

Simulation of virtual buildings, before they are physically constructed, is useful for designers and clients. With this novel interface device for walk-through simulation, the user perceives a 360-degree image of virtual space and a sense of walking while the position of the walker is fixed in the physical world.

The walker wears a head-mounted display, foot-mounted omni-directional sliding devices, and a hoop around the waist, which limits the walker's position. A special-

ized roller skate equipped with four casters enables two-dimensional motion. The device has a brake pad at the toe. When the walker steps forward, the break pad generates friction force at the backward foot, and the friction force enhances haptic feedback.

The walker can freely change the direction of walking in the hoop. The length of the step is measured by an optical encoder connected to the caster. The virtual space is correlated with the motion of

the feet and body and viewed in a head-mounted display. Novice users usually hold the hoop to maintain their balance. Experienced users can push their waists against the hoop and walk fast or even run.

The system enables remote collaboration between architects and their clients, who can experience a house or other building while it is still in the design process. The design can be interactively changed in real time by the remotely located designer. At

SIGGRAPH 95, models of virtual buildings are delivered via the Internet.

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