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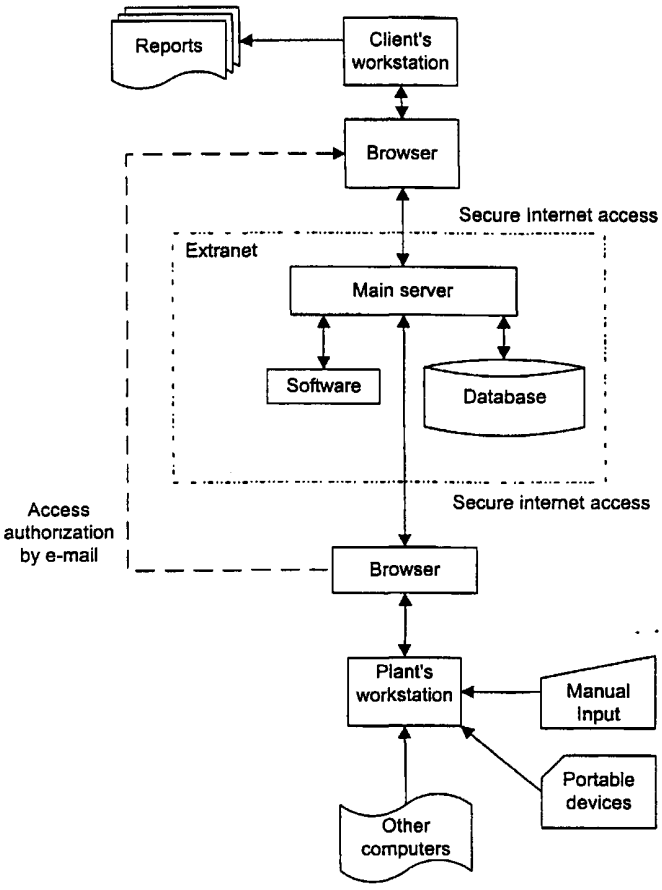
(54) Title: SYSTEM AND METHOD FOR REMOTELY FOLLOWING UP OR ASSESSING A PROJECT



(57) Abstract: A system and a method for remotely following up or assessing the various steps of a manufacturing or construction project comprises a data server on which data representing images, videos, descriptions, layouts, graphs, tests results, reports and other information relating to the project, its various steps and their evolution can be stored. Remote workstation may be connected to the data server via the Internet or any other appropriate secure communication network to access this information.

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SYSTEM AND METHOD FOR REMOTELY FOLLOWING UP OR ASSESSING A PROJECT

Field of the Invention

The present invention relates to a system and a method which allow a client to follow up or assess each step in a manufacturing or construction project such as the manufacturing of a piece of equipment, particularly a heavy equipment like a travelling crane, a fluid tank, etc. It can also be extended to a service or any other manufactured items, including domestic items such as a computer or a piece of furniture and certain construction projects.

Globalization of the markets has created new opportunities for many companies to expand the pool of clients to those located in far away places. In many industrial contexts, once a contract is signed and the construction of an equipment begins, representatives of the client need to be constantly kept informed of the progression of the work and of the results of the various quality, performance and/or other tests. These information are hitherto transmitted by mail, courier, telephone, email or fax. A representative of the client often needs to travel to the plant to inspect the equipment and gather information that is not otherwise easily available. These exchanges of information and travels are often inefficient, costly and time consuming.

Computer based systems for graphically generating temporal relationships between tasks in a project are known, see for example US patent 5,101,340 (Nonaka et al.), US patent 5,303,170 (Valko), US patent 5,563,994 (Harmon et al.), US patent 5,442,730 (Bigus), US patent 5,537,524 (Aprile) and US patent 5,907,490 (Oliver).

However, these patents relate to PERT and other critical path systems and not to an easy to use system to obtain detailed information in respect to the actual progress and the actual output of each step of a manufacturing or construction project.

