

YES / New Avenues Project
Final Report

December 11, 2001

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Project Abstract

YES Industries is a non-profit organization providing employment opportunities for mentally and physically challenged individuals. To improve organization and efficiency at their main site and to enhance communication among different sites, YES has asked the CWRU Engineering in Community Service classes to make a technical recommendation for the proper equipment and software. Students in the project are selecting the software that fits the needs of the organization, determining the computer system requirements for that software, and designing a network to integrate new and existing systems. Early phases of the project involve working closely with YES to understand their operation and jointly drafting a proposal to purchase the recommended equipment. Team members are researching and discussing the tradeoffs between using wireless and adopting traditional networking schemes, buying commercial software over writing new solutions, and increasing performance while reducing costs. Later phases, occurring over several semesters, will include actual installation and implementation of different systems as well as testing.

Phase I: Fall 2001
Technical Recommendation for YES Building 1

The following recommendations follow from consideration of the current system and future goals for networking YES Building 1. First, the software recommendations explain the best combination of packages that integrate well with current systems and are likely to be good choices for the future. The hardware recommendations discuss proposed hardware solutions that are sufficient to run the software choices and robust enough to provide future flexibility. In addition, network specifications tie the hardware systems together so that users can access data from different computers in one site or among different locations in a secure manner. Research focused on finding the best solution below \$10,000 to ensure a reasonable grant proposal figure.

Software Recommendation

Hardware progresses at an astonishing rate, but software is a more stable field. It progresses at a much slower speed, and in a completely different way. New builds of programs, fixes, and updates appear yearly for prominent software. Luckily it is much easier for users to keep up with this since the main program usually doesn't change. The following are the software recommendations for YES building 1.

Software	Function
Windows OS, Office, AntiVirus	General Software
Solomon	Accounting
ACT! 2000	Sales Tracking
Payroll	Ceridian/Solomon
CWRU database	Medical Records

First general software issues need to be discussed. We recommend a minimum of Windows 2000 as the operating system (OS). It is based on NT technology so it will be more stable than other platforms. We also considered Windows XP. The current market is heading in the direction that will include XP on all newly sold machines. If this is the case, XP should be used, but if two similar systems are available and the one with 2000 is considerably less in price, it is recommended purchasing that machine.

For normal office use, such programs as Microsoft Word, Excel, and PowerPoint are recommended. These programs are all included in the Microsoft Windows Office package. YES currently owns licenses to this software bundle; unfortunately, it is an older version so in order stay current and compatible, we recommend Microsoft Office 2000. Luckily, we project that when YES actually purchases these proposed systems, this software will be standard on all machines. In actuality it is standard on several brands now.

To prevent viral infection of the new network, either McAfee or Norton AntiVirus is recommended. They are the two leading products and the individual distinctions between the two are trivial. The company should take which ever of the two is loaded on the purchased machines or the cheaper of the two when they purchase the machines.

Moving away from general software issues, we now move towards functional based software that will help YES operate. Accounting software was the main concern when the team decided to upgrade the current technology level of YES building 1. One of the main concerns was that the accounting software needed to be compatible with the home office's software. The home office currently uses Solomon. Keeping this in mind, several software programs were investigated. Program such as Best MAS 90, Peachtree,

and In Touch Base System were all considered, but one package stood out from the others. Solomon IV for Windows is one of the best packages on the market. It is the latest version released, and it is compatible with the home office. One of the highlights of this software are that the company that sells it, Great Plains Business Solutions, has developed several modules that will allow for flexibility and expandability of the program. This software has recently had a payroll module added to it. Payroll was another large concern when selecting software. This module may remove the need for Ceridian, which is currently used by YES.

Sales tracking is a new software idea at YES building 1. Of the leading products on the market, it was easily narrowed down to two different programs. First is Synchronic's CounterPoint in Touch. This appeared to be a standard program with functionality. On the other hand, there is a line of products previously owned by Symantec, but now owned by Interact Commerce Corporation. This company has released the newest version of ACT called ACT! 2000. This is truly an impressive program. While maintaining its standards of functionality, this program has gone a step further and has included a user-friendly interface. It manages sales processes, manages and tracks all accounts automatically, allows quick retrieval of customer information, and communicates with contacts and customers. This is a highly recommended software package. It is also boasted as being compatible with Dynamics, a very similar program created by the same creators of Solomon. Though not as completely compatible as Dynamics would be, Solomon is also partially compatible. In addition, there is a program that will further this compatibility. It is ACT! Hotlinks for Solomon IV. It allows synchronization between the two programs.

As previously mentioned, the payroll need may be able to be completely met by Solomon, but in case that is an unacceptable option, YES currently uses Ceridian. This is a company that supplies a program that allows them to handle payroll for the business. Since YES is familiar with this process, it might be beneficial to maintain the current payroll operation.

