

VIRTUAL DEVICE BASED CAPTURING OF INSTANT MESSAGES**TECHNICAL FIELD**

[0001] The present disclosure relates to interactive communications. More particularly, the present disclosure relates to a system that enables a virtual device (VD) or an application configured therein to record and monitor instant messaging (IM) chats taking place between two or more users.

BACKGROUND

[0002] Background description includes information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] In today's time when use of and reliance on communication devices (such as smart phones) has increased manifold and has become almost irreplaceable, applications such as instant messaging (IM) platforms/applications (such as WhatsappTM, LineTM, WeChatTM, etc.) have also become very important for enabling communications between clients and service providers and also for other business purposes. However, even though such applications have become indispensable, security and compliance monitoring of communications that take place using such platforms is also growing in priority. For instance, if a bank employee is communicating with a client on queries/orders of the client or financial advisory in general, it is important for the bank to be kept informed and retain a record on the communications that the bank employee is doing, which existing platforms/applications do not provide.

[0004] Existing solutions require banks/financial institutions and other business entities to create their own IM platforms so that communication through such platforms can be monitored/recorded. However, such solutions are rigid and mandate each client/customer of the business entity also use the same IM platform, which the clients/customers may not be comfortable with. Most such platforms also do not allow real-time analytics/decision making to be performed on communication taking place between two ends/parties such as banker/bank employee and client/customer. Existing customized platforms further do not enable intervention/communication by a third party/monitoring device/person who is logging/recording the communication and therefore monitoring devices are only logging the

communication/data and not analyzing it in real-time and replying back to one or more communications or taking allied actions such as blocking some communication, auto-forwarding a part of the communication to another banker/employee/department, and so on. Furthermore, as also mentioned above, existing architectures/solutions/platforms do not support heterogeneity (i.e. they don't support multiple different IM platforms), and therefore need each party to have the same customized IM platform in order to monitor communication. Such rigidity makes it unacceptable to most clients such as high value clients who have their own preferred IM platform that they wish to use (be served in) while communicating with one or more entities.

[0005] There is therefore a need in the art for a system and method that allows enterprises to capture, store, analyze, and perform other desired actions on communications that are taking place between two or more users through one or more IM platforms.

[0006] All publications herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

[0007] In some embodiments, the numbers expressing quantities of ingredients, properties such as concentration, reaction conditions, and so forth, used to describe and claim certain embodiments of the invention are to be understood as being modified in some instances by the term “about”. Accordingly, in some embodiments, the numerical parameters set forth in the written description and attached claims are approximations that can vary depending upon the desired properties sought to be obtained by a particular embodiment. In some embodiments, the numerical parameters should be construed in light of the number of reported significant digits and by applying ordinary rounding techniques. Notwithstanding that the numerical ranges and parameters setting forth the broad scope of some embodiments of the invention are approximations, the numerical values set forth in the specific examples are reported as precisely as practicable. The numerical values presented in some embodiments of the invention may contain certain errors necessarily resulting from the standard deviation found in their respective testing measurements.

[0008] As used in the description herein and throughout the claims that follow, the meaning of “a,” “an,” and “the” includes plural reference unless the context clearly dictates

otherwise. Also, as used in the description herein, the meaning of “in” includes “in” and “on” unless the context clearly dictates otherwise.

[0009] The recitation of ranges of values herein is merely intended to serve as a shorthand method of referring individually to each separate value falling within the range. Unless otherwise indicated herein, each individual value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g. “such as”) provided with respect to certain embodiments herein is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the invention.

SUMMARY

[0010] The present disclosure relates to interactive communications. More particularly, the present disclosure relates to a system that enables a virtual device (VD) or an application configured therein to record and monitor instant messaging (IM) chats taking place between two or more users.

[0011] In an aspect, the present disclosure relates to a virtual device (VD) configured in a computing device, and having at least one Instant Messaging (IM) platform configured therein, wherein the VD is configured to receive an add request from a first member of a chat session taking place on the IM platform such that when the VD accepts the add request, the VD receives communication taking place between the first member and a second member.

[0012] It should be appreciated that VD or communication platform configured therein can be also referred to as a chatbot hereinafter, wherein, in an exemplary implementation, either the chatbot receives a request from a user of an ongoing chat session to join the chat session, or the chatbot sends a request to any/all user(s) of the ongoing chat session for joining the session.

