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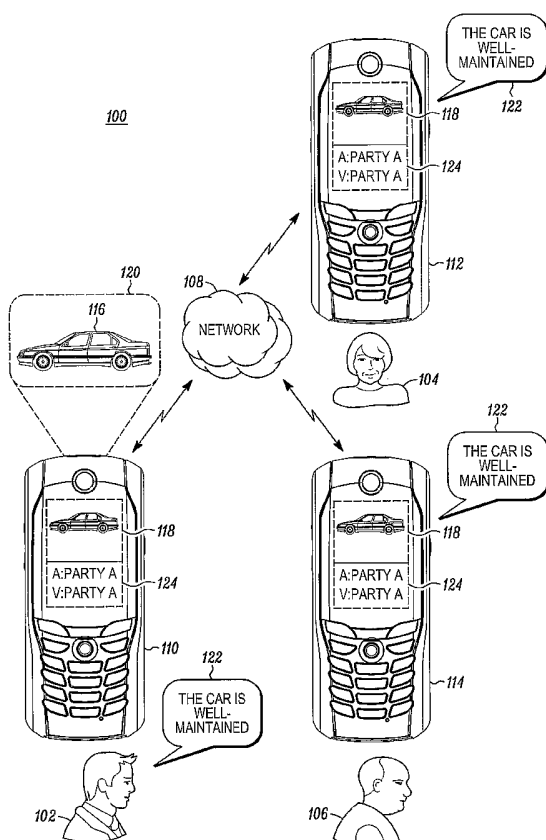
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[Continued on next page]

(54) Title: IMAGE AND AUDIO CONTROLS FOR A COMMUNICATION DEVICE IN PUSH-TO-VIDEO SERVICES



(57) Abstract: A method (300) and an apparatus (110) for a communication device for controlling an image portion and an audio portion of a push-to-video communication are disclosed. The communication device (110) initiates the push-to-video communication (304), establishes the push-to-video communication (306), transmits the image portion and the audio portion of the push-to-video communication (308), and makes control of at least one of the image and audio portions of the push-to-video communication available (310) for other communication devices involved in the push-to-video communication. The communication device (110), after making the control of at least one of the image and audio portions of the push-to-video communication available, continues to transmit the corresponding portions of the push-to-video communication (312). The communication device (110) relinquishes the control when one of the other communication devices takes the control.



RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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IMAGE AND AUDIO CONTROLS FOR A COMMUNICATION DEVICE IN PUSH-TO-VIDEO SERVICES

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FIELD OF THE INVENTION

The present invention generally relates to push-to-video services, and more specifically to controlling of audio and video portions of a push-to-video call for a communication device.

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BACKGROUND OF THE INVENTION

Push-To-Talk ("PTT") service is commonly found in two-way radio systems including a public safety radio communication system for police, dispatch radio systems for businesses, and more recently, cellular telecommunication systems. The PTT service provides one-to-one, or one-to-many, audio communication in wireless communication systems. With the PTT service, one party can communicate to other parties in a one-to-many call by pressing a PTT key. For example, in a police radio communication system, PTT can be used to send out a call from a central station to all available police officers, and a police officer responding to the call can send out a reply to all other police officers and to the central station. Similarly, Push-To-Video ("PTV") service provides one-to-one, or one-to-many, video and audio communication service in wireless communication systems. Because the video communication service provided by PTV may contain audio portion as well as video, it is desirable to able to control the audio and video portions of PTV communication.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exemplary environment in which a push-to-video communication device in accordance with at least one of the preferred embodiments is illustrated to
5 have initiated and established a push-to-video communication;

FIG. 2 is the exemplary environment of FIG. 1 in which the push-to-video communication device in accordance with at least one of the preferred embodiments is illustrated to have surrendered partial control of the push-to-video communication;

FIG. 3 is an exemplary flowchart for controlling an image portion and an
10 audio portion of a push-to-video communication in accordance with at least one of the preferred embodiments; and

