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Development of an Electronic Data Collection and Analysis System for the Mexican Fine Arts Center Museum

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REGIS UNIVERSITY
SCHOOL FOR PROFESSIONAL STUDIES

MASTER OF SCIENCE
IN
COMPUTER INFORMATION TECHNOLOGY –
MANAGEMENT OF TECHNOLOGY

Development of an Electronic Data Collection and Analysis System
for the Mexican Fine Arts Center Museum

PROFESSIONAL PROJECT

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In Association With:
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September 8, 2005

Abstract

The Mexican Fine Arts Center Museum (MFACM) in Chicago, Illinois has a large list of patrons. However, it currently utilizes an outdated database and paper-based system to track these individuals for marketing and membership purposes. A grant has been received from the Lila Wallace Foundation to streamline the data collection and analysis processes. The current goals are to increase the productivity of collecting data throughout MFACM departments and locations, to more fully analyze available data for marketing opportunities, and to create a replicable and sustainable data collection and reporting system. Further, the solution will help to build upon current IT system architecture and is designed to enhance, rather than replace, current business processes.

In an effort to improve communication between visitors and MFACM this project aims to install a contact management database onto the network, convert all past audience information to a new data format, add an electronic kiosk in the museum, and introduce electronic forms onto the museum's website. These data collection methods will be connected to an electronic database via a CDML connection. Patrons will then be able to log on to the website or visit the kiosk to update contact information and request additional details regarding exhibits. The collection of these types of information is vital to the museum, and is the primary component of the grant.

With the advent of the information age it is important for organizations to use technology to their advantage. Tight budgets and the need for low administrative expenses cause non-profit organizations to use the most effective and efficient means possible. With the addition of the new data collection system, MFACM will be better equipped to obtain and store large amounts of personal data. This will help the museum market programs and special displays. In turn, this will ultimately lead to more annual visitors, higher admissions revenue, and higher annual donations. The increased revenue will be enough to cover future support of the new data systems and allow for other upgrades (e.g. new exhibits, additional parking) to be determined by the museum staff.

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1.0 Introduction

1.1 Problem Statement

Effective and efficient data collection and analysis is an extremely valuable business tool even for non-profit agencies. Non-profits often face the same financial demands and constraints as regular companies. In order for the Mexican Fine Arts Center Museum (MFACM) to remain financially stable, the managers were forced to implement more efficient data resources to facilitate better marketing and donation opportunities. MFACM is the nation's largest Latino arts institution and is the only Latino museum accredited by the American Association of Museums. The Museum is located in Chicago, IL which has a number of other prominent museums. It competes with these other non-profit organizations for donations which, along with grants, comprise the operating budget. Many other organizations already utilized electronic data collection kiosks and online data forms. An upgrade to their current system was required to remain competitive.

MFACM managed with the outdated software and organizational standards as long as possible. As the Museum's membership grew, the old system could not keep up. Grants are larger and require more application information than before. Furthermore, visitors, members and donors simply expect today's non-profit agencies to be technologically equipped.

1.2 Review of Existing Situation

MFACM utilized an outdated customized database (FileMaker 5) and a paper-based system to track individuals and corporations for marketing and membership purposes. The database was cumbersome and no longer fulfilled the needs of MFACM and the paper-based system lacked the benefits of an electronic system. Files were manually searched to determine where to send marketing materials. MFACM also used a Microsoft Excel spreadsheet to track grants and a Microsoft Word document for membership records. Both of these were inefficient ways of storing that type of information. The large amount of data stored in the Word and Excel files was susceptible to accidental deletion or incorrect editing. It was also very inefficient for workers to search for a specific grant or member when the data did not conform to any formatting standard.

1.3 Goals of the Project

The ultimate goal of the project was to utilize the grant from the Lila Wallace Foundation to upgrade and streamline data collection and processing. The following tasks were specifically outlined to obtain the goal: the installation of a contact management database onto the network, the conversion of all past audience information to a new data format, the addition of an electronic kiosk in the museum and introduction of electronic forms onto the museum's website. The data collection methods were to be connected to an electronic database via a CDML connection. Patrons were also to be able to log on to the website or

visit the kiosk to update contact information and request additional details regarding exhibits.

1.4 Barriers and/or Issues

Several barriers and issues were identified in regard to this project. As with many IT projects the users' comfort level with the new system was an issue. The museum employees had little technical knowledge. As a group, they were unsure how steep the learning curve would be once the project was completed and how their work duties would be affected. Because of this, the users were a bit more apprehensive to buy in to the project. After being reassured of the benefits of the project and that there would be adequate training, the employees welcomed the project.

Another point of contention was the constraint regarding the software that was to be chosen for the upgrade. The museum executives wanted to stay within the FileMaker family because the employees were familiar with FileMaker products. This limited the choice of software to two products, FileMaker Donation or ebase. Eventually, ebase was chosen which led to another issue, data conversion. The formatting of the data in the old FileMaker5 database was not standardized. There were phone numbers with no area codes; some had dashes while others used periods. There was only one name field. Therefore, the first and last name was all one field with some fields containing multiple names for family members, etc. All of the data had to be exported to a Microsoft Excel spreadsheet,

correctly formatted and imported back into a FileMaker5.5 database for use with ebase.

Lack of documentation was the last major hurdle. There were no written documents on file regarding the old database. The FileMaker5 database had to be thoroughly investigated in order to obtain the necessary information and properties needed to continue with the project. MFACM does not have an in-house IT position and the employees are not technically trained. Therefore, surveys and interviews about the old database would not be beneficial.

1.5 Scope of the Project

This project was designed to be completed within a fairly short amount of time, approximately six months. Within that time frame, the project aimed to install a contact management database onto the network, convert all past audience information to a new data format, add an electronic kiosk in the museum, and introduce electronic forms onto the Museum's website. As with most projects, however, the scope was not absolute. There were several suggestions made by the executives regarding additional tasks and functions they would like to see completed in the project. The most prominent of which was the addition of departmental databases within the Museum. It was agreed that this could be explored upon the completion of the original project due to current budget constraints.

2.0 Chapter Two: Review of Literature & Research

2.1 Review of Existing Solutions Available

Through interviews held with Museum executives, it was initially determined that there were three main database upgrade options. A custom solution tailored exactly to the needs of the Museum was the first option. The second was to edit the current FileMaker database by correctly formatting the data and adding desired functions. Purchasing a pre-packaged solution was the final option. Upon consultation, the executives decided the best option would involve a solution that stuck with the FileMaker program on the Mac's already installed at the Museum. The custom upgrade option would have resulted in large capital expenditures to upgrade the computers and required too much internal support that the Museum could not provide. Editing the current database would have also required an exorbitant amount of support. These costs were prohibitive since the budget was limited to the amount of the grant. Therefore, the only realistic option was to buy a prepackaged solution because it would provide external support and would be upgradeable.

Since MFACM had expressed its desire to remain with a FileMaker product, two options were available; FileMaker Donation and ebase. Upon investigation it was determined that FileMaker Donation did not work well with membership or interests tracking, two major functions required by MFACM employees. By process of elimination, ebase was chosen as the new database program for the Museum.