[0013] In another aspect, the received communication at the VD can be logged in a storage device that can be operatively coupled with the VD, wherein the logged communication can be analyzed manually or automatically to generate one or more responses, or enable one or more actions to be taken. In an aspect, at least one of the generated one or more responses can be added to the chat session by the VD.

[0014] In an aspect, the VD can be configured with and compatible to a plurality of IM platforms (such as WhatsappTM, WeChatTM, etc.), wherein the VD can form part of more than one chat session at a given time. In another aspect, the add request sent, by the first member of the ongoing chat session, to the VD can be issued using a unique identifier of the VD, wherein, in an exemplary instance, the unique identifier can be phone number that has been mapped to the VD. In another aspect, the computing device can be a server/cloud that can include a plurality of VDs.

[0015] The present disclosure further relates to a method of enabling logging of communication taking place in a chat session between two or more members, said method comprising the steps of receiving, at a virtual device (VD) configured in a server, a request to add the VD to the chat session; accepting, at the VD, the request; and enabling the VD to receive communication taking place between the two or more members during the chat session.

[0016] Various objects, features, aspects and advantages of the inventive subject matter will become more apparent from the following detailed description of preferred embodiments, along with the accompanying drawing figures in which like numerals represent like components.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The accompanying drawings are included to provide a further understanding of the present disclosure, and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the present disclosure and, together with the description, serve to explain the principles of the present disclosure.

[0018] FIGs. 1A and 1B illustrate exemplary manner in which aspects of the present invention can be implemented.

[0019] FIG. 2 illustrates an exemplary flow diagram indicating implementation of VD to connect a client C with a banker B in accordance with an embodiment of the present disclosure.

[0020] FIG. 3 illustrates an exemplary system configured in a virtual device (VD) in accordance with an embodiment of the present disclosure.

[0021] FIG. 4 illustrates an exemplary computing architecture of the proposed system in accordance with an embodiment of the present disclosure.

[0022] FIG. 5 illustrates an exemplary implementation of the proposed system in

accordance with an embodiment of the present disclosure.

[0023] FIG. 6 illustrates an exemplary flow diagram showing implementation of the proposed VD in accordance with an embodiment of the present disclosure.

DETAILED DESCRIPTION

[0024] All publications herein are incorporated by reference to the same extent as if each individual publication or patent application were specifically and individually indicated to be incorporated by reference. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

[0025] As used in the description herein and throughout the claims that follow, the meaning of “a,” “an,” and “the” includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein, the meaning of “in” includes “in” and “on” unless the context clearly dictates otherwise.

[0026] The following is a detailed description of embodiments of the disclosure depicted in the accompanying drawings. The embodiments are in such detail as to clearly communicate the disclosure. However, the amount of detail offered is not intended to limit the anticipated variations of embodiments; on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the present disclosure as defined by the appended claims.

[0027] Each of the appended claims defines a separate invention, which for infringement purposes is recognized as including equivalents to the various elements or limitations specified in the claims. Depending on the context, all references below to the "invention" may in some cases refer to certain specific embodiments only. In other cases it will be recognized that references to the "invention" will refer to subject matter recited in one or more, but not necessarily all, of the claims.

[0028] All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g. “such as”) provided with respect to certain embodiments herein is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the

invention.

[0029] Various terms are used herein. To the extent a term used in a claim is not defined below, it should be given the broadest definition persons in the pertinent art have given that term as reflected in printed publications and issued patents at the time of filing.

[0030] In the following description, numerous details are set forth. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form, rather than in detail, in order to avoid obscuring the present invention.

[0031] Reference throughout this specification to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, the appearance of the phrases "in one embodiment" or "in an embodiment" in various places throughout this specification are not necessarily all referring to the same embodiment. Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more embodiments.

[0032] Throughout the following discussion, numerous references will be made regarding servers, services, interfaces, engines, modules, clients, peers, portals, platforms, or other systems formed from computing devices. It should be appreciated that the use of such terms is deemed to represent one or more computing devices having at least one processor (e.g., ASIC, FPGA, DSP, x86, ARM, ColdFire, GPU, multi-core processors, etc.) configured to execute software instructions stored on a computer readable tangible, non-transitory medium (e.g., hard drive, solid state drive, RAM, flash, ROM, etc.). For example, a server can include one or more computers operating as a web server, database server, or other type of computer server in a manner to fulfill described roles, responsibilities, or functions. One should further appreciate the disclosed computer-based algorithms, processes, methods, or other types of instruction sets can be embodied as a computer program product comprising a non-transitory, tangible computer readable media storing the instructions that cause a processor to execute the disclosed steps. The various servers, systems, databases, or interfaces can exchange data using standardized protocols or algorithms, possibly based on HTTP, HTTPS, AES, public-private key exchanges, web service APIs, known financial transaction protocols, or other electronic information exchanging methods. Data exchanges can be conducted over a packet-switched network, a circuit-switched network, the Internet, LAN, WAN, VPN, or other type of network.