FIG. 4 is an exemplary block diagram of a communication device capable of push-to-video communication in accordance with at least one of the preferred embodiments.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A method and apparatus for a communication device for controlling an image portion and audio portion of a video communication utilized in a push-to-video communication, which allows one-to-one or one-to-many communication, are disclosed. FIG. 1 is an exemplary environment 100 where at least one of the preferred embodiments may be practiced. In FIG. 1, Party A 102 initiates a push-to-video call to a group of parties, for example, party B 104 and party C 106 through a communication network 108, such as a cellular communication network. When the push-to-video communication is established, Party A 102, more specifically, the communication device 110 of Party A 102, is initially in control of both image and audio portions of the push-to-video communication. Both image and audio portions of the push-to-video communication are transmitted from the originator's communication device 110, and parties B 104 and C 106 are able to see and hear the image and audio portions transmitted from Party A's communication device 110 with their respective communication devices 112 and 114. For example, if Party A 102 has a car 116 for sale and wants to show a live picture of the car 116, then the video communication may have the image portion 118 of the car 116 on all the communication devices 110, 112, and 114 being a live picture 120 captured by the originator's communication device 110, as shown in FIG. 1, with Party A 102 providing narration as the audio portion 122. Each communication device 110, 112, and 114 also provides an indication of who has the control of the image portion 118 and the audio portion 122 in an indicator field 124.

Control of one or both of the image portion 118 and audio portion 122 can be then made available for any one of the parties involved in the video communication. For example, as shown in FIG. 2, Party B 104 may take the control of the audio portion 122 while leaving the image portion 118 in control of Party A 102 such that the image portion 118 being displayed on all communication devices 110, 112, and 114 is provided by Party A's communication device 110 but the audio portion 122 heard by all parties are now being provided by Party B 104 through the communication device 112 of party B 104. The indicator field 124 of each

communication device 110, 112, and 114 now reflects the change in the control of the audio portion 122 of the video communication. Similarly, party B 104 may take control of the image portion 118 while leaving the audio portion 122 in control of the originator's communication device 110, or party B may take control of both image and audio portions.

FIG. 3 is an exemplary flowchart 300 for controlling an image portion and an audio portion of a push-to-video communication in accordance with at least one of the preferred embodiments. The process begins in block 302. A communication device, such as the communication device 110 of Party A 102 in FIG. 1, initiates a push-to-video communication in block 304, and establishes the push-to-video communication with other communication devices such as the communication devices 112 and 114 in block 306. The established push-to-video communication has an image portion such as the image portion 118, and an audio portion such as the audio portion 122 as previously illustrated in FIG. 1. In block 308, the communication device 110 transmits the image portion 118 and the audio portion 122 of the push-to-video communication. Although the image portion 118 of the push-to-video communication in FIGs. 1 and 2 is illustrated as a live image captured by the communication device 110, the image portion 118 may be a recorded image stored in the communication device 110 including a still image and a streaming video. The audio portion 122 of the push-to-video communication may include a recording stored in the communication device 110 in addition to a live audio captured by the communication device 110 as illustrated in FIGs. 1 and 2.

In block 310, the communication device 110 then makes control of one or both of the image portion 118 and the audio portion 122 of the push-to-video communication available to other communication devices, such as the communication devices 112 and 114, involved in the push-to-video communication. The communication device 110 may make the control of either or both of the image portion 118 and the audio portion 122 of the push-to-video communication available in response to receiving a request to relinquish control of either or both of the image portion 118 and the audio portion 122. The communication device 110, however, maintains the control of both of the image portion 118 and the audio portion 122 of

the push-to-video communication, and continues to transmit both of the image portion 118 and the audio portion 122 of the push-to-video communication in block 312. The communication device 110 may provide an indicator, which may shows which device or user currently has the control or ownership of the video portion 118 and the audio portion 122, which portion of the push-to-video communication is available for any user involved to take the control, and which device or user is requesting to take the ownership of either or both portions of the push-to-video communication. When one of the communication devices, takes the control of one of the image portion 118 and the audio portion 122, the communication device 110 relinquishes the corresponding control over the push-to-video communication in block 314. For example, as illustrated in FIG. 2, the communication device 110 relinquishes the control of the audio portion 122 of the push-to-video communication when the communication device 112 takes the control of the audio portion 122 of the push-to-video communication. When the communication device 110 relinquishes the control of one of the image portion 118 and the audio portion 122, it terminates the transmission of the corresponding portion of the push-to-video communication in block 316, and begins to receive the corresponding portion of the push-to-video communication from the communication device which has taken the control of the corresponding portion in block 318. The process then terminates in block 320.

