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(54) **WIRELESS IMAGE TRANSFER FROM A DIGITAL STILL VIDEO CAMERA TO A NETWORKED COMPUTER**

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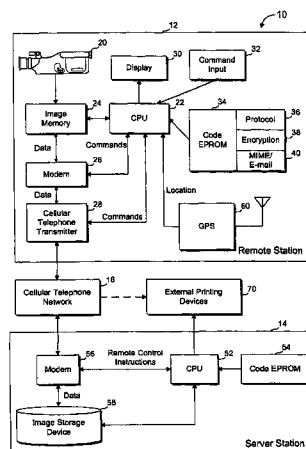
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(57) **ABSTRACT**

A portable image transfer system includes a digital still camera which captures images in digital form and stores the images in a camera memory, a cellular telephone transmitter, and a central processing unit (CPU). The CPU controls the camera memory to cause it to output data representing an image and the CPU controls the cellular telephone transmitter to cause a cellular telephone to transmit the data received from the camera memory. A receiving station is coupled to the cellular telephone transmitter by a cellular network to receive image data and store the images.

**72 Claims, 1 Drawing Sheet**



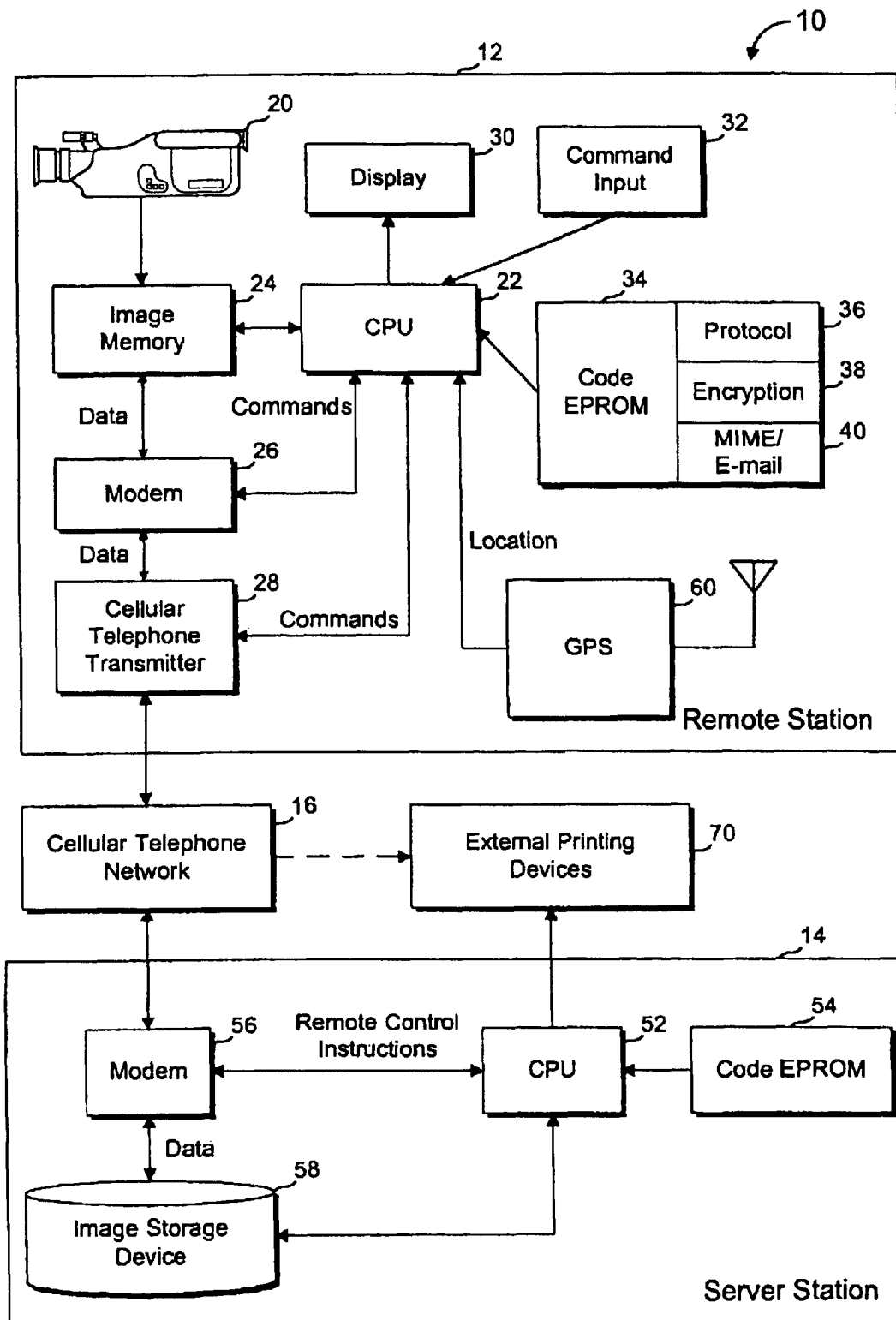


Fig. 1

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# WIRELESS IMAGE TRANSFER FROM A DIGITAL STILL VIDEO CAMERA TO A NETWORKED COMPUTER

**Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.**

## BACKGROUND OF THE INVENTION

The present invention relates to the field of digital still video cameras (DSVC's). More specifically, one embodiment of the present invention provides for improved storage of images generated by a DSVC. A portable DSVC is convenient for taking pictures at various locations because of the cameras's size and weight. Unfortunately, as users have come to expect small weights and compact sizes for consumer electronics, DSVC's have tended to be limited in the number of images which could be stored. One solution to the problem is to add additional memory modules, but this is an expensive solution given that the memory modules must be miniaturized so as not to adversely affect the portability of the DSVC.

What is needed is a DSVC with a large image storage capacity where the image storage is not unduly expensive and does not unreasonably impact the size of the portable cameras.

## SUMMARY OF THE INVENTION

An improved portable image capture system is provided by virtue of the present invention. In one embodiment, a central processing unit (CPU), a modem and a cellular telephone transmitter are coupled to an image memory of a DSVC. The CPU is also coupled to a display and a command input device, which might be a voice activated device or a touch screen device integrated with the display. The CPU executes programs as needed to download images