALL
- POLYGON 5
  - VERTICES: E, F, G, H
  - ATTRIBUTES: CEILING

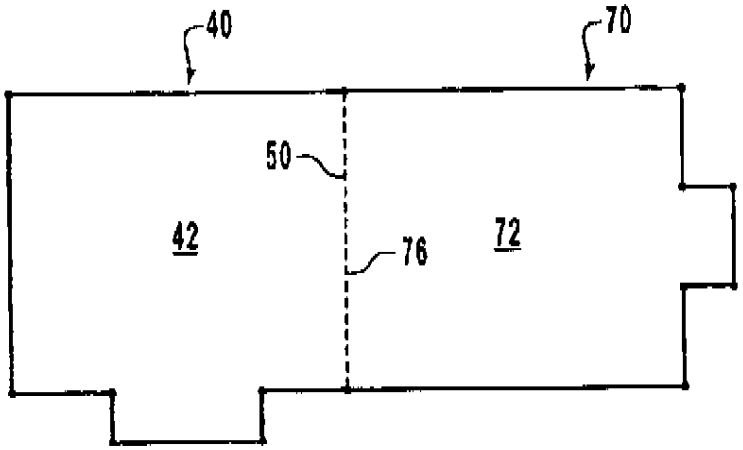
- LEVEL: 1ST FLOOR
- STRUCTURE: JONES' HOME

FIG. 4



No.	Element
40	polyhedron
42	surface plane
70	second polyhedron
72	surface plane
74	wall plane
76	wall plane
78	wall plane
80	wall plane
82	additional wall plane
84	additional wall plane
86	additional wall plane
88	additional wall plane

FIG. 5



No.	Element
40	first polyhedron
42	surface plane of first polyhedron
50	wall plane of first polyhedron
70	second polyhedron
72	surface plane of second polyhedron
76	wall plane of second polyhedron

FIG. 6