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Title of the Invention

Hosting System

Background of the Invention

Field of the Invention

The present invention relates to a hosting system and more particularly to a hosting system preferable for assistance for analysis and design of plant equipment.

Description of the Related Art

Conventionally, various types of hosting services by Internet Service Provider (ISP) have been well known. These hosting services are rental services for line and server by the ISPs, in which public servers relating to mainly internet such as WWW server and mail server are connected to back bone of the provider so as to manage the servers for clients.

That is, the conventional ISP is only a place for a supplier of information to publicize information relating to products and services provided by himself on the public servers, while user accesses the information freely or by receiving a certification. As a result, the supplier of information cannot do anything but wait for user (client) to access. Further, if speaking of user side, he cannot make sure if information or service which he wants exists in an accessed site. Therefore, user has to contact the supplier of the information individually in order to receive providing of his desired information or service. As a result, not only a complicated procedure is required, but also cost is increased.

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According to the conventional service provided by the ISP, to take an illustration, user accesses a site in which ready-made products provided by a supplier are displayed and if there is any product which he wants, he purchases it. On the other hand, if user wants a product customized to himself, he has to contact directly the supplier and purchase the customized product. Therefore, not only cost and time are required, but also a complicated procedure is also required. That is, before, there was not any site or hosting service capable of providing user with a product just fitting to him like a pattern-made product easily.

Conventionally, although there was a site capable of providing various application tools, there was not any site capable of coping with update of system content or application tool dynamically. Further, conventionally, a site capable of achieving a transaction which will be finished in a short term, such as fund and stock, has been available. However, there is not a service capable of coping with a long-term transaction, in which plural applications need to be activated on respective working stages and tool usage and usage condition need to be controlled for a long term, like plant design and analysis work.

Recently, Application Service Provider (ASP) has appeared through which user can use an application inherent of himself. However, the ASP only provides one or plural applications through a common middle ware and thus application usage know-how cannot be provided depending on individual user's request.

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Conventionally, although there is known a service in which parts desired by user are ordered and by assembling those parts, a final product is provided like personal computer and automobile, that service is limited to combination of parts for choosing a final product. Therefore, a problem inherent of individual user cannot be solved.

Further, although the same application as that used on design stage is sometimes employed for equipment analysis in operation and maintenance periods after plant is designed and constructed, the application used on design stage cannot be used as it is without any modification, because its usage method and customization are completely different from the design stage.

Summary of the Invention

The present invention has been achieved in views of the aforementioned problems possessed by the conventional hosting service, and an object of the present invention is to provide a novel and improved hosting system capable of providing a service flexibly corresponding to a request of individual user, providing a service inherent of each user by extracting his own problem, coping with update of content or application tool dynamically and making effective use of common resource such as tool and information.

To achieve the above object, according to an aspect of the present invention, there is provided a hosting system for relaying plural supplier terminals with plural client terminals,

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the hosting system comprising: a shared provider layer constructed as a common layer to all the supplier terminals and all the client terminals; and individual deployer layers constructed as layers inherent of respective client terminals. According to the present invention, because the shared provider layer and the individual deployer layer are separated from each other, a service inherent of individual client can be provided by a simple system at cheap price.

Preferably, the deployer layers are formed in multi-layers depending on access level or access permission level of the client terminal. For example, it can be so constructed that only simple tools can be received on a bottom deployer layer and a higher grade tool or consultant service can be received on a higher deployer layer.

Preferably, the deployer layer comprises a service control data base for controlling service information related to the supplier terminal and customer control data base for controlling customer information related to the client terminal. Consequently, such data bases enable to accumulate data for analysis of provided service and customer information.

Preferably, the deployer layer comprises a tool layer for controlling various application tools dynamically with reference to the service control data base and/or the customer control data base. With such a structure, resource such as application tool can be shared.

Preferably, the deployer layer comprises an analysis engine for analyzing assistance request information provided

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by the client terminal. Consequently, a problem inherent of the client as an analyzing result is clarified and/or formulated by such an analyzing engine, thereby making it possible to provide individual clients with user-friendly services.

