Information Systems Management
Course 95-822

Spring 2006

Final Consulting Report

Every Child Inc.

Gautham Ratnakar

Executive Summary

Student Consultant: Gautham Ratnakar
Community Partner: Kim Tobiczyk, Chris Friedman

I. Background Information

Every Child, Inc. (ECI) was founded in 1997 to address significant gaps in permanency services to children with special needs and their families in western Pennsylvania. From a small staff of twelve, the agency has grown to 70 highly-skilled full-time employees. Each is experienced in providing an array of permanency services to be consistent workers in children's lives in their birth families, or as they move through foster care, reunification, or special needs adoption. Staff is organized in teams to provide comprehensive, continuous, and quality service.

Every Child, Inc. receives referrals of children and families from child welfare agencies in the western Pennsylvania area. The agency is supported by purchase-of-service contracts with child welfare agencies, state and federal grants, foundations, and individual and community contributions. All services to children and families are free of charge. The annual operating budget of ECI is about $4 million and has served and helped more than 3,000 children and families.

Source – www.everychildinc.org

The mission statement of ECI is as follows -

> *"Every Child believes that decisions regarding a child's future should be timely, competent, and result in relationships that meet the holistic needs of the child. We believe that every child, no matter their age, race, culture, or seriousness of disability or medical condition, deserves the opportunity to grow up in a loving, lasting family."*

Source – www.everychildinc.org

The services offered are primarily focused on children and the uniqueness of Every Child Inc. is that they do not have specialized departments handling each of these services. Their agents are apt with dealing all the different services offered. They have

II. Consulting Tasks

The consulting tasks began with the search for appropriate solution to resolving problems that was created by their case management and documentation software, Logs2Go. This was a software system developed by Carnegie Mellon University students about 6 years ago as an Information Systems project and had been updated only once since. The lack of upgrading and changes in the business processes to conform to legislation within Every Child Inc., created gaps in their business processes since the software system could not scale and adapt. Additionally, there were a number of glitches and bugs in the software which led to large number of data inconsistencies in their database. This forced the employees and management to employee alternative means such as manual paper work for billing

and use of other software for time sheets. This hampered the productivity of the entire organization and the management sought to resolve this.

The second scope of work was realized during the work conducted at Every Child Inc. to address the first consulting task. It was noticed that Every Child Inc. did not have a technology plan and thus lacked a technology budget which made the planning, sustaining and acquisition of technology related investments not possible. Working with the CP, analysis and evaluation of possible recommendation was performed and documented. Using this documentation, a technology plan was developed for the planning between 3-5 years. This plan included primarily three components, long term cost savings, sustaining technology investments and strategic implementation of IT within their business processes.

III. Outcomes Analysis and Recommendations

The first consulting task lead to the development of the recommendations to replace Every Child Inc.'s existing case management software using a product developed by a professional software company. This decision was reached after careful evaluation and analysis of all the possible alternative solutions. The final recommendation was to acquire the services of Athena Software's, Penelope case management software system. Currently, Every Child Inc. has to be granted permission from Pittsburgh Social Venture Partners because they intend to use a grant by PSVP to implement the recommendation. The primary risk involved is that if PSVP does not grant the go-ahead the entire consulting task fails.

The outcome of the second consulting task is the development of the technology plan to help strategically allocate funds for improving their IT infrastructure to achieve the organization achieve their mission and sustain it. Each recommendation was developed, analyzed and evaluated with the CP for feasibility and sustainability. The primary risk associated with this task is that it requires the establishment of a technology budget and an IT management team to sustain and implement the recommendations, neither of which has been established by Every Child Inc. yet.

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Alice is a senior in Computer Science. She will begin working as a software engineer for Google next fall.

Final Consulting Report

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I. About the Organization

Organization

Every Child, Inc. (ECI) was founded in 1997 to address significant gaps in permanency services to children with special needs and their families in western Pennsylvania. From a small staff of twelve, the agency has grown to 70 highly-skilled full-time employees. Each is experienced in providing an array of permanency services to be consistent workers in children's lives in their birth families, or as they move through foster care, reunification, or special needs adoption. Staff is organized in teams to provide comprehensive, continuous, and quality service.

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Source – everychildinc.org

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Source – everychildinc.org

Facilities

Every Child Inc. is located at 6401 Penn Avenue in the Shady Side area. Their office is a well ventilated, large space consisting of numerous cubicles for senior employees and segmented desk spaces for the agents. They have a dedicated server room to hold all the important network peripherals such as network routers, junction boxes back-up servers etc.

Programs

Every Child has a numerous number of programs offered to customers. Listed below are some of them:

- Adoption
- Specialized Foster Family Care
- Family Based Mental Health services
- Family Preservation
- Family Reunification
- Medically-Related-Wrap-Around
- Healthy Infants for Pregnant Teens and Women
- Post Adoption Support Services

The programs are primarily focused on children and the uniqueness of Every Child Inc. is that they do not have specialized departments handling each of these services. Their agents are apt with dealing all the kinds of services offered. The following is a brief description of how computers are involved in their activities. The Agent goes to the field to work with customer and at the end of the day, the agent comes back to the office to complete the requisite paperwork which is done partially on their custom documentation software and rest completed on paper. They also have to record the number of hours agent spend with clients, separately for billing purposes as the current software does not support that activity.

Staff

The staff at ECI consists of about 47 agents and 31 administrative staff. All the staff has to use computers for their daily activities as documentation is an integral process in their operations. The administrative staff uses computers to monitor the day to day functioning of the organization involving e-mailing Sponsors, Donors, volunteers etc., and generating invoices for customers, etc. They have a training program integrated into their orientation of new employees to familiarize them with the software applications commonly used.

Technical Environment

Every Child has a contract with DELL for their computers. Most of the computers are relatively new with the configuration of Pentium 4 machines with 256MB RAM and run Windows XP Operating System on them. They have 2 DSL internet connections, one for the office purposes and the other for a VPN network that they are in the process of deploying. Apart from this they have Printers, ranging from a large commercial grade printer to small desktop printers. The server configuration is as follows: Intel Xeon 3 GHz processor running Windows 2000 Network edition, with about 2 GHz Ram

Technical Management

Every Child Inc hires the services of an individual IT consultant to manage and service major IT related problems such as server maintenance, software issues and network problems. But for general day to day IT issues, Chris Friedman, Office Manager (Now Director of operations) takes care of them but is limited to the extend of problems he knows to resolve. Additionally, they have a service contract with DELL for the computers and they take care of the maintenance and repair of hardware problems (2 minor problems so far). The service contract expires within the next 4 months and they are considering alternatives such as external agencies other than Dell to support their existing infrastructure.

Technology Planning

Every Child does not have a budget allotted for technology development but they have received a $50,000 grant from Pittsburgh Social Venture Partners (PSVP) to evaluate and improve the efficiency of the agency. This is their current budget to be used for the development or purchase and implementation of the new case documenting and logging software.

Internal and External Communication

File space is given for every employee on the server and this is a shared location. All the staff members have e-mail accounts but they are checked sporadically as they are out on the field and the e-mail can be checked only through the office computers. They have a website but the information displayed there is outdated. But currently, their IT consultant is in the process of developing a new website for Every Child and due to be deployed soon by the date is not confirmed.

Information Management

The most critical information in the organization is the documentation and logging of times spent with their clients. This information is entered into a database using custom built software developed about 6 yrs ago by CMU students. Additionally they also use QuickBooks software to generate invoices for their customers and do payroll for their employees. The time card information is maintained on excel sheets separately due to the inconsistency of information on the reports generated by the documentation software. They take back-ups of data on their server onto tapes which is done on a day-to-day basis which is performed by their office manager, Chris Friedman.

Task 1 – Research alternatives and develop recommendations to implement of a new case management and documentation software

Every Child Inc. uses Logs2Go, a case management and documentation software system developed as an Information Systems project team from Carnegie Mellon University about 6 years ago and has been updated only once by a different team. The software system due to the lack of upgrades and changes in Every Child Inc.'s business processes to conform to changes in legislation, has led to the creation of gaps in the processes. These gaps have impacted the productivity and the performance of the employees and the organization as a whole. The shortcomings of the software specifically are documented as follows:

- Data inconsistencies in their database – Numerous glitches and bugs in the software system due to insufficient testing have created inconsistencies in their data.
- Limited reporting capabilities – The software does not permit the building of customized reports and the scope of the currently available reports are limited. One of the important reports that Every Child Inc. wants to generate is a performance and outcome evaluation report which will be helpful in their fund raising activities but the current software system doesn't have the capabilities to do so. Additionally, the data inconsistencies in their database have prevented them from generating and using the reports.
- Time sheets and billing – The data inconsistencies in the database have hampered their ability to use the employee timesheets and client billing functionality within the software.

These shortcomings affected employee productivity, since Every Child Inc have had to employ alternative means to fill these gaps created in their processes such as manual paperwork for billing, separate MS Excel spreadsheets for Time sheets, etc. The first task was to analyze the all the possible solutions to resolve these shortcomings of the Log2Go case management software.

The Approach

The approach used here was, to research and list all possible solutions that can be adopted and implemented at Every Child Inc. to address the problems listed above. The internet was the primary source for research and the following were the potential alternative solutions that could be implemented:

- *In-house development of the existing logging software*:
  This solution was basically to perform an enhancement project. The organization could hire a team of programmers to build and develop the existing software to meet the current requirements. This development can be done in an open-ended methodology, so that it is a scalable to future needs and growth.
- *Purchasing and aid the development of software from an external agency*

An external agency (Trubase) had developed a custom application that is pertinent to one particular type of service (Family services) had approached and submitted a proposal to Every Child Inc. Their intention was to obtain help from Every Child Inc. to further develop their application to other services, in short to develop a complete solution for non-profits.

- *Purchase of commercial software*
  A commercial solutions package can be purchased and licensed by Every Child Inc. from a commercial software company that satisfied their requirements. This could potentially be multiple software applications, if a single such solution is not available in the market.

Once the possible solutions were laid out, analysis and the evaluation of the alternatives were conducted. The criteria for the evaluation of these alternatives were the cost analysis, advantages, risks associated and finally the sustainability of the solution. Find attached in Appendix the analysis of the approaches.

The approach that was agreed upon unanimously by the management was the purchase of commercial case management software. From the analysis that was performed with Mrs. Tobiczyk, it could be seen that the purchase of the software from a professional software company was the most cost effective, had the most advantages and had the least risky as when compared to the other approaches. Further research was conducted and the most appropriate software system that seemed suitable and met Every Child Inc.'s requirement was developed by a software company, Athena Software.net which is called Penelope Case management software. A demonstration from the company as well as a presentation conducted showed the software's clean and user friendly architecture, reliability and customizability. Finally, after documentation of analysis and evaluation, recommendations to acquire the Penelope software system using the Application Service Provider model was suggested by CP.

Task 2 – Develop a Technology plan

Every Child Inc. required a comprehensive technology plan is aligned with the organization's vision to innovate new technology. In the past, all upgrades and purchase were done ad hoc and thus was having difficulty sustaining their technology related investments, (including Logs2Go software system) and future technology planning. Additionally, the lack of a technology plan lead to no budget allocated for technology development. Most of Every Child Inc.'s IT infrastructure was leased or out-sources thus making the need for a technology plan extremely important, due to the short term nature of these investments. Additionally, there was no inventory of their current technology assets and the only person who had this information was their IT consultant.

The Approach

The first priority for this consulting task was to make the management and Mrs. Tobiczyk aware of the importance of a technology plan to an organization such as Every Child Inc. Prior to the development of a plan, interviews were conducted with the staff and current technology assets were examined with Mr. Friedman. Additionally, Mr. Friedman was able to provide a list of the technology related procedure and policies that are in place at Every Child Inc. Based on a sample technology plan that was available at

techsoup.com, a draft with the possible recommendations was drafted that was to be implemented in a 3-5 year period. After conducting careful analysis and evaluation of the recommendations in the plan with Ms. Tobiczyk, the most feasible and important recommendations were selected to be a part of the technology plan.

