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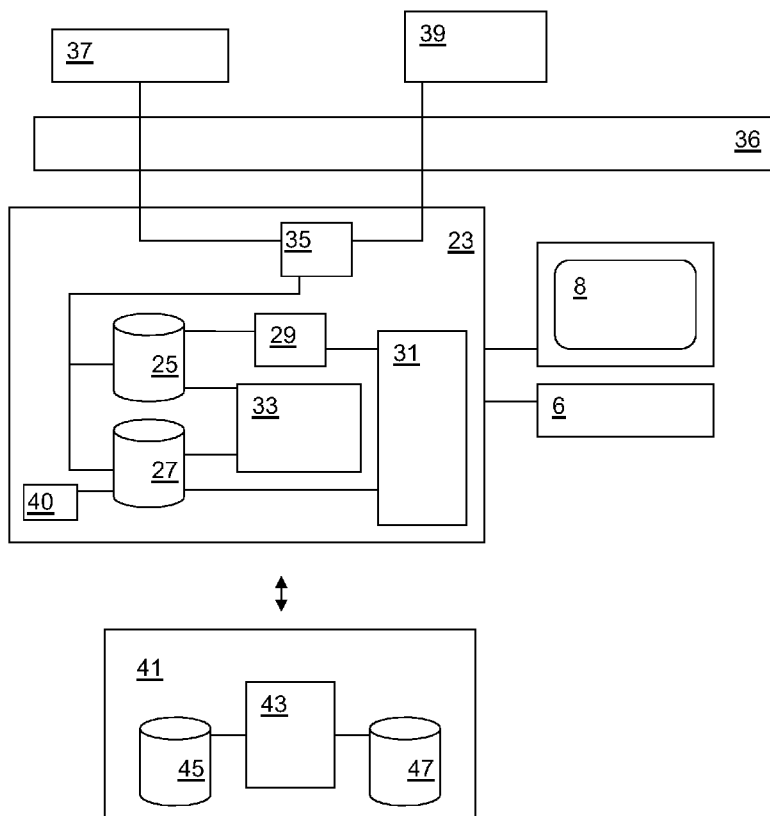
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[Continued on next page]

(54) Title: COMPUTER, COMPUTER PROGRAM PRODUCT AND METHOD FOR PROVIDING AN AUDIO OUTPUT SIGNAL



(57) Abstract: A computer (23) connectable to a data network (36) and arranged to perform DJ functions, comprises: A first data base (25) for music track files; A second data base (27) for mix instructions files, A playback unit (33) arranged to provide the audio output signal by manipulating music files based on mix instructions files; A search unit (40) arranged to determine if the at least one music track file is found in the first data base (25) and A retrieval unit (35) arranged to connect to a music track data base (37) through a data network (36) to retrieve information related to at least one music track file from the music track data base (37) based on the indication of the at least one music track if it is not found in the first data base (25).

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COMPUTER, COMPUTER PROGRAM PRODUCT AND METHOD FOR PROVIDING AN AUDIO OUTPUT SIGNAL

Technical Field

5 The present invention relates to a computer as defined in the preamble of claim 1, a computer program product as defined in the preamble of claim 6, a hand-held unit as defined in the preamble of claim 10 and a method as defined in the preamble of claim 11.

10 Background and Prior Art

Traditionally, DJ systems comprise two record players to enable the playing of two music tracks at the same time and two sets of controls to enable manipulation of each track individually.

15 Typical parameters to control include:

Crossfade: gradually changing from one channel to another channel by increasing the volume of one channel in at the same time as fading the other one out.

Pitch: changing the speed at which a track is played to adapt the speed of two tracks to each other.

20 Bend: temporarily changing the speed at which a track is played, to synchronize the beat of two tracks with each other to make a seamless transition between them.

Pause/play: to start and stop the playback of a channel.

Cue: stop playback and set the playback position to the cue point; a user set position in the track.

