EMERGENCY NOTIFICATION SYSTEM

- TEAM MEMBERS

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BACKGROUND


PHOTOS
Virginia Tech
Scenes from the Shooting
ALAN KIM / ROANOKE TIMES / AP

Problem Formulation

Problem Definition: The existing system on Howard University's campus i.e. (AlertHU, Call boxes) is not adequate for notification in emergencies.

Technical liabilities:

- Switching systems become overloaded
- Limited frequency channels become blocked
- Government agency's can stop cell phone transmission
- Call boxes often do not function

Design Requirements

Constraints:

- Inform within 3- 5 minutes of incident report
- Operative temperature range of -40F to 149F
- Indoor audio output sensitivity of 94dB
- Visuals displays viewed from 25m
- Cost

Knowledge used:

- Programming
- Digital Systems design
- Telecommunications

Regulations:

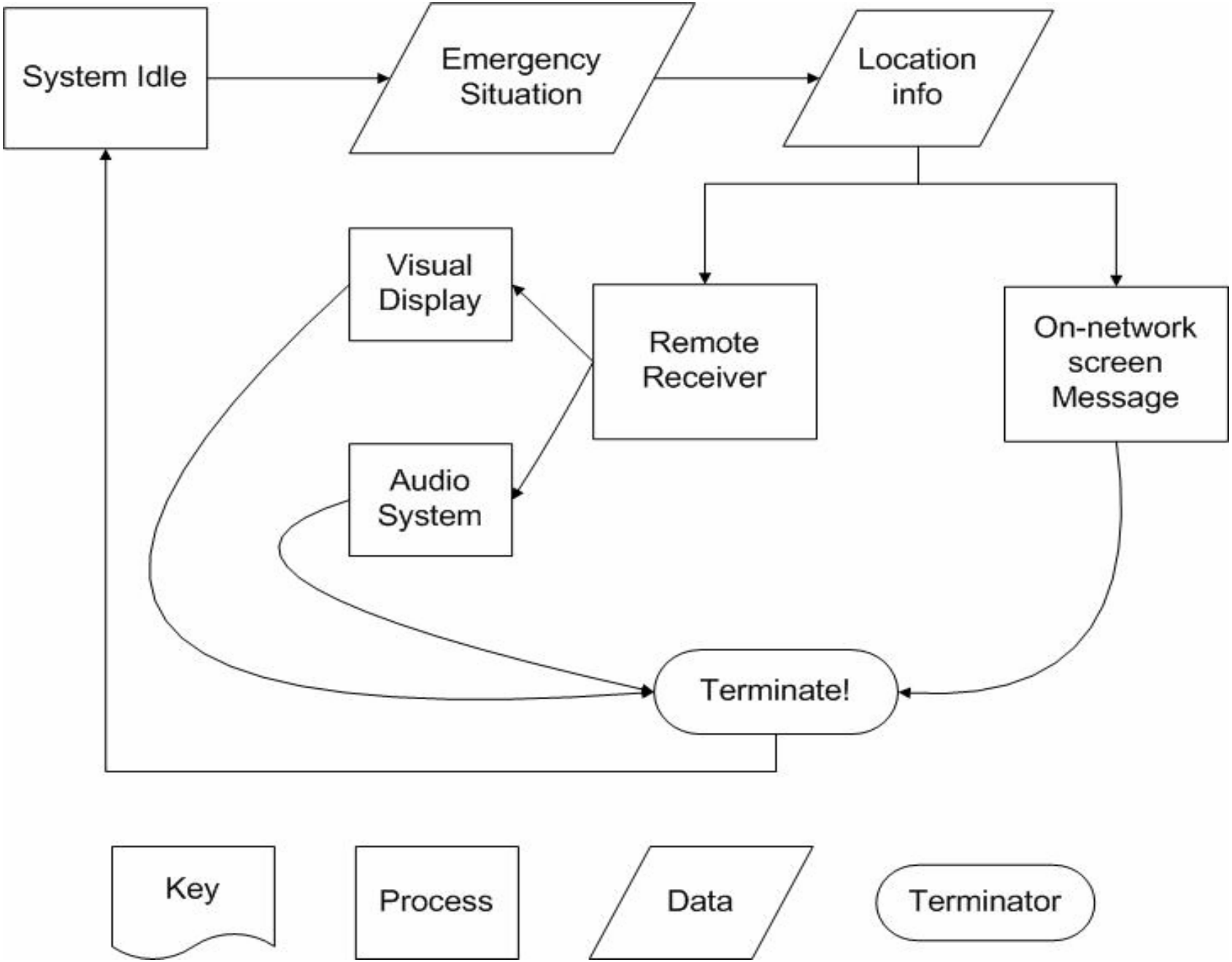
- United Facilities Criteria 4-021-01 Design and O&M
- Americans with Disabilities Act standards by synchronizing audio and visual messages
- Complies with Occupational Health and Safety Administration 1910.165 for employers that use an alarm system