through the cellular telephone transmitter to a server station according to a protocol optimized for the connection available. Where the connection is a direct cellular telephone line, data is sent through the cellular telephone transmitter to cellular telephone system and it is received by a modem at the server station. A CPU at the server station directs the file to be stored in a data storage device, which is typically a large-capacity, inexpensive device such as a hard drive.

In variations of the present invention, the server station might perform complex analysis of the received images in order to instruct the DSVC to obtain additional images which the server station determines are needed for the analyses. The analyses include image resolution enhancement, stereoscopic matching, photocopying, and the like, as well as subjective evaluation of camera angle and image compression. In a specific implementation, the server station transmits images back to the remote station for viewing or forwarding to a local facsimile device or digital camera.

A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portion of the specification and the attached drawing.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a remote station according to the present invention coupled to a server station via a cellular telephone system.

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## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a image transfer system 10 is shown with a remote station 12 coupled to a server station 14 via a cellular telephone system 16. Remote station 12 includes a digital camera made up of a capture device 20 and an image memory 24. Image memory 24 is a memory configured to hold a small number of images captured by capture device 20. In some embodiments, capture device 20 and image memory 24 are provided by a conventional digital still video camera, such as the Ricoh RDC-1 still video camera supplied by Ricoh Company, Ltd. of Tokyo Japan. Whether an existing DSVC is used or the camera is integrated, a CPU 22 is coupled to image memory 24, a modem 26 and a cellular telephone transmitter 28. The coupling between the various elements is such that CPU 22 can control image memory 24 to transfer data representing an image from image memory 24 to modem 26, which converts the image data into a signal suitable for transmission over a telephone line. Modem 26 is coupled to provide that signal to cellular telephone transmitter 28, which transmits the signal through cellular system 16 to modem 56 of server station 14.

