Information Systems Management
Course 95-822

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Final Consulting Report

Greater Pittsburgh Community Food Bank

Jianlin Wu

Greater Pittsburgh Community Food Bank
Executive Summary

Student Consultant, Jianlin Wu
Community Partner, Larry Hokaj, Scott Yablinsky

I. Background Information

The consultant, Jianlin Wu, worked with Community Partners, Larry Hokaj and Scott Yablinsky, at Greater Pittsburgh Community Food Bank (GPCFB). Larry is the IT Director at GPCFB; his email is LHokaj@gpcfb.org . GPCFB's telephone number is (412)460-FOOD. The website of GPCFB, www.pittsburghfoodbank.org , provides more information.

The mission of GPCFB is to eliminating hunger and developing collaborative strategies to encourage self-reliance in southwestern Pennsylvania. To accomplish its mission, GPCFB takes many roles and offer a wide variety of programs, such as serving as a central collection facility for grocery products and distributing them to member agencies, involving the community as food donors, volunteers and financial supporters, working on the programs to empower the needy to meet their own nutritional needs, communicating the nature of and solutions to the problem of hunger

Currently, GPCFB has about sixty full time employees. The two Community Partners, Larry Hokaj and Scott Yablinsky are the entire IT staff of GPCFB. As the IT Director of GPCFB, Larry has the responsibilities to plan, design and implement the IT infrastructure and IT application in GPCFB. He also provides the IT support to the entire GPCFB. Scott Yablinsky is the part-time IT support person in GPCFB. He coordinates with Larry regarding various projects and also completes routine IT tasks, such as backup, checking server status, user support, etc.

II. Consulting Tasks

There were two consulting tasks during the whole semester. One was to improve the IT management capability in GPCFB. The current IT management activities mostly include IT support and IT equipment/asset management. However, all of the IT asset information was recorded in Microsoft Excel files, there were also no records or data collected for the IT support work and there was no knowledge base used for the IT support work. An information system was needed to assist the IT management work at GPCFB. The other task was to setup a new presentation system at GPCFB. There was a wireless LCD TV that had been donated to the GPCFB. It supports wireless VGA and an audio connection with a PC or laptop. Therefore, a new presentation system was setup in the GPCFB utilizing this equipment to improve internal and external communication.

III. Outcomes Analysis and Recommendations

After working for a semester, one IT Resource Management (IRM) system has been setup in GPCFB which improved the IT management capability in GPCFB. CP uses IRM system to record the IT assets information of GPCFB. The server, router and software information can be queried in the system. The CP also uses this system to record all of the support activities. He can get statistical information from the system, such as the amount of hours spent on IT support each week, the number of cases the IT staff needs to handle, and the type of support provided most often. In addition, CP use IRM system to setup their knowledge base. Then the knowledge within GPCFB can be queried by the users and IT staff. All of the support knowledge can be indexed within the

system. CP not only improved the efficiency of IT support and of the community, but also improved the communication amongst the IT staff and whole community.

A new presentation system was setup and CP uses it to improve the internal and external communication of GPCFB. Since the presentation system can directly connect to a PC, the presentation information can be updated quickly and easily.   The system user just needs to upload their material to the PC, which can then be displayed on the LCD TV. In this way, the visitors and internal users can share information more freely and accessibly.

It is recommended that GPCFB should develop the backup and recovery plan and a three-year technology plan. The backup and recovery plan can help the community sustain their current IT systems and assure that GPCFB can deal with all aspects of IT system failure. It will enhance the confidence of community donors and members utilizing GPCFB's services. The technology plan can help the community understand how they develop their IT systems and what kinds of technology will be used at GPCFB within the next few years. It will help GPCFB persuade the donors and gain the funding.

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About the Consultant

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Jianlin Wu is a master student in MISM program at Carnegie Mellon University. He had five years working experience in IT management before.

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I. About the Organization

Organization

The Greater Pittsburgh Community Food Bank (GPCFB) is a nonprofit organization committed to *eliminating hunger and developing collaborative strategies to encourage self-reliance in southwestern Pennsylvania*. To accomplish its mission, GPCFB performs the following functions:

1) Serves as a central collection facility for grocery products and distributes them to member agencies serving the needy in southwestern Pennsylvania;

2) Involves the community as food donors, volunteers and financial supporters of the Food Bank and the member agencies;

3) Works on the programs to empower the needy to meet their own nutritional needs;

4) Communicates the nature of and solutions to the problem of hunger.

GPCFB was established in 1980. It has approximately 350 member agencies located throughout the eleven county region of southwestern Pennsylvania. GPFBC receives food from the donors, the local and national companies, farmers, gleaning and food drives. After the food has been received, it is then distributed to the member agencies. The member agencies subsequently distribute the food to the needy. The member agencies include smaller county-wide food banks, food pantries, soup kitchens, daycare centers for both senior citizens and children, personal-care homes, drop-in centers, homeless shelters, shelters for battered women and their children, drug rehabilitation centers, home delivered meals programs (Meals on Wheels) for the elderly, and after-school programs for youth.

The agencies can get the donated food for free. They can order the food from GPCFB and agencies can arrange for pick up or have it delivered to their program once the order is placed. GPCFB monitors its member agencies to ensure that the food is properly stored, handled and that all client eligibility requirements are being met.

GPCFB is governed by a Board of Directors. Currently, GPCFB has about sixty employees. There are three divisions under the Chief Executive Officers. They are led by a Chief Financial Officer, a Chief Program Officer and a Chief development Officers. The Community Partner (CP), IT director of GPCFB is under the Chief Financial Officers.

There was no IT department in GPCFB until 1999. In 1999, GPCFB began to use Navision to assist with the financial accounting work. However, the earliest version of Navision did not work well in GPCFB. In 2000, a new version Navision was implemented in GPCFB. With the increasing requirement of the IT support, the IT manager position was created in 2000. In January 2000, GPCFB planned to develop and implement the Ceres, which is a customized system of Navision. Ceres was setup successfully in July, 2002. And thereafter, more servers were added. In addition, a

TRT/PDA system was developed to help the drivers search for the food packs from the inventory. A web server was also setup in the lab so that the web site can be hosted internally. They also setup a telephony-based voicemail system and wireless network in the office.   The fundamental IT infrastructure and basic IT applications are functional and work well in GPCFB. The major IT task for GPCFB IT department is to evaluate and improve the current IT system to support the GPCFB mission with a high level of efficiency.