Summary of the Invention

The present invention is aimed at providing a system and a method to ease the exchange of information and allow a manufacturer or a contractor to keep a client informed of the progression of the work in relation to a given project at any time of the day. Another important benefit of the invention is the possibility to create an easily accessible system with an extensive amount of information.

Any production of a piece of equipment involves a succession of steps, starting for instance from the selection and ordering of the raw materials and so forth. Other typical steps invoive cutting, welding, painting, testing, inspecting, etc. These steps may be put together to create basic models. One model may be adapted for the manufacture of a travelling crane, another for a supporting structure, etc. Each project is based on one of these models.

The invention allows a user to follow each step of the manufacturing or construction process using a dedicated web browser designed for communicating with a main server. The exchange of data is made in a secure manner over the Internet through a direct communication link or through other known communication systems. A standard web browser could also be used in some applications. Access to the data of a particular project is controlled by the project manager(s) who manage the access rights so as to maintain confidentiality of each client's date. One way to achieve this is to send a key by e-mail. Once installed on the client's workstation, the key will allow the client's web browser to retrieve the desired data.

More particularly, the invention relates to a computerized system for remotely following up or assessing the progress of a multi-step manufacturing or construction project comprising:

a) a data server itself comprising:

i. computer processor mean for processing data,

ii. storage means for storing data relating to various steps of said project on a storage medium;

iii. means for selectively accessing said data;

iv. a plurality of graphical interface means each associated with one of said steps;

v. data transceiver means.

b) at least one individual workstation itself comprising:

i. computer processor means for processing data;

ii. visual display screen connected to said computer processor means;

iii. means adapted to display said graphical interface means on said visual display screen;

iv. data transceiver means.

c) a data communication network adapted to connect said workstation to said data server trough their respective data transceiver means.

The invention also relates to a method for remotely following up or assessing the progress of a multi-step manufacturing or construction project comprising the following steps:

a) inputting data concerning each step on a data server as described in claim 1;

b) associating a graphical interface means with each said step;

c) connecting a remote workstation to said data server using a data communication network as described in claim 1;

d) accessing said data with the use of said remote workstation.

Brief description of the drawings

FIG.1 is a block diagram schematically illustrating a system in accordance with a preferred embodiment of the present invention;

FIG. 2 is a schematic representation of a computer screen generated by a system in accordance with an embodiment of the present invention;

FIG. 3 is an example of a grid used to design the graphical models used in project using an embodiment of the invention.

Detailed description of the preferred embodiment

As shown in FIG.1, the invention comprises a main server running a specially designed software. The system stores and retrieves data from a database. The main server and the related components create an Extranet, which is a private network to which internal or external clients for whom a manufacturing or construction project is being executed have access from outside. The manager(s) of the project have access to the managing modules of the system through a web browser and a secure Internet or other data communication connection. Data is supplied to the main server by manual inputs, probes, sensors, scanners, cameras, portable devices or other similar devices. Other computers may be connected to the project manager's workstation or to the main server to feed data thereto.

The system is able to graphically represent each step of the manufacturing process with easy to understand symbols such as the simple geometrical figures shown in FIG. 2. Once a step is completed, the symbol of that step is changed to a predetermined color such as green, indicating that the step is over. Other colors may be used as well. For instance, red or another predetermined color may be used to identify steps that are stopped or otherwise delayed. Clicking on a symbol of a particular step with an on-screen pointer will retrieve information to be

displayed elsewhere on the browser screen, for example at the bottom thereof. Additional extended menus can also appear, if desired.

The system uses a simple programming language to customize the standard models or make changes to a previously created project. The software preferably allows the project manager(s) to perform an on-line customization of the project on an as needed basis.

For example, as shown in FIG.2, a circle symbol can be chosen to mean a simple step, a square symbol to indicate that an inspection will be conducted, an octagon symbol to mean that there will be a documented inspection report (DIR), and a triangle symbol to mean that a representative of the client will come to the plant for inspection. In this example, the "SC" symbol was chosen to mean that a subcontractor is used. Any other combination of known or newly created symbols may be used in conjunction with the invention.