Remote station 12 also includes a display 30 and a command input device 32 for interacting with the user of remote station 12 and accepting commands. The programs executed by CPU 22 are stored in a code EPROM 34 which respond to the commands sent by a user using input command device 32. Command input device 32 might be a voice activated device or a touch screen integrated with display 30. Code EPROM 34 includes code necessary to perform certain processing functions on an image before it is transmitted, such as a protocol packetizing program 36, an encryption module 38 and an e-mail handler 40.

Server station 14 is shown comprising modem 56 which is controlled by a CPU 52 which executes code stored in its own code EPROM 54. The programs stored in code EPROM 54 are instructions for CPU 52 to transfer data received by modem 56 into data storage device 58 while processing the received image to handle the requirements of the protocols used to send the image.

In one example of the operation of image transfer system 10, CPU 22 executes a program with instructions to periodically read an image from image memory 24 and mark the image as being read, allowing image memory 24 to be overwritten by subsequent images. As each image is read, the image data is encrypted and formatted as an electronic mail message. Where cellular system 16 is not a direct modem link, but a SLIP/PPP connection using TCP/IP, additional protocol packaging is performed on the image for transmission. When the images are received at server station 14, they are decrypted and unpackaged, then stored in data storage 58. If desired, some or all of the images in data storage 58 can be made available over the Internet. If a TCP/IP connection is used, CPU 20 might also execute a routine stored in code EPROM 34 to "ping" a destination before sending an image. The ping process sends a dummy message through a channel to determine whether or not the destination, such as server station 14, is available, ready and willing to receive data. If an affirmative response to the ping is received by remote station 12, only then does CPU 22 transmit the image package. If location information is to be included with each image, a Global Positioning System (GPS) receiver 60 can be coupled to CPU 22, such as a PCMCIA-compatible GPS receiver manufactured by Trimble Navigation of Sunnyvale, Calif.

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Many uses of the present invention are contemplated, some of which are mentioned here, others of which are apparent after reading the disclosure. One use is the collection of vacation photos. Since the remote station is extremely portable, it is convenient for a vacationer to pack the remote station and carry it on their travels. When the capture of an image is desired, the vacationer activates remote station 12 using command input device 32, captures the image and, if image memory 24 is full, transmits images back to server station 14. This allows the vacationer to take as many pictures as desired without worrying about running out of film or image memory capacity, or needing to carry around sufficient memory to hold all the images from an entire trip.

Another application in television reporting. A field reporter could use the remote station to capture images at the scene of a news event and have those images transmitted to a server station controlled by the television studio, thus allowing up-to-the-minute news photos without requiring expensive and bulky equipment such as is now required in a news van.

In a typical operation, display 30 indicates the amount of free space remaining in image memory 24. When the user decides to free up additional memory by transmitting images already stored in image memory 24, the user initiates a command sequence using command input device 32. This begins the process of CPU 22 dialing a cellular number for server station 14 or otherwise setting up the link between remote station 12 and server station 14. CPU 22 then packages an image as required by the protocols, encryption or mailing procedures and directs the package as needed and flags the images in image memory 24 as being sent. One method for labeling images as being sent is to include a binary flag for each block of image memory 24 available for images. As an image is captured by capture device 20, the flag is set to indicate that the block is in use. As an image is transmitted by CPU 22, the flag is reset to indicate that the block is again available for image storage.