2.2 Known and Unknown

At the point in time when the project began, there were several important factors that remained unknown. It was undetermined which members of the Museum staff would be assisting with the project and in what capacity they would be serving. Most of the employees were limited in their technical knowledge; therefore their roles were difficult to define. Eventually it was decided that the department managers would assist in determining the requirements of the project and Museum executives would sign off on project testing and milestones. This allowed the requirements and approval to be determined by the Museum and all of the technical work to be done by professionals. With the available personnel, this was the best combination of responsibilities that could be created.

Another major uncertainty was the specific details surrounding the implementation of the new system. Because of this, a general timeline had been created, but the detailed timeline was still unknown. A budget was not in place at the beginning of the project. It was determined that the budget could not exceed the amount of the grant from the Lila Wallace Foundation, but an itemized budget could not be created until more information was determined. Once explicit deliverables, available hardware and exact features of the database were outlined, then the budget and timeline could be resolved.

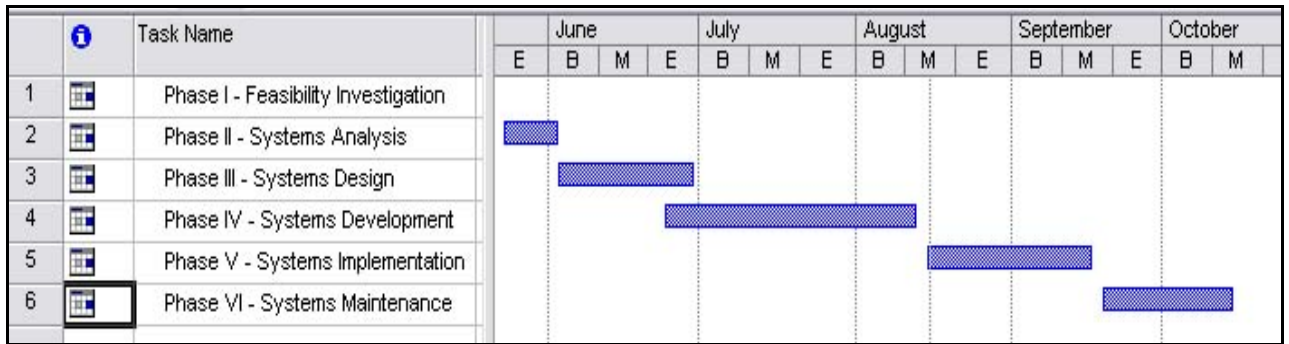


Fig. 1 – General Timeline

Major components of the project were known from the beginning and were enough to get the project underway. The length and terms of the contract were what defined the project. Without a consulting contract the project could not have continued. Also, the constraints of the project were realized and established the technology (ebase and CDML) that would drive the project. Overall, the ultimate objective was to create a more efficient system for MFACM so that they may better serve customers, members and market their programs. All planning and decisions were created with this in mind.

2.3 Contribution the Project Will Make to the Museum

The development of the electronic data collection and analysis system adds an invaluable component to the Museum. Collectively, the new system:

- Upgraded the database that tracks, records and processes membership and donations
- Upgraded database features
- Added a reporting mechanism

- Allows for better tracking of members and donors
- Allows for more efficient solicitation
- Enables MFACM to more effectively attract new donors and members

All of these features were desperately needed at the Museum because of rising costs and increased competition for donations. With the new system in place, MFACM will be better equipped to compete for donations and increase the number of annual visitors and membership.

2.4 Discussion of Other Available Tools

Microsoft Excel was another tool that was utilized for this project. Data from the FileMaker 5 database had to be converted because the database was poorly designed. There were sometimes 2-3 names in the “name” field. It was not separated into “first name” and “last name”. Also, family members were included in the “name” field. Other fields, such as the “donation” field, needed editing as well. Data in the “donation” field was not standardized. It sometimes included a dollar sign or decimal point. Therefore, data was exported out of the FileMaker 5 database into a Microsoft Excel comma separated file, correctly formatted and imported into the new FileMaker 6 file.

2.5 Discussion of Tool Choice

Due to the constraints placed on the project by MFACM, the tool choice was extremely limited. The Museum wanted to remain with a FileMaker product while

increasing their productivity and functionality. Conversion from the poorly designed FileMaker 5 database was most efficiently facilitated by the use of Microsoft Excel, but importing the data the way it was would have only introduced problems into the new FileMaker 6 database. Microsoft Excel provided a fine intermediary solution for the standardization of the data.

2.6 Summary

The research conducted provided great insight into what was necessary for the project to be successful. MFACM executives listed constraints in regards to remaining with FileMaker for their database solution. Once this was determined the project became much more specialized. Attention was placed on finding and implementing a solution that fulfilled the criteria outlined by the Museum. With this approach, the executives were sure to receive a finished product that best fit the requirements of MFACM.

Despite the fact that several factors remained unknown at the outset of the project, essential information that was known allowed the project to commence. The unknown factors became known in time to be useful in the project and did not prohibit further advancement. This was a critical fact since the project's contributions to the Museum and the tool choice rested greatly on the unknowns. Museum executives did outline their largest requirement (using a FileMaker product) at the beginning of the project; however, had the unknowns not become

realized, the project would have been severely delayed and tool choice may have varied.

3.0 Chapter Three: Project Methodology

3.1 Research Methods Used

The information used for this project was obtained through the following methods:

1. Departmental Surveys
2. Discussions with Staff Regarding Survey Results
3. Departmental Meetings
4. On-Site Observations
5. Discussions with On-Site Tech Consultant

Departmental Surveys

The questions listed below were distributed to all MFACM departments via e-mail. Results were then provided by MFACM staff both electronically and via paper. The results were analyzed in detail.

Initial Survey Questions – sent to departments via survey

- What data does your department collect (e.g. mailing list, account records, attendance figures)? (Please think of any type of information collected to store and list it here.)
- Where/how do you store your data? Please list the different ways data is stored. (Examples include: FileMaker databases, Excel spreadsheets, Word tables, and paper files.)

- How many records are there for each type of data collected? A rough estimate is fine.
- What additional types of data may be needed in the future? (e.g. Within the next few years, will the department need to store more data related to another function, such as an event or grant?)
- Why are these pieces of data needed? In general, what is the data used for? (e.g. The mailing list is used to send e-newsletters; The database is needed to track attendance figures.)
- Is it necessary to use data “held” by another department? (e.g. This department uses the mailing list information in the Development database.) If so, please list both the type of data and the department.

Discussions with Staff Regarding Survey Results

Upon receipt of survey results, a further set of questions was posed to MFACM staff to fill any gaps in knowledge. Department managers participated in this refining process. Their responses provided clarification on issues such as FileMaker license numbers, Marketing's media database, Graphic Art's lack of a database, and the Gift Shop's data collection process.

