

FRIENDLY HOUSE SOFTWARE IMPLEMENTATION

An Interactive Qualifying Project Report

submitted to the Faculty

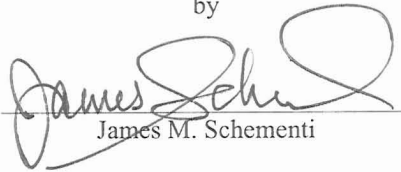
of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by



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Date: April 27, 2006

Professor Gary F. Pollice, Major Advisor

1. computers
2. united way
3. software

Preface

The purpose of this report is to give a brief overview of this project with Friendly House. It will explore the motivation for this project, the proposal from Friendly House, the development and scoping of the project, and the execution of the project. This paper will not discuss Friendly House's working as an organization other than what makes sense to the project.

Acknowledgements

I would like to first and for most than the project advisor, Gary Pollice, for is guidance during the project. The drives to Friendly House, since I did not have a car, were appreciated and the incite into dealing with an organization outside WPI was helpful. I would also like to thank Friendly House for giving me this opportunity to learn and work with them, especially Gordon Hargrove, Martina, Jerry Schlater for driving the project and Jim for driving me home after late nights of cabling. I would also like to thank SMLP Technologies for providing high quality service and hardware to complete this project, and being patient with the billing issues.

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Abstract

Friendly House handles all their business needs without the major aid of computers. They spend a lot of time creating reports to send United Way and are looking for a computerized solution to solve their issues. They have selected a suitable web-based system that would suit their needs, so the focus of this project is to ensure their current infrastructure can support the software and enable them to begin using it.

Background

Friendly House

Friendly House works with entire families, both nuclear and extended, as an integrating force for the families and the neighborhoods it serves. Friendly House provides a continuum of comprehensive coordinated neighborhood basic services to inner-city families. To fulfill its mission, Friendly House offers after school programs, art and recreation programs, summer camping programs, senior services, basic needs services, a continuum of shelter services, community organizing efforts, and a host of information and referral services.

Previous Work

This project is following up 3 students' research, Christopher Fournier, Mark Legris, and Robert Contois, Friendly House Inc. and the Central Mass Housing Alliance (CMHA) purchased a license for Social Solutions' ETO software, a web-based tool that focuses on relating efforts to outcomes. This project aims to help Friendly House Inc. complete the following:

- Customize ETO Software to suit their needs
- Ensure a proper infrastructure on site to support the software
- Produce training materials for future customizations and users

Motivation

Friendly House only has a couple outdated, but working, computers in their office, and their internet connection is sub-par. They currently have a Microsoft Access Database in place to manage certain aspects of their business, but they have expressed need that it is insufficient and they need a consistent system that will work for all their areas of business.

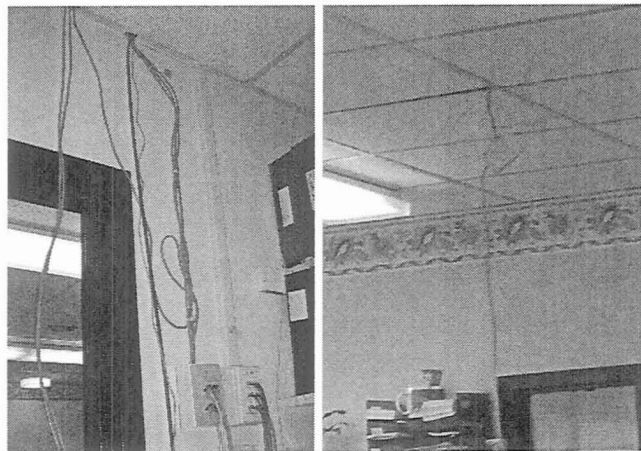
Methodology

Project Scoping

The first meeting about this project Jerry Schlater expressed interest in customizing their purchased software tool for their business needs, and then training the Friendly House employees on how to use it. However, when I first visited Friendly House, it became apparent there were bigger issues that needed to be tackled first.

