Title: SYSTEM, DEVICE, AND METHOD FOR GENERATING CAMPAIGNS BETWEEN IP-CONNECTED DEVICES AND FOR DYNAMIC MODIFICATION THEREOF USING MACHINE LEARNING

Abstract: Device, system, and method of interactive communications among mobile devices and Internet Protocol (IP) connected screens. A system receives a briefing data structure describing a target interactive video-game; analyzes it; generates a set of dependent questions; extracts a type of a suitable video game, and extracts values for video-game parameters; generates a draft skeleton of video game for item-by-item approval, rejection, or modification; receives uploaded digital assets; and prepares a final version of the interactive video game. The system monitors usage of the video-game, and modifies and fine-tunes the video game based on the monitored usage. The system is also capable of replacing a generic object within the video game, with a specific or branded object, dynamically and while the video-game is being played; based on a bidding process among multiple advertisers, or based on detected attributes of a player/user and of observing-users.
System, Device, and Method
for Generating Campaigns between IP-Connected Devices
and for Dynamic Modification Thereof using Machine Learning

Cross-Reference to Related Applications
[001] This application claims priority and benefit from United States provisional patent application number 62/247,809, filed on October 29, 2015, which is hereby incorporated by reference in its entirety.

Field of the Invention
[002] The invention relates to the field of electronic communications.

Background
[003] Millions of people use portable electronic devices for daily communications. For example, cellular phones and smartphones are used to allow two persons to conduct a voice conversation. Similarly, a first user may utilize a video conferencing application, such as Skype or FaceTime, to conduct a video conference with a second user.
[004] Users may further utilize electronic devices for various other purposes, for example, sending and receiving electronic mail (email) messages, engaging in Instant Messaging (IM), capturing images and video, playing games, browsing the Internet, or the like.

Summary
[005] Applicants have realized that there is a need for efficient, convenient, and automatic or semi-automatic or computer-assisted generation of content items (e.g., video, video items, interactive videos, games, video games, or the like), for various "connected devices" or electronic devices or mobile devices or Internet Protocol (IP) connected devices, particularly devices that are able to interact with a digital screen or an IP-connected screen. Applicants have further realized that there is a need for a solution to enable such IP-connected devices to efficiently communicate with each other, as well as a need for automatic or computer-assisted
generation (and dynamic on-the-fly modification) of campaigns (e.g., advertising or marketing campaigns) for such devices. Applicants have further realized that such generation and real-time modifications, may be performed efficiently by utilizing Machine Learning algorithms, which may analyze input provided by a developer or designer in order to automatically generate a campaign; as well as to monitor and analyze real-time data about the campaign usage and/or about the campaign user(s) and/or about observers, in order to fine-tune or to modify the campaign content in real-time.

[006] The present invention may provide a device, system, and method of interactive communications among mobile devices and Internet Protocol (IP) connected screens. For example, a system receives a briefing data structure describing a target interactive video-game; analyzes it; generates a set of dependent questions; extracts a type of a suitable video game, and extracts values for video-game parameters; generates a draft skeleton of video game for item-by-item approval, rejection, or modification; receives uploaded digital assets; and prepares a final version of the interactive video game. The system monitors usage of the video-game, and modifies and fine-tunes the video game based on the monitored usage. The system is also capable of replacing a generic object within the video game, with a specific or branded object, dynamically and while the video-game is being played; based on a bidding process among multiple advertisers, or based on detected attributes of a player-user and of observing-users.

[007] Some portions of the discussion here may relate, for demonstrative purposes, to generation and/or modification of a "video game"; however, this term is used as a non-limiting example, and the present invention may generate, modify, control, monitor and/or operate other types of interactive content items, for example, an interactive content that a user of a mobile device may control or modify or alter, by browsing, by playing, by advancing or retreating, by selecting a selection from multiple options, or the like, optionally similar to controlling a video-game or an interactive application or an interactive web-application. All these may be referred to herein as "Interactive Experience" or "Interactive Experience Campaign" (IEC) or "Interactive Experience Content".

[008] The present invention comprises devices, systems, and methods of interactive communications among mobile devices and Internet Protocol (IP) connected screens, as well as an efficient process and system for generating and/or modifying interactive content, by utilizing Machine Learning algorithms. For example, a Machine Learning generator system or generation
system. The briefing data structure describes a target interactive experience content (e.g., an interactive content that a user of a mobile device may control or modify or alter, by browsing, by playing, by advancing or retreating, by selecting a selection from multiple options, or the like, optionally similar to controlling a video-game or an interactive application or an interactive web-application); analyzes it; generates a set of dependent questions; extracts a type of a suitable interactive experience content or video game, and extracts values for interactive-experience parameters or interactive-content parameters or video-game parameters; generates a draft skeleton of interactive experience content or video game for item-by-item approval, rejection, or modification; receives uploaded digital assets; and prepares a final version of the interactive experience or interactive content or interactive video game. Optionally, the system monitors usage of the interactive experience or the interactive content or the interactive video-game, and modifies and fine-tunes the interactive experience or the interactive content or the interactive video game based on the monitored usage. Additionally or alternatively, the system is capable of replacing a generic object within the interactive experience or the interactive content or the interactive video game, with a specific or branded object, dynamically and while the interactive experience or the interactive content or the interactive video-game is being played or while the user is engaging with it; for example, based on a bidding process (e.g., real-time bidding process) among multiple advertisers, and/or or based on detected attributes of a player-user, and/or based on detected attributes of observing-users.

[009] The present invention may comprise devices, systems, and methods of wireless interactive communication between (i) an Internet Protocol (IP) connected screen, and (ii) one or more mobile electronic devices operated by one or more users. The mobile electronic device may be, for example, a smartphone, a tablet, a phone-tablet ("phablet"), a smart-watch, a smart-bracelet or fitness-bracelet, an Augmented Reality (AR) item or glasses or helmet or headgear or gear, a Virtual Reality (VR) item or glasses or helmet or headgear or gear, a portable gaming device, a smart-glasses device (e.g., similar to Google Glass), a wearable electronic device, or other suitable electronic device(s).

[010] For example, a cloud-based platform or system may allow designers to efficiently and rapidly develop a web-based application, which may be played on the IP-connected screen. The application may communicate, via a communication server, with a single mobile electronic device, or with many mobile electronic devices; and may receive from such mobile electronic
device(s) user inputs or user feedback, for example, indicating user selection or user operations that are performed on such mobile electronic device(s). The display shown on the IP-connected device may be updated or may be modified, in response to the user input received from the single mobile electronic device; or in response to the aggregated audience feedback that is received from multiple such mobile electronic devices.

[0011] The present invention may utilize and/or apply Machine Learning for designing, creating and generating, in an automatic manner or semi-automatic manner, real-world marketing campaigns targeted to mobile devices or connected devices, as well as for dynamic on-the-fly modification and/or customization and/or adaptation of such campaigns.

[0012] A first set of embodiments of the present invention may comprise a method and a system for creating or generating an interactive video advertisement or interactive experience or interactive content or interactive video-game, by utilizing machine learning which automates the interaction between the development platform and the designer (or creator, or programmer, or developer). This may allow to scale to numerous developers or designers, the usage of automatic or semi-automatic generation of interactive experiences or interactive video advertisement items; and may enable a non-expert user or a non-expert designer, or a novice user or a novice designer, to efficiently and semi-automatically instruct a system to generate for him an interactive video advertisement that fits his needs, with little or no human assistance, and with little or no knowledge of programming languages. It is clarified that the system and method of the present invention do not necessarily create the raw video footage that may be included or embedded in the interactive experience; but rather, the system and method of the present invention generate a marketing campaign or advertising campaign that utilizes or includes such video and/or other digital assets, and/or may generate a template or skeleton or data-structure(s) or script(s) that subsequently control and/or modify the digital assets (e.g., video footage, animation, images, text, audio, sounds, or the like) based on the generated logic and/or rules. The automatically-generated or the semi-automatically-generated interactive content or interactive experience or interactive video or interactive advertisement or interactive game, then connects a person in the real world (offline) to the digital world (online), or connects a user of a mobile device or an electronic device to a digital environment, by using the person's connected device or mobile device or electronic device (e.g., a smartphone, a smart-watch, a wearable device), thereby
enabling the end-user to interact or play with the interactive experience or interactive content or interactive advertisement or interactive video game.

[0013] A second set of embodiments of the present invention enables automatic, real-time, on-the-fly, modification and/or customization of a pre-programmed interactive experience or interactive content or interactive advertisement or interactive video game, in order to better fit (or to tailor it to) the particular audience to which the interactive content or interactive experience or interactive advertisement or interactive video game is being offered, including both the particular (or main) end-user person that plays or engages with the interactive content or video game (or intends to play, or intends to engage with, the interactive content or interactive advertisement or the video game) and/or one or more other persons that are located nearby and are watching the interactive experience or interactive content or video game being played or being engaged with (or such observers or nearby-standing or nearby-located persons that intend to watch the interactive content or video game that would be played or would be engaged with).

[0014] The system and method of the present invention may automatically and dynamically modify or customize or alter or fine-tune the interactive experience or interactive content or the interactive advertisement or video game, based on one or more characteristics (e.g., as non-limiting examples, characteristics of the end-user that is playing or engaging with the interactive content or the video game, and/or characteristics of one or more observers or audience-members that observe the interactive content or video game being played or being engaged with).

[0015] The platform may further utilize a "big data" data collection system and/or Machine Learning data analysis module, which may monitor and/or log and/or store and/or aggregate data with regard to the player-user and/or with regard to one or more human observers; as well as a real-time bidding system which may determine which particular content or which particular digital assets to include or to embed within the interactive experience or the video game or the video ad, and/or which may determine which on-the-fly customization to perform or to inject into the interactive experience or interactive content or video game (e.g., based on requirements placed by advertisers, and/or based on content provided by advertisers, and/or based on identified characteristics of the player-user, and/or based on the identified characteristics of one or more observers).

[0016] The present invention may provide other and/or additional benefits or advantages.
**Brief Description of the Drawings**

[0017] Fig. 1 is a schematic block-diagram illustration of a process, in accordance with some demonstrative embodiments of the present invention.

[0018] Fig. 2 is a schematic block-diagram illustration of a system, in accordance with some demonstrative embodiments of the present invention.

[0019] Fig. 3 is a schematic block-diagram illustration of a system, in accordance with some demonstrative embodiments of the present invention.

[0020] Fig. 4 is a flow-chart of a method of dynamic real-time customization, in accordance with some demonstrative embodiments of the present invention.

