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(54) DATA ENTRY AND SETUP SYSTEM AND METHOD FOR ULTRASOUND IMAGING

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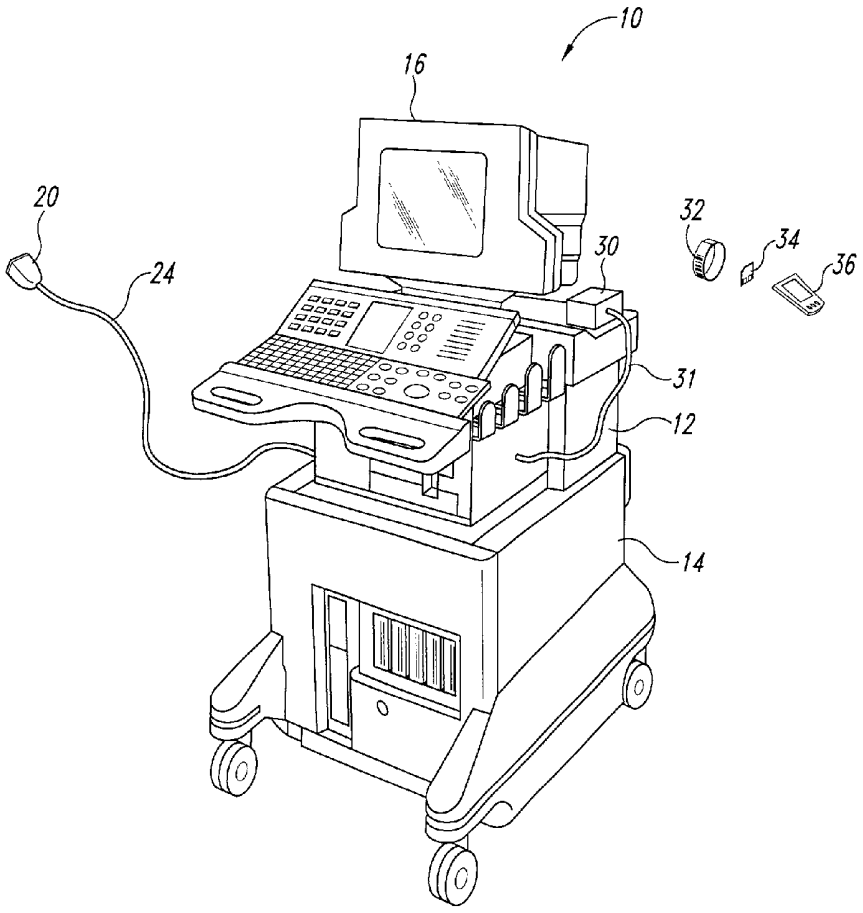
(57) **ABSTRACT**

An ultrasound imaging system includes a data entry device that reads storage media that is assigned to each patient on which the system is to be used or the operator of the system to obtain ultrasound images. The storage media, which may be a bar code, smartcard, personal digital assistant, for example, contains patient identifying information. The patient or procedure identifying information may be used to access a digital requisition that is referenced by the patient identifying information. The digital requisition may be stored in a disk drive included in the ultrasound imaging system or in a clinical information system accessed through a communication link included in the ultrasound imaging system. The digital requisition may include information pertaining to an ultrasound examination procedure that is to be performed on the patient, which can be used to automatically set up the ultrasound imaging system. The digital requisition may also include the patient's medical history or information about the patient that can be associated with ultrasound images obtained from the patient.



