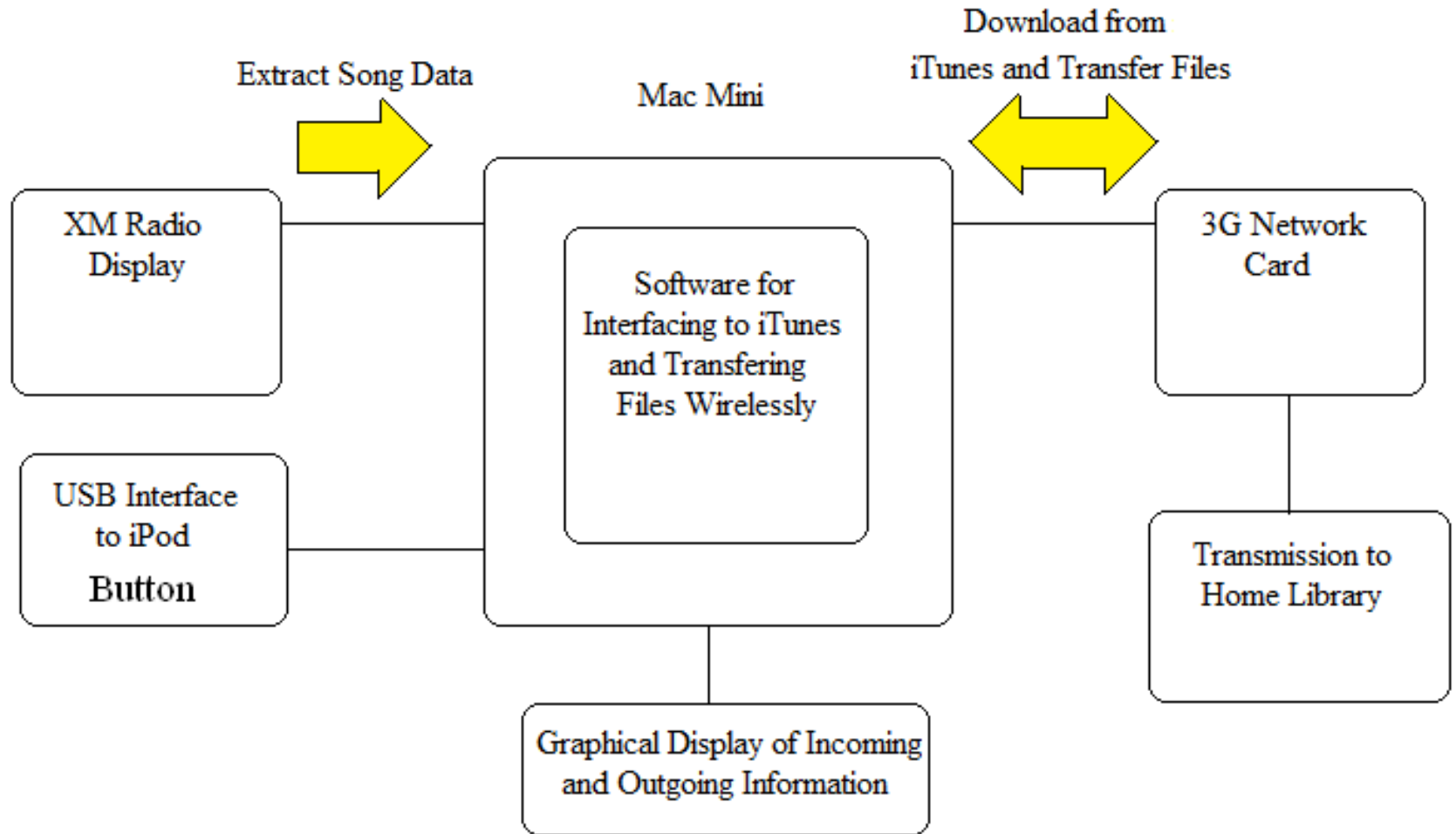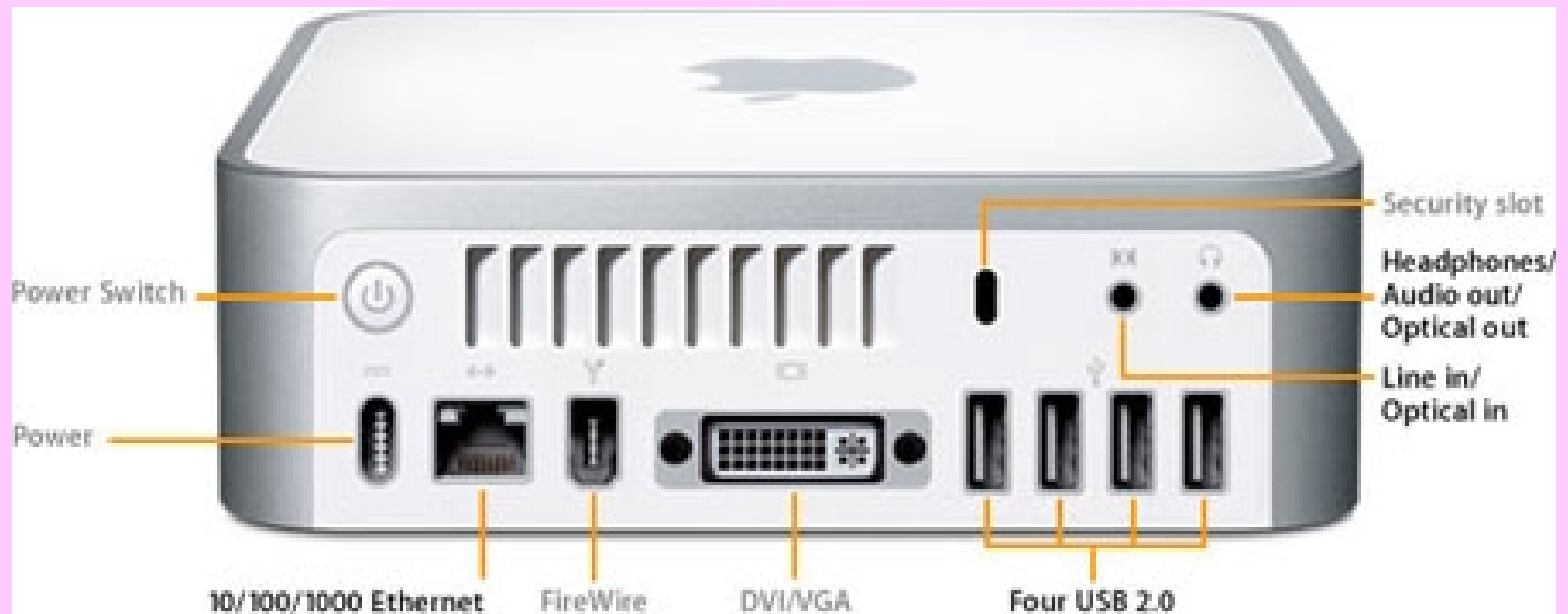# iCarTunes