Task 1 – Research alternatives and develop recommendations to implement of a new case management and documentation software

Outcomes

Every Child Inc. have come to a conclusion that the replacement of the Logs2Go software system is a necessity and are currently awaiting the approval of Pittsburgh Social Venture Partners(PSVP) to go ahead and implement Penelope case management software system. This is because Every Child Inc. has decided to use the grant from PSVP, to finance this project. Mrs. Tobiczyk now has a better understanding on the criteria of evaluating software and technology related projects. Such an understanding was illustrated at the end of the analysis and evaluation of the solutions where Mrs. Tobiczyk clearly identified and concluded that the Application Service Provider model for the delivery of the software would be the most appropriate for the organization with the distribution of costs and the maximum sustainability. More importantly, she was able to elaborate on the ability to access the software system from anywhere through the internet which gives their employees mobility and to work from home.

State prior to the partnership

Prior to the consulting task the CP knew what the problem with the Log2Go software was but only had a vague idea about the solution. They understood that they needed to do something immediately to resolve the problem and was considering undertaking an enhancement project on the Log2Go system. But now after the analysis and evaluation of the solutions, the CP has a better understanding of what is required and is moving towards implementing the recommendations.

Outstanding opportunities

Until the recommendation made to acquire the Penelope software system is implemented, the consulting task will not be completely realized. Even if the recommendation is not implemented immediately, the analysis and evaluations performed can be used in the future, when they decide to address the problem.

Sustenance and risks

The primary risk that can be noticed for the consulting task is that is PSVP does not give Every Child Inc the go ahead for the implementation of the recommendation, the entire task will fail. Additionally, if Every Child Inc. decides to not implement the recommendations and continues to use their current Log2Go software system, the entire task will again fail.

Please refer Appendix A & B for the analysis performed for the evaluation of the solutions

Task 2 - Develop a Technology plan

Outcomes

The technology plan developed and developed with active participation from the CP. The technology plan enables Every Child Inc. to strategically allocate funds for technology related investment, sustain their existing technology investments, and train their staff. The plan ensures that Every Child Inc invests small amounts of money over a period of 3-5 years to attain the maximum productivity from their employees, minimize technology related costs and plan their upgrades. From the problems faced due the lack of technology planning (Logs2Go), the CP has clearly understood the importance of a technology plan. Working with the CP, the analysis and feasibility of the recommendations was evaluated in detail to ensure maximum conformance with Every Child Inc's mission.

Additionally, the CP now has a complete and thorough inventory of the current computer hardware and software infrastructure deployed within the organization. This inventory includes the number and configurations of computers, printers and network equipments at each office, the number and types of different software packages are being used, the status of internet and intranet connectivity, and the software security of each equipment.

State prior to the partnership

Prior to the execution of this task, any upgrade or purchase was done ad hoc, and there was little organization and information about the upgrades. Due to the absence of a technology plan, no annual budget existed for technology expenditures. Consequently, some essential infrastructure upgrade, such as for the Logs2Go software system, has not been made possible due to insufficient funding. There wasn't a system in place to address or prevent technology related problems, and such problems were either ignored or given attention only when it was absolutely necessary to address them. Additionally, there was no systematic record or understanding of the IT infrastructure in the organization. The Office manager had only the statistics of the technology deployment but not the system configuration or software package versions. Most of the information about their software and hardware configurations was known only to their IT consultant.

Outstanding opportunities

The scope of the recommendation in the technology plan was limited by the budget constraints faced by Every Child Inc. The recommendation of the technology budget should be implemented, allocated a good amount and kept separately to implement the recommendations. Otherwise the plan will be redundant and cannot be implemented.

Increased capacity

The technology plan itself, has increased the granularity of their planning for their technology projects. The analysis and evaluations conducted with the CP, has familiarized the CP with the process of developing a plan in the future and performing the analysis. The breakdown of the budget and costs in the technology plan will give the CP about the costs and will be able to prevent overpaying for the items. The resources

given also give the CP further reading into the topics and credible & trustworthy places where the recommended items can be bought. Additionally, the inventory of the IT infrastructure will help the CP plan upgrades.

Sustenance and risks

The establishment of an IT management team and IT budget is essential to sustain the plan. The risk of the plan failing to serve its purpose is high, if either one of them is not established in the organization. Every Child Inc. is yet to create either one. The technology plan has to be reviewed constantly and updated to ensure that the goal of the document is to achieve its mission in the most productive and cost effective manner.

New Vision

The task was completed and the CP has not suggested new ways of using the outcomes of this task.

Recommendations

Vision

Every Child Inc.'s vision for technology focuses on the use of technology to improve the performance and productivity of the organization in attaining its mission. This includes sustaining of current technology investments to help the organization to achieve its maximum potential by utilizing its currently available technology and, introducing new technology to keep abreast with its competitors.

Goals

A detailed set of technology recommendations have been listed in their technology plan.

**Please refer to technology plan in Appendix C for a detailed out line of the recommendations. **

The following is a synopsis of the most important recommendations that Every Child should implement to achieve their vision in the next three years.

1. Evaluate need for in-house systems administration
2. Every Child should begin updating their web-site themselves
3. Establishment of a technology budget

Strategies

Recommendation 1: Evaluate need for in-house systems administration

Currently they have an accidental techie (Office Manager) dealing with common IT issues but has to rely on external sources to resolve more technically challenging issues. Based on the software that is currently used by the organization, an employee can be trained to deal with these more challenging issues on a part time basis. The proposed software packages that training can be done on are Windows 2000 network administration, network/hardware troubleshooting, and updating websites & maintenance.

This trained employee can result in less reliance on external resources to resolve technical issues and will also result in huge cost savings. This new trained employee can be made to report to the office manager to create a make-shift IT team. This newly trained employee can also be a part of the IT management team as he/she will be more aware of the technology trends after the training

Approach:

- *ECI* should track its user related issues and the amount of money & time it takes to resolve them over a period of time (30-60 days).
- Evaluate the cost requirements to resolve such issues in order to identify if a staff member trained to provide troubleshooting and networking administration capabilities can reduce this cost.

Outcomes:

Outcome	How this will be measured	What is the current measure
The organization will rely less on external sources for IT maintenance.	The measure can be the number of times and difference in the amount of money the organization has had to rely on their IT consultant to resolve their IT issues after implementing this recommendation. The approximate cost saving is estimated to about half the amount paid to the IT consultant annually.	The current measure is the $50 per hour that Every Child Inc. is paying for the services of their IT consultant, though their monthly expenditure varies.

Internal resources:

The following are the internal resources that will be necessary and helpful in implementing the recommended goal of having an employee trained in network administration and basic troubleshooting. The selected employee will have to be removed from his current job functions to enable his to attend the training program. The technology plan will indicate the future technologies that are potentials to be implemented within the organization to address various technology related issues, which will be helpful in selecting the training program. A part of the training budget will have to spend on this training program yearly, to ensure that the employee's skills are according to the requirements of the organization.

External resources:

The following are the external resources that will be necessary and helpful in implementing the goal of having an employee trained on basic troubleshooting. The training program has to be provided by an external source such as a university or a training center. Online book stores can be used to buy the necessary reference books such as books on Windows 2000 NT for administrators will be helpful for the employee in

resolving technical issues. Online tutorials offered by Techsoup.org can be used to obtain helpful articles and also use the online forums to obtain additional help.

Amazon.com

http://www.amazon.com/exec/obidos/search-handle-url/103-4928128-0692638?%5Fencoding=UTF8&search-type=ss&index=stripbooks%3Arelevance-above&field-keywords=windows%202000%20NT

www.techsoup.com

Recommendation 2: Every Child should begin updating their web-site themselves

Currently their website is being hosted by an external agency and the required updating is done when the management of Every Child requests their IT consultant to do so. If the IT consultant does not respond in a timely manner, it could result in Every Child not being able to inform their clients, sponsors, volunteers, etc. any relevant information. The update could be an announcement for a special occasion or gathering, where a low turn over will cost Every Child both in costs and reputation.

A tech savvy employee identified by the organization can be trained on how to use a content management system to be able to update and maintain their website. This will eliminate Every Childs reliance on an external source and thus will result in cost savings on the long run.

Approach:

- An employee is identified by the management who is a potential fit to undergo training to use a content management system
- The employee is sent for training and the content management system is set-up in the organization.
- The website will be updated and maintained by Every Child itself.

Outcomes:

Outcome	How will this be measured	What is the current measure
The website will be maintained by the organization itself	All the updates on the website will be performed within the organization	There is no current measure.
There is cost saving on the long run	This can be measured by the decrease in the costs on their IT consultant after the website is maintained by the organization itself.	Every Child Inc pays their IT consultant $50 per hour for his services.

Internal resources:

The following are the internal resources that will be necessary and helpful in implementing the recommended goal of having the website updated and maintained by Every Child themselves. The employee to be trained to use the content management system is required. A system has to be available to load the content management system

and be given for the employee's use only to ensure availability of the system when required.

External resources:

The training required for the employee to operate the selected Content management System can be obtained from any of the training locations in Pittsburgh such as University of Pittsburgh. A content management system is available for purchase online stores such as

www.techsoup.com

Goal 3: Establishment of a technology budget

ECI presently does not do any detailed technology budgeting. Not forecasting technology needs can easily create a situation where employees are not providing service as productively as possible and can lead to unexpected spikes in spending as large numbers of systems need replacement or require alternative solutions. Additionally, a budget is required to support the technology plan and is very important to sustain the plan.

Approach:

- The IT management team will have to negotiate with the management to establish a technology budget which will be a part of the annual budget.
- The IT management team will decide how the money will be dispensed and into which projects.
- This technology budget will be a recurring amount established for the IT management team's disposal.

Outcomes:

Outcomes	How will this be measured	Current measurement
The organization will be able to sustain their IT related projects	This outcome can be measured by having observing the level of integration of technology into their processes.	There is no current measure.

Internal Resources:

The main internal resource required is, the budget amount has to be set-up from the total annual budget, and being a non-profit organization, this amount has to be agreed upon by the entire management.

About the Consultant

Gautham Ratnakar is a graduate student of Carnegie Mellon pursuing a degree in the Masters in Information Systems Program. He has an undergraduate degree in Computer Science and Engineering. He has a strong interest in Consulting and plans to pursue his career in a Consulting firm's Technology integration division.

Appendix A – Analysis of alternatives

The purpose of this document is to analyze the alternative solutions to resolve the problems faced by Every Child Inc., due to their current implementation of the Logs2Go case management and documentation software systems. This document will be used to aid the management of Every Child Inc., make a decision on the solution to implement to resolve their existing problems. The analysis is based on the advantages, risks and sustainability of the potential alternatives.

Approach I: ***In-house development of the existing logging software***

This solution was basically to perform an enhancement project. The organization could hire a team of programmers to build and develop the existing software to meet the current requirements. This development can be done in an open-ended methodology, so that it is a scalable to future needs and growth.

Advantages

- *Functionality & features* – The software development is an enhancement project and the development will be according to the current requirements. Thus the final deliverable will be completely customized to Every Child's needs.
- *Implementation* – There will be minimal implementation time as, the replacement will be the code residing on the server. Being almost similar to the existing system, the enhanced system will not require a complex implementation plan.
- *Training* – There will be minimal training requirements as the layout and the features will be similar to original but with added functionality. This minimizes the time requirements for transition from the old system to the new one.

Risks

- *Project Management* – Every Child does not have experience or the required resources to perform effective project management. Ineffective project management can make the project become over budget.
- *Risks* – The cost involved with the development will be relatively high and if the project fails or goes over-budget, these cost will be incurred by Every Child.
- *Project risk* – Extensive testing has to be conducted to ensure that there are no bugs and glitches present in the deliverable. Since the existing system is known to have problems, this approach not only has to look into resolving the existing issues but has to ensure that no new problems arise from this enhancement.
- *Time line* – The timeline for such a development and implementation could span over 2-4 months, due to the bad documentation and commenting. The recruited developers will have to spend a considerable amount of time understanding the existing system architecture and design before they can begin with the development. This will further increase the time line which in turn will increase the costs associated with the development.

- *Cost* – The lengthy development time will drive the total cost of this approach higher than it would usual.
- *Upgrades* – There will be a no availability of upgrades as this approach is a one time enhancement project. This raises sustainability and scalable issues with regard to the future requirements of Every Child.

Approach II: ***Development and purchase of software from Trubase***

An external agency (Trubase) had developed a custom application that is pertinent to one particular type of service (Family services) had approached and submitted a proposal to Every Child Inc. Their intention was to obtain help from Every Child Inc. to further develop their application to other services, in short to develop a complete solution for non-profits.