One application in which the present invention finds a use is in-field stereo image capture. With in-field stereo image capture, a camera is on location capturing an image and the server is processing the images. One problem with developing high quality stereo reconstructions is accuracy in image areas where the scene geometry changes quickly, i.e., sharp edges. The need for increased accuracy can be accommodated by capturing more images where needed to increase accuracy. Unfortunately, in the prior art, a photographer would either have to return from a site to process the images to determine if any more images are needed, often necessitating a second trip to the site, or have take the image processing computers to the site. With the present invention, images can be captured and sent to the server for processing with the server interactively responding with requests for the additional images. Thus, the server would process the captured images to determine if a good stereo image can be created. If portions of the stereo image are unacceptable, the server can signal, via the digital still video camera, the photographer to capture additional images.

Face recognition is a similar example. The capture device and the server could cooperate to interactively perform stereo matching, with the server requesting additional captures to improve face recognition. This would overcome the need for subjects to have stereo photographs stored in a laboratory.

Another use of the present invention is to obtain photocopies in locations, such as libraries, where it is not conve-

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nient to bring the item to be copied to a photocopy machine. At photocopier resolutions, a single uncompressed page image might require about 15 megabits of memory (1 bit/pixel  $\times 400 \text{ dpix} \times 8.5" \times 11" = 1496 \text{ mbit}$ ). In order to reduce the memory requirements, the image can be compressed at the DSVC, but this requires considerable computation power at the DSVC. With the present invention, a low resolution image (e.g., 100 dpi) can be captured and sent to the server station. The server station then analyzes the low resolution image and identifies all white or black areas of the image as well as boundaries of the areas. To convert to a higher resolution image, the server represents each low resolution pixel with sixteen high resolution pixels. Where the image is all black or all white the high resolution pixels are correctly colored, while the blocks of sixteen high resolution pixels near an edge might not all be one color. To refine these areas, the server station sends image capture instructions to the DSVC instructing it to capture additional information from the edge areas.

Once the image is created at the server station with the desired high resolution, it can be sent to an printer or facsimile machine, typically one located near the user of the DSVC. A user of the DSVC desiring a photocopy could then indicate, using command input 32, the telephone number of a nearby facsimile machine. The DSVC would then obtain a low resolution image of the page of which a hard copy is desired, and send a low resolution image to server station 14. Server station 14 then determines the areas of the image for which additional information is needed. Server station 14 communicates the locations of those areas on the image and the DSVC recaptures those areas of the image. The increased resolution required for the high resolution image can be obtained by using a higher resolution lens on the DSVC, or simply capturing multiple images at low resolution and averaging. The resulting image can be compressed by server station 14 if the printing device is a facsimile machine, so that server station 14 need only transmit a compressed facsimile file. Alternatively, server station 14 can retransmit the compressed file to remote station 12, which would then dial the facsimile machine directly through cellular telephone network 16.

In FIG. 1, CPU 52 is shown connected to external printing devices 70, which could be facsimile machines, printers, or digital copiers. Other variations include the external printing devices 70 coupled to cellular telephone network 16, especially in the case of the external printing device being a facsimile machine. External printing device 70 might also be coupled directly to remote station 12. If the size and weight of remote station 12 is not too constrained, a printer might be included thereon. If desired, remote station 12 can be configured to display the captured image on display 30 or in a viewfinder of camera 20.

Yet another application is stereoscopic matching. Suppose remote station 12 is carried by a geologist who is backpacking to a remote region and desires to capture three-dimensional (3D) images of a landscape. Stereoscopic images are formed from two images of one scene taken at slight offset of each other. In many stereoscopic systems, the precise relative position of the camera between the two images is needed. However, it is now possible to perform stereographic "matching" (alignment of the two images to create the 3D effect) without alignment information. One such system is the C3D technology sold by The Turing Institute of Glasgow, Scotland. Combining that system with the present invention, the geologist could upload the dual images and have a C3D system at the server station immediately evaluate the images to determine if a lock on a 3D

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image can be made. If not, the server station sends a message to the geologist to reposition the camera and recapture an image, thus avoiding a second trip to the site for image capture.

