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which local network may or may not have connections to the Internet. Also shown as part of system **40** is power supply unit **45** connected, in this example, to a main alternating current (AC) supply **46**. Not shown are batteries that could be present, and many other devices and modifications that are well known but are not applicable to the specific novel functions of the current system and method disclosed herein. It should be appreciated that some or all components illustrated may be combined, such as in various integrated applications, for example Qualcomm or Samsung system-on-a-chip (SOC) devices, or whenever it may be appropriate to combine multiple capabilities or functions into a single hardware device (for instance, in mobile devices such as smartphones, video game consoles, in-vehicle computer systems such as navigation or multimedia systems in automobiles, or other integrated hardware devices).

In various embodiments, functionality for implementing systems or methods of various embodiments may be distributed among any number of client and/or server components. For example, various software modules may be implemented for performing various functions in connection with the system of any particular aspect, and such modules may be variously implemented to run on server and/or client components.

The skilled person will be aware of a range of possible modifications of the various embodiments described above. Accordingly, the present invention is defined by the claims and their equivalents.

ADDITIONAL CONSIDERATIONS

As used herein any reference to “one embodiment” or “an embodiment” means that a particular element, feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment. The appearances of the phrase “in one embodiment” in various places in the specification are not necessarily all referring to the same embodiment.

Some embodiments may be described using the expression “coupled” and “connected” along with their derivatives. For example, some embodiments may be described using the term “coupled” to indicate that two or more elements are in direct physical or electrical contact. The term “coupled,” however, may also mean that two or more elements are not in direct contact with each other, but yet still co-operate or interact with each other. The embodiments are not limited in this context.

As used herein, the terms “comprises,” “comprising,” “includes,” “including,” “has,” “having” or any other variation thereof, are intended to cover a non-exclusive inclusion. For example, a process, method, article, or apparatus that comprises a list of elements is not necessarily limited to only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus. Further, unless expressly stated to the contrary, “or” refers to an inclusive or and not to an exclusive or. For example, a condition A or B is satisfied by any one of the following: A is true (or present) and B is false (or not present), A is false (or not present) and B is true (or present), and both A and B are true (or present).

In addition, use of the “a” or “an” are employed to describe elements and components of the embodiments herein. This is done merely for convenience and to give a general sense of the invention. This description should be read to include one or at least one and the singular also includes the plural unless it is obvious that it is meant otherwise.

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Upon reading this disclosure, those of skill in the art will appreciate still additional alternative structural and functional designs for a system and/or a process associated with the disclosed principles herein. Thus, while particular embodiments and applications have been illustrated and described, it is to be understood that the disclosed embodiments are not limited to the precise construction and components disclosed herein. Various apparent modifications, changes and variations may be made in the arrangement, operation and details of the method and apparatus disclosed herein without departing from the spirit and scope defined in the appended claims.

What is claimed is:

1. A computer implemented method for managing user communication within a single call session, the computer implemented method comprising:

intercepting and managing, by a server, a communications session initiated by a user device over a communications network, the communications session being initiated between at least a sender user device and a recipient user device, the sender user device associated with a sender address, wherein the intercepting comprises extracting sender address from incoming call signalling and establishing a session identifier that maintains continuity throughout subsequent routing and messaging operations without terminating the video communications session and without establishing a new dialog, connection, or security context;

querying to obtain a recipient user decision tree instructions from a database, wherein the decision tree instructions comprise hierarchical rule structure comprising sender classification rules, time-based routing rules, and/or availability dependent routing rule;

computing an availability status by querying the recipient user device and receiving an availability response from the recipient user device;

algorithmically generating routing instructions by comparing the decision tree instructions, sender address, and the computed availability status, wherein the routing instructions comprise instructions for streaming a pre-recorded message through the server;

selecting a pre-recorded media file from a plurality of pre-recorded media files stored in the database in substantially real time based on user decision tree instructions and sender address;

executing the routing instructions by retrieving the selected pre-recorded media file from the database and streaming the selected pre-recorded media file from the database through the server to an audio/visual interface associated with the sender user device;

wherein the video communication session is maintained without termination throughout the various routing and streaming steps and wherein the various routing and streaming steps are associated with the session identifier from interception to streaming of the selected pre-recorded media file, and wherein the server, the database, the sender user device, and the recipient user device operate with the same session identifier for the entire video communication session; and

transmitting a notification to the recipient user device wherein all routing, streaming, and reply capture operations are executed under a single session authority boundary defined by the established session identifier, and wherein no new session authority is created during retrieval or streaming of the prerecorded media file.

2. The computer implemented method according to claim 1, wherein the video communications session is a Session

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Initiation Protocol, SIP, dialog, and streaming the selected pre-recorded media file further comprises delivering a pre-recorded video as early media by sending a Session Progress with Session Description Protocol (SDP) and streaming the prerecorded video over a negotiated SRTP path without answering toward the caller.

3. The computer implemented method according to claim 2, further comprising capturing a reply in the same session by issuing an in-dialog re-INVITE or UPDATE that requests upstream media from the sender device.

4. The computer implemented method according to claim 1, wherein the decision tree is keyed to the sender address and includes conditions selected from time of day, specific date, caller identity, caller category, and/or a no-message option.

5. The computer implemented method according to claim 1, wherein the selected pre-recorded media file may comprise a pre-recorded video message, a text message sent to the sender through SMS, and/or prompting the sender to record a video message.