FIG.3 shows an example of a grid used by the project manager to make or change the graphical models. Whether a box is filled or left empty tells the system to display or not a corresponding symbol.

In this example, the "c01" in the first box instructs the system to display "01" in a circle in the project step position corresponding to the position of said "c01" in the grid. The resulting display is shown in figure 2.

As can be seen, in this example, "c" represents a circle which symbolizes a simple step, "s" represents a square which symbolizes an inspection step, "t" represents a triangle which symbolizes a client inspection step, "dir" represents an octagon in which the letters "dir" are placed to symbolise a documented inspection report step in the project.

The relevant worksheets, digital pictures of the equipment, videos, graphs, quality testing results and any other relevant data are accessible through the client's browser. For instance, a welding step (for example the circle with "02" in it as

shown in figure 2) may be linked by clicking or other known means to the relevant detailed procedure followed by the welder (position of the pieces, cleaning of the surfaces, etc), as found in the quality procedures of the manufacture/contractor. The client may even have access to data relating to the welder to check his or her qualifications. Such data may include a picture, qualifications and other background information. A remotely-controllable real time video camera may even be used to inspect the work in real time.

The main advantage of the system and method is that the client can follow the progression of the manufacture or construction project without leaving his or her office, or having to contact someone at the plant. The use of this system will reduce the need for the client to do on-site inspections.

It is, of course, understood that the invention is not to be limited to the exact details of the system and method for following up or assessing a manufacturing or construction project described above. A variety of departures from the foregoing disclosure may be made in order to confirm to the design preferences or the requirements of each specific application of the invention. It is therefor appropriate that the invention be construed broadly and in a manner consistent with the fair meaning or proper scope of the claims that follow.

CLAIMS

1. A computerized system for remotely following up or assessing the progress of a multi-step manufacturing or construction project comprising:

a) a data server itself comprising:

i. computer processor mean for processing data,
ii. storage means for storing data relating to various steps of said project on a storage medium;
iii. means for selectively accessing said data;
iv. a plurality of graphical interface means each associated with one of said steps;
v. data transceiver means;

b) at least one individual workstation itself comprising:

i. computer processor means for processing data;
ii. visual display screen connected to said computer processor means;
iii. means adapted to display said graphical interface means on said visual display screen;
iv. data transceiver means;

c) a data communication network adapted to connect said workstation to said data server trough their respective data transceiver means.

2. A computerized system as described in claim 1 wherein said graphical interface means comprise a symbol associated with each said step.

3. A computerized system as described in claim, 2 comprising means to change the color or another visual characteristic of said symbol to represent the status of said step.

4. A computerized system as described in claim 2 wherein each said symbol is coded as to its shape, its color and indicia associated therewith.

5. A computerized system as described in claim 4 wherein said indicia are numbers and or letters.

6. A computerized system as described in claim 4 wherein each said shape is associated with a predetermined type of said step.

7. A computerized system as described in claim 4 wherein each said color is associated with a predetermined status of said steps.

8. A computerized system as described in claim 4 wherein each said indicia is associated with a predetermined characteristic of said steps.

9. A computerized system as described in claim 4 wherein each said shape, said color and said indicia is associated with a predetermined type of said step, each said color is associated with a predetermined status of said steps and each said indicia is associated with a predetermined characteristic of said steps.

10. a method for remotely following up or assessing the progress of a multi-step manufacturing or construction project comprising the following steps:

a) inputting data concerning each step on a data server as described in claim 1;

b) associating a graphical interface means with each said step;

c) connecting a remote workstation to said data server using a data communication network as described in claim 1;

d) accessing said data with the use of said remote workstation.