Preferably, based on the analyzing result by the analyzing engine, the deployer layer further comprises a matching engine for matching assistance request information provided by the client terminal with service information provided by the supplier terminal.

Preferably, the deployer layer extracts and/or processes service information relating to the analysis result from service information provided by the supplier terminal and provides the processed information to the client terminal as individual service information.

Preferably, the deployer layer comprises an application tool linking engine for interlinking plural primary application tools provided by one or two or more supplier terminals so as to integrate to a secondary application tool dedicated for the client terminal or to a secondary application tool recognized virtually as a single application tool as viewed from the client terminal side. Consequently, it is possible to provide an application tool coinciding with individual client need at cheap price so that plural applications can be activated, like a pattern-made product.

Preferably, the deployer layer is capable of holding on the network assistance request information provided by the client terminal and/or service information provided by the

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supplier terminal through plural transactions or through a long-time transaction. With such a structure, the necessity of updating information for each transaction is eliminated unlike the conventional hosting service, so that it is possible to interlink complicated tools over plural application tools with each other.

Preferably, the deployer layer processes the assistance request information as a transaction changing with time passage by adapting various contents and/or various application tools provided from the supplier terminal and/or the client terminal and/or held in his own server dynamically depending on working stages of the client terminal. Consequently, the system can cope with long term business stages of the client side flexibly and accurately.

Further preferably, the deployer layer processes the assistance request information as a transaction changing with time passage dynamically depending on update of various contents and/or various application tools provided from the supplier terminal and/or the client terminal and/or held in his own server. Consequently, the system can cope with a long transaction accurately.

Finally, preferably, the hosting system assists for analysis and design of plant equipment.

As described above, conventionally, there is a system for matching a product with a product or a product with its price on the internet like auction. However, there is not any site which matches a service need with its supply which the

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present invention proposes. With the above described structure, the present invention proposes a system capable of combining a service of a third party also, which is not restricted to a specific company, so as to meet customer need flexibly. As a means for achieving this purpose, the present invention includes a matching engine for controlling the deployer layers for individual customers and connecting customer data base and service supply data base to this layer for analysis and accumulation of customer history in order to select a service best matching with a customer request depending on time. According to the present invention, by separating the individual deployer layers and connecting each deployer layer to data base for storing customer's problem solution history, it is possible to correspond to diversified and long-term extending service assistance requests of the client flexibly.

Brief Description of the Drawings

The above and other features of the invention and the concomitant advantages will be better understood and appreciated by persons skilled in the field to which the invention pertains in view of the following description given in conjunction with the accompanying drawings which illustrate preferred embodiments. In the drawings:

Fig. 1 is a block diagram showing a schematic structure of a hosting system of the present invention;

Fig. 2 is a block diagram showing concept of hierarchical

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structure of the hosting system of the present invention;

Fig. 3 is a block diagram showing concept of individual deployer layer of the hosting system of the present invention;

Fig. 4 is a block diagram showing concept of provision of common service and individual service in the hosting system of the present invention;

Fig. 5 is a block diagram showing concept of the operation of the hosting system of the present invention;

Fig. 6 is a block diagram showing concept of application tool linkage action of the hosting system of the present invention;

Fig. 7 is a block diagram showing concept of application tool linkage action of the hosting system of the present invention with a time passage corresponding to business development of client side;

Fig. 8 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention;

Fig. 9 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention;

Fig. 10 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention;

Fig. 11 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention;

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Fig. 12 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention;

Fig. 13 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention;

Fig. 14 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention; and

Fig. 15 is an explanatory diagram showing an example of a screen displayed on a client terminal when processing is carried out by the hosting system of the present invention.

Description of the Preferred Embodiments

Hereinafter, the preferred embodiments of the hosting system of the present invention will be described in detail with reference to the accompanying drawings. Same reference numerals are attached to components having same functions in following description and the accompanying drawings and a description thereof is omitted.