The above description is illustrative and not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of this disclosure. For example, the server station 14 can be either a stationary system or a semi-portable system, so long as it need not be as portable as remote station 12. Also, the remote station 12 might be controlled from server station 14 by allowing remote station 12 to receive command messages from server station 14 over cellular system 16. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

What is claimed is:

1. A portable image transfer system comprising:
  - a digital still camera, at a remote station, which captures images in digital form and stores the images in a camera memory;
  - a cellular telephone transmitter;
  - a central processing unit (CPU) coupled to the camera memory and the cellular telephone transmitter, wherein the CPU controls the camera memory to cause it to output data representing an image and the CPU controls the cellular telephone transmitter to cause a cellular telephone to transmit the data output from the camera memory;
  - a receiving station coupled to the cellular telephone transmitter by a cellular network to receive image data; means, at the receiving station, for image processing; means for resetting the camera memory to be reused for subsequent images once an image is transmitted to the receiving station;
  - a return link for sending commands from the receiving station to the CPU, wherein the commands are directions for obtaining further images as needed by the means for image processing; and
  - an image storage device coupled to the receiving station to store images received by the receiving station.
2. The apparatus of claim 1, wherein the CPU interfaces to a camera memory of an existing digital still camera.
3. The apparatus of claim 1, wherein the cellular telephone transmitter comprises:
  - a standard cellular telephone; and
  - a cellular modem.
4. The apparatus of claim 1, further comprising means for packaging images as electronic mail messages prior to transmission by the cellular telephone transmitter.
5. The apparatus of claim 1, further comprising means for handling a serial line interface protocol connection between the cellular telephone transmitter and the receiving station.
6. The apparatus of claim 1, further comprising means for encrypting image data prior to transmission by the cellular telephone transmitter.
7. The apparatus of claim 1, further comprising a means for causing the digital still camera to capture images on a periodic basis, wherein the CPU is [programmed] programmed to periodically transmit an image to free the camera memory for accepting subsequent images.
8. The apparatus of claim 1, further comprising means for determining a location of the portable image transfer system and means for including a location indication with each

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9. The apparatus of claim 1, wherein the commands represent user directions to be displayed at the remote station directing the user to capture additional images as needed by the means for image processing.

10. The apparatus of claim 1, wherein the commands are directions directed at the remote station directing the digital still camera or CPU to capture additional image data as needed by the means for image processing.

11. The apparatus of claim 1, further comprising a remote printing device for printing images processed by the receiving station.

12. The apparatus of claim 11, wherein the remote printing device is one of a facsimile machine, a digital copier or a printer.

13. The apparatus of claim 8, further comprising means, within the receiving station, for using the location indication as a variable when processing said each image.

14. *The apparatus of claim 1 wherein the return link is further for sending commands from the CPU to the receiving station.*

15. *A portable image transfer system comprising:*

*a digital still camera, at a remote station, which captures images in digital form and stores the images in a camera memory;*

*a cellular telephone transmitter;*

*a central processing unit (CPU) coupled to the camera memory and the cellular telephone transmitter, wherein the CPU controls the camera memory to cause it to output data representing an image and the CPU controls the cellular telephone transmitter to cause a cellular telephone to transmit the data output from the camera memory;*

*a receiving station coupled to the cellular telephone transmitter by a cellular network to receive image data; means, at the receiving station, for image processing; means for resetting the camera memory to be reused for subsequent images;*

*a return link for sending commands from the receiving station to the CPU, wherein the commands are directions for obtaining further images as needed by the means for image processing; and*

*an image storage device coupled to the receiving station to store images received by the receiving station.*

16. *The apparatus of claim 15, wherein the CPU is configured to format the images into electronic mail messages prior to transmission by the cellular telephone transmitter.*

17. *The apparatus of claim 15, further comprising a component to provide location information relating to the location of the portable image transfer system, the CPU being configured to include location information with each image.*