Cameron Currey

Sam Nazari

Tim Pruss

Overview

- Save a list of favorite songs

- Download songs wirelessly from iTunes

- Load songs onto an iPod via USB cable

- Transmit songs to library on home PC

Hardware Interface

Mac Mini

Power Switch

Power

10/100/1000 Ethernet

FireWire

DVI/VGA

Four USB 2.0

Security slot

Headphones/
Audio out/
Optical out

Line in/
Optical in

Mac Mini – Ports

- Ethernet
- FireWire
- USB(x4)
  - Using one port for satellite internet
  - Using another port to receive input from the XM Radio display
  - Use one for the button
- DVI/VGA
  - Output to small display screen

Mac Mini - Usage

- Our 'microcontroller'
- Brain behind all the connections
- Runs the main Software
- Storage device for songs
- Yours for only 2 *easy* payments of $300
  - We plan to write a request to Apple
  - Hopefully they will let us have/borrow one for the project

XM Radio

XM Radio

- Delphi SA10276-11P1 XM
- Cost: $60
- Usage: Tap the display
  - Reroute the information to the Mac Mini
  - Info will go through a USB drive
  - Can't find hardware schematic. Will have to do some reverse-engineering.

Wireless Internet

3g Wireless Internet

- Model: AT&T USBConnect 881
- Interface:
  - Plugs right into the Mac Mini's USB
- Costly
  - $100 w/ plan purchase
  - $60/month
- Use
  - Connects to iTunes online, purchases song.

Mac-Mini DVI

- 128x128 display screen
  - About the size of an I-Pod screen
- Cost: $30
- Displays the GUI
- Connects to the Mac-Mini's dvi port

'*Button*'