Their network infrastructure was unreliable and outdated. The physical wires were not rated for the use and their actual internet connection would fade in and out depending on which computer you were using. The only rooms that had internet connection was the accounting and main offices, but they were expecting to use this system in classrooms, and the gym area.

Figure 1 – Example Original Wiring

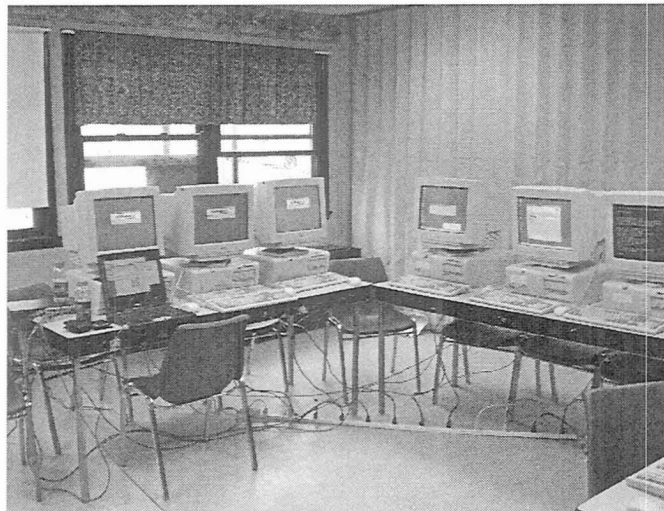


We quickly changed the scope of the project to focus on building up the infrastructure first. This included cleaning up their network room, entirely rewiring the main office and accounting office, and adding more network drops all around the facility. This also included setting up new computers for the office and installing them, as well as creating an internet-ready classroom.

Internet-Ready Classroom

The first project I took on was setting up the computers for their classroom. The previous project group had received computers during their project but just kept them in storage at Friendly House. I set up the computers in an open classroom and set up a little local area network (LAN) with a switch and used my laptop to install Windows 2000 and Office XP onto the machines. Then after some configuration and user setup, I packed the computers back up and put them back in storage for when I could set up the network.

The internet-ready classroom development



Funding

Friendly House was awarded a \$2500 grant to put towards technology, so I was given that budget and told to go with it. I planned to create a list with the equipment and material needs outlined for the cabling project, along with prices, and find a company that could provide those materials and ship them to Friendly House.

Cabling Project Planning

To plan out the project, I first needed to know how many network drops they needed, and where. The where is important because that will tell me how much cable the project will require. Devising a way to accurately estimate the amount of cable needed was critical since if I order too little the project can be delayed but if I order way too much I may go over budget and cost Friendly House more money than they need to spend.

Timing is also important since I need to do most of this work in the evenings when no one is around. Coming up with a schedule to make sure progress is being made in a timely fashion is needed. Friendly House can't have the network they have be interrupted, so I need to install everything alongside the old system and then cut over without any service interruption.

Results

Cabling Project

The first course of action was to figure out exactly where they needed internet connection. I created a floor plan of Friendly House in Visio, took some measurements to make sure it was to scale, and then outlined the wiring plan (please see appendix for diagram). The actual execution of this plan varied a little bit, but not by a lot.

After I had the plan in place, I needed to solidify what materials we needed. I worked with Jerry to figure out how much cable we needed and how many network drops were required. For every computer they had I installed 3 network drops to give them plenty of room to expand. Also, I purchased a wall-mounting rack to organize their wiring and make it clean, maintainable, and expandable. The cable was plenum rated cable, which is fire safe and rated for drop-ceiling use.

I placed the order with SMLP Technologies, a New York based one-stop IT shop. I work for the as a consultant so I knew of the quality hardware they use, so I placed the order for all the parts through them. Here is the total project order (please see invoices in appendix).

