

Claims

1. A multi-sensory stimulation system comprising:
 - an inlet for receiving a flow of liquid or gas;
 - 5 a conditioning system for drawing the flow of at least one of liquid, gas and electricity (the **Flow**) through the inlet, the conditioning system comprising two or more conditioning modules for conditioning the Flow according to a respectively different sensory modality; and
 - an outlet for delivering the conditioned Flow.
- 10 2. The multi-sensory stimulation system according to claim 1, wherein:
 - the inlet comprises two or more inlet apertures, and the Flow comprises an independent flow to each of a corresponding two or more of said conditioning modules; and/or
 - 15 the outlet comprises two or more outlet apertures, and the Flow comprises an independent outflow for each outlet aperture.
3. The multi-sensory stimulation system according to claim 1 or 2, comprising a control module, the control module:
 - 20 receiving event information from an environment simulation engine, the event information specifying particular sensory stimuli in a virtual environment comprising the user; and
 - activating at least one said conditioning module according to the event information.
- 25 4. The multi-sensory stimulation system according to claim 3, wherein the event information comprises duration information specifying a duration of activation of the at least one conditioning module.
- 30 5. The multi-sensory stimulation system according to claim 3 or 4, wherein the event information comprises intensity information specifying an intensity of activation of the at least one conditioning module.

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6. The multi-sensory stimulation system according to claim 5, wherein the intensity information comprises a time-varying intensity profile, and the intensity of activation of the at least one conditioning module varies over time
5 according to the intensity profile.

7. The multi-sensory stimulation system according to any one of claims 3 to 6, wherein the event information comprises location information.

10 8. The multi-sensory stimulation system according to any one of claims 3 to 7, wherein at least one conditioning module is an olfactory stimulation module comprising at least one aroma chamber containing a scent, each aroma chamber being configured to deliver the respective scent into the Flow and the conditioned Flow thereby comprising a scented Flow.

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9. The multi-sensory stimulation system according to claim 8, comprising a plurality of said aroma chambers each of which contains a different scent.

20 10. The multi-sensory stimulation system according to claim 9, wherein the event information comprises a scent profile and the control module is configured to activate two or more aroma chambers according to one or more scents specified in the scent profile.

25 11. The multi-sensory stimulation system according to any one of claims 3 to 10, wherein at least one conditioning module is a thermal stimulation module comprising a temperature conditioning element configured to control a temperature of the Flow and the conditioned Flow thereby comprising a temperature controlled Flow.

30 12. The multi-sensory stimulation system according to any one of claims 3 to 11, wherein at least one conditioning module is a somatosensory module for

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changing a speed of the Flow to thereby apply a non-contact haptic stimulus to the user upon delivery through the outlet.

13. The multi-sensory stimulation system according to any one of claims 3 to 5 12, wherein the event information further comprises direction or orientation information specifying a direction along which to apply the condition Flow.

14. The multi-sensory stimulation system according to any one of claims 1 to 10 12, comprising a mount portion for connection to a head mounted display to secure the system in relation to a head of the user.

15. The multi-sensory stimulation system of any one of claims 1 to 13, further comprising a gustatory stimulator shaped to be received in a mouth of the user, the gustatory stimulator comprising at least one electrical stimulation device for 15 delivering at least one of electrical stimulation and thermal stimulation to a tongue of the user.

16. A wearable multi-sensory stimulation assembly comprising:
a wearable member configured to be worn by a user; and
20 one or more multi-sensory stimulation systems according to any one of claims 2 to 15, located on the member to enable directional stimulation of at least one sensory system of the user when wearing the assembly.

17. The wearable system of claim 15, wherein the member comprises a 25 garment wearable on a chest of the user, the assembly comprising a plurality of said multi-sensory stimulation systems located around a collar of the garment.

18. The wearable system of claim 15 or 16, further comprising a contact 30 thermal stimulator comprising one or more thermal elements located, in use, near skin of the user to control a temperature of the skin.

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19. The wearable system of any one of claims 15 to 17, further comprising a contact somatosensory stimulator comprising one or more motorised units located, in use, near skin of the user to apply a force to the skin, and/or one or more electrode patches for delivering electrical stimulation to at least one
5 muscle of the user.

20. The wearable system of claim 18 or 19, wherein the event information further comprises orientation or direction information specifying a direction along which the apply heating, cooling or force to the skin.
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21. The wearable system of any one of claims 16 to 20, wherein the member comprises a head mounted display and at least one said multi-sensory stimulation system is mounted on the head mounted display.

15 22. The wearable system of claim 21, comprising a plurality of multi-sensory stimulation systems mounted on the head mounted display.

23. The wearable system of claim 15 or 16, further comprising an auditory stimulator located on the head mounted display located to deliver an audial
20 signal to the auditory stimulator.