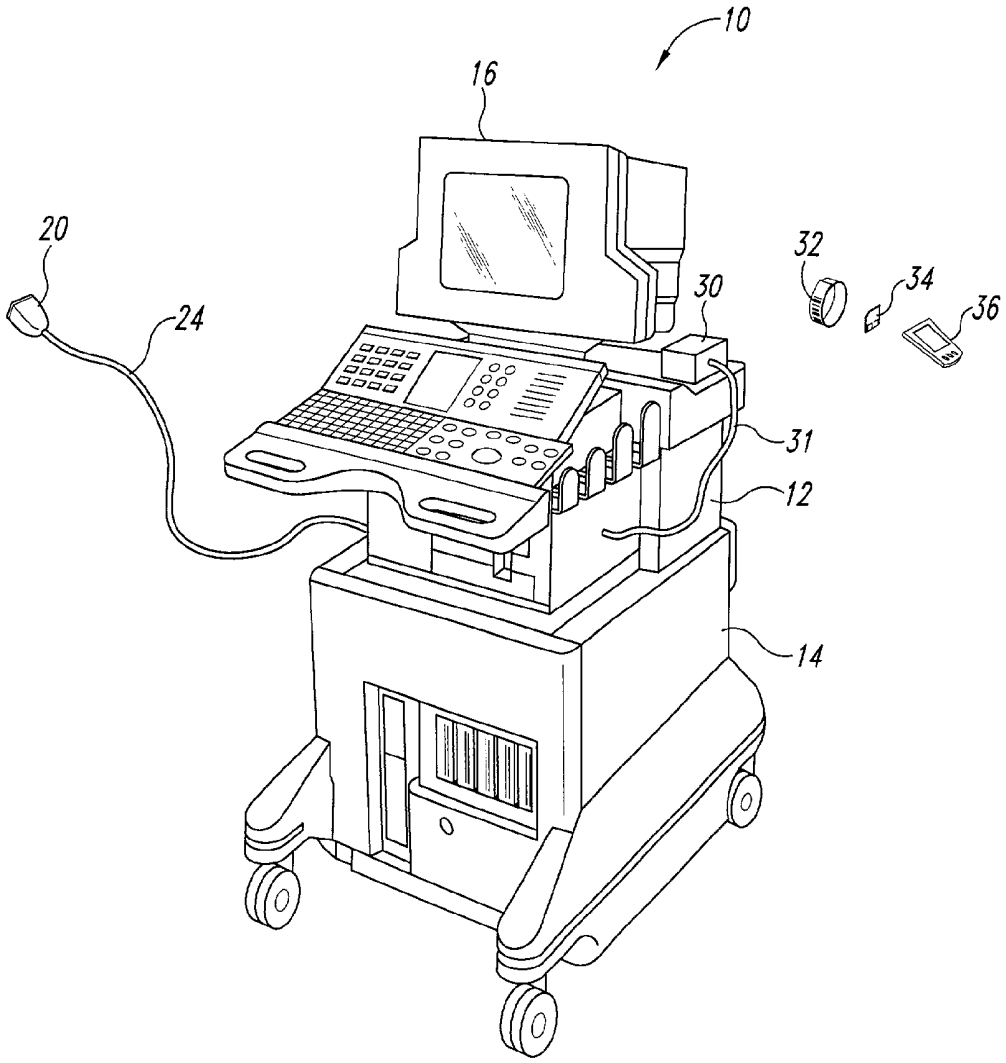


Fig. 1

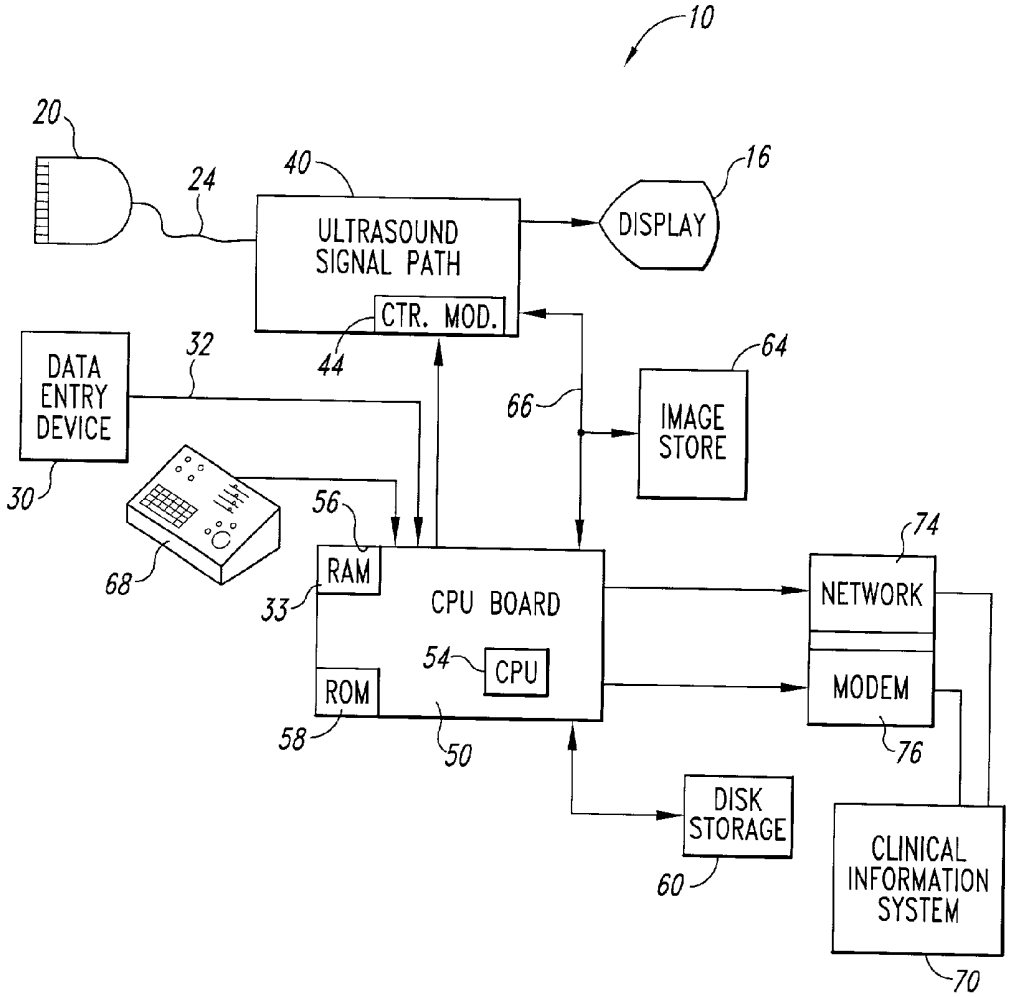

10
20
24
40
16
ULTRASOUND SIGNAL PATH
DISPLAY
CTR. MOD.
44
DATA ENTRY DEVICE
32
30
64
66
IMAGE STORE
56
68
RAM
33
CPU BOARD
74
NETWORK
54
CPU
ROM
MODEM
58
50
76
DISK STORAGE
60
CLINICAL INFORMATION SYSTEM
70

