or deactivated. The material is conformal such that it is caused to expand by the exerted force and collapse when the force is removed. Where electric potential or thermal energy is used to activate the element **22**, it is preferable that the non-active material be configured to define an insulative outer layer **34** (FIG. **2**C) that protects the user **12**. Exemplary active materials particularly suitable for this embodiment include paraffin wax and EAP (in the form of a roll actuator).

[0081] In another embodiment, the interface **10** may be modified by an externally connected element **22**. For example, and as shown in FIG. **2**D, a spring element **22** formed of a suitable SMA may be coupled to and configured to cause the linear motion of the body **32**. Through at least one return spring **36**, latch and/or detent (not shown), the interface **10** is able to autonomously achieve stowed and deployed conditions. More particularly, a pseudoplastically strained SMA spring element **22** is presented in its martensite phase, and connected in series to a biasing return spring **36** having a spring modulus in between the martensitic and austenitic moduli of the SMA spring **22**.

[0082] It is appreciated that providing the necessary difference in spring moduli between the actuation and biasing springs **22**,**36** involves selecting appropriate cross-sectional areas for each spring. When the element **22** is heated from below its A_s to above its A_f temperature, it is caused to activate its shape memory and simultaneously increases the spring modulus (or stiffness) of the spring. These combined conditions in the SMA spring element **22** cause the biasing spring **36** to collapse (FIG. **2**D). When the spring element **22** cools, so as to be caused to return to the martensitic state, the biasing spring **36** expands. Thus, both springs **22**,**36** are buttressed by fixed structure **38**. The body **32** is preferably connected to the engaged distal ends of the springs **22**,**36**, for example, by a bracket **40**, so as to maximize linear displacement.

[0083] In a preferred embodiment the interface **10** is configured to achieve one of a plurality of achievable shapes, orientations, positions, and/or characteristics. For example, where SMP material is utilized, it is appreciated that the element **22** may be formed of multiple soft segments, so as to exhibit multiple transition temperatures. As previously described, the element **22** is able to achieve a first shape or configuration when reaching a first transition temperature, and a second shape when achieving a second transition temperature greater than the first. Alternatively, a plurality of elements **22** may be provided, configured, and separately coupled to the source **24**, such that differing sets of elements **22** may be activated and deactivated resulting in the interface **10** being able to achieve a variety of differing geometric shapes, orientations, positions, or characteristics. In this configuration, user preference settings are preferably provided, such that the user **12** is able to select which shape, orientation, or characteristic to achieve.

[0084] As shown in FIG. **3**, the preferred interface **10** may be manually modifiable when the element **22** is activated, so as to be customized by the user **12**. For example, as shown in the illustrated embodiment, imprints (or impressions) **42** produced by the user's fingers may be memorized, so that subsequent engagement between the user **12** and interface **10** is facilitated. This further reduces the likelihood of slippage, and fosters more precise control of the associated system **14**. In this configuration, it is appreciated that a suitable SMP, as described above, may again be utilized. Once the second or customized shape has been set (i.e., "memorized"), the interface **10** may remain in the modified shape permanently. Alternatively, the modification may be reversed causing the interface to return to the original condition; additionally for certain classes of embodiments when manipulation of the interface **10** is desired, the element **22** may be activated causing the imprints **42** to return.

[0085] FIGS. **4**-**5** present series progressions in which an active material interface **10** is caused to achieve a plurality of reversible shapes over time, such as, for example, where multi-segment SMP based interface is activated to achieve a first transition temperature and furthermore, to achieve a second transition temperature, as previously described. In FIG. **4**A, the interface **10** initially presents a circular lateral cross-section, is caused to reversibly achieve an ellipsoidal cross-section when the element **22** is activated or deactivated; and then caused to achieve an ellipsoidal shape having concavely arcuate sides (or a "peanut" shape) when further activated. In lieu of series transformation, it is appreciated that each illustrated progression may reflect parallel transformation (as shown in hidden-line type in FIG. **4**A), for example, wherein a plurality of separately activated elements **22** are provided and configured to result in a different modified shape (e.g., orientation, etc.) when differing sets of elements **22** are activated. That is to say, the multiple shapes shown in FIGS. **4**A through **5** present exemplary shapes into which the starting geometry shown at the left of the figures could be deformed. It is appreciated that multiple discrete smart material actuator elements **22** connected to the HMI interface **10** that would allow achievement of the different shapes shown; they could be selected in an arbitrary order and not necessarily in the order shown. The number and orientation of the actuators **22** would dictate how many of the different shapes would be achievable.

[0086] In FIG. **4**B, a reconfiguration progression is shown, wherein the interface **10** presents an initial circular lateral cross-section, is caused to achieve a circular wave form cross-section having six undulations, and then further caused to achieve, a final circular wave form having four undulations. FIG. **4**C is a plan view of another progression, wherein the interface **10** transforms from an initial square, to a square having convexly arcuate sides, to a square having concavely arcuate sides, and finally to a square lateral cross-section having alternating concavely and convexly arcuate sides. FIG. **4**D shows yet another progression, wherein the interface transforms from an initial octagon, to an octagon having concavely arcuate sides, to an octagon having alternating straight and concavely arcuate sides, and to a final octagon lateral cross-section having alternating concavely and convexly arcuate sides, as a result of progressive activation of element **22**. In addition to these shapes, it is appreciated that modification may simply result in an enlarged or reduced scaling of the original geometric shape (FIGS. **3**A-C).

[0087] It is also appreciated that modification of the geometric shape may be caused along the longitudinal profile of the interface **10** (FIG. **5**). For example, as previously mentioned, activation of element **22** may result in the shortening or lengthening of the original (or first) height of the interface **10**, so as to achieve a second height substantially (e.g., at least 10%, more preferably 25%, and most preferably 50%) different from the first height. As shown in FIG. **5**, the interface **10** may be configured to reversibly transform from an initial rectangular elevation, to a rectangle having a concavely arcuate top surface/side **44**, and/or to a rectangle having a convexly arcuate top surface/side **44**.