Lastly, another new idea for YES building 1 is employee medical records. While this function may be able to be met with a commercial product, none were found that would completely conform to the needs of YES. Many software programs on the market are geared towards a doctor's office setting. It is highly recommended that a student or students at CWRU design, develop, and implement such a database for YES building 1. This will be discussed later on.

Hardware Recommendation

To accommodate the software choices, a good selection of hardware is necessary. For the various tasks performed at YES Building 1 there is a need for three standard PC workstations, a high-end server, and an existing laptop computer (see table). Because the grant will be written at a future date there is no exact recommendation for processor speed or memory capacity, rather the term standard reflects the low-end to mid-sized workstation available at the time, which will meet the requirements of all of the proposed software packages. In addition to these workstations a high-end server will provide flexibility for future applications, network login, database synchronization, and other unplanned tasks such as the hosting of a web site. If purchased within one year's time the recommendation is a 1.0 to 1.5 GHz process with 256 MB of RAM and at least a 30 GB

hard drive. All computers should be equipped with a Universal Power Supply (UPS) system to ensure protect from power surges, brownouts, and old wiring.

Component	Quantity
Standard PC Workstation	3
High-End Server	1
11 Mbps Wireless Access Point	2
11 Mbps Wireless PCI Card	4
Universal Power Supply System	4

Networking the various workstations, servers, and laptops together can be a daunting task, however, a wireless network can make the job simple. Previously existing as a novelty for high-tech companies, wireless networks have recently dropped significantly in price and demonstrated practical flexibility for small business and non-profit organizations that do not always have permanent resources and personnel to maintain complicated networks. By simply connecting two access points to a power source, YES Building 1 computers equipped with the Wireless PCI Networking cards receive full access to the network. Any new computers containing the network cards can then join the network with no further installations.

The advantages of the wireless network for a non-profit organization like YES are numerous. Wireless networks offer the flexibility to move workstations to different location in an office building without rewiring or activating the faceplates of traditional networks. Employees with laptops can move around the office freely without losing connection to the network as well as be instantly connected to the network when visiting other sites. In the event that operations move to a new building moving the network involves only moving the access points preventing the costs of wiring a new building. Lastly sites that have an existing Ethernet network can utilize the new wireless network

as well by inserting a connection from a hub on the Ethernet network into the access point providing a transition from one type of network to another.

Wireless networking has the ability not only to connect local computers together, but also to connect different sites. Relatively inexpensive components known as Wireless-to-Wireless bridges exist to connect two locations within the same vicinity (approximately 2-3 miles) together. This type of solution can connect the wireless network in the three different buildings together or to provide fast Internet access to all locations.

Future Phases

YES Industries is looking for a partnership with the Engineering and Community Service Classes at Case Western Reserve University that will last over several semesters. Below are some proposed portions of the project that will follow the work at YES Building 1.

Project Portion	Estimated Start	EECS 394	ENGR 101
Grant Proposal Writing	Spring 2002	√	
Medical Database	Spring 2002	√	
Installation/Testing	Fall 2002	√	√
Internet Connectivity	Summer/Fall 2002		√
Web Page	Spring 2003		√
Other Building Proposals	Ongoing	√	√

Grant Proposal Writing

As a combined effort with YES Industries and the CWRU class, students will work on writing the actual grant proposal for funds to purchase the software and equipment needed for YES Building 1. Writing will begin in the spring semester so that a proposal is ready by the summer.

Medical Records Database

This project is rather simple in design, but is more difficult to successfully implementation than one would expect. The student/students who undergo this project will need to produce a industrial program that is both stable and error-free. All forms of error checking and data verifying will be essential for a reliable program. The method of database storage and searching should be decided by the programmers to ensure peak efficiency and reliability. Whoever undertakes this project will need to discuss with YES management what data needs to be stored.

Installation/Testing

Students in both EECS 394 and ENGR 101 will help to install network equipment and computers. Because small problems are sure to arise there will be testing phases to ensure that all of the equipment is working correctly. In addition students will also train YES Industries staff members in how to use the new network.

Internet Connectivity

This project entails discovering the best possible connection to the Internet for YES building 1, although it can be expanded to other YES sites in the future. Such things as if DSL is even plausible to YES need to be examined. Cost is also an important issue. How much will installation and monthly payments cost?

Web Page Development

Although this project has not been discussed with YES management, with the speed that business is evolving into e-business it will be essential. Undertakers of this project will need to design a fully functional and beneficial web page. It should be integrated with

the YES system to allow online orders of products. Several meetings with YES management will be required to ascertain exactly what will be advantageous to the improvement of YES.

Other Building Proposals

In addition to YES Building 1 there are two other buildings that will need upgrades from existing systems. Students will prepare reports much like this one describing the software and hardware needs at a particular location and participate in the grant writing for funding for future projects.