Fig. 2

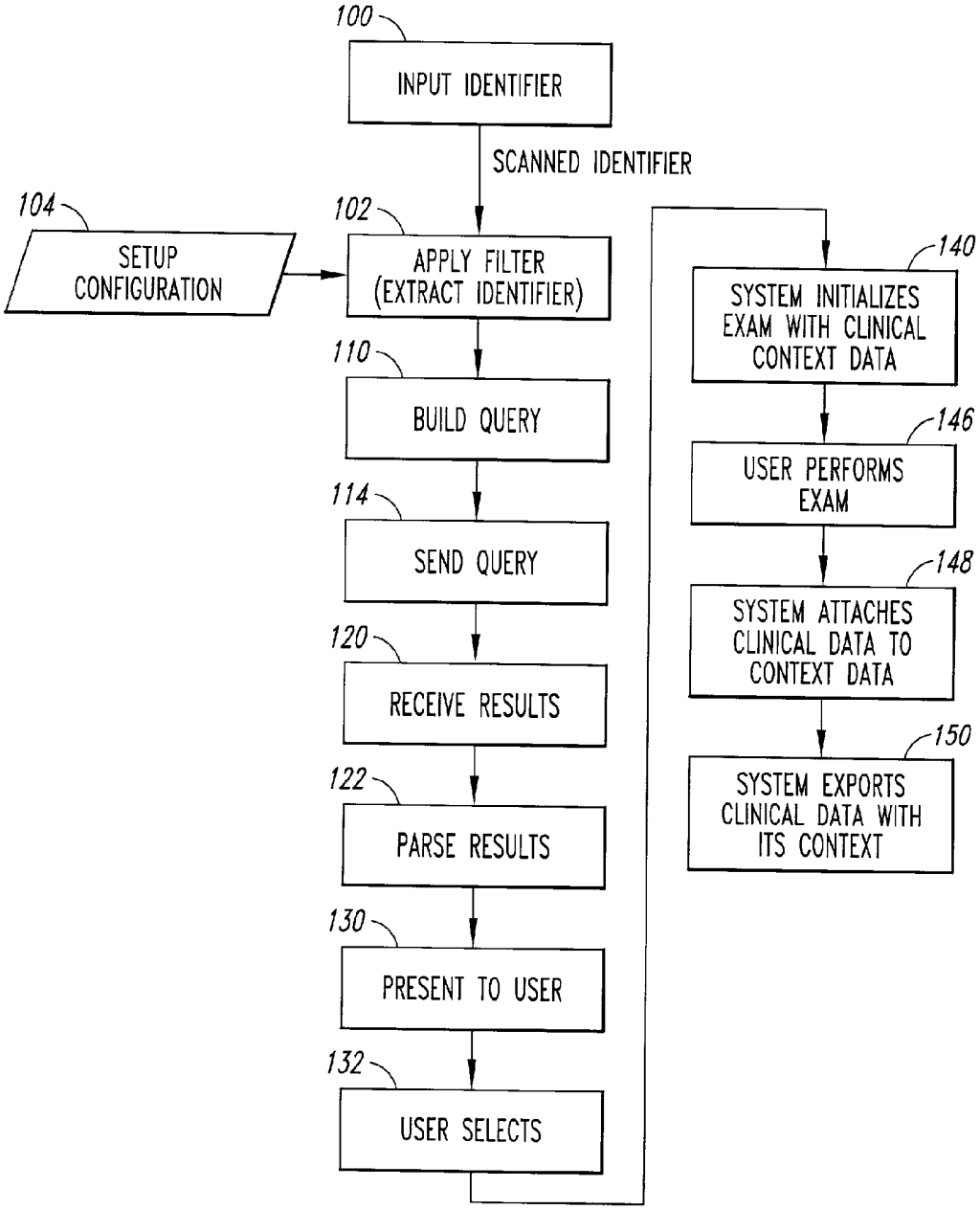

100
INPUT IDENTIFIER
SCANNED IDENTIFIER
104
SETUP CONFIGURATION
102
APPLY FILTER (EXTRACT IDENTIFIER)
110
BUILD QUERY
114
SEND QUERY
120
RECEIVE RESULTS
122
PARSE RESULTS
130
PRESENT TO USER
132
USER SELECTS
140
SYSTEM INITIALIZES EXAM WITH CLINICAL CONTEXT DATA
146
USER PERFORMS EXAM
148
SYSTEM ATTACHES CLINICAL DATA TO CONTEXT DATA
150
SYSTEM EXPORTS CLINICAL DATA WITH ITS CONTEXT

Fig. 3

DATA ENTRY AND SETUP SYSTEM AND METHOD FOR ULTRASOUND IMAGING

TECHNICAL FIELD

[0001] This invention relates to ultrasound imaging systems, and, more particularly, to a system and method facilitating the entry of examination setup data and other information into an ultrasound imaging system.