18. *The apparatus of claim 15 wherein the return link is further for sending commands from the CPU to the receiving station.*

19. *A portable image transfer system comprising:*

*a digital still camera, at a remote station, which captures one or more images in digital form and stores the images in a camera memory;*

*a cellular telephone transmitter for communication with a receiving station, the receiving station having an image processor;*

*a central processing unit (CPU); and*

*a return link for receiving commands from the receiving station to the CPU to obtain further images as needed by the image processor,*

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the CPU being coupled to the camera memory and the cellular telephone transmitter, the CPU being configured to control the camera memory to produce output data representing the images formatted as one or more electronic mail messages, the CPU further being configured to control the cellular telephone transmitter to transmit the output data from the camera memory to the receiving station.

20. The portable image transfer system of claim 19 wherein the one or more electronic mail messages is provided in MIME format.

21. The portable image transfer system of claim 19 further including means for connecting to the receiving station using a predetermined communication protocol.

22. The portable image transfer system of claim 19 wherein the CPU is further configured to connect to an external printing device via the cellular telephone transmitter.

23. The portable image transfer system of claim 19 wherein the return link is further for sending commands from the CPU to the receiving station.

24. A portable image transfer system comprising:

a digital still camera, at a remote station, which captures one or more images in digital form and stores the images in a camera memory;

a cellular telephone transmitter for communication with a receiving station, the receiving station having an image processor;

circuitry to produce information relating to the location of the portable image transfer system;

a central processing unit (CPU); and

a return link for receiving commands from the receiving station to the CPU to obtain further images as needed by the image processor;

the CPU being coupled to the camera memory, to the circuitry, and to the cellular telephone transmitter, the CPU being configured to control the camera memory to produce output data representing a combination of the images and the location information, the CPU further being configured to control the cellular telephone transmitter to transmit the output data from the camera memory to the receiving station.

25. The portable image transfer system of claim 24 wherein the output data represent the images and the location information in an electronic mail message.

26. The portable image transfer system of claim 24 further including means for connecting to the receiving station using a predetermined communication protocol.

27. The portable image transfer system of claim 24 wherein the CPU is further configured to connect to an external printing device via the cellular telephone transmitter.

28. The portable image transfer system of claim 24 wherein the return link is further for sending commands from the CPU to the receiving station.

29. A portable image transfer apparatus comprising:

a cellular telephone transmitter component;

an image capture component for producing digital images;

a memory operatively coupled to the image capture interface to receive and store one or more digital images;

a controller coupled to the memory and to the cellular telephone transmitter component, the controller configured to produce output data representing the images,

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the controller further configured to control the cellular telephone transmitter component to communicate with a receiving station to transmit the output data from the memory to the receiving station, the receiving station having image processing means; and

a return link for receiving commands from the receiving station,

wherein the output data is transmitted to the receiving station when the receiving station transmits a first command to the portable image transfer apparatus to obtain further images needed by the image processing means.

30. The portable image transfer system of claim 29 wherein the image capture component is a digital camera.

31. The portable image transfer system of claim 29 wherein the image capture component is an interface to a digital camera.

32. The portable image transfer system of claim 29 wherein the controller is further configured to receive one or more images from the receiving station.

33. The portable image transfer system of claim 29 wherein the controller is further configured to communicate with the receiving station using a predetermined communication protocol.

34. The portable image transfer system of claim 29 wherein the controller is further configured to communicate with the receiving station to send the image over the Internet.

35. The portable image transfer system of claim 29, wherein the controller is further configured to format the images into one or more electronic mail messages prior to transmission by the cellular telephone transmitter.

36. The portable image transfer system of claim 35 wherein the one or more electronic mail messages is provided in MIME format.

37. The portable image transfer system of claim 29, wherein the cellular telephone transmitter comprises a standard cellular telephone and a cellular modem.