Advantages

- *Functionality & features* – The software development will be according to the current requirements of Every Child. Thus the final deliverable will be completely customized to Every Child's needs.

Risks

- *Risks* - there are numerous risks associated with this approach and they are listed out as follows
    1. *Upgrades* – There is no guarantee that the developer will be able to supply the required upgrades to ensure the system scales/grows to future requirements.
    2. *Support* – It is not ascertainable whether there will be efficient and timely support be provided for day to day issues.
    3. *Opportunistic re-pricing* – There is a risk involved with the possibility of the software provider to change the terms of the contract. That is the software provider can increase the prices of the support and so on.
    4. *Project risk* – There has to be extensive testing to be done to ensure quality of the deliverable. Since there is only one developer involved in the development of the software, the comprehensiveness of testing is questionable.
- *Cost* – The quoted cost for the purchase of the system and implementation is very high compared to the other two approaches. Also the
- *Implementation plan* – There has to be an effective implementation plan developed, so as to ensure the smooth transition from the old log system to the new one. The plan has to ensure that there is no interruption in the daily work processes for documentation.
- *Training* – A new training plan has to be developed so that the training period is minimal and is imparted effectively. This is very important to support the implementation plan for the transition.

Approach III: ***Purchase and implementation of commercially available software Penelope from Athena software***

A commercial solutions package can be purchased and licensed by Every Child Inc. from a commercial software company that satisfied their requirements. This

could potentially be multiple software applications, if a single such solution is not available in the market.

Advantages

- *Quality* –The specialization of the company in their products will ensure there will be quality and reliability in their product.
- *Cost* – The total cost of the purchase and implementation will be comparatively lower than the other approaches.
- *Upgrades & support* – There is guarantee that there will be free upgrades provided and also there is provision for quality customer service.
- *Customization* – There is flexibility incorporated in the software architecture to provide extensive customization.
- *Quick implementation and data migration* – The implementation of the software can be done quickly due to the deployment only on the server and the ready to implement architecture. A data migration service offered by the company ensures that there will no data lost and reduces data inconsistencies.

Risks

- *Training* – A new training plan has to be developed so that the training period is minimal and is imparted effectively. This is very important to support the implementation plan for the transition.
- *Implementation plan* – There has to be an effective implementation plan developed, so as to ensure the smooth transition from the old log system to the new one. The plan has to ensure that there is no interruption in the daily work processes for documentation
- *Contract risks* – There is a constant possibility of the software provider shutting down their operations, thus there inherent risk of not being able to acquire upgrades and thus create potential problems with lock-in. There is shirking risks inherent in this approach, where the software provider does not provide the services promised in the contract.

Appendix B – ASP vs. Software acquisition

The purpose of this document is to perform an analysis of different methods of implementing the Penelope case management software system, to aid Every Child Inc make a decision regarding the implementation. The analysis will consist of the cost analysis, potential advantages and risks associated with the implementation of the Penelope Software system using the different methods. The following are the different approaches:

1. Acquisition of the licenses and software system
2. Using the Application Service Provider model

Acquisition of licenses and software system

This implementation approach consists of the purchase of the software from Athena software and the deployment on Every Child Inc.'s local network. Currently, Every Child Inc. has the necessary resources and the IT infrastructure to support such an implementation.

Cost for this implementing – The following budget is an estimate of the acquisition and implementation of the software assuming a one month implementation period.

	Software acquisition and Implementation	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Data gathering of the processes and requirements	Chris Friedman, IT Consultant, Supervisors	10	5	
2	Evaluate and purchase software system – Includes 30 user licenses and server license.				$24,500
3	Implementation and customization *Athena Implementation specialist charge $75 per hour+$2000 (airfare) *The timeline for the implementation is an estimated one and may Vary depending on the customization requirements	Athena - Implementation specialist, IT consultant, Chris Friedman	24	15	$3,800
4	Develop training material for employees	Chris Friedman, IT consultant	15	10	
5	Training for the employees	Athena - Trainer, IT consultant		15	$3,125
6	Customer support				$3,240
	Total estimated Staff hours		**49**		
	Total estimated Consulting hours			**45**	**$2,250**
	*Cost estimate is for consulting hours estimated at an average of $50/hour.				
	Total estimated cost to the organization				**$36,915**

Advantages:

- *Complete control of system and the database* – Since the database and the software system are located locally at Every Child Inc.'s, there is complete control of the system and will be easier to monitor.
- *One time upfront investment* – There is one upfront cost for the acquisition of the licenses and the installation, the will be a higher return on the investment as the cost of maintenance is minimal compared to the recurring subscription costs incurred in the ASP model.
- *Sustainable* – Even if Athena software shut down their operations, there will be a lack of upgrades but otherwise the operations of the Every Child Inc. will be minimally affected.

Risks/drawbacks:

- *Maintenance/troubleshooting* – Expertise is required if there is some problem encountered with the system and may require a consultant from Athena Software to resolve it. Additionally, the costs of the IT consultant may rise if there are network issues encountered during the operation of the software.

- *Support costs* –There is a recurring cost of $3,240 for customer support which is required for the availability of free upgrades.
- *Implementation period/cost* – When compared to the ASP model of implementation of the software, the implementation period and costs are very high.
- *Risks* – The risks associated with this approach and they are listed out as follows
    1. *Upgrades* – There is no guarantee that Athena Software will be able to supply the required upgrades to ensure the system scales/grows to future requirements.
    2. *Support* – It is not ascertainable whether there will be efficient and timely support be provided by Athena software for day to day issues which could hamper the productivity of the employees for that day.

Using Application Service Provider model (ASP)

This implementation approach consists of the purchase of the software from Athena software using the ASP model. Athena software will be hosting Every Child Inc.'s database in a remote location and the only infrastructural required are computers with internet connection, both of which Every Child Inc. has. There will be only an upfront cost of acquiring the user licenses and training in this approach but the user licenses will be a recurring cost.

Cost for this implementing

	Implement new case management software, Penelope software system	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Data gathering of the processes and requirements	Chris Friedman, IT Consultant, Supervisors	10	5	
2	Evaluate and purchase software system				$21,600
3	Submit requirements document to Athena Software for customization.	Chris Friedman			
4	Develop training material for employees	Chris Friedman, IT consultant	15	10	
5	Training for the employees	Athena-Trainer, IT consultant		15	$3,125
	Total estimated Staff hours		**10**		
	Total estimated Consulting hours			**30**	**$1,500**
	*Cost estimate is for consulting hours estimated at an average of $50/hour.				

	Total estimated cost to the organization				**$26,225**

Advantages

- *Distributed costs* – Due to the subscription nature of the model, the costs are distributed annually. Budget constraints of Every Child Inc., make this an optimal choice of implementation.
- *Upgrades and customer support* –The ASP model does not require the purchase of the customer support.
- *Mobility and access* – Since the software is accessed over the network, the employees of Every Child Inc. can access the software from any location as long as they have access to the internet.
- *Maintenance costs* – The maintenance costs will be minimal in comparison to the local implementation.
- *Implementation* – There is practically instant implementation of the software system and the transition period between the Logs2Go software system at Every Child can be done almost instantly.

Risks/Drawback

- *Uptime of the Internet* – The uptime of the internet is a very important and any problems with the internet connection can lead to problems with access to the software.
- *Higher costs* –Over the long run, it can be inferred that the total costs is going to relatively higher than that of the local implementation of the software system.
- *Uptime of Athena server* – The uptime of the Athena server is another important factor as if the server is down during any time between 8am to 4pm can result in loss of productivity of employees at Every Child Inc.
- *Risks – The following are the risks inherent in this approach*
    1. *Contract risks* – There is a constant possibility of Athena software shutting down their operations, thus since the data is located on their servers, there inherent risk of not being able to acquire the data and thus create potential problems with lock-in.
    2. *Opportunistic re-pricing* – There is a risk involved with the possibility of the Athena software to change the terms of the contract. That is the software provider can increase the prices of the monthly subscription costs and since the data is located on their server, Every Child Inc. may have to give in to their terms and conditions.

    Shirking risks - There is shirking risks inherent in this approach, where the software provider does not provide the services promised in the contract.

Appendix C – Technology plan

Introduction

The purpose of this technology plan is to evaluate the Every Child Inc's (*ECI*) existing technology infrastructure and usage in order to make recommendations for future planning and direction. *ECI's* staff worked with a CMU student technology consultant to produce this plan.

Note: This document is a direct adaptation of a technology plan format available at TechSoup.com and is developed strictly for the use of Every Child Inc. only.

About Organization

Every Child Inc. was founded in 1997 to address significant gaps in permanency services to children with special needs and their families in western Pennsylvania. From a small staff of twelve, the agency has grown to 70 highly-skilled full-time employees. Each is experienced in providing an array of permanency services to be consistent workers in children's lives in their birth families, or as they move through foster care, reunification, or special needs adoption. Staff is organized in teams to provide comprehensive, continuous, quality service.

Every Child Inc. receives referrals of children and families from child welfare agencies in the western Pennsylvania area. The agency is supported by purchase-of-service contracts with child welfare agencies, state and federal grants, foundations, and individual and community contributions. All services to children and families are free of charge.

Source – www.everychildinc.org

Project Goals

The goal of this document is to help *ECI* better manage its technology by providing:

- An inventory of *ECI's* current technology assets.
- Documentation *ECI's* needs.
- A prioritized plan, including a budget, for addressing these needs.

Methodology

The CMU student consultant conducted interviews with *ECI's* staff, examined its current technology assets and documented the results in this technology plan. The plan includes recommendations based on specific needs identified during the assessment phase. The IT consultant surveyed the current state of technology and followed up to review the survey findings and to discuss technology needs and priorities.

Note: It is recommended that this plan be reviewed by the *ECI's* staff and updated every year as part of the budgeting process to ensure that it remains relevant to *ECI's* circumstances.

Executive Summary

ECI provides services to families from their office located at 6401 Penn Avenue, Pittsburgh, PA-15206. The office house nearly 39 computers and is an integral part of almost all their business processes. *ECI*'s technology challenges include outdated logging & documentation software, unstable computers and networks, a fragmented IT infrastructure strategy, and a lack of training.

In the coming months, *ECI* expects to replace their obsolete case logging and documentation software Penelope, Athena software which is well designed documentation software, delivered through an Application Service Provider model. This replacement is expected to increase the productivity of the employees within the organization. This is because the old system failed to scale with the growth of the organization and was rigid to customization which, left gaps in their processes to be filled by manual paperwork. The transition between the software can be done almost immediately without interrupting their daily business processes, through the use of the ASP model.

In order to help ensure continuous service delivery *ECI* should enhance its risk management strategy. A disaster recovery plan must be implemented and followed as a mandated policy with the organization. A system of backing up data daily from the server is currently in place but there is no policy for media rotation or systematic replacement of the tapes. The implementation of such a policy will further strengthen the recovery plan. Additionally, there is no procedure in place to perform periodic restore of the back-up to verify the backups. Thus *ECI* should take several steps to better utilize its existing backup hardware and software by changing its current backup procedure and creating a more comprehensive backup and restore procedure.

In order to reduce the monthly operating costs, *ECI* should consider vertically integrating many of their current IT infrastructures that they have outsourced. The outsourced components are constant and recurring costs that can be eliminated by careful budgeting and planning. The outsourced components include, leasing computers from Dell, email services from Yahoo and website maintenance to an external agency. These components should be priorities according to the value added and cost saving and tackled one at a time as all the three cannot be tackled at the same time. The leasing of computers can be eliminated by acquiring small amount of new computers from Dell itself. The email services can be eliminated by adopting Microsoft Exchange as its email server and groupware package to facilitate better email management, group calendaring, and further information sharing across the organization. The website maintenance can be moved in-house to be done by a trained tech savvy employee. The elimination of these components can result in huge cost savings than can be used to invest in new projects that can enhance the productivity of the organization.

Finally, *ECI* should organize a technology management team to oversee these projects and to guide ongoing technology support and planning needs. A good technology management team guides the organization's use of technology, facilitates the planning process, and helps resolve recurring technology related issues.

Statement of Needs

- Replace obsolete case management and documentation software.
- Implement a disaster recovery plan
- Vertically integrate IT infrastructure.
- Implement policies and procedures.
- Establish a training plan for applications, policies, and procedures.

