Spreadsheet Reformatting Tool

Statement of Work & Requirements

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

Individual Contributions Breakdown

	Project Part	Project Category	Team Member			
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Responsibility %	**1**	Section 1a Customer Problem Statement	100%			
		Section 1b Glossary of Terms	100%			
		Section 2a Enumerated Functional Requirements		100%		
		Section 2b Enumerated Non-Functional Requirements			100%	
		Section 2c User Interface Requirements				100%
		Project Management	100%			

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1. Customer Problem Statement

a. Problem Statement

We have a Human Resources department with hundreds of employees using various 3rd party software to administer the different programs in the employee life-cycle. Each one of these software has some reporting functionality. Some programs have limited capability, and produce reports that must be modified to meet the needs of the business. Other programs have very robust reporting tools within the platform, and require a great deal of working knowledge in order to completely format the report to what is needed for the business purpose. Additionally, many employees are using multiple programs each day and do not know the intricacies of each program's reporting capabilities. Often, what the end-user needs is not exactly what the given software will produce (or it would take a great deal of time and knowledge to produce the desired result). As a result, our end-user employees manually manipulate reports in Microsoft Excel in order to get what they need on a daily, weekly, monthly, or quarterly basis. Some of our employees have to manipulate a spreadsheet each day for their business needs.

Some programs, due to the complexity of reporting and the sensitivity of the underlying data, our business only allows a small number of people to create reports. For example, our HRIS program contains sensitive employee information and so we limit the reporting capabilities to just four individuals. Furthermore, the HRIS program is very capable of producing reports in a manner that will output in exactly the format the end-user requires, but the reporting tool is quite complex and the average end-user cannot be expected to possess this knowledge just for a few reporting needs (nor could we afford to train them or use their time in this manner). Due to the limited number of people that are given access to the HRIS reporting tool, the number of customization requests by individuals is necessarily limited. If a customer needs a basic customization, such as the removal of a field, or the filtering of certain employees, they are denied a custom report, and must do the formatting themselves.

As discussed, for various reasons we have employees using Microsoft Excel for final formatting needs. This is not usually a matter of just putting in new data and having a chart or table automatically update. Most commonly, the end-user needs to delete some columns, filter some columns based on some criteria, sort the data on other criteria, and so forth. And, the employees are doing this on a recurring basis, sometimes daily. This is quite a was of time for the employees, even if it is only a matter of minutes. Their job is not to spend time formatting Excel spreadsheets. Some of the very tech-savvy employees have managed to write Microsoft Excel “macros” in order to complete this repeated formatting automatically. We asked the employees if they could apply this method for others, but it is too complicated and time consuming to write one single macro (there is programming involved in the background of Excel), and cannot be easily taught to others. Additionally, even those employees with the Excel “macros” still need to download the reports and run their program in order to get the final formatting complete.

We have already partially eliminated one step in the process, the downloading of the report for the end-user. Previously, users would need to go into their respective programs on a recurring basis and either download a report already produced, or need to wait for a new report to generate and then download (as there is no scheduler in some systems). Some of our software allows us to schedule reports to be emailed or sent via FTP or retrieved via API. This has helped eliminate some of the time spent with the daily retrieval of reports from the various systems, as we have scheduled the applicable reports to be moved automatically to their respective network locations for end-user retrieval.

In summary thus far, we have end-users of reports retrieving reports in spreadsheet format from a centralized repository and completing manual formatting of the files in Microsoft Excel. They are completing the same tasks on a recurring basis, as frequently as daily. Due to barriers of knowledge, and restrictions of the time of our subject matter experts, we do not have a way to eliminate these repetitive tasks. As such, we are coming to market for a software solution to our problem.

What this company needs is a software that will perform the repetitive formatting tasks that each end-user needs, without necessitating a high degree of time or training. Ideally, the software will perform these tasks automatically, on whatever schedule the end-user dictates. The software should allow the user to save multiple “templates” of the required formatting, as oftentimes employees have more than one special formatting need. This program must be as user-friendly as possible - we do not expect our

employees to be able to do any sort of programming to setup these formatting tasks and schedules.