25

Since it has become possible to store music in data files on hard disks or other memory, DJ systems have been developed in which the songs that are to be played are stored in a memory, for example, a data base from which they can be retrieved and played when desired. Typically these systems comprise similar functions to the

30 traditional DJ systems in that they enable the mixing of two tracks and manipulation

of each of the tracks to achieve a good mix, for example, a smooth transition between two songs.

In applicant's co-pending application PCT/SE2006/050030 a hand-held DJ system comprising a data base for music tracks is proposed in which one set of controls is used to control both tracks.

Recently systems have become available in which the parameters used to achieve a certain mix can be stored in a mix instructions file and applied to the music files at a later time. Such a system is the TRAKTOR DJ Studio 3 available from Native Instruments Software Synthesis GmbH. The content of the mix instructions file can be created, for example, by registering the actions performed during a DJ session, that is, which music tracks are used and how the DJ manipulates them. This may be assisted by software that, for example, adjusts the playback speed of two tracks. For example, the mix instructions file can comprise data such as the music files' identification number, the point in each music file where the playback should start from, and if bend and/or pitch should be applied, how much and at which point. The system may apply the data in the mix instructions file to create the same mix again based on the same music files, which are stored in the system. This is a great improvement over the method previously known, which was to record the entire mix. Also, this system makes it easier to edit the mix since the parameters set in the mix instruction file can be altered instead of recording the entire mix again.

Object of the Invention

It is an object of the invention to provide a more flexible DJ system than the ones known in the art.

Summary of the Invention

This object is achieved according to the present invention by a computer connectable to a data network and arranged to provide an audio output signal comprising a mix of at least two music tracks, said computer comprising:

A first data base holding at least one music track file;

A second data base holding at least one mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and at least one function used to manipulate the output of the music track;

5 A playback unit arranged to provide the audio output signal by manipulating the at least one music track as specified in the mix instructions file;

A search unit arranged to determine if the at least one music track file is found in the first data base and

10 A retrieval unit arranged to connect to a music track data base through a data network to retrieve information related to at least one music track file from the music track data base based on the indication of the at least one music track if it is not found in the first data base.

Preferably the search unit is arranged to perform the following steps:

15 - search a mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and at least one function used to manipulate the output of the music track, to find all music tracks indicated in the mix instructions file;

20 - identify any music tracks indicated in the mix instructions file that are not found in the first data base;

- automatically connect a music track data base in the data network in order to retrieve information related to the identified music tracks from the music track data base.

25 The object is also achieved by a computer program product for use in a computer as defined above, said computer program product comprising a computer readable code means which, when executed in said computer causes the computer to perform the following steps:

30 - search a mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and specifying at least one function

used to manipulate the output of the music track, to find all music tracks indicated in the mix instructions file

- identify any music tracks indicated in the mix instructions file that are not found in the first data base

- 5 - automatically connect a music track data base in the data network in order to retrieve information related to the identified music tracks from the music track data base.

The object is also achieved by a hand-held unit arranged to provide an audio output
10 signal comprising a mix of at least two music tracks, said computer comprising:

A first data base holding at least one music track file

A second data base holding at least one mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and specification of at least one function used to manipulate the output of the music

15 track,

A playback unit arranged to provide the audio output signal by manipulating the at least one music track as specified in the mix instructions file.

The object is also achieved by a method for use in a computer according to claim 1,
20 said method comprising the following steps

Initiating a search of a particular mix instructions file to identify at least one music track indicated in the mix instructions file,

Identifying any music tracks not found in the first data base,

Retrieving information related to the identified music tracks from a music track data
25 base through a data network.

The method and apparatus according to the invention enable easy sharing of the mix instructions files in a more flexible way than with, for example, the TRAKTOR system. The TRAKTOR system only enables playback of the files using exactly the
30 files that were used when creating the mix instruction files. Hence, when sharing a mix instruction file the files must be exported as well.

Because the mix instructions files are much smaller than the files comprising the complete mix of two or more tracks they can be shared, or transported, more easily. Also, copyright issues can be avoided since sharing the mix instructions file does not infringe the copyright. Each user can then provide legal copies of the desired music files for themselves.

The invention can also encourage use of legal sources when downloading music, since the program may be arranged to search for music only in authorized data bases.