**Description of some Demonstrative Embodiments of the Present Invention**

[0021] Reference is made to Fig. 1, which is a schematic diagram of a process in accordance with the present invention. The process may be performed, for example, by: a computing device 101 and a design module (DM) 102. In Fig. 1, the content shown on the left side is associated with (or performed by) the computing device 101; the content shown on the right side is associate with (or performed by) the design module 102; and the content shown in the middle column with arrows indicates the exchange of information, and/or operations that are associated with (or performed by) both the computing device 101 and the design module 102.

[0022] The process of Fig. 1 may be used in order to generate an interactive content or interactive experience or interactive advertisement or an interactive video game, or a pre-defined sequence of video clips and/or animations which may be interconnected via a defined logic or rules or conditions or scripts, that are intended for playing or for playback on a digital IP-connected screen, based on interactions received wirelessly from one or more users of one or more (respective) mobile electronic devices (e.g., smartphone, tablet, smart-watch). Accordingly, the terms "video" or "video clip" or "video game" may be used herein interchangeably, in a non-limiting manner, and may comprise any other suitable type of interactive content, interactive advertisement, user-selectable content, user-modifiable content, interactive application, or the like.

[0023] The computing device 101 may be an electronic device (e.g., desktop computer, laptop computer, smartphone, tablet) operated by a developer or designer or a novice end-user. The design module 102 may be, for example, a locally-residing design module which may be internal
to computing device 101, or may be a remotely-residing design module which may be external to
and/or remote from computing device 101. For example, design module 102 may be
implemented via, or may reside on, a remote server computer (e.g., accessible via the Internet or
via TCP/IP), a local server computer (e.g., accessible over LAN or WAN), a local computer, a
remote computer, a "cloud based" service or element, a System as a Service (SaaS) server or
unit, a service available through or accessible through or operable through a Web browser, a
service operable through a native application or a local application or a remote application or a
locally-installed application, a service operable via a plug-in or extension or add-on to a browser
or to another application, or the like. The process may enable automation using Artificial
Intelligence (AI) and/or Machine Learning of interactive experience generation and/or video
game generation and/or video advertisement generation and/or interactive advertisements
generation.

[0024] The process may comprise multiple steps or phases; for example, five phases 111-115.
[0025] In a Briefing Phase 111, the computing device 101 sends to the design module 102 a brief
or a data structure about a particular brand or brand-name; for example, one or more data-items
and/or files, which may be in an open format and/or in a proprietary format, and may optionally
include text, graphics, logos, slogan, brand-names, graphic design items, animations, sounds,
video-clip, audio-clip, audio-video clip, and/or other content items related to the brand. The
Brief data structure may optionally be, or may include, HTML data, XML data, a PDF or
Microsoft Word file that includes text and/or graphics, a Natural Language Processing (NLP)
structure or data-item; and may optionally comprise natural language sentences. The Brief data
may be expressed in an open format; and its analysis may include, for example, utilization of
Machine Learning as well as "big data" analysis which takes into account historical data,
previous preferences or previous assets of the designer or previously-prepared interactive
experiences of the designer, or previously-engaged interactive experiences that the designer had
engaged with or played with; location-based data or assets or clues (e.g., taking into account the
current geo-spatial location of the designer, which may be obtained from a Global Positioning
System (GPS) component, from a scanned QR code or barcode or two-dimensional barcode,
from wireless communication networks or SSID names, from cellular triangulation or cellular-
based location estimation, or the like); and/or may also take into account preferences of
generally-similar users or designers (e.g., who have one or more common traits with the current designer), or may take into account preferences of nearby-located designers.

[0026] The design module 102 receives the Brief data, stores it, and analyzes it. The analysis may include, for example, parsing of the Brief data, in order to detect keywords that indicate which type of interactive experience or interactive content or interactive video-clip or interactive video-game campaign is desired by the designer; and in order to detect or determine values of parameters that are desired for this campaign. For example, the design module 102 may search for one or more pre-defined keywords (e.g., or natural language phrases or terms or words), that indicate particular types of elements and/or that indicate desired values for parameters.

[0027] In a demonstrative example, the Brief data structure may comprise a natural language sentence such as, "We would like the system to generate for us a virtual soccer game that can be played by two users"; and the design module may parse or analyze this Brief sentence in order to determine that: (a) the designer wishes to generate a game sequence, rather than an audio/video playback sequence; (b) the designer is interested particularly in a Virtual Soccer, out of a pre-defined list of template games that the platform supports; (c) that the virtual soccer game that is desired, is of a version that has two human players, rather than a single human player that plays against the computer. In some embodiments, multiple different types or versions of a genre of interactive experience, may be efficiently derived or deduced or generated based on a common type or genre, which the system may identify or define, even though for a conventional user such interactive experiences may not necessarily appear to be similar. In a first demonstrative example, an interactive experience of "interactive bowling game" and an interactive experience of "interactive golf game", may have similar structure or rules or flow, as both of them may be "single-player, single-hand, motion action" type of interactive experience, with similar or identical rules; which may differ from each other based on the actual digital assets (images, video segments, text) that are inserted or embedded into the same interactive content template. In a second demonstrative example, an "interactive basketball shooting game" and an "interactive soccer penalty shots game" may similarly be derived from the same common template, while only their digital assets are different from each other.

[0028] The briefing phase 111 is the initial phase of the creation process, in which the designer is requested to input or provide or upload a Brief of the campaign, through the computing device 101 to the design module 102. The uploaded Brief may comprise one or more items or content-
items or properties, for example: (A) Indication of the call-to-action method, indicating what is the goal of the campaign; such as, to redirect the user to a sign-up page, to provide to the end-user a coupon to increase a specific product sale; (B) Indication of the number of simultaneous or concurrent end-users that are supposed to communicate with the game being developed; such as, indication of a single-player game or interactive experience, a one-on-one game or interactive experience, a two-player game or interactive experience of two human user, a two-player game or interactive experience of one human user against a machine-emulated user, a multiple-player or multi-player game or interactive experience, a group-against-group game or interactive experience, or the like; (C) Indication of the logic or rules or milestones or threshold-values for winning and/or for losing; for example, the designer may indicate using natural language how multiple video-clips (e.g., in a video sequence) are to be controlled; for example, in a virtual soccer penalty shootout interaction, where the end-user swipes his phone (or mobile device) in one of three directions to virtually kick an on-screen ball, once swiped the screen transitions to a suitable video-clip or animation in which the ball is kicked to the particular direction that was swiped by the end-user; and the scoring video-clip or animation (e.g., which may optionally provide a reward coupon) is played pseudo-randomly in a pre-defined value of winning percentage (e.g., 20 percent win rate, indicating that the reward is gained on average in 20 percent of games played or in swipe-movements performed). In some embodiments, the Brief data-structure may optionally comprise a flow-chart or block-diagram, to indicate logic, conditions, go-to commands, loops, subroutines, options, and/or other flow-related data; and the system may automatically analyze such flow-chart or block-diagram in order to extract or deduce or estimate such logic or conditions or other parameters. In other embodiments, the Brief data-structure may comprise pseudo-code, or may comprise text in a natural language (e.g., English or other natural language; and not necessarily a programming language), which conveys data about logic or conditions or flow; for example, natural language sentences such as, "when the user drags his finger on the touch-screen, the on-screen basketball player avatar throws an on-screen basketball towards a hoop, and randomly, on average, 1 out of 3 such throws is successful".

[0029] The submitted or uploaded Brief data structure is analyzed by the design module 102, which prepares one or more specific questions (e.g., from a closed pool or closed list of relevant questions or question-templates) for the questioning phase which follows. I
[0030] In a Questioning Phase 112, the design module 102 asks the computing device 101 (and its user) one or more questions in order to augment and/or clarify the information that was submitted in the Brief Phase. The Questioning Phase may utilize Machine Learning and/or "big data" analysis, in order to review or analyze historical choices or preferences of the current designer (or of similar designers, or of nearby-located designers), and to review or analyze data from similar campaigns of other users or designers. For example, the design module 102 may present a series of close questions; and optionally, a subsequent question may depend or may rely upon the answers provided to one or more previous question. In some embodiments, identification of a type or genre of interactive experience, or of an asset or a logic or a parameter thereof, may trigger the system to automatically generate a set of particular questions that are relevant to this information; for example, if the system managed to deduce that the designer is interested in an interactive experience similar to an "online basketball hoop shooting game", then the system may present a set of questions that are pre-associated in the system with such type or genre of interactive content or interactive experience; and/or may present questions based on Machine Learning from similar interactive experiences of this type or genre (or similar types or genres) that have been prepared in the past by the same designer or by other designers.

[0031] The design module 102 interacts with the computing device 101 of the designer by using a series of closed questions, which may optionally depend on whether the designer answered "yes" (or "no", or a particular numeric value, or the like) to previous question(s) in the series. The Questioning Phase may continue until an AI algorithm that operates the design module 102, determines or estimates that it has sufficient data to generate an interactive experience or interactive video-game campaign.

[0032] In a demonstrative example, some or all of the following questions may be used in the Questioning Phase: (A) Do you wish to show users' votes on screen? (possible answers being: Yes or No). (B) If the answer to Question A was "yes", then: where on the screen do you wish to show the users' vote (possible answers being: Top / Bottom / Left / Right, or an option enabling the designer to touch a particular location in the screen, or to drag-and-drop an item to a specific location or coordinates on the screen. (C) For each video-clip or animation, is there any further customization required, for example, depending on player information? (possible answers being: Yes or No). (D) Is there additional customization required, based on information about observers who watch the game? (possible answers being: Yes or No). (E) How many times
does an end-user get to re-try the game if he loses? (possible answers being: 0 or 1 or 2 or 3 or 4). (F) Is there a reward coupon for an end-user that lost the game? (possible answers being: Yes or No). Other suitable questions may be used, and may be in a format of closed questions with pre-defined possible answers that the designer from which the designer may select.

[0033] In an Approval Phase 113, the design module 102 already has sufficient data for generating an interactive experience or interactive content or interactive video game for the campaign, which may not necessarily yet include the particular digital assets for that campaign (which the designer may not necessarily be required to provide or to upload, yet, up until this stage); and thus, the Approval Phase may optionally generate one draft version or skeleton version, or multiple draft versions or skeletons, of the interactive experience or interactive video game, based on the same input and guidelines. The Approval Phase may present to the user one or more such draft versions of the generated interactive experience or video game (or its template or skeleton), for his approval or selection or fine-tuning or modification.