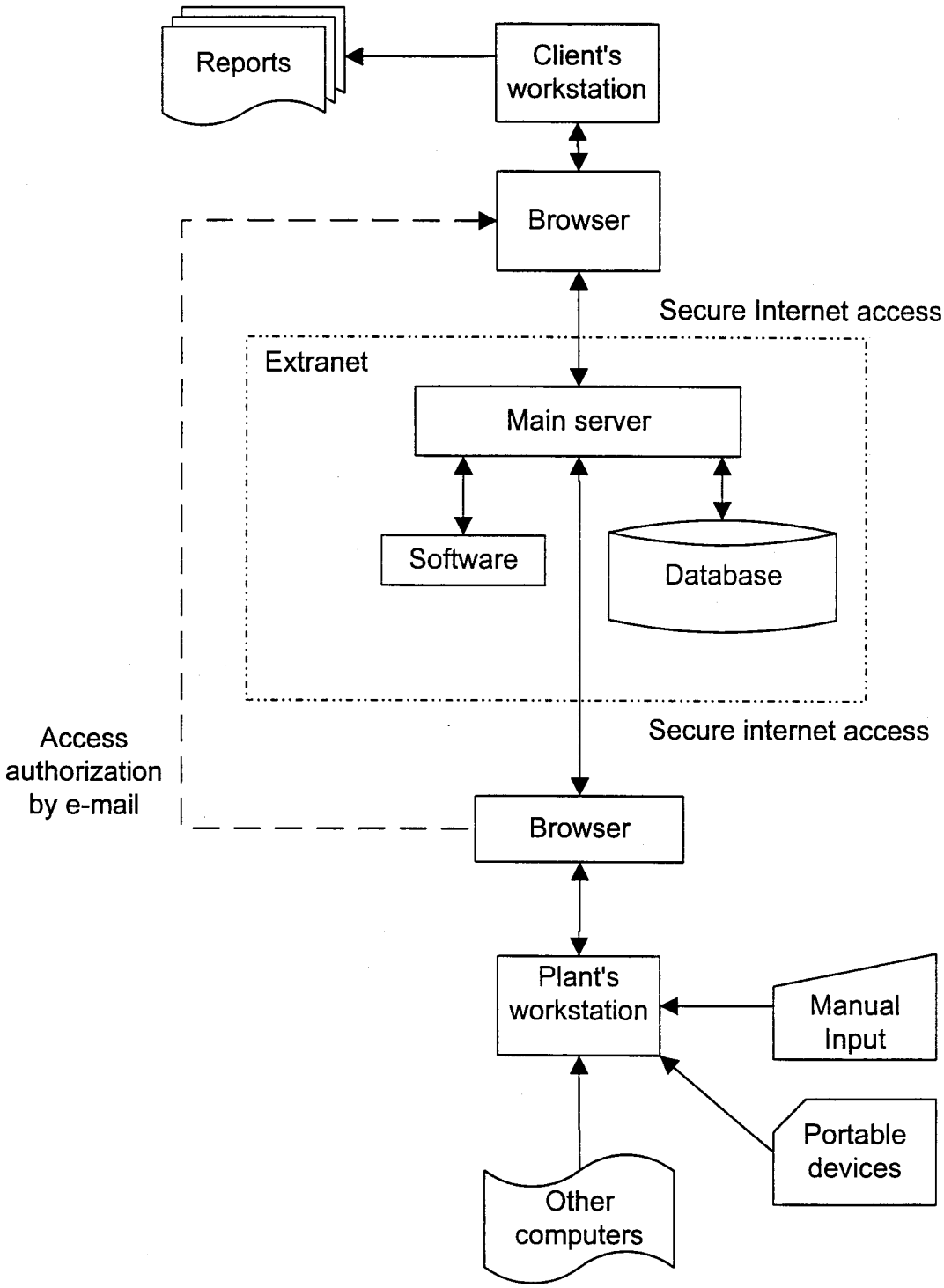
Reports
Client's workstation
Browser
Secure Internet access
Extranet
Main server
Software
Database
Secure internet access
Access authorization by e-mail
Browser
Plant's workstation
Manual Input
Portable devices
Other computers

