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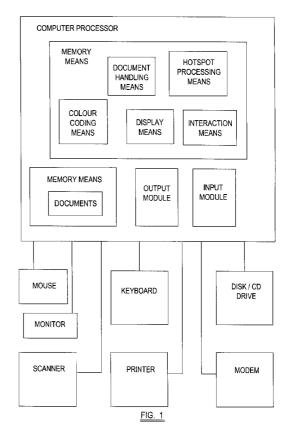
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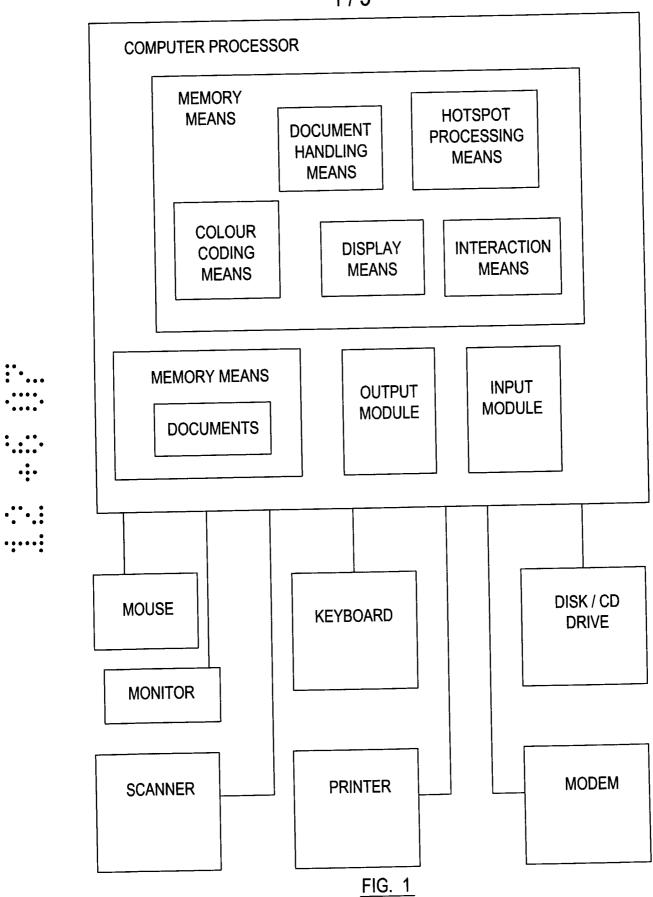
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(54) Abstract Title: Document management system

(57) A system in which a plurality of documents which form a hierarchy are stored. A principle documents includes information relating to a principle object, subdocuments include information relating to a portion of the object referenced by the document above them in the hierarchy. To a representation of the principle object, hotspots are added to portions referenced by subdocument and these hotspots are linked to the appropriate subdocuments and colour coded according to the information in the subdocument. The hierarchy of objects is preferably site of buildings, individual buildings, floors and rooms. The information in the documents preferably relates to the asbestos hazard level.





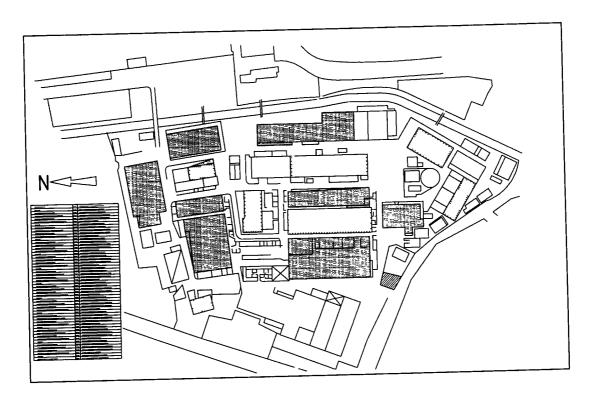


FIG. 2



FIG. 3

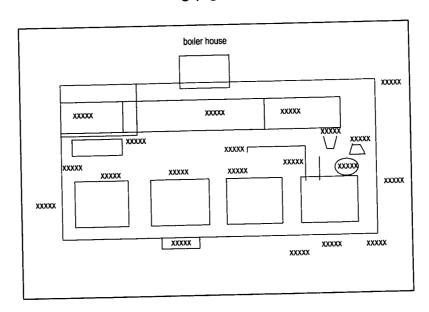
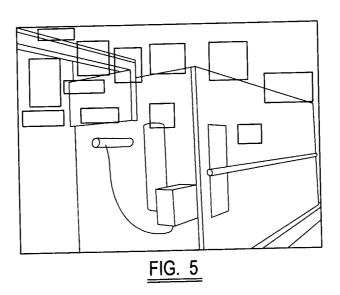


