

In Brief

Who: Provo 21st Married Student Ward

What: A program for the bishopric to easily manage the ward directory using tools to view, edit, and contact individual members or entire organizations, and generate useful membership reports.

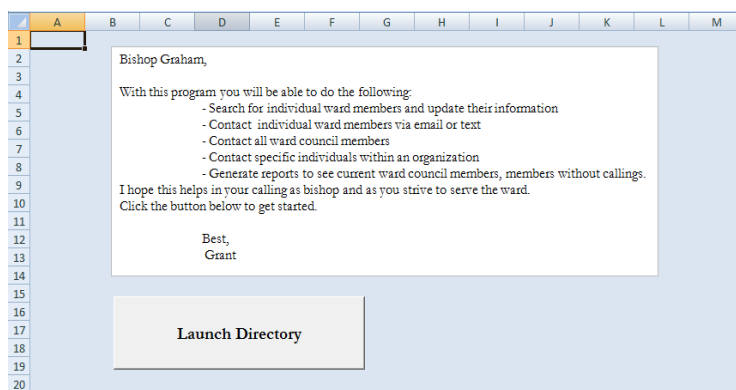
Why: The bishopric needs a better way to manage the ward directory and contact ward members.

Executive Summary

An area of improvement that has been discussed in leadership meetings in my ward is communication. The ward sponsors an average of six activities a month which require a lot of coordination and communication from leaders to individual ward members or organizations. Previously, ward leaders would look at a PDF document of the ward directory to find an individual's contact information. Then, they would have to type in each number or email manually into their phone or inbox. Furthermore, making changes to a member's information in the directory involved contacting the ward membership clerk who would update the church's directory program (MLS) and the ward directory clerk who would update the PDF document that is distributed to the ward. This program uses the exportable membership excel file from MLS and allows the user to browse the ward directory, contact individual members or organizations via text or email, and generate membership reports such as "Members without a Calling."

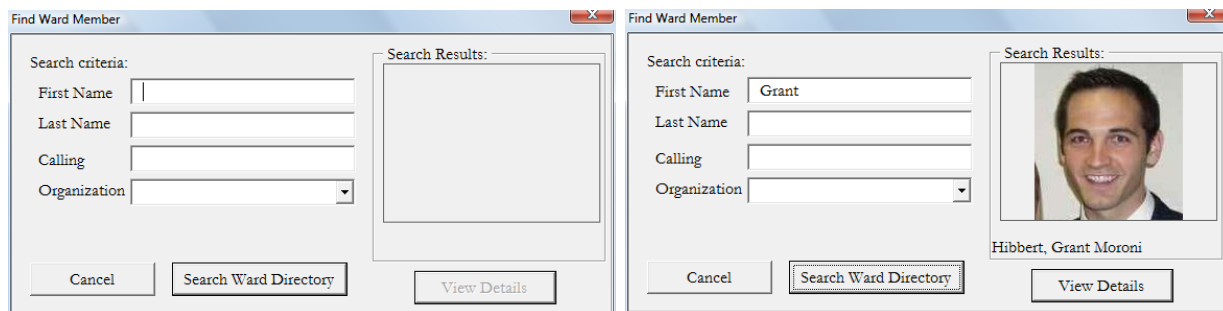
Implementation

Once the workbook opens, the "Home" sheet will activate. By clicking the "Launch Directory" button on the "Home" sheet, the user will be presented with the Directory Portal user form (below). This program is divided into the four main sections displayed on the Directory Portal from: Update or Contact Member, Contact Ward Council, Contact an Organization, and Generate Reports.



