Title: GENERATION OF ANIMATION USING ICONS IN TEXT

Abstract: There is described a method and a system for creating animation. The method comprises receiving a text descriptive of a scene to be converted into the animation; inserting at least one icon within the text, each one of the at least one icon being associated with an element of the scene, and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; executing the text with the at least one icon to generate the animation; and displaying the animation in a represent the scene, with the element according to the at least one of the parameter, the action and the spatial location defined by the at least one icon.
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GENERATION OF ANIMATION USING ICONS IN TEXT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority from US provisional patent application 61/107,545 filed October 22, 2008 and entitled "GENERATION OF ANIMATION USING ICONS IN TEXT".

TECHNICAL FIELD

[0002] The present disclosure relates to the field of digital content creation, and more specifically to controlling events in animation that is text-based.

BACKGROUND

[0003] Text-to-Movie (TTM) or Text-to-Animation (TTA) systems convert text into a movie or animation in either a 2D image or 3D rendered scene format. In such systems, the description of all elements in a scene is found within the text. As a simple example, a typical input text to a TTM system might be: "Bob stands up and walks to the door". The TTM system converts this sentence into an animation in which a character stands up and walks to a door in a room.

[0004] In current TTM systems all the actions are described within the text using words. Any change to a parameter of an action has to be done within the text using words. Referring back to the above example, when Bob stands up, he can do it quickly or slowly. Similarly, Bob can walk quickly or slowly, loudly or softly, etc. To change any one of these aspects, the user would have to add the appropriate words to the text: "Bob stands up quickly and walks slowly to the door".

[0005] While the use of text is natural for the user to convey a story, it does suffer from certain limitations with respect to controlling the details of actions, special effects or even in describing abstract locations in a 3D environment. It can become rather cumbersome to write every detail of every action of an actor/object in a scene. Imagine having to specify every aspect of every action in the text: "Bob stands up slowly and walks quickly but quietly to the door with his legs coming high off the ground for each step to the window". Some of the ambiguous decisions are made by Artificial Intelligence (AI) algorithms, so that the user does not have to specify every detail. In general, the AI will make decisions on important aspects that the user did
not specify. In the example above, if the user does not specify how quickly Bob is to
stand up, then an AI engine will choose an appropriate default value.

[0006] Even if it is specified in the text using words that something is done quickly, there is the problem of ambiguity inherent in the language: how quick is quick? This is a difficult issue for text based systems. Consider another situation where the user would like a character to move to a specific location in the scene that does not contain an object. Since there is no object to act as a destination, he might have to write text like the following: "Bob walks to a position 3 feet to the right of the table and 1 foot behind the chair". This is not a natural way to write.

[0007] Therefore, there is a need for a more natural way to define characters of an animation and the actions that they perform.

SUMMARY

[0008] In accordance with an embodiment, there is provided a method for creating an animation, comprising: receiving a text descriptive of a scene to be converted into the animation; inserting at least one icon within the text, each one of the at least one icon being associated with an element of the scene, and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; executing the text with the at least one icon to generate the animation; and displaying the animation to represent the scene, with the element according to the at least one of the parameter, the action and the spatial location defined by the at least one icon.

[0009] In accordance with an embodiment, there is provided a system for creating an animation, comprising: an icon generator for receiving a text descriptive of a scene to be converted into the animation, and for inserting at least one icon within the text, each one of the at least one icon being associated with an element of the scene, and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; and an animation generator in operative communication with the icon generator, for executing the text with the at least one icon to generate the animation, the animation representing the scene, with the element according to the at least one of the parameter, the action and the spatial location defined by the at least one icon.
[0010] In accordance with another embodiment, there is provided a system for creating an animation, comprising: a processing device; and a memory, the memory comprising instructions for implementing the processing device to: receive a text descriptive of a scene to be converted into the animation; insert at least one icon within the text, each one of the at least one icon being associated with an element of the scene and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; execute the text with the at least one icon to generate the animation; and output the animation to represent the scene, with the element according to the at least one of the parameter, the action, and the spatial location defined by the at least one icon.

[0011] In accordance with an embodiment, there is provided a computer readable media storing instructions for creating an animation, the instructions being readable by a processing device, for allowing the processing device to: receive a text descriptive of a scene to be converted into the animation; insert at least one icon within the text, each one of the at least one icon being associated with an element of the scene and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; execute the text with the at least one icon to generate the animation; and output the animation to represent the scene, with the element according to the at least one of the parameter, the action, and the spatial location defined by the at least one icon.

