**Invited Survey**

# Physical User Interfaces:
# What they are and how to build them

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## Abstract

Physical user interfaces are special purpose devices that can be situated in a real-world setting. Unlike general purpose computers, they are typically designed for particular contexts and uses. In this survey, I present an introductory tour of this new interface genre. First, I will summarize what they are by describing several design niches for these devices: ubiquitous computing, tangible media, foreground and ambient devices, collaborative devices, roomware, and physical controls. Examples will be plentiful, and will range from the playful, to the artistic, and to the serious. Second, I will introduce technologies that are suitable for software professionals who wish to prototype these physical user interfaces. The commercially available Phidgets (www.phidgets.com) are used as a case study of what is available and what can be done with them.

## Bio

Saul Greenberg, a professor in Computer Science at the University of Calgary, is an active researcher in Human Computer Interaction (HCI) and Computer Supported Cooperative Work (CSCW). He and his group investigate how people work together, how the computer and related technologies (groupware) affect group behavior, and how software and physical devices can be designed to support and augment group work. He and his team developed the now-commercialized Phidgets (Physical Widgets) that make it easy for the hardware-naive to rapidly prototype physical user interfaces.