FIG. 4



DATE OF ANALYSIS: XX XXX XXXXXXX SAMPLING PERFORMED BY: XXXXX XXXXX METHOD OF ANALYSIS: XXXXXXXXXXXXXXXXXXXXXXXXX ECL Analysis of Physical Location of Sample Fibrous Content Sample Structure Number XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXXXXXX XXXXX XXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXX XXXXX

FIG. 6

Title: Document Management System

Description of Invention

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The invention relates to a document management system, in which the documents include information concerning objects, and the system employs colour coding to indicate information concerning the objects or portions of the objects.

There are various applications where it is desirable to manage documents which include information concerning objects. Such objects may be sites of buildings, buildings on the site, parts of the buildings, reports on parts of the buildings. For example, asbestos is a recognised health risk, and it is known to carry out surveys of buildings on a site to ascertain which buildings and which parts of the buildings contain asbestos. Information on the asbestos hazard can be presented in one or more documents such as printed reports, and on printed plans of the site or of the buildings. If a review of the asbestos hazard on a site is to be conducted, it may be necessary to handle many documents, making it difficult to collate and order the asbestos content information. Additionally, if a contractor is asked to deal with the asbestos in a particular building or part thereof, they will need to be supplied with the information relating to the asbestos content of the building or building part, which will require finding this information, or, if supplied with documents containing all asbestos information for the site, will need to sift through these documents to obtain the information necessary to them.

According to a first aspect of the invention there is provided a document management system comprising

document handling means which enables access of a principal document which includes information concerning a principal object and enables access of at least one subordinate document which includes

information concerning a subordinate object which is a portion of the principal object,

hotspot processing means which creates a hotspot and associates the hotspot with the portion of the principal object, and links the hotspot with the subordinate document, and

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colour coding means which colour codes the hotspot according to information concerning the portion of the principal object.

The information concerning the principal object may include a representation of the principal object. The information concerning the subordinate object may include a representation of the subordinate object. The representation may be a photograph or a drawing of the object. The information concerning the principal object may include written information concerning the principal object. The information concerning the subordinate object may include written information concerning the subordinate object. The written information concerning the object may include a report of an assessment of a hazard of the object.

The hotspot processing means may associate the hotspot with the portion of the principal object by placing the hotspot on a part of the representation of the principal object which represents the portion of the object. The hotspot processing means may link the hotspot with the subordinate document such that activation of the hotspot causes access of the subordinate document. The hotspot processing means may assign a name to the hotspot. The name of the hotspot may be indicative of the portion of the principal object with which the hotspot is associated.

The colour coding means may colour code the hotspot according to information concerning a hazard of the portion of the principal object with which the hotspot is associated. The colour coding means may colour code the hotspot according to information concerning an asbestos hazard of the

portion of the principal object with which the hotspot is associated. The colour coding means may colour code the hotspot according to information concerning a highest hazard of the portion of the principal object with which the hotspot is associated. The colour coding means may colour code the hotspot according to information concerning a highest asbestos hazard of the portion of the principal object with which the hotspot is associated.

The document management system may comprise display means. The display means may enable display of the hotspot. The display means may enable display of information concerning the principal object. The display means may enable display of the representation of the principal object. The display means may enable display of information concerning the subordinate object. The display means may enable display of the representation of the subordinate object.

The document management system may comprise interaction means which enables interaction with the hotspot. The interaction means may enable interaction with the hotspot to cause activation of the hotspot and access of the subordinate document. The interaction means may access the subordinate document to obtain information therefrom concerning the subordinate object. The interaction means may interact with the hotspot to access a name of the hotspot.

