**Schulich School of Medicine & Dentistry**

**Western Computer Science – CS3307a**

**Collaborative project**

**Project Initial Requirements**

**Acuity STAR Dashboard**

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# Stakeholders

|  |  |  |
| --- | --- | --- |
| Paul Malcomson | Schulich Clinical Application support | [Paul.malcomson@sjhc.london.on.ca](mailto:Paul.malcomson@sjhc.london.on.ca) |
| Derrick Gould | Schulich Clinical Application support | |  |  | | --- | --- | |  | [Derrick.Gould@lhsc.on.ca](https://gwwa.lhsc.on.ca/gw/webacc?User.context=76d064d1bd77a9d4bdfdd6cd79ac7f50f2ff3259&Provider.name=SOAP&Item.drn=55EEA69D.SJHC.PO22.100.1387567.1.7DA6.1@1:7.SJHC.PO22.100.0.1.0.1@16&Url.Folder.type=Folder.UNIVERSAL&htmlId=&Item.index=12&action=Item.Action&Item.Properties=&Item.Enclosure.id=55EEA69D.SJHC.PO22.100.1387567.1.7DA6.1@1:7.SJHC.PO22.100.0.1.0.1@16&Url.Item.isOutbound=&merge=msgitem&tab=1&writeAccess=1&Item.type=Mail&Item.meOnBC=0) | |
| Nazim Madhavji | Professor |  |
|  |  |  |

# Project requirements

## Problem statement

The ability to manipulate and consume aggregate information from Acuity STAR has always been a manual process. Currently users have to process data in Excel, manually.

## Project Objective

Create a program that processes Excel CSV data, displays and prints metrics, summary, and visualization information from this data.

The ideal solution would allow users to load one or more of the four ‘subject areas’ spreadsheet data. The subject areas are:

1. Grants and clinical funding
2. Presentations
3. Publications
4. Teaching

This data will be in a known format, CSV with column headings. See Appendix A for spreadsheet information. **NOTE that columns could be in a different order, so column heading determines the data throughout the CSV**. CSV files are comma delimited, optionally contained in “ (quotes) “ – meaning some data could have commas throughout the text.

Once this data is loaded, a navigable dashboard of visual information should be displayed, based on this data. Appendix B has mockups of what dashboard information should be presented.

The program should also show different graphing of this data. Appendix C lists some valuable graphing styles. All dashboard and visual graphing should be printable.

Stretch assignments would include:

ERROR processing is required to validate that data contains information (not blanks for key fields) and valid information for that field type. A stretch goal for this project would be to allow users to view and modify/remove/ignore error rows/columns in the CSV. This could be an additional set of screens, optional after loading a subject area that displays error records. User could Ignore or Fix the data and reload.

Node authorship collaboration visualization using the Author(s) data in the Publications subject area.

Node grant collaboration visualization using the Primary Investigator and Co-Investigator name fields in the Grants and Clinical Trials Subject area.

## Technical requirements

The program should execute in a Windows environment (Win XP forward). Optional (stretch goal) is to run on both Mac (OSX) and Windows.

# Project Scope

## Inclusions

* This document contains the relevant information that will be elaborated on as the course progresses.
* The data included in this project should be considered confidential in nature and should not be shared to anyone outside the CS3307a course.

## Exclusions

* There should be no need to contact Acuity, the vendor of STAR for any questions.
* Students will not reverse engineer any component of Acuity STAR.
* Students will not need to access STAR data beyond the 4 subject area csv files.

# Appendices

## Appendix A - Data, CSV layouts

NOTE: some columns might not have data (blank or NULL). Mandatory columns should not have NULL values, if they do, then it row should be considered and ERROR.

Mandatory fields MUST be present so if that column is missing from CSV file, then do not proceed with loading (a mandatory column is missing). Optional fields, if missing, should just not be part of the data analysis.

Columns could be in a different order in the CSV. Column Headings (the name of the field) will not change.

