

**National Military Family Association**

**Database Management System**

**Project Design Report**

IST 659 M005 Group Ralph Parlin and Jieer Chen

**Project Summary**

This project assists the Marketing department at the National Military Family Association (NMFA) establish a single Database Management System. The National Military Family Association (NMFA) is the leading 501(c)(3) non-profit association serving the families of the currently serving, veteran, retired, wounded or fallen members of the Army, Navy, Marine Corps, Air Force, and Coast Guard.

The Marketing department is responsible for advancing the NMFA brand. The purpose is to increase awareness of the efforts undertaken by NMFA on behalf of its constituents. Increased awareness results in increased donations, and in turn, increased ability for NMFA to support military families through advocacy and programs.

To accomplish this, the marketing manager must communicate with different groups of people that engage with NMFA or are relevant to NMFA’s mission. As such, the marketing department communicates directly to military families, as well as works with the Development department to help them reach donors and with the Programs department to help promote their programs and scholarships. Additionally, the Marketing department is solely responsible for sending all electronic communications for NMFA. This includes emails to each department’s database of people – donors, program and scholarship applicants, and program and scholarship recipients.

Under the current structure, each of the three departments maintains their own sperate system and process for capturing, storing and managing data about the people they interact with.

The Programs department uses an excel spreadsheet file that includes information about people that are applying for, or have participated in, programs and scholarships offered by NMFA. The Programs department inputs information into their spreadsheet manually after downloading new records from their website’s online application intake form. Updates to their spreadsheet are made manually as required. The Programs department also maintains an excel spreadsheet of all NMFA’s volunteers across the U.S. These volunteers help host functions and administer programs and the excel spreadsheet is used to keep record of where the volunteers live and their contact information. When an event is happening near their location, the spreadsheet is used to develop email lists to that will inquire about a volunteer’s interest in supporting a local event. This spreadsheet was created manually and remains manually updated and managed.

The Development department uses a robust online cloud-based system called Raiser’s Edge to manage the data of their donors and members. It’s automated and provides sufficient querying capability for the Development department. However, this system is isolated from all other data in the organization resulting in a silo of information. The Development department extracts the data from Raiser’s Edge to an excel spreadsheet in order to provide the information with the organization. Each time the Development department needs an email sent to donors and members, they download a new spreadsheet and provide it to the marketing department.

The Marketing department uses an excel spreadsheet to manage data about the people they engage with through email marketing. They collect this data through an online form on their website and then manually add new entries into their “master-file” which includes a running list of everyone that has ever signed up to receive information from NMFA. Updates to their spreadsheet are made manually from feedback they get from email recipients. The Marketing department uses Constant Contact (a cloud based email service provider) to deliver their email collateral, but they must manage recipient lists manually before uploading into Constant Contact. The Marketing department lacks a system that helps them segment their list and properly target recipients according to the objectives of an email campaign. They would be very challenged to segment their list to include only recipients that, for example, live in a certain state, but did not receive the latest newsletter. This would be even further challenged if they wanted to send an email to recipients that live in a certain state, and have participated in a certain program offered by NMFA as this would require the merging of the Programs and Marketing spreadsheets.

NMFA’s current data situation allows for a single person to exist on each of the three data systems/spreadsheets, or worse, may exist on all three but have minor inconsistencies that renders them as a different record.  These disparate systems coupled with no consistency in data integrity results in data merging tasks taking hours of reconciliation when they should be near instantaneous.

The data integration required across the Development, Programs, and Marketing departments requires an extensive Data Lake/Data Warehouse architecture with an extract, transform, load (ETL) capability and it exceeds the scope of this project. Our proposed system will focus on addressing the challenges faced by the Marketing department and will provide a proof of concept for NMFA to consider as a model for a broader database solution. Our system will result in the Marketing manager being able to manage targeted messaging for specific people in the database. It will allow them to build records for each marketing campaign they develop, as well as glean insights from marketing and donation campaign trends to assist the Development and Programs departments.

A critical first step in this process will be to ensure each department has a clear, and shared understanding of the different audiences each department works with. Furthermore, each department must subscribe to the idea that there needs to be select data consistency across each department system. These understanding will be codified in unifying business rules and process. These business rules are the perquisite needed to provide the Marketing manager a system that allows her to integrate the Development and Program department data into the more comprehensive database management system. Once complete, questions that cripple the NMFA to answer now (see “Major Data Questions” below) data, will become near effortless.

**Entity and Attribute Tables**

|  |  |
| --- | --- |
| **Participant** |  |
| ParticipantID | Primary Key |
| ParticipantLastName | Participant’s last name |
| ParticipantFirstName | Participant’s first name |
| ParticipantHouseNumber | Participant’s house number |
| ParticipantStreet | Participant’s street name |
| ParticipantCity | Participant’s city name |
| ParticipantState | Participant’s state name |
| ParticipantZip | Participant’s zip code |
| ParticipantType | Coded field that represents the different status a given person can have with the organization. |
| MilitaryAffiliation | Participant’s affiliation with the military, e.g. Army, Navy, Civilian, etc. |

|  |  |
| --- | --- |
| **Donor** |  |
| ParticipantID | Primary Key and Foreign Key |
| DonateStartingDate | Date the participant started donating |

|  |  |
| --- | --- |
| **Suscriber** |  |
| ParticipantID | Primary Key and Foreign Key |
| SubStartingDate | Date the participant subscribed to NMFA |

|  |  |
| --- | --- |
| **Member** |  |
| ParticipantID | Primary Key and Foreign Key |
| MemberStartingDate | Date the participant became a member |