[0034] In some embodiments, for example, the designer is shown the generated campaign skeleton, which may optionally comprise general screenshots or demonstrative screenshots that may comprise generic objects or place-holders, and which may optionally comprise (and show to the user) a proposed flow-chart or block-diagram that reflects the logic or rules or conditions or flow that the system generated as a proposal for that interactive experience; and the user or designer is then requested to approve or to go-back and modify input(s) provided.

[0035] In other embodiments, multiple draft skeletons are shown for campaigns or choices within a campaign to choose from; for example, inquiring whether the designer prefers Skeleton A or Skeleton B; or inquiring whether the designer prefers that the generated skeleton would include Element X or Element Y.

[0036] In some embodiments, the design module 102 may calculate or estimate how many possible options or relevant options there may exist, and may present to the designer's approval a suitable number of skeletons, or may present to the designer groups or batches of commonly-grouped options.

[0037] In a demonstrative example, there may be three possible game-durations; there may be four options for winning-rate; and there may be five options for a reward; such that there may be a total of 3 x 4 x 5 permutations or combinations, or 60 permutations or combinations. In some embodiments, the design module 102 may present 60 such draft-versions for the designer's
selection, optionally indicating next to each version what are the parameter values that
distinguish this version from other(s).

[0038] In other embodiments, the approval process may be gradual or staggered, such that the
designer may firstly approve a group or batch of relevant skeletons (e.g., having a first-value for
game-duration), and only then approve or select a version, or a sub-group, based on a secondary
parameter. In some embodiments, the approval phase may relate to the entire draft skeleton,
and/or to discrete elements or sections or portions therein; for example, enabling the designer to
select "V" (approval) or "X" (rejection) for each and every element or portion or segment of the
interactive experience skeleton or the interactive video-game skeleton. Optionally, if the
designer marked "X" (rejection) for one or more game elements, the design module 102 may
then re-calculate and re-generate new draft versions of the interactive experience skeleton with
alternate elements, and may provide them to the designer in a second or a third (or subsequent)
iteration of approval; which may further be repeated if the designer still has rejections or
modification requests.

[0039] In a Design Phase 114, the designer may command the system to take the template or
skeleton of the generated interactive experience campaign or interactive video-game campaign,
that was generated or was proposed to the designer in the previous phases, and to insert or add
the actual digital assets or content-items in order to create or generate the actual interactive
experience campaign or interactive video-game campaign. This includes, for example, placing or
inserting an image of the correct merchandise or product or service or logo or name or slogan
into the skeleton or template of the interactive experience or the interactive video sequence or the
interactive video-game campaign, inserting or choosing the correct and specific coupons or
rewards or prizes, inserting or putting or embedding a video-clip or an animation that will be
played in specific time(s) (e.g., upon winning, or upon losing, or once a particular action is
performed during the interactive experience, or once a particular condition holds true during the
interactive experience), and/or inserting of other digital assets and/or content items. This is the
last phase in the preparation process, and after this phase the interactive experience campaign is
ready to launch.

[0040] In an Engagement Phase 115, the interactive experience campaign is ready and can be
run as is. However, the design module 102 may continuously engage with the interactive
experience campaign (e.g., during and/or after the interactive experience campaign running), in
order to autonomously modify and/or fine-tune the interactive experience campaign based on real-time data that is monitored and collected while the interactive experience campaign is running or between iterations of running. In some embodiments, the system may enable the designer to indicate in advance to the system, that the generated interactive experience campaign should comprise certain parameters, minimum-value parameters, maximum-value parameters, limits, constraints, or other threshold values or conditions, in order to enable the system to automatically adjust or modify the interactive experience campaign on-the-fly yet based on such pre-defined thresholds or conditions; optionally in order to maximize the efficiency or to reach certain performance goals, or to avoid reaching certain saturation limits. In a demonstrative embodiment, the system may enable the designer to request in advance certain usage conditions or usage limitations; for example, limiting the engagement time-period of a single user (e.g., up to 10 minutes of engagement for each user or for each device); limiting the engagement time-period of a type of devices (e.g., tablets); rules for allowing the system to terminate an ongoing interactive experience or to modify it if a certain condition holds true, or to reach certain goals (e.g., a goal of reaching K different users or N different mobile devices per hour or per day), or the like.

[0041] Optionally, the design module 102 may generate and/or send alerts or notifications, if it detects an event that is determined to be worthy of reporting; such as, by analyzing field conditions from sensors / data of the user, and/or by detecting that a threshold value was reached, and/or by detecting an anomaly or a significantly high (or significantly low) value for a usage parameter.

[0042] The engagement phase is not an internal phase in the creation of the interactive experience campaign; but rather, it augments the creation process by enabling the system to autonomously modify or fine-tune the interactive experience campaign based on actual performance parameters, or to propose such modifications to the interactive experience campaign manager or the designer (e.g., and to automatically implement such modifications, subject to their approval, or in some embodiments even without their approval).

[0043] In some embodiments, the system may implement an A/B Testing module or process, in which two (or more) different or slightly-different versions of the interactive experience are generated; for example, generating Version A and Version B of the same interactive experience campaign. In the engagement stage, the two versions may be run in the alternate (e.g., Version A
is run one time or K times or one hour or one day or one week; then Version B is run one time or K times or one hour or one day or one week; then repeating again Version A, and so forth). The system may automatically and autonomously monitor the performance of the two (or multiple) versions, and may determine autonomously which version is more efficient, or reaches higher goals or exhibits better performance (e.g., triggers more users to engage; or triggers users to engage for a longer cumulative time-frame; or distributes a greater number of coupons or prizes; or other performance criteria or goals).

[0044] It is noted that one of the objectives of the process of Fig. 1 is to create one or more interactive experience campaigns or interactive video sequences or interactive video games to be used by customers of the designer. The designer may start from a generated template or skeleton of such interactive experience campaign or interactive video game and customize it using different media assets or digital assets and content-items. The customization includes, for example, replacing template videos and template images with actual content items, adding or removing of sounds or background music or sound effects or narration, insertion or replacement of rewards or coupons or prizes, customization of periods of time or durations or threshold values o, customization of game logic rules (e.g., how many re-tries the mobile user gets; what is the average winning rate), or the like. The designer may also create the template of an interactive experience campaign or an interactive video game by taking or re-using digital assets and interactive experience campaign components or video game components and combining them with the help of the artificial intelligence of the design module 202, to generate the interactive experience campaign that is tailored based on the requirements of the designer.

[0045] Reference is made to Fig. 2, which is a schematic block-diagram illustration of a system 200 for generating an Interactive Experience Campaign (IEC) or interactive advertisement or interactive video-game, in accordance with some demonstrative embodiments of the present invention. System 200 may be implemented using suitable hardware units and/or software units; and may optionally perform some or all of the operations of the process of Fig. 1.

[0046] In a demonstrative embodiments, system 200 may comprise, for example: a Brief Structure creation unit 201, to enable a designer to create or put together a Brief Structure that indicates desired type and/or desired content of the IEC or the interactive video-game (optionally, the Brief Structure may be expressed in a natural language, as layman text; and/or as a flow-chart or block-diagram); a Brief Structure analysis module 202, which analyzes the Brief
Structure: a type extractor 203, to extract and/or determine, from the Brief Structure, which type or genre of IEC or interactive video-game is relevant or is suitable for this campaign, optionally taking into account a pre-defined pool of video-game templates or IEC templates 204 from which a closest type or genre or IEC template may be selected; a video game parameters extractor or an IEC parameters extractor 215, to extract and/or determine, from the Brief Structure, the suitable value or values for one or more parameters of the relevant IEC or interactive video game (e.g., number of retries; required winning rate; whether or not multiple votes are needed; whether or not certain information such as aggregate votes is to be displayed); a natural language analyzer 205, which may parse and/or analyze the Brief Structure in order to facilitate extraction of IEC-type and/or IEC parameters and/or game-type and/or game parameter values; an optional video game parameters pool or IEC parameters pool 206, which may indicate which parameters are relevant for a particular type of IEC or video game, thereby facilitating the ability of the system to search for values of these particular parameters in order to populate them; a parameters value populating unit 207 to determine actual values or suggested values or optional values, for one or more parameters of the relevant IEC or video game (and optionally, to determine the final value based on the designer's response to the system's request to select one of several options).

[0047] System 200 may further comprise, for example: a questioning unit 208 to generate and to present to the designer a series of questions with regard to missing information, or with regard to parameters for which two or more relevant options exist for the selection of the designer; a sufficiency checker 209 to determine or to estimate whether the system has sufficient information in order to generate a skeleton IEC or a skeleton video game, or whether there is a need to present further queries or notifications to the designer; a skeleton video-game generator or a skeleton IEC generator 210 to generate a draft version of the skeleton of the IEC or the video game, comprising multiple elements therein; an approval / rejection / modification unit 211, to present to the designer one or more skeleton-components or video-game elements or IEC-elements for his approval or rejection or modification; an asset uploader 212 to enable uploading or insertion of digital assets and content item(s) into the skeleton IEC or into the skeleton video game; a skeleton customization unit 213 to enable modification or customization of one or more parameters of the IEC or the video-game (e.g., by changing parameter values; by drag-and-drop of elements on a screen); and a video-game compiler unit or an IEC compiler unit
214 to compile or assemble and to finalize the IEC or the interactive video game based on the approved skeleton and the received digital assets and the customization decisions that were provided (the term "compiler" as used herein need not require actual code compilation; but rather, may include other type of a process which puts together, or assembles together, or aggregates together, one or more assets and the rules and/or timeline which govern the transition among such assets, and/or the conditions for transitioning between such assets).

[0048] System 200 may further comprise a "big data" repository or database 221, which may be local and/or remote and/or a "cloud computing" repository; and which may log, monitor, and store all the data and information, starting from the initial phases of obtaining the Brief data-structure, data of the analyzed Brief, data about extracted or suggested or proposed IEC parameters, data about IEC logic or rules, data about input or selections made by the designer, data of skeleton versions or draft versions of the IEC and of the final IEC, digital assets that the designer uploads or provides; as well as IEC utilization data and IEC operation data (e.g., data regarding the actual usage, engagements, or the like), with regard to this IEC as well as with regard to other IECs and other designers. Database 221 may collect data and/or may receive data from virtually any and all other units and/or modules that are operable, as described above and/or herein. Similarly, database 221 may provide data to virtually any and all other units and/or modules that are operable, as described above and/or herein.