BACKGROUND OF THE INVENTION

[0002] Ultrasound imaging systems widely used to obtain a variety of ultrasound images. The imaging systems may be used to scan different parts of the body and the same parts of the body using different techniques or imaging modalities. For example, the heart of a patient may be scanned by placing an ultrasound transducer against different surfaces of the chest to obtain images from different directions. Further, each image may be obtained by either keeping the ultrasound transducer stationery or scanning the transducer across the surface of the skin while the image is being obtained. To obtain the proper image, the operator of the imaging system must be informed of the type of image requested for the patient and the imaging system must be set up in accordance with that information.

[0003] Several techniques are conventionally used to set up ultrasound imaging systems. The most basic technique is for the operator of the ultrasound imaging system to simply read the necessary information from a chart for the patient and then set up the imaging system for the examination procedure that is to be performed. The operator also generally enters patient identifying information, such as the patient's name or identification number, so that the identifying information can be displayed on a recording of the image. The procedure description and patient information are generally entered from a menu asking for the entry of specified information.

[0004] There are several disadvantages and problems with the above-described technique. First, it requires a substantial period of time for the operator to read the chart, enter patient identifying information and/or other data into the system, and then set up the imaging system for the image requested in the chart. Second, this technique is prone to errors because it is fairly easy for an operator to misread the chart. Even if the chart is read correctly, the operator may incorrectly set up the imaging system for the procedure that is to be performed. The operator may also incorrectly enter the patient identifying information.

[0005] Attempts have been made to solve the above-described productivity and error problems. One approach is to interface an ultrasound imaging system with a clinical information system that is maintained by many health-care providers. The clinical information system stores information about the patient, the procedures that are to be performed on the patient, information about physicians responsible for the patient, the patient's medical history, insurance information, and other information pertaining to the patient. The ultrasound imaging system may interface with the clinical information system through various means, such as a local area network or a wireless communication system. In use, the operator obtains patient identifying information from the patient or the patient's chart, and types that information into the ultrasound imaging system. The ultrasound imaging system then transmits the patient identifying information to the clinical information system, which uses the patient identifying information to access information about the patient. The clinical information system then downloads a "digital requisition" to the ultrasound imaging system. The digital requisition includes information specific to the patient, such as the procedures that are to be formed, the name of the patient's physicians, insurance coverage information, medical alerts (HIV status, allergies, etc.) and other information about the patient. The digital requisition may also include information about the patient's medical history, including prior ultrasound images, which can be compared to the image being obtained during the examination procedure.

[0006] Although interfacing ultrasound imaging systems to clinical information systems provides significant performance advantages and lessens the possibility of mistakes, it is still less than ideal. It is still possible for the operator to enter the wrong patient identifying information, and thereby receive the wrong digital requisition. Also, it requires significant time for the operator to obtain the correct patient identifying information and enter that information into the imaging system. Finally, it still requires significant time for the operator to properly set up the imaging system, and the operator may set up the imaging system incorrectly or less than optimum for the procedure that is to be performed. Most ultrasound imaging systems are mounted on a wheeled cart. The mobile nature of these ultrasound imaging systems make it difficult to couple them to a central network, which would make it possible to set up the imaging systems from a central location.

[0007] Another approach to facilitating the use of medical diagnostic systems is described in U.S. Pat. No. 5,361,755 to Schraag et al. The Schraag et al. system provides an instruction manual for operating a medical monitor. The instruction manual contains clear text instructions for setting up the monitor along with questions for the patient to answer. The instruction manual also includes respective bar codes corresponding to each answer. The patient sets up the monitor in accordance with the instructions, and answers the questions by scanning the bar-code corresponding to the correct answer. The diagnostic information obtained by the monitor, as well as the patient's coded answers, are downloaded to a medical facility for analysis by a healthcare practitioner. The codes may also be decoded by the monitor to provide clear text instructions for operating the monitor. Although the monitor described by Schraag et al. does facilitate the entry of information into the monitor, the entered information does not automatically set up the monitor for any specific purpose nor does it tag the test results with information identifying the patient. As a result, the use of the Schraag et al. monitor is still time-consuming and prone to error.

[0008] There is therefore a need for a system that automatically sets up ultrasound imaging systems and automatically enters patient identifying information, thereby minimizing both the use of operator time and the possibility of error in obtaining ultrasound images.

SUMMARY OF THE INVENTION

[0009] An ultrasound imaging system in accordance with the invention includes an imaging probe, an ultrasound signal path, a display, a processor, and a data entry device

structured to read storage media containing patient identifying information. The ultrasound imager is structured to transmit a query to a mass storage device containing the patient identifying information and to receive a response from a mass storage device containing at least a portion of a digital requisition. The digital requisition stored in the mass storage device contains at least the patient identifying information and information associated with the patient identifying information pertaining to an ultrasound examination procedure that is to be performed on the patient. The processor is structured to transmit a query to the mass storage device containing the patient identifying information and to receive a response from the mass storage device containing at least a portion of the digital requisition. The information contained in the digital requisition may be used to automatically set up the ultrasound imaging system. The information contained in the digital requisition may also be information about the medical history of the patient, or information that is used by the ultrasound imaging system to associate the patient with ultrasound images obtained from the patient using the ultrasound imaging system.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] **FIG. 1** is an isometric view an ultrasound imaging system in accordance with one embodiment of the present invention.