From a business point of view the provider of the DJ system according to the invention can reach a business agreement with the various copyright holders, for example, so that each time a user of the DJ system legally downloads and pays for a music track, the provider of the DJ system gets a part of the amount paid for the music track. Of course, the provider may get paid per DJ system connected to the data bases, and/or per time unit instead. This provision paid to the provider of the system will further motivate making mix instructions files based on legal copies of music tracks and sharing these with others.

In a preferred embodiment the retrieval unit is a computer program or part of a computer program arranged to retrieve the music tracks themselves from the music track data base.

In another preferred embodiment the retrieval unit is arranged to retrieve information related to the music tracks from the music track data base said computer further arranged to display the retrieved information through the computer's user input/output unit. In this case, the input/output means of the computer is preferably arranged to prompt the user to retrieve the music tracks from the music track data base.

Brief Description of the Drawings

The invention will be described in more detail in the following, by way of example and with reference to the appended drawings in which:

Figure 1 discloses a prior art system

5 Figure 2 discloses a system according to the present invention

Figure 3 is a flow chart of an overall method according to the present invention

Detailed Description of Embodiments

Figure 1 shows a DJ system 1 known in the art, using computer files comprising
10 music tracks. The system 1 comprises a computer 3 comprising a first data base 5
for music tracks. The system also comprises traditional DJ functions 7 for manipu-
lating at least one of the tracks stored in the first data base 5, for example, regarding
playback speed (the bend and pitch parameters discussed above) to mix the tracks in
a desired way. The computer has user input/output means represented by a keyboard
15 6 and a screen 8. Of course other input/output means may be present, such as a
mouse or console input means for physically manipulating a music track.

The system 1 also comprises a mix instructions file creation software program 9 ar-
ranged to store information about the music tracks used and how they are manipu-
20 late by means of the DJ functions 7 to achieve the mix. This information is stored as
parameter values in a mix instructions file, which is stored in a second data base 11.
Of course, the first and second data bases may be implemented as one data base.

The computer 3 also comprises a playback software program 13 arranged to retrieve
25 a mix instructions file from the second data base 11 and, as prescribed in the mix
instructions file, to retrieve at least one music track at a time from the first data base
5 and manipulate them according to the mix instructions file to create a mix of the
music tracks.

30 Figure 2 illustrates a DJ system according to the invention. A computer 23 com-
prises a first data base 25 for holding music tracks and a second data base 27 for

holding mix instructions files similar to the ones known in the art. As in Figure 1, the computer has user input/output means represented by a keyboard 6 and a screen 8. The user input/output means may be used to inform the user about the options available, for example the music tracks and mix instructions files found in the first and second data base, respectively.

The computer may also comprise traditional DJ functions 29 and a mix instructions file creation software program 31 similar to the ones known in the art arranged to create mix instructions files and store them in the second data base 27. The DJ function 29 and mix instructions file creation software 31 are, however, not essential to the system of the invention.

According to the invention the computer comprises a playback software program 33 arranged to retrieve a mix instructions file from the second data base 27 and, as prescribed in the mix instructions file, to retrieve at least one music track at a time from the first data base 25 and manipulate them according to the mix instructions file to create a mix of the music tracks. The computer also has retrieval software 35 for retrieving, through a data network 36, mix instructions files and/or music tracks from sources such as a music track data base 37 or a mix instructions file data base 39 in the network. The sources are not necessarily data bases; music tracks or mix instructions files can be retrieved from any kind of source in the network. The network will typically be the Internet, but may be any type of network, for example a Local Area Network (LAN).

A mix instructions file may prescribe the use of music tracks that are not stored in the first data base 25, for example if the mix instructions file has been downloaded from another source such as the mix instructions file data base 39. In this case it is possible to download the music from another source, such as the music track data base 37. Legal sources of music exist on the Internet, from which the desired music tracks can be downloaded in return for a fee. The music track data base 37 may, instead of or in addition to actual music tracks also comprise an overview of music

tracks and the source from which each of them can be downloaded legally. Of course, the retrieval software may have information about possible sources of music, too. It may also be possible to include information in a mix instructions file about where some or all of the music tracks used by the mix instructions file can be
5 retrieved. This will be particularly useful for music that is not promoted by the established record companies and therefore may not be found in the commercial data bases. Music tracks and/or mix instructions files can be downloaded from any site, including simple home pages.