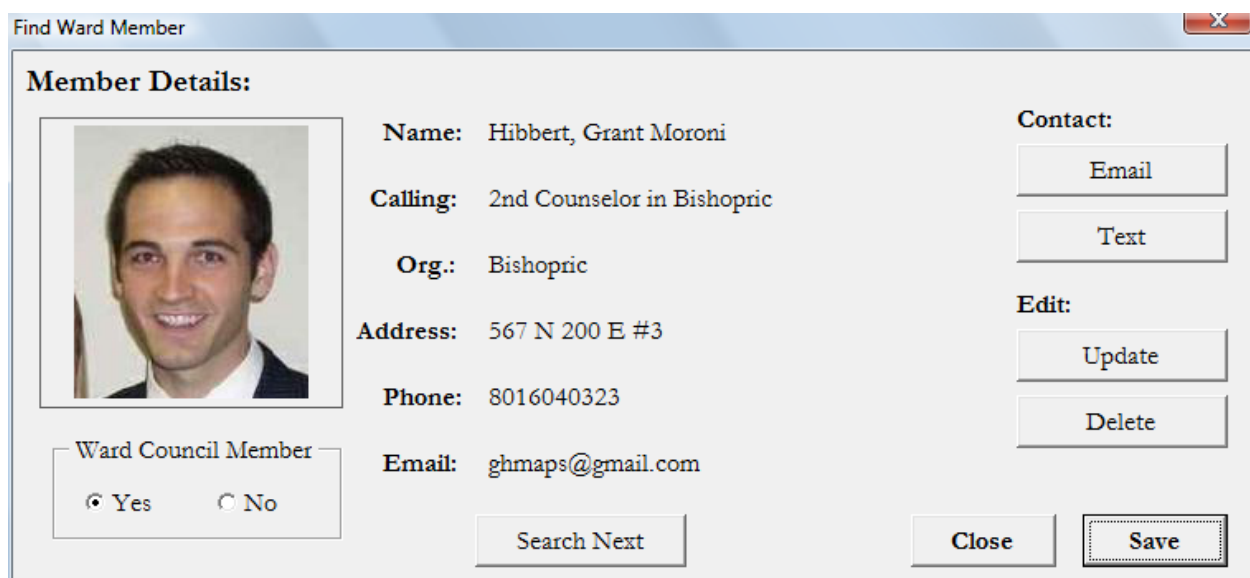
Update or Contact Member:

The “Update and Contact Member” command button opens the “Find Ward Member” user form. This simply allows the user to search the ward directory for a specific member. The user can enter search criteria in the text fields for first name, last name, and calling. The user can use just one text field, a combination of fields, or search part of the name. The search criteria are also not case sensitive. Furthermore, the user can search for members of an organization using the organization combo box. The search results are displayed to the right showing an image of the member and their full name. The “View Details” command button is not enabled until search results have been found.



The image shows two instances of the "Find Ward Member" form. The left form has empty search criteria fields: First Name, Last Name, Calling, and Organization. The right form has "Grant" entered in the First Name field. In the right form, the Search Results area displays a photo of a man and the name "Hibbert, Grant Moroni". Both forms have "Cancel", "Search Ward Directory", and "View Details" buttons.