FIG.1

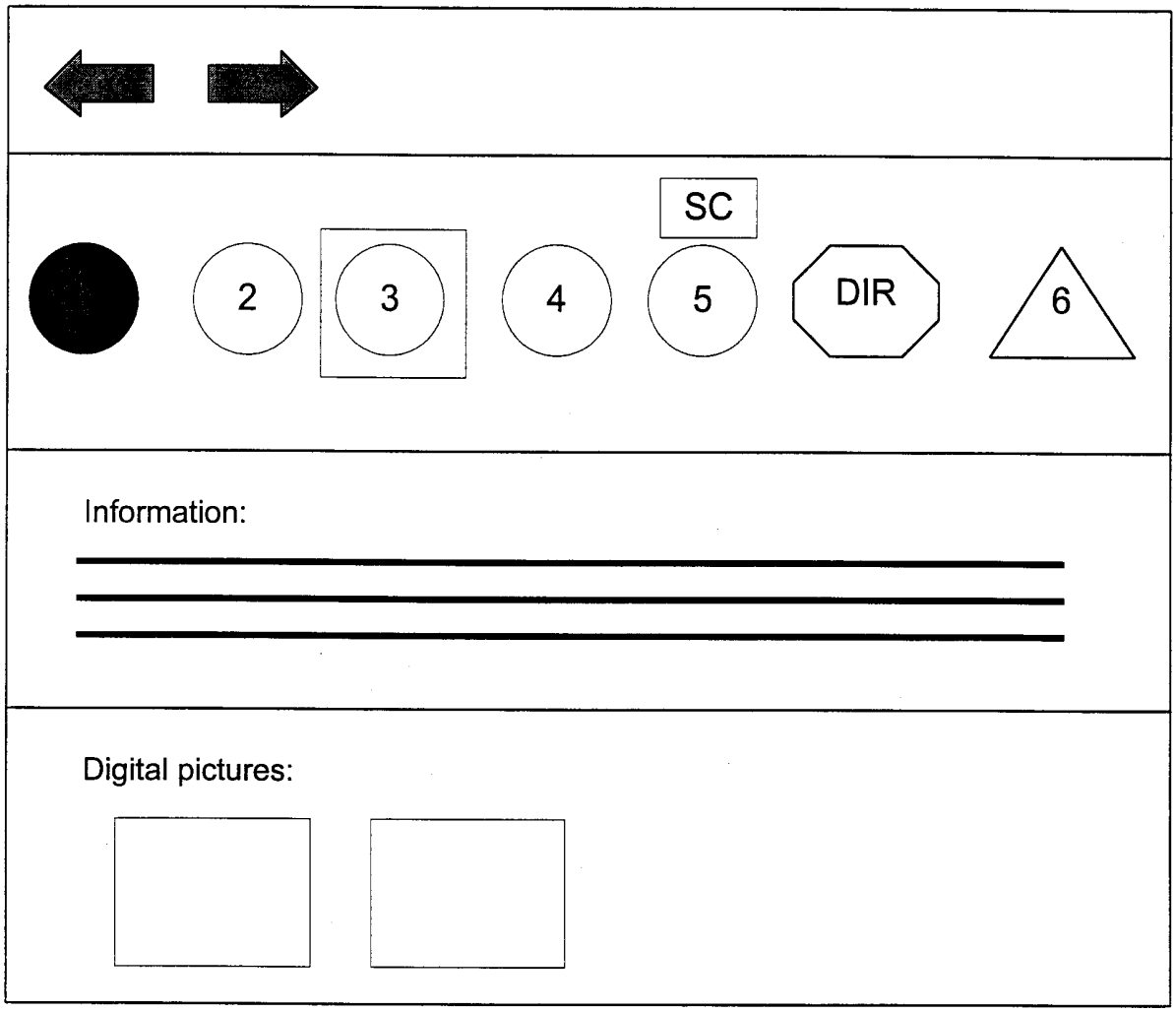

FIG.2

					ssb					
c01	c02	c03	c04	c05	dir	t06				

FIG. 3