10 To avoid a situation in which it is discovered while a mix instructions file is being used that it uses a music track that is not available in the first data base 25, a search program 40 may be provided. The search program 40 is arranged to search a mix instructions file to determine which music tracks are used by the mix instructions
15 file, and to search the first data base 25 to identify the music tracks used by the mix instructions file that are not found in the first data base 25. The search program 40 then informs the retrieval software about the missing music tracks so that they can be retrieved by the retrieval software 35 as discussed above.

If the search program 40 identifies one or more music tracks that are used by the
20 mix instructions file but are not available in the first data base 25, it may instruct the retrieval program 35 to retrieve the missing music track or tracks from the music track data base 37. If the missing music tracks are not available directly from the music track data base 37 the music track data base should know where to retrieve them and pass this information to the retrieval program. Alternatively, the music
25 track data base 37 may retrieve the missing music tracks and forward them to the retrieval software 35. When they have been retrieved by the retrieval software 35 they are stored in the first data base 25.

30 Instead of automatically retrieving the missing music tracks it may inform the user that some music tracks are missing, for example by displaying information on the screen. The information may be simply the identity of the tracks that are missing, or

the retrieval program may first retrieve information about the cost of the music tracks and where they can be found and display this information to the user at the same time. The user may then instruct the retrieval program to retrieve the missing music tracks from the network, or to obtain information about the cost of the music tracks and where they can be found, if this has not been done already.

As is common in the art the user can also order specific music tracks to be downloaded from the network, for example to be used when creating mix instructions files as described above. In Figure 2, for simplicity, the search program 40 is shown connected to the second data base 27. Obviously it must also be able to retrieve information regarding the music tracks stored in the first data base 25. The skilled person will realize that it may be connected in other positions, for example, between the retrieval program 35 and the second data base 27, depending on how and when it is going to be activated.

The search program 40 may be used automatically to determine if all the music tracks used by the mix instructions file are found in the first data base 25, for example, every time a mix instructions file is retrieved from the network, or when a user initiates the use of a mix instructions file. Alternatively, the user can order the search program 40 to search a particular mix instructions file that he intends to use at a later stage.

The computer may be connected to loud speakers and/or a headset and used to play music to an audience, or to the user of the computer by means of the playback software. The computer may also, or alternatively, be arranged to communicate with a portable, preferably hand-held DJ system 41. The portable DJ system 41 comprises a software playback module 43 similar to the software playback module 33 of the computer, a first data base 45 for music tracks and a second data base 47 for mix instructions files. The portable DJ system 41 and the computer 23 may be arranged to communicate in such a way that when they are connected their respective first 25, 45 and second 27, 47 data bases are synchronized with each other, In this way, the

music tracks and mix instructions files retrieved by the computer can be transferred to the portable DJ system 41.

The portable DJ system may be a unit such as the hand-held unit described in applicant's co-pending application PCT/SE2006/050030. This hand-held DJ system
5 comprises a music track data base and DJ functions for manipulating music tracks. To be used according to the invention it should be enhanced with a mix instructions file data base 47 and a playback software program 43. In this way, music tracks and mix instructions files stored in the computer 23 can be transferred to the hand-held
10 unit 41 and be played there.

Instead of transferring all music tracks and all mix instructions files from the computer 23 to the hand-held unit 41 the user may be able to select one or more mix instructions files or music tracks. When transferring a mix instructions file to the
15 hand-held unit the search program 40 may be used to identify the music tracks used by that mix instructions file and automatically transfer all those music tracks to the hand-held unit.

If feasible the portable DJ system may also comprise one or more of the other units
20 31, 35, 40 to enable the creation of mix instructions files in the portable DJ system and/or the direct retrieval of mix instructions files and/or music tracks from the network to the portable DJ system.

