# Spreadsheet Reformatting Tool

Proposal

## FHSU CSCI 441 Fall 2019

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**Project Website:** https://sites.google.com/view/csci441vaf19-hrisreportmanagem
**Github Repository:** https://github.com/jepogue/HRIS-Report-Management

## I. Executive Summary

This software will be designed to facilitate the customization of spreadsheet reports from any source. Its key purpose is to allow administrative employees to automatically reformat generic reports to suit their specific needs. This will allow the average, non-technical employee to customize reports and will eliminate the manual, repeated effort by such employees. This will also allow the designated reporting subject matter experts to focus on higher-level tasks rather than responding to individualization requests from many end-users.

## II. History of the Problem

Employees are receiving spreadsheet reports from 3rd party software. The reports need to be reformatted for specific uses based on individual's needs. Often, the particular 3rd party software provides a means of customization, but the user needs to be an expert in each 3rd party system in order to customize reports to their needs. The designated subject matter experts for the reporting software cannot accommodate every possible individualization request from the end-user employees. As such, most end users are importing the spreadsheets into Microsoft Excel and manipulating the reports manually.

Examples (not exhaustive) of repetitive manual manipulation tasks employees are performing in Microsoft Excel:

1. Deleting columns/fields that are not needed
2. Filtering or grouping the records by a particular column/field value
3. Creating graphs of the data that is received in a spreadsheet format
4. Merging two reports together from different data sources based on a common key
5. Emailing reports to other employees or external contacts

Currently, there is nothing in place to help employees minimize the manual and repetitive ordeal of manipulating reports each time a new one is received without having programming knowledge in Microsoft Excel.

## III. Proposed Solution

Microsoft Excel can automate reformatting tasks, but it requires extensive knowledge of the underlying programming language, which the average user does not possess. This proposed program will act as a user-friendly interface for users to customize their Microsoft Excel spreadsheet reports, and will retain their preferred configurations for future use – cutting down tremendously on the amount of time users spend trying to modify each report to their individual needs. At the same time, this will not require the company to employ "experts" to operate the software tool on behalf of the average user.

Every spreadsheet modification feature the program will offer is already available from within Excel's interface. The program will simplify these procedures for the user and allow their settings to be run automatically, either ad-hoc, or at a scheduled time, eliminating any manual intervention.

The proposed software solution is not dependent on working with any particular 3rd party software. As the vast majority of reports from 3rd party software can be created in a Microsoft Excel format, the proposed solution will work with current, and future 3rd party systems. This makes it a valuable tool for the company as it currently has unforeseen applications.

The software does not intend to replace the base functionalities of Microsoft Excel. Excel would still be used to manipulate data and perform calculations as needed. This software intends to eliminate the need for manual reformatting on a recurring basis, which alleviates 3rd party software domain experts from having to assist average end-users of reports with custom modifications to their reports within the 3rd party software.

**IV. Program Features**

1. Select a file from the repository
    a. Users should be able to select the the output location of the 3rd party reporting system either on the network, or locally where the file to be modified will be located. The software will pull a copy of the report from the designated location ad-hoc or on a scheduled basis to begin processing.

2. Save a template
    a. After accessing a report output by the 3rd party reporting system, a user will select the particular manipulation settings (described in other requirements) the program will perform on the report. These settings will be stored in the program as a template, so the user can access them again.
    b. Once template settings are stored, the user will be able to select that template and run it ad hoc or setup on a schedule.
    c. Template settings may be edited but not saved and run in a single use-case.
    d. Frequently used templates should be displayed prominently in the system's UI.
    e. All settings described will be saved in the template

3. Merge with another file
    a. For reports with common data sets, the user will be able to compare and merge two reports.
    b. Users can customize the resultant report before the merge occurs.

4. Delete Fields
    a. Oftentimes, Human Resource Information Systems reporting capabilities lack the ability to drill down reports to the users desired specifications. This system will

allow the user to choose pertinent information for their needs, while purging superfluous info.
    b. The software will manage this functionality without altering the inputted report. This allows the user to reverse settings made, if they decide that there is information they would like to include after having previously taken it out.
    c. The fields available for deletion will be dynamically displayed on a per-report basis within the systems UI.

5. Compare to prior report
    a. After processing a new report, the user can choose to compare it with a previously processed report and the system will notate any additions, deletions or changes.
    b. Changes will be highlighted by the system, and can be compiled into a seperate report.

6. Schedule Auto-Run
    a. Users will have the ability to automatically run their templates on a daily, weekly, or monthly basis. These runs will occur without user interaction, and the user will be able to select the output in the designated location or email address.