[0033] The terms "configured to" and "programmed to" in the context of a processor refer to being programmed by a set of software instructions to perform a function or set of functions.

[0034] The following discussion provides many example embodiments. Although each embodiment represents a single combination of components, this disclosure contemplates combinations of the disclosed components. Thus, for example, if one embodiment comprises components A, B, and C, and a second embodiment comprises components B and D, then the other remaining combinations of A, B, C, or D are included in this disclosure, even if not explicitly disclosed.

[0035] As used herein, and unless the context dictates otherwise, the term "coupled to" is intended to include both direct coupling (in which two elements that are coupled to each other contact each other) and indirect coupling (in which at least one additional element is located between the two elements). Therefore, the terms "coupled to" and "coupled with" are used synonymously.

[0036] In some embodiments, numerical parameters expressing quantities are used. It is to be understood that such numerical parameters may not be exact, and are instead to be understood as being modified in some instances by the term "about." Accordingly, in some embodiments, a numerical parameter is an approximation that can vary depending upon the desired properties sought to be obtained by a particular embodiment.

[0037] Unless the context dictates the contrary, ranges set forth herein should be interpreted as being inclusive of their endpoints and open-ended ranges should be interpreted to include only commercially practical values. The recitation of ranges of values herein is merely intended to serve as a shorthand method of referring individually to each separate value falling within the range. Unless otherwise indicated herein, each individual value within a range is incorporated into the specification as if it were individually recited herein. Similarly, all lists of values should be considered as inclusive of intermediate values unless the context indicates the contrary.

[0038] Groupings of alternative elements or embodiments of the inventive subject matter disclosed herein are not to be construed as limitations. Each group member can be referred to and claimed individually or in any combination with other members of the group or other elements found herein. One or more members of a group can be included in, or deleted from, a group for reasons of convenience and/or patentability. When any such inclusion or deletion occurs, the specification is herein deemed to contain the group as

modified thus fulfilling the written description of all Markush groups used in the appended claims.

[0039] This disclosure allow for construction or configuration of a computing system or device to operate on vast quantities of digital data, beyond the capabilities of a human. The computing system or device is able to manage the digital data in a manner that could provide utility to a user of the computing system or device that the user would lack without such a tool.

[0040] The present disclosure relates to interactive communications. More particularly, the present disclosure relates to a system that enables a virtual device (VD) or an application configured therein to record and monitor instant messaging (IM) chats taking place between two or more users.

[0041] In an aspect, the present disclosure relates to a virtual device (VD) configured in a computing device and having at least one Instant Messaging (IM) platform configured therein, wherein the VD is configured to receive an add request from a first member of a chat session taking place on the IM platform such that when the VD accepts the add request, the VD receives communication taking place between the first member and a second member.

[0042] In an aspect, the received communication at the VD can be logged in a storage device that is operatively coupled with the VD, wherein the logged communication can be analyzed manually or automatically to generate one or more responses or enable one or more actions to be taken. In an aspect, at least one of the generated one or more responses is added to the chat session by the VD.

[0043] In an aspect, the VD can be configured with and be compatible to a plurality of IM platforms, and wherein the VD forms part of more than one chat session at a given time.

[0044] In another aspect, the add request can be issued by the first member using a unique identifier of the VD, wherein the unique identifier is phone number mapped to the VD.

[0045] In an aspect, the computing device can be a server that can include plurality of VDs, wherein at least one VD can be capable of creating, updating, modifying, or deleting one or more chat sessions.

[0046] In an aspect, the first member and the second member can be selected from a bank representative of a bank and a client of the bank.

[0047] The present disclosure further relates to a method of enabling logging of

communication taking place in a chat session between two or more members, said method comprising the steps of: receiving, at a virtual device (VD) configured in a server, a request to add the VD to the chat session; accepting, at the VD, the request; and enabling the VD to receive communication taking place between the two or more members during the chat session.