It will be understood that each of the units 29, 31, 33, 35 and 40 in the computer 23
25 and the playback unit 43 of the portable unit 41 are implemented as software modules stored in the computer, or portable unit, respectively. As the skilled person will understand, the illustration shown in Figure 2 is only a logical diagram, and the actual functions can be implemented in software in a number of different ways.

30 Figure 3 is a flow chart of method steps that may be performed in the computer 23 and/or a portable device according to the invention.

Step S31: Initiate search of a particular mix instructions file.

Step S32: Search mix instructions file and identify any music tracks not found in the first data base 25. If all tracks used by the mix instructions file are found in the first data base, the procedure ends.

5 Step S33: Select action regarding the missing files. If the files should be retrieved automatically, go to step S34; if information about the missing files should be retrieved automatically, go to step S35; if the user should be prompted with no extra information, go to step S36.

10 Step S34: Retrieve the files from the appropriate source or sources and store them in the first data base 25. As discussed above the files may be retrieved from the music track data base 37, from other sources by means of the music track data base, or from other sources directly. End of procedure.

15 Step S35: Retrieve extra information from the music track data base. This may be, for example, information about where the missing tracks can be retrieved, the price, etc. Go to step S36.

Step S36: Present information to the user and prompt the user to enter instructions if desired. If extra information was retrieved in step S35 this information can be presented, otherwise only the information found in the mix instructions file is presented. Go to step S37?

20 Step S37: Select action depending on the instructions from the user. If the missing music tracks should be retrieved, go to step S34; if extra information should be retrieved, go to step S35; otherwise, end of procedure.

25 A central data base for mix instruction files can be arranged in the network in a similar way as the music track data base. From the mix instruction files data base mix instruction files can be downloaded by individual users. In this case the central data base may comprise a search function similar to the search unit 40 arranged to search each mix instruction file that is uploaded to the central data base to verify that all music files used are found in, or by means of, the music track data base 37.

30 In this way the uploading of mix instruction files using unauthorized versions of music tracks can be prevented. A further function may be provided arranged to

search the music tracks data base 37 to identify legal music files matching the unauthorized copies. In this case means should be provided for editing the mix instruction files to replace the references to unauthorized files with references to the legal copies that can be found by means of the music tracks data base.

5

As mentioned above, the invention enables business agreements between the suppliers of music files and the supplier of the DJ system according to the invention and the suppliers of music, and/or supplier of mix instructions files. Each time a system according to the invention is used to download a music track automatically, a provision may be paid to the supplier of the DJ system. Similarly, each time a music track is downloaded automatically because it is used by a particular mix instructions file, the creator of the mix instructions file may receive a provision.

10

CLAIMS

1. A computer (23) connectable to a data network (36) and arranged to provide an audio output signal comprising a mix of at least two music tracks, said computer
5 comprising:

A first data base (25) holding at least one music track file;

A second data base (27) holding at least one mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and at least one function used to manipulate the output of the music track;

10 A playback unit (33) arranged to provide the audio output signal by manipulating the at least one music track as specified in the mix instructions file;

A search unit (40) arranged to determine if the at least one music track file is found in the first data base (25) and

15 A retrieval unit (35) arranged to connect to a music track data base (37) through a data network (36) to retrieve information related to at least one music track file from the music track data base (37) based on the indication of the at least one music track if it is not found in the first data base (25).

2. A computer (23) according to claim 1, wherein the search unit (40) is arranged to
20 perform the following steps:

- search a mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and at least one function used to manipulate the output of the music track, to find all music tracks indicated in the mix instructions file;

25 - identify any music tracks indicated in the mix instructions file that are not found in the first data base (25);

- automatically connect a music track data base (37) in the data network (36) in order to retrieve information related to the identified music tracks from the music track data base (37).

3. A computer according to claim 1 or 2, wherein the retrieval unit is arranged to retrieve the music tracks themselves from the music track data base (37).

4. A computer according to claim 1 or 2, wherein the retrieval unit is arranged to
5 retrieve information related to the music tracks from the music track data base (37)
said computer further arranged to display the retrieved information through the
computer's user input/output unit (8).

