Personal Environment Transmitter System (P.E.T.S.)

Objective

The objective of this project is to develop a system that would allow one's personal environment to be transmitted as the person moves through different areas. This system will interface with other devices to allow automatic control of temperature, lighting, and entertainment control.

Design

The system will comprise of 2 devices: a central control box and a settings transmitter. The settings transmitter will hold the settings required as the user moves around different environments and the central control box controls the devices and communicates with the settings transmitter to set the different devices accordingly. All communication between devices will be done via Bluetooth. This allows a sufficiently large area of communication without the requirement of each devices being aligned.

Central Control Box

The Central Control Box will be designed with two modules consisting of the HC12 module and the Ericsson Bluetooth Application and Training Tool Kit. The Tool Kit will allow communication via the Bluetooth environment and allow us to interface with the HC12 microcontroller via a RS232 cable. Software will be developed for the Tool Kit that will continuously poll the settings transmitter to ensure no changes are made. If there are changes made via the settings transmitter, this information will be sent via the RS232 cable. Also, if there are changes sent via the HC12 module, the Tool Kit will send a command to update the settings transmitter.

The second module is the HC12 module. This module will contain different sensors to ensure the system is in synch with the user settings. The following sensors will be installed:

a sound level meter will be interfaced to provide the current decibel level

a variable level light sensor to determine light levels

a temperature sensor to determine current temperature

Depending on the readings provided, the Central Control Box can perform the necessary adjustments by communicating to other devices via infrared, serial/parallel port or pin outputs.

Settings Transmitter

The settings transmitter is a device that holds the settings that the user carry from one environment to another. This will be polled and/or updated by the central control box continuously to ensure settings are in synch. Also, this device will allow the user to be able to manually enter settings and configurations and remotely change environmental settings. To allow portability and ease of use, this system will be developed in a cell phone with Bluetooth capability. The Motorola V330 will be used due to its Bluetooth capability and API availability for development.

The system will have 2 devices implemented will be implemented with an embedded HC12 microcontroller with Bluetooth to communicate with a Bluetooth chip worn by the user. The microcontroller will continuously poll Bluetooth devices and will pair up with a device once a valid device is found. All communications will be initiated by the microcontroller.

Links

Wireless Software Development Links:

http://developers.sun.com/techtopics/mobility/midp/articles/wtoolkit/ http://developer.motorola.com/?path=1.2.6.25.768 http://trix2.cellmania.com/downloads/downloads/pdf/NetBeans_20060401.pdf#se arch=%22j2me%20v330%20api%22

Ericsson Bluetooth Application and Training Tool Kit <u>http://www.eng.uwaterloo.ca/~tnaqvi/downloads/DOC/Ericsson/devkit.pdf</u> Waterloo Development Tools Page <u>http://www.eng.uwaterloo.ca/~tnaqvi/developmenttools.html</u>