Emergency Notification System

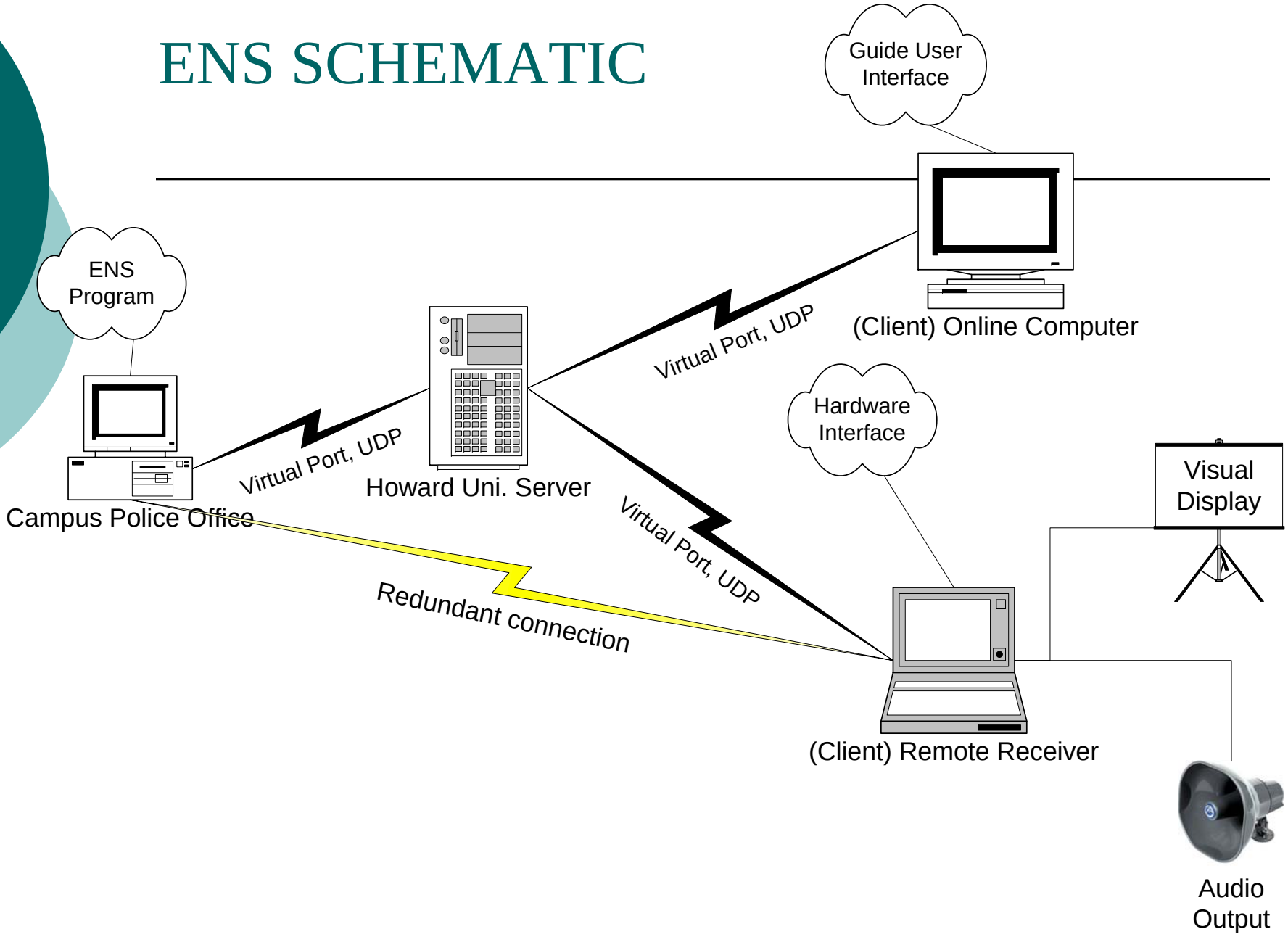
Solution Approach

- Under the assumption that Howard University is our client
- Emergency phone message received via campus police alert
- System located in police office, initiated by operator who chooses emergency from prompts
- Base station transmits datagram socket message over the internet to remote station
- Remote station receives socket message; runs the assigned notification media through various hardware outputs

System Overview (Flow Chart)