[0011] **FIG. 2** is a block diagram of pertinent portions of the imaging system of **FIG. 1**.

[0012] **FIG. 3** is a flowchart showing the software executed by a processor in the imaging system of **FIG. 1** and showing the method in which the imaging system of **FIG. 1** operates.

DETAILED DESCRIPTION OF THE INVENTION

[0013] An ultrasound imaging system **10** in accordance with one embodiment of the invention is illustrated **FIG. 1**. The system **10** includes a chassis **12** containing most of the electronic circuitry for the system **10**. The chassis **12** is mounted on a cart **14**, and a display **16** is mounted on the chassis **12**. An ultrasound imaging probe **20** is connected to the chassis **14** by a cable **24**. In operation, the probe **20** is placed against the skin of a patient (not shown) and either held stationery or moved to acquire an image of tissues beneath the skin. The image is presented on the display **16**, and it may be recorded by a recorder (not shown) or data storage medium (not shown in **FIG. 1**). Data corresponding to the image may also be downloaded through a suitable data link, such as the Internet or a local area network.

[0014] The above-described components of the imaging system **10** are conventional and are commonly used to obtain ultrasound images. The imaging system **10** according to one embodiment of the invention differs from conventional imaging systems by the inclusion of a data entry device **30** coupled to the chassis **12** by a cable **31**. In one embodiment, the data entry device **30** comprises a bar-code scanner that is adapted to read bar codes **32** and enter information into the system **10** corresponding thereto. In another embodiment of the invention, the data entry device **30** comprises a "smartcard" reader that is adapted to read information stored in a smartcard **34**. In another embodiment of the invention, the data entry device may be a data port to which a personal digital assistant ("PDA") **36** may be coupled. Other devices capable of reading information stored in a variety of media can also be used as the data entry device **30**. The data entry device **30** is used in a manner that will be explained in detail in connection with **FIG. 3**.

[0015] The electrical components in the ultrasound imaging system **10** are illustrated in greater detail in **FIG. 2**. The ultrasound imaging probe **20** is coupled through the cable **24** to an ultrasound signal path **40** of conventional design. As is well-known in the art, the ultrasound signal path **40** includes a transmitter (not shown) coupling electrical signals to the probe **20**, an acquisition unit (not specifically shown) that receives electrical signals from the probe **20** corresponding to ultrasound echoes, a signal processing unit (not specifically shown) that processes the signals from the acquisition unit to perform a variety of functions, such as isolating returns from specific depths or isolating returns from blood flowing through vessels, and a scan converter (not specifically shown) that converts the signals from the signal processing unit so that they are suitable for use by the display **16**. The ultrasound signal path **40** also includes a control module **44** that controls the operation of the above-described units. The ultrasound signal path **40** may, of course, contain components in addition to those described above, and, it suitable instances, some of the components described above may be omitted.

[0016] The control module **44** of the ultrasound signal path **40** interfaces with a central processor unit ("CPU") board **50** containing a number of components, including a CPU **54**, random access memory ("RAM") **56**, and read only memory ("ROM") **58**, to name a few. As is well-known in the art, the ROM **58** stores a program of instructions that are executed by the CPU **54**, as well as initialization data for use by the CPU **54**. The RAM **56** provides temporary storage of data and instructions for use by the CPU **54**. The CPU board **50** interfaces with a mass storage device, such as a disk storage drive **60**, for permanent storage of data, such as data corresponding to ultrasound images obtained by the system **10**. However, such image data is initially stored in an image storage device **64** that is coupled to a signal path **66** extending between the ultrasound signal path **40** and the CPU board **50**.

[0017] The CPU board **50** also interfaces with the data entry device **30**, as explained above, and a control panel **68**, which provides for the manual entry of information. The CPU board **50** may also interface with remote systems, such as a clinical information system **70**, by suitable means, such as a local area network **74**, a modem **76** or a wireless communication link **78**.

[0018] The operation of the ultrasound imaging system **10** will now be explained with reference to **FIG. 3**. **FIG. 3** comprises a flowchart showing the operation of the ultrasound imaging system **10**, which is controlled by the CPU **54** in accordance with a program stored in the ROM **58**. The flowchart of **FIG. 3** thus also constitutes an explanation of the software stored in the ROM **58** that is executed by the CPU **54**.

[0019] The operation begins at step **100**, where an operator uses the data entry device **30** to enter patient identifying data from storage media. For example, as mentioned above, the patient may wear a wrist band containing the bar-code **32** that can be scanned by a bar-code scanner used as the data

entry device **30**. The patient may alternatively be provided with the smartcard **34** containing, among other things, patient identifying data that can be read by a smartcard reader used as the data entry device **30**. As also stated earlier, the storage media may be a personal digital assistant ("PDA") **36**, which interfaces with a data port used as the data entry device **30**. Other data storage media may also be read by the data entry device **30**. The data storage media, whether it is a bar-code **32**, smartcard **34**, PDA **36**, or some other device, is preferably carried by the patient to avoid incorrect patient identifying data being entered into the ultrasound imaging system **10**.