The hotspot processing means may create a number of hotspots, and for each hotspot, associate the hotspot with a portion of the principal object and link the hotspot to a subordinate document. The colour coding means may colour code each hotspot according to information concerning the portion of the principal object with which the hotspot is associated. The display means may enable display of each of the hotspots. The interaction means may enable interaction with each of the hotspots.

The system may manage a hierarchy of principal and subordinate documents.

The principal document may be a first document which includes information concerning a first object, and the subordinate document may be a second document which includes information concerning a second object which is a portion of the first object.

The principal document may be the second document which includes information concerning the second object, and the subordinate document may be a third document which includes information concerning a third object which is a portion of the second object.

The principal document may be the third document which includes information concerning the third object, and the subordinate document may be a fourth document which includes information concerning a fourth object which is a portion of the third object.

The principal document may be the fourth document which includes information concerning the fourth object, and the subordinate document may be a fifth document which includes information concerning a fifth object which is a portion of the fourth object.

In one embodiment, the system manages a series of principal and subordinate documents, which include information concerning hazards of buildings on a site. The first object may be a site of buildings, the second object may be a building on the site, the third object may be a floor of the building, the fourth object may be an area of the floor, and the fifth object may be a portion of the area of the floor from which a sample is taken, for example to be tested for asbestos.

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The objects may be cables or pipes of a building.

The system may be embodied in software. The software may be run on a computer, the documents may be stored on the computer, or another computer. The software may be run on a PDA, the documents may be stored on the PDA or on a computer.

According to a second aspect of the invention there is provided a method of using the document management system of the first aspect of the invention to manage a plurality of documents.

The document management system allows users of the system to navigate through the documents handled by the system, and, for example, to access particular documents easily. This is achieved by simply activating a series of hotspots. Thus, for example, details of the asbestos hazard of a portion of a site of buildings can be easily obtained. The user need not sift through all of the documents containing asbestos hazard information of the site to obtain this information. The hotspots associated with the various portions of the site are colour coded. When the colour coding indicates the asbestos hazard, this allows easy display and understanding of the asbestos hazard of, for example, the site or a building or a floor of the building etc.

An embodiment of the invention will now be described by way of example only, with reference to the accompanying drawings, in which:

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Figure 1 is a schematic representation of the system of the first aspect of the invention;

Figure 2 shows a representation of a first object;

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Figure 3 shows a representation of a second object

Figure 4 shows a representation of a third object;

5 Figure 5 shows a representation of a fourth object, and

Figure 6 shows written information concerning a fifth object.

document handling means, a hotspot processing means, and a colour coding means, and also a display means and an interaction means. These are realised as software, in one or more modules. In this embodiment, the software is loaded onto and run on a computer system. The computer system comprises a computer, and a visual display unit (VDU), a keyboard, a mouse, a disk/CD drive, a printer, a modem and a scanner. These are connected to the computer in conventional manner. The computer comprises a processor, one or more memory modules, an input module for receiving input from the keyboard, mouse, disk/CD drive, modem and scanner, and an output module for sending output to the disk/CD drive, printer and modem.

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Although the document management system will be described in conjunction with a computer system, it will be appreciated that the management system can be utilised using other equivalent systems, such as a PDA.

- The document management system software is loaded into a memory module of the computer, from the disk/CD drive or modem using the input module. The processor accesses and runs the document management system software.
- 30 In this embodiment, the documents include information concerning asbestos hazards of buildings on a site. The asbestos hazard information is obtained

by carrying out a survey of various parts of various buildings on the site, and using this to record the hazard information in the documents. The documents are input into a memory module of the processor of the computer, from the disk/CD drive, modem or scanner, using the input module of the processor.

The documents comprise a first document which includes information concerning a first object which is a site of buildings, a plurality of second documents each of which includes information concerning a second object which is one of the buildings on the site, a plurality of third documents each of which includes information concerning a third object which is a floor of one of the buildings, a plurality of fourth documents each of which includes information concerning a fourth object which is an area of one of the floors, and a plurality of fifth documents each of which includes information concerning a fifth object which is a portion of one of the areas of one of the floors from which a sample to be tested for asbestos is taken during the hazard survey.