Facilities

Three years ago, the GPCFB moved into a new building. It is located at 1 North Linden Street in Duquesne of Pittsburgh. It is a new facility, built on a former Brownfield and is considered the centerpiece of the redevelopment at the former mill site in Duquesne. It is a large building, including several warehouses to store the food, an office area, several meeting rooms, a pantry, and a computer room to house the majority of GPCFB's IT framework.

Programs

The GPCFB provides a vital link between those who have food to share and those who desperately need it. GPCFB finds ways to rescue food that might otherwise go to waste and then re-direct it to people who need it via a multitude of programs.

Through GPCFB's gleaning program, they are able to organize community volunteers to harvest excess fruits and vegetables from area farm fields and orchards; and then distribute them to the member agencies. With the Three Rivers Table program, GPCFB encourages the donation of surplus prepared foods from restaurants, airlines, caterers and cafeterias.   GPCFB also collects foods from markets and grocery by their Reclamation Center program. With the regular warehouse donation programs, GPCFB is able to accept bulk products donated by both national and local food manufactures.

GPCFB also conducts various education programs that address the root causes of hunger. Not only are food and household products discussed, but the information and training are also provided by GPCFB to help eliminate hunger. Examples of the previously mentioned educational programs are the Cooking and Nutrition program, Farm Stand Project, Orientation and training volunteers, as well as GPCFB's monthly publication, the Agency Update..

Staff

GPCFB has about sixty full time employees. GPCFB also has volunteers to help to sort and pack the food. Most of the staff have a personal computer and email account and are comfortable with the IT applications, such as Ceres, Outlook, Microsoft offices and the TRT/PDA system.

 Larry Hokaj is the IT director of the GPCFB, he has the responsibilities to plan, design and implement the IT infrastructure and IT application in GPCFB. He also provides the IT support to the entire GPCFB. Scott Yablinsky is the part time IT support person in GPCFB. He coordinates with Larry regarding various projects and also completes routine IT tasks, such as backup, checking server status, user support, etc.

Technical Environment

GPCFB has five Servers. Each takes the different roles.

Server name	Server description	Software installation
GPCDC1	the primary domain server	windows 2003 server; antivirus software and VERITAS Backup Exec (VBE)
GPCDC2	the second domain server, HPML310	Windows 2003 server, VBE
GPCFB1	HP ML530, web servers	MS SQL, VBE
GPCFB2	windows 2003 server, used for the remote access	Raid 5 for the 4 disks
GPCFB3	winNT4.0 server	Data server

GPCFB has firewall, Cisco router, three wireless routers and one T1 line to connect to the internet. There are about fifty computers in GPCFB. All the computers are connected via LAN. The wireless Router is setup in the large warehouse so that the laptop in the warehouse can be connected to the LAN.

Below is an overview graph for the GPCFB technical environment:

GPCFB Technical Environment
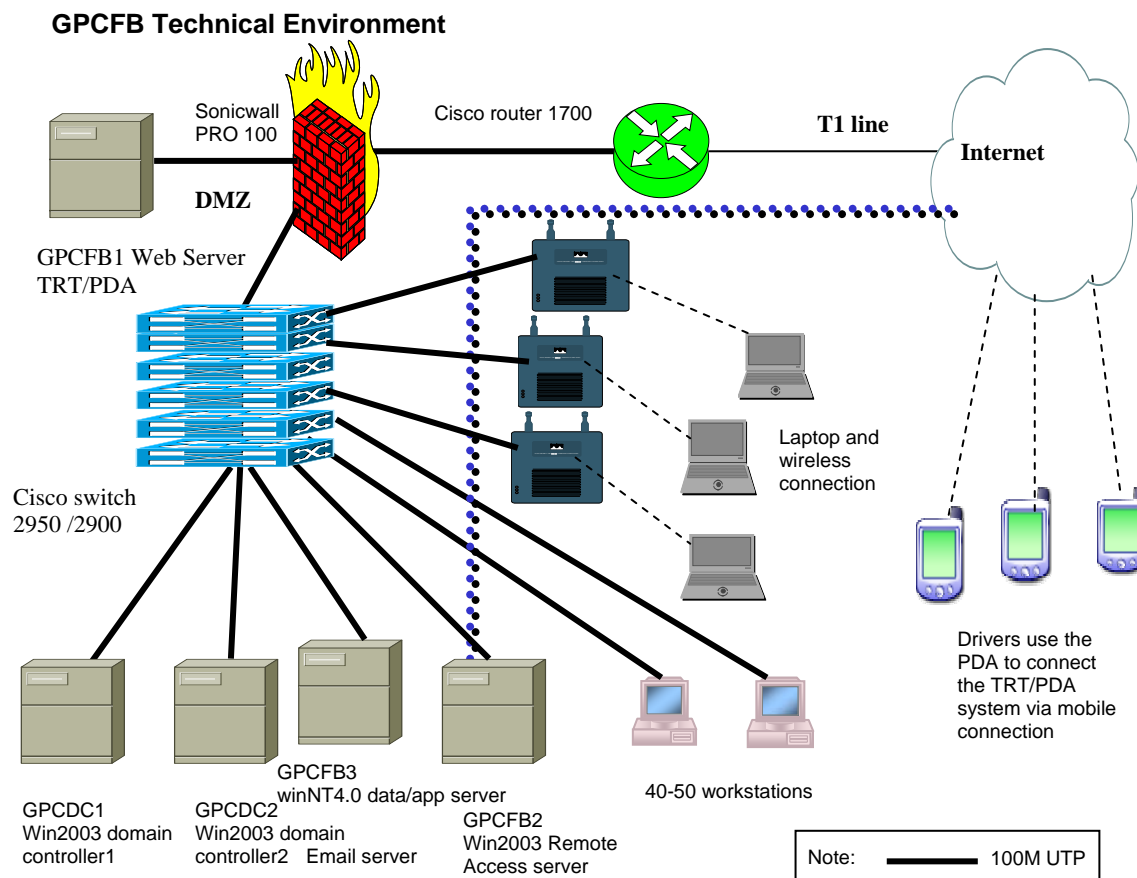
All the important data on the server is being backed up to the tapes via VERITAS Backup Exec software each day. The part-time IT support person checks and relocates the tapes each week in case of the disaster.

Technical Management

The GPCFB IT director has more than ten years' working experience and takes responsibilities to plan and implement IT-based projects.   GPCFB buys the maintenance support for the Servers. If any hardware issues occur, the vendor fixes them. The part-time IT assistant performs the backup and checks the server status daily. If the need for a new application arises, GPCFB will pay the professional company to do it, such as the web site design and development or a new feature of the finance software.