5. A computer according to claim 4, wherein the input/output means is arranged to
10 prompt the user to retrieve the music tracks from the music track data base (37).

6. A computer program product (40) for use in a computer (23) according to claim
1, said computer program product comprising a computer readable code means
which, when executed in said computer causes the computer to perform the follow-
15 ing steps:

- search a mix instructions file, said mix instructions file comprising instructions in-
cluding an indication of at least one music track and specifying at least one function
used to manipulate the output of the music track, to find all music tracks indicated
in the mix instructions file

20 - identify any music tracks indicated in the mix instructions file that are not found in
the first data base

- automatically connect a music track data base (37) in the data network (36) in or-
der to retrieve information related to the identified music tracks from the music
track data base (37).

25

7. A computer program product according to claim 6, wherein the computer read-
able code means will cause the computer to retrieve the music tracks themselves
from the music track data base (37).

30 8. A computer program product according to claim 7, wherein the computer read-
able code means will cause the computer to retrieve information related to the music

tracks from the music track data base (37) and display it through the computer's user input/output unit (8).

5 9. A computer program product according to claim 6, wherein the computer readable code means will cause the computer to prompt the user to retrieve the music tracks from the music track data base (37).

10. Hand-held unit arranged to provide an audio output signal comprising a mix of at least two music tracks, said computer comprising:

10 A first data base (45) holding at least one music track file

A second data base (47) holding at least one mix instructions file, said mix instructions file comprising instructions including an indication of at least one music track and specification of at least one function used to manipulate the output of the music track,

15 A playback unit (43) arranged to provide the audio output signal by manipulating the at least one music track as specified in the mix instructions file.

11. A method for use in a computer according to claim 1, said method comprising the following steps

20 Initiating a search of a particular mix instructions file to identify at least one music track indicated in the mix instructions file,

Identifying any music tracks not found in the first data base (25),

Retrieving information related to the identified music tracks from a music track data base (37) through a data network (36).

25

12. A method according to claim 11, comprising the step of presenting the retrieved information to the user and prompt the user to enter instructions if desired.

13. A method according to claim 11, further comprising the step of retrieving the
30 identified music tracks from the music track data base (37) upon instructions from the user.

14. A method according to claim 11 comprising the step of retrieving the files from the music track data base (37) or another site in the data network (36) and storing them in the first data base (25).