[0012] In accordance with an embodiment, there is provided a graphical user interface (GUI) for inserting an icon into a text, in view of generating an animation therefrom, the GUI comprising: a text display window comprising a text data entry field for allowing a user to enter the text therein, the text being descriptive of a scene to be converted into the animation; an icon selection display window comprising a set of available icons associated with an element of the scene, the icon selection display window allowing a user selection of the icon from the set of available icons, the icon defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; and an output unit for sending the text and the user selection to a processing device, the processing device to be used in: inserting the icon into the text based on the user selection, and in executing the text with the icon inserted therein to generate the animation.
The expression "text timeline" refers to an event timeline driven by text. The input text for the Text Timeline can come from a word processor, a text box, a text block, or any other type of text input.

The term "element" refers to a component of a scene to be animated. Entities, objects, the scenery itself, a location within the scenery, the background, the lighting, sound effects, visual effects, special effects, and camera views are examples of elements. The term "entity" refers to an animated element in a story. An object, a person, a character, and an animal are examples of an entity. For example, a chair can be an entity if the chair is animated. In this case, the chair can walk or talk for example.

The term "3D scene" is used to describe the set of elements used to create the scene to be animated. A 3D scene can be a list of elements. The 3D scene can also be a visual representation of the scene to be played, in which all elements used to create the animation are spatially represented. For example, a 3D scene may contain elements such as the characters, the objects, sound markers indicative of sound effects, a camera indicative of view angles, and the like. In this 3D scene, the elements are positioned in accordance with their position as described in the text supplied. In the case of 3D animation, a 3D scene can be a 3D visual representation of the elements, while it can be a 2D visual representation in the case of a 2D animation.

It should be understood that the term "text" is used to describe any text related to the animation. A text can be a description of a scene, a description of an entity, a dialog, a description or instruction related to a camera such as an orientation of the camera or a zoom of the camera, a description or instruction related to the lighting of the scene, and the like.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Further features and advantages of the present disclosure will become apparent from the following detailed description, taken in combination with the appended drawings, in which:

Figure 1 is a flow chart illustrating a method for creating an animation, in accordance with an embodiment;
Figure 2A illustrates a block structure comprising text in which icons associated with elements of a scene are embedded, in accordance with an embodiment;

Figure 2B is a block diagram illustrating the association of a block with an interface, in accordance with an embodiment;

Figure 3A is a block diagram illustrating a drag-and-drop method for embedding icons within a text from an icon source, in accordance with an embodiment;

Figure 3B is a block diagram illustrating the drag-and-drop method of Fig. 3A, in which icon parameters are chosen, in accordance with an embodiment;

Figure 3C is a block diagram illustrating a method for embedding icons within a text using a text command, in accordance with an embodiment;

Figure 3D is a block diagram illustrating a drag-and-drop method for embedding icons within a text from a 3D scene, in accordance with an embodiment;

Figure 3E is a block diagram illustrating a method for embedding icons within a text using a mouse, in accordance with an embodiment;

Figure 4 illustrates a 3D scene comprising sound markers, in accordance with an embodiment;

Figure 5 illustrates a 3D scene in which a character walks to a door, in accordance with an embodiment;

Figure 6 illustrates a 3D scene in which elements are associated with lighting icons, in accordance with an embodiment;

Figure 7 illustrates a 3D scene in which elements are associated with visual icons, in accordance with an embodiment;

Figure 8 illustrates a 3D scene in which a camera is associated with a camera icon, in accordance with an embodiment;

Figure 9 illustrates a 3D scene comprising spatial markers associated with spatial icons, in accordance with an embodiment; and

Figure 10 is a block diagram illustrating a system for creating an animation in accordance with an embodiment.
DETAILED DESCRIPTION

[0033] Figure 1 illustrates an embodiment of a method 50 for creating an animation. A text describing a scene to be converted into an animation is provided by a user in 52. For example, text data is entered by a user, and received at a processing device implementing the method.

[0034] In one embodiment, a text box or block is used to enter the text. For example, a data entry field can be displayed by a user interface to allow a user to type text into the field. The input text can also come from a word processor, for example, and be imported therefrom. It should be understood that while the present description refers to a text box to input text, other types of text inputs may be used.