Technology Planning

The GPCFB IT director Larry is responsible for planning and budgeting of the technical environment. Larry needs to submit the proposals to the Chief Finance Officers at GPCFB when funding is needed for the technology environment.   There is no formal technology plan in existence, but the detail technology budget plan is prepared each year.

Internal and External Communication

GPCFB has good internal communication since most of the staff sits in the same big office area. They all use the community email and website system. Most of the staff has personal computers. The telephone and voice system works well and each employee has access to them. The printer and photocopy machines are open to all the employees..

GPCFB has organized various programs to communicate with the member agencies, donors, and volunteers. GPCFB usually use calls, faxes, and emails to communicate.   Many member agencies and donors also use the website to get the information from GPCFB. However, the update of the website is not frequent, and subsequently it impacts the external communication. GPCFB are working on it to improve the quality and add new function to support the website update in time.

Information Management

GPCFB manages its information electronically via an information system, especially for the important, critical data, such as financial data and warehouse data regarding inventory. TRT/PDA is used to search the location of certain food. The Microsoft exchange is used as the email system. Some information is kept both in electronic and paper format, such as the check-in and check-out paper forms. The IT director is responsible for those Information Management Systems.

II. Scope of Work

Task 1. Improve the IT management Capability in GPCFB

Problem & Opportunity:

The current IT management activities mostly include IT support and IT equipments/assets management. One information system is needed to support the IT management work in GPCFB.

There are many IT assets in the GPCFB, which include windows servers, workstations, laptops, network equipments (network switch, router), software licenses, software media, printers, and voice mail equipment. Currently, all the IT assets information is recorded in a Microsoft Office multiple Excel files. The IT staff is responsible for the data entry when new assets come into GPCFB and maintain the record when changes occur.   If the management team or finance department needs the IT assets statistic data or report, the IT staff has to provide all of the information. In most cases, it takes a significant amount of time for the IT staff to maintain the record and provide the report because all of the IT assets information is kept in the Excel file. With the increasing number of the IT assets, it will be almost impossible to do the statistical analysis in the future.

Below is the IT assets management process diagram:
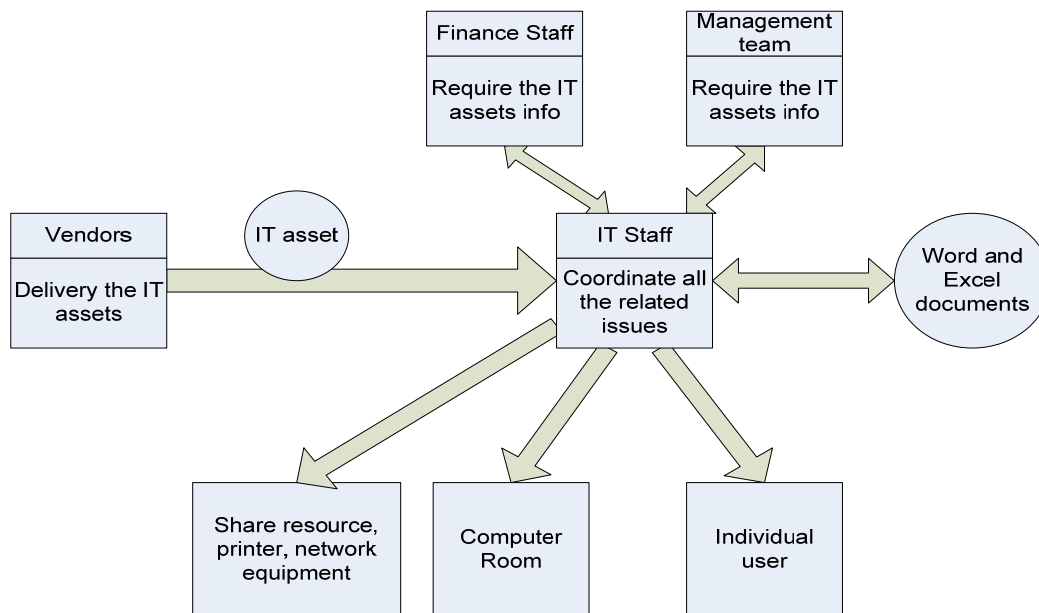
Currently, if the user meets with an IT problem, they directly call or email the IT staff to get support. Then IT staff will help the user fix the problem. There are no records for the support cases. There is also no knowledge base for the past IT support cases.   How many IT support cases for each week? What are the problems? How to fix the problems? How many times need to different IT tasks?   All above questions are important for the IT director to do technology planning and budget. They need a system help to collect the data to improve their work and show their effort to the management team.   Below is the current IT support process diagram:
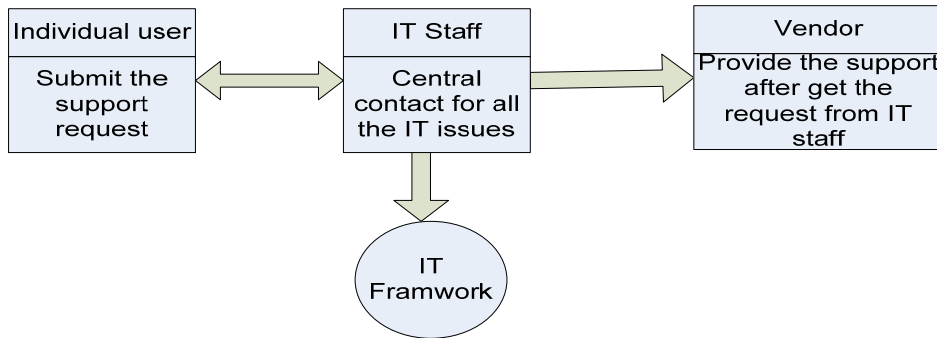
Below are some problems caused by the current IT management way and will impact the mission of the community:

(1) IT staff is the central contact point; most of the work has to be done by the IT staff, which takes a large amount of time given that there are only 2 IT staff members in the GPCFB. As a result, The IT staffs don't have an optimal amount of time to do the things with high priority or of more value.

(2) It is very slow to get the report or statistics data regarding IT assets utilizing their current methodologies. Usually, the finance and management team need to wait a long time to get feedback from IT staff when they just want to query one asset's status.

(3) The communication of IT assets information is not smooth, which decreases the efficiency of the entire community operation.

(4) It is difficult to track the status for each IT support cases, all the cases are just kept in the IT staff's minds.