Recommendation Summary

The following technology projects are recommended, in order of priority in each area. While these recommendations are generally in order of priority, they do have dependencies on each other.

Increase Technology Management Capacity

- Create IT management team.
- Document Procedures and Policies
- Evaluate need for regular systems administration.
- Establish a formal technology budget.
- Create training plan.

Strengthen Existing Computing & Network Infrastructure

- Implement a Disaster Recovery and a sturdy back-up plan
- Purchase new workstations from Dell computers

Improve Data Management Applications

- Implement new case management software, Penelope software system
- Implement Microsoft Exchange Server for email and groupware.
- Establish a Sponsor/donor/volunteer tracking database.

Improve Internet Communications

- Maintain and update website from within the organization.

Budget Summary

	Total Budget for Recommendations		Staff Hours	Consult. Hours	Est. Cost
	Total estimated hours		**180**	**54**	
	Total estimated cost to the organization				**$33,215**

Budgets for each recommendation are below:

	Create IT Management Team	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Identify technology team members.	*ECI*			
2	Establish a regularly schedule meeting time to review current technology needs and to assess future needs.	*ECI*			
3	Communicate to all users how technology will be supported including expectations of response times, support capabilities, and escalation paths.	*ECI*			
	Total estimated Staff hours				
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.				
	Total estimated cost to the organization				

	Document Policies and Procedures	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	The technology team should review which procedures are the most common which, if documented, could reduce administrator time and increase employee satisfaction.	Tech-Team	4		
2	The technology team needs to review which computer usage polices should be drafted.	Tech-Team	4		
3	Documentation for policies and procedures should be finalized based upon what has already created.	Chris Friedman/ Tech-Team	40		
4	Documentation and any required training should be deployed.	Tech-Team	10		
	Total estimated Staff hours		**58**		

	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour				
	Total estimated cost to the organization				

	Evaluate Need for Regular Systems Administration	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Track cost to organization to administer network and computing services.	*ECI*	10		
2	Perform cost analysis of the observation and having a regular administrator	Chris Friedman			
3	Identify possible candidate who can satisfy this requirement (possibly from Tech-team)	Tech-team			
4	Training for the candidate				**TBD**
	Total estimated Staff hours		10		
	Total estimated cost to the organization				**TBD**

	Establish a Formal Technology Budget	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Compute the total expenditure on technology related leases	*ECI*	2		
2	Create initial technology budget.	*ECI*	10		
	Total estimated Staff hours		12		
	Total estimated cost to the organization				

	Create Training Plan	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Perform assessments of staff skills and create training plan	*ECI*	20		
2	Complete training materials	Chris Friedman	20		
	Total estimated Staff hours		**40**		
	Total estimated cost to the organization				

	Implement an Disaster Recovery Plan and	Assignee	Staff	Consult.	Est. Cost

	sturdy Back-up plan		Hours	Hours	
1	Purchase 9 DATA Tapes ($30 ea)	*ECI*			$300
2	Designate a backup manager.	*ECI*	1		
3	Setup, schedule, and test backup		2	2	
4	Training for administrators and backup manager		1	1	
5	Document backup procedures.			1	
	Total estimated Staff hours		**12**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**4**	**$200**
	Less donations and/or discounted services				
	Total estimated cost to the organization				**$2,000**

	Purchase of new workstations from Dell	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Purchase in **four installments of 10** Computer Workstations - Intel Celeron D 2.53 GHz CPU, 256MB, 80 GB Hard drive, 17" Monitor, Windows XP Professional - Estimated price is for a Dell Dimension B110 w/1 year warranty.				$3,000
	Total cost of the 4 installations				$12,000
2	Configure and install new computers.		10	3	
3	Migrate user files from older computers to new computers.* *This process may take less time depending on data volume and requirements.		10	5	
	Total estimated Staff hours		**20**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**8**	**$400**
	Less donated or discounted services				
	Total estimated cost to the organization				**$3,400**

	Implement new case management software, Penelope software system	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Data gathering of the processes and requirements	Chris Friedman, IT Consultant, Supervisors	10	5	

2	Evaluate and purchase software system				$21,600
3	Submit requirements document to Athena Software for customization.	Chris Friedman			
4	Develop training material for employees	Chris Friedman, IT consultant	15	10	
4	Training for the employees	Athena-Trainer, IT consultant		15	$3,125
	Total estimated Staff hours		**10**		
	Total estimated Consulting hours			**30**	**$1,500**
	*Cost estimate is for consulting hours estimated at an average of $50/hour.				
	Total estimated cost to the organization				**$26,225**

	Implement Microsoft Exchange Server for email and groupware	**Assignee**	**Staff Hours**	**Consult. Hours**	**Est. Cost**
1	Purchase Microsoft Exchange Server Standard Edition w/Software Assurance from Discountech.com				$39
3	Purchase 100 Exchange Client Access licenses ($2.50 each) from Discountech.com.				$250
4	Install Exchange Server			4	
6	Install Exchange Web access			2	
7	Configure clients		5	10	
8	Train Administrators on basic administration		2	2	
	Total estimated Staff hours		**7**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**18**	**$900**
	Less donations and/or discounted services				
	Total estimated cost to the organization				**$1,190**

	Maintain and update the website from within the organization	**Assignee**	**Staff Hours**	**Consult. Hours**	**Est. Cost**
1	Identify possible candidate who can satisfy this requirement (possibly from Tech-team)	Tech-team	5		
2	Training for the candidate				

3	Acquisition of CMS software and installation	TBD		2	**TBD**
4	Review website goals, requirements, and content with appropriate staff representative of the organization.	Tech-team	20		
5	Website design and implementation: Implementation is for updating web content. *		10		
	Total estimated Staff hours		**35**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour. **Less donated or discounted services**			**2**	**$400**
	Total estimated cost to the organization				**$400**

Recommendations

It is recommended that *ECI* implement the following projects to improve its technology infrastructure and prepare for future growth. Recommendations are listed in order of importance as deemed by *ECI*.

Dependencies and Project Sequencing

The recommendations in this plan are written for a 3-5 year time horizon and rely on the establishment of a technology budget and an IT management team to sustain this plan. The figures used to calculate the total budget is subject to change due the fluctuation of market prices. The following projects have dependencies or should be undertaken in tandem.

1) All projects described in the "Establish Technology Management Practices" section can begin immediately.

2) The "Purchase new workstations from Dell" project is not implemented instantly as budget constraints might dictate a need to phase this project over a suitable timeframe.

3) The "Upgrade of hardware" should ideally happen after the completion of the "Purchase new workstations from Dell" due to the need to completely eliminate the costs incurred through leasing computers from Dell.

Establish Technology Management Practices

Create IT Management Team

ECI does not have a formal technology management team. Given the size of *ECI*'s computing environment, it is recommended that *ECI* develop an Information Technology Management Team. This team will drive the overall direction of technology and information systems. This will be the most sustainable and cost effective way to manage the technology projects and systems that *ECI* will be developing. This team can be comprised of existing staff through a reallocation of their time depending the existing staff skill set, interest and budget considerations. It is essential that a member of the staff with input into the budgetary and strategic planning processes is included, as well as staff that represent technical/programmatic and administrative aspects of the organization

Benefits

1) Allows all staff to begin discussing needs, ideas and directions for technology.
2) Provides a realistic technology budget that takes into account the organization's technology plans.
3) Becomes a focal point for future technology planning, and specific technology projects such as purchase of new software or database planning.
4) The diverse membership of the tech team can help ensure that such policy is useful for all members of an organization.

Recommendation

- *ECI* should develop an Information Technology Management Team pooled from its existing staff.
- The team works to set technical priorities, assist in decisions in technology plan implementation and advocates for technology in the budgeting process.
- The team is made up of a representative cross-section of the organization. This will be increasingly important as *ECI*'s technological capacity grows and the needs of its users become more diverse.
- The tech team ensures continuity for planning that outlasts the tenure of any one individual.
- The tech team should ensure that members also share training opportunities.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Identify technology team members.	*ECI*			
2	Establish a regularly schedule meeting time to review current technology needs and to assess future needs.	*ECI*			
3	Communicate to all users how technology will be supported including expectations of response times, support capabilities, and escalation paths.	*ECI*			
	Total estimated Staff hours		**TBD**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**TBD**	
	Total estimated cost to the organization				

Resources

- Appendix B: see "IT Management Team Organization" item.

Document Policies & Procedures

In order to most productively manage the technology usage at *ECI* it is important for the organization to document common computer procedures and computer usage policies and to train staff members on these policies and procedures.

Recommendation

- The series of training materials has been in use and those that have to be developed have to be finalized and deployed to all *ECI* staff members.
- Computer usage policies should be drafted and posted at each location.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	The technology team should review which procedures are the most common which, if documented, could reduce administrator time and increase employee productivity.	Tech-Team	4		
2	The technology team needs to review which computer usage polices should be drafted.	Tech-Team	4		
3	Documentation for policies and procedures should be finalized based upon what has already created.	**TBD**	40		
4	Documentation and any required training should be deployed.	Tech-Team	10		
	Total estimated Staff hours		**58**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.				
	Total estimated cost to the organization				

Resources

- Appendix B: See related best practices in Appendix B of this plan.

Evaluate need for in-house systems administration.

Due to the size of *ECI*'s organization, it should consider how much time and money is spent administering various systems and resolving day-to-day user problems. *ECI* presently has lacks an in-house person with administration and troubleshooting skills on site and have to depend on an external IT consultant to satisfy and sustain their needs.

Recommendation

- *ECI* should track its user related issues and the amount of money & time it takes to resolve them over a period of time (30-60 days).
- Evaluate the cost requirements to resolve such issues in order to identify if a staff member trained to provide troubleshooting and networking administration capabilities can reduce this cost.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost

1	Track cost to organization to administer network and computing services.	*ECI*	10		
2	Perform cost analysis of the observation Vs. onsite administrator	Chris Friedman			
3	Identify possible candidate who can satisfy this requirement (possibly from Tech-team)	Tech-team			
4	Training for the candidate				
	Total estimated cost to the organization				

Resources

- TechSoup: Technology Assistance Providers list. (http://www.techsoup.org/resources/index.cfm?action=resource.view_summary&resourcelist_id=11&order=title)

Establish a formal technology budget.

ECI presently does not do any detailed technology budgeting. Not forecasting technology needs can easily create a situation where employees are not providing service as productively as possible and can lead to unexpected spikes in spending as large numbers of systems need replacement or require alternative solutions.

Recommendation

Due to the leases, software licenses, and required supplies and services that *ECI* has, it is recommended that *ECI* establish a comprehensive technology budget that will allow *ECI* to maintain a viable set of technologies over an extended period of time. Planning for regular software upgrades, computer replacements and upgrades will give the organization a better way to forecast technology-related expenditures. By establishing a comprehensive budget it can spread the cost of maintaining up-to-date computer systems over time.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Create initial technology budget.	*ECI*	10		
	Total estimated cost to the organization				

Resources

- Appendix B: Annual Technology Budgeting.
- TechSoup: "Technology Budgeting Basics" article discusses how to budget for technology. (http://www.techsoup.org/howto/articles/techplan/page2722.cfm)

Create training plan.

ECI has over 70 full-time employees. These employees can work most efficiently if they are properly trained on basic computer skills as well as in the applications that they commonly use such as Microsoft Excel, Word, and Penelope.

Recommendation

- *ECI* should undertake a staff skills inventory to assess the level of computer-related skills its employees have.
- *ECI* should also identify ways in which existing software products, such as Microsoft Office could be applied to increase productivity if additional and more specialized training were given to some individuals.
- *ECI* should budget an average amount per employee for training. This will ensure that both new hires and existing employees have access to training when needed. Some employees will need more training than others and this will accommodate this additional training requirements.
- It is recommended that *ECI* encourage peer training as some employees know applications better than others. These staff members should be identified and time should be made available for these staff members, to share their knowledge with colleagues. This can be an inexpensive way to deliver training.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Perform assessments of staff skills and create training plan	*ECI*	20		
2	Complete training materials	**TBD**	20		
	Total estimated Staff hours		**40**		
	Total estimated cost to the organization				

Resources

- TechAtlas: TechAtlas has tools to assist an organization with evaluating the level of training that is required for each staff member through its survey tools. (http://www.techatlas.org)
- TechSoup: "Technology Training: The Nonprofit Viewpoint" article discusses the need and value of training and common challenges at a non-profit. (http://www.techsoup.org/articlepage.cfm?ArticleId=414&cg=searchterms&sg=training)
- Appendix B: Training & Documentation

Strengthen Existing Network Infrastructure

Implement a Disaster Recovery plan and back-up system

Backup systems are a staple of most disaster preparedness plans. Without an organization-wide back up plan, *ECI* is at risk of losing important data, documents and programs which can prevent or slow its service delivery. In addition to ensuring that all users' data files are properly backed-up, *ECI* should also plan to store a copy of its backups at an offsite location.