This is not a new problem for us. We have previously compiled a list of common tasks and ideal solutions from employees that are tasked with manually manipulating reports for formatting purposes.

For most applications, we foresee the reports in the centralized repository containing more fields/columns than are necessary. We will do this in order to minimize the maintenance and customization requirements for the applicable subject matter experts. Commonly, the employees that are experts in a specific reporting tool are asked to add or remove a field, which is not a good use of their time. However, we cannot, for various reasons discussed above, allow the end-user to modify or create reports themselves. We have had employees attempt to create basic Excel “macros” by using Excel’s built-in “macro recording” functionality. However, this fails if the report is ever modified. Adding or removing an additional column throws the whole thing off. We need the proposed software to dynamically delete a field/column based on the column name, and not simply on the location/ordering of the column within the spreadsheet. Furthermore, if this column name is changed or removed, we would expect the program to alert the end-user, and not simply skip the step or delete the wrong column (as was happening with our users home-grown “recorded macros”). We would like the user to be presented with a visual representation of the fields/columns that are in the report, and they should be able to deselect any fields they do not wish to have. A preview of the data within that field would also be nice to have. The program should delete those fields upon running.

Another common task employees perform is sorting and filtering. Different users care about different pieces of information, and different populations of people or things within that data that is contained in a large report. Our employees need to be able to filter the data by one or more fields/columns and subsequently sort that data by multiple columns. The output report should not contain the data that was “filtered out”.

Re-ordering the fields/columns in the report is something else our end-users find themselves doing on a regular basis. Frequently, there is a unique identifier located in one column that needs to be either the first column in the report or some other specific column depending on the final usage. Additionally, users have reported that they often need to rename the column headers in order to import into a system or otherwise make them more readable for their particular audience. Furthermore, with users importing into other systems, they are always having to save the files as a “.csv” before importing,

and would like to have that step eliminated. Some users prefer to save a copy of both the “csv” and the Excel file, while other users have no need for a copy in an excel format.

Continuing along the lines of importing and dealing with other systems: users have reported that they are often merging reports from two different systems. For example, we have a user that takes data from the HRIS platform, and matches it with data from the Learning Management system in order to see which newly hired employees have completed their training. They are currently doing this by using a “vlookup” in Excel based on a unique identifier that is shared between the two systems. They would like to be able to have a program perform this operation automatically and just have to indicate which files to merge and which fields contain the unique identifier.

Once the formatting is complete, many employees are creating graphs and/or PDFs of the report output. They have asked for the ability to dictate what type of graph they would like and what data is applicable within the report, and have the graph be created automatically and either output as an image or into a PDF document. The report (without any graphs) should also be available to be exported into PDF.

Almost always, all of the work done thus far is not just for the employee’s personal use. It is to be shared with other employees. Users are sometimes emailing their report or saving a copy to a shared location, or both.

To put this all into context, the following is a specific example we received of one user’s daily process which contains most of the company’s needs with regard to the proposed software solution:

Every morning I need to produce a report of the new hires and what training is required of them. I login and go to the report repository to retrieve two different reports. One report is from our HRIS and one is from our LMS. The report from the LMS contains the employees hired yesterday that need training. It has specific information about training classes that our HRIS does not keep on file. However, it doesn’t have the employee’s location and manager email, which I need in order to schedule training. That information is in a report from the HRIS, and so I need to merge the two files together in order to get a listing that I can send to the managers at the various locations.

First, I open up the HRIS report and delete all the columns except the Employee ID, Employee Name, Manager Name, Manager Email, and employee location. Then, I put the LMS report into the same Excel file, and use “vlookup” to bring the HRIS information into the LMS report. After that, I take the merged report, and filter out any

people in two specific locations, as they don't need to go through the training in those locations. Finally, I sort by location and then manager, so the managers can easily find their employees.