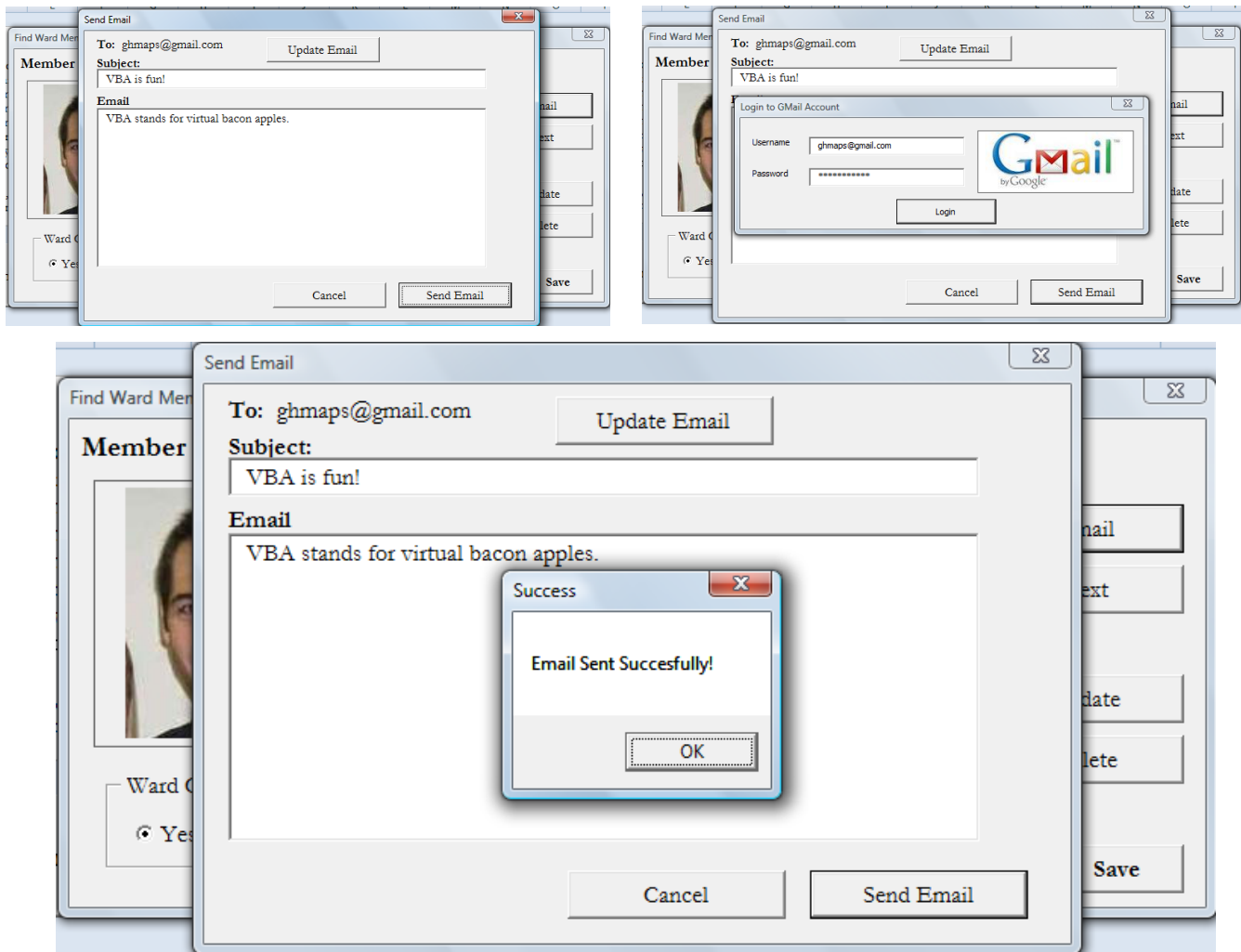
Clicking “View Details” will display the “Member Details” user form (below). This displays information from the directory for that member. The form will indicate if no information is found (e.g. “No calling” or “No phone provided”). By clicking “Search Next” the next member that meets the search criteria will be displayed. The “Ward Council Member” box shows if the displayed member is part of Ward Council or not. This can be changed by clicking the appropriate radio button and clicking “Save.”