[0035] In 54, the text is enriched by inserting at least one icon associated with an element of the 3D scene. The icons are used to control parameters or characteristics of the elements to which they are associated, and actions performed by the elements in the scene, as well as to specify abstract locations within a 3D scene. The icons can be used to control visual aspects relative to the actions of entities such as characters or objects within the 3D scene, to control special sound and visual effects, or to pinpoint abstract locations within the 3D space, for example. The use of icons allows the user to keep the text simple without highly detailed descriptions of each action, effect, or location. It also provides the user with an access to a wide range of parameters through the icons.

[0036] In one embodiment, the icons replace words. For example, the word "walk" can be replaced with a "walk" action icon. An icon can represent a large amount of information in a compact form. While the word "walk" is indicative of the basic action, the "walk" action icon can contain other information like the speed of the walk, sound associated with the walk, the style of the walk, etc. Alternatively, the icons may be present in addition to the words.

[0037] Referring back to figure 1, the last step of the method 50 is the generation of the animation in 56. When the text box is activated, the content, namely the text and the icons, is executed and the animation is generated and displayed. The resulting animation is a visual and audio representation of the content of the text box.
[0038] In one embodiment, a traditional timeline located outside the text box is used for the timing and synchronization of events. The execution of the content of the text box, including the text and the icons, is made in accordance with the timeline.

[0039] In one embodiment, the synchronization of events may be performed using a text timeline. In this case, the position of an icon within the text is indicative to the point in time at which the content associated with the icon is executed. Taking the example of a sound, the timing of the execution of the sound is determined by the position of the icon defining the sound in the text. It may also have timed delays or it can also be triggered by other timing or positional cues derived from the actions within the scene. Within each event, multiple timing cues might be available. For example, the sound of a foot touching a floor could be triggered at any one of multiple times within the action of stepping, like when the heel hits the floor, or when the toes hit the floor.

[0040] Figure 2A illustrates one embodiment of a text box 111 comprising icons 112, 113, and 114 inserted within text. Icons 112 and 113 are associated with a "Mary" element 115 within a 3D scene 110. Icon 114 is associated with a chair 116 in the 3D scene. Icons 112 and 113 are used to control the character "Mary" 115. For example, the icon 112 may be used to define Mary 115 by providing information such as her hair color, her position within the 3D scene, etc. The second icon 122 can be used to control an action performed by Mary. Icon 114 can be used to characterize the chair, such as its location, its shape, etc.

[0041] An example of five types of icons are as follows:

- Audio icons to control sound effects, dialogs, etc;
- Action icons to control the movement of a character or an object;
- Lighting icons to control the scene lighting;
- Visual icons to control special visual effects such as lightning, rain, etc;
- Camera icons to control the camera angle, the camera position, zooming, etc; and
- Spatial marker icons to indicate a 3D spatial position within the scene.

[0042] In one embodiment, the shape of an icon can be representative of its type. For example, a camera icon can have the shape of a camera; a lighting icon can have
the shape of a light bulb, etc. While the present description refers to five types of icons, it should be understood that other type of icons associated with elements of a 3D scene can be defined and used. For example, entity icons can be defined and used to characterize parameters related to the position and the visual appearance of an entity within the 3D scene. Gesture icons can be defined and used to control the gesture of a character, etc.

[0043] In one embodiment, a user interface 104 is used to change parameters of an icon 103 embedded within a text 102 in a text box 101, as illustrated in figure 2B. By selecting the icon 103 by a double-click, for example, the user interface 104 appears. It should be understood that any user interfaces such as drop-down menus, dialog boxes, and the like can be used to change the parameters of an icon.

[0044] Figure 3A illustrates one embodiment of a method to drag-and-drop an icon 203 from an icon source 204 for inserting an icon 202 within a text contained in a text box 205. An icon 203 is dragged from the icon source 204 by the mouse into the text 205 within the text box 201. The icon source 204 is an area in the user interface where all the available icons can be chosen by the user.