Before sending out, I quickly create a chart showing the amount of people needing training at each location, and take a screenshot so I can use it in a report I put together. Lastly, I make sure a copy is in a specific directory for later reference, and then I print it to PDF and email it to all the managers at a group email listing.

b. Glossary of Terms

.csv - (abbr) a comma-separated values (CSV) file is a delimited text file that uses a comma to separate values. A CSV file stores tabular data (numbers and text) in plain text.

Employee life-cycle - an HR model that identifies the different stages a worker advances through in an organization and the role HR plays in optimizing that progress

HRIS program - a software or online solution that is used for data entry, data tracking and the data information requirements of an organization's human resources (HR) management, payroll and bookkeeping operations. A HRIS is usually offered as a database.

Learning Management system - a software application for the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs.

LMS - (abbr) Learning Management System

Macros - an automated input sequence that imitates keystrokes or mouse actions. A macro is typically used to replace a repetitive series of keyboard and mouse actions and are common in spreadsheet and word processing applications like MS Excel and MS Word.

Recorded macros - a macro created by a piece of software that records user actions for playback at a later time.

Subject Matter Experts - an individual with a deep understanding of a particular process, function, technology, machine, material or type of equipment.

Unique identifier - any identifier which is guaranteed to be unique among all identifiers used for those objects and for a specific purpose.

2. System Requirements

a. Enumerated Functional Requirements

Requirements	Priority	Description
REQ-1	5	User can create and save a template of formatting rules to be assigned to the chosen file
REQ-2	5	User can select a file for the system to import for reformatting.
REQ-3	5	User can delete columns
REQ-4	5	User can rename column headers
REQ-5	5	User can rearrange columns
REQ-6	5	User can choose to sort data by chosen criteria within a template before the report is reformatted.
REQ-7	5	User can filter the data based on one or more column values
REQ-8	5	User can merge two reports within the system based on a unique identifier
REQ-9	5	User can save formatted file to local drive
REQ-10	4	User can designate the output file after formatting has been run. This includes: name, save-location, and filetype.
REQ-11	4	User can schedule templates to be applied to reports automatically

REQ-12	3	User can group data by columns, similar to a “Pivot Table” in Microsoft Excel
REQ-13	3	The system will allow users to compare two reports formatted from the same template.
REQ-14	3	Formatted file can be emailed automatically upon completion by system
REQ-15	3	User can choose to keep a copy of the original, or save only the newly formatted report.
REQ-16	3	Formatted file can be exported to PDF by user.
REQ-17	3	User can schedule the templates to run on a recurring basis (i.e. everyday, every Monday, first of each month, etc.)
REQ-18	2	Saved templates should be allowed to be edited by user for single-use runs without being altered (template will remain as is after single-use edit)
REQ-19	2	User will receive a prompt to pick a template when opening a file.
REQ-20	1	The system should store information in a report after a user chooses to delete it, so it may be regained after a template has been run.
REQ-21	1	User can email their edited reports as a download link to other people or groups of people.
REQ-22	1	User can create visual charts and data representations in the template.