[**0020**] The data read by the data entry device **30** is then filtered at step **102** to extract patient and/or procedure identifying data in the event the data storage media read by the data entry device **30** contains information in addition to patient identifying data. The filtering at step **102** is performed in accordance with examination setup data provided at step **104**. The setup data is preferably in the form of a template that identifies the location of the data that should be entered, since the storage media may store data in addition to that data of interest. The template also preferably identifies the significance of the entered data, e.g., whether the entered data is a patient identifier, accession number, etc. The ultrasound imaging system **10** then builds a query at step using the information extracted at step **102**. The query preferably specifies the information that is to be returned in response to the query. For example, in addition to providing a patient number, the query may specify that a response should include information identifying the type of images that are to be obtained and the name of the physician responsible for the patient.

[**0021**] The query is then sent to a database containing appropriate information at step **114**. The database may be an internal database stored in the disk drive unit **60**, or it may be an external database stored in, for example, the clinical information system **70** (**FIG. 2**). If the database is internal, the data may be provided to the system **10** through a variety of means, such as by periodically downloading the data to the system **10** from the clinical information system **70** or some other source. In either case, the database contains the patient identifying information extracted at step **102** as well as other pertinent information such as the images that should be obtained for such patient.

[**0022**] A response to the query sent at **114** is ultimately received at step **120**. The response preferably contains at least the data specified in the query at step **110**. The response data is preferably parsed at step **122** to convert the data received in the response to a representation that can be viewed by the operator. The ultrasound imaging system **10** then presents the scheduled exam information to the operator at step **130** using the display **16**. For example, the system **10** may display the type of exam to be performed, the type of image to be obtained, the name of the responsible physician, the name of the referring physician, and other clinically relevant information.

[**0023**] The operator of the ultrasound imaging system **10** then views the information on the display **16** presented at step **130** and selects an examination procedure to be performed at step **132**, since more than one examination procedure may be scheduled yet only one procedure may be performed at a time. The operator can select an exam at step **132** through a variety of means, such as by "clicking" on a schedule procedure item using a pointing device, using the control panel **68**, or other suitable means. The nature of the selection will, of course, depend to some extent upon the manner in which the information is displayed at step **130**.

[**0024**] The ultrasound imaging system **10** then reads information corresponding to the selected examination procedure and automatically sets up itself at step **140** in accordance with such information. The system **10** may also copy pertinent data at step **140** so that such data can later be associated with image data generated by the system **10** as a result of the examination procedure. The operator then performs the examination procedure at step **146** in a conventional manner.

[**0025**] The ultrasound imaging system **10** attaches the clinical data, i.e., data received at step **120**, with context data, i.e., data corresponding to the image obtained in the exam, at step **148** so that the proper patient data is permanently associated with the image obtained from the patient. Finally, the ultrasound imaging system **10** exports the combined clinical data and context data at step **150**, preferably to the clinical information system **70**. However, the clinical data could instead or in addition be downloaded to the smartcard **82** or PDA **84** carried by the patient.

[**0026**] It is thus seen that the ultrasound imaging system **10** may be set up by the operator in very little time since it is only necessary to read patient identifying data using the data entry device **30**. Thereafter, the ultrasound imaging system **10** may be automatically set up and the patient identifying data may be automatically associated with the image obtained from the patient, thereby minimizing the chances of error.

[**0027**] From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

1. A system for configuring an ultrasound imaging system, comprising:

storage media storing data including patient identifying information specific to a patient;

a mass storage device storing a digital requisition for the patient, the digital requisition containing at least the patient identifying information and information associated with the patient identifying information pertaining to an ultrasound examination procedure that is to be performed on the patient; and

an ultrasound imager including an imaging probe, an ultrasound signal path, a display, a processor, and a data entry device structured to read the storage media to obtain the patient identifying information, the ultrasound imager being structured to transmit a query to the mass storage device containing the patient identifying information and to receive a response from the mass storage device containing at least a portion of the digital requisition.

2. The system of claim 1 wherein the processor is structured to set up the ultrasound system to perform an ultra-

sound examination procedure in accordance with the digital requisition received from the mass storage device.

3. The system of claim 1, wherein the storage media comprises a bar code, and wherein the data entry device comprises a bar code reader coupled to the processor in the ultrasound imager.

4. The system of claim 1, wherein the storage media comprises a smartcard, and wherein the data entry device comprises a smartcard reader coupled to the processor in the ultrasound imager.

5. The system of claim 1, wherein the storage media comprises a personal digital assistant, and wherein the data entry device comprises an interface port for the personal digital assistant coupled to the processor in the ultrasound imager.

6. The system of claim 1, wherein the mass storage device storing the digital requisition for the patient comprises a mass storage device included in the ultrasound imager.

7. The system of claim 6, wherein the mass storage device included in the ultrasound imager comprises a disk drive included in the ultrasound imager.

8. The system of claim 1, further comprising:

a communication link included in the ultrasound imager; and

a clinical information system coupled to the ultrasound imager though the communication link, the clinical information system containing the mass storage device storing the digital requisition for the patient, the communication link being operable couple the query from the ultrasound imager to the clinical information system and to couple the response containing at least a portion of the digital requisition to the ultrasound imager from the clinical information system.

9. The system of claim 8, wherein the communication link comprises a local area network.

10. The system of claim 8, wherein the communication link comprises a modem and dial-up connection to the clinical information system.