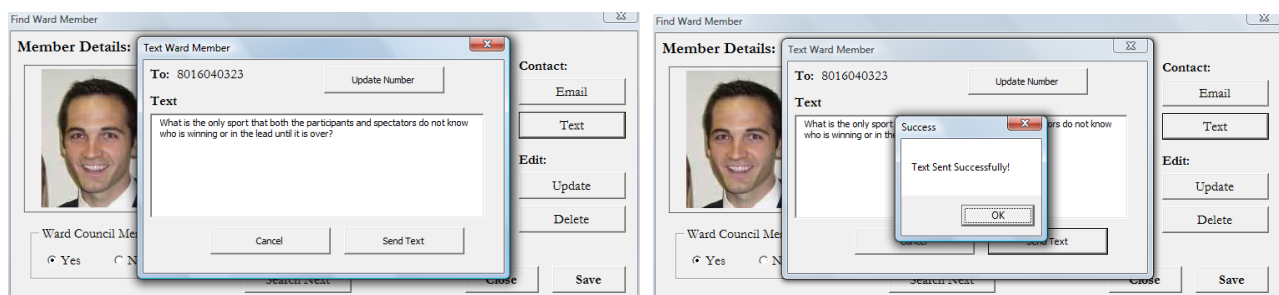
The image shows the "Member Details" form for Hibbert, Grant Moroni. It includes a photo, name, calling (2nd Counselor in Bishopric), org. (Bishopric), address (567 N 200 E #3), phone (8016040323), and email (ghmaps@gmail.com). There are buttons for "Email", "Text", "Update", "Delete", "Search Next", "Close", and "Save". A "Ward Council Member" section has radio buttons for "Yes" and "No".

The bishop can then choose to contact this member via Email or Text. Clicking “Email” will open the send email form (below left). This form displays the email address at the top of the form, but that can be changed and updated in the spreadsheet by clicking “Update Email.” The form includes

text boxes for the subject and message of the email. Clicking “Send Email” will bring up the Login to Gmail form (below right). After logging into Gmail, the email will send and a confirmation message will display (below). If any error occurred, an error message will display instead.



On the “Member Details” user form, the “Send Text” button displays a text box to update the number and insert the text message (below). The user is prompted with the “Login to Gmail” user form and a message is displayed if the text was delivered successfully similar to the “Send Email” functionality above.



Again on the “Member Details” form, the “Update” command button allows the user to update any of the member’s information (below left). An input box appears once a field is clicked (below). The input box accepts any entry except nothing. The user can refresh the data to preview the updated information by clicking on “Refresh” or save their changes to the spreadsheet by clicking “Save.”

The left screenshot shows the 'Update Member Information' form with the following fields: Name: Hibbert, Grant Moroni; Calling: 2nd Counselor in Bishopric; Org.: Bishopric; Address: 567 N 200 E #3; Phone: 8016040323; Email: ghmaps@gmail.com. The right screenshot shows a 'Change Address' dialog box with a text input field and OK/Cancel buttons.

The remaining command buttons on the “Member Details” user form behave as described. The “Delete” button will remove the member’s information from the directory. “Close” will unload the form and “Save” will write any changes made in the form to the spreadsheet.

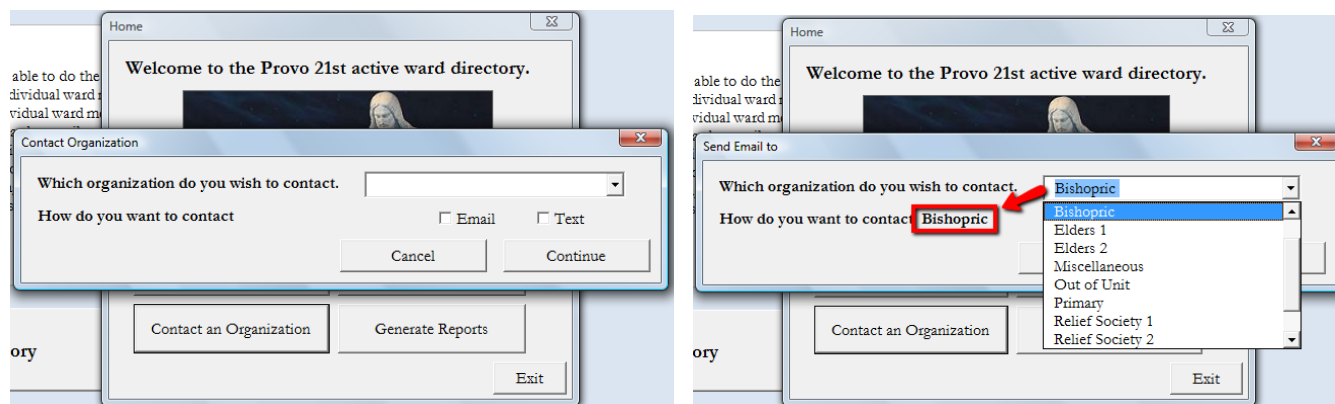
Contact Ward Council:

