

the first and second cavities to transition the second and third regions into the expanded state.

11. The user interface of claim 1, wherein the second and third regions are configured to simultaneously transition from the retracted state to the expanded state.

12. The user interface of claim 1, further comprising a second pump configured to manipulate the fluid from the first cavity to transition the second region from the expanded state to the retracted state.

13. The user interface of claim 1, wherein the substrate further defines a fluid channel that directs a portion of the fluid between the first and the second cavities.

14. The user interface of claim 13, wherein the pump is fluidly coupled to the fluid channel.

15. The user interface of claim 1, wherein the tactile layer is joined to the membrane substantially proximal to the second and third regions.

16. The user interface of claim 1, wherein the first, second, and third regions form a substantially continuous surface of the membrane opposite the substrate.

17. The user interface of claim 1, wherein, in the elevated state, the deformable area is substantially planar and parallel to the first region.

18. The user interface of claim 1, the tactile layer is disconnected from the membrane across the first, second and third regions of the membrane.

19. A user interface system comprising:

a volume of fluid;

a membrane including a first region and a second region, wherein the second region substantially surrounds the first region, and wherein the second region is operable between

a retracted state, wherein the second region is flush with the first region, and

an expanded state, wherein the second region is proud of the first region;

a substrate joined to and retaining a portion of the first region in planar form, the substrate cooperating with the second region to define and substantially enclose a cavity;

a pump configured to manipulate a portion of the fluid into the cavity to transition the second region from the retracted state to the expanded state;

a tactile layer, configured as a touch sensor to detect a user touch on the tactile surface, joined to a portion of the membrane opposite the substrate, and defining a tactile surface touchable by a user, and comprising a deformable area operable between

a lowered state, wherein the deformable area is in contact with the first region, and

an elevated state, wherein the deformable area is lifted off of the first region by the second region in the expanded state; and

a display coupled to the substrate and configured to output an image through the tactile layer.

20. the user interface of claim 19, wherein the tactile layer is coupled to the membrane substantially proximal the second region.

21. The user interface of claim 19, wherein, in the elevated state, the deformable area defines a button of a volume sub-

stantially greater than the volume of the fluid displaced into the cavity to transition the second region to the expanded state.

22. A user interface system comprising:

a volume of fluid;

a membrane including a first region, a second region, and a third region, wherein the first region is interposed between the second and third regions, and wherein the second and third regions are operable between a retracted state and an expanded state, the second and third regions flush with the first region in the retracted state and proud of the first region in the expanded state;

a substrate joined to and retaining a portion of the first region of the membrane in planar form, the substrate cooperating with the second region and the third region to define and substantially enclose a first cavity and a second cavity;

a pump configured to manipulate a portion of the fluid into the first and second cavities to transition the second and third regions from the retracted state to the expanded state;

a tactile layer, configured as a touch sensor to detect a user touch on the tactile surface, joined to a portion of the membrane opposite the substrate, and defining a tactile surface touchable by a user, and comprising a deformable area operable between a lowered state, wherein the deformable area is in contact with the first region, and an elevated state, wherein the deformable area is lifted off of the first region by the second and third regions in the expanded state; and

a display coupled to the substrate and configured to output an image through the tactile layer.

23. A user interface system comprising:

a volume of fluid;

a membrane including a first region and a second region, wherein the second region substantially surrounds the first region, and wherein the second region is operable between a retracted state, wherein the second region is flush with the first region, and an expanded state, wherein the second region is proud of the first region;

a substrate joined to and retaining a portion of the first region in planar form, the substrate cooperating with the second region to define and substantially enclose a cavity;

a pump configured to manipulate a portion of the fluid into the cavity to transition the second region from the retracted state to the expanded state;

a tactile layer, separate and distinct from the substrate and the membrane, joined to a portion of the membrane opposite the substrate, and defining a tactile surface touchable by a user, and comprising a deformable area operable between a lowered state, wherein the deformable area is in contact with the first region, and an elevated state, wherein the deformable area is lifted off of the first region by the second region in the expanded state;

a touch sensor configured to detect a user touch on the tactile surface; and

a display separate and distinct from the tactile layer, coupled to the substrate, and configured to output an image through the tactile layer.