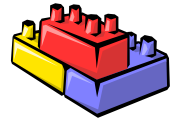# Building Blocks for a Pervasive Computing Environment

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What is Pervasive Computing?

Pervasive Computing is a recent approach to the creation of technology, which aims to make computers and computational devices less invasive and more useful.

There are many areas of Pervasive Computing currently being developed; this project aims to focus on the specific problem of creating hardware Elvin clients for use in an event correlation system.

What is Elvin?

• Message based communications paradigm
• Content based routing (vs. address based)
• Little or no configuration information required
• Extremely flexible and highly transparent

Elvin is used as the communications method for events generated by the hardware devices being developed for this project. Elvin messages sent by the sensors have a specified format that the correlation software subscribes to.

Using Elvin also means that other, not yet conceived-of devices can transparently use the information from sensors without modifications of the original or existing framework.

Project Objectives

• Create interface & specifications documents
• Develop hardware Elvin Clients ("Sensors")
• Develop networking (Ethernet and RS232)

System Description

The system physically consists of a number of Elvin Devices connected over various communications links to the Elvin Router ("R" - see Fig 1).

Each Elvin Device ("B") has an arbitrary number of individual sensors ("L") attached to it. These sensors may include simple things such as light level sensors, switches, or beam break detectors, or they may be complicated inputs such as keypad entry, audio-visual or raw data.
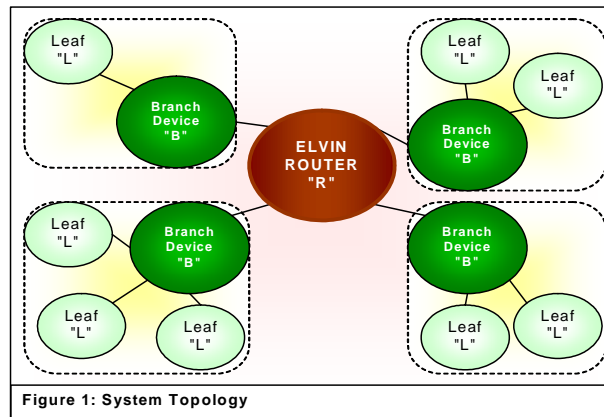

Figure 1: System Topology

Implementation Specifics

The hardware devices will be linked together to create a physical protocol stack. Devices can be constructed so that they can simply be unplugged and plugged into different situations, and the system can implicitly reconfigure itself to the new setup (see Fig 2).
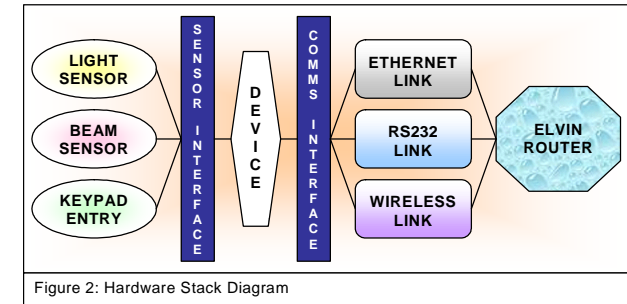

Figure 2: Hardware Stack Diagram

For example, an Elvin Device could be constructed with sockets for sensors. These sensors could be plugged in, and they would then be associated with that device. Additionally, the entire device could be unplugged from say a Serial RS232 link, into an Ethernet link, and still seamlessly communicate with the Elvin Router (see Fig 2).

Use of the ATMEL AVR (part of the Ethernut Development Board) and the PIC16F876 will be employed to construct these devices, as they are cheap and simple.