- Hack-a-Mouse

- Open up an old USB mouse

- Figure out which connection signifies a 'click'
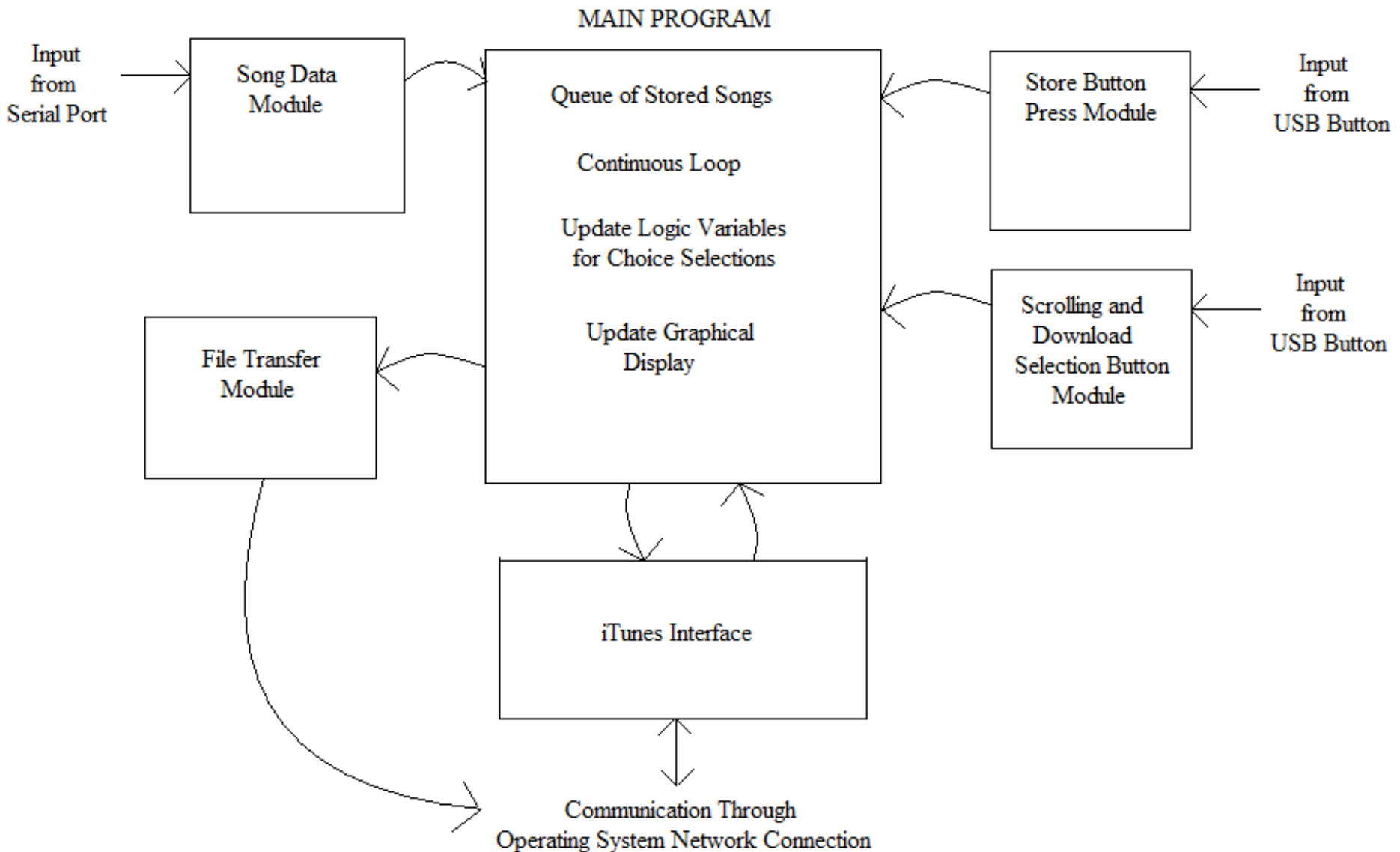
- Wire up a generic button through these

Software

- Processes Input and Output
- Input
  - Song Data
  - Button Presses
  - Song Files
- Output
  - Display Menus
  - Song Transfers

More About Software

- Written in C#

- Interface with the Various Hardware Components

Software

MAIN PROGRAM

| Input from Serial Port | → | Song Data Module | | Queue of Stored Songs

Continuous Loop

Update Logic Variables for Choice Selections

Update Graphical Display | | Store Button Press Module | ← | Input from USB Button |

File Transfer Module

Scrolling and Download Selection Button Module ← Input from USB Button

iTunes Interface

Communication Through Operating System Network Connection

Potential Risks

- Outputting the correct information through the dvi port.

- Grabbing info from the xm radio display
  - No hardware schematic =(

- THE PRICE IS WRONG (sorry Bob)
  - (we need free stuff)

Budget

- Mac Mini $600
- XM Radio $60
- Satellite Radio $220 (2 months)
- Mini DVI screen $30
- Miscellaneous $40

- **GRAND TOTAL: $950**

Schedule Flow

- May 5 – Write letters of request to retailers for donations to project
- May 12 – Purchase XM radio display and research its schematics
- May 19 – Purchase/pickup Mac-Mini and connect serial port from XM radio display
- May 26 – Interface software to extract data when a button is pressed
- June 2 – Write skeleton software and test ability to extract song data
- June 9 – Modify software to hand off Song data to an iTunes search query
- June 16 – Modify Software to display search results and modify button Interface
- June 23 – Test song download capabilities
- June 30 – Build customized GUI to be displayed on display screen
- July 7 – Develop software to run on home computer to receive file transmissions
- July 14 – Purchase display screen and test Mac-Mini capabilities
- July 21 – Purchase and set-up 3G Wireless Internet Connection on Mini-Mac
- July 28 – Test system and debug any issues
- August 4 – Testing
- August 11 – Bundle system in a car-ready package