sions" or "first axis" and "second axis" as may be used herein are intended to encompass not only orthogonal grids, but the intersecting traces of other geometric configurations having first and second dimensions (e.g. the concentric and radial lines of a polar-coordinate arrangement).

[0065] At the "intersections" of the traces, where the traces pass above and below each other (but do not make direct electrical contact with each other), the traces essentially form two electrodes. Each intersection of row and column traces can represent a capacitive sensing node and can be viewed as a picture element (pixel), which can be particularly useful when the multi-touch panel is viewed as capturing an "image" of touch. (In other words, after the panel subsystem has determined whether a touch event has been detected at each touch sensor in the multi-touch panel, the pattern of touch sensors in the multi-touch panel at which a touch event occurred can be viewed as an "image" of touch (e.g. a pattern of fingers touching the panel).) When the two electrodes are at different potentials, each pixel can have an inherent self or mutual capacitance formed between the row and column electrodes of the pixel. If an AC signal is applied to one of the electrodes, such as by exciting the row electrode with an AC voltage at a particular frequency, an electric field and an AC or signal capacitance can be formed between the electrodes, referred to as Csig. The presence of a finger or other object near or on the multi-touch panel can be detected by measuring changes to Csig. The columns of the multi-touch panel can drive one or more analog channels in the panel subsystem. In some embodiments, each column can be coupled to one dedicated analog channel. However, in other embodiments, the columns can be couplable via an analog switch to a fewer number of analog channels.

[0066] The touchscreen stackups described above can be advantageously used in the computing system to provide a space-efficient touch sensor panel and UI.

[0067] A number of different mobile telephones can include the touchscreen stackups and computing system described above according to embodiments of the invention. PSA can be used to bond the sensor panel to a display device (e.g. LCD module). A number of different digital audio/video players can also include the touchscreen stackups and computing system described above according to embodiments of the invention. These mobile telephones and digital audio/video players can advantageously benefit from the touchscreen stackups described above because the touchscreen stackups allow these devices to be smaller and less expensive, which can be important consumer factors that can have a significant effect on consumer desirability and commercial success.

[0068] Although the present invention has been fully described in connection with embodiments thereof with reference to the accompanying drawings, it is to be noted that various changes and modifications will become apparent to those skilled in the art. Such changes and modifications are to be understood as being included within the scope of the present invention as defined by the appended claims.

What is claimed is:

1. A method for forming a multi-touch sensor panel, comprising:

forming a plurality of first traces of substantially transparent conductive material on a first substrate;

forming a plurality of second traces of the substantially transparent material;

creating a fluid-tight gap between the plurality of first traces and the plurality of second traces;

filling the fluid-tight gap with a fluid having substantially no bubbles and an optical index similar to the optical index of the first and second traces to make the gap and the first and second traces substantially transparent; and

orienting the second and first traces to cross over each other at crossover locations separated by the fluid, the crossover locations forming mutual capacitance sensors for detecting touches.

2. The method of claim **1**, wherein the first substrate is a cover glass having a first side capable of being touched, and a second side opposite the first side on which the plurality of first traces are formed.

3. The method of claim **2**, further comprising forming the plurality of second traces on a second substrate.

4. The method of claim **1**, further comprising creating the fluid-tight gap by forming compressible spacers between the first and second traces, the compressible spacers capable of being compressed during a touch and changing a mutual capacitance of the mutual capacitance sensors.

5. The method of claim **1**, further comprising coupling a chip on glass to the first substrate, the chip on glass including sensor panel circuitry.

6. A method for forming a multi-touch sensor panel, comprising:

forming a plurality of first traces and a plurality of second traces of substantially transparent conductive material;

orienting the plurality of second and first traces to cross over each other at crossover locations, the crossover locations forming mutual capacitance sensors for detecting touches;

separating the second and first traces by a fluid having substantially no bubbles and an optical index similar to the optical index of the first and second traces to make the first and second traces substantially transparent.

7. The method of claim **6**, further comprising forming the plurality of first traces on a second side of a first substrate having a first side capable of being touched, the second side opposite the first side.

8. The method of claim **7**, further comprising forming the plurality of second traces on a second substrate.

9. The method of claim **6**, further comprising separating the second and first traces using compressible spacers, the compressible spacers capable of being compressed during a touch and changing a mutual capacitance of the mutual capacitance sensors.

10. The method of claim **7**, further comprising coupling a chip on glass to the first substrate, the chip on glass including sensor panel circuitry.

11. A multi-touch sensor panel, comprising:

a first substrate having a plurality of first traces of substantially transparent conductive material formed thereon;

a plurality of second traces of the substantially transparent material;

a fluid-tight gap formed between the plurality of first and second traces; and

a fluid having substantially no bubbles and an optical index similar to the optical index of the plurality of first and second traces held within the fluid-tight gap, the fluid for making the gap and the plurality of first and second traces substantially transparent;

wherein the plurality of first and second traces are oriented to cross over each other at crossover locations separated