11. The system of claim 10, wherein the dial-up connection is through the Internet.

12. The system of claim 8, wherein the communication link comprises a wireless communication system.

13. The system of claim 1 wherein the ultrasound imager further comprises a mass storage device operable to store ultrasound images obtained using the ultrasound imager, the mass storage device further being operable to store the patient identifying information in a manner that associates the patient identifying information with the ultrasound images.

14. The system of claim 13, further comprising a communication link included in the ultrasound imager, the communication link being operable to transmit the stored ultrasound images and associated patient identifying information.

15. An ultrasound imaging system, comprising:

storage media storing data including patient identifying information specific to a patient;

a clinical information system storing digital requisitions for a plurality of patients, each of the digital requisitions containing respective patient identifying information and information pertaining to the patient associated with the respective patient identifying information; and

an ultrasound imager including an imaging probe, an ultrasound signal path, a display, a processor, a communication link, and a data entry device structured to read the storage media to obtain the patient identifying information, the ultrasound imager being structured to obtain an ultrasound image and to use the communication link to transmit a query to the clinical information system and to receive a response from the clinical information system containing at least a portion of the digital requisition.

16. The ultrasound imaging system of claim 15 wherein the processor is structured to set up the ultrasound system to perform an ultrasound examination procedure in accordance with the digital requisition received from the mass storage device.

17. The ultrasound imaging system of claim 15, wherein the storage media comprises a bar code, and wherein the data entry device comprises a bar code reader coupled to the processor in the ultrasound imager.

18. The ultrasound imaging system of claim 15, wherein the storage media comprises a smartcard, and wherein the data entry device comprises a smartcard reader coupled to the processor in the ultrasound imager.

19. The ultrasound imaging system of claim 15, wherein the storage media comprises a personal digital assistant, and wherein the data entry device comprises an interface port for the personal digital assistant coupled to the processor in the ultrasound imager.

20. The ultrasound imaging system of claim 15, wherein the communication link comprises a local area network.

21. The ultrasound imaging system of claim 15, wherein the communication link comprises a modem and dial-up connection to the clinical information system.

22. The ultrasound imaging system of claim 21, wherein the dial-up connection is through the Internet.

23. The ultrasound imaging system of claim 21, wherein the communication link comprises a wireless communication system.

24. The ultrasound imaging system of claim 15 wherein the ultrasound imager further comprises a mass storage device operable to store ultrasound images obtained using the ultrasound imager, the mass storage device further being operable to store the patient identifying information in a manner that associates the patient identifying information with the ultrasound images.

25. The ultrasound imaging system of claim 15 wherein the ultrasound imager is further operable to associate information obtained from the digital requisition with the obtained ultrasound image.

26. The ultrasound imaging system of claim 25 wherein the ultrasound imager is further operable to download the ultrasound image and associated information obtained from the digital requisition to the clinical information system.

27. An ultrasound imaging system, comprising:

an ultrasound imaging probe;

an ultrasound signal path;

a display;

a mass storage device;

a data entry device structured to read storage media containing patient identifying information; and

a processor coupled to the ultrasound signal path, the display, the data entry device, and the mass storage device, the processor being operable to obtain the patient identifying information from the data entry device, obtain procedure information identifying an examination procedure associated with the patient identifying information, and to automatically set up the ultrasound system to perform the ultrasound examination procedure in accordance with the obtained procedure information.

28. The ultrasound imaging system of claim 27, wherein the data entry device comprises a bar code reader coupled to the processor.

29. The ultrasound imaging system of claim 27, wherein the the data entry device comprises a smartcard reader coupled to the processor.

30. The ultrasound imaging system of claim 27, wherein the data entry device comprises an interface port for a personal digital assistant, the interface port being coupled to the processor.

31. The ultrasound imaging system of claim 27, wherein the mass storage device comprises a disk drive.

32. The ultrasound imaging system of claim 27, further comprises a communication link coupled to the processor, the communication link being operable to couple data to the ultrasound imaging system from an external device and to couple data from the ultrasound imaging system to the external device.

33. The ultrasound imaging system of claim 32, wherein the communication link comprises a local area network interface.

34. The ultrasound imaging system of claim 32, wherein the communication link comprises a modem.

35. The ultrasound imaging system of claim 32, wherein the communication link comprises a wireless communication system.

36. A method of configuring an ultrasound imaging system, comprising:

providing storage media, the storage media storing data including patient identifying information specific to a patient;

using the ultrasound imaging system to read the storage media to obtain the patient identifying information;

using the patient identifying information to access a digital requisition for the patient, the digital requisition containing at least the patient identifying information and information associated with the patient identifying information pertaining to an ultrasound examination procedure that is to be performed on the patient;

obtaining from the accessed digital requisition information pertaining to the ultrasound examination procedure that is to be performed; and

using the information pertaining to the ultrasound examination procedure that is to be performed to automatically set up the ultrasound system to perform the ultrasound examination procedure.

37. The method of claim 36, wherein the act of providing storage media comprises providing a bar code in which the patient identifying information is encoded, and wherein the act of using the ultrasound imaging system to read the storage media to obtain the patient identifying information comprises using the ultrasound imaging system to read the bar code.