|  |  |
| --- | --- |
| **Volunteer** |  |
| ParticipantID | Primary Key and Foreign Key |
| VolunteerStartingDate | Date the volunteer became a volunteer |

|  |  |
| --- | --- |
| **ScholarshipApplicant** |  |
| ParticipantID | Primary Key and Foreign Key |

|  |  |
| --- | --- |
| **ScholarshipApplication** |  |
| ParticipantID | Primary Key and Foreign Key |
| ScholarshipID | Primary Key and Foreign Key |
| SchApplyDate | Application date |
| SchApplyDecision | Decision (Y/N) of application |

|  |  |
| --- | --- |
| **ScholarshipRecipient** |  |
| ParticipantID | Primary Key and Foreign Key |

|  |  |
| --- | --- |
| **ScholarshipReceived** |  |
| ParticipantID | Primary Key and Foreign Key |
| ScholarshipID | Primary Key and Foreign Key |
| SchRecieveDate | Date scholarship is received |

|  |  |
| --- | --- |
| **Sholarship** |  |
| ScholarshipID | Primary Key |
| SchName | Name of school |
| SchAmount | Amount ($) of scholarship |
| SchStartDate | Start of scholarship date |
| SchEndingDate | End of scholarship |

|  |  |
| --- | --- |
| **ProgramApplicant** |  |
| ParticipantID | Primary Key and Foreign Key |

|  |  |
| --- | --- |
| **ProgramApplication** |  |
| ParticipantID | Primary Key and Foreign Key |
| ProgramID | Primary Key and Foreign Key |
| ProApplyDate | Application date |
| ProApplyDecision | Decision (Y/N) of application |

|  |  |
| --- | --- |
| **ProgramRecipient** |  |
| ParticipantID | Primary Key and Foreign Key |

|  |  |
| --- | --- |
| **ProgramReceived** |  |
| ParticipantID | Primary Key and Foreign Key |
| ProgramID | Primary Key and Foreign Key |
| ProAdmissionDate | Date participant is admitted to program |

|  |  |
| --- | --- |
| **Program** |  |
| ProgramID | Primary Key |
| ProName | Name of program |
| ProCity | City location of program |
| ProState | State location of program |
| ProZip | Zip of program location |
| ProStartingDate | Starting date of the program |
| ProEndingDate | Ending date of the program |

|  |  |
| --- | --- |
| **Donate** |  |
| DonationID | Primary Key and Foreign Key |
| ParticipantID | Primary Key and Foreign Key |
| DonateDate | Date of donation |

|  |  |
| --- | --- |
| **Donation** |  |
| DonatationID | Primary Key |
| DonateAmount | Amount of each donation for each donor |
| DonateBalance | Running total of donations for each donor |

|  |  |
| --- | --- |
| **EMarkigInvolvement** |  |
| EParticipantID | Primary Key and Foreign Key |
| ECampName | Primary Key and Foreign Key (Name of email campaign) |
| EmailSentDate | Date email was sent |

|  |  |
| --- | --- |
| **EMarketingCampaign** |  |
| ECampID | Primary Key |
| ECampName | Name of email campaign |
| ECampStartingDate | Start date of email campaign |
| ECampEndingDate | End date of email campaign |

**Entity Relationship Diagram**



**Conceptual Diagram of the Super-Type and Sub-Type**



**Business Rules**

1. A “donor” is defined as a person that makes a financial contribution to the organization.
2. A “subscriber” is defined as a person that has opted in to receive emails from the organization by providing their email address on the sign-up form on the NMFA website.
3. A “member” is defined as a person that makes a financial contribution to the organization and elects to be considered a member.
4. A “volunteer” is any person that has elected to assist NMFA.
5. The term “participant” is the general term that will be used to identifying any individual that is included under any of the following statuses: “donor”, “subscriber”, “member”, and “volunteer”.
6. A “ program participant” is a person that has/ is selected to participate in an NMFA program. No “NMFA status” is required to be a recipient.
7. A “scholarship recipient” is any person meeting scholarship specific criteria that has/ is selected to receive a NMFA scholarship. A recipient is not required to be a participant.
8. A “donor” does not have to be a member nor a subscriber but could be both.
9. A “member” must also be a “donor” since donating is a prerequisite to become a member, and a “member” could also be a “subscriber”, but it is not required.
10. A “constituent” is/are all military families covered by the broader advocacy goal of the organization (no action is required buy constituents)
11. The Marketing department is the authoritative administrator of the subscriber database.
12. The Development department is the authoritative administrator of the donor and member database.
13. The system of record the Development department uses to manage fundraising and donation data is Raiser’s Edge (a comprehensive cloud-based fundraising and donor management software solution)
14. The Programs & Scholarship department is the authoritative administrator of the program recipient and volunteer database
15. Marketing email distribution lists will be catalogued for historical purposes each time an email is sent (through Constant Contact – the cloud-based email marketing distribution management system currently used by the organization.)
16. An applicant can apply for multiple programs, but only for each program once.
17. An applicant can apply for multiple scholarships, but only for each scholarship once.

**Major Data Questions:**

1. How many donors do we have?
2. How many donors have donated in the last 3 months?
3. Which donors participated in the last donation activity?
4. What is the average donation in the last donation activity?
5. How many emails have we sent to donor X?
6. How many direct mail pieces have we sent to donor X?
7. How many members do we have?
8. How many members live in city X?
9. In what state so most of our members live?
10. How many subscribers do we have?
11. How many subscribers are also members?
12. Which subscribers are donors?
13. Which subscribers are in the military?
14. When was the last time we sent an email to subscriber X?