The document management system is used to manage this hierarchy of documents. The first document may constitute a principal document. The principal object will be the site of buildings. The second documents will constitute the subordinate documents. The subordinate objects will each be one of the buildings on the site. Each of the second documents may constitute a principal document. For each such principal document, the principal object will be a building of the site. For each such principal document, the third documents which contain information concerning the building of the site will constitute the subordinate documents. The subordinate objects will each be one of the floors of the building of the site. Each of the third documents may constitute a principal document. For each such principal document, the principal object will be a floor of a building of the site. For each such principal document, the fourth documents which contain information concerning the floor of the building of the site will constitute the subordinate

documents. The subordinate objects will each be one of the areas of the floor of the building of the site. Each of the fourth documents may constitute a principal document. For each such principal document, the principal object will be an area of a floor of a building of the site. For each such principal document, the fifth documents which contain information concerning the area of the floor of the building of the site will constitute the subordinate documents. The subordinate objects will each be one of the portions of the area of the floor of the building of the site from which a sample to be tested for asbestos is taken.

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It will be appreciated that the document management system can be used in conjunction with other documents which include information concerning other types of objects.

The document management system is used to first of all create various hotspots on the various principal documents, to link the hotspots to the appropriate subordinate documents, and to colour code the hotspots. Thereafter, the document management system is used to manage the documents and to obtain information concerning the asbestos hazard of one or more portions of the site of buildings.

The document handling means of the document management system is used to access the principal document constituted by the first document. A representation of the site of buildings is included in the first document and is displayed on the VDU, using the display means of the document management system (see Figure 2). A user of the system then uses the hotspot processing means to create hotspots on the site of buildings. The user uses the hotspot processing means and the mouse and/or keyboard to delineate a portion of the site of buildings, which comprises a building on the site. The user then uses the hotspot processing means to place a hotspot on the delineated building, thereby associating the hotspot with the building. The user then uses

the hotspot processing means to link the hotspot with the subordinate document constituted by the second document which includes information concerning the building. The user also uses the hotspot processing means to assign a name to the hotspot, e.g. a name which describes the building. The user then repeats this process to create several further hotspots for further buildings of the site. Each hotspot is placed on, and thereby associated with, a different building of the site, and is linked with the subordinate document constituted by the second document which includes information concerning the building.

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The colour coding means of the document management system is then used to colour code each of the hotspots. The colour coding means is used to colour code each hotspot according to the highest asbestos hazard in the building with which the hotspot is associated. This information is available from the hazard survey. Once the user has defined the hotspots of a principal document that link to the subordinate documents, the system will apply a semi-transparent colour to the hotspot, according to the asbestos hazard. The operation is dynamic and not static. When the risk of an area changes, as indicated by the subordinate document, the colour coded hotspots will reflect the new level of risk automatically, without any user interaction with the hotspot. The colour coding is red for a high asbestos hazard, orange for a medium asbestos hazard, purple for a low asbestos hazard, blue for a very low asbestos hazard, and green for no asbestos hazard.

The colour coded hotspots are displayed on the representation of the site of buildings using the display means of the management system.

The document handling means of the document management system is then used to access the principal document constituted by one of the second documents. A representation of the building is included in the second document and is displayed on the VDU, using the display means of the

document management system (see Figure 3). A user of the system then uses the hotspot processing means to create hotspots on the building. The user uses the hotspot processing means and the mouse and/or keyboard to delineate a portion of the building, which comprises a floor of the building. The user then uses the hotspot processing means to place a hotspot on the delineated floor, thereby associating the hotspot with the floor of the building. The user then uses the hotspot processing means to link the hotspot with the subordinate document constituted by the third document which includes information concerning the floor of the building. The user also uses the hotspot processing means to assign a name to the hotspot, e.g. a name which describes the floor of the building. The user then repeats this process to create several further hotspots for further floors of the building. Each hotspot is placed on, and thereby associated with, a different floor of the building, and is linked with the subordinate document constituted by the third document which includes information concerning the floor of the building.