First, a schematic structure of the hosting system of this embodiment will be described with reference to Fig. 1. As shown in the same Figure, the hosting system 100 can be configured as a hosting server having central processing unit, memory unit and communication unit. As will be described later, the hosting server is divided physically or virtually to a shared internet service (shared provider) layer 110 open to the

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public and a deployer layer 120 which can be accessed by specific client. In this example, the deployer layer 120 has three-layer structure comprised of a first deployer layer 122, a second deployer layer 124 and a third deployer layer 126. Although the deployer layer 120 will be described about its three-layer structure in this embodiment, the present invention is not restricted to this example, but it is needless to say that the present invention can be applied to the deployer layer having a single layer or the deployer layer having plural layers divided arbitrarily.

The hosting system 100 is connected to computer system of information and service supplier 200 such as software vendor A202, software vendor B204, service company C206 and service company D208 by public telephone network like the internet network or dedicated line. The suppliers 200 provide the hosting system 100 with application tools, various information about seminar and the like, and services. The hosting system 100 divides information and service provided by the suppliers into the shared internet layer 110 and/or the deployer layer 120 corresponding to a predetermined rule or a request from the supplier 200 and constructs data base accessible depending on access right of the client as a service provision control data base 502.

Not only various pieces of information from each supplier 200 but also usage logs of such information in the hosting system 100 are recorded in this service provision control data base 502. As a result, various engines of the

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hosting system 100 can access this service provision control data base 502 appropriately and fetch out desired information by retrieval for reference.

The client 300 is comprised of computer systems of plant companies such as oil company 302, chemical company 304, pharmaceutical company 306, for example, and small and medium engine companies 308. The client 300 can access the hosting system 100 through public telephone network like the internet network 400 or dedicated line as shown in the Fig. 1. Then, various kinds of information about the clients 300 are stored in a customer control data base 402.

This customer control data base 402 registers various kinds of information from the respective clients 300 and records usage logs of the information in the hosting system 100. As a result, various engines of the hosting system 100 access this service provision control data base 502 appropriately and retrieves for reference, so that desired information can be picked up.

Although only users of this hosting system 100 are indicated as the client 300, the shared internet layer 110 is structured to be accessible freely and not only the aforementioned plant related companies but also other business companies and individuals can constitute part of the client 300 by accessing this network through the internet network. However, as described later, a specific certification has to be obtained in order to access the deployer layer 120 constructed on a upper level of the shared internet service

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layer 110.

Next, the hierarchical structure of the hosting system 100 of this embodiment will be described with reference to Fig. 2.

As shown in the same Fig. 2, the shared internet layer 110 is provided on a bottom layer of the hosting system 100 of this embodiment. As described previously, the shared internet service layer 100 is structured to be accessible freely. A client or general user who accesses the shared internet service layer 100 can refer to a service list provided by a certain site, for example. If required, he can request further detailed information. Further, it can be so constructed that even general user can receive information such as new distribution through a predetermined registration.

The deployer layer 120 of the hosting system 100 of this embodiment is constructed with multi-layers, for example, three layers. Basically, as the layer level rises, high-grade service or highly specialized service depending on individual equipment and customer can be received. The respective layers is desired to be classified by mainly extracting generalized element technology and particularly, it is preferable to design so that use of marketed applications is facilitated. Further, the deployer layer can be classified depending on technical specialty of a job requested by each client.

In case where the deployer layer is constituted of multi-layers, it can be so constructed that individual

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certification is required each time when the client accesses each layer or up to which layer can be accessed by each client. For example, in the example shown here, a client capable of accessing the first deployer layer 122 is permitted to use only a simple tool. A client capable of accessing the second deployer layer 124 is permitted not only to use high grade tool, but also receive various consultings. Further, a client capable of accessing the third deployer layer 126 can not only receive project planning but also receive a detailed estimate. Meanwhile, the example shown here is just an example and which information or service is provided on each deployer layer can be determined arbitrarily. Even if any configuration is employed, it is evident that the structure of the deployer layers belongs to the technical field of the present invention.

The deployer layer mentioned in this specification refers to generally a layer constructed physically or virtually on a host server, which can be deployed individually for each client and in which information and service of application tool are adapted to a specific environment of each client. That is, for each client side, the deployer layer of this embodiment is recognized as a layer constructed physically or virtually as a layer inherent of each client terminal. From a viewpoint of the hosting system, the deployer layer of this embodiment is recognized as a layer for adapting information and service of application tool provided by each supplier to each client.