[0045] In one embodiment, the specific type of icon (action icon, camera icon, lighting icon, etc) is chosen within the icon source before they are placed in the text. The icon 202 is then linked to an entity within the scene. The link to the entity is done after the icon 202 has been placed in the text. Once in the text, the icon is selected by double clicking it or right clicking it with the mouse as illustrated by 207, for example. Selecting the icon makes an interface 208 appear, the interface 208 containing the parameters of the icon 202 that can be modified. For example, one of the parameters within this interface 208 allows the association of the icon 202 to an entity. The element (also referred to as an entity) is chosen amongst a list of the specific entities available at the time of the insertion of the icon 202. Once the user selects the element, an element selection command may be issued for example.

[0046] In one embodiment, the icon 202 is a generic icon and all of its parameters including the type of the icon 202 are defined by the user after insertion in the text.

[0047] Figure 3B illustrates one embodiment of a method for inserting an icon 214 within a text using a textual command 210. The user writes the textual command
directly in the text of the text box 210. The textual command 210 is then automatically
converted to a corresponding icon 214, as illustrated by 212.

[0048] In one embodiment, the textual command 210 comprises two parts: the first
part is indicative of the type of icon 214 and the second part defines the specific icon
214 within said type. Parentheses, dashes, and the like can be used to separate the
textual command 210 from the text. Inside the textual command 210, a colon, a
comma, and the like can be used to separate the two parts of the textual command
210. Here is an example of the format of the textual command 210: (Icon Type:
Specific Icon). The Icon Type part refers to the type of the icon 214 such as action
icon, spatial marker icon, etc, and the Specific Icon part refers to a precise icon within
that type, such as walk, run, sit, blink, etc. If an icon representing a "walk" is to be
entered at a given place in the text, then the following textual command generates
the appropriate icon: (Action: Walk). Similarly if a thumbs up gesture is desired, the
following command can be used: (Gesture: Thumbs up). It should be understood that
the textual command 210 can also specify other parameters such as the element to
which the icon 214 is associated.

[0049] The example for the textual command 210 presented above is illustrative only.
Any type of command known to a person skilled in the art that can be inserted
directly in the text, and which can then be used to generate and insert an icon within
a text.

[0050] Figure 3C illustrates one embodiment for inserting an icon 221 within a text,
and that is to drag-and-drop an icon 226 from a 3D scene 227 (shown in a scene
display window of an icon display window of a graphical user interface for example).
If the user wishes to insert an icon that is linked to a particular entity 223 within the
3D scene 227, then he can directly select the entity 223 in the 3D scene 227 of the
user interface. The icon 226 is chosen from a set of possible icons from a secondary
user interface 225 that emerges when the entity 223 is selected. While in figure 3C
the secondary user interface 225 is represented by a snowflake arrangement of icons
225, it should be understood that any type of menu arrangement is possible. The
user then places the chosen icon 226 at the appropriate point in the text 221 by
dragging it with the mouse. The icon 226 is automatically linked to the entity 223
within the 3D scene 227.
Figure 3D illustrates one embodiment for inserting an icon by using a mouse. In this method, the user uses the mouse to double click or right click at a location 231 in the text where he wants to add an icon. By double-clicking or right-clicking, a generic icon appears at the selected location and is directly inserted within the text. With another click, a menu 232 appears. The menu 232 allows the user to choose the type of the inserted icon and other parameters.

Figure 4 illustrates one embodiment of a 3D scene illustrating audio markers 303 and 304 associated with audio icons inserted within a text. An audio icon can be linked to a sound file or a sound rendering engine, to a localized event, or a specific position and time, in a 3D scene. An "event" is a specific time and place in the 3D scene determined by the actions of the elements within the scene. For example, the following sentence and icon are comprised in the text: "Mary knocks on the door (i)." (Note that (i) represents an icon in the present textual description). This icon 303a is associated with a knocking sound in the scene. When the text and the icon 303a are executed, a knocking sound 303 is executed when a character 302 hits a door 301 (hitting the door being the event). Any number or type of event may be used to trigger sound, like a foot touching the ground, a door being closed, etc. In one embodiment, the position of a sound source is a parameter of the icon 303a. The specific position of the sound source can be defined by specifying the position using coordinates (x,y,z) in the text such as in the following sentence: "Mary hears a knock coming from the other side of the room (i) (x,y,z)." By specifying the coordinates (x,y,z) after the icon 304a, an audio marker 304 is generated in the 3D scene. Alternatively, the position of the sound source can be defined by placing an audio marker 304 directly in the 3D scene. An audio icon 304a can be associated with multiple sounds that can be determined by a sound rendering engine.

