TITLE

A computer-implemented method.

FIELD OF INVENTION

This invention relates to a computer-implemented method of managing an off-shore oil rig.

BACKGROUND

Off-shore oil rigs involve large investments of capital and manpower and it is desirable to be able to control them through computer systems. It is an object of a preferred form of the invention to go at least some way towards providing a computer-implemented method for managing such an Off-shore oil rig in a one-stop centralised manner. While this object applies to the preferred embodiment it should not be seen as a limit on the scope of the invention. The object of the invention per se is simply to provide the public with a useful choice.

SUMMARY OF THE INVENTION

According to one aspect of the invention there is provided a computer-implemented method of managing an off-shore oil rig, comprising the steps of:

a) providing a computer server on an Off-shore oil rig;

b) providing a plurality of systems on the Off-shore oil rig such that they detect and communicate to the server one or more of:

   i) fires;

   ii) gas leaks; and

   iii) tank levels;

c) providing a plurality of cameras on the Off-shore oil rig such that they communicate video footage to the server indicative of what is happening at various areas of the Off-shore oil rig;

d) providing digital signage throughout the Off-shore oil rig in data communication with the server such that messages are displayed on the signage; and

e) Providing a plurality of kiosks and/or mobile devices throughout the Off-shore oil rig, each incorporating a display screen, such that the kiosks and/or mobile

devices are in data connection with the server and so that human workers can use the kiosks and/or mobile devices to access information related to the Off-shore oil rig.

The mobile devices may for example comprise tablets and/or smart phones connected to the server via wifi.

The server referred to above may be a unitary device or a collection of sub-servers.

Optionally the server is arranged so that in the event of a fire or gas leak being detected it communicates with one or more of the kiosks to indicate a calculated safe escape route for a human worker in the vicinity of the fire or leak.

Optionally one or more sensors automatically shut(s)-down an item of Off-shore oil rig machinery on detecting a predetermined dangerous situation, and communicates this to the server.

Optionally the Off-shore oil rig server can be accessed via the internet by land based human users.

Optionally the server is interfaced with a vessel management system of the Off-shore oil rig and provides human user access to that system via the kiosks and/or mobile devices (eg for viewing the status of facets of the Off-shore oil rig).

Optionally the server delivers training information to human users via the kiosks.

Optionally the kiosks can only be accessed by pre-authorised users, for example by way of password, ID card or biometric thumb/finger print reader, etc.

Optionally the server receives information as to:

a) the status of items or systems connected to the server (eg an alarm summary); and

b) weather conditions at the location of the Off-shore oil rig;

and causes it to be communicated to an onshore base.

Optionally multiple Off-shore oil rigs utilise the computer-implemented method and communicate with the same onshore base.

BRIEF DESCRIPTION OF THE DRAWING

Some preferred embodiments of the invention will now be described by way of example and with reference to the accompanying drawing, of which:

Figure 1 is a schematic layout of a computer-implemented management system.

DETAILED DESCRIPTION

Referring to figure 1, an Off-shore oil rig is provided with a software-driven computer-implemented management system 1. A central server 2 is in Modbus communication 3 with a monitoring sub-system 4 comprising a fire detection sub-system 5, a gas leak detection sub-system 6, an emergency shut-down sub-system 7 and a tank gauging sub-system 8. The sub-systems 5, 6, 7 and 8 are interlinked as indicated at 9. These communicate fires, gas leaks, machinery shut-downs and tank levels to the server 2.

The server 2 is in LAN cable communication 10 with a camera module 11 comprising a series of cameras 12 situated at various locations around the Off-shore oil rig. The cameras 12 communicate video footage to the server 2 on the status or happenings at the areas they cover.

The server 2 is also in LAN cable communication 13 with digital signage 14 spread throughout the Off-shore oil rig to communicate messages to workers.

The server 2 is in LAN cable communication 15 with the Off-shore oil rig's pre-existing vessel management module 16. This enables access by the server 2 to all of the features and facilities previously controlled by the vessel management module.

The server 2 is in LAN cable communication 18 with an intranet 19 comprising a plurality of kiosks 20 spread throughout the Off-shore oil rig. The kiosks each have a screen and can be used by human workers to communicate with the server 2. In some embodiments the kiosks may simply be computer stations. In this way workers can control or access information from various items of the Off-shore oil rig connected to the server directly or indirectly. For example in the event of a fire or gas leak detected by the modules 5 and 6 the server calculates the safest escape route for a worker in the vicinity of the fire or leak. The escape route can be viewed by a worker using one of the kiosks 20. The kiosks can also be used to deliver training to workers by video and audio feed. They are password, ID card or fingerprint protected, and different workers will have different levels of access to the features of the system. The kiosks 20 may be supplemented or replaced by portable digital devices 26 such as tablets and/or smart phones.