FIG. 4 is an exemplary block diagram of the communication device 110 capable of a push-to-video communication in accordance with at least one of the preferred embodiments. The communication device 110 has a transmitter 402, which is configured to transmit an outbound image portion and an outbound audio portion of the video communication such as the image portion 118 and the audio portion 122 as previously illustrated in FIG. 1. Although the image portion 118 of the push-to-video communication in FIGs. 1 and 2 is illustrated as a live image captured by the communication device 110, the image portion 118 may be a recorded image stored in the communication device 110 including a still image and a streaming video. The communication device 110 also has a receiver 404, which is configured to receive an incoming image portion and an incoming audio portion of the push-to-video communication. An image controller 406 is coupled to both the transmitter 402 and

the receiver 404, and is configured to determine whether to transmit the outbound image portion of the push-to-video communication. A display 408, which is coupled to the image controller 406, is configured to display the outbound image portion of the push-to-video communication. An audio controller 410 is also coupled to both the transmitter 402 and the receiver 404, and is configured to determine whether to transmit the outbound audio portion of the push-to-video communication. The outbound audio portion of the push-to-video communication may include a recording stored in the communication device 110 in addition to a live audio captured by the communication device 110 as the audio portion 122 illustrated in FIGs. 1 and 2. A speaker 412 is coupled to the audio controller 410, and is configured to communicate the incoming audio portion of the push-to-video communication.

The communication device 110 further has an image control key 414, which is coupled to the image controller 406 and is configured to generate an image transmit signal and an image receive signal. The image transmit signal is configured to direct the image controller 406 to transmit the outbound image portion of the push-to-video communication, and the image receive signal is configured to direct the image controller 406 to receive the incoming image portion of the push-to-video communication. The image controller 406 is further configured to direct the transmitter 402 to continue transmitting the outbound image portion of the push-to-video communication after the image receive signal is generated until the receiver 404 receives the incoming image portion of the push-to-video communication. The display 408 is further configured to display the incoming image portion of the push-to-video communication after the image receive signal, which directs the image controller 406 to receive the incoming image portion of the push-to-video communication, is generated.

The communication device 110 also has an audio control key 416, which is coupled to the audio controller 410 and is configured to generate an audio transmit signal and an audio receive signal. The audio transmit signal is configured to direct the audio controller 410 to transmit the outbound audio portion of the push-to-video communication, and the audio receive signal is configured to direct the audio controller 410 to receive the incoming audio portion of the push-to-video

communication. The audio controller 410 is further configured to direct the transmitter 402 to continue transmitting the outbound audio portion of the push-to-video communication after the audio receive signal is generated until the receiver 404 receives the incoming audio portion of the push-to-video communication.

5 The display 408 may be further configured to display a source of a currently displayed image portion of the push-to-video communication and a source of a currently used audio portion of the push-to-video communication. The speaker 412 may be further configured to communicate the recorded audio as the outbound audio portion of the push-to-video communication.

10 While the preferred embodiments of the invention have been illustrated and described, it is to be understood that the invention is not so limited. Numerous modifications, changes, variations, substitutions and equivalents will occur to those skilled in the art without departing from the spirit and scope of the present invention as defined by the appended claims.