(5) The good experience of the IT support can not be shared in an efficient way. No knowledge base system is used.

(6) It is very difficult to quantify the workload of the IT staff. However, it is very important for the IT director and management team to do the technology plan and budget.

(7) The communication of IT support is not smooth; the users' only way to get status updates is to contact IT staff.

Approach & Solution:

(1) The solution will be trying to setup an information system to assist IT management in GPCFB. This information system will replace the IT staff as the central contact point. It includes IT support tracker and assets management. Anyone requiring the IT assets information can login to this system to get what he/she needs. All the users in GPCFB can login to this system to track the status for the IT support case they submitted; they also can query the knowledge base to resolve the problem by themselves

(2) Work with CP to collect and identify the requirements for this information system. For example, what are the basic functions the system should have?

(3) Identify two or three open source software or commercial software which can be used in GPCFB.

(4) Research them and evaluate the possible solution with CP.

(5) Implement the suitable product according to the GPCFB needs.

(6) Help the CP test the system

(7) Write the document and help the CP configure the system and learn how to use it

Effects to the Community:

Staff: The current IT staffs can have more time to handle more important tasks and focus on the technical support to improve the operation efficiency of the community. they can use the tracking system to record their work. All the users can submit support request and track the status via the tracking system

Technical environment: A new information system will be installed on one current server; the system will need to be administered. Backup and recovery plan should include this system.

Technical management: The system should assist IT staffs to administer the IT facilities and assets; it will also help the finance department and management team get the IT assets information in a convenient way. The system should also assist the IT staff to track the current IT issues; it will also help users to submit and track the IT support cases
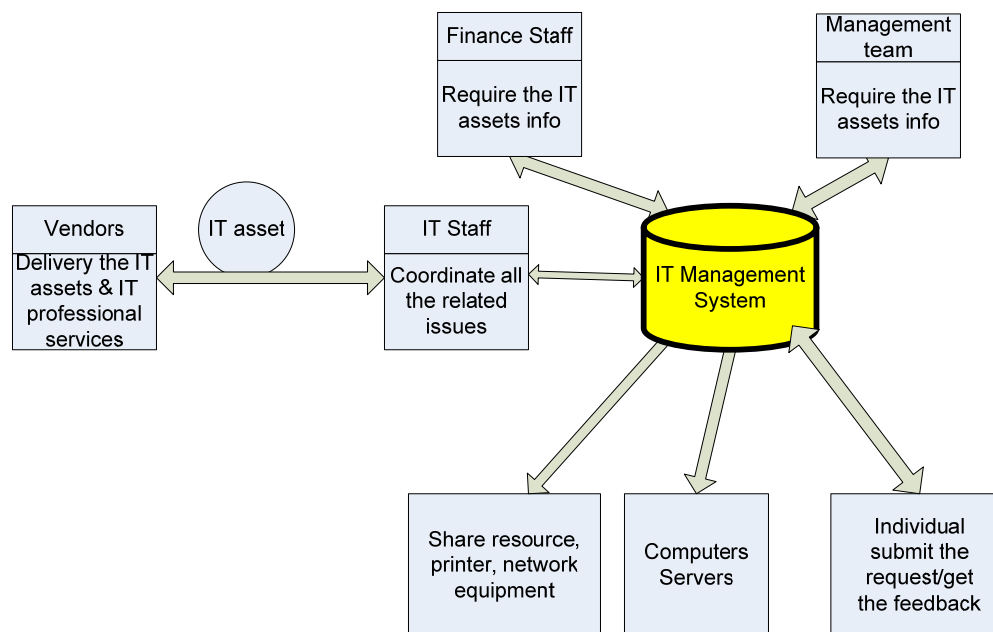
Technology Plan: The system will enable the IT director and management team to get the current IT assets information quickly and get a clear picture for the current IT assets status. It helps to smooth the technology planning process. The system will also enable the IT director and management team to get quantified data of the IT support cases in the GPCFB and get a clear picture for the work status of the IT staff. It provides useful data to them to do the technology planning and budget.

Internal and External Communication: The system will improve both the internal and external communication. The finance staffs and management team can query the IT assets status directly rather than let the IT staff provide it. They also can provide the related report to the donors or boards of directors in short time if necessary The GPCFB staff can submit and track their IT support request whenever they want by login to the tracking system. The IT director can also provide the report with detailed data to present to the management team

Information management: The GPCFB will use this information system to manage their IT facilities and assets. The GPCFB will use this information system to track IT support cases and manage the knowledge base in the GPCFB.

Feasibility of the Work:

(1) Two to Three months time is enough to implement a software system.

(2) The GPCFB IT staffs have the IT skill to use the system. Since there are several powerful servers and good IT infrastructure in GPCFB, current resource can support it.

Risks:

(1) The system can not fit all the requirements of the GPCFB, some customization must be performed.

(2) The system is not easy to use , then the user will need more training.

Task 2. Setup the new presentation system

Problem & Opportunity:

In the GPCFB, they use an old TV and DVD player as the presentation system which is located in the meeting room and seldom used. it is difficult to use if the presented material is not the DVD/CD media, such as the files stored in the PC/laptop.   Currently, there is a wireless LCD TV that has been donated to the GPCFB. It supports the wireless VGA and audio connection with the PC/Laptop. So a new presentation can to be setup in the GPCFB based on this equipment. This new presentation system can improve the internal and external communication. It can help to show the visitor and donators with much more attracting information of GPCFB and help GPCFB gain more support.   It will also be used to show the share information in the community. The current way to share information is by posters.

Below are some problems and concerns:

(1) The donator wants to know that his donating is useful and helpful for the community.

(2) The GPCFB need to present their mission, organization and achievement to all the visitors via a simple method.

(3) Important news or video information need to be shared via a simple method.

Approach & Solution:

(1) Try to propose and setup the presentation system by using the current wireless TV and desktop workstation. The presentation system can be used to welcome visitors, present the community video, share video information in the community. it also can be used share any information that can be displayed via the PC

(2) The CP will collect the requirements for this system. the key is where to put this system and how to use them

(3) Design the proposals with CP and query the opinion of management team for the proposals

(4) Get the final solution by adjusting it with feedback of management team.

(5) Implement the solution with CP

(6) Test and configure the system

(7) Write the document and help CP to learn how to use it

Effects to the Community:

Technical environment: A new presentation system will be installed. it will be used to present the mission, organization and achievement to the visitors. It will also be used to share the information in the community instead of the posters.