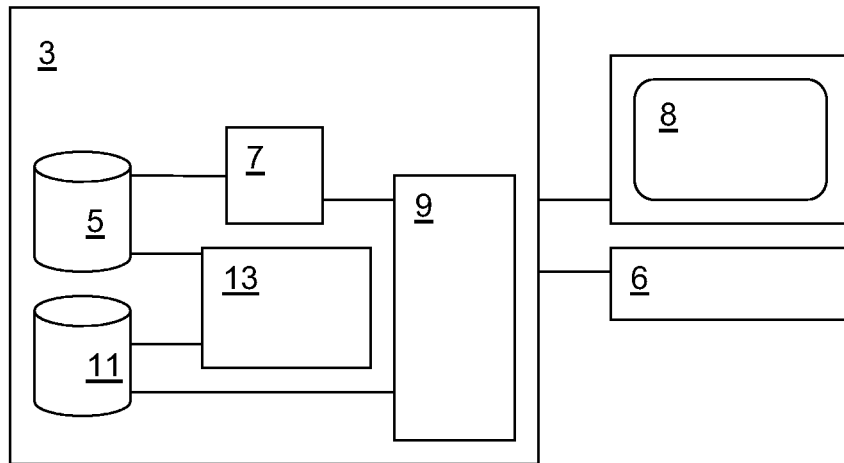


Fig. 1

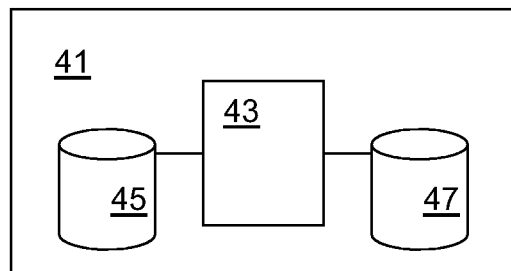
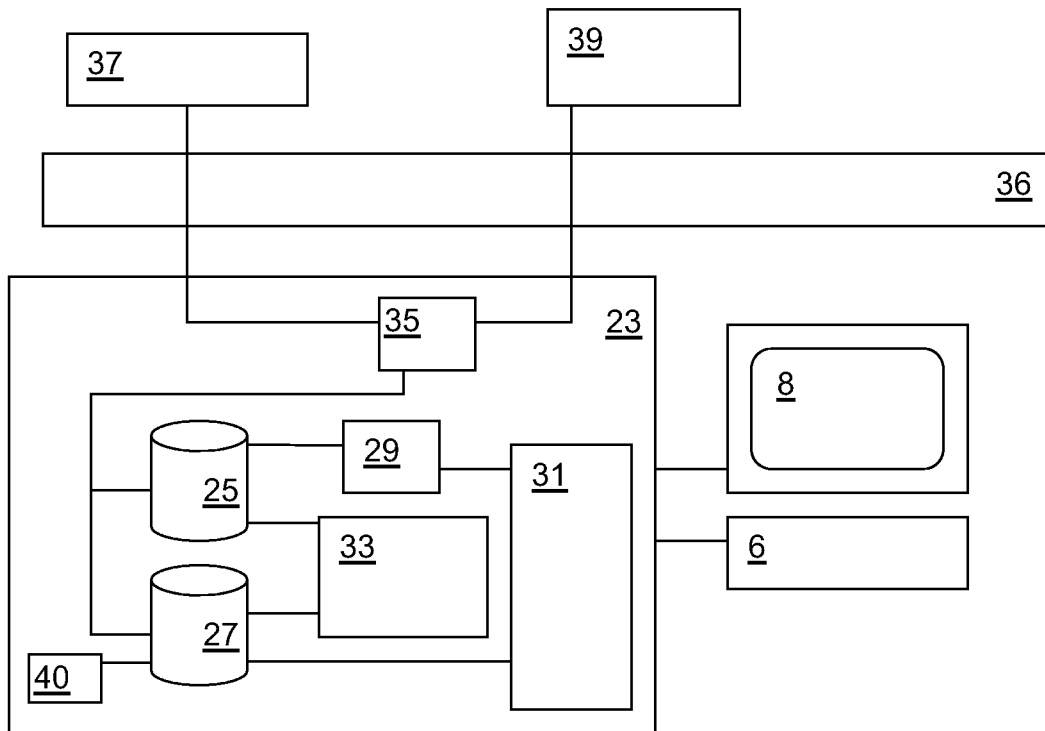