WHAT IS CLAIMED IS:

1. A communication device capable of push-to-video communication, the communication device comprising:
 - a transmitter configured to transmit an outbound image portion and an
 - 5 outbound audio portion of the push-to-video communication;
 - a receiver configured to receive an incoming image portion and an incoming audio portion of the push-to-video communication;
 - an image controller coupled to the transmitter and the receiver, the image controller configured to determine whether to transmit the outbound image portion of
 - 10 the push-to-video communication;
 - a display coupled to the image controller, the display configured to display the outbound image portion of the push-to-video communication;
 - an audio controller coupled to the transmitter and the receiver, the audio controller configured to determine whether to transmit the outbound audio portion of
 - 15 the push-to-video communication; and
 - a speaker coupled to the audio controller, the speaker configured to communicate the incoming audio portion of the push-to-video communication.
2. The communication device of claim 1, further comprising:
 - an image control key coupled to the image controller, the image control key
 - 20 configured to generate an image transmit signal and an image receive signal, wherein:
 - the image transmit signal is configured to direct the image controller to transmit the outbound image portion of the push-to-video communication, and
 - the image receive signal is configured to direct the image controller to receive the incoming image portion of the push-to-video communication.
- 25 3. The communication device of claim 2, wherein the image controller is further configured to direct the transmitter to continue to transmit the outbound image portion of the push-to-video communication after the image receive signal is generated until the incoming image portion of the push-to-video communication is received.

4. The communication device of claim 3, wherein the display is further configured to display the incoming image portion of the push-to-video communication after the image receive signal is generated.
5. The communication device of claim 4, further comprising:
5 an audio control key coupled to the audio controller, the audio control key configured to generate an audio transmit signal and an audio receive signal, wherein:
the audio transmit signal is configured to direct the audio controller to transmit the outbound audio portion of the push-to-video communication, and
the audio receive signal is configured to direct the audio controller to receive
10 the incoming audio portion of the push-to-video communication.
6. The communication device of claim 5, wherein the audio controller is further configured to direct the transmitter to continue to transmit the outbound audio portion of the push-to-video communication after the audio receive signal is generated until the incoming audio portion of the push-to-video communication is received.
- 15 7. The communication device of claim 6, wherein the display is further configured to display a source of a currently displayed image portion of the push-to-video communication and a source of a currently used audio portion of the push-to-video communication.
8. The communication device of claim 1, wherein the outbound image portion
20 includes at least one of:
a recorded image stored in the communication device, the recorded image including a still image and a streaming video, and
a live image captured by the communication device.

9. The communication device of claim 1, wherein the outbound audio portion of the push-to-video communication includes at least one of:

an recorded audio stored in the communication device, and
a live audio captured by the communication device.

5 10. The communication device of claim 9, wherein the speaker is further configured to communicate the recorded audio.

11. A method in a communication device for controlling an image portion and an audio portion of a push-to-video communication, the method comprising:
- initiating the push-to-video communication;
 - establishing the push-to-video communication;
 - 5 transmitting the image portion and the audio portion of the push-to-video communication; and
 - making available control of at least one of the image and audio portions of the push-to-video communication.