Quantity	Product
4	1000ft Plenum Rated cat5e cable - white
6	Mounting box for 2 jacks - offwhite
6	Mounting box for 4 jacks - offwhite
1	Mounting box for 6 jacks - offwhite
6	2 jack faceplate - offwhite
6	4 jack faceplate - offwhite
1	6 jack faceplate - offwhite
40	off white jacks
16	black jacks
24	blue jacks
1	wall mounted rack with at least 64 jack spaces
1	red gaffers tape
1	blue gaffers tape
1	black gaffers tape
3	Label Roll
40	10 ft patch cables - white
1	Package of "Velcro" or some equivalent
1	Large pack of zip ties - black

The cabling process was very organized and neat as to ensure all the cables were not in the way or exposed much. There are 4 stages to cabling; **running, taping, coiling, and installing.** When cabling you must also take into account how many cables to run and where the cables need to break off from the main shoot to go to a sub-shoot or individual drops. Each one of the drops we ordered holds 4 cables, so if there are 8 drops in one room, and the room is 80 feet away, we need to run 32 cables, each being 80 feet, to the room, so a total of 2560ft.

So for this example I would label the cable, pull 80 feet out of the cable box, label it again, and then cut the cable and repeat the process 32 times. I would have to switch cable boxes in the middle but you get the idea. The labeling is to ensure you know which cable is which. So, the beginning of every cable will match the ending of every cable, making it easy to trace a cable from a drop to the backroom.

After the cable is run, it needs to be taped together. I purchased 3 colors of gaffers tape to color code the cables. Every 4 cables I would run I would tape together with one color, and then at the end I would tape all the cables together with another color. This makes it easy to see where to break the cables off from the main shoot, and then the broken off cables are still taped together.

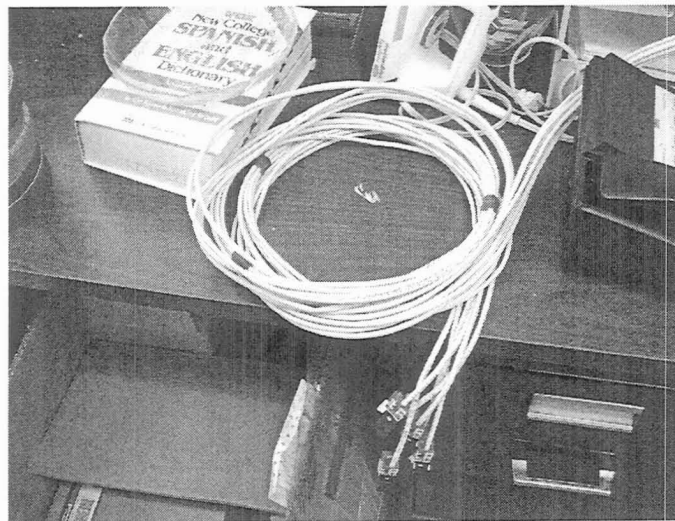


After the cable is taped the thick cable is bundles up to be moved for installation. Usually the cable bundle is zip-tied or taped together so the bundle doesn't come apart. Having your cable free of tangles makes installation much easier.



Installation is the hard part for this project, since the cable was to go (for the most part) into the drop ceilings. Here you would cut the tape/zipties holding the bundle together, anchor one side, and put the other side into the ceiling and pull it out another close location. Keep feeding the front through the ceiling until you get all the cable through the ceiling to the destination. Then break off whatever sub-shoots you need and pull the cable out where the drop should go.