Departmental Meetings

Meetings were scheduled with the following departments:

- Yollocalli
- Permanent Collection
- Visual Arts
- Development
- Radio Arte
- Marketing
- Education
- Gift Shop
- Graphic Arts

The questions below provide an example of those asked during the meetings:

General Meeting Questions

- What are the primary functions of the department?
- Is there anything that the department would like to do but cannot due to lack of resources?
- What problems are currently experienced (e.g. workflow, technology) that need to be fixed?

- What needs to be improved about the way that data is collected and stored? (What new features would be beneficial?)
- What is the comfort level, both individual and departmental, with technology? With FileMaker?
- How many individuals within the department enter or access data? (Are more/less licenses needed?)

The focus of each meeting was determined by the department's need, presented in the initial survey. These were the primary topics examined:

- Databases – number, type, and quality of database
- Licensing requirements – current, minimum, and idea level of licensing
- Needs – the current needs of the department in terms of technology and information gathering
- Wants – the current wants/desires of the department in terms of technology and information gathering
- Inter-department linkages – what information is shared between departments

On-Site Observations

Hands-on examinations of MFACM's wiring closet, the general mailing list database, and the Gift Shop's registers and workstation provided quality

information concerning technical specifications and set up that could not be obtained through an interview process.

Discussions with On-Site Tech Consultant

Individual meetings, phone conferences, and e-mail discussions with MFACM's on-site tech consultant provided insight into specific database details and network design and set up. Throughout the departmental meetings process, the consultant focused on the physical set up of databases and any problems associated with their use.

3.2 System Development Life Cycle Model Followed

The following Systems Development Life Cycle (SDLC) model was used for this project.

Phase I – Feasibility Investigation

Phase II – Systems Analysis

Phase III – Systems Design

*Milestone – Museum Management Approval

Phase IV – Systems Development

*Milestone – Museum Management Approval

Phase V – Systems Implementation

Phase VI – Systems Maintenance

3.2.1 - Feasibility Investigation

This is the initial phase of the SDLC. Information collected during this phase set the tone for the entire project. An in-depth analysis was performed of the Museum's current system, cost-effective upgrades and requirements needed to significantly improve the system and available funds for use on the project.

During this phase it was determined by MFACM executives and the consultants that the project did, in fact, meet feasibility requirements.

Review of Current System

MFACM had a simple, customized FileMaker5 database in use. It consisted of six tables with template forms. The design utilized a menu system and was extremely poor. Only two of the six tables were being used and portions were unfinished. In addition, the database was being run on an Apple iMac running OS 9.1 that was acting as a server but was running a client version of FileMaker and, therefore, did not have many server capabilities. The database was shared out to clients via Ethernet and allowed only five to six users at one time.



Fig. 2 – Screenshot of Main Information Page in Old FileMaker 5 Database

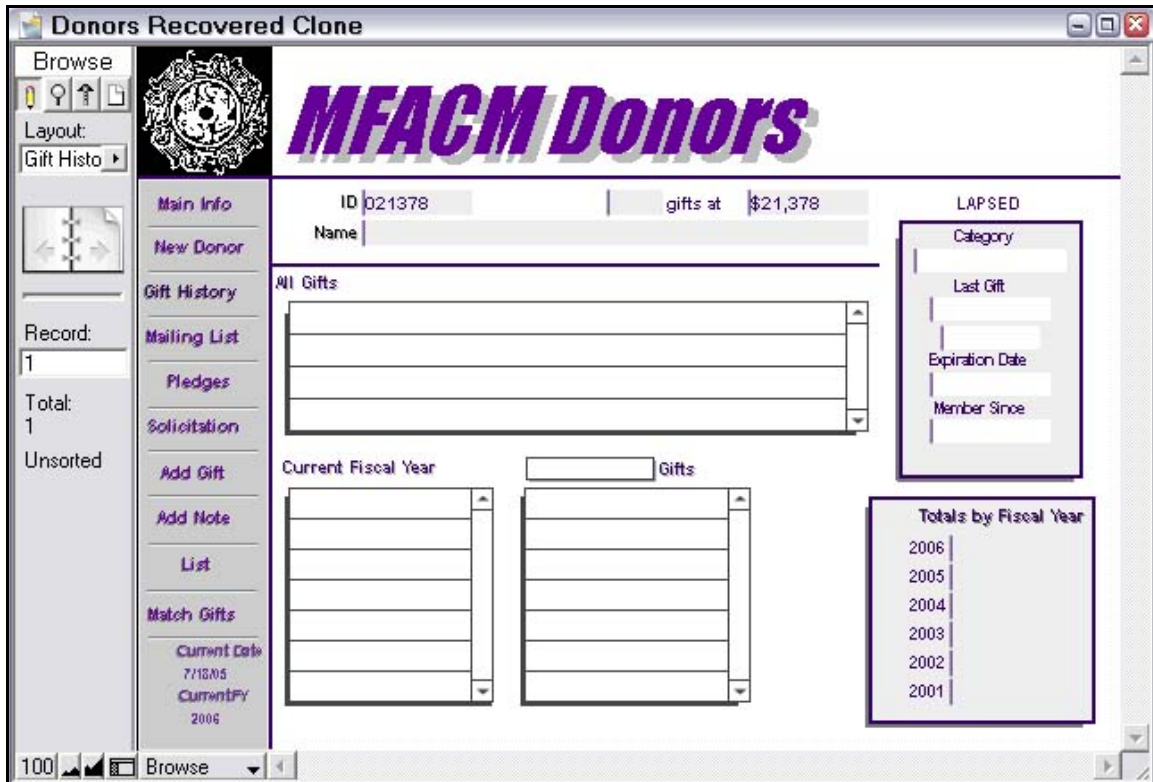


Fig. 3 – Screenshot of Gift Information Page in Old FileMaker 5 Database

Problem Analysis

The situation outlined above was problematic for many reasons. Only a few users could access the database at a time with only one of those being able to edit information. This is very inefficient and was no longer acceptable for the Museum. Often, even if a user was able to access the database, the correct information could not be found because of the poor design of the database. Unused tables located in the database were unnecessary and only caused confusion.

Interviews and Information Collection

Interviews were conducted with department managers to determine specific needs for each department, as well as general needs for the entire Museum. These interviews proved to be extremely beneficial for a number of reasons. First, a relationship was created with the department managers. Often in IT consulting situations the human factor is overlooked. The interviews provided an opportunity to get to know the future users of the product. Second, a vast amount of helpful information was derived from the interviews. Most of the information was previously unknown. Lastly, the interviews provided an invaluable resource in determining the specific requirements of the Museum. The interview summaries can be seen in Appendix A.

Requirements Analysis

Business Requirements

MFACM sought the installation of a first-class database to help facilitate retention and expansion of audiences and membership. Actions and outcomes of the project meet the requirements of the grant from the Lila Wallace Foundation. The final product will better assist the Museum in solicitation of shows, educational activities and artwork while increasing donations and membership.