[0049] The database 221 may be utilized by a Machine Learning unit 222 which may mine or analyze the "big data" information and may generate insights or suggestions that may be applicable to other IECs and/or to other designers. For example, the Machine Learning unit 222 may mine and analyze the "big data" stored in database 221, and may determine that a certain type of parameter (e.g., the average chance of winning an online sports game) is typically in a certain range (e.g., a winning chance of between 1/4 and 1/3), in all or in most other IEC projects that were launched in the past year; or in all the IEC projects that were launched in the past six months and have reached a certain engagement milestone or threshold value (e.g., have engaged at least 18 mobile users per day, every day). Similarly, the Machine Learning module 222 may determine, based on other previously-completed IEC projects, that in a "virtual sports" type of IEC, the value of user-engagement indicators increase positively if the entire time-period for the engagement is not more than K minutes per engagement or per user or per game; and this insight, derived from multiple IEC projects, may be proposed or implemented when a new IEC project is
constructed, or may even be injected as a modification (or as a suggested modification or a proposed modification) to an existing, already-running, IEC.

[0050] The Machine Learning unit 222 may operate by taking into account data collected or obtained from any and/or all other modules or units, with regard to any other or all other IEC projects and/or designers. Furthermore, the Machine Learning unit 222 may provide insights or suggestions to a designer or with regard to a particular IEC project, based on historical data of other designers and/or the same designer, and/or based on historical data of other IEC projects of the same designer and/or of other designers, and/or based on analysis of data that relates to a multiplicity of IEC projects (of a certain type or genre, or of multiple types or genres, or the entire population or entire data-set of available IEC projects). Other suitable parameter-values, rules, thresholds and/or insights may be generated by the Machine Learning module 222, in any phase or phases of the process(es) that are described above or herein.

[0051] Reference is made to Fig. 3, which is a schematic block-diagram illustration of a system 300 in accordance with some demonstrative embodiments of the present invention. System 300 may be part of system 200 of Fig. 2; or may be operably associated with system 200 of Fig. 2; or may operate by playing and further handling the IEC or the interactive video-game that was generated by system 200 of Fig. 2 and/or by the process of Fig. 1.

[0052] System 300 may comprise, for example: an IP-connected digital screen 301; a playback unit 302 to playback the generated IEC or interactive video game; a user-input collector 303 to receive from one or more end-users, of one or more mobile devices, commands or inputs that affect or control the IEC or the interactive video-game being played or being engaged with; a monitoring / listening unit 304 to monitor the usage and/or the progress of the IEC or the interactive video game that is being played or being engaged with, over multiple iterations, and to listen to events that occur therein, while also recording or logging analytics data about the utilization in a log database 305; a data analysis module 306 to analyze the recorded data, in real time or subsequently; a notification unit 307 to generate real-time or periodic notifications about alerted events of about aggregated data reaching a threshold, or about analyzed data reaching a threshold; a video-game modification generator or an IEC modification generator 308 to propose and/or to implement one or more modifications of customizations to an already-prepared IEC or interactive video-game based on analytics data or based on monitored usage data.
In some embodiments, the monitoring / listening unit 304 may collect data from, or may obtain data from, a variety of sources and/or sensors; for example: from sensors, microphones, imagers (e.g., optionally utilizing face-recognition, motion-recognition, gesture-recognition, identification of eye movements or gazes); identification or estimation or user gender and/or user age and/or user age-group and/or user ethnicity, based on user name and/or user image and/or user voice and/or user accent; user information that the user volunteers to provide via a form or other input interface; user information that is obtained from a website or an application, or from a social network or a social networking service (e.g., Facebook, LinkedIn) or from a content-sharing website or service (e.g., YouTube, Pinterest, Instagram) or from a communication application (e.g., WhatsApp, SnapChat) or from other sources, such obtained data relating to, for example, user gender, user age or age-group, user profession, user marital status, user hobbies or interests; by utilizing one or more beacons or sensors which may be located nearby (e.g., near or at or on the IP-connected digital screen); and/or other suitable information with regard to the player-user(s) and/or with regard to observing-user(s). All such information may be fused together from multiple sensors or sources; and may be used in order to modify or tailor the IEC to the characteristics of the particular player-user and/or the observing-user(s).

System 300 may further comprise a "big data" repository or database 321, which may be local and/or remote and/or a "cloud computing" repository; and which may log, monitor, and store all the data and information associated with the actual running of the IEC and/or its performance and/or its engagement parameters and/or its utilization; with regard to a particular IEC, as well as with regard to other IECs (e.g., of other designers, or of the same designer). Database 321 may collect data and/or may receive data from virtually any and all other units and/or modules that are operable, as described above and/or herein. Similarly, database 321 may provide data to virtually any and all other units and/or modules that are operable, as described above and/or herein.

The database 321 may be utilized by a Machine Learning unit 322 which may mine or analyze the "big data" information and may generate insights or suggestions that may be applicable to other IECs and/or to other designers, and/or which may be relevant to the currently-running IEC or to a recently-run IEC or to an intended-for-running IEC. For example, the Machine Learning unit 322 may mine and analyze the "big data" stored in database 321, and may determine that a certain type of parameter (e.g., the average chance of winning an online
sports game) is typically in a certain range (e.g., a winning chance of between 1/4 and 1/3), in all or in most other IEC projects that were launched in the past year; or in all the IEC projects that were launched in the past six months and have reached a certain engagement milestone or threshold value (e.g., have engaged at least 18 mobile users per day, every day). Similarly, the Machine Learning module 322 may determine, based on other previously-completed IEC projects, that in a "virtual sports" type of IEC, the value of user-engagement indicators increase positively if the entire time-period for the engagement is not more than K minutes per engagement or per user or per game; and this insight, derived from multiple IEC projects, may be proposed or implemented when a new IEC project is constructed, or may even be injected as a modification (or as a suggested modification or a proposed modification) to an existing, already-running, IEC.

[0056] The Machine Learning unit 322 may operate by taking into account data collected or obtained from any and/or all other modules or units, with regard to any other or all other IEC projects and/or designers. Furthermore, the Machine Learning unit 322 may provide insights or suggestions to a designer or with regard to a particular IEC project, based on historical data of other designers and/or the same designer, and/or based on historical data of other IEC projects of the same designer and/or of other designers, and/or based on analysis of data that relates to a multiplicity of IEC projects (of a certain type or genre, or of multiple types or genres, or the entire population or entire data-set of available IEC projects). Other suitable parameter-values, rules, thresholds and/or insights may be generated by the Machine Learning module 322, in any phase or phases of the process(es) that are described above or herein.

[0057] The present invention may further comprise a method and a system for online modification and/or real-time dynamic modification of an IEC or an interactive video game, in order to better fit one or more detected characteristics of the audience (or of a particular audience member, or of multiple audience members), by using machine learning.

[0058] The Applicants have realized that conventional systems may utilize a method of selecting a pre-prepared banner advertisement (e.g., an image), based on real-time bidding of multiple advertisers who bid for placement of their pre-prepared banner advertisements; a highest-paying bidder is selected, and his pre-fabricated image is inserted into a web-page as an impression of an advertisement. The Applicants have realized that conventional systems lack the ability to customize on-the-fly a template IEC or video-game or video-clip or video-sequence, based on
real-time data that is determined with regard to the user(s) who are about to view the advertisement or who are currently viewing the advertisement. The Applicants have realized that there is a need for a dynamic on-the-fly video customization system and video-game customization system and IEC customization system, which may allow an advertising or marketing system to dynamically customize an IEC or a video clip or a video game, based on characteristics of the audience member(s) that are also determined in real time immediately prior to the customization and/or during the running of the IEC and/or while the IEC is being engaged-with.

[0059] The present invention enables to define in advance generic objects in an IEC or in a video game or a video sequence, which may later be replaced by other specific objects or assets of the advertisers’ choice; and such replacement or insertion of assets may be performed in real-time, as part of a price-bidding process of multiple advertisers for a particular impression, or alternatively immediately after ending of such price-bidding and determination of a bidding winner from such advertiser. Accordingly, an IEC or an interactive video game or video sequence is generated in advance in a manner that includes a multiplicity of generic objects or assets; for example: an image or an animation of a bottle of drink, or a shirt, or a pair of pants, or a soap bar, or a car, or other suitable item or object or article.

[0060] The generic object in the IEC or video game is subsequently replaced or over-written by another, advertiser-specific, object; which is provided by an advertiser, or by the highest-bidding advertiser. In some embodiments, object replacement is performed only if the generic object and the replacement object have the same size (e.g., width and height, in pixels) and/or the same dimensions ratio (e.g., ratio of 2 / 3 for width / height) and/or same functionality (e.g., generic object of a bottle having a generic name on it, and replacement bottle of a bottle having a particular name on it).

[0061] The system may ensure that only objects of the same functionality, can be replaced by other suitable objects that have the same functionality or utility (or, their graphical representation can be replaced); such that, for example, only an advertiser-specific replacement image of a bottle would replace a generic image of a bottle; and such that a replacement image of a soap-bar would not replace a generic image of a bottle, even if both of them have identical size or dimensions or ratio (e.g., thereby avoiding a situation in which an IEC or a video game shows a person trying to drink a soap-bar).
[0062] The present invention may enable not only replacement of a generic object in an IEC or in a video game with a specific object, but may further enable real-time bidding by multiple advertisers to purchase such advertiser-specific replacement operation, by bidding an offered price to insert a particular replacement image or video into the IEC or video game, in real time and while the system takes into account actual characteristics of the user(s) who play and/or watch the video game.

[0063] Reference is made to Fig. 4, which is a flow-chart of a method of dynamic real-time customization (e.g., of an IEC or a video-game or a video-clip or a video-sequence or an interactive video), in accordance with some demonstrative embodiments of the present invention.

[0064] In step 401, an IEC or video sequence or a video game is constructed or programmed or generated, such that the IEC or video game or video sequence includes at least one generic object that is efficiently replaceable by a (specific, subsequently-selected) replacement object. Efficient replacement may mean, for example, that real-time on-the-fly replacement of the generic object is possible, for example, by insertion of a file or renaming of a file, rapidly and automatically, without the need to re-program manually the code of the video game in order to achieve such replacement.

[0065] In step 402, the method determines one or more attributes or characteristics, of: (a) one or more users of mobile devices, that actually interact or operate (or, are about to interact, or are about to operate) the IEC or the video game (which is being played or engaged already, or which is about to be played or is about to be engaged); and/or one or more observers or audience-members, who observe or watch the IEC or video game that is being played (or engaged) or that is about to be played (or engaged), wherein such observers may optionally utilize or hold or carry their own mobile devices.