The colour coding means of the document management system is then used to colour code each of the hotspots. The colour coding means is used to colour code each hotspot according to the highest asbestos hazard in the floor of the building with which the hotspot is associated. This information is available from the hazard survey. Once the user has defined the hotspots of a principal document that link to the subordinate documents, the system will apply a semi-transparent colour to the hotspot, according to the asbestos hazard. The operation is dynamic and not static. When the risk of an area changes, as indicated by the subordinate document, the colour coded hotspots will reflect the new level of risk automatically, without any user interaction with the hotspot. The colour coding is red for a high asbestos hazard, orange for a medium asbestos hazard, purple for a low asbestos hazard, blue for a very low asbestos hazard, and green for no asbestos hazard.

The colour coded hotspots are displayed on the representation of the building using the display means of the management system.

5 This process is then repeated for each principal document constituted by a second document, i.e. for each building of the site for which there is a second document.

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The document handling means of the document management system is then used to access the principal document constituted by one of the third documents. A representation of the floor of the building is included in the third document and is displayed on the VDU, using the display means of the document management system (see Figure 4). A user of the system then uses the hotspot processing means to create hotspots on the floor of the building. The user uses the hotspot processing means and the mouse and/or keyboard to delineate a portion of the floor of the building, which comprises an area of the floor of the building. The user then uses the hotspot processing means to place a hotspot on the delineated area, thereby associating the hotspot with the area of the floor of the building. The user then uses the hotspot processing means to link the hotspot with the subordinate document constituted by the fourth document which includes information concerning the area of the floor of the building. The user also uses the hotspot processing means to assign a name to the hotspot, e.g. a name which describes the area of the floor of the building. The user then repeats this process to create several further hotspots for further areas of the floor of the building. Each hotspot is placed on, and thereby associated with, a different area of the floor of the building, and is linked with the subordinate document constituted by the fourth document which includes information concerning the area of the floor of the building.

30 The colour coding means of the document management system is then used to colour code each of the hotspots. The colour coding means is used to

colour code each hotspot according to the highest asbestos hazard in the area of the floor of the building with which the hotspot is associated. This information is available from the hazard survey. The system will then apply a semi-transparent colour to the hotspot, according to the asbestos hazard. The colour coding is red for a high asbestos hazard, orange for a medium asbestos hazard, purple for a low asbestos hazard, blue for a very low asbestos hazard, and green for no asbestos hazard. The operation is dynamic and not static. When the risk of the highest asbestos hazard in the area of the floor of the building with which the hotspot is associated changes, as indicated by a change in the subordinate document, the colour coded hotspot will reflect the new level of risk automatically without any user interaction.

The colour coded hotspots are displayed on the representation of the floor of the building using the display means of the management system.

This process is then repeated for each principal document constituted by a third document, i.e. for each floor of a building of the site for which there is a third document.

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The document handling means of the document management system is then used to access the principal document constituted by one of the fourth documents. A representation of the area of the floor of the building is included in the fourth document and is displayed on the VDU, using the display means of the document management system (see Figure 5). A user of the system then uses the hotspot processing means to create hotspots on the area of the floor of the building. The user uses the hotspot processing means and the mouse and/or keyboard to delineate a portion of the area of the floor of the building, which indicates a portion of the area from which a sample to be tested for asbestos has been taken. The user then uses the hotspot processing means to place a hotspot on the delineated portion of the area,

thereby associating the hotspot with the portion of the area. The user then uses the hotspot processing means to link the hotspot with the subordinate document constituted by the fifth document which includes information concerning the portion of the area and the sample taken therefrom (see Figure 6). The user also uses the hotspot processing means to assign a name to the hotspot, e.g. a name which describes the portion of the area. The user then repeats this process to create several further hotspots for further portions of the area. Each hotspot is placed on, and thereby associated with, a different portion of the area of the floor, and is linked with the subordinate document constituted by the fifth document which includes information concerning the portion of the area and the sample taken therefrom.