Fig. 2

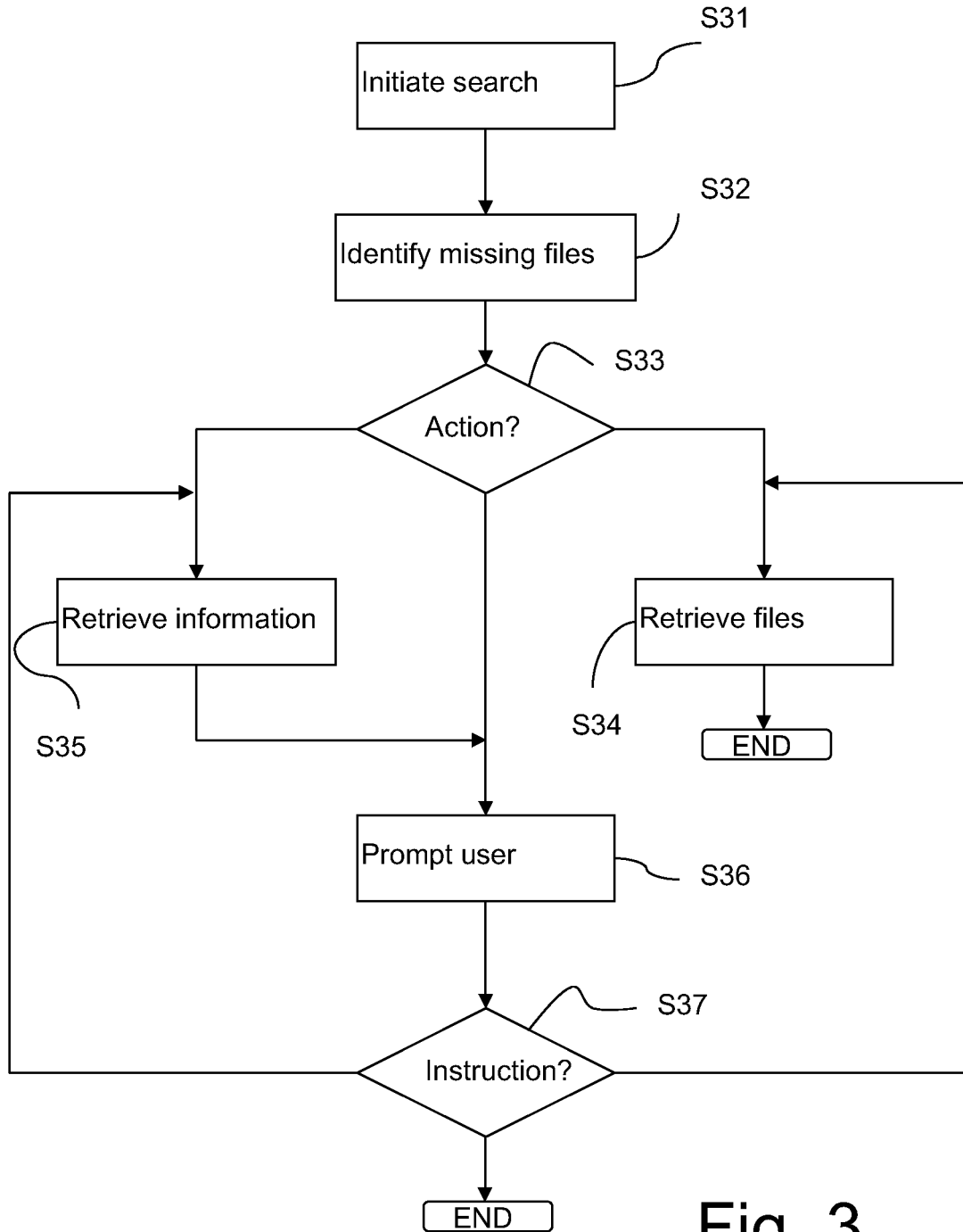


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2007/050491

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: H04R, H04N, G11B, H04H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A | GB 2343049 A (BAKER, M J), 26 April 2000 (26.04.2000) -- | 1-14 |
| P,A | US 20060233055 A1 (HENDRICKSON, G L ET AL), 19 October 2006 (19.10.2006) -- | 1-14 |
| A | US 20020172379 A1 (CLIFF, D T), 21 November 2002 (21.11.2002) -- | 1-14 |
| A | US 20020091455 A1 (WILLIAMS, T D), 11 July 2002 (11.07.2002) -- ----- | 1-14 |

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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International application No.

PCT/SE2007/050491

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|-------|-------------|----|------------|------|---------|-----|------------|
| GB | 2343049 | A | 26/04/2000 | GB | 0302439 | D | 00/00/0000 |
| | | | | GB | 2381371 | A,B | 30/04/2003 |
| | | | | GB | 9823050 | D | 00/00/0000 |
| ----- | | | | | | | |
| US | 20060233055 | A1 | 19/10/2006 | NONE | | | |
| ----- | | | | | | | |
| US | 20020172379 | A1 | 21/11/2002 | GB | 0110445 | D | 00/00/0000 |
| | | | | GB | 2378626 | A,B | 12/02/2003 |
| ----- | | | | | | | |
| US | 20020091455 | A1 | 11/07/2002 | US | 7191023 | B | 13/03/2007 |
| ----- | | | | | | | |