The server 2 is in LAN cable communication 21 with an administration software module 22 which can be used to control or administer system features.

The off-shore management system 1 can be accessed by a remote on-shore human user 23 via the internet 24 and an onshore server 25.

The server 2 facilitates access by on Off-shore oil rig, or onshore, users to access the system and view performance characteristics of the Off-shore oil rig, for example oil or gas production, gas or oil storage tank levels and associated weather conditions.

In the preferred embodiment of the invention the system 1 interfaces readily with exiting systems of the Off-shore oil rig and provides a centralised control facility for the Off-shore oil rig. Desirably the system 1 can be readily customised to suit a variety of Off-shore oil rigs and operator preferences.

The software driving the system 1 may be organised to provide a series of modules, for example:

A. An Administration Module having:

i. An E-human resources sub-module comprising a set of digital documents detailing a company profile, human resources policies, operation policies and training videos;

ii. an E-safety procedures sub-module comprising a set of related documents and videos;

iii. a training sub-module providing information on fire detection systems, gas detection systems, electrical apparatus, hazardous areas, safety housekeeping and accident prevention; eg by way of videos, etc; and

iv. an E-Library sub-module providing a set of system specifications and related drawings, user manuals, system diagrams (these may be grouped so that a user can get to them with a few clicks and may be printable if a printer is available), etc; and

B. A System Interface Module having:

i. a system status sub-module recording system alerts captured from connected Off-shore oil rig machinery and sensors, alarm summaries, current alarms, fire and gas detection system status, storage tank levels and engine status; and also providing access to navigation systems, vessel management systems, fire damper systems, preload and ballast systems, fire extinguishing systems and weather monitoring systems (users may access one or more of these to get status information depending on their level of authorisation);

ii. a schedule monitoring sub-module providing a spare parts schedule and a maintenance schedule and facility to send these to an appropriate user;

ii. a CCTV monitoring sub-module providing control for multi-camera views and full screen views;

iii. an Add-On Services sub-module recording Port Authority document guides, weather reports and news items;

iv. a digital signage sub-module recording a helicopter schedule, upcoming events and broadcast messages; and

v. an Auto-Dial Telephone assistance sub-module.

While some preferred embodiments of the invention have been described by way of example it should be appreciated that modifications and improvements can occur without departing from the scope of the following claims.

CLAIMS

1. A computer-implemented method of managing an Off-shore oil rig, comprising the steps of:
    a) providing a computer server on an oil Off-shore oil rig;
    b) providing a plurality of sensors on the Off-shore oil rig such that they detect and communicate to the server one or more of:
        i) fires;
        ii) gas leaks; and
        iii) tank levels;
    c) providing a plurality of cameras on the Off-shore oil rig such that they communicate video footage to the server indicative of what is happening at various areas of the Off-shore oil rig;
    d) providing digital signage throughout the Off-shore oil rig in data communication with the server such that messages are displayed on the signage; and
    e) Providing a plurality of kiosks and/or mobile devices throughout the Off-shore oil rig, each incorporating a display screen, such that the kiosks and/or mobile devices are in data connection with the server and so that human workers can use the kiosks and/or mobile devices to access information related to the Off-shore oil rig.

2. A computer-implemented method according to claim 1, wherein the server comprises a unitary device or a collection of sub-servers.

3. A computer-implemented method according to claim 1 or 2, wherein the server is arranged so that in the event of a fire or gas leak being detected it communicates with one or more of the kiosks and/or mobile devices to indicate a calculated safe escape route for a human worker in the vicinity of the fire or leak.

4. A computer-implemented method according to claim 1, 2 or 3, wherein one or more sensors automatically shut down an item of Off-shore oil rig machinery on detecting a predetermined dangerous situation, and communicates this to the server.

5. A computer-implemented method according to any one of the preceding claims, wherein the Off-shore oil rig server can be accessed via the internet by land based human users.

6. A computer-implemented method according to any one of the preceding claims, wherein the server is interfaced with a vessel management system of the Off-shore oil rig and provides human user access to that system via the kiosks and/or mobile devices.

7. A computer-implemented method according to any one of the preceding claims, wherein the server delivers training information to human users via the kiosks and/or mobile devices.

8. A computer-implemented method according to any one of the preceding claims, wherein the kiosks and/or mobile devices can only be accessed by pre-authorised users.

9. A computer-implemented method according to any one of the preceding claims, wherein the server receives information as to:

a) the status of items or systems connected to the server; and; and

b) weather conditions at the location of the Off-shore oil rig;

and causes it to be communicated to an onshore base.

10. A computer-implemented method according to any one of the preceding claims, wherein multiple Off-shore oil rigs utilise the computer-implemented method and communicate with a common on-shore base.