Figure 5 illustrates one embodiment of an action icon 400 inserted within a text and linked to a 3D scene. An action icon causes an entity in the scene to perform a given action. The icon can make the entity do any number of actions such as walking, jumping, sitting, standing, running, etc. Figure 5 illustrates the 3D scene corresponding to the following text: "I feel like going outside (i)." Parameters of the "walk" icon 400 such as start and stop positions are defined. In one embodiment, these parameters are entered by the user by selecting the icon 400. The input of the parameters by the user may generate visual markers in the 3D scene. For example,
a dotted line character 403 may be generated in the 3D scene. Alternatively, the
parameters of the icon 400 may be defined by placing the markers 403 and 404
within the 3D scene. In another embodiment, parameters of the icon 400 such as the
start and stop positions may be defined by reference to other elements of the 3D
scene such as [Start: chair] and [End: door]. The path that an entity uses to get from
the start position to the end position can be determined in several ways. For
example, the user may specify the path explicitly, or it can be determined by an
artificial intelligence engine.

[0054] Figure 6 illustrates one embodiment of lighting icons 506 and 508 linked to
elements of a 3D scene. Lighting icons 506 and 508 are used to control the scene
lighting. Lighting icons 506, 508 give the user control over such things as diffuse
background lighting, spot lights, etc. Using lighting icons 506, 508, the user can
highlight areas or entities within the scene, create shadows, and the like. Figure 6
illustrates the 3D scene corresponding to the following text: "The sunlight is coming
in the window (i), Mary still switches the light on (i)". The icon 508 is associated with a
lamp 501 located in the 3D scene. The icon 506 is used to control the sunlight
coming through the window in the scene. The sunlight is visually represented by an
arrow 504 in the 3D scene.

[0055] Figure 7 illustrates visual icons 604, 606 inserted within a text and associated
with elements of a 3D scene. Icons 604 and 606 are embedded within the following
text: "Mary was caught in the storm (i) (i)". The icon 604 is associated with a marker
601 in the 3D scene and is used to control the lightning in the animation. The icon
606 is associated with a marker 603 is the 3D scene and is used to control the rain in
the scene of the animation. Visual icons may be inserted within a text in order to
control other elements such as fog, for example.

[0056] Figure 8 illustrates one embodiment of a 3D scene corresponding to a text in
which camera icons 709, 711 are inserted. The icons 709 and 711 are inserted within
the following text: "Mary and Bob are in the living room (i), Bob says: I'm leaving (i)".
Both icons 709 and 711 are associated with a camera 705 in the 3D scene. The first
icon 709 sets the camera 705 of the 3D scene so that a user sees a long shot of the
scene to view both characters 702 and 704, as illustrated in window 706. The icon
711 sets the camera 705 of the 3D scene so that a user sees a close-up shot of the
scene where only the character 702 appears, as illustrated in window 707.
[0057] Figure 9 illustrates one embodiment of a 3D scene corresponding to a text comprising spatial marker icons 807, 809. The icons 807 and 809 are embedded in the following text: "Mary walks to A, then she turns and walks to B". The icons 807 and 809 are associated with markers 804 and 805 in the 3D scene, respectively. Spatial markers represent a precise point in the 3D scene that acts as a marker for other actions. They are positional cues within the 3D scene that can be used as targets for the other functions. All the other functions (audio, action, visual and camera) can use these targets. They can be used as the target for action icons so that the action will take place at the spatial marker, or the action will begin or end on the spatial marker. For example we could have an action such as "walk" use the spatial markers to pinpoint the beginning and end of a walk, or mark out a path throughout the scene.

[0058] Referring back to figure 5, the start and stop positions can be defined with respect to spatial markers placed in the 3D scene such as [Start: marker A] and [End: marker B].

[0059] It should be understood that icons associated with entities can be used to create 1D, 2D or 3D animations.

[0060] The above method with the functionalities described above in reference to Figures 1 to 9, are implementable in a processing device, which performs the above tasks in accordance with instructions stored in a memory in operative communication with the processing device. Such a processing device and memory can be a personal computer for example.

[0061] Now in reference to Fig. 10, there is illustrated a system for creating an animation in accordance with an embodiment. The system 900 has a user interface 902, an icon generator 904 and an animation generator 906. The user interface 902 may use a display device 908 to interact with a user and display the animation generated by the animation generator 906 thereon.