[0066] For demonstrative purposes, a single user Adam may utilize his smartphone in order to play an IEC or a video game shown on a digital advertising board; and Adam may be referred to as the "playing-user"; it is clarified that in some embodiments, there may be multiple "playing users", for example, when two human users play against each other via two smartphones and via one digital advertising board. In parallel, two observers, Bob and Carl, may be located in proximity to Adam and the digital advertising board; optionally utilizing or holding or carrying their own smartphones or other mobile devices. Those observers may be referred to herein as "observing-users".
[0067] In a demonstrative example, the playing-user may start engaging with the IEC or the video game; and the system may obtain or receive or may obtain or may deduce or may sense one or more attributes about the playing-user. The attributes may include, for example, gender, age, age-range, profession, geographical location, residence, marital status, interests and hobbies, recently-visited web-sites or web-pages, browsing history, recently-purchased items, recently-viewed (but not purchased) items, or the like. In some embodiments, the playing-user may be requested or required to log-in or to sign-in, in order to play the game or in order to engage with the IEC; and may utilize a social network account or an email address for such login process, thereby enabling the system to associate between the playing-user and attributes or information that are linked to (or exist within) his social network profile, or which were otherwise gathered in connection with his email address (e.g., purchases history). Other sources and/or sensors and/or beacons may be used for collecting or obtaining such or other user-specific attributes, as described above.

[0068] Similar attributes may be obtained or received with regard to the observing-users who watch the IEC or the video game; for example, by using one or more sensors and/or beacons as described above. In a demonstrative example, a beacon mechanism may be used, e.g., similar to Apple iBeacon, or by using Wi-Fi device identifier and/or cellular device identifier and/or Bluetooth device identifier and/or Near Field Communication (NFC) identifier, in order to determine information about a user that is standing nearby the IP-connected screen, optionally enabling the system to extract an entire user profile or at least one or more user attributes about such nearby observer or nearby person. In another demonstrative example, an imager or camera may be located near or at the IP-connected screen, or may be mounted thereon or may be integrated therein, and may capture images of observing-users or images of playing-users and/or images of nearby-standing users; an analysis module may analyze the captured images, and may extract from them image-portions that reflect the faces of observing users or nearby users; then, a face recognition module may identify those users based on a general search of an online database (e.g., reverse-search in Google Images search engine based on an image that is sent to it), or by using a specific data-set (e.g., searching through the set of "online friends" of the playing-users who are his "friends" in his Facebook or social networking account, based on similarity between the captured face image and the Facebook images of friends), thereby enabling the system to determine the identity and even the name of an observing user, and further enabling the system
to display on the IP-connected screen an observer-tailored message or invitation (e.g., inviting the observer user, using his own name, to participate in the IEC or to observe it or to be the next-player of the IEC or to join-in and engage in a multi-user IEC).

[0069] In another example, the content of the IEC may be tailored or modified in real-time based on sensed characteristics of the observer or observers, without necessarily requiring the system to determine or to pin-point their exact identity or identities, but rather, relying on the estimated gender and/or age-range and/or ethnicity of such observer or observers. For example, an imager of camera of the system or of the IP-connected screen, may capture images of the surrounding area; and an image analysis module or a Computer Vision module or unit may analyze such image(s), and may determine that a female is playing and/or observing (e.g., by identifying a player-user or an observer who wears a dress, high-heel shoes, long hair, lipstick makeup, female accessories); and in response, content of the IEC may be modified to present a specific content-item or digital-asset that an advertiser for females would like to place there, for example, showing a female perfume or a female skirt as an item within the IEC being played. In another example, the analysis of images may allow the system to estimate that the player-user or observing-user(s) is a child or a teenager (e.g., based on height, body proportions, attire or clothes, accessories, or the like), thereby allowing the system to tailor and modify the content of the IEC to present a specific child-oriented or teenage-oriented item (e.g., image of toy or food item that caters to children or teenagers). In some embodiments, the system may determine a value of an attribute of a majority of observing users, or of a dominant portion of observing users; for example, the system may determine that a majority of observing users are female (or are children), and may thus modify the IEC content to include a female-oriented (or child-oriented) product or item. Other suitable determinations or estimations may be performed.

[0070] Step 403 of the method may be performed for one particular generic object in the IEC or the video game, or for a set of generic objects in the IEC or the video game; or may be performed separately for each generic object in the IEC or video game. In this step, based on the known attributes and characteristics, of the playing-user(s) and/or of the observing-user(s), a real-time ad-placement bidding process is performed, with regard to the generic object (or for each such generic object separately, or for a set of generic objects). This step may be optional; since in some embodiments, object replacement may not necessarily require a bidding process.
[0071] The bidding process is performed only among advertisers that had prepared their proposed replacement object, intended to be inserted as a replacement for the generic object within the IEC that is being engaged or the video game that is being played or that is about to be engaged or played. In contrast with a conventional banner ad system, in which each advertiser prepares in advance an entire banner ad to be displayed if the advertiser wins the bidding process, the present invention requires and enables advertisers to prepare in advance only a fractional content item, namely, a representation of an object within an IEC or a video game to be inserted or to replace a generic placeholder object while the IEC or video game is being engaged or played. In some embodiments, the replacement object may be non-rectangular; for example, may be a precise image of a bottle or a car, which may be inserted by the system as a replacement image for a non-rectangular generic image or placeholder image (e.g., optionally by using a transparent layer of PNG image or GIF image, in order to "blend" a replacement image into a surrounding background).

[0072] In some embodiments, the generic object and the replacement object may be non-images; for example, they may be an audible sound or a melody or an audio clip or a background music or a jingle. For example, an IEC or a video game may be programmed to have a generic background music, which may be replaced by a branded music (e.g., a jingle or a tune that is associated with a particular brand or product or advertiser).

[0073] In some embodiments, the bidding process for replacement of a generic object may be performed only among the particular advertisers who indicated an interest in advertising a relevant specific object, and that had also prepared a specific object to be displayed or conveyed instead of the generic object. For example, the generic object may be a shirt that is shown during the IEC or the video game; and the relevant advertisers may be fashion vendors or clothes vendors or shirt vendors.

[0074] In contrast with a conventional banner ads exchange, in which each advertiser has to prepare its entire full-size banner ad, the present invention utilizes partial-advertisements or specific objects that are pre-provided by the bidding advertisers, and are inserted in real time as a replacement for a generic object within an IEC or a video clip or video game; thereby obviating the need for the advertiser to prepare in advance a full IEC or a full video game or a full video-clip, and enabling the advertiser to provide or to upload a smaller data-file or image or object which is then inserted into the IEC or video-game as a replacement for a generic object thereof.
[0075] Step 404 comprises the actual object replacement operation in the IEC or the video clip or video game, such that the original generic object is replaced by one particular replacement object, typically associated by the highest-bidder; or alternatively, replaced by an object provided by another one of the bidders (e.g., based on an algorithm that maximizes placement and/or revenue and/or fill-rate over time or across an inventory of digital marketing "real-estate" that is available for filling). It is noted that the replacement may not necessarily be based on a bidding process among advertisers; but rather, may be based on other conditions or pre-defined settings. In a demonstrative example, the system may detect that the playing-user (e.g., who logged in by using his Facebook credentials) had performed in the past a "like" operation to Pepsi Cola, and this determination may trigger the system to replace a generic image of a bottle in the IEC, with a particular replacement image of a Pepsi Cola bottle (e.g., if an advertiser such as PepsiCo had requested such replacement in such situation); or conversely, this determination may trigger the replacement of the generic bottle image, with a replacement image of Coca-Cola (e.g., if a rival or competitor had requested such placement). In another example, the replacement may be based on location-based determinations; for example, determining to replace a generic image of a sandwich in the IEC, with a replacement image of a Big Mac sandwich based on the determination that a McDonald's restaurant is located in proximity to the IP-connected screen. Other replacements may be performed, taking into account browsing history or "liking" history of user(s), and/or other data obtainable about the player-user and/or the observing-user(s).

[0076] The replacement may be performed by one or more suitable ways; for example: by copying and/or renaming one or more data files (e.g., the generic image is "bottle.png", the bidding advertiser provides his specific "pepsi.png", and upon his winning the bidding process, the file "pepsi.png" is renamed to be "bottle.png", while the original generic "bottle.png" is either over-written or deleted or discarded or renamed to "generic-bottle.png" or is moved to another folder). In another embodiment, the bits or payload of the specific object, are copied or moved to overwrite the bits or payload of the generic object; such that the file "bottle.png" remains, but its content is replaced or over-written. In another embodiment, the code of the IEC or video-game may be modified automatically on the fly, such that instead of defining the bottle image as pointing to "generic-bottle.png", the code would be modified to point to "pepsi-bottle.png". Other suitable replacement methods may be used.
In some embodiments, the object replacement may be performed without a bidding stage, or independently from a bidding stage. For example, the IEC OR video game or video clip is being operated by, or on behalf of, or within an area controlled by, a shirts vendor; and the system may automatically detect one or more characteristics of the playing-user (and/or the observing-users), and may replace images or objects within the video-game based on such detected characteristics. For example, by using an Augmented Reality (AR) fitting room process, the shirts vendor does not have to prepare many videos in advance; but rather, it may command the system to automatically change the video on-the-fly to contain the particular shirt that is most likely to trigger a sale, based on characteristics of the playing-user and/or the observing-users (e.g., as described above).

The present invention enables replacement of a generic object with a specific object, not only in an IEC or a video game, but also in other digital assets or digital content items or containers. For example, in a streaming video system (e.g., similar to YouTube, Netflix, Hulu, HBO On Demand, or the like), a video or an audio-video item (e.g., a video-clip of a song, or an entire motion picture or movie) may include a generic object, which may subsequently be replaced on-the-fly based on detected characteristics of one or more observing-users, or based on characteristics of a main user who is logged-in to the account; thereby enabling a new format of advertising and product-placement within movies, motion pictures, video-clips that accompany popular songs, or the like; and further enabling the fine tailoring of a digital content, or even of a commercial or an advertisement, to the particular characteristics of the user(s) who watch it or who are about to watch it.

The present invention may comprise a method for generating an interactive video game composed of an Augmented Reality (AR) agent or module (e.g., design module 102), which operates in conjunction with a designer utilizing a computing device; and performing multiple stages, for example, briefing stage, questioning stage, approval stage, and final design stage, such that a tailored video-game is generated automatically or semi-automatically without the involvement of a code programmer. The campaign containing the video game may be automatically monitored, managed, modified and/or fine-tuned.

