

# Project Proposal for Magali

SUPERB Summer 1999

## **Description:**

Create a graphical user interface for a hand-held wireless intercom unit. The interface will be a set of simple graphical primitives that represent buttons and lamps. The basic set will have six buttons and six lamps, with an option for an additional button and maybe a more sophisticated display that can handle text. This interface will be the control panel for initiating and terminating connections with two other intercom units in a limited prototype system. The interface will also indicate connection status.

The bulk of the work will involve coding in ANSI 'C'. There will be some assembly language programming and a fair amount of "hands-on" bench testing with real hardware. The basis for the GUI is an existing graphical library - this library needs to be adapted to our hardware architecture, and applications (code that make the buttons and lamps work) need to be written. Many of the steps to make this happen are not clearly defined yet, so you'll have to make independent judgments on how some things should be done.

## **Task Outline:**

1. Understanding the basics of the Intercom system.
2. Completely understanding the existing graphics library.
3. Install the library into the Intercom operating system.
4. Write the application code to create the buttons and lamps.
5. Test the code on the bench using the Intercom test board.

## **Goal:**

This project should take a couple of months to complete. What "complete" means can vary because step 5 tends to be somewhat painful and full of nasty surprises for a variety of reasons. So, we should probably shoot for completion of step 4, and as much of step 5 as possible.

## **What You'll Be Learning:**

- How a simple but complete communication system works.
- Issues of coding for embedded systems.
- Structure of a low-level graphical library.
- Programming to a low-level application programming interface (API)
- Threaded programming concepts.
- Structure and compilation of a simple operating system.
- Standard lab test procedures

## **What You Need To Do First:**

To get started, you need to understand how the Intercom system works. There is currently no single document that gives an overview of Intercom, so you'll have to rely on a set of web pages, schematics, source code, and your own reasoning ability. We will sit down and go over the system to start (I'll show you where everything is) and I'll be available any time for help, but much of the time you'll be able to solve a problem on your own, with a little (or a lot) of digging.