WGA Database Organization and Migration: Project Brief

The WGA currently uses both an in-house Access database and online MySQL database to track memberships, fee payments, event registration, donations, and awards submissions. To improve their data management and communication with their members, they need to consolidate these databases and introduce new features capable of using the database to automatically create PDF receipts for donations/member renewals, auto-generate emails and mass mailers from database information, and pull custom reports for grants.

Project Goal

We will provide a plan for the WGA to improve their databases and communication.

Project Deliverables

i. Entity Relationship Document
ii. Plan to coordinate migration with web host
iii. Plan for migrating database
iv. Plan for choosing user-interface
v. Plan for adding specifically requested features
vi. Description of responsibilities for Database Administration
vii. Estimated timetable and budget for implementing plan

Summary of Key Concerns

i. Pertinent information split across two database: in-house Access and online MySQL
ii. Current database tables are either non-relational or table relations are too few to be useful leading to unnecessary duplication
iii. Unable to produce custom queries or generate custom reports because of database design
iv. Unable to produce receipts for online transactions or create emails from database records using current software
v. Current data management is inefficient and slows down other routine tasks like sending receipts for charitable donations or confirming online member renewals

Possible Solutions

i. Manage data with Access on in-house servers.
   a. Link MySQL data to current Access tables using MySQL ODBC connector.
   b. Purchase third-party software to improve functionality of Access
   c. **Pro**: quickest solution to implement
   d. **Con**: will not address all problems; risk of losing data if in-house server fails

ii. Manage data through web-based interface on online MySQL database
   a. Migrate all data to MySQL server
   b. Use phpMyAdmin or custom-built website using PHP.

c. Create requested feature to PHP additions to new website interface.
d. **Pro**: addresses all concerns, moves data online
e. **Con**: Most expensive option, longest to implement, may require SQL training

iii. Manage data using Access/Filemaker Pro as interface for MySQL/MS-SQL database

a. Migrate all data to MySQL server
b. Link data with MySQL ODBC and use Access/FilemakerPro as interface.
c. Build PHP apps individually to add requested features.
d. **Pro**: easiest to implement in stages, easier to use than other DB software
e. **Con**: depends on stability of MySQL ODBC

Analysis of Recommended Solutions

1. Option #1 requires the least amount of work and could likely be done without much further assistance from CSL/Huco. The most technical aspect of this option would be setting up the MySQL ODBC connection software. With the help of a competent IT person this could be done within a day and might even take less than an hour if everything went smoothly. (See Appendix for instructions on setting up MySQL ODBC connector with Access.) However, this solution doesn't solve your biggest problem, consolidating the data from two different databases. The MySQL ODBC connector will let you see the data on the MySQL server, but it won't allow you to make table relations between the tables in MySQL and those in Access, which is essential for generating automatic receipts or pulling custom reports. You'd also still want to think about reorganizing your database tables in Access, but if you take that step, then we would suggest taking the extra step and uploading the data to the MySQL database online. Consider this option if the WGA can't dedicate any resources to optimizing the database and needs to do something as a stopgap.

2. Option #2 will likely cost the most in terms of time and money but will deliver the best results over the long term. By moving your data online you have a much smaller risk of losing information if the WGA server fails and you can reorganize your database so that online transactions automatically update all your tables. In addition, you could eventually move event registration online as well. Before going this route, consider the feasibility of training WGA employees in SQL as this changes which user interface we recommend. If the WGA can train an employee to learn the basics of SQL, then consider using open source software like phpMyAdmin to manage your database. Doing so will make this option considerably less expensive. If such training seems unlikely, then you will need to have someone build you a website to manage the MySQL database. Building a website also allows you to build in the features that you want like PDF receipts. We would recommend having Digital Tea build this site as they've built part of this functionality into your website already. We would advise against having a student build the whole user interface, as he/she is unlikely to support it after it's finished, leaving you with no option but to start over when things change in the future.

3. Option #3 addresses some of the user interface problems that arise in option #2 but depends entirely on the stability of the MySQL ODBC connector software. In this solution you gain the advantages of moving your data to the MySQL server but dodge the problem of deciding whether to train an employee in SQL or spend extra to build a website to manage your data. You will likely still need to hire a technical consultant to help migrate the data to MySQL and help set up custom forms and report templates for non-experienced users, but that cost should be significantly less than building a new website. CSL/Huco might be able to implement this transition as another term project. Some of your requested features might not be available in Access/FilemakerPro, but this can be remedied through third-party software. Again, CSL/Huco might be able develop these smaller applications as term projects (the lack of on-going support for these smaller apps worries us less than having no support for the whole user interface). If the MySQL ODBC connector proves to be unstable, this option becomes untenable; however, there is the option of using Access as the front-end for with a MS-SQL database. Access and MS-SQL are both Microsoft products and should communicate smoothly. Blue Genesis also supports MS-SQL (at an additional cost).

Implementation Phases

Regardless of which option the WGA chooses, the process of optimizing the WGA's databases will require three phases. These phases are not independent and the WGA should not go ahead with first phase unless they feel prepare to complete the process. That said, each phase can be tackled as an individual project and might work well as future CSL term projects.

- Stage 1 – Redesign Database and Migrate: Remove redundancies in current database, particularly in contact and payment information. Reorganize using table relations. Migrate information online.
- Stage 2 – User Interface: Develop connection to back-end MySQL database using available software or custom-built software. Train to learn new software, especially basics of using SQL queries to pull custom reports.
- Stage 3 – Addition Features: Purchase and set up third-party software to augment Access or develop PDF receipt, mass email app and automatic renewals and donations using PHP, either integrated into the website or as standalone apps.

Recommendations and Future Steps

Given the above information, we recommend the following next steps:

i. Try the MySQL ODBC Connector as soon as possible to test its stability. This will likely require a little technical help from Blue Genesis but the process is manageable. Knowing if this will work is essential to deciding which option to choose.
ii. Begin the work of reorganizing the tables in your Access and MySQL as soon as you decide to proceed with migration. Database optimization can be done in the near-term without requiring much technical knowledge. The ERD provided in the

appendix provides a framework for how to proceed. This stage would also make a good CSL project.

iii. Start to learn the basics of making SQL queries within Access to build custom reports. Access has the functionality you need to do custom forms. Review the information on SQL queries in the Appendix and online training.

iv. Decide if further training in SQL for WGA employees is feasible. Consider that any future Member Managers will likely need SQL training. This may determine the option you choose more than any other factor. Consult the SQL information in the Appendix.

v. Remember that any student-built project will be difficult to support long term and any major changes in the future means starting over. Having Digital Tea build a website will be costly but weigh long-term support into the cost

vi. Buying 3rd party software will be cheaper than having Digital Tea build custom software, so research the software we suggested. Some of these programs have free trials and might help you decide if the software meets your needs or requires more training than your willing to invest. Especially consider trialing FilemakerPro as it purports to have a PDF creator and mass emailer functionality, but these features may not work in the way you hope they will.