

morning commute mug **407**; refillable pop bottle **408** and children's drink bottle **409**. Each contextual lid may activate an associated software functionality, for example, but not limited to: water purification indicator **410**; exercise or nutritional information indicator **411**; theme park ride interface **412**; rewards points or carbon credit tracking interface **413**; current sports player information interface **414**; remote ordering menu **415**; rss reader **416**; promotional content **417**; fingerprint identification system **418** and game **419**.

[0049] FIG. 18 shows an example of containers which are placed next to or on top of each other their display surface and thus may be combined to form a larger display. Also shown an example of six containers forming one, larger, segmented display. This non-limiting example shows a promotional ad campaign running across the segmented display when containers are stacked on a coffee counter in a coffee store.

[0050] FIG. 19 shows a user holding a cylindrical display embodiment **601** with two hands, and rotating said cylindrical display so as to scroll through a document, web page or image that is larger than what can be rendered on that display. A scroll may be performed in either direction, with the display rotated around its longitudinal axis **602**.

[0051] FIG. 20 shows a user performing a circular movement around an axis **702** that is non-concentrical but parallel to the longitudinal axis **703** of a cylindrical display embodiment **701**. In the embodiment of a container, this action causes the fluids inside the container to swirl. This action can be sensed and used, in one embodiment, to scroll graphics on the display with physics action, or as input to a game.

[0052] FIG. 21 shows a user holding a curved display embodiment with the non-dominant hand, placing the finger of the dominant hand on the display, and moving the finger laterally. In this non-limiting example, this action is used to move graphic objects rendered on the display.

[0053] FIG. 22 shows a user holding a curved display embodiment with the non-dominant hand, placing two fingers of the dominant hand on the display, and moving both fingers away from each other. This may be used to zoom graphics on the display.

[0054] FIG. 23 shows a user holding a curved display embodiment with the non-dominant hand, placing two fingers of the dominant hand on the display, and moving one fingers away from the other while maintaining the location of the first finger. This may be used to zoom graphics on the display in a way that allows the graphics underneath the first finger to stay stationary.

[0055] FIG. 24 shows the user rubbing a curved display embodiment with one hand, while holding it with the other. The rub gesture moves left and right and from up to down, and can be performed with the display upright or sideways. One non-limiting example use for this action is in deleting or erasing information rendered on the display.

[0056] FIG. 25 shows the user holding a cylindrical display embodiment with one hand then tilting it from upright to a certain angle. This can be used for example, to move graphics on the display or control playback speed of a movie rendered on the display.

DETAILED DESCRIPTION OF THE INVENTION

Definitions

[0057] “Flexible Display” or “Flexible Display Surface” means any display surface made of any material, including, but not limited to displays constituted by projection and

including, but not limited to real and electronic paper known in the art, based on Organic Light Emitting Devices or other forms of thin, thin-film or e-ink based technologies such as, e.g., described in U.S. Pat. No. 6,639,578, cardboard, Liquid Crystal Diode(s), Light Emitting Diode(s), Stacked Organic, Transparent Organic or Polymer Light Emitting Device(s) or Diode(s), Optical Fibre(s), Styrofoam, Plastic(s), Epoxy Resin, Textiles, E-textiles, or clothing, skin or body elements of a human or other organism, living or dead, Carbon-based materials, or any other three-dimensional object or model, including but not limited to architectural models, and product packaging. Within the scope of this application, the term is can be interpreted interchangeably as paper, document or paper window, but will not be limited to such interpretation. **[0058]** The term “Paper Window” refers to one embodiment of a flexible display surface implemented by tracking the shape, orientation and location of a sheet of paper, projecting back and image onto said sheet of paper using a projection system, such that it constitutes a flexible electronic display. Within the scope of this application, the term is may be interpreted as interchangeable with flexible display, flexible display surface or document, but the terms flexible display, document and flexible display surface shall not be limited to such interpretation.

[0059] The term “document” is synonymous for Flexible Display or Flexible Display Surface.

[0060] “Marker” refers to a device that is affixed to a specific location on a flexible display surface for the purpose of tracking the position or orientation of said location on said surface. Said marker may consist of a small half-sphere made of material that reflects light in the infrared spectrum for the purpose of tracking location with an infrared computer vision camera. Said marker may also consist of an accelerometer that reports to a computer system for the purpose of computing the location of said marker, or any other type of location tracking system known in the art. A similar term used in this context is “point.” “Fold” is synonymous with “Bend,” wherein folding is interpreted to typically be limited to a horizontal or vertical axis of the surface, whereas Bends can occur along any axis (2). Folding does not necessary lead to a crease.

Interaction Styles

[0061] Position and shape of flexible displays can be adjusted for various tasks: these displays can be spread about the desk, organized in stacks, or held close for a detailed view. Direct manipulation takes place with the paper display itself: by selecting and pointing using the fingers, or with a digital pen. The grammar of the interaction styles provided by this invention follows that of natural manipulation of paper and other flexible materials that hold information.

[0062] FIGS. 1 through 10 show a set of gestures based on deformations and location of the flexible display(s). These gestures provide the basic units of interaction with the system:

[0063] Hold. Users can hold a flexible display with one or two hands during use. The currently held display is the active document (FIG. 1).

[0064] Collocate. FIG. 2 shows the use of spatial arrangement of the flexible display(s) for organizing or rearranging information on said display(s). In one embodiment, collocating multiple flexible displays allows image contents to be automatically spread or enlarged across multiple flexible displays that are collocated.