Carputer

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Overview

- Power
- Communication
- Hardware Design & Fabrication
- Software (client)
- Software (server)
Power

- Vehicle power has large voltage fluctuations, as well as random signal noise.
- Computer requires constant 3.3v with very small (<100mV) fluctuations.
- Power circuit will use UPS to provide constant power in case of low voltage situations.
Communication OBD2

- OBD2 to converter
- Converter to RS232
- freediag will manage communications between vehicle and carputer
Communication Client to Server

- Carputer connects to server via 802.11x using an Ethernet to wireless bridge.
Interface

- 800x600 resolution.
- Touch Overlay.
- Customized Linux Window Manager.
- Taskbar Shows Active Data.
Processor

- StrongArm Architecture
- CPU: Intel XSCALE PXA 255 400 MHz
- USB: 2x USB host, 1x USB device
- Expansion: PCI, 32Bit, 33MHz via companion device
- Memory: 64MB DRAM, 32MB Flash
- Software: WindowsCE support, Linux support
- I/O: 2x high speed serial port 10/100 MBit Ethernet, LPCIDE interface
Motherboard

- We will acid wash our own board.
- Due to high risk we may use a commercial PCB manufacturer as backup.
Motherboard Obstacles

- RF noise
- Power noise
- Difficulties with Design and Manufacture
- Size Requirements
Enclosure

- Friend of the team, Curtiss Melder, will be employed to mill aluminum for the enclosure.
- The enclosure will provide RF shielding.
- The enclosure will be designed to be aesthetically pleasing.
Software (client)

- Embedded Linux (slackware) has been chosen as the OS for the carputer.
- Fluxbox will be used as the basis for the GUI.
- FLTK will be used to create custom interfaces for freediag, and other functionality.
Software (server)

- Transfer logs.
- Server program displays relevant information.
Schedule

- **Summer**
  - Finish purchasing parts
  - Design and fab mobo
  - Begin UI

- **September**
  - Make it boot!
  - Integrate with vehicle
  - Custom window manager in place
Schedule

- **October**
  - Establish minimum functionality
  - Begin server software

- **November**
  - Debug and polish
  - Finish server software

- **December**
  - Prepare final presentation and DEMO!
Bill of Materials

- Kontron CPU: already received
- OBD2 interface: already received
- Hard Drive: already received
- LCD/T Touch Screen: Ordered
- PCB/Acid wash: available anywhere
- Ethernet to 802.11x bridge: available
- Enclosure: set up but not received
- Other small parts/components: DigiKey, Mouser, etc
Questions?!?