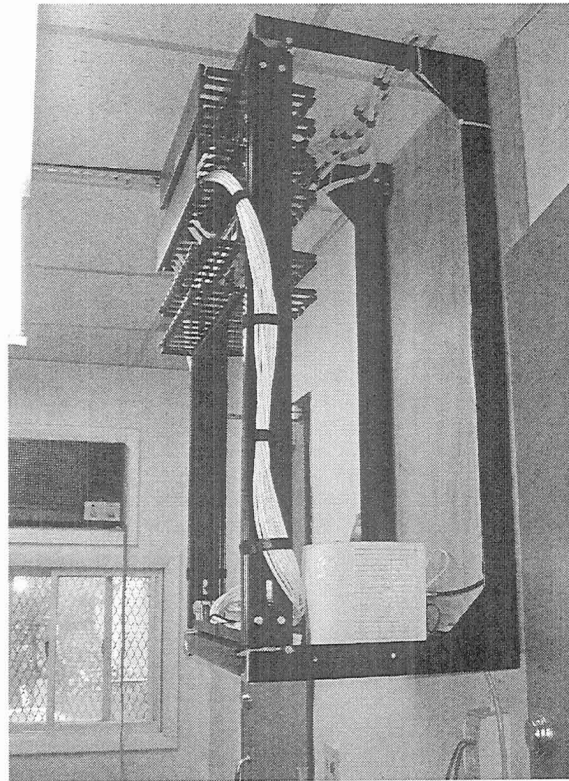
Now we need to install the drop. Without getting into too much detail, you attach a special jack to the end of the cable that allows you to plug a network cable into it, and then snap it into a plastic box, along with 3 other cables, and attach the box to the wall. This gets repeated for all the drops.



Lastly is the patching. This included installing a wall-mounting rack, running the other end of the cables neatly into the rack, and attaching the special jacks to the ends of the

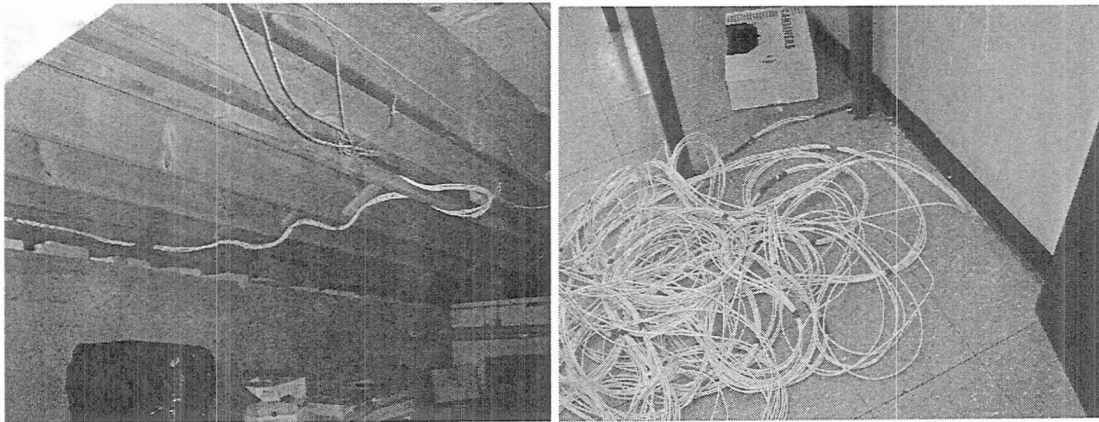
cable and installing it into the rack. Lastly you use patch cables to plug into the rack and the network switch to make everything work.

The finished friendly house rack:



Internet-Ready Classroom

Setting up the classroom proved to be more of a challenge than I had expected. The original path of the cables (up the steps area and in the drop ceiling of the 2nd floor) was blocked, so I needed to find a way to go up through the floor. Luckily that worked out and I was able to run cable straight over the main office and keep going back until I was under the classroom. Then I drilled a hole and popped the cables out and set up some tables and network drops in the classroom and wired it.



Conclusion

Accomplishments

Friendly House was in major need of infrastructure upgrades, and now they have a system which will last them as long as the technology remains standard. At the very end of the project they were using the ETO Software website and beginning to move some of their business functions to it.

Issues Faced

The Friendly House staff did not quite understand why the entire network needed to be rewired; they just wanted to start using the website, so communicating that was difficult. Also, their current computers were old and some of the internet connectivity issues had to do with the machines themselves. Also, Friendly House did not pay SMPL technologies back until late July, which greatly inconvenienced them and put a blemish on my reputation with them.