With such a structure, each client can receive various information and services as if a site dedicated to himself were

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formed through the shared internet service layer 110. That is, as shown in Fig. 3, if each client acquires an access right to each deployer layer, he comes to possess dedicated deployer layers 120a, 120b, 120c, and 120d physically or virtually independent on the hosting system 100 through the shared internet service layer 110. As a result, the client can receive information and service for solving a problem inherent of himself.

Fig. 4 shows schematically the functions of the hosting system capable of providing a service inherent of each client as described above. As shown here, the shared provider layer 110 is constructed to be accessible freely so that substantially common services can be provided to every client. Such common service includes, for example, distribution of general news. Then, as already described above, each client can access the deployer layer 120 through predetermined certification or payment.

The deployer layer 120 includes an analyzing engine 132, a working engine 134, a matching engine 136 and other processing engine 136. Assistance request information from a client is processed by referring to various kinds of contents and applications stored in data base layer 140a (including customer control data base 402, service provision control data base 502 and other data bases) in the hosting server 140 by means of these engines 132, 134, 136 and 138 and using various application tools stored in tool layer 140b as required and transmitted as service inherent of each client. Therefore,

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as a result, each client can receive information or service inherent of himself as if his own dedicated site (client dedicated deployer layer) existed in the hosting system as shown in Fig. 3.

A schematic flow of information/service among the hosting system 100, the supplier 200 and the client 300 will be described with reference to Fig. 5. As shown in the same Figure, service information such as various contents and application tools are provided from the supplier 200 to the hosting system 100 and stored in the customer control data base 402. Then, if an assistance request is transmitted to the hosting system 100 from the client 300 having an access right to the deployer layer 120, the analyzing engine 132 in the hosting system 100 analyzes the assistance request information based on the customer control data base 402 in which data about customer previous access is stored. As a result, a problem inherent of the client 300 is clarified or formulated.

Further, the matching engine 138, for example, specifies a service based on the service provision control data base 502 depending on an analyzing result of the analyzing engine 132 and carries out a desired processing. More specifically, a content or application tool inherent of the client 300 who made access is selected from various contents and application tools stored in the service provision control data base 502 and a desired processing is carried out. The processing results are reported to the client 300 and at the same time, some of the

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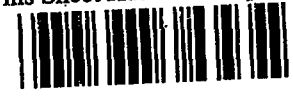
results processed by using a specified service. Its result is reported to the client 300 through the working engine 134. That is, the hosting system 100 can provide information or service to the client 300 corresponding to his assistance request.

If the matching engine 138 cannot find out information for solving a problem inherent of the client 300 from various contents and application tools stored in the hosting server 140, the hosting system 100 processes various contents or application tools stored in the hosting server 140 using the working engine 134 or other processing engine 136 and provides a result to the client 300 by adapting it to his environment.

For example if a single application tool cannot correspond to the environment or assistance request of the client 300, as shown in Fig. 6, plural primary application tools stored in the hosting server 140 are interlinked with each other so as to integrate a secondary application tool physically or virtually, thereby meeting the environment or assistance request of the client 300. Thus, such a user-friendly environment is constructed as if a physically or virtually single secondary application tool were used from viewpoint of the client 300, although plural application tools are used actually on the tool layer.

For plural application tools to be activated on the tool layers, it is preferable to construct an environment capable of holding various kinds of information provided from the client

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300 or supplier 200 on the network through plural transactions or a long-time transaction. At this point, a conventional internet environment was not capable of holding a predetermined information on the network through plural transactions or a long-time transaction, which is employed in this embodiment. Therefore, in the conventional internet environment, information had to be input each time when transaction was changed or a long-time transaction sometimes could not be processed. According to this embodiment, desired information is held on the internet through plural transactions or a long-time transaction, thereby processing being achieved effectively.

A result of this processing is reported to the client 300 and at the same time, provided as desired information or service and further reported to the supplier 200 side. If no appropriate information and service such as content and application tool exists in the hosting server 140, additional service or information can be requested to the supplier side. Then, after receiving the additional service or information, a predetermined matching or working processing can be carried out.