The present invention may further comprise a method for adding advertisement(s) or product placement into an IEC or a video clip or a video game, by defining a generic object within the video clip or video game, which are subsequently replaced (immediately prior to
playing, or during the playing) with a specific object having the same size and the same usage or purpose or utility or function. Optionally, the specific object that replaces the generic object, is selected by using a real-time bidding process among multiple bidding advertisers. Optionally, the specific object that replaces the generic object, is selected by taking into account at least: attributes of the playing-user; and/or attributes of the user who is logged-in to the relevant account; and/or attributes of one or more observers who are observing and/or who are located in immediate proximity to the playing-user or to the digital screen. In some embodiments, the specific object that replaces the generic object, is selected after the IEC or video clip or video game has already started, or during the playback of the IEC or video clip, or during an ongoing play session or engagement session with the IEC or the video game.

[0081] The present invention may provide solutions and systems in the field of digital signage. More specifically, the present invention may facilitates interactions between: (A) mobile devices (such as mobile phones, cellular phones, smartphones, tablets, phone-tablet or "phablet" devices, laptop computers, netbook computers, notebook computers, or the like), and (B) Internet Protocol (IP) connected or IP-enabled or IP-supporting digital signs (or digital screens), over a wireless communication network or over wireless communication link(s) (e.g., via the Internet, a Wi-Fi network, a Wi-Max network, cellular network, 2G network, 3G network, 3.5G network, 4G network, 4G LTE network, a combination of wireless networks and/or cellular network, or the like).

[0082] The present invention may provide applications allowing these interactions, and the present invention allows such interactive applications to be efficiently created, designed, managed, monitored, operated, controlled, modified, distributed and/or connected; in an efficient manner that does not require developers, programmers and/or coding professionals. It is clarified that the terms "application", "app", "mobile app", "web-based app", "browser-based app", "interactive app", or similar terms, may relate and may include any suitable application which enables interaction(s) between one-or-more mobile electronic devices and one-or-more IP-connected screens; and such "interactive app" may be generated and created efficiently, in accordance with the present invention, using one or more suitable techniques (e.g., using HTML5, using CSS, using JavaScript, using Adobe Flash, using native programming language, or the like). It is clarified that any portions of the discussion herein, that relate to a Flash application or to a Flash file, are non-limiting examples for demonstrative purposes only; and the
interactive application(s) of the present invention may be constructed by other (non-Flash) technologies or programming language(s) or scripts.

[0083] The present invention may further provide platform enabling a novel way of creating, designing, distributing, managing, measuring and monitoring these applications, for example, using a cloud based service (e.g., implemented as SaaS - Software as a Service), or using other suitable architectures (e.g., client-server, peer-to-peer, distributed architecture, centralized architecture, or the like).

[0084] The present invention may further enable accumulation and analysis of information and data regarding these interactions, such as statistics and analytics, via the cloud servers or other suitable server(s). The accumulation and aggregation of data may then be utilized for data mining and data analysis, for generating analytics and Business Intelligence (BI) insights and "best practice" recommendations or suggestions or insights; and in order to automatically deduce and generate recommendations and improvements.

[0085] The present invention may comprise a cloud based SaaS (Software as a Service) platform, or other suitable platform or system, enabling the efficient design, creation, computing, distribution, management and measurement statistics and analytics of interactive applications, thereby allowing real-time two-way interaction between mobile devices (such as smartphones and tablets) with digital IP-connected signs or screens, such as advertising billboards of any size, computer screens, smart TVs, and other IP-connected screen.

[0086] The system of the present invention may allow a designer to design and to create an interactive app and screen content (as well as control logic of the interactive application and definition of the flow of the interactive application) using the plug in or using the web interface, without leaving his design environment (e.g., Adobe Flash or HTML5); and/or by using a web creation interface, and/or without the need for adding or including software developers (e.g., programmers, code developers) in the process. The designer may utilize the system of the present invention in order to efficiently design both the digital content for the digital screen, then the mobile app interface, and then connect both and upload them to the SaaS platform where it generates an interactive app or file. The interactive file(s), such as a Flash file or an HTML file (e.g., HTML-5 file(s), optionally utilizing CSS or JavaScript and/or other techniques), may then be downloaded or viewed by virtual any end-user device ("client") and may be used on digital sign players and systems. The invention this provides a full "eco system" for rapidly and
efficiently generating interactive apps, eliminating or reducing the need for software and application developers.

[0087] The SaaS User Interface (UI), available on mobile browsers and/or desktop / laptop browsers, may include areas where interactive apps may be uploaded or downloaded, design areas allowing design modifications and alterations from within the SaaS platform, management area to control the apps (such as, start and stop them), statistics and analytics area to view and monitor and manage the apps performance, and social areas including a blog, sharing modules, content publishing modules, modules for creating and/or modifying and/or sharing and/or publishing user content, and other suitable options.

[0088] The present invention may be implemented as a Software as a Service (SaaS) platform which enables content creators (creative teams and designers) to design and create in an easy way, engaging interactive experiences between any digital components. The system enables the creation of mobile-to-screen interactive experiences, which are deployed on digital IP-connected screens, optionally by using a Content Management System (CMS) which may be optional but need not necessarily be required. The content items generated by the present invention are delivered in rapid development cycles, enabling customers to be constantly up-to-date and efficiently create and deploy the latest high-quality digital interactive experiences.

[0089] The system of the present invention may be implemented by using a cloud-based engine, able to control other components; and able to serve data to, and receive data from, other components. The cloud-based engine enables the creation of interactive experiences, and manages and controls the interactive experiences in dynamic real-time manner. The system may comprise, or may be connected to (e.g., wirelessly), an Internet Protocol (IP) connected screen or other suitable display unit. The IP-connected screen may be, for example, a large digital screen in a sports venue or arena or stadium; a set of group or batch of discrete screens or of interconnected screens; a digital advertising screen or billboard on which digital content may be displayed; a digital advertising screen located at (or near) a shop or a store or other retailer venue or commerce venue; a digital screen located in other locations (e.g., at a bus-stop or train-stop or subway-stop; at a gas station; at or near or within a vending machine or automated vending machine, or Automatic Teller Machine (ATM) or other "kiosk" type machine or device or system; at a bank or banking center, or at a financial services center; at an entertainment center
or venue; at an arts center or venue; at a transportation hub; on a road or highway; inside a mall or shopping area); or the like.

[0090] In a demonstrative implementation, the IP-connected screen may display or may play-back an interactive experience file that may be able to run on any digital screen infrastructure. Optionally, the interactive experience file may run on (or through, or in association with) a CMS module (e.g., CMS server or CMS software) which may manage or control the digital signage content, for example, by utilizing a playlist timeline module. In a demonstrative implementation, the IP-connected screen 102 may contain all the relevant graphic assets; may be implemented as a Flash file (SWF file); and may be controlled by the cloud-based engine. Other suitable file formats or structures may be used (e.g., using HTML5, using JavaScript, using CSS, using native programming language, or the like).

[0091] The cloud-based engine may be in communication with one or more wireless electronic devices, for example, a smartphone, a tablet, a smart-watch, an Augmented Reality (AR) device, a wearable device, a portable gaming device, and/or other suitable electronic devices or portable devices which may be operated by end-users. The wireless communication may utilize Wi-Fi, Wi-Max, wireless LAN communication, cellular communication, 3G, 4G, 4G-LTE, and/or other suitable wireless communication protocols or standards. In some implementations, each end-user device may comprise, or may run, a lightweight client-side (end-user device side) controller application, which may be implemented (for example) as a Web-based application (e.g., utilizing HTML5 / CSS3).

[0092] The system may comprise a dashboard module or back-office gate or portal, which allows customers to create new interactions, to edit previously-created interactions, to play interactions (e.g., on the IP-connected screen and/or on the end-user devices), to obtain statistics analytics, and to manually operate or control specific interactions.

[0093] In some embodiments, the system may utilize a smartphone or other handheld device or portable electronic device (e.g., tablet, smart-watch, Augmented Reality (AR) device or glasses or helmet, portable gaming device, or the like) to become or to operate as the controller of the experience from the end-user point-of-view. The system's technology allows the controller to be either a native app or a web application. Being a web application, the system's technology creates a lightweight web application loaded to the handheld devices even at poor or low-bandwidth (e.g., 3G) connectivity as in stadiums or theaters or other closed venues or indoor
locations. The system's controller may be a lightweight HTML5 framework, thus sturdy and proven, and it may run behind any application built using the system. This may be an important asset as it may not matter which application is running, such as a car race or a trivia game, and where it is running, and the application behind it on the smartphone or tablet may remain the same. This feature may have important implications as the framework is tested, stable and proven, so there is no need to check each application built using the system: any newly-created application would immediately run on a mature and proven framework or foundation, rather than being built from scratch or from the ground up each time for a certain purpose.

[0094] The system's platform may be implemented as a Software as a Service solution, and the first cloud based, full SaaS solution for the creation, management, distribution and measurement of interactions between handheld connected devices such as smartphone or tablets to digital screens connected to the Internet. The system allows the rapid and efficient creation, from within existing software and from the web itself, of interactive apps, without the need for programmers or coders or developers. The system's solution takes a complicated, long and expensive process and turns it into a simple, easy to use product. The system's cloud may also operate as a comprehensive data hub, storing and analyzing data regarding interactive activities, allowing to better understand, analyze and learn best practices regarding what is working and what is not. On top, the system may also create and support a community of users sharing ideas, know-how and knowledge regarding interactions between mobile devices to screens. The system may provide a framework allowing the user to create almost any application, without templates for the big screen and with only operational templates for the controller. This way the system makes the developers unnecessary, allowing for a much simple and fast creation time.

[0095] Some embodiments of the present invention may utilize a step-by-step "wizard" module which may enable (or may assist) a designer to create an interactive application for interactions among IP-connected screen(s) and mobile electronic device(s). The module may be a web-based or browser-based application or module or plug-in or extension, or a stand-alone program or application. The module may comprise or may utilize a main menu or a sequence of main operations, for example, initial configuration, defining of assets, defining of logic, IP-connected screen-side design, end-user side design, review interactive application, and submit or share or upload the interactive application.
[0096] For example, a designer may select a type or template of interactive application (e.g., a survey application; a virtual bowling application; a virtual basketball hoops application; a virtual soccer-kicking application; or the like). The designer may select or define or customize the Flow settings for the interactive application; for example, whether the end-user controls the end-user module by hand-motion or by tapping or by on-screen operations or button clicking or "swipe" gestures (or a combination of multiple methods); whether the flow or the progress between events is based on velocity or on timing or takes into account a pseudo-random value (or a combination of methods); the number of levels or iterations in the interactive application; and other flow-related settings and definitions.