*Technical management***:** The system should be administered and maintained by the IT staff in GPCFB. it shall add the IT staff's workload. But it will save a lot of time for the system users who need to present information in the community.

Internal and External Communication: The presentation system will improve both the internal and external communication. Since the presentation system can directly connect PC, the presentation information can be updated quickly and easily.   The system user just need to upload their material to the PC, then all that can be display in the LCD TV.   In this way, all the visitors and internal users can be shared with the latest information easily.

Information management: The GPCFB will use this presentation system to demonstrate the video information for the visitors and staff of the GPCFB. The presentation system also can show any electric information stored in PC.

Feasibility of the Work:

(1) Two to Three months time is enough to implement the presentation system.

(2) The GPCFB IT staffs have the skill to use the system.   Some extra resource is needed to setup the presentation system, such as the workstation, DVD Player.

Risks:

(1) The system can not fit all the requirements of the GPCFB; the users seldom use it.

(2) The system is not easy to use; the user will need more training..

III. Outcomes and Recommendations

Task 1. Improve the IT management in GPCFB

Results/Outcomes

(1) The system requirements for the IT resource management system were compiled and documented to identify and determine the solution.

(2) The solution evaluation report was provided by considering the cost, functionality, usability, extensibility, and performance. The decision was based on this evaluation report.

(3) The IT resource management system was setup and the system was put into using.

(4) The IT assets were recorded in the IT resource management system step by step. The server, router and software information can be queried in the system. When the CP wants to get detailed information for IT equipment, such as serial number or configuration settings, he can login to the system and retrieve the information.

(5) The IT support cases were recorded in the IT resource management system. The CP uses this system to record all of the support activities. He can get statistical information from the system, such as the amount of hours spent on IT support each week, the number of cases the IT staff needs to handle, and the type of support provided most often.

(6) The knowledge base was setup in the IT resource management system. The FAQ can be queried by the users and IT staff. All of the support knowledge is indexed within the system. With the IT resource management system, the IT staff can search the knowledge base to check whether or not a problem was resolved previously and if so, can use the information in assisting them to solve the current problem.

Evidence of Expanded Capacity

(1) Improve the efficiency of IT support and of the community. By using the IT resource management system, the CP only needs several minutes to get the IT asset list versus several hours from the previous methodology. It also saved the working time for the CP each week to answer the questions by querying the information from the IT resource management system.   Since the users can also get information from the system, the CP also saves time in this regard.

(2) Improve communication amongst the IT staff and whole community; the system can help to share information such as issue status and FAQs.   It saves the working time each week for the CP since the users can fix the problems by themselves by querying the knowledge base system.

(3) The IT staff can collect and analyze the data to improve their work. They also can use this data to show their work to the management team. The technology plan and budget can be better prepared and supported.

Evidence of Sustainability

(1) The system is setup together with CP. The CP can also configure and use it. The IT staff can fix common issues by themselves.

(2) The configuration and backup work is performed by the CP before the system is used.

(3) The system is setup on the current Food Bank web server and uses the IIS, Mysql, PHP which have been installed on this server before.

(4) The CP can also get help from the open source community, a professional company, CMU students, and/or faculty.

New Vision of How Technology Support the Mission

Currently, CP just begins to use this system. The IT Resource management system is still need to be configured with more detail, some asset information still need to be imported. More support cases and knowledge need to be added into the system. IT Resource management system will improve the operation efficiency of GPCFB, it will also help GPCFB improve existing processes and knowledge management and gives the CP and community management teams the insight of how technology can improve operations and supports their mission.

Task 2. Setup the new presentation system

Results/Outcomes

(1) The new system is tested and setup, the test report is developed.

(2) The system diagram is compiled. The CP uses this diagram to implement and maintain system.

(3) The system is begun to use. It is used for the meeting, presentation and demo. It is also used to present the display of visitor's demo material as well as a projection.

(4) User can control the center file server in the lab from the conference room.

Evidence of Expanded Capacity

(1) This new presentation system improves the internal and external communication of GPCFB. Since the presentation system can directly connect to a PC, the presentation information is updated quickly and easily. The system user just needs to upload their material to the PC, which can then be displayed on the LCD TV. In this way, the visitors and internal users can share information more freely and accessibly.

(2) The presentation system is used for the meeting with visitors, present the community video, and share video information in the community. It is also used to share information that can be displayed from the PC.

(3) The new presentation system has high mobility; the LCD display can be easily moved to a temporary location for presentation because of its wireless connection.

(4) It will save a lot of time for the system users who need to present information in the community.

Evidence of Sustainability

(1) The system was setup by the CP. The CP can setup, configure and use it. The IT staff can fix the common issues, such as how to connect CVR ,Video and audio to this system.

(2) All of the testing, setup, and configuration work has been practiced by the CP before the system is put into use.

(3) The LCD TV also has a support warranty and the vendor should provide the service support.

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Recommendation 1. Create backup and recovery plan

The backup and recovery plan is a formal way to organize the backup and recovery activities for GPCFB. It will provide one clear roadmap for the IT director and management team on how to deal with the IT system in a disaster situation. It also provides a guide for the IT staff on how to backup and recover the IT system at GPCFB.

Currently, GPCFB performs a nightly backup and stores the backup tapes off-site with one of the IT staff.   But they don't have a formal backup and recovery plan. They also lack practice in recovering the system from backup media. If one IT system fails, most employees won't know how to handle it because few people have the knowledge and experience with system failure/disaster especially in the case of a huge disaster. In this situation, the recovery plan can play an important role by assisting the IT staff to recover the system step-by-step. The management team and IT director can also get a clear idea for the impact of this failure to the community from the recovery plan. Then, they can handle the situation more effectively.

Usually, in most cases, there is no investment required to develop backup and recovery plans. For GPCFB, the current backup hardware is enough to support the system backup. No more hardware is needed. Primarily, documenting and formalizing the current backup process and developing a proposal on how to recover from various system failure situations, will be sufficient.   However, the benefits are well worth the time spent in developing the aforementioned. For system recovery, recovery experience is very important; and the recovery plan can help the operator gain such experience.

Strategies to create backup and recovery plan

To create the backup and recover plan, some steps should be taken, as illustrated below:

(1)Clarify the current IT system and priority of each system, including users, applications, databases, hardware, and OSs.

(2) Analyze possible failure situations; include the OSs, DBs, network, applications, wrong user operation, power outage, or some other disaster situations

(3) Identify the backup items and backup processes

(4) Develop the recovery process for different failure cases. For example, if the data disk of the web server failed suddenly, the web site is unavailable for the users; each step should be listed for how to deal with this situation.