Software and Technical Requirements

Currently, the Museum's configuration of computers is roughly 90% Macintosh with a mix of OS9 and OS10 running FileMaker 5.5 and FileMaker 6. The server is FileMaker 5.5 connected to ebase 2.11. It was a necessity to find a FileMaker solution that would operate on the current system. The FileMaker upgrade and ebase combination fulfilled the requirements outlined by Museum executives. They wanted to keep the familiarity of FileMaker while adding the functionality of ebase. The project complied with all requirements.

Pre-implementation Requirements

Prior to implementation of the project, the following items were required to pass inspection by Museum executives.

- ebase functionality
- Data conversion
- ebase import format
- Import into ebase
- Appearance of data

Despite the fact that the data conversion was more laborious than expected, eventually it was completed successfully. The remaining requirements were a bit easier to fulfill, which ultimately lead to management approval and successful implementation.

Training Requirements

MFACM required in-depth training to be part of the project so that Museum staff would be able to operate and fully utilize the new system. It was decided that a user manual would be created and that staff members would attend classes illustrating correct use and functionality of the system. Screenshots were to be used in both the manual and classes to help familiarize users with the interface employed in the database.

3.2.2- Systems Analysis

During this, the second phase of the SDLC, the proposal was created for MFACM and project goals were defined in terms of tasks and plans. Once the feasibility investigation returned a positive result, it was only a short time until the proposal was presented to the Museum. Upon analyzing the proposal, Museum executives decided to move forward with the project. They realized the cost was severely outweighed by the benefit and that the funds from the Lila Wallace Foundation grant were to be used for this type of project.

Proposal Development

Creation of the proposal was relatively simple once the present situation and needs of the Museum were outlined. The fact that MFACM wanted to remain with a FileMaker product greatly limited options and made the proposal less time consuming to produce. Museum administrators were consulted throughout the

drafting of the proposal to ensure that specific needs were being outlined. This helped to ensure a timely acceptance of the proposal and allowed more time for the project itself.

Development of Tasks and Plans

In the development of the specific tasks and plans, ultimate project goals were used from the beginning to guide the project. It was a process that began with the end in mind and created tasks to complete the necessary steps to obtain project goals. From that point, the timeline below was created to keep the project on the necessary pace to finish on time.

Month 1

1. Meet with museum tech support to determine upgrade/replacement options
2. Meet with department heads to locate current data and identify future data
3. Work with museum tech support to begin preliminary analysis of current database(s)
4. Order computers, parts, and software for front desk system (if necessary)
5. Work with museum tech support to begin preliminary analysis of upgrade/replacement options
6. Work with museum tech support to begin detailed analysis of current database(s)
 - a. Determine record size

- b. Determine table linkages
- c. Determine frequency of duplication
- d. Create table map & DFD

7. Submit Research Summary Report 1

Month 2

1. Plan initial database setup for front desk system
2. Work with museum tech support to begin detailed analysis of upgrade/replacement options (using results of current database analysis)
3. Obtain organizational decision for upgrade/replacement option and purchase solution(s)
4. Begin testing of upgrade/replacement option(s)
5. Determine preliminary project schedule
6. Finalize detailed analysis of current database(s)
7. Work with museum tech support to begin developing plan for data conversion
 - a. Data cleanup
 - b. Data export
 - c. Data repositioning/mapping
 - d. Data import
8. Plan/design initial interface for front desk system
9. Plan/design reporting mechanism for front desk system
10. Obtain final organization approval for upgrade/replacement option and

installation path

11. Begin installation of upgrade/replacement option and initial testing

12. Begin initial data conversion testing

Month 3

1. Begin initial installation of front desk system

2. Begin consultant testing for front desk system

3. Draft training module for front desk system

4. Begin reporting procedures for front desk system

5. Develop reporting mechanism for upgrade/replacement database

6. Begin initial consultant and museum tech support testing of real-time
upgrade/replacement use

7. Draft training module for upgrade/replacement database

8. Develop backup/disaster recovery plan

9. Set up reporting mechanism for front desk system

10. Begin training process for front desk system

11. Begin user testing of front desk system

12. Begin data conversion

13. Begin final consultant and museum tech support testing of real-time
upgrade/replacement use

14. Begin testing of backup/disaster recovery plan

15. Begin user testing of real-time upgrade/replacement use

16. Obtain feedback from users about database

17. Research Summary Report 2

Month 4

1. Begin consultant testing of reporting mechanism for front desk system
2. Conduct usability analysis of front desk system
3. Update front desk system based upon test results (if necessary)
4. Report on front desk system data and evaluation of project status
5. Finalize data conversion
6. Update upgrade/replacement database (if necessary)
7. Begin initial training and dual system use
8. Begin monitoring data entry and work flow
9. Implement front desk system (connection to live database)
10. Train users on reporting mechanism for front desk system
11. Continuous monitoring of front desk system
12. Begin final training (database use and reporting)
13. Continue dual system use
14. Develop data source within database for mailing list data form
15. Investigate data import options for mailing list data form
16. Continuous monitoring of upgrade/replacement database

Month 5

1. Discontinue use of old system; sole use of upgrade/replacement database

2. Work with web team to develop mailing list data form for collection of data from website
3. Begin testing of mailing list data form for website
4. Draft training module for mailing list data form
5. Research Summary Report 3
6. Implement mailing list data form for website
7. Begin training for mailing list data form data conversion/import
8. Conduct in-depth analysis of upgrade/replacement database functionality
9. Continuous monitoring of mailing list data form

Month 6

1. Report on front desk system data
2. Handover of front desk system project
3. Report on upgrade/replacement database project
4. Annual consultant report on activities and Research Summary Report 4
5. Handover of upgrade/replacement database project
6. Add electronic kiosk to museum sign in process
7. Expand upon online component to data collection
8. Begin exhibit kiosk data collection project
9. Utilize electronic and phone surveys to collect data
10. Add mobile sign-in center project for single location
11. Create more detailed departmental reporting mechanism

3.2.3 - Systems Design

The third phase of the SDLC outlines creation of the project, support and training plans. Specifically, the features, screen layouts, process diagrams and other documentation are created during this phase. The information from the systems analysis phase is instrumental to the successful creation of the systems design phase. Once the specific tasks and plans were outlined, it was easier to determine the support and training plans.

Create the Project Plan

The new database was designed to be more user-friendly, having a better graphical user interface (GUI). It was also intended to better handle the needs of the Museum, namely membership and donations tracking. The screenshot seen below is an example of the new interface and composition of the database. It has proven to be better organized and more effectively meets the needs of MFACM.



Fig. 4 – Screenshot of Main Information Page in New ebase Database

Create the Support Plan

As extensive as this project was, the Museum needed a comprehensive support plan to ensure continuous functionality of the system. Support for the new database system is two-tiered. As a first line of support the regular users (users with only viewing capabilities) and super users (users with view and edit capabilities, but not administrative rights) have two choices. They can access an online support forum or contact Museum administration. If additional support is needed beyond these two options the contract allows either the consultant or ebase to be contacted free of charge for six months with a fee being charged after that time.