[0097] The designer may further define and customize the call-to-action method(s), for example, whether a coupon would be generated and then presented or delivered to the end-user (e.g., allowing the user to upload a graphic file representing a coupon; or allowing the user to connect the interactive application to a couponing sub-system or module); whether a redirection of the end-user would occur (e.g., to a pre-defined web-site or web-page or other virtual destination); or other suitable calls-to-action (e.g., directing the user to "share" the experience with other users, or to post about the experience in a social networking website or a blog or micro-blog).

[0098] The designer may select one or more authentication methods from a pre-defined list; for example, using a social network login, using email, using an avatar, skipping authentication and proceeding as a guest, or a combination of methods. The designer may proceed to define or upload digital assets (e.g., graphic files, video files, audio files, text items); for example, an initial screen-side video to attract the user(s) eyeballs to the IP-connected screen; an engagement video to be shown after the user connected to the interactive application; a set of videos (or, a set of groups-of-videos) to be shown after the user performs a particular gesture or motion or selection or other user feedback (e.g., each defined gesture triggering a different video, or a different group-of-videos).

[0099] The designer may proceed to define the IP-connected screen side design, with suitable logo, greeting text, website URL, an optional QR code, and/or other elements. The designer may then proceed to define the mobile-side screen design, including a "welcome" screen, one or more "action" screens, one or more "outcome" screens that are related to one or more of the action screens, and/or other elements.
[00100] The designer may then review the interactive application for testing and/or debugging purposes; and may go back and edit or customize or modify the previously-defined elements. The interactive application may then be submitted or sent to one or more destinations; for example, to a virtual folder or cabinet of the designer; to a cloud-based repository; to a particular client; to a supervisor; or the like. Other suitable operations may be used, in other suitable order or sequence.

[00101] Some embodiments may provide a device, system, and method of interactive communications among mobile devices and Internet Protocol (IP) connected screens. A system enables rapid and efficient generation of an interactive application, that has a screen-side component able to run on IP-connected screen, and that has a mobile-side component able to run on smartphones, tablets, smart-watches, and other mobile electronic devices. User feedback from an end-user device, or aggregated user feedback from multiple end-user devices, interacts with and affects the interactive application as displayed on the IP-connected screen. The system enables the interactive application to run and to operate automatically at a sports venue, a digital billboard or digital sign, or at other suitable venues.

[00102] Some embodiments of the present invention may utilize suitable hardware components and/or software modules, which may be part of servers, computers, databases, repositories, mobile devices, or other units; and may include, for example, processors, memory units, storage units, input units (keyboard, mouse, touch-screen, etc.), output units (screen, speakers, etc.), wireless transceivers and/or wired transceivers, modems, Network Interface Cards (NICs), network adapters, network elements, Operating Systems, drivers, location-based or location-finding units (e.g., GPS units), software applications, or the like.

[00103] In some embodiments, a method comprises: automatically generating an interactive application which enables wireless interaction between an Internet Protocol (IP) connected screen and one or more mobile electronic devices, by performing: (a) receiving a briefing data structure which comprises a description of features of a target interactive game to be generated; (b) analyzing said briefing data structure, and extracting from said briefing data structure at least: (I) a type of interactive game that is suitable to be used in order to generate the target interactive game; and (II) a value of a parameter that is used within the target interactive game; (c) generating a series of dependent questions which query a designer regarding values of one or more other parameters of the target interactive game; and deducing values for said one or
more other parameters from answers provided by the designer; (d) generating a draft skeleton of the target interactive game, comprising game elements and game logic rules; (e) presenting for the designer approval or rejection or modification, said game elements and said draft skeleton; (f) assembling a final version of the target interactive game, to be played on said IP-connected screen via said one or more mobile electronic device.

[00104] In some embodiments, the method further comprises, prior to performing step (f): receiving from the designer a set of digital assets intended for placement within the target interactive game; inserting said digital assets into suitable placeholders within the draft skeleton of the target interactive game.

[00105] In some embodiments, the method further comprises, subsequent to step (f): enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen.

[00106] In some embodiments, the method further comprises, subsequent to step (f): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) based on the detected attribute of the player-user, modifying a content item that is displayed within the target interactive game; wherein the modifying is performed prior to commencement of the play-session of the target interactive game.

[00107] In some embodiments, the method further comprises, subsequent to step (f): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) based on the detected attribute of the player-user, modifying a content item that is displayed within the target interactive game; wherein the modifying is performed dynamically in real-time during an ongoing play-session of the target interactive game.
In some embodiments, the method further comprises, subsequent to step (f): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user.

In some embodiments, the method further comprises, subsequent to step (f): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; based on the detected attribute of the observing-user, modifying a content item that is displayed within the target interactive game; wherein the modifying is performed prior to commencement of the play-session of the target interactive game.

In some embodiments, the method further comprises, subsequent to step (f): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (C) based on the detected attribute of the observing user, modifying a content item that is displayed within the target interactive game; wherein the modifying is performed dynamically in real-time during an ongoing play-session of the target interactive game.

In some embodiments, the method further comprises, subsequent to step (f): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, modifying a content item that is displayed within the target interactive game;
wherein the modifying is performed prior to commencement of the play-session of the target interactive game.

[00112] In some embodiments, the method further comprises, subsequent to step (i): (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, modifying a content item that is displayed within the target interactive game; wherein the modifying is performed dynamically in real-time during an ongoing play-session of the target interactive game.

[00113] In some embodiments, the analyzing comprises: applying a natural language processing algorithm to said briefing data structure; and performing said extracting by taking into account results of said natural language processing algorithm applied to said briefing data structure.

[00114] In some embodiments, the analyzing comprises: extracting from the briefing data structure a particular keyword which is estimated to indicate a required type of the target interactive game; selecting from a pool of templates of interactive games, a particular template of interactive game which matches said particular keyword.

[00115] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser.

[00116] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement; (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object
replacement; (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

[00117] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a real-time bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement; (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

[00118] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser, wherein the generic on-screen object is associated with a first utility function; prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement; (ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function; (iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function; (iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

[00119] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object
replacement, each advertiser bid including at least an offered price for said object replacement; (ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function; (iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function; (iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

[00120] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) based on the detected attribute of the player-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

[00121] In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) based on the detected attribute of the player-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.
In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user.

In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.
In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

In some embodiments, assembling the final version of the target interactive game comprises: generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser; wherein the method further comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

In some embodiments, a computerized process comprises: generating an interactive application which enables wireless interaction between an Internet Protocol (IP) connected screen and one or more mobile electronic devices, wherein the interactive video game comprises a generic on-screen object which is dynamically replaceable by a specific object provided by an advertiser.
In some embodiments, the computerized process comprises: prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement; (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

In some embodiments, the computerized process comprises: after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a real-time bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement; (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

In some embodiments, the generic on-screen object is associated with a first utility function; and the computerized process comprises: prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement; (ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function; (iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function; (iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

In some embodiments, the computerized process comprises: after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a bidding process among multiple advertisers, by: (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement; (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement; (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.
replacement; (ii) excluding from said bidding process, any bid which proposes to replace said
generic on-screen object with a replacement object that is associated with a second, different
utility function; (iii) maintaining in said bidding process, only bids which propose to replace said
generic on-screen object with a replacement object that is associated with said first utility
function; (iv) selecting a particular advertiser out of said multiple advertisers who submitted
advertiser bids for said object replacement; (v) replacing within the generic on-screen object
within the interactive video game, with a specific on-screen object that is received from said
particular advertiser.

[00132] In some embodiments, the computerized process comprises: (A) enabling a play-
session of the target interactive game on the IP-connected screen, wherein the play-session is
controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-
associated with the IP-connected screen; (B) detecting an attribute of the player-user who utilizes
the mobile electronic device which is wirelessly operably-associated with the IP-connected
screen; (C) based on the detected attribute of the player-user, replacing the generic on-screen
object with a specific branded on-screen object; wherein the replacing is performed dynamically
in real-time during an ongoing play-session of the target interactive game.

[00133] In some embodiments, the computerized process comprises: (A) enabling a play-
session of the target interactive game on the IP-connected screen, wherein the play-session is
controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-
associated with the IP-connected screen; (B) detecting an attribute of the player-user who utilizes
the mobile electronic device which is wirelessly operably-associated with the IP-connected
screen; (C) based on the detected attribute of the player-user, replacing the generic on-screen
object with a specific branded on-screen object; wherein the replacing is performed immediately
prior to commencement of the play-session of the player-user with target interactive game.

[00134] In some embodiments, the computerized process comprises: (A) enabling a play-
session of the target interactive game on the IP-connected screen, wherein the play-session is
controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-
associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is
observing the play-session of the target interactive game that is controlled by the player-user.

[00135] In some embodiments, the computerized process comprises: (A) enabling a play-
session of the target interactive game on the IP-connected screen, wherein the play-session is
controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

[00136] In some embodiments, the computerized process comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

[00137] In some embodiments, the computerized process comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user; (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

[00138] In some embodiments, the computerized process comprises: (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen; (C) detecting a second attribute of an observing-user who is observing the
play-session of the target interactive game that is controlled by the player-user; (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

[00139] The present invention may be implemented by using a special-purpose machine or a specific-purpose that is not a generic computer, or by using a non-generic computer or a non-general computer or machine. Such system or device may utilize or may comprise one or more units or modules that are not part of a "generic computer" and that are not part of a "general purpose computer", for example, cellular transceivers, cellular transmitter, cellular receiver, GPS unit, location-determining unit, accelerometer(s), gyroscope(s), device-orientation detectors or sensors, device-positioning detectors or sensors, or the like.

[00140] Functions, operations, components and/or features described herein with reference to one or more embodiments of the present invention, may be combined with, or may be utilized in combination with, one or more other functions, operations, components and/or features described herein with reference to one or more other embodiments of the present invention.