The colour coding means of the document management system is then used to colour code each of the hotspots. The colour coding means is used to colour code each hotspot according to the asbestos hazard in the sample taken from the portion of the area of the floor of the building with which the hotspot is associated. This information is available from the hazard survey. The user uses the mouse and/or keyboard to select a hotspot. Once the user has defined the hotspots of a principal document that link to the subordinate documents, the system will apply a semi-transparent colour to the hotspot, according to the asbestos hazard. The operation is dynamic and not static. When the risk of an area changes, as indicated by the subordinate document, the colour coded hotspots will reflect the new level of risk automatically, without any user interaction with the hotspot. The colour coding is red for a high asbestos hazard, orange for a medium asbestos hazard, purple for a low asbestos hazard, blue for a very low asbestos hazard, and green for no asbestos hazard.

The colour coded hotspots are displayed on the representation of the building using the display means of the management system.

This process is then repeated for each principal document constituted by a fourth document, i.e. for each area of a floor of a building of the site for which there is a fourth document.

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Thus the document management system is used to create various hotspots on the various principal documents, to link the hotspots to the appropriate subordinate documents, and to colour code the hotspots.

The document management system can then be used to manage the documents and to obtain information concerning the asbestos hazard of one or more portions of the site of buildings. For example, the system can be used to obtain asbestos hazard information concerning a sample taken from a portion of an area of a floor of a building of the site. To do this, a user activates the computer, and runs the document management system. The user uses the system to choose the site of buildings from a menu, in a conventional manner. This causes the document handling means of the system to enable access of the principal document constituted by the first document which contains information concerning the site of buildings. The display means of the system then enables display of the representation of the site of buildings contained in the first document, see Figure 2. The site of buildings comprises a factory, and the representation comprises a drawing of a plan of the site. Various hotspots on the representation of the site of buildings are also displayed. The user looks for the hotspot which is associated with, i.e. delineates, the building of interest. This is carried out by the user using the mouse to hover a cursor over each hotspot, which causes display of the name of the hotspot which indicates the identity of the building, until the hotspot associated with the building of interest is located. The user uses the interaction means of the system and the mouse to activate the hotspot by placing the cursor on the hotspot and clicking on the hotspot. This causes the interaction means and the document handling means of the system to enable access of the subordinate document constituted by the second document which contains information concerning the building of interest.

The second document then constitutes a principal document. The display 5 means of the system enables display of the representation of the building contained in the second document, see Figure 3. The building comprises a boiler house, and the representation comprises a photograph of a front elevation of the building. Various hotspots on the representation of the building can also be displayed. The user looks for the hotspot which is 10 associated with, i.e. delineates, the floor of the building which is of interest. This is carried out by the user using the mouse to hover a cursor over each hotspot, which causes display of the name of the hotspot which indicates the identity of the floor of the building, until the hotspot associated with the floor of interest is located. The user uses the interaction means of the system and the 15 mouse to activate the hotspot by placing the cursor on the hotspot and clicking This causes the interaction means and the document on the hotspot. handling means of the system to enable access of the subordinate document constituted by the third document which contains information concerning the floor of interest. 20

The third document then constitutes a principal document. The display means of the system enables display of the representation of the floor of the building contained in the third document, see Figure 4. The floor of the building comprises the ground floor, and the representation comprises a drawing of a plan of the ground floor. Various hotspots on the representation of the floor of the building can also be displayed. The user looks for the hotspot which is associated with, i.e. delineates, the area of the floor of the building which is of interest. This is carried out by the user using the mouse to hover a cursor over each hotspot, which causes display of the name of the hotspot which indicates the identity of the area of the floor of the building, until the hotspot

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associated with the area of interest is located. The user uses the interaction means of the system and the mouse to activate the hotspot by placing the cursor on the hotspot and clicking on the hotspot. This causes the interaction means and the document handling means of the system to enable access of the subordinate document constituted by the fourth document which contains information concerning the area of interest.