The “Contact Ward Council” button on the portal form allows the user to contact all members of ward council via email or text. This functionality was added so the bishop can contact only those members about specific items discussed in ward council. Once clicked, the user is presented with a message box, “Do you want to send an email?” with Yes/No options (below left). “Yes” will present a similar send email form as discussed in the previous section with login to Gmail and confirmation message. “No” will display the next a message box, “Do you want to send a text message?” with Yes/No options (below right). “Yes” will display a similar text form as previously discussed with login to Gmail and confirmation message. “No” displays an error message asking the user to choose a method of contact and brings the user back to the home portal form.

The left screenshot shows the 'Home' form with a 'Send Email' dialog box. The right screenshot shows the 'Home' form with a 'Send Text' dialog box. Both forms have a 'Welcome to the Provo 21st active ward directory.' message and a background image of a statue. The forms also have buttons for 'Update or', 'Contact an Organization', 'Generate Reports', and 'Exit'.

Contact an Organization:

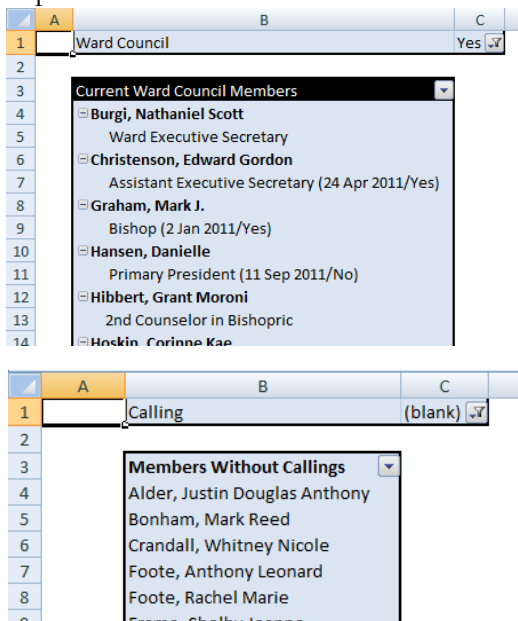
The “Contact an Organization” button on the “Home” portal presents the user with the “Contact Organization” form. This allows the user to specify an organization using a combo box and check email and/or text boxes to chose the method(s) of contact (below left). The list box is generated by connecting the source range and destination range, adding the source range to a new spreadsheet, removing the duplicates, sorting the data, adding each item to the combo box, and finally deleting the new spreadsheet. A fun part in designing this form was to include a label that would update every time the combo box item changed and display the selected choice (below right). After clicking “Continue” the methods of contact are then presented. If the “Email” checkbox is selected, email



forms similar to the forms discussed in the previous sections are presented. Likewise if the “Text” checkbox is selected, similar forms are displayed as discussed above.

Generate Reports:

The last command button on the “Home” portal displays a form allowing the user to specify a report to generate (right). The two reports available are “Active Ward Council Members” and