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FIG. 1

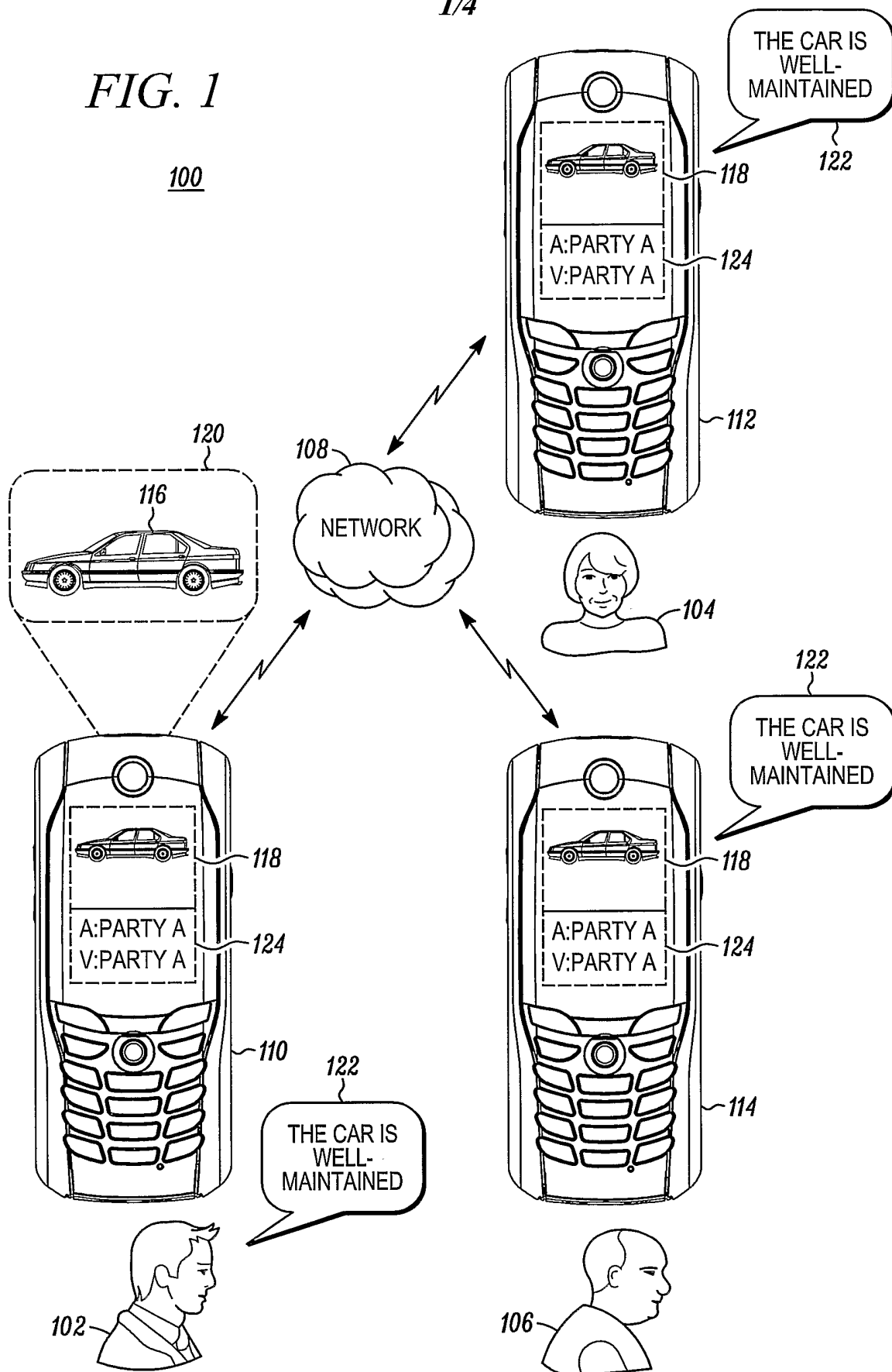