[0062] The icon generator 904 receives the text from the user interface 902, for example, generates icons and inserts the icons in the text.

[0063] In one embodiment, the icon definition unit 912 provides the user interface with available icon types and parameter options, receives commands and parameter selections from the user interface, and communicates the icon definition to the Icon
Insertion Unit 910. The icon definition is reflective of a user's icon selection, placement, parameter selection, or other information relative to the icons chosen. In one embodiment, the Icon Insertion unit 910 inserts the appropriate icon in at a given location in the text, as defined and indicated by the icon definition unit 912. In one embodiment, the icon insertion unit 910 simply generates icons as per textual commands already present in the text received. The memory is optionally used to store the available icons, the selected icons and their respective information, and/or the text.

[0064] The system 900 is further adaptable to implement all of the above functionalities described in reference to Figures 1 to 9. For example, the user interface 902 can display a scene in a scene display window of a graphical user interface, with elements and spatial markers disposed in accordance to a coordinate system, and adapted to permit a user to select an icon type from one of the elements of the scene, drag and drop an icon associated with the particular element of the scene, to a specific position in a text box (also referred to as a text display window) wherein the text, or a part of the text, may be entered and displayed with the selected icon. In one embodiment, the user interface 902 may also display a data entry field where the text is initially entered by the user.

[0065] Alternatively, the user interface 902 displays an icon selection display window, such as an icon box with a set of available icons, from which the user may drag and drop the icon from the icon box into the text display window.

[0066] The selection of a specific icon by a user can be done by first displaying a list of available elements in the scene, from which the user may make a selection. The reception of an element selection command, for example, allows the system 900 to retrieve a set of available icons for this element, from which a user may select the desired icon associated to the element in the scene. The choice of icon is made upon the icon generator, for example, receiving an icon selection and insertion command. The icon is then generated according to the command.

[0067] Still in reference to Fig. 10, the animation generator 906 is adapted to execute the text and the icons to generate an animation reflective of the text. The animation is a video and/or an audio representation of the text and the icons inserted therein. In one embodiment, the animation generator 906 generates the animation according to a timeline which synchronizes the events described by the text and the icons.
[0068] The animation, once generated, may be displayed in an animation display window of the interface.

[0069] The user interface 902 has input and output units and is adapted to display a graphical user interface on the display device 908. The input and output units respectively allow communication to and from the icon generator 904 and the animation generator 906. The user interface 902 also interacts with a user via any type of other input/output device such a keyboard, mouse, touch screen, audio input and the like.

[0070] It is noted that the above method may further be embodied in any computer readable media adapted to be read by a processor for example, and storing instructions which, one read, implement the processor to embody the above-described method and system.

[0071] While preferred embodiments have been described above and illustrated in the accompanying drawings, it will be evident to those skilled in the art that modifications may be made therein without departing from the essence of this disclosure. Such modifications are considered as possible variants comprised in the scope of the disclosure.
CLAIMS

1. A method for creating an animation, comprising:
   receiving a text descriptive of a scene to be converted into the animation;
   inserting at least one icon within the text, each one of the at least one icon
   being associated with an element of the scene, and defining at least one of:
   a parameter of the element, an action to be performed by the element, and a spatial
   location in the scene;
   executing the text with the at least one icon to generate the animation; and
   displaying the animation to represent the scene, with the element according to
   the at least one of the parameter, the action and the spatial location defined by the at
   least one icon.

2. The method as claimed in claim 1, wherein the inserting at least one icon
   comprises receiving a drag-and-drop command from a user interface, upon a user
   dragging and dropping the at least one icon displayed by the user interface, directly
   into the text from an icon box displayed by the user interface.

3. The method as claimed in claim 1, wherein the inserting at least one icon
   comprises receiving a drag-and-drop command from a user interface, upon a user
   dragging and dropping the at least one icon displayed by the user interface, directly
   into the text from the scene displayed by the user interface.

4. The method as claimed in claim 1, wherein the inserting at least one icon
   comprises receiving a textual command entered by a user, the textual command
   specifying the element and an icon type of the at least one icon, the method
   comprising generating the at least one icon based on the textual command.