38. The portable image transfer system of claim 29, wherein the controller is further configured to encrypt image data prior to transmission by the cellular telephone transmitter.

39. The portable image transfer system of claim 29, wherein the controller is further configured to control the image capture device to periodically capture images and to periodically transmit image data to the receiving station.

40. A telecommunication system comprising:

a communication component for receiving image data originating from a cellular telephone device;

an image data store for storing the image data;

a return link for sending commands to the cellular telephone device; and

a controller coupled to the communication component and to the image data store, the controller configured to process the image data and to communicate the image data over the Internet to a receiving station, wherein the cellular telephone device is an image transfer apparatus as recited in claim 29,

wherein the image data is transmitted to the receiving station when the receiving station transmits a first command to the cellular telephone device.

41. An image processing system comprising:

a communication component for receiving image data originating from a cellular telephone device, the cellular telephone device comprising an image transfer apparatus as recited in claim 29;

an image data store for storing the image data; and  
a controller coupled to the communication component  
and to the image data store, the controller configured  
to process the image data and to communicate the  
image data over the Internet.

42. The image processing system of claim 41 wherein the  
controller is further configured to transmit one or more  
images to the cellular telephone device.

43. An image processing system comprising:

a communication component for receiving image data  
originating from a cellular telephone device, the cel-  
lular telephone device comprising an image transfer  
apparatus as recited in claim 31;

an image data store for storing the image data; and  
a controller coupled to the communication component  
and to the image data store, the controller configured  
to process the image data and to communicate the  
image data over the Internet.

44. The portable image transfer system of claim 29  
wherein the return link is further for sending commands to  
the receiving station.

45. A telecommunication system comprising:

a communication component for receiving image data  
originating from a cellular telephone device;

an image data store for storing the image data;

a return link for sending commands to the cellular tele-  
phone device; and

a controller coupled to the communication component  
and to the image data store, the controller configured  
to process the image data and to communicate the  
image data over the Internet to a receiving station, the  
receiving station having image processing means,

wherein the image data is transmitted to the receiving  
station when the receiving station transmits a first  
command to the cellular telephone device to obtain  
further images needed by the image processing means.

46. The telecommunication system of claim 45 wherein  
the return link is further for sending commands from the  
cellular telephone device.

47. A portable image transfer system comprising:

a digital still camera, at a remote station, which captures  
one or more images in digital form and stores the  
images in a camera memory;

a cellular telephone transmitter for communication with a  
receiving station, the receiving station having means  
for image processing;

a central processing unit (CPU); and

a link for receiving data from the receiving station to the  
CPU,

the CPU being coupled to the camera memory and the  
cellular telephone transmitter, the CPU being config-  
ured to control the camera memory to produce output  
data representing the images formatted as one or more  
electronic mail messages, the CPU further being config-  
ured to control the cellular telephone transmitter to  
transmit the output data from the camera memory to the  
receiving station,

wherein the output data is transmitted to the receiving  
station when the receiving station transmits a first  
command to the portable image transfer system to  
obtain further images needed by the means for image  
processing.

48. The portable image transfer system of claim 47  
wherein the one or more electronic mail messages is pro-  
vided in MIME format.

49. The portable image transfer system of claim 47 further  
including means for connecting to the receiving station  
using a predetermined communication protocol.

50. The portable image transfer system of claim 47  
wherein the CPU is further configured to connect to an  
external printing device via the cellular telephone transmit-  
ter.

51. The portable image transfer system of claim 47  
wherein the link is further for sending data from the CPU to  
the receiving station.