Recommendation

It is recommended that *ECI* better utilize its back up hardware and software to ensure quality backups are occurring. It has adequate hardware and software to properly back up its data.

OFFICE

At the location a DAT tape drive is attached to the server and data is backed-up using VERITAS Backup Exec 10.0. Workstation data is not backed-up, data files are mostly stored centrally on the server, but it does not appear that an efficient tape rotation and replacement system is employed. Thus it is recommended that a daily tape rotation system with periodic replacement of the tapes be implemented, and the backup process is automated.

The tape backup includes accounting data which is backed up along with the rest of the data onto a Zip disk. It is recommended in establishing a secure, private area where its accounting backups can be stored. The accounting program's backup procedures should be followed in such a way as to backup the data to the server so that daily multi-generational backups can be made to tape.

BACK-UP MANAGEMENT RESPONSIBILITY

It is recommended that the designated staff member (the backup manager) periodically test the restorability of backups, review tape backup logs for errors, track tape age, and ensure that tape rotation and offsite storage practices are followed strictly. The backup manager should also ensure proper documentation and cross-training is provided. Ideally, the backup manager is someone who is already administering backups at a location and is familiar with the technologies involved.

MEDIA ROTATION

Media rotation is critical, since tapes wear out through constant use. It is recommended to implement a good practice to have a backup that can be used to, restore data from which might be a couple of weeks old, prior to a virus or version of a document that was saved without the data. If it is essential to backup files that are more than a week or two old, adding additional tapes can give an organization a longer history from which to recover files from, but at a greater expense.

It is recommended that *ECI* create two or three media sets that are rotated each week. One set which is currently in use, one recent set on site, and one set in an offsite location (usually at someone's house, or in a safety deposit box) Each set would should be between two-four tapes, though this will depend on exactly how much data there is to backup. If tapes are to be stored offsite, data confidentiality should be considered. If data is confidential, systems such as encryption should be used to ensure that confidential data stays confidential.

TESTING

Monitoring your backups to make sure they are working properly is an essential part of any backup routine. Each week, the administrator should take a few minutes to launch Backup Exec and check the reports to see if it encountered any significant errors in its last backup. Once every two weeks is a good idea to perform test restores to make sure that data can be restored properly.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Purchase 9 DATA Tapes ($25-$30 ea)	*ECI*			$300
2	Designate a backup manager.	*ECI*	1		
3	Setup, schedule, and test backup		2		
4	Training for administrators and backup manager.		1	1	
5	Document backup procedures.				
	Total estimated Staff hours		**4**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**1**	**$50**
	Less donations and/or discounted services				
	Total estimated cost to the organization				**$350**

Purchase new workstations from Dell.

ECI's offices have computer workstations that are on lease from Dell Computers. Considering the cost analysis of the total cost of this rental, the total year cost is almost the same as that of purchasing new computers. While replacement of all of the workstations at once may not be feasible due to budget constraints, it is recommended that *ECI* replace their computers over acceptable phases of two installments. Purchase of new computers can mean that they become outdated over the passage of time and thus, it is important that outdating is monitored. Thus, older computer workstations should be periodically evaluated for their positive and/or negative effect on user and office productivity. Older workstations can often hamper productivity through a lack of performance, reliability; or, may just be too out of date to work effectively with the stated technological direction of an organization.

A modern well-configured Windows 2000 or XP-based computer workstation can provide the average office user with an easy-to-use, fast, reliable, and secure productivity tool for many years. New computer acquisitions should be made keeping in mind a migration path toward standardizing on a common operating system through eventual replacement of all the computers on lease.

Benefits

- Replacing the computer on lease will result in significant reduction in expenditures which can be utilized for new technology related projects.
- The purchased computers become assets to the organization
- The costs of upgrading the computers are minimal in comparison to the cost of leasing them.

Recommendation

- *ECI* should acquire up to 10 new computers at a time with at least the following minimum requirements:
    - *Hardware Minimum:* 1.5GHz Celeron or Pentium IV, 128MB RAM (256MB preferred), 20GB Hard disk storage
    - *Operating System:* Windows 2000 or XP Professional (preferred)
    - *Software:* Microsoft Office 2000 or Microsoft Office XP, Antivirus software

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff	Consult.	Est. Cost
1	Purchase in **four installments of 10** Computer Workstations - Intel Celeron D 2.53 GHz CPU, 256MB, 80 GB Hard drive, 17" Monitor, Windows XP Professional - Estimated price is for a Dell Dimension B110 w/1 year warranty.				$3,000
	Total cost of the 4 installations				$12,000
2	Configure and install new computers.		10	3	
3	Migrate user files from older computers to new computers.* *This process may take less time depending on data volume and requirements.		10	5	
	Total estimated Staff hours		**20**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**8**	**$400**
	Less donated or discounted services				
	Total estimated cost to the organization per installation				**$3,400**

* File migration may be easier and quicker if local workstation data files are migrated to secure server shares as described by other projects in this plan.

Resources

- **For brand-name computers, Dell is found to be a good balance between reliability, performance, and price. (www.dell.com)**
- **Recycled computer information can be found at:(** www.crc.org**)**

Improve Data Management Applications

Data management is a broad term that refers to the procedures and tools that an agency uses to keep track of mission-critical information, such as data about members and donations. A good data management plan identifies the ways that information flows into the agency (e.g., via the website or membership applications that are received in the mail), the way that information is entered, maintained and retrieved on a daily basis (e.g., via database software), and the ways that the data is used to further the agency's mission (e.g., via mass mailings or aggregate reports to funders).

ECI data management applications include a planned MS Access database for Sponsor/donor/volunteer tracking. This section addresses issues and concerns with the office applications used to manage data.

Acquire and implement a new case management software

In order to maximize the productivity of the employees, *ECI* should consider replacing their existing obsolete case management software, Logs2Go with a new one, Penelope Case Management Software, which can be scaled to their growth and satisfies all their requirements. The existing case management software was implemented about 6 years ago and no enhancements or upgrades have been made since then. This lack of upgrades has left a number of gaps in their business processes which has forced alternative means to be employed such as manual paperwork to fill them. Additionally, the database has data inconsistencies and lacks reporting facilities such as outcomes and performance reports vital for fund raising activities. Thus there has been significant impact on the productivity of the organization as a whole.

Benefits

- Ability to generate outcomes and performance reports for fund raising activities
- Increased productivity due to customizability to current and future requirements
- Implementing the ASP model of the software will eliminates current maintenance costs incurred for the Logs2Go case management software system
- The ASP model will eliminate sustainability issues such as no upgrade costs and maintenance expertise requirements.

Recommendation

- It is recommended that *ECI* should acquire Penelope Case Management Software System developed by Athena Software system
- A cost analysis should be performed between acquiring licenses and ASP model and the approach should be selected
- It is recommended a efficient training plan is developed to dispense employee training, to ensure smooth transition and does not affect lower the existing productivity.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Implement new case management software, Penelope software system	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Data gathering of the processes and requirements	Chris Friedman, IT Consultant, Supervisors	10	5	

2	Evaluate and purchase software system				$21,600
3	Submit requirements document to Athena Software for customization.	Chris Friedman			
4	Develop training material for employees	Chris Friedman, IT consultant	15	10	
5	Training for the employees	Athena-Trainer, IT consultant		15	$3,125
	Total estimated Staff hours		**10**		
	Total estimated Consulting hours			**30**	**$1,500**
	*Cost estimate is for consulting hours estimated at an average of $50/hour.				
	Total estimated cost to the organization				**$26,225**

Resources

- Athena software website: The site gives an overview of the software system and also contains useful documents such as Implementation guide and Deployment guide.
  (www.athenasoftware.net)

Establish Sponsor/Donor/Volunteer tracking database.

In order to best manage its sponsor, donors, volunteer information and provide this information access to all staff members, *ECI* should implement a centralized database. *ECI*'s management has indicated that this project is already underway as a separate project. Therefore, those needs will not address in this plan. However, it is recommended that *ECI* undergo a thorough database planning process to ensure its diverse needs are properly accommodated for in whatever database is created. This will be extremely important to the ECI as the ability to gather information, quickly and accurately will impact the productivity of the employees.

Resources

- TechSoup Article: "Avoiding Disaster: The Database Planning Process"
  (http://www.techsoup.org/articlepage.cfm?ArticleId=208&cg=searchterms&sg=database%20planning)

- TechSoup Article: "Database Planning Guide" – Provides a workbook to assist with the database planning process.
  (http://www.techsoup.org/worksheetpage.cfm?worksheetid=110&cg=searchterms&sg=database%20planning)

Implement Microsoft Exchange Server for email and groupware.

ECI presently outsource their email requirements using yahoo small businesses and is hosted on the yahoo servers. *ECI* pays a monthly subscription of $39 for this service. As part of the effort to reduce the expenditures through leases, *ECI* should consider purchasing and implementing a M.S Exchange server to begin a self-reliant email service which can be used by the employees, whether at home or at office. *ECI* requires a group calendaring and scheduling package which would enable *ECI* to more easily schedule meetings, check staff availability, and reserve office resources as well a retrieve email.

Recommendation
It is recommended that *ECI* acquire Microsoft Exchange Server to facilitate email and other groupware needs. Microsoft Exchange is a groupware solution that will help *ECI* share schedules, schedule organization-wide meetings, share contacts and tasks as well as manage email.

Benefits
Exchange Server contains ways to incorporate Public and Private Folders, the ability to customize and program forms, and ways to create and manage agency-wide tasks. Exchange Server also includes a web based access to data, allowing *ECI* staff to access their information from anywhere in the world.

Through Exchange Server, and its preferred client MS Outlook, *ECI* could check to see what times individuals were free or busy for meetings. Advanced uses of Microsoft Exchange include creating task lists for projects including deadlines, staff responsibilities, and status updates and even allows for the creation of special forms such as HR or timesheet forms that could be automatically sent to the appropriate people.

Considerations
Hosting email using Microsoft Exchange requires that *ECI*'s Internet connect be reliable and requires that some basic administrative tasks be adopted. ***Hosting a mission-critical service such as email requires more administration attention internally than if such an application was outsourced to a professional service.***

Implementation Tasks – The following steps are required for implementing this recommendation.

	Implement Microsoft Exchange Server for email and groupware	Assignee	Staff	Consult.	Est. Cost
1	Purchase Microsoft Exchange Server Standard Edition w/Software Assurance from Discountech.com				$39
3	Purchase 100 Exchange Client Access licenses ($2.50 each) from Discountech.com.				$250
4	Install Exchange Server			4	
6	Install Exchange Web access			2	
7	Configure clients		5	10	
8	Train Administrators on basic administration		2	2	
	Total estimated Staff hours		**7**		

	Total estimated Consulting hours			**18**	**$900**
	*Cost estimate is for consulting hours estimated at an average of $50/hour.				
	Less donations and/or discounted services				
	Total estimated cost to the organization				**$1,190**

Resources

- For more about MS Exchange Server information: (http://www.microsoft.com/exchange)

Improve Internet Communications

Maintain and update website by ECI

Currently, *ECI* has their website hosted by an external agency but, the maintenance and updating is done by their IT consultant. The IT consultant updates the website when the management of Every Child makes a request. If the IT consultant does not respond in a timely manner, it could result in Every Child not being able to inform their clients, sponsors, volunteers, etc. of any relevant information. The update could be for an announcement of a special occasion or gathering, where a low turn over will cost *ECI*, both in reputation and costs.

A properly implemented website with current content can be helpful in communicating to clients, funders, volunteers, and staff. Some website functionality may also serve to benefit the efficiency of the organization if there are opportunities to electronically serve constituents utilizing less time and overhead of the organization.