5. The method of claim 4, comprising displaying the at least one icon in the text
   according to a shape representative of the icon type.
6. The method of claim 1, wherein the receiving comprises retrieving the text from a data entry field displayed for a user to enter the text therein.

7. The method of claim 1, wherein the executing comprises executing the text and the at least one icon according to a timeline, the timeline setting a synchronization of events described by the text and the at least one icon.

8. The method of claim 7, wherein the inserting comprises inserting the at least one icon at a position in the text, the position being indicative of a time in the timeline when the at least one icon is to be executed during the executing.

9. The method of claim 1, wherein the inserting of the at least one icon comprises inserting an icon representative of at least one of: a person, an object, a sound effect, a visual aspect of the scene, and a movement performed by one of the person and the object in accordance with the action.

10. The method of claim 1, wherein the inserting comprises receiving an element selection command from a user upon the user selecting the element from a list of available elements for association with the at least one icon.

11. The method of claim 1, wherein the scene comprises one of a two-dimensional and a three-dimensional scene, and wherein the inserting comprises specifying a respective one of a two-dimensional and a three-dimensional set of spatial coordinates of the at least one icon in the scene.

12. The method of claim 1, wherein the inserting comprises receiving an icon insertion command upon a user identifying a position in the text and selecting the at least one icon to be inserted at the position.
13. The method of claim 12, wherein the at least one icon is a sound icon, and wherein the executing comprises executing a sound at a point in time defined by at least one of: the position of the at least one icon in the text, and a timing cue associated with any action of any element in the scene.

14. The method of claim 1, wherein the at least one icon defines the action according to spatial markers, and wherein the executing comprise causing the element to perform the action in the scene in accordance with the spatial markers, each one of the spatial markers being indicative of at least one of: a start coordinate of the element, a stop coordinate of the element, a positional cue, a positional target, and an identification of an other element present in the scene and involved in the action.

15. A system for creating an animation, comprising:

an icon generator for receiving a text descriptive of a scene to be converted into the animation, and for inserting at least one icon within the text, each one of the at least one icon being associated with an element of the scene, and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; and

an animation generator in operative communication with the icon generator, for executing the text with the at least one icon to generate the animation, the animation representing the scene, with the element according to the at least one of the parameter, the action and the spatial location defined by the at least one icon.

16. The system of claim 15, comprising a user interface in operative communication with the icon generator, for displaying a set of available icons to a user, and for sending a command to the icon generator upon receiving a user selection of the at least one icon from the set of available icons displayed to the user, the command being for inserting the at least one icon in the text.
17. The system of claim 16, wherein the user interface is adapted to change the one of the parameter, the action and the spatial location defined by the at least one icon upon a request from the user.

18. The system of claim 16, wherein the user interface is adapted to send the command upon the user selection comprising the user dragging and dropping the at least one icon from the set of available icons, the set of available icons being displayed in association with the element.

19. The system of claim 15, comprising a user interface in operative communication with the icon generator, for displaying a set of available elements to a user, and for sending an element selection command to the icon generator upon receiving a user selection of the element to be associated to the at least one icon, from the set of available elements displayed.

20. The system of claim 15, comprising a display device for displaying at least one of: the at least one icon, a visual representation of the element, and the animation.

21. A system for creating an animation, comprising:

   a processing device; and

   a memory, the memory comprising instructions for implementing the processing device to:

   receive a text descriptive of a scene to be converted into the animation;

   insert at least one icon within the text, each one of the at least one icon being associated with an element of the scene and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene;

   execute the text with the at least one icon to generate the animation; and
output the animation to represent the scene, with the element according to the at least one of the parameter, the action, and the spatial location defined by the at least one icon.

22. A computer readable media storing instructions for creating an animation, the instructions being readable by a processing device, for allowing the processing device to:
   
   receive a text descriptive of a scene to be converted into the animation;
   
   insert at least one icon within the text, each one of the at least one icon being associated with an element of the scene and defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene;
   
   execute the text with the at least one icon to generate the animation; and
   
   output the animation to represent the scene, with the element according to the at least one of the parameter, the action, and the spatial location defined by the at least one icon.