[0048] The present disclosure further relates to a method of enabling logging of communication that is to take place in a chat session between two or more members, said method comprising the steps of: enabling a first member of the two or more members to log into a virtual device (VD); enabling the first member to, using the VD, initiate a chat session or a request therefore to a second member of the two or more members, wherein said chat session is to be initiated using an Instant Messaging (IM) platform configured in the VD; and initiating the chat session between the first member and the second member in a manner such that communication log of the chat session is recorded in the VD. In an aspect, the first member can be authenticated before being logged into the VD. The first member may be remotely logged into the VD. Furthermore, the first member may not be allowed to initiate the chat session with the second member from his/her own computing device.

[0049] The present disclosure further relates to a method of enabling logging of communication that is to take place in a chat session between two or more members, said method comprising the steps of: receiving, at a virtual machine (VM), a request for initiating the chat session between a first member and a second member selected from the two or more members; initiating, at the VM, the chat session based on the received request and inviting said first member and said second member to join said chat session; and logging, by means of an Instant Messaging (IM) platform that is configured at the VM, communication that takes place between the first member and the second member as part of the initiated chat session, wherein the VM, through IM platform, also becomes part of the chat session. In an aspect, the request can be received by the VM from either the first member, or from the second member, or from a third party. Furthermore, the VM can initiate the chat session only when a separate chat session between the first member and the second member does not already exist. Furthermore, the first member and the second member can be selected from a bank representative of a bank and a client of the bank. In another aspect, the VM can authenticate each member before adding the member to the chat session.

[0050] The present disclosure relates to a system that enables a virtual device (VD) or an application configured therein to record and monitor instant messaging (IM) chats taking

place between two or more users.

[0051] In an aspect, VD (going forward, reference to VD to include a first application such as an Instant Messaging (IM) client application, and include a second application that is a mining (also referred to as “recording”) application) of the present disclosure can be associated with a mobile phone number or other forms of user ID recognized by IM platform, using which the VD can be automatically or manually added to a data channel that exists between two or more users that are communicating through same or different IM platforms such as WhatsappTM, WeChatTM, LineTM, among many other messaging platforms. For instance, a first user and/or a second user can add the VD to his chat user interface by manually adding the VD’s user ID (recognized by the IM platform such as phone number, email, unique identifier, social media handle, etc.) so that VD explicitly becomes a member of the chat that is going on between the first user and the second user. Once the VD becomes a member of the ongoing chat session, VD can receive all the interactions/messages being communicated between the two or more users and log/store them in, for instance, a database that is operatively coupled with the VD using its mining application. Such a database/storage can then be analysed in real-time or at any future date for extracting desired information on the kind of communication taking place between the two or more users. Any other operation and search can also be performed on such a database that takes input from one or multiple such VDs.

[0052] In an aspect, the present disclosure proposes a monitoring system/architecture configured in a server/cloud that comprises one or more virtual devices (VDs), each VD having at least one IM chat platform client and being associated with a mobile SIM/number using which the VD can be added as a party/entity to an existing data channel being used for communication between two or more parties. It should be appreciated that each VD can also be compatible with one or more heterogeneous IM platforms. For instance, a given VD having an identifier 9823 and having a mobile number 9810617992 can have WhatsappTM as well as WeChatTM installed/configured in it and therefore the same VD can be added to two different sessions, one happening between say client-1 and banker-1 using WhatsappTM, and another session happening between say client-2 and banker-2 using WeChatTM. The proposed monitoring system therefore supports access to heterogeneous encrypted chat sessions across one or more IM/messaging platforms. The proposed system also bypasses encryption as the VD is compatible and has respective IM platforms installed therein.

[0053] In an aspect, VDs can appear as any other instant message-

producing/consuming entity, and therefore a user can send an instant message to the virtual device by specifying its unique identifier such as mobile phone. VD may publish its presence attributes, which can be perceived by other instant message-capable systems within the instant messaging infrastructure. VDs can be configured, using instant messaging or other mechanisms, to send instant message notifications. In an aspect, VD can reside on a server on the Internet, on a home computer, on a service provider's system, or elsewhere. In general, the VD utilizes network connectivity to actual devices or information objects that it represents. However, such connectivity only requires that the device content and status be made accessible so that it can be translated as needed into instant messages. A set of virtual devices may be provided by a single system, or there can be multiple instantiations of the implementation system, one per virtual device instance. A virtual device could be implemented as a server, web server, proxy, gateway, or other intermediary architectures. The virtual device may be implemented to support object-oriented properties, including persistence, reusability, inheritance, and the like.