7. Email to myself or others
    a. User will be able to automatically email processed reports from the UI and manage email designation from the report's template.
    b. Once option is selected, the user will be prompted for their own email address.
    c. Copy of file will need to be sent via server-side mail script to user's own address as a download link, since file sizes could very easily exceed common mail server limitations.

8. Specify the output name of the file
    a. Output report after processing will be saved with filename chosen by the user and this setting will be saved to the template.

9. Save in a desired location
    a. Users will be able to select the location of the processed reports outputted by the software. This location is saved based on the template the user has set, and can be adjusted within the template.

10. Create data visualizations
    a. Users will be able to output charts and graphical representations of reports after processing.
    b. Their visualization settings will be able to be stored within each template for easy re-use.

11. Export report/chart, etc. to PDF
    a. Users will have the option to export the report as a PDF file or as a JPEG image.
    b. Export menu will ask the user to name the file, then select its format.
    c. The user will also have the ability to select which directory on their machine the file is then saved to.

12. Change file format to .csv or otherwise
    a. Realizing that different customers have different needs, It may necessitate that the exportable report be provided in a variety of formats. Thus the software should accommodate exporting in multiple file formats chosen by the end user.

13. “Group By” / Pivot
    a. Users will be able to perform sorting and counting functions based on the data in their report. System will be able to perform further statistical functions as well.
    b. Data will be able to be grouped by common fields, similar to a “pivot table” in Microsoft Excel.

**V. Our Solution**

Our software will fulfill a need that undoubtedly plagues many a company. Regardless of the industry, most businesses large or small require administrative personnel, whose duties include providing periodic reports to other employees or within other administrative software systems. Given how many tasks administrative personnel are already responsible for, it is unreasonable to expect a central reporting/technical staff to willingly modify report configurations on an as-needed basis for other employees. As such, the onus is generally placed on each employee to modify their own reports to their individual needs, which can often be a tedious and time-consuming process when performed on a weekly or monthly basis.

Since most administrative software solutions that have the ability to customize reports require the use of their own proprietary reporting software, or an advanced knowledge of Excel functions, our project aims to offer a simple, cross-compatible solution for users of any OS or spreadsheet software. It will not matter where the spreadsheet originates as long as it is in an approved format for importing.

The simplicity of importing a spreadsheet, easily modifying it to one’s liking, then exporting it to a myriad of desirable formats is not currently an available application for public use. As such, the need for such a tool is self-evident. Ultimately, this software will provide value for our customers, by saving time placed on menial tasks within their various administrative departments. This results in money saved, and time better allocated for higher priority tasks.

## VI. Team Profile and Expertise

*Areas of expertise of our team members:*

Josh Lewis: Documentation, Visual design, dynamic PDF and image creation

John Mullane: Organization and Presentation

Jeremy Pogue: C#, Java, C++, Python Programming

Taylor Zwiebel: C#, Java, C++, Python Programming

**VII. Product Ownership & Plan of Work**

The following list describes the product/feature ownership of this project. Each member will own that specific aspect of the project.

1. **Select a file from the repository** - Jermey Pogue
2. **Save a template** - John Mullane
3. **Merge with another file** - Taylor Zwiebel
4. **Delete Fields** - Jeremy Pogue
5. **Compare to prior report** - Taylor Zwiebel
6. **Schedule Auto-Run** - Taylor Zwiebel
7. **Email to myself or others -** Josh Lewis
8. **Specify the output name of the file** - John Mullane
9. **Save in a desired location** - Jeremy Pogue
10. **Create a chart** - Josh Lewis
11. **Export report/Chart, etc. to PDF** - Josh Lewis
12. **Change file format to .csv or otherwise** - Jeremy Pogue
13. **“Group By” / Pivot** - John Mullane

In the coming weeks, we are going to focus on building core functionality features of (1) Selecting files, (4) deleting fields, (2) saving a template, and (9) saving in desired location. These base features will be created into a user-interface that is easy to use and understand.

## VIII. Glossary

1. **JPEG** - a format for compressing image files.

2. **Microsoft Excel** - an electronic spreadsheet program used for storing, organizing, and manipulating data. It can create charts and other data visuals.

3. **PDF** - a file format that provides an electronic image of text or text and graphics that looks like a printed document and can be viewed, printed, and electronically transmitted.

4. **Pivot Table** - a function in Microsoft Excel that allows the user to reorganize and summarize selected columns and rows of data in a spreadsheet or database table to obtain a desired report