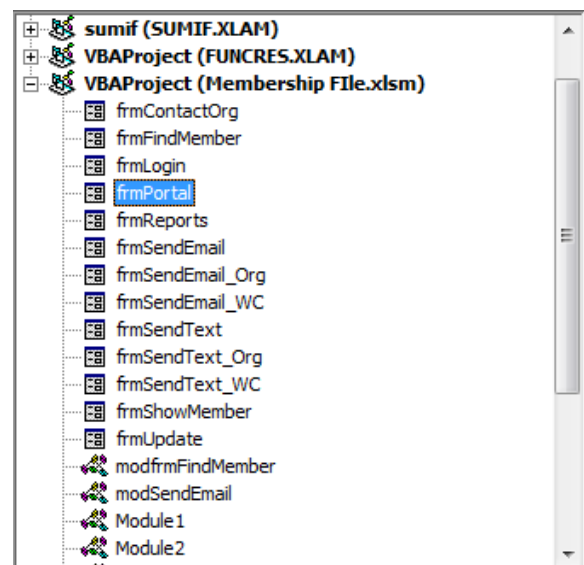
“Members Without Callings” (the two reports most frequently requested by my bishop). Selecting “Active Ward Council Members” and clicking “Generate Reports” will create a pivot table and activate the “Ward Council” spreadsheet (left). The pivot table places the members’ full name and calling in the row fields and ward council in the page field. Then, it filters the page field for “Ward Council” = “Yes.”

Likewise, “Members Without Callings” will generate a pivot table with only the members’ full names in the row fields and callings in the page field. Then, it filters the page field for “Calling” = (blank) (right).

Learning and Conceptual Difficulties Encountered

User Interface

I learned through this project how difficult user interface (UI) can be! I wanted to make this program intuitive enough that even an elderly family history consultant could use it. The program has 13 user forms total: Update or Contact Ward Member (5), Contact Organization (3), Contact Ward Council (3), Home portal (1), Generate Reports (1). Each user form had to be clean and easy to understand and navigate. Since many user forms needed to share information, declaring global variable in modules was crucial. I also researched user interface design and learned basic practices like buttons should be to the lower right, and Tab sequence should take the user to the next logical action, and questions should lead the user (e.g. How do you want to contact ____ on the Contact Organization form).



Run Time Error 481

The biggest headache I encountered was displaying the member's image in the "Update or Contact Ward Member" and "Member Details" forms. I captured an image of each member using a screen capturing tool and saved them in the files workbook path as a PNG file. The code was correct to grab the picture (I basically copied it from the example in class see below). I got error "Run Time Error 481 – invalid picture." After an hour of troubleshooting, Google searches, and a visit with the TA, a solution was found. The error came because the pictures were 32 bit pictures but my VBA only recognized 24 bit. I had to convert all my pictures to 24 bit (.bmp) files using Paint.

This line of code took hours of my life:

```
imgMem.Picture = LoadPicture(ThisWorkbook.Path & "\\pics\" & Sheets("Member Data").Cells(rowNum, 4).Value)
```

Different Cell Phone Carriers

My program includes the cell phone number of ward members and does not indicate which carrier they use. In order for a text message to send to any member, I had to account for every potential cell phone carrier. The program actually sends a text message to the every major carrier (below).

Obviously, this is not ideal. Turns out there is not a viable solution that is within the scope of this class. Fortunately, the only carrier that sends an email indicating an undeliverable message is AT&T.

```
Do Until error = 0
    sendGMail Sheets("Member Data").Cells(rowNum, 8).Value & "@messaging.sprintpcs.com", un, pw, subject, message
    sendGMail Sheets("Member Data").Cells(rowNum, 8).Value & "@vtext.com", un, pw, subject, message 'verizon
    sendGMail Sheets("Member Data").Cells(rowNum, 8).Value & "@txt.att.net", un, pw, subject, message 'att
    sendGMail Sheets("Member Data").Cells(rowNum, 8).Value & "@tmomail.net", un, pw, subject, message 'tmobile
    sendGMail Sheets("Member Data").Cells(rowNum, 8).Value & "@sms.mycricket.com", un, pw, subject, message 'cr
Loop
```

Final Takeaways

As I begin my career, I look forward to using the new skills I've learned in this class. By doing this project, I have gained a better appreciation for the world of programming and have learned logic and reasoning skills. This was a wonderful experience and I know the bishopric will enjoy using the program.