[0054] In an exemplary implementation, with respect to FIG. 1A, system 100 of the present disclosure can include a bank client 102 (also referred to as a “consumer” or simply as a “client” hereinafter) establishing a data channel 106 (say through chat session) using any of the above mentioned IMs with a bank employee 104 (also referred to as a bank representative or relationship manager or client representative or any other equivalent term hereinafter), wherein in case the bank or any other regulatory body requires that all communication taking place using the data channel (say using a WeChat™ IM platform) between the client 102 and the bank employee 104 be recorded, the bank or any other third party provider can, as shown in FIG. 1B, configure a VD 152 (also interchangeably referred to as a virtual machine (VM) or chatbot hereinafter) having a phone/mobile number 154 or corresponding user ID recognized by IM platform to be associated with the data channel that has been configured between the client 102 and the bank employee 104. Such association can be enabled by requiring the client 102 and/or the bank employee 104 to add VD's user ID (recognized by the IM platform such as phone number, email, among others) to the chat that is taking place, thereby creating second data channel (or chatgroup that includes bank employee 104, client 102, and VD 152) or in an event where the aforesaid cannot be done, highlighting and/or directing attention of bank employee 104 and client 102 to an existing second data channel or group chat (that already includes bank employee 104, client 102, and VD 152) with some notification message or other means to both parties (102 and 104) so that

all communication between the client 102 and the employee 104 is logged by VD 152 .

[0055] In an aspect, such communication between the parties such as 102 and 104 can include, but is not limited to, any text, audio, video, or any other multimedia communication that is taking place between two or more users of a chat session and is intended to be recorded in the storage device that is operatively coupled with the VD.

[0056] It would be appreciated that although the present disclosure has been explained with reference to data channel being created between a first user (say a client) and a second user (say a bank employee/representative/banker), which data channel is then intervened through a VD-initiated channel (by addition of VD's user ID recognized by the IM platform such as phone number, email, etc) to the chat session between the users, aspects of the present disclosure can always cover the VD based channel being added to a IM-based group chat session having more than two users. For instance, a CEO can create a WhatsappTM group chat session while addressing his/her board of directors, in which case, VD of the present disclosure can be added to the group chat session (by any member of the group chat or by group admins) to enable monitoring/recording of communication from the CEO to the board of directors.

[0057] In another exemplary use case, a Wealth Advisor can create a group chat session with his/her team of assistants and his client, in which case VD of the present disclosure can be added to the group chat session by the group admin of the group chat (usually the wealth Advisor) or any other group admin assigned by him.

[0058] In another embodiment, it is to be appreciated that VD (or application configured therein) can be compatible with multiple IM platforms, i.e. a given VD can intervene/intercept communication taking place using a WhatsappTM based data channel as well as, at the same time, intervene/intercept communication taking place using a WeChatTM.

[0059] In another exemplary implementation, VD of the present disclosure can be configured to, based on its configuration, respond to one or more types of communications from any or both of the at least 2 users. For instance, in case a client (first user) asks for bank balance of his/her account from the second user (bank employee) in a chat session that VD is a part of, VD can automatically access the account details of the first user (based on rights given to the VD) and respond back automatically to the user on the same data channel itself.

[0060] In an aspect, VD of the present disclosure can also be configured to respond to one or more chats/communications taking place during a chat session that VD is a part of, or block one or more of such communications or its user (say when they are abusive or

unrelated to the purpose), or can also generate one or more compliance alerts to necessary stakeholders that may or may not include the members of the chat session. Information relating to such actions of the VD can also be logged/stored in the server/storage device/database that the VD is operatively coupled to.

[0061] In an aspect, VD of the present disclosure may require root/superuser access to the host platform or virtual container where IM application platform is installed in order to interface with the IM application to monitor or capture its messages. Mining application configured in the VD of the present disclosure can be configured to transmit all or a configured part of the data communication being captured in the IM application that is configured in the VD (say in real-time) to a database/server/storage device that the VD is operatively coupled to, which database/server/storage device can also be configured to, in real-time, perform (or enable performance of) one or more analytics on the received/logged so that meaningful information can be captured and presented immediately to the necessary stakeholders.

[0062] In another aspect, VD of the present disclosure may require, in certain IM platforms, a method to perform screen capture/ screen-scraping and/or use a virtual keyboard to enable VD to perform its functions of capturing messages from chats and/or transmitting messages into chats respectively.