The four subject areas are listed with field names below. Each field name has a disposition of Mandatory, Optional or Ignore and an Expected Data type. Mandatory fields should be flagged as ERROR if the column is blank. Ignore fields can literally be ignored and should not be displayed as part of any dashboard/graphing.

Dates in this data can be YYYY or YYYY/MM or YYYY/MM/DD. If dates are in any other format, then consider the row an ERROR row.

Some field data might have an asterisk (\*) prefacing them. These are normal and should be included in visualizations.

There can be special characters (carriage return, end of line) in the data.

### Grants and Clinical Funding subject area

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject Area** | **Field Name** | **Mandatory/Optional/Ignore** | **Expected Data type** |
| Grants and Clinical Funding | Record Info | Ignore | N/A |
|  | Last Modified User | Ignore | N/A |
|  | Last Modified Date | Ignore | N/A |
|  | ID | Ignore | N/A |
|  | Member Name | Mandatory | Text, owner of the row. |
|  | Primary Domain | Mandatory | Text, department of the owner (Surgery, eg) |
|  | Start Date | Mandatory | YYYY or YYYY/MM or YYYY/MM/DD |
|  | End Date | Mandatory | YYYY or YYYY/MM or YYYY/MM/DD |
|  | Funding Type | Mandatory | “Grants” or “Clinical Trials” |
|  | Status | Mandatory | Applied  Funded  Declined  Rejected  Not Funded |
|  | Peer Reviewed? | Mandatory | True/False (checkbox) |
|  | Industry Grant? | Mandatory | True/False (checkbox) |
|  | Role | Mandatory | Co-Applicant  Co-Investigator  Collaborator  Co-Principal Investigator  Principal Applicant  Principal Investigator  Principal Site Investigator  Site Investigator |
|  | Short Title | Optional | Text |
|  | Title | Mandatory | Text, could contain special characters |
|  | Application Summary | Optional | Text |
|  | Grant Purpose | Optional | Text |
|  | Area | Optional | Text |
|  | Principal Investigator | Mandatory | Text |
|  | Co-Investigators | Mandatory | Text |
|  | Grant and/or Account # | Optional | Text |
|  | Prorated Amount | Optional | $ currency |
|  | Administered By | Optional | Text |
|  | Funding Source | Optional | Text |
|  | Project | Optional | Text |
|  | Currency | Optional | CAD or USD |
|  | Received Amount | Optional | $ currency |
|  | Total Amount | Mandatory | $ currency |
|  | Member Share | Optional | $ currency |
|  | Monetary | Optional | True/False (checkbox) |
|  | Rpt | Optional | Short for Reportable;  True/False (checkbox) |
|  | Hours Per Week | Optional | Numeric |
|  | Personnel Paid | Optional | Text |
|  | Rnw | Optional | True/False (checkbox) |
|  | Education Grant | Optional | True/False (checkbox) |
|  | Duplicate Reported | Optional | True/False (checkbox) |
|  | Other Details (doesn't print) | Ignore | N/A |
|  | Year | Ignore | N/A |