(5) Develop a document for backup and recovery. The guide and process for how to deal with the failure should be well documented. The operator can refer to this document to recover the system.

(6) Test the plan by recovering the system from the backup tape. For example, assuming one server is destroyed, and tries to recover the system on a new server following the recovery plan.

(7) Formalize the plan based on the test result.

Outcome

(1) The main outcome is the backup and recovery plan.   It should include the backup items list, system and application list, contact and resource information, backup processes for each server/system, any possible failure list, and recovery process and guide.

(2) The recovery media (CD, Tapes) for the server and PC also should be prepared

Resource

1. Internal resource

a. Get impact and priority information of each IT system from the management team and IT director.

b. The IT director and IT staff can provide the current backup process and how to recovery each system.

c. The current backup equipment and software, such as backup tapes, VERITAS backup software, the spare network, and system equipment.

2. External resource

a. The professional consultant/company who developed the application system. The company can provide the information on how to backup and recover their application. Such as the files need to be backup, the software media need to be kept, the relationship between each software package, How to install the system and import/recover the data.

b. The other food bank communities in the USA. Some other communities should have good documented plan which provide the good sample. Some have good example and experience for backup and recover which should be very helpful for providing thoughts to develope own plan.

c. VERITAS company or partners. They can provide backup and recover technology consultation, such as the backup/recovery software and hardware.

3. Budget

a. The current backup system should support the entire IT systems backup. The cost may include the cost of having extra tapes, but should not be more than $100.

b. To test the recovery plan, one or more spare servers maybe needed.

Recommendation 2. Create 3-year technology plan

The technology plan is a formal way to clarify how to use the technology and develop the IT system within the limited budget in the future.

Currently, the GPCFB has a detailed annual budget for the IT department, which includes the whole year budget for technology, but GPCFB doesn't have a formal technology plan, which provides a proposal for how to develop the IT system in the next several years and what kind of

technology should be used/evaluated in the next several years. If one technology plan is developed, the IT director and management team shall have a clear map for future IT systems at GPCFB. The benefit of future IT systems to GPCFB and the related budget can also be evaluated in more detail. The most important thing is that the GPCFB can figure out what is the most important technology for the community.   Then, they can try to gain funding or budget for the new project to setup this application.

Strategies

To develop the technology plan, the steps below are needed.

(1) Form a committee and establish responsibility and accountability for each member, the committee should include the IT staff, one from the management team, and one from the finance Dept.

(2) Collect information for the future development plan of the whole community such as, a development plan for the whole community, future planning, etc.

(3) Identify the requirements and expectations for IT technology from the community For example, the expectations from the users, what do they hope to improve, the IT services or systems needed in the future.

(4) Evaluate the current resources (hardware, software, human resources). Check to see whether the current resources can support the requirements of the new project.

(5) Propose the technology plan

(6) Discuss with the management team the technology plan and budget. Discuss the feasibility of the plan.

(7) Revise the technology plan according to the feedback.

(8) Get the approval from the management team and formalize the plan

Outcome

The main outcome is the technology plan.   It should include future applications, the technology architecture, and how they achieved the mission of GPCFB previously. For example, the current applications are based on the Windows platform, MSSql, MS Access Database, and IIS webserver. The technology plan can define whether to use the LAMP(linux, apache,mysql,php) architectural application or continue using the current Windows technology architecture.   The technology plan also needs to define whether to develop some other application in the next several years to assist in the operation of GPCFB.

For planning for the technology plan, below aspects should be consider:

- Objectives
- Costs
- Problem resolution time
- Project plans

- Task assignments

- Security events

- Gantt charts

Resource

    1. Internal/External resource

    a. IT director should discuss with the management team the future plan of GPCFB, so that IT staff can know what is required and what the expectations are from GPCFB regarding IT.

    b. Budget plan for the past several years. It can provide information on how much money spent for each current system. then estimate the money needed for the future system in the plan.

    c. http://www.nctp.com/   it is a good website to get the guide to how to write technology plan, such as the steps, the contents, the sample and some other communities' experience.

    d. Get help or information from the company who helped setup the current application system in GPCFB. The company can provide detailed information of current application system, weaknesses of the current system, how to improve the current system in future, the cost and time needed, etc.

    2**. Budget**

    There is almost no extra budget needed for creating the technology plan. The budget is only need when implementing the plan.

About the Consultant

Jianlin Wu is a master student in MISM Program at Carnegie Mellon University. Before this program, He had more than five years working experience in IT management area. He will be taking part in Angel.com for internship over the summer and return in the fall to finish MISM program in Carnegie Mellon University.

Appendix A.

IT Resource Management System -------IT Support Cases Tracking

IT Resource Management System -------IT Knowledge Base Management

Appendix B.   System Requirements Report

System Requirements Report

For the IT resource management system, below requirements is collected.   They will be use to identify and determine the possible solution.

1. Report and track the following:

- Hardware
    - Description
    - Installed Location
    - Serial Numbers

- Software
    - Version Number
    - Title
    - Operating System
    - Applications
    - License or Serial Number

- Time Spent on IT Issues Per Department

- Time Spent on Repair/Maintain Per Hardware Asset

- Time Spent on IT Issues Per User

- Track Usernames and Passwords (Login Assets)

2. Allow for Multiple Technicians
    The system should support multiple technicians work together.

3. Allow for Concurrent Work (Multiple Users Utilizing Asset Management Software Simultaneously)

4. FAQ Section/Knowledge Base
    The system should provide the support for Knowledge base function. The technician can create the knowledge base. The user can add and search the knowledge base.

Appendix C.   System Evaluation Report

System Evaluation Report

Based on the system requirements reports, we proposed three solutions:
 Solution 1:
    Purchase Eden Service Management Suite, which is commercial software product of Eden
Software Company. The suite consists of Incident Management (Help Desk), Problem and Asset
Management. The software also has integrated Resource and Knowledge Management. The Help Desk
as a stand-alone would ship with the Incident Resource, and Knowledge Management components in
addition to applicable Administrative Rights.
 Solution 2:
        Setup open source software IRM based on LAMP(linux + Apache + MySql +PHP) architecture.
IRM is a Web-based asset tracking and trouble ticketing system built for IT departments and
helpdesks. It keeps detailed information, both hardware and software, about each computer and
network device in your organization, as well as a complete history.
 Solution 3:
        Setup open source software IRM based on windows platform (Windows2003 + IIS + MySql
+PHP). The current Windows2003,IIS and MySql and PHP are ready.

