ENPRO 371 – Bus Tracker

- Our goal is to develop a cost effective bus tracking system based on affordable radio-frequency (RF) technology that will provide customers with reliable information, which they can use it to ensure the safety of their children.

Organization

- Engineering
  - Create new design
  - Procure parts
  - Assemble prototype
- Marketing/Information Technologies
  - Maintain both external and internal website
  - Further define customer profiles
  - Further define competitor profiles

Opportunity

- Parents: Save time in the morning, while ensuring the safety of their children
- School Boards: Increase the utilization of school bus system
- Bus Companies: Better services to their customers

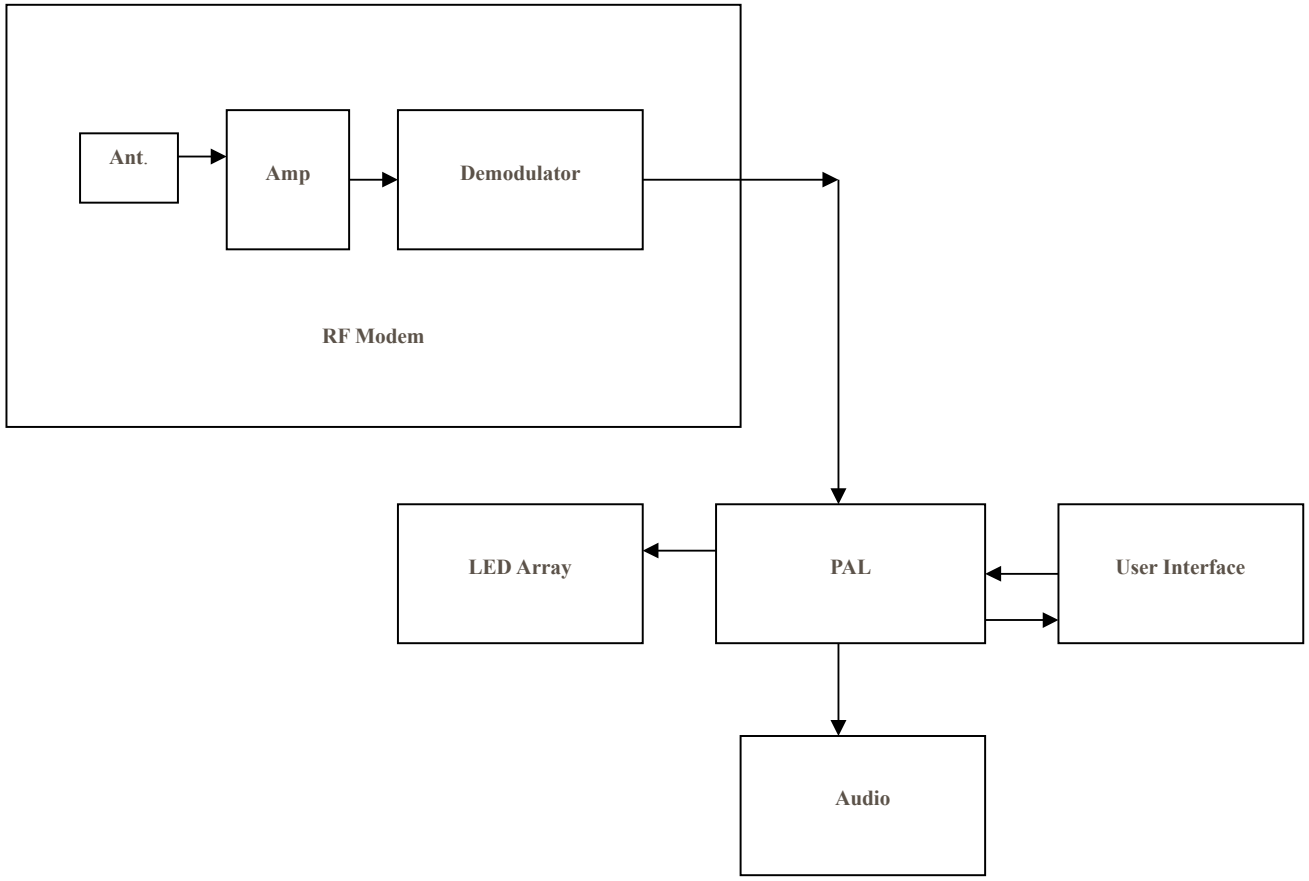
Potential Technologies

- Global Positioning System (GPS)
  - Accurate but expensive
  - Overcast sky coverage, fog, rain, or snow can affect GPS measurements
- Radio Frequency
  - Less accurate but cost effective
  - Independent system
- Internet
  - Most users are still on a dial-up connection
  - Not everyone can afford equipment/connection
- Telephone
  - Device may be in use
  - Cost incurred for each notification