Design the Training Plan

A well designed training plan was necessitated by the lack of familiarity with the new system and the limited technical skills of the Museum staff. Simply using the ebase Administrators Manual and User Manual was an initial option. However, upon meeting with prospective users it was determined that neither provided the exact solution that was needed. Therefore, a hybrid of the two manuals was to be created using screenshots, etc.

In addition to the manual, classes were to be held for each group of users. These classes were designed to familiarize the users with the new system and outline the specific rights of each group prior to initial usage. A full-service training plan was the only option given the Museum's inexperience with the new system.

3.2.4– Systems Development

Phase IV is where the actual database was created and tested until it was virtually error free. All requirements were also checked for fulfillment at this point. The documentation for the project was the final step of the systems development phase.

Develop and Test the Database

In order to ensure functionality, the new database was rigorously tested in an iterative process. A great deal of off-site testing was done during the beginning stages of development. However, once the product was semi-functional different on-site tests were completed. The random sampling of records provided a simulated real-work situation and proved to be a valuable test. Feature testing ensured that all requirements outlined by MFACM were included in the database and were functioning properly. Report testing was another value-added test which verified correct output of the reports required by the Museum. Finally, users tested the entire product using real work situations and functions. This entire cycle of testing was completed several times until all issues were corrected and the database was ready for implementation.

Create Documentation for the Project

At this point in the project some of the documentation had already been completed. The proposal was required near the beginning of the project in order for the project to continue. A project timeline, which was outlined previously, was a requisite in the systems design phase to serve as a guide for the project. Monthly reports were essential throughout the project in order for Museum executives to keep informed on the process the project was making. A final

report and users manual were part of the contract and were delivered at the end of the project.

3.2.5– Systems Implementation

Once the product was ready, the old database was converted and the new system was implemented. The delivery process was incremental. First, the FileMaker server was successfully put into place. Next, the ebase server was delivered. Finally, the client-side databases were installed. The entire implementation process went well, leaving MFACM executives happy.

Deliver the End-User Training

The manual, customized specifically for MFACM, proved to be precisely the correct choice. Museum staff found the manual to be well organized, comprehensive and user friendly. The training sessions were delivered first to the super users so they could begin working. Material covered included viewing and entering/editing data. All administrators attended this super user session and second class designed exclusively for them. This administrator class outlined directions on creation/management of users and providing first-tier support for other users. Regular users attended an entirely different session focusing on viewing data. Upon completion of the sessions, nearly all forty users felt adequately trained on the new system to begin work immediately.

3.2.6– Systems Maintenance

Systems maintenance is the last and longest phase of the SDLC. The phase includes error correction, end-user support and any applicable updates/upgrades. Since this project is still in its infancy, the maintenance phase has been extremely short thus far. The only error correction that was made included a section of data that needed to be re-imported. Unfortunately, the clients missed a crucial piece of the puzzle when they were approving the database. The issue was handled in a timely manner and the product is now fully functional.

Other foreseeable components of this phase are continuous end-user support, which will always be required throughout the life of the database, and a possible upgrade to FileMaker 7 further down the road. At the present time FileMaker 6 fulfills the Museum's needs. However, as time goes on, requirements may increase which will likely necessitate an upgrade to FileMaker 7 and possibly a subsequent version of ebase, as well.

3.3 Short Review of the Deliverables from Each Phase

Each of the SDLC phases was vital to the success of the project. There were required deliverables during each phase, whether formal or informal. They are listed below.

Phase I – Feasibility Investigation

- Report of Department Manager Interviews

Phase II – Systems Analysis

- Project Proposal (including timeline)

Phase III – Systems Design

- Support Plan
- Training Plan

Phase IV – Systems Development

- Documentation

Phase V – Systems Implementation

- New Database
- Users Manual and Training

Phase VI – Systems Maintenance

- Future Recommendations
- Final Report

3.4 Short Review of the Milestones between the Phases

There were two milestones outlined at the beginning of the project. Both were MFACM management approval, but were at different points in the project. It was necessary to obtain management approval at two critical stages, before and after systems implementation. The system design had to first be verified before project implementation could take place. Fortunately, MFACM executives liked the design plan and implementation proceeded.

After actual implementation, Museum management approval was once again needed. Since the implementation went well and coincided with the design, the implementation was also approved. The project fulfilled the requirements laid out by the consultant team and MFACM. Staff members were anxious to begin using and benefiting from the new system.

3.5 Outcomes

As a result of the feasibility investigation it was determined that MFACM had the funds to complete the project. As the project moved on it became more apparent that the new system would become a reality. Now that the project is complete, the Museum can more effectively track donations and memberships. They are also now better equipped to compete with other non-profits for those donations and memberships. The system allows MFACM to more effectively solicit for educational opportunities and displays based upon audience interests.

3.6 Project Methodology Summary

The Systems Development Life Cycle used for this project worked very well for this type of system. Following such a methodology is sometimes difficult. It is relatively easy to deviate greatly from the SDLC. However, despite occasional deviations, this project stuck to the SCLC outlined previously. A project of this size is nearly impossible to successfully complete without following some type of methodology. The SDLC provided guidance throughout the project and

ultimately led the consultant team and MFACM to a successful project in the way of a reliable, functional database system.

4.0 Chapter Four: Project History

4.1 How the Project Began

The electronic data collection and analysis system project was initiated upon the receipt of a grant from the Lila Wallace Foundation. Guidelines for use of the funds were very strict. MFACM was required to use the funds to upgrade their data collection, storage and analysis systems. Grant research personnel were asked to obtain such a grant because the Museum knew it needed to upgrade and update its old system which no longer fulfilled the requirements needed by MFACM.

Upon receiving the grant, Museum executives began searching for consultants because there were no staff members with enough IT knowledge to complete a project of the desired size and complexity. The Museum contacted Linton Myers of LKM Technology. During the initial meeting, a contract was created between MFACM and LKM Technology. Once the feasibility investigation provided a positive result, the project proceeded.

4.2 How the Project Was Managed

Management of the project was initially conducted by LKM Technology in conjunction with MFACM management. Once the proposal was approved, LKM Technology became the primary manager of the project. The Museum was consulted on any major changes to the budget, timeline, etc. However, while

acting within the guidelines of the proposal LKM Technology was the sole entity in charge.

Delegation of responsibilities was not extremely difficult since only 2-3 people were working on the project at one time. Once a task on the timeline was completed, efforts focused on the next task. A participatory management style was used because Linton Myers was the manager and lead consultant. With such high level of involvement, the manager was able to delegate responsibilities very easily. If a severe problem was encountered, it was dealt with immediately. However, if the issue was not pertinent, it was fixed at the end of the task.

4.3 Was the Project Considered a Success?

Both MFACM and LKM Technology deemed the project a success. Upon completion, it fulfilled the requirements and met the goals laid out by the Museum. Staff members and managers were pleased with the end result. There was only a small learning curve and they could more effectively complete their job tasks. The project increased morale throughout the Museum and is currently helping MFACM bring in more visitors, receive additional donations and sign up an increasing number of members.

