forms based on the type of motion sensor employed in the mobile phone **1**, and the single of FIG. **8**A is merely exemplary.

[0068] With further reference to FIG. **8**B, there is shown an exemplary velocity profile **110** that may be generated by the control circuit **42** in response to the data from the accelerometer. The velocity profile **110** can be generated, for example, by integrating the acceleration and deceleration as detected by the accelerometer with respect to time. As can be seen in FIG. **8**B, the control circuit **42**, based on the integral of the acceleration, presumes that the mobile phone **10** is moving at a constant velocity during the period between the first pulse **102** (the acceleration pulse) and the second pulse **104** (the deceleration pulse). Using the direction and velocity of motion, the control circuit **42** pans and/or zooms the display in a direction and at a rate that corresponds to the direction and velocity of the detected motion.

[0069] A person having ordinary skill in the art of computer programming and applications of programming for mobile phones would be able in view of the description provided herein to program a mobile phone **10** to operate and to carry out the functions described herein. Accordingly, details as to the specific programming code have been omitted for the sake of brevity. Also, while software in the memory **46** or in some other memory of the mobile phone **10** may be used to allow the mobile phone to carry out the functions and features described herein in accordance with the preferred embodiment of the invention, such functions and features also could be carried out via dedicated hardware, firmware, software, or combinations thereof, without departing from the scope of the invention.

[0070] FIG. **9** illustrates a representative flow chart **120** showing an example of steps, functions and methods that may be carried out using the invention. The flow chart includes a number of process blocks arranged in a particular order. As should be appreciated, many alternatives and equivalents to the illustrated steps may exist and such alternatives and equivalents are intended to fall within the scope of the claims appended hereto. Alternatives may involve carrying out additional steps or actions not specifically recited and/or shown, carrying out steps or actions in a different order from that recited and/or shown, and/or omitting recited and/or shown steps. Alternatives also include carrying out steps or actions concurrently or with partial concurrence.

[0071] The steps shown in the flow chart may be carried out using a mobile phone, for example, of the type described herein or other type. Appropriate programming code may be written in an appropriate computer language or the like to carry out the steps, functions and methods as now are described with respect to FIG. **9**. The steps shown in the flow chart are referred to below as blocks.

[0072] Beginning at block **122**, it is determined whether motion processing is enabled in the mobile phone **10**. If motion processing is not enabled, then images provided to the display **22** will not be panned or zoomed as the mobile phone is moved. Motion processing can be enabled, for example, by setting a parameter within the phone (e.g., via a soft menu located within the phone's setup and configuration utility) or by using one or more keys (e.g., via function keys **24** or keypad **22**) on the mobile phone to enable and disable motion processing. For example, motion processing may be enabled when a specific key is depressed or key stroke is entered into the mobile phone **10**, and disable when the key is released or a different keystroke is entered. If motion processing is not enabled, then the method moves back to block **122** and the process repeats. If motion processing is enabled, then the method moves to block **124**.

[0073] At block **124**, it is determined whether the phone is moving (e.g., in an up/down, sideways or back and forth manner). Motion can is detected by the motion sensor **60** in conjunction with the motion signal processing circuitry **62**. For example, the motion sensor **60** may be a three axis accelerometer that produces voltage signals indicative of acceleration along any of the three axes. The acceleration signal may be presented as a signed digital value, wherein the magnitude is the calculated acceleration, and the acceleration direction is indicated by the sign. The vector sum of the three signed values corresponds to the motion of the mobile phone **10**. As will be appreciated, form and/or derivation of the motion signal may be different for different types of motion sensors. If the vector sum of the motion signal is at or near zero (e.g., within a dead band around 0), then motion is not occurring, and the method moves back to block **122**. However, if the vector sum is not zero (or not within the dead band), then it is concluded that motion is occurring and the method moves to block **126**.

[0074] At block **126**, the motion is analyzed to determine if the motion is intended motion. As described herein, the threshold detector **66**, amplitude detector **68** and/or frequency detector **70** determine whether such motion is intended motion or unintended motion (e.g., incidental motion due to walking or slight bouncing in a car). Determination of whether or not the motion is intended motion can be based on a comparison of the detected motion relative to a threshold value. For example, if the detected motion signal is slowly oscillating between a first value and a second value, wherein the first and/or second values are outside the above-mentioned dead zone, such motion may be interpreted as unintended motion if the oscillation frequency is low (e.g., motion due to an unsteady hand, slight bounce due to walking, etc.) even though motion actually is occurring. If the detected motion is determined to be unintended motion, then the method moves back to block **122**. If the detected motion is determined to be intended motion, then the method moves to block **128**.

[0075] At block **128**, the movement vectors are computed to determine direction and velocity of the motion. Movement along any of the three axes can be interpreted as specific requests to pan and/or zoom. For example, movement in the +y direction can be interpreted as a request to pan up the virtual document, while movement in −y direction can be interpreted as a request to pan down the virtual document. Other directions can be interpreted in a likewise manner (e.g., +x direction may be a request to pan right, −x direction may be a request to pan left, +z direction may be a request to zoom out, and −z direction may be a request to zoom in). As discussed herein, the specific assignments for the different vectors may be redefined by the user.

[0076] As will be appreciated, processing of the specific signals is dependent on the type of sensor used to detect motion. For example, an accelerometer can detect acceleration and deceleration, but cannot detect constant motion with zero acceleration or deceleration. Thus, additional signal processing may be implemented within the motion signal processing circuit **62** and/or the control circuit **42** to fully interpret the actual motion. For example, constant or