A COMPUTER-IMPLEMENTED METHOD

Abstract

A computer-implemented method of managing an Off-shore oil rig, comprising the steps of:

a) Providing a computer server 2 on an oil Off-shore oil rig;
b) Providing a plurality of sensors 4 on the Off-shore oil rig such that they detect and communicate to the server one or more of:

    i) Fires;
    ii) Gas leaks; and
    iii) Tank levels;

c) Providing a plurality of cameras 12 on the Off-shore oil rig such that they communicate video footage to the server 2 indicative of what is happening at various areas of the Off-shore oil rig;
d) Providing digital signage 14 throughout the Off-shore oil rig in data communication with the server such that messages are displayed on the signage; and
e) Providing a plurality of kiosks 20 and/or mobile devices 26 throughout the Off-shore oil rig, each incorporating a display screen, such that the kiosks and/or mobile devices are in data connection with the server and so that human workers can use the kiosks and/or mobile devices to access information related to the Off-shore oil rig.

Fig. 1 for publication

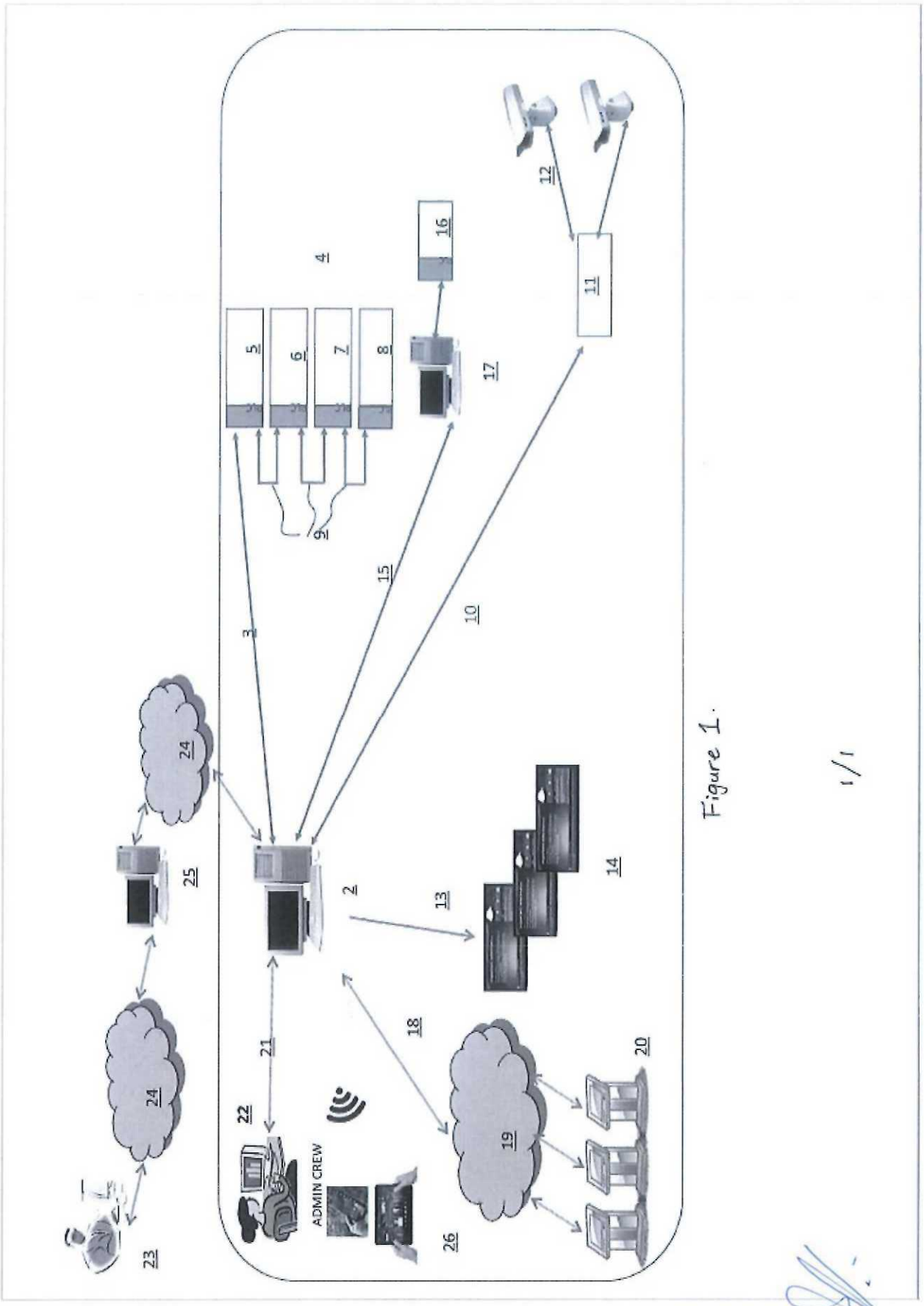

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Figure 1.

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