[0063] In yet another aspect, IM platform of the present disclosure can be configured to directly interface with IM platform API's or bot SDKs to perform the intended functionality.

[0064] In an aspect, system of the present disclosure can include one or more VD's, each VD having one or more IM platforms, and each IM platform being capable of enabling one or more chat sessions to be initiated/monitored/analyzed/responded.

[0065] In an aspect, when VD becomes a part of the chat session, VD can be enabled to determine/ retrieve member information of the chat session and enable/disable/configure its functionality based characteristics derived from the retrieved member information or based on any other parameter of the chat session.

[0066] In another aspect, real-time chat context may be used to trigger certain responses/functionalities.

[0067] In another aspect, VD device may be configured to receive a message from a first user (client), and retrieve client information relating to the first user based on the message or user ID. It may then appropriately identify and highlight an existing group chat

session (which already includes first user, second user, and VD) for the first user's and second user's attention to be directed into groupchat with some notification message sent to the existing group chat or VD may create a new group chat session with a respective second user to enable communication between the first user and the second user, which communication can also be logged/captured by the VD.

[0068] In an exemplary implementation, VD of the present disclosure can be an Android™ based VD that can be created on a server or can be a real Android™ device. Any other operating system based device/VD implementation is completely within the scope of the present disclosure. As mentioned disclosure, VD of the present disclosure enables IM data (chat communication) to be pushed to the server or any other configured storage device. Aspects of the present disclosure can be configured to control the VD and IM platform(s) configured therein, wherein such aspects can be implemented, for instance, by means of an automation tool that interacts with user interface (UI) of IM as well as interact at code level or API level with the VD to perform any or a combination of creation of chat groups, deletion of chat groups, management of IM, generation of operation logs, and other management and hygiene functions.

[0069] It would be appreciated that although the above exemplary implementation has been described with a situation where user of an ongoing chat session adds the VD, any other potential implementation that enables VD/VM to become part of a chat session is completely within the scope of the present disclosure. For instance, in another exemplary implementation, chatbot/VD can create chat session(s) (also interchangeably referred to as chat group(s)) between a bank representative (BR) and the client. Such a session can either be pre-created or can be created on an explicit request by any of the client or the BR. Such a request can also be sent a bank administrator or a client advisor in a manner such that the request can be processed and a chat group/session can be created and then client and the BR are invited to join the same, which enables the VD to log all communication that takes place in the chat group/session. In another exemplary implementation, it is possible that the BR adds chatbot or VD based IM to an existing chat group. In such a case, the chatbot can check if such a group exists and join the same if it exists else can create a new chat group/session. In yet another exemplary implementation, the BR can get direct access to the VD and to the IM inside it, and therefore the BR uses this VM/VD to chat directly with the client. Such an implementation therefore may not need three devices to be a part of the chat session/group, as the BR may be necessitated by the bank to always log into the VD to authenticate himself and

use the VD's IM platform to initiate the chat so that the logging is more efficient and optimal. Also, in such a case, BR may not be allowed to use his own personal/official device to initiate a chat session/group with the client and be mandated to log into the VD and use the IM platform configured/implemented/installed therein. In an aspect, BR can access such remote VD from anywhere via any desktop or mobile through an appropriately configured remote access tool. Also, VD UI can be customised in a manner such that the BR feels aligned with the VD and feels native. All the above are therefore exemplary implementations and any other means that enables recording of communication that takes place between BR and client is well within the scope of the present disclosure.

[0070] In an exemplary aspect, if, while logging chat communication, an error is encountered, screenshots can be taken of the communication/chat screen so as to capture the changes. Audio/Video chat sessions can also be appropriately recorded.

[0071] FIG. 2 illustrates an exemplary flow diagram 200 indicating implementation of VD to connect a client C 202 with a banker B 212. In an exemplary implementation, VD of the present invention can be configured in the form of a chatbot 206, or VD can include one or more different chatbots, each chatbot being either operatively compatible with different IM platforms or each chatbot only being compatible with one IM platform. Any other implementation is completely within the scope of the present disclosure. As shown, a client C 202 can initially send a message "xxx" to chatbot 206 through an IM server Single Chat session of C 204, based on which the chatbot 206 can retrieve, through a lookup table/database 208, if a group chat session for the client C 202 and his corresponding banker B 212 already exists, wherein in case the session already exists, the session 210 is initiated/enabled/activated to enable the banker B 212 and client C 202 to interact with each other. In an implementation, VD/chatbot 206 can be added to the group chat session 210 so that communication/data exchange between banker B 212 and client C 202 can be seen on the IM interface of the VD/chatbot 206 and recorded/logged in a database that the VD/chatbot 206 is operatively coupled to.