23. A graphical user interface (GUI) for inserting an icon into a text, in view of generating an animation therefrom, the GUI comprising:

   a text display window comprising a text data entry field for allowing a user to enter the text therein, the text being descriptive of a scene to be converted into the animation;

   an icon selection display window comprising a set of available icons associated with an element of the scene, the icon selection display window allowing a user selection of the icon from the set of available icons, the icon defining at least one of: a parameter of the element, an action to be performed by the element, and a spatial location in the scene; and

   an output unit for sending the text and the user selection to a processing device, the processing device to be used in: inserting the icon into the text based on
the user selection, and in executing the text with the icon inserted therein to generate the animation.

24. The GUI of claim 23, wherein the icon selection display comprises a scene display window for displaying the element in the scene, with the set of available icons.

25. The GUI of claim 23, comprising an input unit and an animation display window, the input unit for receiving from the processing device, at least one of: the text with the icon inserted therein, and the animation, the text display window for displaying the text with the icon inserted therein, and the animation display window for displaying the animation therein.
Receiving a text

Inserting at least one icon associated with an element of the 3D scene

Generating the animation

Fig. 1
Choose location and type of icon

Fig. 3E
"Mary knocks on the door "

"Mary hears a knocking sound from the other side of the room (x, y, z)"
"I feel like going outside."
"The sunlight is coming in the window, Mary still switches on the light"

Lighting icon for sunlight through the window.

Lighting icon to illuminate the lamp.
"Mary was caught in the storm"
"Mary walks to 1, then she turns and walks to 2."

Spatial marker linked to position A in the scene.

Spatial marker linked to position B in the scene.

Mary

X-Axis

Y-Axis

Z-Axis

Fig. 9
**INTERNATIONAL SEARCH REPORT**

**A CLASSIFICATION OF SUBJECT MATTER**


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)


in combination with keywords

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

**C DOCUMENTS 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>
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<tbody>
<tr>
<td>A</td>
<td>US20060217979 A1 (PAHUD, M et al) 28 September, 2006 (28-09-2006) See abstract, paragraphs 5, 7, 36, 37, 39, 40, 41, 72, 73 and figures 8-14</td>
<td>1, 15, 21, 22</td>
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<tr>
<td>A</td>
<td>US20080055316 A1 (PAHUD, M et al) 6 March, 2008 (06-03-2008) See paragraphs 2, 3, 22, 29-34, 42-45 and figures 6, 11, 13</td>
<td>1, 15, 21, 22</td>
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[x] Further documents are listed in the continuation of Box C

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<tr>
<td>A</td>
<td>document defining the general state of the art which is not considered to be of particular relevance</td>
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<tr>
<td>E</td>
<td>earlier application or patent but published on or after the international filing date</td>
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<td>L</td>
<td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td>
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<tr>
<td>O</td>
<td>document referring to an oral disclosure use exhibition or other means</td>
</tr>
<tr>
<td>P</td>
<td>document published prior to the international filing date but later than the priority date claimed</td>
</tr>
</tbody>
</table>

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents such combination being obvious to a person skilled in the art

& document member of the same patent family

Date of the actual completion of the international search

15 January 2010 (15-01-2010)

Date of mailing of the international search report

1 February 2010 (01-02-2010)

Name and mailing address of the ISA/CA

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50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No 001-819-953-2476

Authorized officer

Corneliu Remes (819) 934-2675
### Box No. II  
**Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. **[x] Claim Nos 23-25**
   
   because they relate to subject matter not required to be searched by this Authority, namely

   Mere presentation of information Claims 23-25 are directed to a graphical user interface (GUI), which is not patentable, because a) it creates only an intellectual effect, and b) human judgment is required to use the GUI, when choosing among various options. A GUI has no effect on the working of a computer, it only affects the user of that computer

2. **[ ] Claim Nos**
   
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically

3. **[ ] Claim Nos**
   
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

### Box No. III  
**Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows

1. **[ ]** As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims

2. **[ ]** As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees

3. **[ ]** As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos

4. **[ ]** No required additional search fees were timely paid by the applicant Consequently, this international search report is restricted to the invention first mentioned in the claims, it is covered by claim Nos

#### Remark on Protest

**[ ]** The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee

**[ ]** The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation

**[ ]** No protest accompanied the payment of additional search fees
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<td>CHUA, T S et al &quot;From Text Description to Animation Sequences&quot; Proceedings of the Computer Animation, 1996, pp 175-183 SBN 0-8186-7588-8 See abstract, sections 1 - 3, 7</td>
<td>1, 15, 21, 22</td>
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