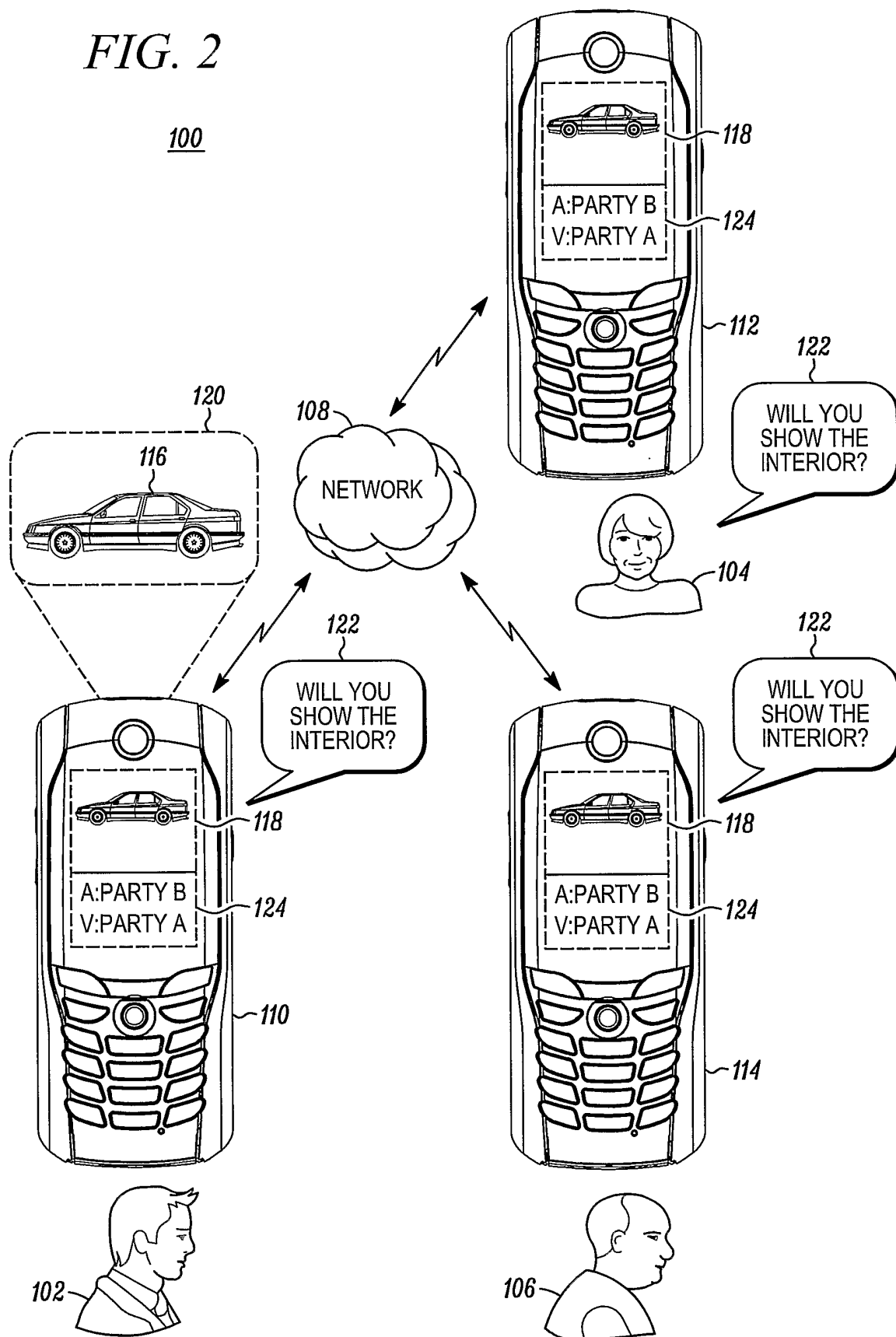
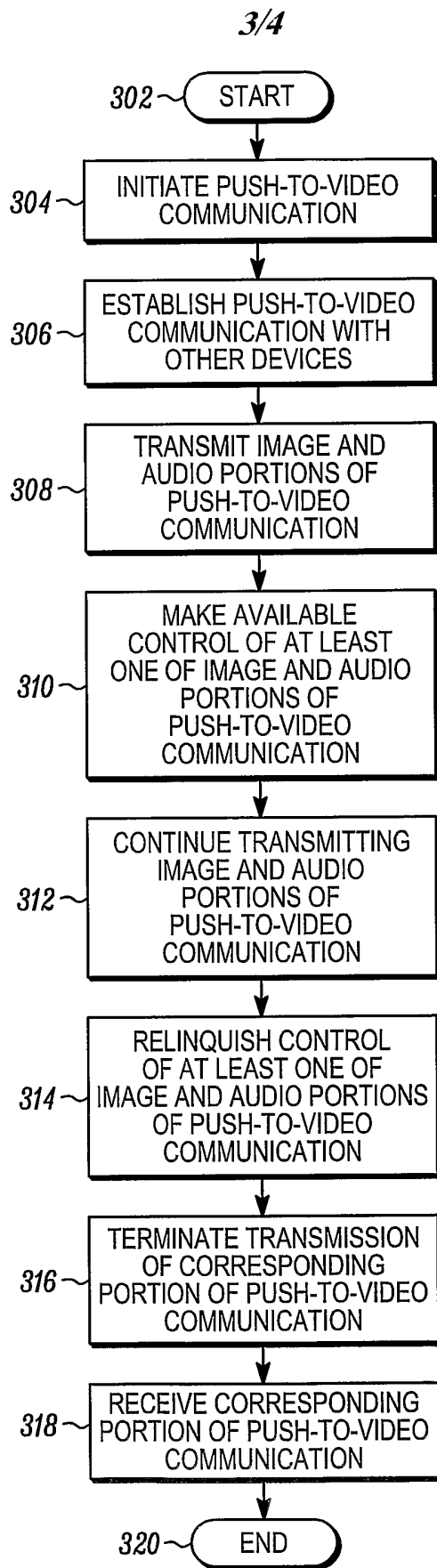