6. The computer implemented method according to claim 5, further comprising automatically prompting the sender user device to capture and transmit response data; and storing the response data on the video-voicemail database.

7. The computer implemented method according to claim 6, wherein the response data comprises recording a video and/or audio message.

8. The computer implemented method according to claim 7, further comprising applying an artificial intelligence processor to generate a written transcript and/or a written description of the video and/or audio message.

9. The computer implemented method according to claim 6, further comprising enabling playback of the response data within a message center on the recipient user device.

10. The computer implemented method according to claim 1, wherein the video communications session is a WebRTC PeerConnection, and streaming the selected pre-recorded media file further comprises injecting a pre-recorded video as a remote media track on the existing connection.

11. The computer implemented method according to claim 10, further comprising capturing a reply by replace-Track and/or addTransceiver to obtain media from the sender device without creating a new connection or performing a new ICE/DTLS handshake.

12. The computer implemented method according to claim 1, further comprising capturing and storing session data in the database, wherein the session data comprises start and end times of calls, the parties involved, and any specific actions taken during the call.

13. The computer implemented method according to claim 12, further comprising enabling access to the call data to an administrator user.

14. The computer implemented method according to claim 12, further comprising calculating billing information based on the call data and automatically generating invoices and/or reports associated with the call data.

15. The computer implemented method according to claim 1, wherein streaming the selected pre-recorded media file to the sender user device further comprises encrypting the prerecorded message prior to transmission.

16. The computer implemented method according to claim 14, wherein encrypting the prerecorded message comprises applying Advanced Encryption Standard (AES), Rivest-Shamir-Adleman (RSA), and/or third party platforms.

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17. The computer implemented method according to claim 1, further comprising applying a machine learning algorithm to automatically modify the decision tree in response to the recipient's behavior and/or the responses of the senders to different automated responses.

18. The computer implemented method according to claim 1, wherein the user decision tree instructions further comprise a wait time preference and wherein algorithmically generating routing instructions further comprises a delay based on the wait time preferences.

19. A computing system for managing user communication within a single call session, the computing system comprising:

at least one computing processor; and

memory comprising instructions that, when executed by the at least one computing processor, enable the computing system to:

intercepting and managing, by a server, a communications session initiated by a user device over a communications network, the communications session being initiated between at least a sender user device and a recipient user device, the sender user device associated with a sender address, wherein the intercepting comprises extracting sender address from incoming call signalling and establishing a session identifier that maintains continuity throughout subsequent routing and messaging operations without terminating the video communications session and without establishing a new dialog, connection, or security context;

querying to obtain a recipient user decision tree instructions from a database, wherein the decision tree instructions comprise hierarchical rule structure comprising sender classification rules, time-based routing rules, and/or availability dependent routing rule;

computing an availability status by querying the recipient user device and receiving an availability response from the recipient user device;

algorithmically generating routing instructions by comparing the decision tree instructions, sender address, and the computed availability status, wherein the routing instructions comprise instructions for streaming a pre-recorded message through the server;

selecting a pre-recorded media file from a plurality of pre-recorded media files stored in the database in substantially real time based on user decision tree instructions and sender address;

executing the routing instructions by retrieving the selected pre-recorded media file from the database and streaming the selected pre-recorded media file from the database through the server to an audio/visual interface associated with the sender user device;

wherein the video communication session is maintained without termination throughout the various routing and streaming steps and wherein the various routing and streaming steps are associated with the session identifier from interception to streaming of the selected pre-recorded media file, and wherein the server, the database, the sender user device, and the recipient user device operate with the same session identifier for the entire video communication session; and

transmitting a notification to the recipient user device wherein all routing, streaming, and reply capture operations are executed under a single session authority boundary defined by the established session identifier, and wherein no new session authority is created during retrieval or streaming of the prerecorded media file.

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20. A non-transitory computer readable medium comprising instructions that when executed by a processor enable the processor to execute a computer implemented method, the method comprising:

intercepting and managing, by a server, a communications session initiated by a user device over a communications network, the communications session being initiated between at least a sender user device and a recipient user device, the sender user device associated with a sender address, wherein the intercepting comprises extracting sender address from incoming call signalling and establishing a session identifier that maintains continuity throughout subsequent routing and messaging operations without terminating the video communications session and without establishing a new dialog, connection, or security context; querying to obtain a recipient user decision tree instructions from a database, wherein the decision tree instructions comprise hierarchical rule structure comprising sender classification rules, time-based routing rules, and/or availability dependent routing rule; computing an availability status by querying the recipient user device and receiving an availability response from the recipient user device; algorithmically generating routing instructions by comparing the decision tree instructions, sender address, and the computed availability status, wherein the routing

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ing instructions comprise instructions for streaming a pre-recorded message through the server; selecting a pre-recorded media file from a plurality of pre-recorded media files stored in the database in substantially real time based on user decision tree instructions and sender address; executing the routing instructions by retrieving the selected pre-recorded media file from the database and streaming the selected pre-recorded media file from the database through the server to an audio/visual interface associated with the sender user device; wherein the video communication session is maintained without termination throughout the various routing and streaming steps and wherein the various routing and streaming steps are associated with the session identifier from interception to streaming of the selected pre-recorded media file, and wherein the server, the database, the sender user device, and the recipient user device operate with the same session identifier for the entire video communication session; and transmitting a notification to the recipient user device wherein all routing, streaming, and reply capture operations are executed under a single session authority boundary defined by the established session identifier, and wherein no new session authority is created during retrieval or streaming of the prerecorded media file.

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