52. A portable image transfer system comprising:

a digital still camera, at a remote station, which captures  
one or more images in digital form and stores the  
images in a camera memory;

a cellular telephone transmitter for communication with a  
receiving station, the receiving station having means  
for image processing;

circuitry to produce information relating to the location of  
the portable image transfer system;

a central processing unit (CPU); and

a link for receiving data from the receiving station to the  
CPU,

the CPU being coupled to the camera memory, to the  
circuitry, and to the cellular telephone transmitter, the  
CPU being configured to control the camera memory to  
produce output data representing a combination of the  
images and the location information, the CPU further  
being configured to control the cellular telephone  
transmitter to transmit the output data from the camera  
memory to the receiving station,

wherein the output data is transmitted to the receiving  
station when the receiving station transmits a first  
command to the portable image transfer apparatus to  
obtain further images needed by the means for image  
processing.

53. The portable image transfer system of claim 52  
wherein the output data represent the images and the  
location information in an electronic mail message.

54. The portable image transfer system of claim 52 further  
including means for connecting to the receiving station  
using a predetermined communication protocol.

55. The portable image transfer system of claim 52  
wherein the CPU is further configured to connect to an  
external printing device via the cellular telephone transmit-  
ter.

56. The portable image transfer system of claim 52  
wherein the link is further for sending data from the CPU to  
the receiving station.

57. A portable image transfer apparatus comprising:

a cellular telephone transmitter component;

an image capture component for producing digital  
images;

a memory operatively coupled to the image capture  
interface to receive and store one or more digital  
images;

a controller coupled to the memory and to the cellular  
telephone transmitter, the controller configured to pro-  
duce output data representing the images, the control-  
ler further configured to control the cellular telephone  
transmitter to communicate with a receiving station to  
transmit the output data from the camera memory to the  
receiving station, the receiving station having an image  
processor; and

a link for receiving data from the receiving station,

wherein the output data is transmitted to the receiving  
station when the receiving station transmits a first

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*command to the portable image transfer apparatus to obtain further images as needed by the image processor.*

*58. The portable image transfer system of claim 57 wherein the image capture component is a digital camera.*

*59. The portable image transfer system of claim 57 wherein the image capture component is an interface to a digital camera.*

*60. An image processing system comprising:*

*a communication component for receiving image data originating from a cellular telephone device, the cellular telephone device comprising an image transfer apparatus as recited in claim 59;*

*an image data store for storing the image data; and*

*a controller coupled to the communication component and to the image data store, the controller configured to process the image data and to communicate the image data over the Internet.*

*61. The portable image transfer system of claim 57 wherein the controller is further configured to receive one or more images from the receiving station.*

*62. The portable image transfer system of claim 57 wherein the controller is further configured to communicate with the receiving station using a predetermined communication protocol.*

*63. The portable image transfer system of claim 57 wherein the controller is further configured to communicate with the receiving station to send the image over the Internet.*

*64. The portable image transfer system of claim 57, wherein the controller is further configured to format the images into one or more electronic mail messages prior to transmission by the cellular telephone transmitter.*

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*65. The portable image transfer system of claim 64 wherein the one or more electronic mail messages is provided in MIME format.*

*66. The portable image transfer system of claim 57, wherein the cellular telephone transmitter comprises:*

*a standard cellular telephone; and*

*a cellular modem.*

*67. The portable image transfer system of claim 57, wherein the controller is further configured to encrypt image data prior to transmission by the cellular telephone transmitter.*

*68. The portable image transfer system of claim 57, wherein the controller is further configured to control the image capture device to periodically capture images and to periodically transmit image data to the receiving station.*

*69. An image processing system comprising:*

*a communication component for receiving image data originating from a cellular telephone device, the cellular telephone device comprising an image transfer apparatus as recited in claim 57;*

*an image data store for storing the image data; and*

*a controller coupled to the communication component and to the image data store, the controller configured to process the image data and to communicate the image data over the Internet.*

*70. The image processing system of claim 69 wherein the controller is further configured to transmit one or more images to the cellular telephone device.*

*71. The image processing system of claim 57 wherein the link is further for sending data to the receiving station.*

*72. The image processing system of claim 57 wherein the link is further for sending data from the CPU to the receiving station.*

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