FIG. 2

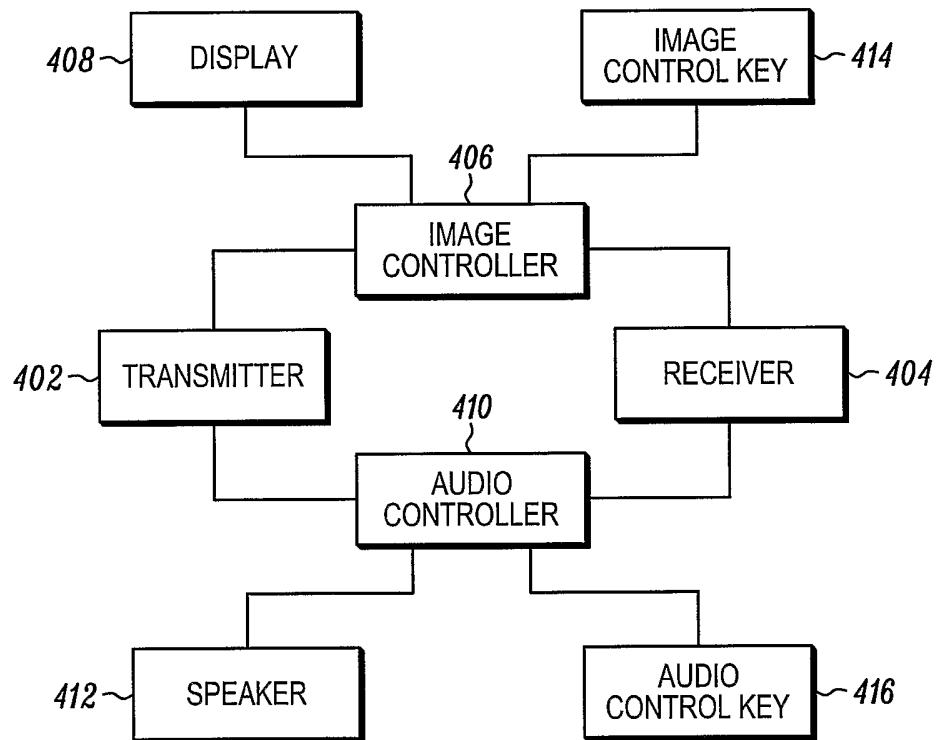




300

FIG. 3

4/4

110*FIG. 4*

INTERNATIONAL SEARCH REPORT

International application No

 /US2005/033663

A. CLASSIFICATION OF SUBJECT MATTER
H04N7/14

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)
H04N

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/63773 A (ORANGE PERSONAL COMMUNICATIONS SERVICES LIMITED; STUBBS, MARTIN) 9 December 1999 (1999-12-09) page 8, line 18 - page 9, line 3 page 23, line 20 - page 25, line 19 page 26, line 7 - page 27, line 23 page 29, line 7 - line 15 figures 9,12	1-11
A	----- "Comverse demonstrates Push to Show Video Walkie-Talkie service using IP multimedia subsystem (IMS) capabilities as part of its total communication portfolio" INTERNET, 7 October 2003 (2003-10-07), XP002282079 -----	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"&" document member of the same patent family

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