We evaluated the three solutions with below aspects:
1. Cost

Item	Solution1(Eden)	Solution 2(IRM on LAMP)	Solution3(IRM on Windows)
Hardware	$0 or $3,000	$0 (old machine)	$0 or $3,000
OS	$0 or $700	$0 - $200	$0 or $700
Database	$4,000(SQL Server per proc license)	$0 (mysql is free)	$0 (mysql is free)
Application	$2,590(Eden ,2Technicians)	$0 (IRM is free)	$0 (IRM is free)
Maintenance	$500 (20% purchase price)	$0	$0
Total	$7090 - $10090	$0 - $200	$0 - $3700

    Since the food bank already have the windows2003 server   available and can be used for the IRM
installation,   for the solution2 and solution , there are no extra costs.
2. Installation time:
   For solution 2 IRM installation on LAMP, since there is no cost need to be approval and it has been
tested on LAMP architecture, usually it takes 1 – 2 weeks.
   For solution 3, since more test and configuration is needed on the Windows and IIS, it shall take 4 –
7 weeks
   For solution 1, considering the contract negotiation, approval and   purchasing delays, it shall take 4
– 6 weeks.

3. Functionality
    Solution 1 provide the more functions than solution 2 and 3, but solution 2 and 3 also provide the

IT asset management, ticket tracking and knowledge base management functions, which are fit for the Food bank's requirements.

4. Availability
Solution 1, the software is stabled and has a good availability.
Solution 2, both the IRM and Linux have high availability.
Solution 3, less stable than solution 1 and 2, but it is still acceptable.

5. Usability
Both three solutions can be used easily. All of them are web applications, they are easy to operate. But solution 1 is more user-friendly with better user interface.

For system administration, the OS of solution 1 and solution 3 is Windows2003. it is easy to manage. The solution2 is a little difficult for Food Bank IT staff since they don't have experience with Linux.

6. Extensibility
Solution 1 is commercial software, any new functions and enhancement is only done by the vendor and will be charged. Solution 2 and 3, all the source codes are opened, users can add or change them if necessary, the open source community also accepts the request to add new function without charging.

IRM for Solution 2 and 3 is developed by PHP, whereas the Eden software is developed by Java. For food bank, it should be much easy to handle PHP than Java.

7. Maintenance and Sustainability
For solution 1, most things should be depended on the vendors
For solution 2, it is a little difficult for food bank to resolve the issues on Linux
For solution 3, it has the best sustainability for food bank since it is built on the current food bank server environment.

8. Risk and Security
For solution 1, the risk should be the return of invest, since it need take much money.
For solution 2, the new LAMP architecture brings some new challenges. It will increase the risk of maintenance and sustainability of current IT environment.
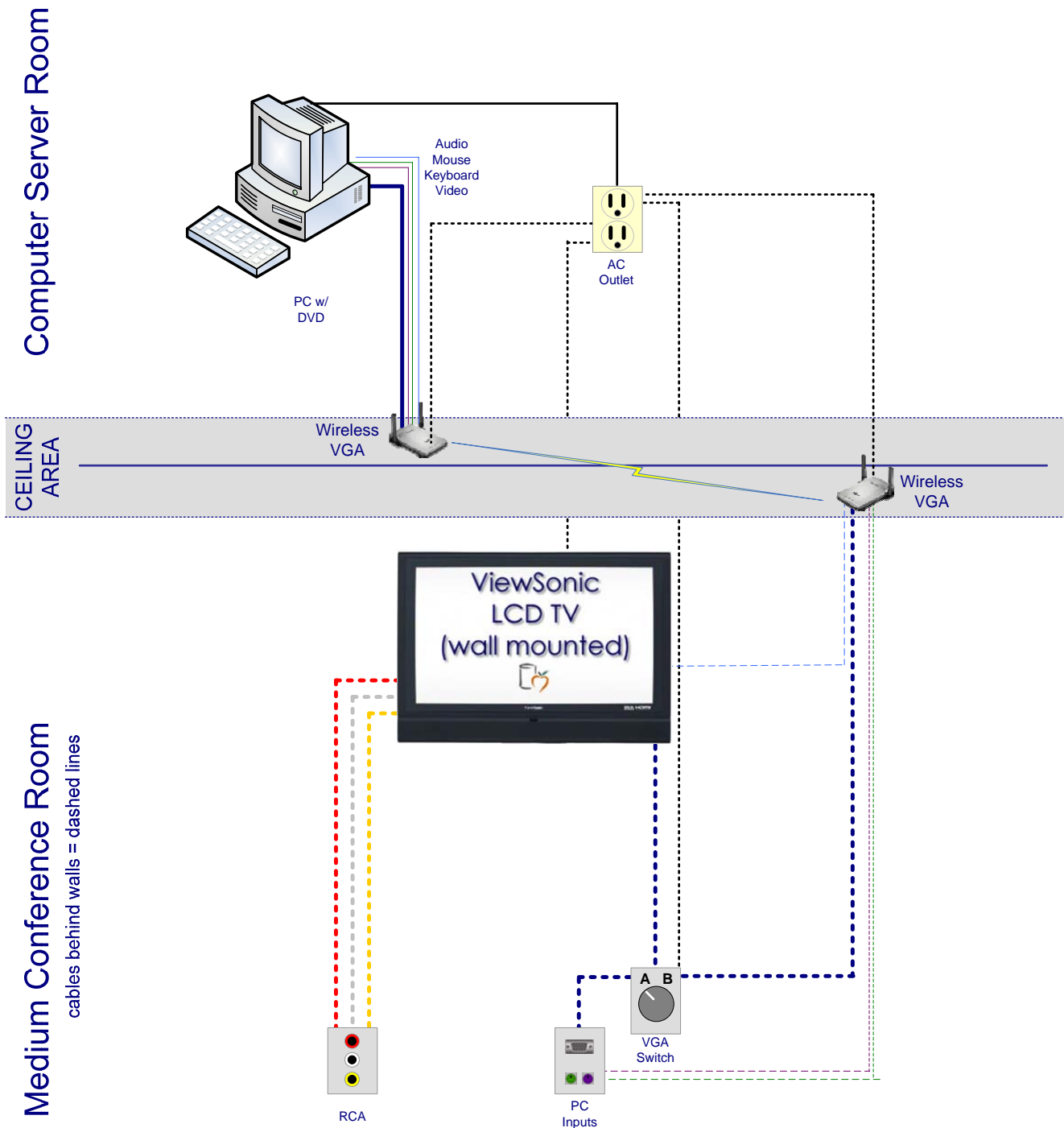Solution 3 take the less risk since there are almost no change happened.
Both Eden and IRM provide the password protection for the application access.

