Sentient Computing uses sensors and resource status data to create a virtual world based on real world environment. This virtual world enables the real world to be the user interface to the application software.

A device called a “bat” is placed on a person or an object (a). The bat is an ultrasonic location system uses trilateration to track the position of the person or the device. A short pulse of ultrasound is emitted from a transmitter (bat) attached to the object to be located, and the computer measures the times-of-flight of the pulse to receivers mounted at known points on the ceiling. The speed of sound in air is known, so the computer can calculate the distances from the bat to each receiver - given three or more such distances, it has enough information to determine the 3D position of the bat.

(a, b) Bat: Each has a unique id, an ultrasonic transmitter, and a radio transceiver.

(c, d) Browsing allows a user to see what’s going on anywhere in the building.

(d) Smart poster: The highlighted spots are buttons to the system’s model of the world.

The simplest applications include maps which update in real time so that you can see anyones current location (c). If you want to call them, just click on the telephone nearest them to set up a phone call. If they are already on the phone it will be coloured red, but as soon as they put it down it will go grey again.

Because the sentient computing system creates an interface that extends throughout the environment, the computer can treat it just like a traditional user interface and create a `button' anywhere in the environment.