According to this embodiment, information or service can be provided corresponding to individual assistance request of the client 300 quickly at cheap price by the individual deployer layer 120 inherent of each client constructed physically or virtually for each client.

According to this embodiment, by constructing the

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individual deployer layer physically or virtually for each client, not only a short-term transaction such as move of fund or stock but also a long-term transaction can be carried out. An example of this long-term transaction will be described with reference to Fig. 7. In general plant business, if a project of plant equipment construction is determined on research/development stage, the concrete construction design is carried out on production design stage. Then, after various problems are considered on detailed design and construction stage, actual plant operation is carried out on operation/maintenance stage. On each of these stages, highly specialized application tools must be used and it is necessary to correspond flexibly to update of the application tools. However, a high level know-how and a long term practice are necessary to operate these application tools interlinkingly in time series and therefore, conventionally, this work takes a very high cost and complicated processing.

According to this embodiment, by constructing the individual deployer layer for each client physically or virtually as shown in Fig. 7, plural application tools can be linked with each other at the same time or in time series, so that a long-term transaction like plant business can be coped with flexibly at cheap price without losing interrelation among the application tools.

Further, according to this embodiment, if various contents or application tools stored in the hosting server 140 are updated, it is possible to make the updated content

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correspond to provision of information and service dynamically, thereby enabling to correspond to a long-term transaction flexibly.

Next, a flow of processing of the hosting system of this embodiment will be described with reference to screens displayed on the client terminal 300 shown in Figs. 8-15.

Fig. 8 shows an entrance page of the shared internet service layer in the hosting server 100. This page functions as a portal for various services and a client who makes access can access a higher deployer layer depending on the degree of his certification. In this example, portals for update history (What's New), news (Asia Pacific EPC News), analysis of problems (What's Your Problem), information of tools provided by server (Engineering Tools), process analysis and simulation (Process Analysis & Simulation), cost estimation (Plant Costing), project management (Project Management), 3-D design model (Plant Conceptual 3D Model), engineering education (Engineering Education), technical consultant (Technical Consultation) and the like are displayed on the screen. Additionally, selection of Japanese/English (Japanese/English), user registration (User Registration), question/answer (Question?/FAQ), link to partner site (Our Partners) and the like are also displayed.

If the client 300 understands his own problem at the entrance page, he can enter a field of that problem quickly as shown in Fig. 9. Fig. 9 shows a screen about a problem on line hydraulic pressure (Line Hydraulics). In this page, design

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phase (Design Problem) for verifying information about dimensions of pipe, nozzle, pump and the like and operation/maintenance phase (Operation Problem) for verifying information about low pressure, pipe vibration and the like are indicated.

To the contrary, Fig. 10 shows a screen for analyzing a problem (What's Your Problem) which should be accessed if the client 300 who makes access does not understand his own problem. On the screen, a region (Identify Your Problem) for the client 300 to enter the characteristic of the problem and a region (Recommended Check List for Your Problem) for indicating a cause portion estimated by the analyzing engine as a check list are indicated.

On a screen shown in Fig. 11, corresponding to the check list in Fig. 10 a region (Please specify Fluid Conditions) for the client 300 to enter necessary data for matching with the problem is indicated. If necessary data is entered here, a tool matching with the problem of the client 300 is activated and then a computation (processing) result is sent back. Further, if the client 300 requests a computation (processing) in a wide range, he needs to enter necessary information through a region (CV Hydraulics Analysis) on the bottom of the screen.

Figs. 12 and 13 show a screen for analyzing a problem of the client 300 by navigation system. By making entry successively following steps (Steps to size a pipe) indicated in a region (Design Problem Sizing Pipe) for analyzing design relating to pipe dimensions, the problem is analyzed as shown

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in Figs. 12 and 13. Fig. 12 shows a screen for indicating schematically an outline of the navigation for analysis. Fig. 13 shows a screen for making a further detailed entry in a step selected on the screen shown in Fig. 12.