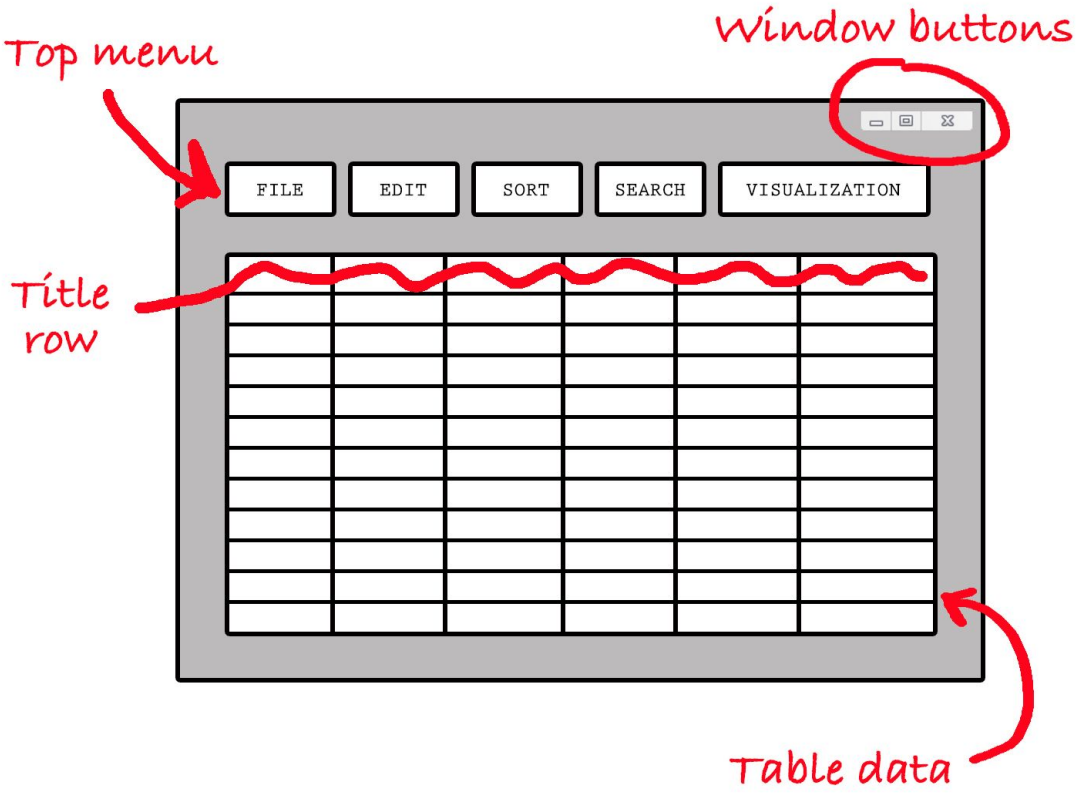
b. Enumerated Non-Functional Requirements

Requirements	Priority	Description
REQ-23	5	Program run time for templates should not exceed the amount of time it takes to manually perform the formatting
REQ-24	3	Program should be able to run while user is actively using other programs, and not substantially consume system resources
REQ-25	4	Program should be easy to install or access if a service
REQ-26	5	The average office employee should be able to operate the program without training
REQ-27	3	The program should be able to be serviced centrally or redeployed/updated as needed
REQ-28	5	Program should operate reliably, and without interruption to scheduling

c. User Interface Requirements

Requirements	Priority	Description
REQ-29	3	Initial screen features simple step-by-step instructions for how to use the application.
REQ-30	4	Help text should be available for all non-self-explanatory user interactions with the program
REQ-31	5	Program should guide the user through various steps (i.e. a “Wizard” type of program)
REQ-32	3	Preview of the file/data will be available to the user when setting up or modifying the template
REQ-33	3	Column headers can be renamed directly in the preview of the data/file
REQ-34	2	Filtering and sorting is done interactively via user interface, similar to Microsoft Excel
REQ-35	2	Columns can be dragged and dropped to re-order
REQ-36	5	The Visualization Wizard tool will allow for a preview of the visual before exporting the image/document
REQ-37	5	User should have a “template library” where they can view all their templates and the reports to which they apply

Interface Design Mock-Up



Notes regarding user interface requirements:

In speaking with the customer, it was clear they were concerned about usability from the standpoint of the average office employee. The customer expressed the desire to maintain similar interactivity with the program, similar to Microsoft Excel, as that is what the employees are using currently. In discussing further the range of capabilities with the customer, we noted that visual interactivity may not be essential as these tasks will no longer be repeated and thus the speed at which the user can setup the template is no longer such an important factor. The customer may be willing to sacrifice the similarity of interaction to Microsoft Excel in order to cut development time/costs. The overriding factor is that anyone that works in the company can easily use this program without extensive training.