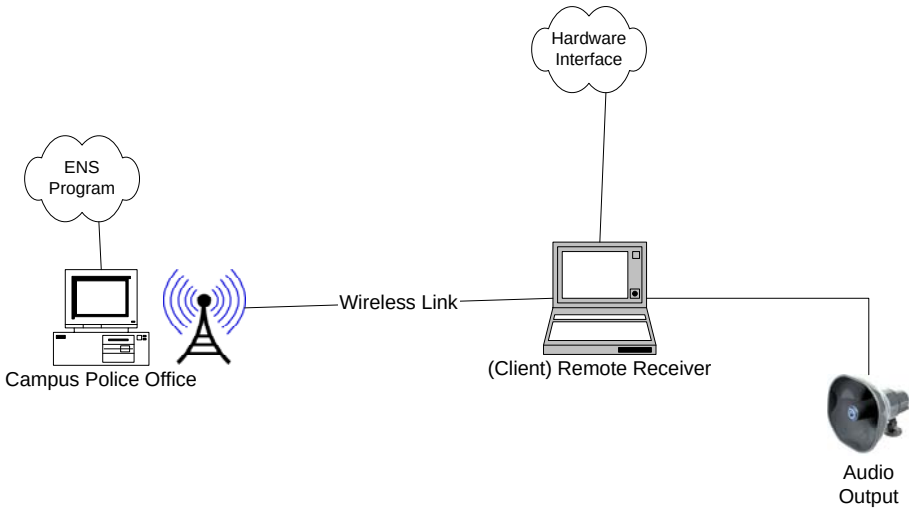


ENS SCHEMATIC



Alternative Solution

- Alternative Transmission Technique: Radio Frequencies
- Radio frequencies can be utilized to transmit signals
- RF transmits waves that correspond to the binary code
- RF are received as binary code at remote stations.
- Remote stations with radio receiver will run binary code as command for hardware output.



TASKS & PROJECT MANAGEMENT

- Research – September and October
- Proposal presentation / board review – November
- Research / code writing – December
- Code writing– January
- Equipment purchase / building prototype – January & February
- Phase 1 testing – February
- Back to drawing board – February and March
- Rebuilding of prototype / phase 2 testing – March
- Final building and delivering of ENS - April

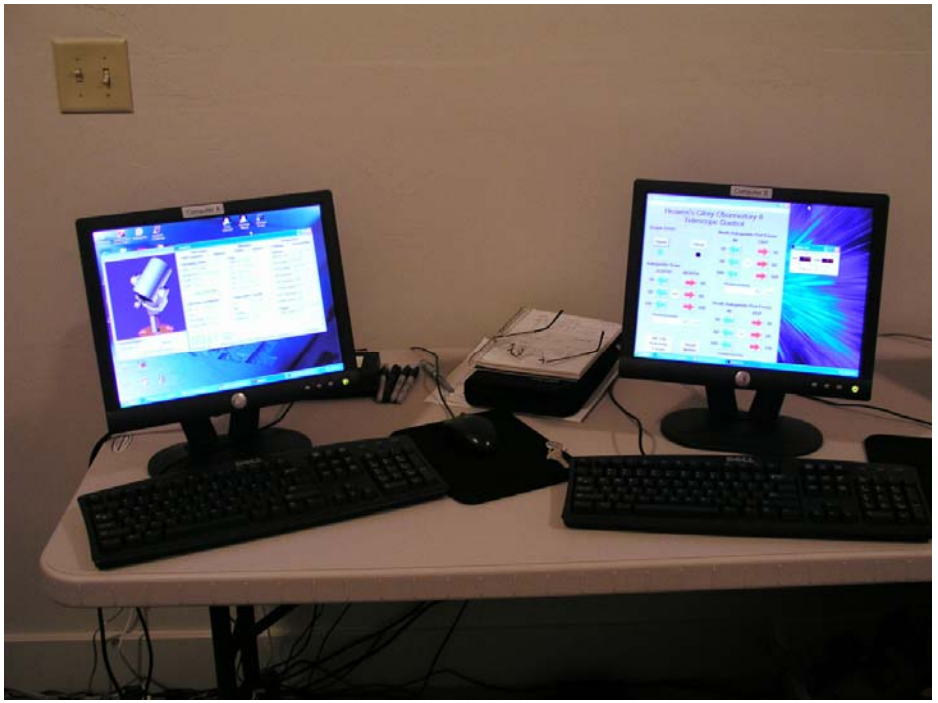
Verification Plan

2 phases of testing

- 1st phase:
  - Run programming codes
  - Run simulations to check for 95% efficiency
  - Check that system adheres to regulations
- 2nd phase
  - Fixing Problems
  - Testing Again

Deliverables

- ENS prototype
  - 2 Computers, FPGA, Speaker



COST AND RESOURCES

- The following resources will be required for our system:

1. Audio communication system: $200
2. Visual display unit: $500
3. On-network screen messaging: $50
4. Miscellaneous: $100

Total: Approx $850

CONCLUSION

- Dire need for effective notification system
- Plan of attack: UDP, socket programming, hardware interface
- Design lifecycle : September 2007 – April 2008