Figs. 14 and 15 show screens indicating basic reference materials which the client 300 can refer to when inputting information for analyzing the problem.

By inputting necessary information following the above described screens, the client 300 can analyze his own problem without feeling any burden and further obtain information necessary for solving the problem using one or plural high-grade application tools.

Although the hosting system according to the preferred embodiment of the present invention has been described with reference to the accompanying drawings, the present invention is not restricted to such examples. It is evident to those skilled in the art that the present invention may be modified or changed within a technical philosophy thereof and it is understood that naturally these belong to the technical philosophy of the present invention.

In the above described embodiments, the present invention has been described about a case where the hosting system of the present invention is applied to hosting system for analysis and design of the plant and however, the present invention is not restricted to such an example but may be applied to hosting system for business requiring a transaction which each client needs to cope with individually and

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necessitates a long-term maintenance.

In the above embodiments, the present invention has been described about an example in which the content or application tool stored in the hosting server 140 is processed by the matching engine 138, working engine 134 or other processing engine 136. However, the present invention is not restricted to such example. For example, each time when an assistance request is made from the client, it is permissible to receive a content or application tool corresponding to the content thereof from the supplier side and process it by matching or working processing.

As described above, according to the present invention, if the assistance request differs depending on the client or the assistance request from the client is about an assistance for a long term, it is possible to provide a hosting system capable of coping therewith in a flexible manner.

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What is claimed is:

1. A hosting system for relaying plural supplier terminals with plural client terminals,

said hosting system comprising: a shared provider layer constructed as a common layer to all the supplier terminals and all the client terminals; and

individual deployer layers constructed as layers inherent of respective client terminals.

2. A hosting system according to claim 1 wherein the deployer layers are formed in multi-layers depending on access permission level of the client terminal.

3. A hosting system according to claim 1 wherein the deployer layer comprises a service control data base for controlling service information related to the supplier terminal and customer control data base for controlling customer information related to the client terminal.

4. A hosting system according to claim 3 wherein the deployer layer comprises a tool layer for controlling various application tools dynamically with reference to the service control data base and/or the customer control data base.

5. A hosting system according to claim 1 wherein the deployer layer comprises an analysis engine for analyzing assistance request information provided by the client terminal.

6. A hosting system according to claim 5 wherein the deployer layer further comprises a matching engine for matching assistance request information provided by the client terminal with service information provided by the supplier

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terminal based on the analyzing result by the analyzing engine.

7. A hosting system according to claim 2 wherein the analyzing engine clarifies and/or formulates a problem inherent of a client as an analysis result.

8. A hosting system according to claim 2 wherein the deployer layer extracts and/or processes service information relating to an analysis result from service information provided by the supplier terminal and provides the processed information to the client terminal as individual service information.

9. A hosting system according to claim 1 wherein the deployer layer comprises an application tool linking engine for interlinking plural primary application tools provided by one or two or more supplier terminals so as to integrate to a secondary application tool dedicated for the client terminal.

10. A hosting system according to claim 1 wherein the deployer layer comprises an application linking engine for interlinking plural primary application tools provided by one or two or more supplier terminals so as to integrate to a secondary application tool recognized virtually as a single application tool as viewed from the client terminal side.

11. A hosting system according to claim 1 wherein the deployer layer is capable of holding assistance request information provided by the client terminal and/or service information provided by the supplier terminal on the network through plural transactions.

12. A hosting system according to claim 1 wherein the

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deployer layer is capable of holding assistance request information provided by the client terminal and/or service information provided by the supplier terminal on the network through a long-time transaction.

13. A hosting system according to claim 1 wherein the deployer layer processes the assistance request information as a transaction changing with time passage by adapting various contents and/or various application tools provided from the supplier terminal and/or the client terminal and/or held in his own server dynamically depending on working stages of the client terminal.

14. A hosting system according to claim 1 wherein the deployer layer processes the assistance request information as a transaction changing with time passage dynamically depending on the update of various contents and/or various application tools provided from the supplier terminal and/or the client terminal and/or held in his own server.

15. A hosting system according to claim 1 wherein the hosting system assists for analysis and design of plant equipment.

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