Future Work

There is a lot more that can be done with Friendly House. First off, the software package can now be tailored to their exact needs. Also, their individual computers need virus protection, and the classroom computers need to be more guarded since children are surfing the internet.

In conclusion, I learned a lot during this IQP and, though it was a lot of manual labor, was happy to work hard for a great place that does so much for the community that has embraced WPI.

Appendix A – SMPL Invoice #1



Invoice

Date	Invoice #
4/7/2005	252

SMPL Technologies
 29 Poplar PL
 Glen Cove, NY 11542

Bill To
Friendly House James Schemm 36 Wall Street Worcester, MA 01604

P.O. No.	Terms	Project

Item	Quantity	Description	Rate	Amount
Cable Spool	4	1000 Feet Mohawk Pop Box Category 5e cable	175.00	700.00
Junction Box	14	Panduit Junction Box	5.00	70.00
Face Plate	6	Panduit Face Plate (2 Port)	3.00	18.00
Face Plate	6	Panduit Face Plate (4 Port)	3.00	18.00
Face Plate	1	Panduit Face Plate (6 Port)	3.25	3.25
Giga-Jack	80	Panduit Enhanced Cat 5 Giga Jack (40 International White, 16 Blue, 24 Black)	5.00	400.00
Labels	3	Panduit Label Dispenser Kit	25.00	75.00
Patch Cable	40	Patch Cable for Network Connectivity (10 Foot)	3.00	120.00
Gaffers Tape	3	Gaffers Tape (Blue, Black, Red)	15.00	45.00
Velcro	1	Panduit Velcro	10.00	10.00
Zip Ties	1	100 Pack Zip Ties	7.99	7.99
Patch Panel	1	Panduit 48 Port Patch Panel	50.00	50.00
Patch Panel	1	Panduit 24 Port Patch Panel	40.00	40.00
WMP1E	3	Double Sided Horizontal Wire Management 2RU	45.00	135.00
Data Rack	1	Wall Mount Data Rack	150.00	150.00
Workstation	1	Dell Optiplex GX280	785.00	785.00
Shipping	1	Shipping	75.00	75.00
			Total	\$2,702.24
			Payments/Credits	\$0.00
			Balance Due	\$2,702.24

Appendix B – SMPL Invoice #2



Invoice

Date	Invoice #
5/5/2005	264

SMPL Technologies
 29 Poplar PL
 Glen Cove, NY 11542

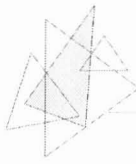
Bill To
Friendly House James Schemant 36 Wall Street Worcester, MA 01604

P.O. No.	Terms	Project

Item	Quantity	Description	Rate	Amount
Patch Cable	20	20 Foot Patch Cable - White	10.00	200.00
Shipping	1	Shipping	50.00	50.00
		Sales Tax	8.75%	0.00

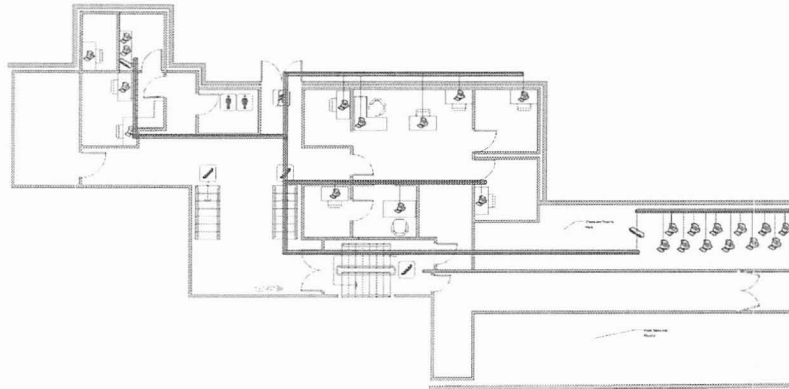
Total		\$250.00
Payments/Credits		\$0.00
Balance Due		\$250.00

Appendix C – Friendly House Floorplan / Wiring Plan



Friendly House - Floor plan

March 30, 2001



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