

The Properties of Computational Objects

Have a Unique Physical Shape or Material Property →

This must influence events in software, physically reflect the function of the object, or convey a special meaning through design. Ideally, there should be a direct interaction between physical form and computation. Desktop computers are general-purpose tools and their neutral physical form reflects that. If you change the form and shape of the computer or its input devices, it has no effect on the software inside. In contrast, computational objects can be fuzzy, flat, hard or soft, and those differences in design can both reflect and change the function and meaning of the object inside the computer. (ESSENTIAL PROPERTY)

Are Programmable, and Run Software →

This can change their practical function and symbolic meaning. Non-computing objects often have many functions, from magical (as a charm or fetish), to symbolic or practical. Usually, the physical form and markings on the object remain fixed. Software can actually change these forms, markings and functions. The addition of software and sensors to a hammer can change its practical function from driving nails to playing music. Through software, an icon on a screen can change from a GUCCI symbol to a Barbie symbol to cross, transforming its symbolic meaning. (ESSENTIAL PROPERTY)

Display Dynamic Media, i.e., Sounds, Images, Light, Motion and Text →

They do this in reaction to a change in their environment or their internal state. This sets computational objects apart from traditionally static media, like sculpture or painting, and relates them more strongly to time based media, like film or music. Through software, the dynamic media of computational objects can also be interactive, rather than fixed and linear, as in film. (ESSENTIAL PROPERTY)

May Sense Their Environment and the People Using Them →

They do this through sound, light, touch and temperature. They can do this simply, with the discrete information of a switch or on/off button, or they can do it more complexly, using continuous information about factors like touch, pressure, or temperature. (NOT AN ESSENTIAL PROPERTY)

May be Networked and Communicate with One Another →

This lets computational objects to know each other's physical state, (i.e. where they are), and identity. Communication between objects can also facilitate communication between people, either as mass media, like the web, or as personal media, like a cell phone. Using networked, computational objects as an artistic medium is a tremendous creative challenge in itself. (NOT AN ESSENTIAL PROPERTY)

Uses Electricity (ESSENTIAL PROPERTY) →

Enabling Materials

Substrate Materials

Like plastic, to integrate and support all other physical materials.

Electronic Components

Integrated circuits, circuit boards.

Output Devices

Speakers, displays, lights, and or mechanical devices that create motion.

Input Devices

Keyboards, buttons, force sensors, motion sensors, and light sensors, etc.

Network Devices

Wires, card or chip, infrared transmitters, radio transmitters and antennas.

Power Supplies and Wires