4.4 What Changes Occurred to the Plan?

Several minor changes occurred during the life of the project. The initial issue was that the data conversion was more difficult than anticipated. This added

another week to the project. Next, the ebase software took longer to receive than expected. An additional two weeks was needed to acquire the software. Therefore, testing and implementation were delayed the same amount of time. Since the departmental databases were the last major task to be completed, they were also pushed back. Lastly, the Museum changed its requirements. They decided it was necessary to retain more data than originally expected.

4.5 How Did the Project End?

At the end of the project the following components were successfully completed.

- Installation of a contact management database onto the network
- Conversion of all past audience information to a new data format
- Addition of an electronic kiosk within the Museum
- Introduction of electronic forms onto the Museum's website

These were the tasks outlined at the beginning of the project. MFACM staff and management were satisfied with the results and the potential for a future relationship between LKM Technology and MFACM was created.

4.6 What Went Right and What Went Wrong?

Many things went right during the project. Many projects do not succeed because they go over budget or are not completed on time. Although this project exceeded its timeline by one month MFACM's system was successfully completed under budget, which was extremely important for a non-profit organization that must remain within the limits of the grant. Since the scope of

the project was increased, it was impossible to complete the necessary data conversions within the allotted time. The Museum is happy with the results obtained by the project because it is customized enough to add functionality but not prohibit future upgrades and retained more data than originally planned.

4.7 Project Variables and Their Impact

A few key variables could have had a severe negative impact on the project if they not gone correctly. Initially, there was no established working relationship between the point person at the Museum and LKM Technology. There was ambiguity in project roles and to whom reports were to be given. The situation defined itself as the project moved on and key executives began overseeing work on the project. Also in the initial stages there was no definition of the servers that would be used or an exact budget. These issues were resolved during the project.

4.8 Project Summary

As IT projects go, the development of the electronic data collection and analysis system for the Mexican Fine Arts Center Museum was an overall success. Often, similar projects do not stay within the budget, as this one did. Although the timeline was overshoot by a month, the project was completed in a reasonable amount of time. MFACM was pleased with the results of the project and began benefiting immediately from the added functionality and convenience of the

system. MFACM also expressed interest in using LKM Technology's services for future IT projects.

5.0 Chapter Five: Lessons Learned

5.1 What Was Learned from the Project Experience?

The entire project was comprised of learning experiences. How to effectively communicate in a business setting was the first lesson learned during the project. Initial meetings with the MFACM management required communication skills focused on professionalism and knowledge of the potential project. Professional conduct was also necessary, in this situation, to help illustrate a professional attitude and ability to complete the project. Had tact and general business communication skills not been utilized, MFACM would have likely chosen another consultant.

The feasibility analysis (Phase I of the SDLC) provided another great learning experience. Information collected during this phase set the tone for the entire project. An in-depth analysis was performed of the Museum's current system, cost-effective upgrades and requirements needed to significantly improve the system and available funds for use on the project. Collection of such information was crucial in order to conduct an accurate analysis and determine whether or not the project was a good decision for MFACM. Upon analyzing the information, it was determined by MFACM executives and LKM Technology that the project was feasible and should be completed.

Throughout the drafting of the proposal MFACM administrators were consulted to verify that all of the Museum's needs were being outlined in the proposal.

Iterative approval of the proposal was vital to the timely creation of the proposal. This lesson learned saved valuable time in the development and approval of the proposal. The time saved was able to be used on system design and implementation, keeping the project closer to its timeline.

The research interviews were essential to the information gathering process. Conducting an effective interview was a valuable skill acquired during this project. Knowing what questions to ask and how to converse with the interviewee is a precious talent. Obtaining the maximum amount of project-related information is a necessity. Holding an interview where there is no goal or direction is time wasted. It is also a good idea to record the information on paper for later use. Verbal exchanges are not valuable if the information cannot be recalled for evaluation at a later time.

Converting data is often required when upgrading a database system. In the case of MFACM, direct conversion was not an option because the formatting of the data in the old FileMaker5 database was not standardized. All of the data had to be exported to a Microsoft Excel spreadsheet, correctly formatted and imported back into a FileMaker5.5 database for use with ebase. This lengthy process provided a great opportunity for learning. It illustrated the importance of standardized data and the requirements needed to correctly import data. Using a third party application (Microsoft Excel), although laborious, permitted the

conversion to take place. It was conceded that if a direct conversion is not possible, then an indirect conversion, although not desired, is a reliable solution.

General problem solving skills were a valuable commodity throughout the life of this project. The issues presented by the Museum required a good problem solver. Problems such as the staff's lack of technical knowledge, data conversion, software restrictions and scheduling proved to be a challenge. Without adequate problem solving skills, the project would have gone grossly over time and over budget.

The ultimate goal of the project was to fulfill the requirements outlined by MFACM. Once the requirements were set, the specific tasks and plans were developed to achieve the goals. Perceptual ability proved to be a great asset during the project. Seeing the final product then deducing what actions need to take place in order to obtain the product was an invaluable skill acquired throughout the project. Development of the detailed timeline relied heavily on this skill.

Completion of the electronic data system would not have been possible without the effective use of the Systems Development Life Cycle (SDLC). Thorough knowledge of the different stages of the cycle had a value-added effect on the project. Completion of each stage illustrated positive progress to Museum

administrators. The SDLC served as a guide throughout the project. Both LKM Technology and MFACM could see the progress of the project at any given time.

Adequate testing of the system was a necessity in order to insure that requirements were met and that problems were mitigated. In order to ensure functionality, the new database was rigorously tested in an iterative process. The random sampling of records, report testing and user testing were all utilized to verify system stability. Rigorous testing was an amazing learning experience. Small problems were found with the data and had to be remedied prior to subsequent testing. Testing was a longer process than anticipated. However, it is extremely important to rectify as many issues prior to implementation as possible.

Training and support of the users was a very unique experience. Creating a hybrid support manual proved to be a challenge, but was worth the effort. The users appreciated the custom features and non-technical language contained in the manual. In addition, the training classes provided sufficient information for users to begin working with the system immediately. The creation and implementation of such a comprehensive training and support system was a great experience.

As can be seen, a much greater knowledge of project management was gained from working on the system. The skills obtained throughout the project can be

applied and tailored to future projects. Knowing how to properly manage a project of this magnitude is a great ability to have. Involvement in the electronic data entry and analysis system project at MFACM was an unmatched experience. Project management requires an individual to be organized, knowledgeable, dedicated and able to effectively communicate with others.

5.2 What Would Have Been Done Differently?

Since the project was an overall success, there are not many things that should have been done differently. There were some problems and mishaps throughout the project, such as the conversion of data requiring additional formatting and software delivery time being delayed by the vendor. However, that is to be expected with any project. A great measure of a project manager is how well he deals with change and adversity. The issues that arose were learning experiences and had things been different much less would have been learned. The thing that absolutely could have been changed was: allowing more time for data conversion and software arrival.