[0072] In the event an existing group chat does not exist (that includes first user, second user, and VD), and VD is unable to automatically create a new group chat session (that includes first user, second user, and VD), VD may send a notification message to second user (bank employee/banker) alerting him to create one group chat (for first user, second user, and VD) manually for himself, while sending a second notification message telling first user (client) to be wait for that groupchat creation. Alternately, in some cases, VD may send a

notification message to first user (client) alerting him to create one group chat by himself to include first user, second user, and VD. In the aforesaid paragraph, depending on expediency, the group administrator of the groupchat may also include or add in other parties into the group chat as well.

[0073] It should be appreciated that these are only exemplary implementations, and any other implementation that enables VD to participate in the communication between two or more users is completely within the scope of the present disclosure.

[0074] In an exemplary implementation, system of the present disclosure can include an operations tool that can be configured to create a group and add the VD (also referred to as chatbot or CB), client/customer, and banker/bank representative/client advisor, based on which when all the three stakeholders are added to the group, the client and the client advisor can initiate a discussion/communication that can be logged into the VD/chatbot. In case a group between the three stakeholders has already been created previously, the operations tool may not need to re-create another group and the VD/client/bank representative can automatically start communication within that group. It should be appreciated that creation and management of group may also be performed at the VD as well (instead of the operations tool).

[0075] FIG. 3 illustrates an exemplary system configured in a virtual device (VD) in accordance with an embodiment of the present disclosure. In an aspect, VD of the present disclosure can a non-transitory storage device having embodied therein one or more routines operable to facilitate contact discovery and discovery-based label updation, and one or more processors coupled to the non-transitory storage device and operable to execute the one or more routines, wherein the one or more routines can include an addition request receive module 302, an addition request acceptance module 304, and a communication recordal module 306. In an aspect, addition request receive module 302 can be configured to enable VD to receive a request for being added to a chat session/group taking place between two or more users. Such a request can be sent by any of the parties that form part of the chat session. Addition request acceptance module 304, on the other hand, can be configured to enable the VD to accept the addition request and, through the communication recordal module 306, receive all communication/data exchange taking place in the chat session and record/log the same in a database/stored device that the VD is operatively coupled with.

[0076] FIG. 4 illustrates an exemplary computing architecture 400 of the proposed system in accordance with an embodiment of the present disclosure. As shown, the proposed

system can include a plurality of banker devices 402 that communicate, through Internet 408, with one or more client devices 404 through different commonly used IM platforms such as Whatsapp™ and Hike™, wherein the architecture can further include any other computing device such as a tablet PC, PC, laptop, mobile/smart phone 406 that is platform agnostic (i.e. can run on any OS such as iOS or Android) and is configured with one or more IM platforms.

[0077] The architecture 400 can further include a virtual server farm 410 having one or more virtual machines (VMs) (also referred to as VDs in the instant specification) such as 412-1, 412-2, ..., 412-n (collectively referred to as VMs/VDs 412). Each VM 412 can be configured with at least one IM platform such that any of the client 404/banker 402 devices can add a VD having at least their IM platform configured therein such that communication between the client 404/banker 402 devices can be viewed/presented on the IM platform interface of the VD as well. At least one application programming interface (API) 416 can further be configured in the proposed architecture 400 that can enable one or more compliance devices 414 having a respective compliance dash/dashboard to view/analyze the communication taking place between devices 402/404/406 and take desired decisions accordingly. Communication between the stakeholders 402/404/406 can be stored, using the same or a different API 416, in a database 418, which may or may not form part of the farm 410. Yet another API 416 can also be configured to enable one or more VMs 412 to respond to or intervene in communication taking place between the stakeholders 402/404/406.

[0078] FIG. 5 illustrates an exemplary implementation of the proposed system in accordance with an embodiment of the present disclosure. Representation 500 shows how a bank representative (BR) 502 can remotely log into a virtual device 504 of the present invention, wherein one or more IM platforms 506 can be configured/installed in the VD 504. Such a configured IM platform 506 can then be used by the BR 502 to chat with users/clients 512 of one or more client devices such as 508 that have the same IM platform 510 configured therein so as to enable communication between the BR 502 and the client/user 512 to be logged/recorded at the VD 504.

