



EE Senior Design: Proposal

The Dream Team

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Overview

- Problem Description
- Proposed Solution
- Demonstrated Features
- Available Technologies
- Engineering Content

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Problem Description

- Teachers need feedback for proper education
 - Homework, Quizzes, Tests
- Delay between teaching and testing
- Better to receive feedback in real-time

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Problem Description

- einstruction™ developed a Classroom Performance System (CPS)

CPS RF Unit



CPS IR Unit
and receiver



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Problem Description

- However, einstruction's CPS is lacking
 - Slow system response to multiple students
 - No built-in rechargeable battery
 - Poor PC software design
 - Recurring subscription costs

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Problem Solution

- Develop a student response system that will take student responses to questions
- It will improve upon CPS
- It will be open source
 - Free
 - Perpetual improvement

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Demonstrated Features

■ Primary Features:

- Data collection, analysis, display
- Wireless communication - response unit to base station
- Wired communication - response unit to computer
- Wired communication - base station to computer
- Rechargeable battery source - response unit
- Inexpensive system - medium-scale production

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Demonstrated Features

- Secondary Features:
 - Microsoft PowerPoint™ integration

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Available Technologies

- Wireless

- ZigBee

- Low power
 - Low data rate

- Bluetooth

- Higher power
 - Higher data rate

- Both are at 2.4GHz ISM

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Available Technologies

■ Power

□ Rechargeable Batteries

- Nickel Cadmium (NiCd)
- Lithium Ion (Li-ion)
- Nickel Metal Hydride (NiMH)

□ Battery-free

- EnOcean

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Available Technologies

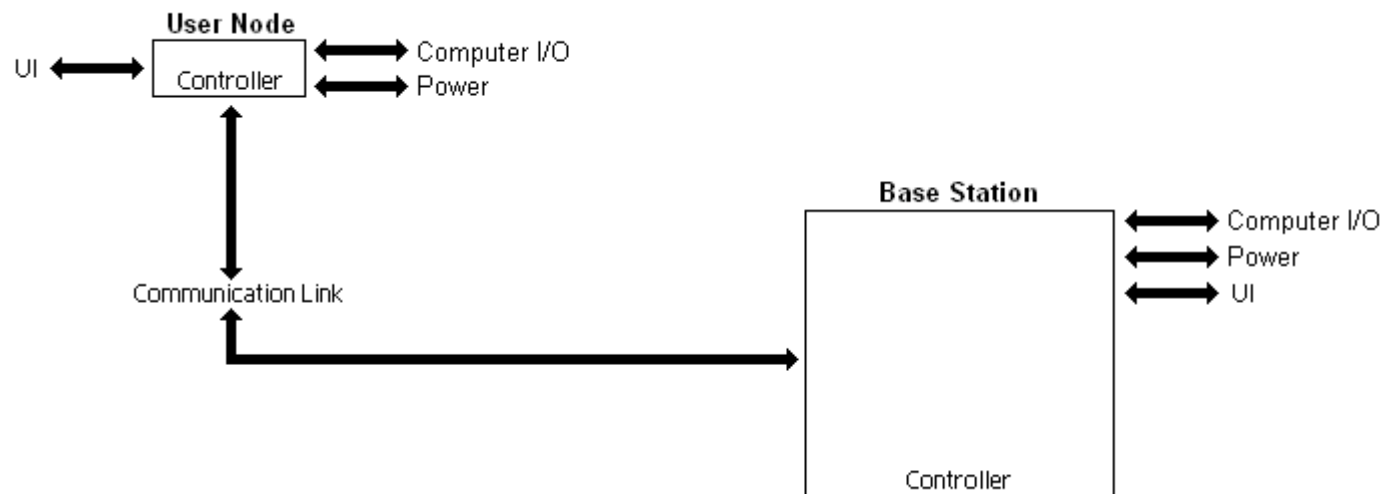
- User Interface
 - Display
 - 7-Segment LED
 - LCD Screen
 - User Input
 - Matrix Keypad

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Engineering Content



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