Recommendation

- It is recommended that *ECI* identify and select an employee from with-in the organization to be sent for training on website maintenance.
- ECI should acquire a Content Management System (CMS) and, have an IT consultant install it on the individual's computer. The installation included having the CMS being integrated to their website and the existing content information should be transferred from the IT consultant's computer to this computer.
- The Tech-team should undertake a formal review of goals and objectives of its website as well as the content that is offered to ensure that it is maximizing its use of its website.

Implementation Tasks – The following steps are required for implementing this recommendation.

	Step	Assignee	Staff Hours	Consult. Hours	Est. Cost
1	Identify possible candidate who can satisfy this requirement (possibly from Tech-team)	Tech-team	5		
2	Training for the candidate				

3	Acquisition of CMS software and installation	Consultant		2	**TBD**
4	Review website goals, requirements, and content with appropriate staff representative of the organization.	Tech-team	20		
5	Website design and implementation: Implementation is for updating web content. *		10		
	Total estimated Staff hours		**35**		
	Total estimated Consulting hours *Cost estimate is for consulting hours estimated at an average of $50/hour.			**2**	**$400**
	Less donated or discounted services				
	Total estimated cost to the organization				**$400**

* This budget assumes that website content is presently updated by the IT consultant. If outside services are required then the appropriate changes should be made. Staff time to evaluate and manage and outside services should be factored into the entire cost of this project and updated in the plan. Consulting hours are estimated without enough information. This item should be updated when more determinations are made.

Resources

- Network for Good – Volunteering/giving portal that provides (currently) free online donation processing to non-profits. (www.networkforgood.org)
- Groundspring - A project of the Tides foundation, this organization offers a fee-based service to provide sophisticated donation processing. (www.groundspring.org)
- Justgive – Provides online donation services (www.justgive.org)
- TechSoup Article: "A Primer on Online Fundraising for Nonprofit Organizations" (http://www.techsoup.org/articlepage.cfm?ArticleId=204&cg=searchterms&sg=donation)

Appendix A: Assessment

The following are an assessment of *ECI*'s technology systems, capabilities, and management processes in place at the start of the project. It is recommended that *ECI* keep this section up-to-date as systems change and use this as a reference for managing their technology.

Summary

Item	Assessment
Total Sites	1
Total Computer Users	74
Total Computers	39
Total Servers	1
Primary Applications Used	Log2Go Case Management System

IT Management

The following sections describe the state of *ECI*'s technology management strategy at the time of the assessment. It is important to keep these sections up-to-date as projects are implemented, new policies and procedures are established, and people assume new roles.

Roles and Responsibilities

The following list of roles and responsibilities are inherently present in an organization that possesses any level of computing technology. While the official titles and job duties of the particular individuals listed below may be dramatically different, this table attempts to capture the functional role these individuals are playing in the computing environment.

Role	Person(s)
Technology Steering Committee – Responsible for setting priorities, recommending budget items, and establishing policies and procedures.	None
Technology Strategist (CIO) – Responsible for establishing the future direction of technology usage the organization.	None
Network Administrator – Manages the network, server, user accounts, and backups.	Chris Friedman/IT consultant
Systems Administrator – Ensures individual workstations are properly configured and are running properly.	Chris Friedman
Database Administrator – Ensures that the database is accessible to users, secure, and is running.	None
Backup Administrator – Responsible for ensuring that the backups are running and are verified.	Chris Friedman
Technical Troubleshooter – Responsible for resolving day to day technology issues.	IT consultant
Website Administrator – Responsible for establishing the direction and functionality of the website and administering basic content updates.	None
Email Administrator – Responsible for setting up and terminating email accounts, resetting passwords, implementing email forwards, etc.	None
External technical support – Vendor(s) relied upon for supporting hardware and software.	Dell Computers/IT consultant

Job Descriptions

ECI does not currently have formal job descriptions for technology support. The organization should consider adding formal technology support tasks to the staff job descriptions.

Policies

The following policies are implemented at *ECI*:

Item	Assessment
Information access, usage, and	Yes

distribution (data privacy).	
File sharing and organization.	None
Email & Internet usage policy.	Yes
Password Security Policies.	Yes
Licensing and copying software.	None

Resources
You may find the following information helpful in establishing computer usage related policies.

- Appendix: See the Appendix section of this plan for suggested guidelines on polices.
- TechSoup: "Managing Technology Use Risks on TechSoup"
  This article contains more information on establishing computer usage polices. (http://www.discounttech.org/articlepage.cfm?ArticleId=392&cg=searchterms&sg=policies)

Procedures

It is recommended that *ECI* document their technology resources and procedures for common technology tasks. This will provide guidance and increase consistency and also allow tasks to be more easily shared among staff when the person with primary responsibility is away or leaves.

Written documentation on contacting support personnel and outside consultants including telephone numbers and any information required to receive support (such as account numbers and passwords) can make seeking support easier. Also, keeping a log on problems encountered, and how they were solved is recommended. The log becomes a knowledge base to help staff troubleshoot problems in the future, and it provides information to the technology committee on the common problems encountered.

The following procedures are documented at *ECI*:

Item	Assessment
Running and restoring backups.	Yes
Copying files to/from the server.	None
Dealing with viruses.	None

* It is important to keep a hardcopy of this information to allow for access when the computers are not working.

Resources

- TechSoup: Sample procedures and related worksheets can be found at (http://www.techsoup.org/articles.cfm?topicid=11&topic=Technology%20Planning&cg=nav&sg=content_topic11)
- TechSurveyor: *ECI* can keep updated information on their technology systems with an online tool such as TechSurveyor: (http://techsurveyor.npower.org/techsurveyor/)

User Account Management

There is a consistent centralized account management procedure implemented in *ECI*. There is a mix of workstations that login to local accounts and network accounts.

Annual Technology Budgeting

ECI does not presently specifically budget technology beyond general equipment lease expenditures. This provides a good cushion in case of emergencies. The agency has not necessarily budgeted for specific foreseeable needs such as staff training or the need to replace computers every 3-5 years and to stay current with software.

In order to properly plan for technology needs a technology budget that estimates annual costs to keep equipment, supplies, and staff current should be a part of an organization's overall operating budget.

Resources

- Appendix: See the Appendix section of this plan for suggested guidelines for annual technology budgeting.
- TechSoup: "Technology Budgeting Basics"
  This article discusses the basics of technology budgeting.
  (http://www.techsoup.org/articlepage.cfm?ArticleId=197&topicid=11)

Training & Documentation

Users of *ECI*'s computer workstations have access to the following training and documentation materials to assist them in more easily using their computers.

Item	Assessment
How to log into the network.	Yes
How to access/use databases.	No
How to access email.	Yes
Where to find written policies and procedures.	Yes
Third-party books for common applications such as Microsoft Office	No * Third-party "How-to" books are an inexpensive investment that may save valuable staff time and ultimately can improve the user skills.

Resources

- Appendix B: Training & Documentation. See this appendix item of the plan for suggested ways to implement training.
- Compass Point: Compass Point currently offers a range of introductory courses in most office-related software, as well as Web and database classes. They have also begun offering e-classes for online learning if time is a constraint.
  (www.compasspoint.org)
- Training Point: A website which provides basic training documentation for non-profits on computer and application usage. (www.trainingpoint.org)

- TechSoup: See the training resources section at www.techsoup.org/articles.cfm?topicid=9&topic=Training&cg=nav&sg=content_topic9

Staff Skills Inventory

It is important to periodically review the skills of your staff and most active volunteers to ensure that all computer users are well trained to ensure they can perform their job most effectively. By reviewing staff skills, appropriate training can be budgeted and implemented. Additionally, a staff skills inventory will suggest ideal candidates for peer training trainers and also those employees who require additional training.

ECI has not undergone a formal review of its staff's technical skills, although familiarity with office automation software (such as Word and Excel) is a consideration during hiring.

Resources

- TechSurveyor: Please refer to the Staff Skills section of the TechSurveyor application at www.techatlas.org.

Site Logistics

This section describes the present state of computing technology at *ECI*'s office. This includes descriptions of computer usage, workstations, networks, backups, and security. It is important to keep this up-to-date as new technology is implemented.

Summary

Item	Assessment
Site Location	6401 Penn Avenue, Pittsburgh, PA 15206
Full-time Staff	63
Part-time Staff	11
Total Volunteers	5-10 at any point of time
Total Workstations	13
Site Administrator Contact Information	Chris Friedman

Workstation Inventory

Name	OS	CPU	CPU Speed	RAM	Number
Dell computer	Windows XP	Intel Pentium IV	240GHz	256MB	
HP Pavillion 503W	Windows XP	Intel Celeron	1.70GHz	128MB	

Network Configuration

WIRING

Item	Assessment
Cable Type	Category 5 twisted pair copper wiring. Professionally wired with in wall-jacks
Central Wiring Location	

HUBS / SWITCHES

Make/Model	Speed	Location	Ports		IP ADDRESS	Connected To
			Total	Free		

ROUTER

Make/Model	Internal IP		External IP		Purpose	Remote Access
TEAM Internet Gateway	**IP**		**IP**			
	SM		**SM**			
	GW		**GW**			

INTERNET HARDWARE

Make/Model	Service Type	IP Type	Speed	Notes
Modem				

Server Configuration

HARDWARE

Item	Assessment
Computer Model	Dell PowerEdge 4600
Serial Number	Service Tag – 3809Y51 Exp. Service Code - 7014540565
Back Plane	
CPU	Intel Xeon 3GHz
Hard Disk(s)	
Floppy Disk	1.44
RAM	2GB
NIC	
SCSI Card	
CD-ROM	
Tape Backup	Seagate DAT utilizing Sony DGD125P tapes

SOFTWARE

Item	Assessment
Windows Server Version	Windows NT Server 4

Windows Server Role	File Server	
Domain Name	EC.everychildinc.org	
Computer Name	ec10.EC.everychildinc.org	
Install Directory	E:\WINNT	
Source File Location		
Swap File		
Protocols	TCP\IP	
Disk Configuration	C:(1.2/10GB) E:(6.19/49.8GB) F:(27.9/76.6GB) J:(27.9/76.6GB)	
Licensing		
Printer	All the available printers	
Special Groups		
Virus Protection	McAfee Serial – E000-5QJ6-0166	
Item	**Address**	
	Internal	**External**
This Machine IP	10.10.10.25	none
Subnet Mask	255.255.255.0	none
Default Gateway	10.10.10.1	none

Network Services

DHCP

Item	Description
Scope	
Exclusions	
Options	

NETWORK SHARES

Share Name	Disk Location	Description	Security
C	C:\		Unsecured network share.
D	D:\		Unsecured network share.

PEER-TO-PEER CONFIGURATION

Computer	Share	Disk Location	Description	Security

Printers

Printer Type	Share	Location	IP Address	Security
HP Color	Shared		10.10.10.40	none
Toshiba e-studio 810	Shared			
Toshiba e-studio 3511	Shared			

Backups

HARDWARE

Item	Assessment
Tape Drive	Seagate DAT
Auto Loader	none
Driver Version	1.11.00
Updated/From	8/27/2004

SOFTWARE

Item	Assessment
Backup Software	VERITAS Backup EXE Version 10.0
Version	10.00
Responsibilities	Daily backup/Weekly backup
Backed-up Paths	EC10 /F: /System State
Database Backup Method	
Day	**Backup Details**
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

TAPE ROTATION

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Security Risk Assessment

Item	Assessment
Password-protected workstations	Yes
Private computer access	Anyone can sit and operate any computer.
Screen-saver password usage	Yes.
Access to server equipment	Yes
Network share security	No
Password expiration policy	Yes

Evaluation

- While computer workstations are not secured from unauthorized use, *ECI*'s offices are generally only accessible to authorized personnel so adding additional password protection is not necessary, although it is usually a recommended step in securing any computing environment.

Internet Services

Internet Services are the set of services that provide an organization with the ability to communicate via email, get access to Internet resources such as websites, and have a presence on the Internet.

Domain Registration

A domain name gives an organization an address on the Internet (i.e. yourdomain.org). It is important to keep track of registration information regarding your domain.

It is recommended that *ECI* keep the information needed to renew their domain on hand, and test this information well before renewal required. *ECI* should review the email address of the administrative contact associated with their registration to ensure that the information is current and should make that this email address is checked on a regular basis. *ECI* does not want to risk losing their domain name to speculators due to the inability to renew registration or due to lack of notification. Speculators watch for domains that expire and buy them immediately if they are not renewed in order to sell them back to their original owners at a markup.

