Project RAMBox Plans for Spring Semester

If everything goes as planned over the Christmas break, we will be close to finishing the programming of the microprocessors. This means that everyone in the group will start focusing on the hardware. This will be a daunting task since there are so many different components to create.

One of the immediate goals for the spring semester will be to find a PCB manufacturer which can help us print and place the small components on the boards. We need to do this for several reasons. For starters, we are under a major time constraint. Trying to find a manufacturer at the last minute would create a situation where we may not be able to get the boards printed. Since we would be asking for a favor from the company, it would only make sense that we do not rush them and have time to correct if something goes wrong. Also, without a determined manufacturer, we do not know what the constraints will be regarding selecting devices with which they can work. Without knowing this, there is a high possibility that the components we choose to place on the boards might not comply with their constraints. Designing the board without this knowledge just means that we would have to go back and repeat our work.

The first board we will be focusing on is for the reference boards. The main goal of these boards is to supply power to the processors. This would allow us to test the triangulation system efficiently with quick. Once we can change the location of the nodes without much effort, we will be able to test different configurations and locations to make sure everything works right and derive defined rules for the placement. Due to the simplicity of the requirements for this board, we should be able to design it in a timely fashion.

The second PCB which will be needed is for the control module. With two processors running in parallel and the fact that this is the link between the light, control board and location grid, this board will be our most elaborate and take the most work. On the board, the main components will be two of the microprocessors, DMX transmitter and receiver along with all of the appropriate plugs and a selector switch to dictate which channel the light input will be located. Since we have several development boards, we should be able to test most of the operations of the system without this board, but getting this part done as soon as possible will allow us to confirm that the two processors will communicate with each other as expected.

Finally, we need to work on the blind node. Once again, the main goal of this board would be to power the blind node processor, but we wanted to add a two-line LCD display to make the system friendly to the user and designate which mode the system is currently operating in. With all communications to and from this node being wireless, the main task would be to power the processor. This allows us to test our programming using the development kits, but by the end, need to run our programs using our LCD display and boards.

In addition to all of the board designs, we understand that everything will not work right the first time. We anticipate that there will be problems with the programming of the processors and are going to try to schedule time for this. By doing this, small problems should not set us back on our schedule. If by some miracle, there is no need to return to the programming process for any of these processors, this will allow us time to refine either the programs or the board layouts.