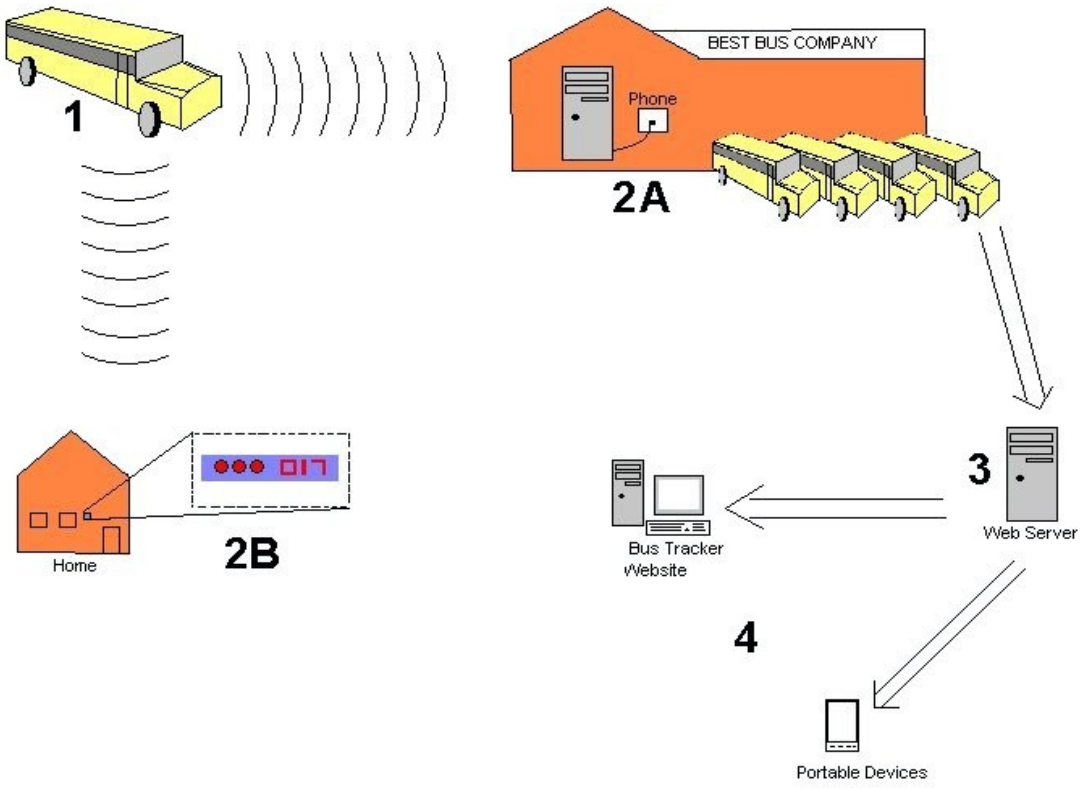
Potential Technologies

- Cell Phone
  - Cost incurred for each notification
  - Internet enable service $20/month
  - Dependent on cell phone service area
- Pager
  - Device may be in use
  - Cost incurred for each notification

Solution


Ant.
Amp
Demodulator
RF Modem
LED Array
PAL
User Interface
Audio

Bus Tracking System



Progress on Prototype

- Prototype
  - Design created
  - Parts procured
  - Prototype 90% assembled
  - Functional testing of individual circuits

Estimated cost

- Cost of the current prototype transceiver is approximately $400.
- Actual manufacturing cost of production level product is estimated at $50.

Product Features

- Reliable bus tracking information with an affordable price
- Adjustable alarm sounds
- Wall mountable unit
- Emergency/Panic button
- Battery backup power
- Bus schedule change alert

Customers

- Schools Boards
  - Nursery
  - Elementary, Junior High
  - Special Education
- Bus Companies

Market Size

- Market Size
  - 37,000 Chicago Public School students who take school buses
- Market Share
  - 10~20%
  - 3,700~7,200 CPS students

Marketing Strategy

- Primary Market
  - Nursery schools
  - Special Education
  - Elementary Schools

- Pricing
  - $10 per month for home base receiver
  - $100 for each transmitter installed in the bus

Surveys

- Parent Survey
- School Bus Company Survey
- School District Survey

Competitor Profile

- Here comes the bus
  - Features
    - Provides real time bus tracking
  - Technology
    - Utilizes GPS based navigation system
  - Price
    - $85/year for in home receiver
    - $3000-5000 software cost
    - $725/bus hardware and installation
    - Schools can recoup 10% of their costs via monthly service fees to students

Cost to the Customer

- Competitors
  - Extremely accurate but expensive (GPS)
    - Initial cost per rider per bus is approximately **$13.18**

      $725/55 riders =$13.18 per riders
- Bus Tracker
  - Accurate and cost effective (RF Technology)
    - Initial cost per rider per bus is approximately **$1.81**

      $100/55 riders = $1.81 per riders

Progress Made

- Created new design based on the current concept
- Created new prototype based on new design
- Assembled new prototype currently 90% complete
- Established relationship with manufacturer

Path Forward

- Finalize assembly of prototype
- Functional testing
- Build ten prototypes
- Pilot program
- Refine concept based on analysis of pilot program data

Risks

- What could cause us to fail
  - Technical problems
  - Market issues
  - Competitive issues
- How we will mitigate these risks
  - Pilot Program

Conclusion

- Why our business is important
  - Safety
  - Efficiency
  - Convenience
- Why we will succeed
  - Clear Need for product
- Why should someone support us
  - Profit potential is considerable given the large market with few competitors

Questions?