[0079] FIG. 6 illustrates an exemplary flow diagram used by a virtual device (VD) in accordance with an embodiment of the present disclosure. In an aspect, at 602, the method can include the step of receiving, at a virtual device (VD), a request for being added to a chat session/group taking place between two or more users; at step 604, accepting, at the VD, the addition request; and at step 506, receiving, at the VD, communication/data exchange taking place in the chat session and recording/logging the same in a database/stored device that the

VD is operatively coupled with.

[0080] In another exemplary implementation, method of the present disclosure can be configured to initially setup at least one VD on a server to make the virtual device scalable, post which one or more IM platforms are installed in the VD. For instance, one VD can have one IM platform or can be multiple IM platforms configured therein, which decision may depend on data stream size or amount of chats that are expected to be logged. Each IM can then be activated and configured to be ready to chat/interact. Once the IMs are activated with banks/users' identifiers, client and banker/advisor can add the unique identifier such as phone number of the VD, making the chat session a tri-party or multi-party chat session, based on which IM that is running on the VD can have access to activities of the chat session/group. IM configured in the VD can also be made accessible through banks'/financial institutions' API or database on need basis to identify the parties or users in chat. Based on advanced access to data as well as computation power of the proposed VD, one or more actions such as mapping of each client to an investment banker, forwarding of chats to a relevant investment banker or a second client, raising real-time triggers based on action of chat parties, creation of sacrosanct logs that are audit ready by any Regulatory body can be performed. VD IM of the proposed invention therefore gives flexibility not only to extract index and log data and timestamp of chats that it is a part of, but can also reinforce sanctity of data through screen capture. As VD IM is configured in locked facilities of the subscribed one or more banks, tampering of data is not possible.

[0081] In an aspect, VD IM data can be stored in a rooted container or the whole VM/VD can be rooted for total control of the VM. Furthermore, in another aspect, a custom application can be installed on the VD that can extract data periodically from the VD and upload to a server/database. One or more ETL tools can also be deployed to react in real time to data events.

[0082] While the foregoing describes various embodiments of the invention, other and further embodiments of the invention may be devised without departing from the basic scope thereof. The scope of the invention is determined by the claims that follow. The invention is not limited to the described embodiments, versions or examples, which are included to enable a person having ordinary skill in the art to make and use the invention when combined with information and knowledge available to the person having ordinary skill in the art.

We Claim:

1. A virtual device (VD) configured in a computing device and having at least one Instant Messaging (IM) platform configured therein, wherein the VD is configured to:
 - receive an add request from a first member of a chat session taking place on the IM platform, wherein the add request is issued by the first member based on a unique identifier of the VD recognized by the IM platform;
 - determine, through a lookup table, based on the add request, if the chat session already exists between the first member and a second member; and
 - in response to the chat session existing between the first member and the second member, accept the add request, wherein when the VD accepts the add request, the VD receives communication taking place between the first member and the second member.
2. The VD of claim 1, wherein the received communication at the VD is logged in a storage device that is operatively coupled with the VD.
3. The VD of claim 2, wherein the logged communication is analyzed manually or automatically to generate one or more responses or enable one or more actions to be taken.
4. The VD of claim 3, wherein at least one of the generated one or more responses is added to the chat session by the VD.
5. The VD of claim 1, wherein the VD is configured with and compatible to a plurality of IM platforms, and wherein the VD forms part of more than one chat session at a given time.
6. The VD of claim 6, wherein the unique identifier is a phone number mapped to the VD.
7. The VD of claim 1, wherein the computing device is a server, and wherein the server comprises a plurality of VDs.
8. The VD of claim 1, wherein the VD is capable of creating, updating, modifying, or deleting one or more chat sessions.
9. The method of claim 1, wherein the first member and the second member are selected from a bank representative of a bank and a client of the bank.

10. The method of claim 1, wherein the VD is a customized physical computing device.
11. A method of enabling logging of communication taking place in a chat session between two or more members, said method comprising the steps of:
 - receiving, at a virtual device (VD) configured in a server, a request to add the VD to the chat session, wherein the add request is issued based on a unique identifier of the VD;
 - determining, at the VD, through a lookup table, based on the add request, if the chat session already exists between the two or more members; and
 - in response to the chat session existing between the two or more members, accepting, at the VD, the request; and
 - enabling the VD to receive communication taking place between the two or more members during the chat session.
12. The method of claim 11, wherein the received communication at the VD is logged in a storage device that is operatively coupled with the VD.