

# Real World Interfaces

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The goal of this project was to develop displays that express information through objects in the physical environment. We call the resulting informational displays real-world interfaces, or RWIs. Typical user interfaces use buttons, scrollbars, sliders, and similar on-screen visual displays to convey and interact with information, whereas RWIs will augment or replace these displays with changes in the surrounding environment that will convey information in a less direct but still noticeable manner. For example, changes in lighting could correspond to the upcoming forecast for temperature, changes in air flow could reflect fluctuations in the stock market, and changes in ambient music could signal an upcoming meeting. Our research effort focused on providing programmers with the ability to use real-world devices in much the same way that they would use a standard user interface toolkit.

Our research has created a simple framework for controlling devices such as lamps and fans, and we have developed software that uses forecasted weather data to control these devices. In our work, we are leveraging the X10 protocol and hardware. The X10 protocol defines signals sent over power lines between X10 hardware devices. While the original purpose for X10 devices was for security and convenience, we see significant possibilities in the areas in the communication and interaction with information. We seek to expand the possibilities of our system and incorporate more diverse data sets such as stock prices or a scheduling system. In addition we are looking to incorporate more simultaneous outputs from the system to display more information at any one time.