Item	Assessment
Domain Name(s)	*EVERYCHILDINC.ORG*
Registrar Name	
Registered Administrative Contact	
Registered Technical Contact	
Registration Login Information	Username / Account ID: Password: (keep separately)
Contact Email (as listed by registrar)	
DOMAIN NAME EXPIRATION	*EVERYCHILDINC.ORG* **(Date)**

Evaluation

Email Hosting

Item	Assessment
Provider Name	Yahoo Inc.
Provider Contact Info	
Primary Account ID	
Administrator	
Contact Email (as listed by	

provider)	
Number of accounts	
Email domain	Everychild.org
Spam protection / filtering	
Cost	$39 per month
Notes	

Website / Domain Hosting

Item	Assessment
Web hosting Provider Name	
Provider Contact Info	
Primary Account ID	
Administrator & Admin Capability	Website maintained using Dreamweaver by IT consultant
Website URL	everychildinc.org
Bandwidth / Storage	
Cost	

Software Applications

IS Applications

Item	Assessment
Accounting	QuickBooks
Client Tracking	Logs2Go case management and documentation software
Program Management	None
Donor / Funding	MS Access
Staff Timesheets	MS Excel
Intranet	
Calendaring / Scheduling	Varied – None to MS Outlook

Appendix B: Best Practices

The following sections describe "best practices" for technology management and general resources that is recommended. Depending on the size of your organization and other concerns, you may wish to implement some or all of these practices. These practices should be tailored to your particular need and organization.

Technology Use Policies

It is recommended that *ECI* develop policies around information use, file sharing, Internet access, and non-work use of resources. Technology policies should be integrated with other staff policies in terms of style, language and the tone they set in the organization. Communicating the reasons for policies is important to gain staff participation, and to ensure policies are enforced and updated appropriately.

EMAIL & INTERNET USAGE

Although it is not recommend hard and fast lines ("No personal email!"), it is helpful to draft an Internet usage policy to establish expectations and offer examples that clearly cross the line ("Staff shall not use *ECI*'s property or Internet access to run a separate business").

PASSWORD SECURITY

ECI should develop guidelines for what staff use as their passwords. The following are some recommendations:

- Password should not be left blank.
- Password should be a minimum of 6 characters long
- Password must use at least one number and/or a special character (i.e. %^!#)
- Never use birthday, family names, organization name or other things that are easy to guess
- Users should change their passwords on a regular basis.

It is recommended to review the passwords for the following services and devices to ensure they are not blank or set as the default:

- Default DSL provider account
- Firewall or router
- Administrator account for network server
- Administrator account for web hosting
- Administrator account for email hosting

LICENSING & COPYING OF SOFTWARE

ECI has licenses for any software application that is installed on a computer. Use or possession of unlicensed software is a felony and can result in fines. It is recommended to implement a policy incorporating the following points:

- Employees should not copy the organization's software for personal use.
- Employees should not bring in personal software for business use unless approved by an appropriate member of the organization.

- If an employee needs a piece of software that your organization does not have, there should be a clear procurement procedure available.
- If an employee needs to use software at home for work purposes, they should check with their system administrator for licensing restrictions or permissions before copying software.

INFORMATION ACCESS, USAGE, & DISTRIBUTION
ECI should clearly state distribution rules for client, program, or other data. People who communicate with *ECI* generally give up personal information with the assumption that their information will be kept confidential and not distributed without their permission. Therefore, *ECI's* policy about making copies of data to use at home or in other locations should be clearly stated. Truly sensitive data should be protected with appropriate procedures and systems.

Organizing Software

In order to ensure that *ECI* can find its software when needed and show proof of licensing, it is important to have a systematic and regular means of storing your original software media, licenses keys, proofs of purchase, and documentation. Below are some general tips for keeping these assets organized:

- Identify a secure place such as a lockable filing cabinet, office, closet, etc, to store all of the original media (CD-ROMs) and related items.
- It can be helpful to organize CD-ROM media using a CD book/binder system that is most often sold for music CDs. These binders also often have pockets for papers or other key information.
- Keep track of license keys/serial numbers. It is important that license keys and serial numbers be kept with the original media. Most software requires these keys upon install. As a backup to the original documentation of these keys, it is recommended to record them separately and a copy kept elsewhere.
- If additional licenses of a product have been purchased, it is important to be able to show this proof-of-purchase in case of a software audit. While this is a rare event and most organizations never encounter this, it will save a lot of time to have copies of original invoices or other related proof of license purchases easily available.
- To reduce the chance of losing original media and to provide a better experience for the users, ECI should consider creating a folder on the server that contains an entire copy of the original media CDs for operating systems, essential software, and printer drivers. This is a common practice with operating systems and Microsoft Office since sometimes users are requested to insert these CDs that they usually don't have. Making available a copy of these CDs on the network allows the user to specify the location other than the CD for the requested programs. In order to prevent workstation users from making usable copies of the software for themselves, do not place license keys or serial numbers on the network that are required for installing the software.

Annual Technology Budgeting

In order to properly manage its technology, *ECI* should draft a technology budget that estimates the annual cost for maintenance of technology equipment and supplies, and includes line items for staff training and support.

HARDWARE UPGRADES

Historically, the useful lifetime of a computer workstation is between 2 and 3 years. In the past, the processing power and capacity requirements of newer and faster operating systems and software applications quickly made computer hardware obsolete. However, in recent years the performance and reliability of computers has dramatically increased, extending the useful lifetime of most computers to about five years. Nowadays, the average PC has so much processing power that hardware upgrades offer little marginal value to the average computer user.

SOFTWARE UPGRADES

The most common software applications are the Log2go documentation system, operating systems, office productivity applications such as Microsoft Office (Excel, Word, Outlook, and so forth), web browsers and email clients. These applications often require upgrades to keep up with new features or remain compatible with other new software. Other applications, such as anti-virus software, may not require upgrades but may be attached to a subscription service that requires an annual renewal fee.

With the arrival of Windows 2000, Microsoft completed their transition to a product line that provides a reliable, fast, and relatively secure operating system. Therefore, computers running Windows 2000 or the more recent Windows XP will not require an operating system upgrade any time soon. Users of Windows 95, 98, or ME operating systems would probably benefit from an upgrade to XP due to its much improved reliability and feature set.

ESTIMATED YEARLY BUDGET ITEMS

Below is a sample of items to budget for hardware and software upgrades. It is important to enumerate costs on a per workstation basis, so that the budget includes appropriate costs for things such as virus protection updates for all computers. All costs below are average estimated costs that may be used as a guideline in *ECI's* own budgeting.

Item	Interval	Est. Cost
Windows-compatible PC Workstations for new users or for replacing old systems	4-5 years	$800
Virus protection subscriptions (per workstation) **May be available for less via Discountech.com or through multiple license purchases*	None	Not required
Web and Email Hosting	Monthly	$20-$40
Internet Connection (Average DSL Connection)	Monthly	$65
Printer Supplies (toner, inkjet inks)	Varied	Consider all printers.
Backup media (tapes, CDs, etc).	6 months	$20-$100 depending on data volume and media type.

Staff Training **Cost estimated based upon industry recommendations*	Yearly	$1000/staff member
Accounting software upgrade (QuickBooks, etc.)	1-2 Years	$200
Specialized application upgrades **In some cases it may be more economical to purchase new licenses through Discountech.com or other non-profit resources.*	2-3 Years	See manufacturer
Support services such as network or database consultants.	As needed	

Training & Documentation

SOFTWARE DOCUMENTATION

Most software comes only with electronic documentation. While software help systems are useful to those who know what they want, they can be daunting to new or inexperienced users. Therefore, purchasing third-party reference books on software applications and making them easily accessible to all staff can help assure that *ECI* maximizes the use of its technology. When new materials are acquired by *ECI*, communicate to everyone where to find them. New-hires should be made aware of any documentation during any new-hire orientation.

PEER TRAINING

It is crucial that *ECI* not become overly dependent on one person's skills, so it is recommended that more than one staff person be given training in basic computer maintenance. Additionally, some staff members may benefit from basic computer usage training. Sharing this knowledge will not necessarily require that all staff attend classes. Staff members that have received formal training may be able to pass their new knowledge along to others.

There are many ways to facilitate training. In general, it is known that peer-conducted training works best in a one-on-one or small group setting. This is a good approach for training staff in Microsoft Word or Windows basics.

Another way to increase the technological capacity of the staff is through non-tech position hiring. When considering hire of staff for non-technical positions, ask for particular application knowledge or technology skills that the current staff do not possess.

BUDGETING FOR TRAINING

Training and documentation is the one of an agency's most worthwhile long-term technology investments. It is recommended that a typical organization set aside a minimum of 3% of their total yearly budget for technology training. It is recommended that *ECI* budget $1000 per computer user as a starting point, although not everyone will need training and not all trainings will cost $1000.

MAINTAIN A STAFF TRAINING PLAN
As part of a comprehensive technology management plan, it is recommended that a training plan is developed to focus on the areas of most need by individual staff members. Staff skills should be reviewed regularly to ensure adequate training is provide for work they are doing.

Special Considerations
A training plan should also include evaluation of training undertaken by staff. By keeping a record of the training, the staff has tried and its effectiveness *ECI will* be able to better target future training. Evaluations are often best completed several weeks after a training to measure what the trainee has retained. When asking about effectiveness remember to focus on the way training helps the person to do their job; not just whether they now know more about a subject.

Resources

- TechSoup -- Techsoup.org has a training section that has articles devoted to making technology training work for nonprofits. There are pieces on different training mechanisms and links to other training resources.
  See
  (http://www.techsoup.org/articles.cfm?topicid=9&topic=Training&cg=nav&sg=content_topic9)

- Skillsoft online training for Excel – Online training can be obtained from Skillsoft through DiscountTech for Microsoft Excel.
  See
  (http://www.techsoup.org/Discountech.com/Category.asp?catalog_name=TechSoupMain&category_name=Training&Page=1)

- ***The Accidental Techie course*** - Since, most small non-profits are very heavily focused on meeting their organizational mission; they don't generally have the resources to hire technical staff. In recognition of the common and unofficial technical role found in many non-profits, CompassPoint offers an "accidental techie" course designed to train those people without a technical background in computer support skills. They are also an excellent resource for training in most office applications. More can be found about their classes and workshops at:(http://www.compasspoint.org.)

IT Management Team Organization

By establishing a formalized technology management team *ECI* can proactively match technology needs to its mission, identify and resolve ongoing problems, prioritize projects, and ensure that *ECI* is gaining the maximum benefit from its technology and staff. A formalized technology team process, even for small organizations, allows all staff to begin discussing needs, ideas and directions for technology.

MEMBERSHIP
The team should have representation from senior management, technology administrators, program areas, and users. A good mix of these backgrounds will provide

the most holistic perspective. A technology team that only has technology staff will not adequately represent the priorities of the organization as a whole; while a team that is absent of any technology background may not adequately find solutions to issues. The team only needs to be large enough to accomplish the tasks and to provide people who can follow up on issues or lead new initiatives.

RESPONSIBILITIES
In order to properly manage the technology at *ECI*, it is recommended that the following responsibilities be taken up by a technology management team:

- Provides oversight of technology problems and user-related issues.
- Recommends budgets.
- Establishes standards for hardware, software, and training needs.
- Develop technology policies and procedures.
- Periodically reviews the organization's technology plan to ensure that it coincides with the organization's mission.
- Periodically reviews the technology-related roles of staff members to ensure primary responsibilities are not being overtaken by technology-related ones.
- Determines if the scale of technology administration requires hiring for a specific role.
- Leads technology related initiatives.
- Communicates to the organization technology support expectations, capabilities, and escalation paths.
- Leads ongoing technology planning.

PROCESS
Meetings: Ideally the technology team meets at a regular interval to discuss both tactical and strategic issues. This meeting interval may vary depending on the number of projects or issues that your organization may be facing. A meeting once a month is only going to be required since *ECI* has a stable infrastructure and is not engaged in many technology-related projects. .

Resolving Tactical Issues: A portion of the meeting should be set aside to review problems that users are encountering with computers, networks, or software. It is suggested that a record be kept of user problems to be reviewed at these meetings. This provides a feedback mechanism to know how well *ECI* is able to use its technology investment. If issues are reoccurring action should be taken to identify the root of the problem and get resolution to eliminate further productivity loss and user frustration.