### Publications Subject Area

|  |  |  |  |
| --- | --- | --- | --- |
| Subject Area | Field Name | Mandatory/Optional/Ignore | Expected Data type |
| Publications | Record Info | Ignore | N/A |
|  | Last Modified User | Ignore | N/A |
|  | Last Modified Date | Ignore | N/A |
|  | Member Name | Mandatory | Text |
|  | Primary Domain | Mandatory | Text |
|  | Publication Status | Mandatory | Published  In-Press  Accepted |
|  | Pubmed Article ID | Optional | Numeric |
|  | Type | Mandatory | |  | | --- | | Book Chapters | | Books | | Books Edited | | Case Reports | | Clinical Care Guidelines | | Commentaries | | Conference Proceedings | | Editorials | | Invited Articles | | Journal Article | | Letters to Editor | | Magazine Entries | | Manuals | | Monographs | | Multimedia | | Newsletter Articles | | Newspaper Articles | | Published Abstract | | Supervised Student Publications | | Websites / Videos | | Working Papers | |
|  | Area | Ignore | N/A |
|  | Status Date | Mandatory | YYYY or YYYY/MM or YYYY/MM/DD |
|  | Role | Mandatory | Principal Author  Co-Author  Collaborator  Senior Responsible Author  Editor  Reviewer |
|  | Peer Reviewed? | Optional | True/False (checkbox) |
|  | Author # | Optional | Numeric |
|  | Journal Name | Published In | Book Title | etc. | Mandatory | Text |
|  | Volume | Optional | Text |
|  | Issue | Optional | Text |
|  | Page Range | Optional | Text |
|  | DOI | Optional | Text |
|  | Website | Optional | Text |
|  | Journal Impact Factor | Optional | Numeric |
|  | International | Optional | True/False (checkbox) |
|  | Publisher | Optional | Text |
|  | Is Presentation? | Optional | True/False (checkbox) |
|  | Personal Remuneration | Optional | Text |
|  | Trainee Details | Optional | Text |
|  | Is Most Significant Publication? | Optional | True/False (checkbox) |
|  | Most Significant Contribution Details | Optional | Text |
|  | Education Publication | Optional | True/False (checkbox) |
|  | Other Details (doesn't print) | Ignore | N/A |
|  | Author(s) | Mandatory | Text |
|  | Title | Mandatory | Text |
|  | Rest of Citation | Ignore | N/A |
|  | ISBNISSN | Optional | Text |

### Presentations Subject Area

|  |  |  |  |
| --- | --- | --- | --- |
| Subject Area | Field Name | Mandatory/Optional/Ignore | Expected Data type |
| Presentations | Record Info | Ignore | N/A |
|  | Last Modified User | Ignore | N/A |
|  | Last Modified Date | Ignore | N/A |
|  | Member Name | Mandatory | Text |
|  | Primary Domain | Mandatory | Text |
|  | ID | Ignore | N/A |
|  | Date | Mandatory | YYYY or YYYY/MM or YYYY/MM/DD |
|  | Type | Mandatory |  |
|  | Area | Ignore | N/A |
|  | Role | Mandatory |  |
|  | Activity Type | Optional |  |
|  | Geographical Scope | Optional |  |
|  | Host | Optional | Text |
|  | Country | Optional | Text |
|  | Province | Optional | Text |
|  | City | Optional | Text |
|  | Number of Attendees | Optional | Numeric |
|  | Hours | Optional | Numeric |
|  | Teaching Effectiveness Score | Optional | Text, typically numeric |
|  | Education Presentation | Optional | True/False (checkbox) |
|  | Remarks | Optional | Text |
|  | Authorship | Optional | Text |
|  | Title | Mandatory | Text |
|  | Rest of Citation | Optional | Text |
|  | Personal Remuneration | Optional | $ currencty |

### Teaching Subject Area

|  |  |  |  |
| --- | --- | --- | --- |
| Subject Area | Field Name | Mandatory/Optional/Ignore | Expected Data type |
|  | Record Info | Ignore | N/A |
|  | Last Modified User | Ignore | N/A |
|  | Last Modified Date | Ignore | N/A |
|  | ID | Ignore | N/A |
|  | Member Name | Mandatory | Text |
|  | Primary Domain | Mandatory | Text |
|  | Start Date | Mandatory | YYYY or YYYY/MM or YYYY/MM/DD |
|  | End Date | Mandatory | YYYY or YYYY/MM or YYYY/MM/DD |
|  | Program | Mandatory | Text |
|  | Type of Course / Activity | Mandatory | Text |
|  | Course / Activity |  | Text |
|  | Geographical Scope | Mandatory | Text |
|  | Institution / Organization | Optional | Text |
|  | Faculty | Optional | Text |
|  | Department | Optional | Text |
|  | Division | Optional | Text |
|  | Location | Optional | Text |
|  | Hours per Teaching Session or Week | Mandatory | Numeric |
|  | Number of Teaching Sessions or Weeks | Mandatory | Numeric |
|  | Faculty Member Additional Comments | Optional | Text |
|  | Student Name(s) | Optional | Text |
|  | Initial Lecture | Optional | True/False (checkbox) |
|  | Faculty Development | Optional | True/False (checkbox) |
|  | Stipend Received | Optional | True/False (checkbox) |
|  | Comment | Optional | Text |
|  | Other Details (doesn't print) | Ignore | N/A |
|  | Total Hours | Mandatory | Numeric |