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The fourth document then constitutes a principal document. The display means of the system enables display of the representation of the area of the floor of the building contained in the fourth document, see Figure 5. The area of the floor of the building comprises boiler number 4, and the representation comprises a photograph of boiler number 4. Various hotspots on the representation of the area of the floor of the building are also displayed. The user looks for the hotspot which is associated with, i.e. delineates, the portion of the area of the floor of the building which is of interest. This is carried out by the user using the mouse to hover a cursor over each hotspot, which causes display of the name of the hotspot which indicates the identity of the portion of the area of the floor of the building, until the hotspot associated with the portion of the area which is of interest is located. The user uses the interaction means of the system and the mouse to activate the hotspot by placing the cursor on the hotspot and clicking on the hotspot. This causes the interaction means and the document handling means of the system to enable access of the subordinate document constituted by the fifth document which contains information concerning the portion of the area of interest. The fifth document comprises a written report concerning a sample taken from the portion of the area and tested for asbestos. Access of the fifth document causes the document management system to display the report, see Figure 6.

Thus use of the document management system enables easy access to asbestos hazard information for any portion of the site of buildings from which a sample has been taken. There is no need to sift through all the documents

containing information on asbestos hazard for the site, either manually or using electronic means. The document management system allows access straightaway to the asbestos hazard information merely by activation of a series of hotspots.

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In each representation of a principal/subordinate document, the hotspots are colour coded according to the level of asbestos hazard of the portion of the site or building or floor or area of floor or portion of area of floor with which the hotspot is associated. It is therefore extremely easy to assess the asbestos hazard of, for example, the site at a glance. This also allows a user to determine the areas of greatest hazard, and then the system can be used to access information concerning these areas.

When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS

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A document management system comprising

document handling means which enables access of a principal document which includes information concerning a principal object and enables access of at least one subordinate document which includes information concerning a subordinate object which is a portion of the principal object,

hotspot processing means which creates a hotspot and associates the hotspot with the portion of the principal object, and links the hotspot with the subordinate document, and

colour coding means which colour codes the hotspot according to information concerning the portion of the principal object.

- 15 2. A system according to claim 1 in which the information concerning the principal object includes a representation of the principal object.
 - 3. A system according to claim 1 or claim 2 in which the information concerning the subordinate object includes a representation of the subordinate object.
 - 4. A system according to claim 2 or claim 3 in which the hotspot processing means associates the hotspot with the portion of the principal object by placing the hotspot on a part of the representation of the principal object which represents the portion of the object.
 - 5. A system according to any preceding claim in which the hotspot processing means links the hotspot with the subordinate document such that activation of the hotspot causes access of the subordinate document.

- 6. A system according to any preceding claim in which the colour coding means colour codes the hotspot according to information concerning a hazard of the portion of the principal object with which the hotspot is associated.
- 7. A system according to claim 6 in which the colour coding means colour codes the hotspot according to information concerning an asbestos hazard of the portion of the principal object with which the hotspot is associated.
- 8. A system according to any preceding claim which comprises display 10 means.
 - 9. A system according to claim 8 in which the display means enables display of the hotspot, and information concerning the principal object, and information concerning the subordinate object.
 - 10. A system according to any preceding claim which comprises interaction means which enables interaction with the hotspot to cause activation of the hotspot and access of the subordinate document.

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- 20 11. A system according to any preceding claim which manages a hierarchy of principal and subordinate documents.
 - 12. A system according to any preceding claim in which the principal document is a first document which includes information concerning a first object, and the subordinate document is a second document which includes information concerning a second object which is a portion of the first object.
 - 13. A system according to claim 12 in which the principal document is the second document which includes information concerning the second object, and the subordinate document is a third document which includes information concerning a third object which is a portion of the second object.

14. A system according to claim 13 in which the principal document is the third document which includes information concerning the third object, and the subordinate document is a fourth document which includes information concerning a fourth object which is a portion of the third object.

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15. A system according to claim 14 in which the principal document is the fourth document which includes information concerning the fourth object, and the subordinate document is a fifth document which includes information concerning a fifth object which is a portion of the fourth object.

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16. A system according to claims 12, 13, 14 and 15 in which the first object is a site of buildings, the second object is a building on the site, the third object is a floor of the building, the fourth object is an area of the floor, and the fifth object is a portion of the area of the floor from which a sample is taken.

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- 17. A method of using the document management system according to any of claims 1 to 16 to manage a plurality of documents.
- 18. A document management system substantially as described herein with reference to the accompanying drawings.
 - 19. Any novel feature or combination of features hereinbefore described and/or as shown in the accompanying drawings.