[00141] While certain features of the present invention have been illustrated and described herein, many modifications, substitutions, changes, and equivalents may occur to those skilled in the art. Accordingly, the claims are intended to cover all such modifications, substitutions, changes, and equivalents.
CLAIMS

What is claimed is:

1. A method comprising:
   automatically generating an interactive application which enables wireless interaction between an Internet Protocol (IP) connected screen and one or more mobile electronic devices, by performing:
   (a) receiving a briefing data structure which comprises a description of features of a target interactive game to be generated;
   (b) analyzing said briefing data structure, and extracting from said briefing data structure at least:
       (I) a type of interactive game that is suitable to be used in order to generate the target interactive game; and
       (II) a value of a parameter that is used within the target interactive game;
   (c) generating a series of dependent questions which query a designer regarding values of one or more other parameters of the target interactive game; and deducing values for said one or more other parameters from answers provided by the designer;
   (d) generating a draft skeleton of the target interactive game, comprising game elements and game logic rules;
   (e) presenting for the designer approval or rejection or modification, said game elements and said draft skeleton;
   (f) assembling a final version of the target interactive game, to be played on said IP-connected screen via said one or more mobile electronic device.

2. The method of claim 1, further comprising, prior to performing step (f):
   receiving from the designer a set of digital assets intended for placement within the target interactive game;
   inserting said digital assets into suitable placeholders within the draft skeleton of the target interactive game.
3. The method of any one of claims 1-2, further comprising, subsequent to step (f):
   enabling a play-session of the target interactive game on the IP-connected screen,
   wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
   which is wirelessly operably-associated with the IP-connected screen.

4. The method of any one of claims 1-3, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen,
       wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
       which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of the player-user who utilizes the mobile electronic device which
       is wirelessly operably-associated with the IP-connected screen;
   (C) based on the detected attribute of the player-user, modifying a content item that is
       displayed within the target interactive game; wherein the modifying is performed prior to
       commencement of the play-session of the target interactive game.

5. The method of any one of claims 1-4, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen,
       wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
       which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of the player-user who utilizes the mobile electronic device which
       is wirelessly operably-associated with the IP-connected screen;
   (C) based on the detected attribute of the player-user, modifying a content item that is
       displayed within the target interactive game; wherein the modifying is performed dynamically in
       real-time during an ongoing play-session of the target interactive game.

6. The method of any one of claims 1-5, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen,
       wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
       which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of an observing-user who is observing the play-session of the target
       interactive game that is controlled by the player-user.
7. The method of any one of claims 1-6, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen,
   wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
   which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of an observing-user who is observing the play-session of the target
   interactive game that is controlled by the player-user;
   based on the detected attribute of the observing-user, modifying a content item that is displayed
   within the target interactive game; wherein the modifying is performed prior to commencement
   of the play-session of the target interactive game.

8. The method of any one of claims 1-7, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen,
   wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
   which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of an observing-user who is observing the play-session of the target
   interactive game that is controlled by the player-user;
   (C) based on the detected attribute of the observing user, modifying a content item that is
   displayed within the target interactive game; wherein the modifying is performed dynamically in
   real-time during an ongoing play-session of the target interactive game.

9. The method of any one of claims 1-8, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen,
   wherein the play-session is controlled by a player-user who utilizes a mobile electronic device
   which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting a first attribute of the player-user who utilizes the mobile electronic device
   which is wirelessly operably-associated with the IP-connected screen;
   (C) detecting a second attribute of an observing-user who is observing the play-session of the
   target interactive game that is controlled by the player-user;
   (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second
   attribute of the observing-user, modifying a content item that is displayed within the target
   interactive game; wherein the modifying is performed prior to commencement of the play-
   session of the target interactive game.
10. The method of any one of claims 1-9, further comprising, subsequent to step (f):
   (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
   (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, modifying a content item that is displayed within the target interactive game; wherein the modifying is performed dynamically in real-time during an ongoing play-session of the target interactive game.

11. The method of any one of claims 1-10, wherein the analyzing comprises:
   applying a natural language processing algorithm to said briefing data structure; and performing said extracting by taking into account results of said natural language processing algorithm applied to said briefing data structure.

12. The method of any one of claims 1-11, wherein the analyzing comprises:
   extracting from the briefing data structure a particular keyword which is estimated to indicate a required type of the target interactive game;
   selecting from a pool of templates of interactive games, a particular template of interactive game which matches said particular keyword.

13. The method of any one of claims 1-12, wherein assembling the final version of the target interactive game comprises:
   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser.
14. The method of any one of claims 1-13, wherein assembling the final version of the target interactive game comprises:

   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;

   prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by:

   (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;
   (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;
   (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

15. The method of any one of claims 1-14, wherein assembling the final version of the target interactive game comprises:

   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser,

   after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a real-time bidding process among multiple advertisers, by:

   (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;
   (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;
   (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

16. The method of any one of claims 1-15, wherein assembling the final version of the target interactive game comprises:

   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser, wherein the generic on-screen object is associated with a first utility function;
prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by:

(i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;

(ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function;

(iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function;

(iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;

(v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

17. The method of any one of claims 1-16, wherein assembling the final version of the target interactive game comprises:

generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;

after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a bidding process among multiple advertisers, by:

(i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;

(ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function;

(iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function;

(iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;

(v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.
18. The method of any one of claims 1-17, wherein assembling the final version of the target interactive game comprises:

   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;
   wherein the method further comprises:
   (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (C) based on the detected attribute of the player-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

19. The method of any one of claims 1-18, wherein assembling the final version of the target interactive game comprises:

   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;
   wherein the method further comprises:
   (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (C) based on the detected attribute of the player-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

20. The method of any one of claims 1-19, wherein assembling the final version of the target interactive game comprises:
generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;

wherein the method further comprises:

(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;

(B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user.

21. The method of any one of claims 1-20, wherein assembling the final version of the target interactive game comprises:

generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;

wherein the method further comprises:

(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;

(B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;

(C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

22. The method of any one of claims 1-21, wherein assembling the final version of the target interactive game comprises:

generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;

wherein the method further comprises:

(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
(C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

23. The method of any one of claims 1-22, wherein assembling the final version of the target interactive game comprises:
   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;
   wherein the method further comprises:
   (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
   (C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
   (D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

24. The method of any one of claims 1-23, wherein assembling the final version of the target interactive game comprises:
   generating an interactive video game which comprises a generic on-screen object which is replaceable by a specific object provided by an advertiser;
   wherein the method further comprises:
   (A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;

(C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;

(D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

25. A computerized process comprising:

   generating an interactive application which enables wireless interaction between an Internet Protocol (IP) connected screen and one or more mobile electronic devices, wherein the interactive video game comprises a generic on-screen object which is dynamically replaceable by a specific object provided by an advertiser.

26. The computerized process of claim 25, comprising:

   prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by:

   (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;

   (ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;

   (iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

27. The computerized process of any one of claims 25-26, comprising:

   after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a real-time bidding process among multiple advertisers, by:

   (i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;
(ii) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;
(iii) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

28. The computerized process of any one of claims 25-27,
wherein the generic on-screen object is associated with a first utility function,
wherein the computerized process comprises:
prior to commencement of a play-session of the target interactive game, performing a bidding process among multiple advertisers, by:
(i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;
(ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function;
(iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function;
(iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;
(v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

29. The computerized process of any one of claims 25-28, comprising:
after commencement of a play-session of the target interactive game, and while said play-session is ongoing, performing a bidding process among multiple advertisers, by:
(i) receiving multiple advertiser bids for object replacement, each advertiser bid including at least an offered price for said object replacement;
(ii) excluding from said bidding process, any bid which proposes to replace said generic on-screen object with a replacement object that is associated with a second, different utility function;
(iii) maintaining in said bidding process, only bids which propose to replace said generic on-screen object with a replacement object that is associated with said first utility function;
(iv) selecting a particular advertiser out of said multiple advertisers who submitted advertiser bids for said object replacement;
(v) replacing within the generic on-screen object within the interactive video game, with a specific on-screen object that is received from said particular advertiser.

30. The computerized process of any one of claims 25-29, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(C) based on the detected attribute of the player-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

31. The computerized process of any one of claims 25-30, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting an attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(C) based on the detected attribute of the player-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

32. The computerized process of any one of claims 25-31, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user.

33. The computerized process of any one of claims 25-32, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
(C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

34. The computerized process of any one of claims 25-33, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting an attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
(C) based on the detected attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.

35. The computerized process of any one of claims 25-34, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
(D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed dynamically in real-time during an ongoing play-session of the target interactive game.

36. The computerized process of any one of claims 25-35, comprising:
(A) enabling a play-session of the target interactive game on the IP-connected screen, wherein the play-session is controlled by a player-user who utilizes a mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(B) detecting a first attribute of the player-user who utilizes the mobile electronic device which is wirelessly operably-associated with the IP-connected screen;
(C) detecting a second attribute of an observing-user who is observing the play-session of the target interactive game that is controlled by the player-user;
(D) based on a combination of (i) the first attribute of the player-user, and (ii) the second attribute of the observing-user, replacing the generic on-screen object with a specific branded on-screen object; wherein the replacing is performed immediately prior to commencement of the play-session of the player-user with target interactive game.
Design Module

DM receives and analyzes the data.

DM asks specific closed questions based on the Brief data and on previous answers.

DM creates campaign guidelines and flow skeleton.

DM approves / rejects the Skeleton and/or each Element; optionally, Designer selects from multiple options of Skeletons or Elements.

Design Phase

Designer uploads assets and content-items of brand.

DM monitors the usage.

Engagement Phase

DM autonomously makes real-time modification actions or proposals.

Computing Device

Briefing Phase

Designer creates / uploads Brief data.

Questioning Phase

Designer provides answers.

Approval Phase

Designer activates campaign.

Fig. 1
IP-connected Screen 301

Playback Unit 302
User-Input Collector 303

Monitoring / Listening Unit 304
Log Database 305

Data Analysis Module 306
Notification Unit 307

IEC Customization Generator 308

Machine Learning 322
DB 321

System 300

Fig. 3
Prepare IEC / video-clip / video-game having a replaceable generic object

401

Determine attributes of playing-user(s) and/or observing-user(s)

402

Optionally, perform a bidding process to select advertiser for object replacement

403

Replace generic object with specific object

404

Fig. 4
**INTERNATIONAL SEARCH REPORT**

**International application No.**

**PCT/TB2016/051740**

A. **CLASSIFICATION OF SUBJECT MATTER**

**IPC (2016.01)** H04W 4/00

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)**

IPC (2016.01) H04W 4/00

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 practicable, search terms used)

Databases consulted: USPTO, THOMSON INNOVATION

C. **DOCK VIENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

☐ Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
  
  "A" document defining the general state of the art which is not considered to be of particular relevance
  
  "E" earlier application or patent but published on or after the international filing date
  
  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another cited document, or other documents referred to
  
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**Date of the actual completion of the international search**

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**Date of mailing of the international search report**

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