Summary and Recommendation

Based on the above analysis, considering the limited budget of Food bank, solution 3 is the best choice for Food bank in current situation. It provides the necessary functionality, low cost, high sustainability and low risk.

Appendix D.   New presentation system proposal

Computer Server Room

Audio
Mouse
Keyboard
Video

PC w/
DVD

AC
Outlet

CEILING
AREA

Wireless
VGA

Wireless
VGA

ViewSonic
LCD TV
(wall mounted)

Medium Conference Room
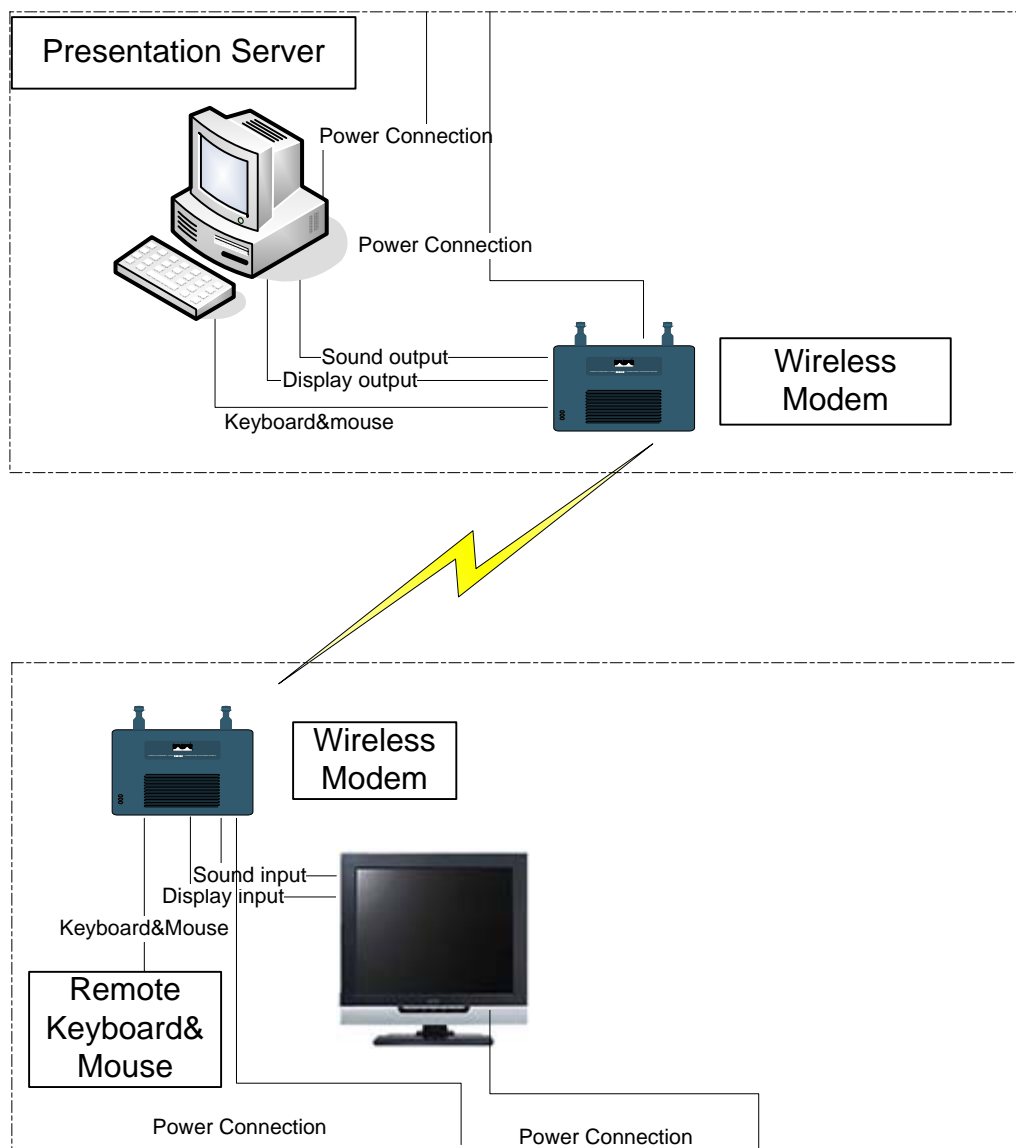cables behind walls = dashed lines

RCA

A B

VGA
Switch

PC
Inputs

Appendix E. Presentation System Test Report
Presentation System Test Report

At March 23 and March 30, we did the basic function test for the presentation system. At first, we setup the presentation system as below:

Wireless LCD Presentation system

Presentation Server

Power Connection

Power Connection

Sound output

Display output

Keyboard&mouse

Wireless Modem

Wireless Modem

Sound input

Display input

Keyboard&Mouse

Remote Keyboard& Mouse

Power Connection

Power Connection

1. video transmission   test
Objective: to verify the video signal can be transmitted within the system.
   When we switch the video output to the wireless modem, the video information can be cleared presented in the LCD.   The video transmission is OK

2. audio transmission   test
   Objective: to verify the audio signal can be transmitted within the system
   In the first test, we missed one sound cable to input the audio signal to LCD. So we failed to test the audio transmission. In the second test, the audio is successful transmitted. When we played music on the server, the music can be listened clearly in the LCD side.

3. keyboard/mouse remote control   test
   Objective: to verify the remote keyboard/mouse (LCD side) can control the server.
   In the first test, we used the laptop as the server, so the remote control was not successful since there is no output for the keyboard in the laptop. We begin to use the desktop as the test server in the second test; the remote keyboard/mouse can control the server successfully.

4. transmission distance/response test (medium conference room, large conference room, lobby)
   Objective: to verify the signal can be transmitted to different locations
   We tested three locations, medium conference room, large conference room and lobby. When we put the server in medium conference room and lobby, the wireless signal is still very good. But when we put the server in large conference room, the signal became unstable.

Summary:
   The current wireless LCD system works well with video and audio information presentation. The presentation server also can be controlled via the keyboard and mouse which are put in the LCD side.
   The medium conference room and lobby are good places to locate the LCD TV. The signal transmission between large conference room and lab is not stable.