Strategic Planning: A portion of the meeting should be set aside to discuss how the organization is using its technology and how technology could be better utilized in service delivery. Care must be taken that technology is not seen as a cure-all; but only as an additional tool to enhance your mission.

Establishment of IT Roles

As the technology resources grow at an organization, so does the need for administration and upkeep. As *ECI* has many computers, software applications, databases, etc, *ECI* is

already spending significant staff time working on these various administration roles, and more of this time can be reclaimed for regular program work through the formal establishment of these IT roles and hiring appropriately.

Technology Strategist (Chief Information Officer)
Estimated Hours per week: 5 – 10 hours

Rationale: If the two weights used for judging IS projects are *sustainability* and *need*, it is the CIO who provides the balance and makes the ultimate decision. *ECI* needs one person with strategic knowledge of the organization's mission and culture to think about the role of IS in achieving that specific mission within that specific culture. This is the critical role. Whatever other IS/IT roles or positions *ECI* decides to take on within the organization, the CIO role must be accounted for.

The CIO is responsible, at the highest level, for budgeting, approving, funding, and working with the other IT management members to create technology plans, policies, and strategies. He or she is not responsible for the down and dirty work of hardware upgrades, software installation, documenting networks, or troubleshooting users' computers, but instead needs to be able to make final decisions about software and hardware choices and purchasing, and about all IS project. The CIO is also responsible for designing IS policy, again, with the assistance of the IT manager.

Critically important to this role is the CIO's ability and willingness to act as an appropriate technology advocate. In order to do this successfully; the CIO must be at the same organizational level as any member of the Management Group. The CIO must have impact on the budget and be able to make management-level decisions about expenditures, fundraising, and staffing. In addition, the CIO oversees IS staff and consultants, and is responsible for managing technology resources.

The CIO does not need to be a programmer or network administrator. However, she should have a general interest in and understanding of technology issues, and be able to do the necessary research and ask the necessary questions regarding IS projects. The research and questions must concern available options, product support, cost in direct dollars, cost in maintenance, cost in staff resources, and training requirements.

The CIO should have a broad understanding of technology, be able to develop strategies, oversee implementation and manage staff. He or she should also have a thorough understanding of the organization's culture and the ways in which technology is used to further the mission of the organization.

Without the structured support of this role, it is impossible to implement any long-term IS planning or projects successfully. Even short-term projects may be less successful because of conflicting, contradictory or unclear goals. Operating without a management-level staff person responsible for the CIO's tasks is not management by design - it is management by luck.

Responsibilities:

- Budgeting, approving, funding and creating technology plans, policies, and strategies

- Designs, maintains, and reviews IS policy
- Member of technology team
- Makes final decisions for hardware and software standards
- Approves all IS projects
- IS advocate to other executives and board
- Ensures IS operates instep with strategic plan
- Ensures IS operates instep with organization's mission

Requirements:
- Strong interest in technology
- Able to make decisions regarding technology
- Understanding of strategic plan of organization
- Understanding of organization's mission
- Understanding of budget process
- Meeting facilitation skills
- Excellent communication skills, written and oral

Database Manager
Estimated Hours per week: 20 hours

Rationale: The Database Manager should be proficient in using the database and someone who will provide training/troubleshooting database usability issues with staff. This position requires that the staff person be involved in the database planning effort, and will continue in a part-time capacity through the database implementation/staff training phase.

Responsibilities:
Documenting existing databases and other data lists
Working with staff on data clean-up and data importing into the new system
- Database development, maintenance and administration
- Database software support, help desk duties
- Staff training on database software issues
- Maintaining vendor contracts and relations

Requirements:
- Knowledgeable in required database software
- Familiar with web programming and development
- Able to manage multiple projects
- Able to prioritize diverse tasks
- Able to troubleshoot database user systems as required
- Excellent communication skills, written and oral

Network and User Support Staff
Estimated Hours per week: 20 hours

Rationale: This person is accountable to the CIO and is responsible for maintaining system and network documentation, identifying IT problems, managing upgrades, and managing IS projects such as database design and development.

While the CIO is responsible for making decisions about the above tasks, the Network Administrator is responsible for implementing the organization's technology plans and policies, and keeping systems operational. This may done with the assistance of other IS team members or non-IS staff.

The Network and User Support Staff must have specific knowledge of computer systems and networks and is expected to consult with the CIO regarding IS plans and policies. S/he is expected to be able to solve user problems, system problems and network errors independently. He will also need to be knowledgeable in both PC and the Apple operating system.

The Network Administrator may supervise other IS staff, works closely with the CIO and responds to user problems as required. Additionally, in a networked environment, s/he will serve as the system administrator, though many of the specific tasks of system maintenance may fall to others within the organization.

Responsibilities:

- System maintenance
- System documentation
- Identify potential IT problems and needs
- Manage system upgrades, Including software and hardware
- Manage IS projects such as database design and development
- Work with CIO to prepare budget or other reports as required
- Manage relationship with vendors, contractors, and service providers
- Conduct and lead trainings as required

Requirements:

- Knowledgeable in required network systems
- Familiar with operating system and server applications
- Able to manage multiple projects
- Able to perform system tasks such as back-up, upgrades, network troubleshooting as required
- Able to prioritize diverse tasks
- Able to troubleshoot user systems or network devices as required
- Excellent communication skills, written and oral

Maintaining the Technology Inventory

The best way to establish self-sufficiency and aid in the maintenance and troubleshooting of any network is to have accurate and up to date documentation for all hardware and software. Any and all information related to hardware set-up, software configuration and use (like shared databases or the registration number for QuickBooks), Internet connectivity, email accounts, back-up routines and support information should be

documented and stored in a network notebook. This documentation is especially valuable for an organization without a technical person on staff as it can aid their work when engaging with a consultant or volunteer support person. If all warranty, service accounts, account numbers, serial numbers and the like are written down in one location it can be the most valuable tool in maintaining the technology at *ECI*. Documenting the network configuration also prevents knowledge of ECI's technology logistics from being lost if a technical staff person leaves or the IT consultant decided to stop working with the organization.

Suggested Steps:

1. Make a list of all mission critical software. Ensure that the version numbers, support information, web site information for the providers and purchase dates are documented.
2. Create a notebook or other system for storing all computer related information
3. Write down the details of *ECI's* network setup, file-sharing system, Internet settings, and access rights. Add this information to the network notebook.
4. Take screenshots of the network control panels on each computer or write all this information down in the event of needing to re-enter the data later on. Add this information to the notebook.
5. Train the staff on how to use the network. Provide them with copies of the file-sharing protocols, back-up procedures, security policies, and anything else they may need to refer to frequently.

Resources

- Planning Process -- The following article makes a good case for why to document a network.
  See http://www.techsoup.org/articlepage.cfm?articleID=91&topicid=11

- Network documentation -- An overview of how to organize information critical to maintaining the health of the network
  See (http://www.npowerseattle.org/tools/network_documentation.pdf)

- Networking Basics -- This article from Tech Soup provides an overview of networking including administration issues.
  See (http://www.techsoup.org/articlepage.cfm?ArticleId=410&topicid=3)

Naming Network Resources

Naming conventions really depends on *ECI* policies and procedures. Though here are a few alternative suggestions focused around staff, others around position in the org, others by location.

WORKSTATIONS

By staff name: For workstations, the key to a naming convention is to make it as easy as possible to tell where a computer is and who is using it by its network name. Trying to track down a computer called "User12" can be challenging. Generally, it's usually easiest

to use staff names. People usually remain associated with their computer for extended periods of time, and the computers often follow their people around the office as they move, so this convention usually works best.

By staff position: If there is significant turnover in the organization, a naming convention based on job title or position works well, as computers tend to get passed from person to person in the same position.

By physical location: If neither of these scenarios work, if for example people move from machine to machine on a regular basis, then a geographic convention, such as “Front Desk” and “Cubicle 3” can work well.

No matter which naming convention is followed it is important to stay consistent and to remember to change network names when people, positions, or computers move.

SERVERS AND NETWORK SERVICES

For servers and network services such as printers, the key to a good naming convention is for network users to be able to clearly identify them. There are three common conventions. Functional, such as “mail_server” or “FileServer” are fairly effective, as long as there are only a few servers. If there is more than one server or particular service type, geographic names work well, such as “SF-file server” or "3rd-floor-printer". The last option for this is to use more idiosyncratic names, such as “minerva” or “bubba” which may have meaning to the organization for other than functional or geographic reasons but could be confusing to people who are new to the organization.

NAMING STYLE

During the naming of resources, avoid using spaces as it can be difficult to directly address such services using file and web browsers and command line interfaces. Instead, consider using an underscore (“_”) or an initial caps style (“File_Server”)

Resources:

- TechSoup: Technology Assistance Providers list. http://www.techsoup.org/resources/index.cfm?action=resource.view_summary&resourcelist_id=11&order=title

- TechSoup: “Technology Budgeting Basics” article discusses how to budget for technology. http://www.techsoup.org/howto/articles/techplan/page2722.cfm
- TechAtlas: TechAtlas has tools to assist an organization with evaluating the level of training that is required for each staff member through its survey tools. http://www.techatlas.org
- TechSoup: “Technology Training: The Nonprofit Viewpoint” article discusses the need and value of training and common challenges at a non-profit. http://www.techsoup.org/articlepage.cfm?ArticleId=414&cg=searchterms&sg=training
- **Dell Computers is found to be a good balance between reliability, performance, and price. (www.dell.com)**
- Recycled computer information can be found at:(www.crc.org)
- Athena software website: The site gives an overview of the software system and also contains useful documents such as Implementation guide and Deployment guide.(www.athenasoftware.net)
- TechSoup Article: “Avoiding Disaster: The Database Planning Process” (http://www.techsoup.org/articlepage.cfm?ArticleId=208&cg=searchterms&sg=database%20planning)
- TechSoup Article: “Database Planning Guide” – Provides a workbook to assist with the database planning process. (http://www.techsoup.org/worksheetpage.cfm?worksheetid=110&cg=searchterms&sg=database%20planning)
- For more about MS Exchange Server information: (http://www.microsoft.com/exchange)
- Network for Good – Volunteering/giving portal that provides (currently) free online donation processing to non-profits. (www.networkforgood.org)
- Groundspring - A project of the Tides foundation, this organization offers a fee-based service to provide sophisticated donation processing. (www.groundspring.org)
- Justgive – Provides online donation services (www.justgive.org)
- TechSoup Article: “A Primer on Online Fundraising for Nonprofit Organizations” (http://www.techsoup.org/articlepage.cfm?ArticleId=204&cg=searchterms&sg=donation)
- TechSoup: “Managing Technology Use Risks on TechSoup” http://www.discounttech.org/articlepage.cfm?ArticleId=392&cg=searchterms&sg=policies
- TechSoup: Sample procedures and related worksheets can be found at http://www.techsoup.org/articles.cfm?topicid=11&topic=Technology%20Planning&cg=nav&sg=content_topic11
- TechSurveyor: *ECI* can keep updated information on their technology systems with an online tool such as TechSurveyor: http://techsurveyor.npower.org/techsurveyor/
- TechSoup: “Technology Budgeting Basics” http://www.techsoup.org/articlepage.cfm?ArticleId=197&topicid=11
- Compass Point: (www.compasspoint.org)
- Training Point (www.trainingpoint.org)

- TechSoup: See the training resources section www.techsoup.org/articles.cfm?topicid=9&topic=Training&cg=nav&sg=content_topic9
- TechSurveyor: See the Staff Skills section of the TechSurveyor application at (www.techatlas.org)
- TechSoup: Articles devoted to making technology training work for nonprofits (http://www.techsoup.org/articles.cfm?topicid=9&topic=Training&cg=nav&sg=content_topic9)
- Skillsoft online training for Excel – Online training can be obtained from Skillsoft through Discountech.com for Microsoft Excel (http://www.techsoup.org/Discountech.com/Category.asp?catalog_name=TechSoupMain &category_name=Training&Page=1)
- Planning Process: http://www.techsoup.org/articlepage.cfm?articleID=91&topicid=11
- Network documentation: http://www.npowerseattle.org/tools/network_documentation.pdf
- Networking: http://www.techsoup.org/articlepage.cfm?ArticleId=410&topicid=3