5.3 Did the Project Meet Initial Expectations?

Feedback received from MFACM was extremely positive. Initial expectations varied from person to person. Some employees sought a new database system that would basically do their job for them. Others did not even think the project would be completed. However, the project exceeded expectations. The new system effectively centralizes data throughout the Museum and is much more

user-friendly than the old system. It increased the productivity of collecting data throughout MFACM departments and locations while allowing complete data analysis for marketing opportunities. This was achieved by creating a replicable and sustainable data collection and reporting system. Further, the solution helped to build upon current IT system architecture and enhanced current business processes.

5.4 What Would Be the Next Stage of Evolution for the Project if Continued?

Funds from the Lila Wallace Foundation were nearly exhausted by completion of the project. Therefore, realistically no additional tasks will be completed for this project. However, it was mentioned by MFACM executives that eventually they would like to see remote kiosks installed at other sites. This certainly is not a necessity, but would allow wider data collection by increasing locations for personal information entry. Currently, MFACM is pleased with their new system and will be relying on it for some time to come.

5.6 Summary

The electronic data collection and analysis system installed at MFACM in Chicago, IL was an enormous success. All objectives were realized and the consulting contract was completed. LKM Technology provided top-notch skill and professionalism to MFACM, which had acquired a grant, but knew very little about information technology. The relationship provided a win-win situation.

Now that the system is fully operational, Museum employees use it extensively. It has proved to be a great resource within the Museum and is helping build a larger donor and membership base. With the added funds brought in by the system, MFACM can focus on achieving other business goals, such as additional parking, new exhibits and better educational opportunities.

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Appendix A - Departmental Interviews

Department: Yollocalli

Representative: Karen Indeck

Databases

The department identified the following data sources:

- 1 Mailing List, composed of educators, separate from general mailing list
(Excel)
- 2 Student Records (Excel)
- 3 Student Attendance (Excel)

They currently use paper registration and attendance forms and transfer information into Excel spreadsheets.

Licenses

The Department is allocated two FileMaker 5 licenses. Karen stated that only one license is required because only one data entry staff member active at a time. However, the present allocation of two is ideal.

Needs

No needs identified.

Wants

The Department would like:

- Capability of tracking budget electronically
- Possible consolidation of student records and student attendance spreadsheets into one database
- Ability to submit check requests electronically

Linkages

The department would like access to:

- General mailing list (view)

Need to Upgrade

Karen stated there's a need to upgrade from Excel to FileMaker or from FileMaker 5 to a subsequent version.

Notes

N/A

Individual Recommendations

Immediate Recommendations

Provide the department with an electronic budget form in Excel.

Future Recommendations

- Investigate software packages for educational institutions that would provide the department with the ability to easily track students, educators, and attendance information.
- Either invest in software package or upgrade Excel spreadsheets to linked FileMaker tables. Consider hosting departmental databases online to provide access by Museum.

Department: Permanent Collection

Representative: Rebecca Meyers

Databases

Rebecca identified this primary data source:

1. Database of Permanent Collection items (FileMaker), including images, artist information, value, and repair details

The database is customized when it was set up in 1992 by consultants. Glitches have been identified and recently reported to the on-site technical consultant.

The database is over 650 MB in size and constantly growing.

Licenses

The department is allocated two FileMaker 5 licenses. An additional license is recommended for future access within vaults.

Needs

Backup capacity with the CD recorder has reached its limit. The database cannot be safely backed-up up in this manner. An additional method such as the use of a DVD recorder or external hard drive should be investigated. Further, a backup rotation schedule should be considered.

Wants

Rebecca would like the following:

- A laptop with wireless access to database that can be used to enter information while in vaults
- A large hard drive to store high quality images

Linkages

Rebecca would like access to:

- General mailing list (view and add donors)
- Visual Art's Transparencies database (view, not yet created)
- Visual Art's Loan database (view)

Rebecca needs to accurately report:

- Art counts (e.g. by year, by type, by artist, by donor).

Need to Upgrade

She stated that there's a need to upgrade from FileMaker 5 to subsequent version. She would consider upgrading to proprietary product should one be found that would meet all of her needs.

Notes

She noted that a problem might exist when publishing images of items on the MFACM database. Many images would require a copyright watermark and some would not be able to be made available at all due to artist restrictions.

Individual Recommendations

Immediate Recommendations

- Provide resources to address glitches in database (e.g. funding for consultant work).
- Purchase DVD recorder to address current backup issues.

Future Recommendations

- Investigate software packages for museums that would provide department with more functionality and support.
- Write grant requesting funds for project that would improve storage of Permanent Collections' records and tie data to Visual Art's artists, exhibits, and loan databases.
- Purchase laptop with additional FileMaker license to provide remote access to database while in vaults.

Department: Visual Arts

Representative: Raquel Aguiñaga Martinez

Databases

The department identified these data sources:

1. Artist Lists, name and contact information (FileMaker)
2. Loan Information, record of items on loan from artists / to other institutions (FileMaker)
3. Transparencies, record of image transparencies on file, not yet created (FileMaker)
4. Exhibits, record of exhibit details such as participating artists and dates (FileMaker)
5. Exhibit Invitations, stored images of exhibit invitations (FileMaker)

Licenses

The Visual Arts Department is allocated two FileMaker 5 licenses. Raquel stated that only one license is required. However, allocation of two should remain as it allows for a support staff person to utilize the database at the same time.

Needs

No needs identified.

Wants

Raquel would like:

- The ability to backup exhibit files. The department already owns scanner and has capability.

Linkages

Raquel would like access to:

- General mailing list (view & edit artist information)
- Permanent Collections (view)

Raquel needs to accurately report:

- Artist information, but need to limit contact information
- Exhibit information
- Available transparencies

Need to Upgrade

Raquel stated a need to upgrade from FileMaker 5 to subsequent version.

However, she provided no real evidence of immediate need.

Notes

Artist information is located in both the Visual Art's database and the general mailing list. This constitutes duplication.

Individual Recommendations

Immediate Recommendations

Provide resources for the continued development of databases (e.g. training, individual consultation).

Future Recommendations

- Investigate software packages for museums that would provide department with better functionality in terms of recording loan information and exhibits.
- Write grant requesting funds for project that would improve storage of Visual Art's records and tie data to Permanent Collections' database.

Department: Development

Representatives: Randy Adamsick & Elena Gonzales

Databases

The department identified these data sources:

1. Grant information (Excel)
2. General mailing list, containing individual donors and members
(FileMaker)

The department focuses primarily on acquisition and management of grants. General mailing list became the responsibility of the department because it contains donors and members. However, almost all departments utilize the list. The meeting focused primarily on storage and use of grant information as the general mailing list was investigated separately.

Licenses

The department is allocated four FileMaker 5 licenses. Current allocation is appropriate.

Needs

No needs identified. (Primary need is to address general mailing list.)

Wants

The department would like:

- Upgrade of grant information “database” to provide increased functionality (e.g. mailing and reporting capabilities)
- Training in current software, including
 - PowerPoint
 - Graphics (e.g. Photoshop, use within Word)

Linkages

No linkages identified (does not include general mailing list).