38. The method of claim 36, wherein the act of providing storage media comprises providing a smartcard in which the patient identifying information is stored, and wherein the act of using the ultrasound imaging system to read the storage media to obtain the patient identifying information comprises using the ultrasound imaging system to output data from the smartcard.

39. The method of claim 36, wherein the act of providing storage media comprises providing a personal digital assistant in which the patient identifying information is stored, and wherein the act of using the ultrasound imaging system to read the storage media to obtain the patient identifying information comprises using the ultrasound imaging system to output data from the personal digital assistant.

40. The method of claim 36, wherein the act of using the patient identifying information to access a digital requisition for the patient comprises:

providing a clinical information system storing the digital requisition for the patient;

coupling the patient identifying information read from the storage media to the clinical information system;

obtaining the digital requisition from the clinical information system.

41. The method of claim 36, wherein the act of using the patient identifying information to access a digital requisition for the patient comprises:

providing the ultrasound imaging system with mass storage media;

periodically storing digital requisitions for a plurality of patients in the mass storage media;

using the patient identifying information read from the storage media to access the digital requisition corresponding to the patient identifying information; and

obtaining the digital requisition from the mass storage media.

42. The method of claim 36, further comprising

obtaining ultrasound images using the ultrasound imaging system;

obtaining from the accessed digital requisition information pertaining to the patient; and

associating the obtained information pertaining to the patient with the obtained ultrasound images.

43. The method of claim 42 further comprising uploading the obtained ultrasound images and associated information pertaining to the patient to an external device.

44. The method of claim 42 wherein the act of uploading the obtained ultrasound images and associated information to an external device comprises uploading the obtained ultrasound images and associated information pertaining to the patient to a clinical information system.

45. The method of claim 36, wherein the digital requisition includes information about the medical history of the patient, and wherein the method further includes obtaining from the accessed digital requisition the information about the medical history of the patient and displaying information about the medical history of the patient.

46. A method of using an ultrasound imaging system to obtain ultrasound images and associate the images with a patient from which the ultrasound images were obtained, the method comprising:

providing storage media, the storage media storing data including patient identifying information specific to the patient;

using the ultrasound imaging system to obtain at least one of ultrasound images, worksheet data, measurements, and calculations from the patient;

using the ultrasound imaging system to read the storage media to obtain the patient identifying information; and

automatically associating the patient identifying information with the images obtained from the patient.

47. The method of claim 46, wherein the act of automatically associating the patient identifying information with the images obtained from the patient comprise:

using the patient identifying information to access a digital requisition for the patient, the digital requisition containing information about the patient that is to be associated with the images obtained from the patient; and

obtaining from the accessed digital requisition the information about the patient that is to be associated with the images.

48. The method of claim 46, wherein the act of providing storage media comprises providing a bar code in which the patient identifying information is encoded, and wherein the act of using the ultrasound imaging system to read the storage media to obtain the patient identifying information comprises using the ultrasound imaging system to read the bar code.

49. The method of claim 46, wherein the act of providing storage media comprises providing a smartcard in which the patient identifying information is stored, and wherein the act of using the ultrasound imaging system to read the storage media to obtain the patient identifying information comprises using the ultrasound imaging system to output data from the smartcard.

50. The method of claim 46, wherein the act of providing storage media comprises providing a personal digital assistant in which the patient identifying information is stored, and wherein the act of using the ultrasound imaging system to read the storage media to obtain the patient identifying information comprises using the ultrasound imaging system to output data from the personal digital assistant.

51. The method of claim 46, wherein the act of automatically associating the patient identifying information with the images obtained from the patient comprise:

providing a clinical information system storing information about the patient that is to be associated with the images obtained from the patient;

coupling the patient identifying information read from the storage media to the clinical information system; and

obtaining from the clinical information system information about the patient that is to be associated with the images obtained from the patient.

52. The method of claim 46, wherein the act of automatically associating the patient identifying information with the images obtained from the patient comprise:

providing the ultrasound imaging system with mass storage media;

periodically storing information about a plurality of patients in the mass storage media, the stored information being associated with respective patient identifying information;

using the patient identifying information read from the storage media to access the information about the patient corresponding to the read patient identifying information; and

obtaining the information about the patient from the mass storage media.

53. The method of claim 46, further comprising uploading the obtained ultrasound images and associated patient identifying information to an external device.

54. The method of claim **53**, wherein the act of uploading the obtained ultrasound images and associated patient identifying information to an external device comprises uploading the obtained ultrasound images and associated patient identifying information to a clinical information system.

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专利名称(译)	用于超声成像的数据输入和设置系统和方法		
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摘要(译)

超声成像系统包括数据输入设备，该数据输入设备读取分配给要在其上使用该系统的每个患者的存储介质或该系统的操作者以获得超声图像。存储介质（例如，可以是条形码，智能卡，个人数字助理）包含患者识别信息。患者或过程识别信息可用于访问由患者识别信息引用的数字请求。数字请求可以存储在包括在超声成像系统中的磁盘驱动器中，或者存储在通过包括在超声成像系统中的通信链路访问的临床信息系统中。数字请求可以包括关于将对患者执行的超声检查过程的信息，其可以用于自动设置超声成像系统。数字请求还可以包括患者的病史或关于患者的信息，其可以与从患者获得的超声图像相关联。