Need to Upgrade

Randy stated preference to upgrade within the near future due to increased functionality. However, he also desires the ability to continue working with current grants “database.”

Notes

N/A

Individual Recommendations

Immediate Recommendations

- Investigate, evaluate, and implement grants database.
- Provide basic training to department for requested software titles.

Future Recommendations

- Provide extended training and professional templates to department for requested software titles.

Department: Radio Arte

Representatives: Jorge Valdivia

Databases

The department identified these data sources:

1. Audience Demographics (FileMaker)
2. Check Requisitions (FileMaker)
3. Student Records (FileMaker)

Jorge stated that all databases (excluding online user demographics) are in FileMaker.

Licenses

The department is allocated two FileMaker 5 licenses. Jorge stated that zero licenses are available to department and that no one has FileMaker installed.

Miguel Barrientos offered a contrasting report, stating that the department has it installed on at least one computer. A discrepancy remains, however, in number of licenses available. If Miguel's report is correct, the department should have three licenses, yet it only has one license in use. The department stated that four licenses total are required.

Needs

- To provide FileMaker access to all staff members (four in total)

Wants

Jorge would like:

- To be able to submit check requests electronically
- Access to foundation profiles

Linkages

No linkages identified. Jorge specifically stated that the department has no need for data from the museum.

Need to Upgrade

Jorge stated a possible need to upgrade from FileMaker 5 to a subsequent version. However, he provided no real evidence of immediate need.

Notes

Jorge stated a concern for lack of security, including antivirus software.

Individual Recommendations

Immediate Recommendations

- Install FileMaker “application” on all staff computers.
- Make accurate number of licenses available to staff members.

Future Recommendations

- Provide department either with access to Development's grants database

Department: Marketing

Representatives: Eva Penar

Databases

The department identified these data sources:

1. Media list, list of media contacts (FileMaker)
2. E-mail list (Groundspring.org)

The media list is currently duplicated within Administration (e.g. Rachel).

Licenses

The department is allocated one FileMaker 5 license. Eva stated that two licenses would be preferable.

Needs

- Training in current software, including:
 - Adobe GoLive
 - Microsoft Entourage
 - FileMaker

Wants

Eva would like:

- Training to be budgeted for every department
- CD recorder for “burning” CDs to send for marketing purposes
- Training in digital imagery (e.g. Photoshop, image formats)

Linkages

Eva would like access to:

- General mailing list (view & edit media information)
- Visual Art’s Artist list (view)
- Yollocalli Mailing list (view)
- Radio Arte Mailing list (view)

The department needs to accurately report:

- Media list

Need to Upgrade

Eva stated there’s no immediate need to upgrade from FileMaker 5 to a subsequent version.

Notes

Eva recommended electronic kiosk at front desk with Internet access that would send a "Thank you for visiting" e-mail to individuals that register. This may also provide the ability to send electronic post cards to friends. Eva wants interactive resource center to be redesigned. It should be able to collect information.

Individual Recommendations

Immediate Recommendations

- Purchase CD recorder to address desire to better disseminate information to media.
- Provide training in Adobe GoLive to enable creation of more dynamic electronic newsletters.

Future Recommendations

- Provide in-depth training on electronic communications.

Department: Education

Representatives: Nancy Villafranca

Databases

The department identified these data sources:

1. Invoice database, to charge teachers/others for services (FileMaker)

2. Tour database, to schedule tours of museum (FileMaker)
3. Mailing list, includes teachers, students, and interested individuals
(FileMaker)
4. Attendance, events and museum attendance, not yet set up (FileMaker)
5. Library Catalog, catalog of books within department, not yet set up
(FileMaker)

The mailing list is currently duplicated within the general mailing list. Nancy would like to evaluate pre-packaged applications to upgrade tour database.

Licenses

The department is allocated three FileMaker 5 licenses. Nancy stated that five licenses would be preferable.

Needs

- Method to track and evaluate programs and workshops.
 - Possibly send electronic surveys
 - Track budgets
 - Track attendance

Wants

Nancy would like:

- The ability to take digital pictures

- The ability to make and print posters (e.g. color copier/printer)
- A centralized source for images
- Training on CD recording technology and FileMaker reporting mechanism

Linkages

The department would like access to:

- Permanent Collection database (view)
- General mailing list (view)
- Media list (view)

The department needs to accurately report:

- Tour information

Need to Upgrade

No immediate need to upgrade from FileMaker 5 to subsequent version.

Notes

N/A

Individual Recommendations

Immediate Recommendations

- Provide training for CD recorder and in FileMaker reporting.
- Investigate, evaluate, and implement tour database.

- Purchase additional FileMaker licenses.

Future Recommendations

- Investigate viability of centralized color copier/printer.
- Investigate, evaluate, and purchase/develop program evaluation system.

Department: Gift Shop

Representatives: Raquel Rios

Databases

The department identified this primary data source:

1. QuickSell database, records all item and transaction information

Licenses

The department is allocated zero FileMaker 5 licenses. They will require one license to access membership records.

Needs

- Better Security

- Registers and desktop need increased security (e.g. professional firewall)
- Better Backup
 - New backup strategy, removable storage (e.g. Zip disk, CD recorder/DVD recorder) taken off site
- Upgraded Technology
 - Registers need to be upgraded to improve system performance and reliability

Wants

Raquel would like:

- Training on import of data into database (e.g. use of Palm Pilot to remotely capture information and import data at museum)

Linkages

Raquel would like access to:

- General mailing list (view)
 - For use in accessing membership information
 - Would require additional computer installed in gift shop
- Tour list (view)

Raquel needs to accurately report:

- Sales information, reports via paper

Need to Upgrade

No need to upgrade from FileMaker 5 to subsequent version. There may be a future need for a migration/upgrade strategy for registers and sales software.

Notes

N/A

Individual Recommendations

Immediate Recommendations

- Secure registers and primary desktop computer by editing router settings.
Begin new backup rotation strategy.
- Install unused (if available) computer in gift shop for use in accessing general mailing list and membership information.

Future Recommendations

- Investigate greater security for gift shop, including professional firewall.
- Plan for future migration/upgrade for sales software and registers.

Department: Graphic Arts

Representatives: Angelina Villanueva

Databases

The department identified no current data sources.

Licenses

The department is allocated zero FileMaker 5 licenses. It does not need a license.

Needs

- Additional storage space
- Ability to categorize and search for images

Wants

N/A

Linkages

Needs to accurately report:

- Images, make available to other departments

Need to Upgrade

There is no software to upgrade from. There is an Immediate need for software to categorize images.

Notes

N/A

Individual Recommendations

Immediate Recommendations

- Investigate, evaluate, and purchase image server software.
- Investigate and purchase image server (at least 500 GB size, preferably 1 TB) that would be made available to organization as a whole.

Future Recommendations

- Continue to upgrade server as space is needed.

Appendix B - Departmental Database Chart with Linkages