## Appendix B - Dashboard screens

### Required functionality (at a minimum)

Below is a mockup of what should be displayed onscreen for the summary… plus/minus (+ -) buttons should expand/collapse sections. After loading one or more subject area, the user should be allowed to select a Dashboard summary of each loaded dataset. Date range filters should be available.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Publication Summary | | |  |  |  |
| Department of Medicine | | | |  |  |
| Date Range Selected: | | |  |  |  |
| 2012-Jan | 2015-Dec | |  |  |  |
|  |  |  |  | Total |  |
| + | Publications | | | 200 |  |
|  | + | Published Abstracts | | 82 |  |
|  |  |  | Filler, Guido | 17 |  |
|  |  |  | Faculty name1 | 28 |  |
|  |  |  | Faculty name2 | 4 |  |
|  |  |  | Faculty name3 | 12 |  |
|  |  |  | Faculty name4 | 10 |  |
|  |  |  | Faculty name5 | 11 |  |
|  | + | Journal Articles | | 75 |  |
|  | + | Books |  | 4 |  |
|  | + | Book Chapters | | 20 |  |
|  | + | Letters to Editor | | 19 |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Grants and Clinical Funding Summary | | | |  |  |  |
|  | Department of Medicine | | | |  |  |  |
|  | Date Range Selected: | | |  |  |  |  |
|  | 2012-Jan | 2015-Dec |  |  |  |  |  |
|  |  |  |  |  | Total # | Total $ |  |
|  | + | Grants |  |  | 14 | 127,000,000.00 |  |
|  |  | + | Peer Reviewed | | 7 | 63,500,000.00 |  |
|  |  |  |  | Filler, Guido | 2 | 18,142,857.14 |  |
|  |  |  |  | Faculty name1 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name2 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name3 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name4 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name5 | 1 | 9,071,428.57 |  |
|  |  | + | Industry Sponsored | | 7 | 63,500,000.00 |  |
|  |  |  |  | Filler, Guido | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name1 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name2 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name3 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name4 | 1 | 9,071,428.57 |  |
|  |  |  |  | Faculty name5 | 2 | 18,142,857.14 |  |
|  | + | Clinical Funding | | | 7 | 280,000.00 |  |
|  |  | + | Peer Reviewed | | 4 | 140,000.00 |  |
|  |  |  |  | Filler, Guido | 1 | 35,000.00 |  |
|  |  |  |  | Faculty name1 | 1 | 35,000.00 |  |
|  |  |  |  | Faculty name2 | 1 | 35,000.00 |  |
|  |  |  |  | Faculty name3 | 1 | 35,000.00 |  |
|  |  | + | Industry Sponsored | | 3 | 140,000.00 |  |
|  |  |  |  | Filler, Guido | 1 | 46,666.67 |  |
|  |  |  |  | Faculty name1 | 1 | 46,666.67 |  |
|  |  |  |  | Faculty name2 | 1 | 46,666.67 |  |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Teaching Summary | | |  |  |  |
| Department of Medicine | | |  |  |  |
| Date Range Selected: | | |  |  |  |
| 2012-Jan | 2015-Dec |  |  |  |  |
|  |  | Academic Year | Hours | Students |  |
| + | PME |  | 1620 | 808 |  |
|  | + | 2012-2013 | 500 | 250 |  |
|  |  | Faculty 1 | 125 | 120 |  |
|  |  | Faculty 2 | 125 | 80 |  |
|  |  | Faculty 3 | 250 | 50 |  |
|  | + | 2013-2014 | 480 | 258 |  |
|  | + | 2014-2015 | 640 | 300 |  |
| + | UME |  | 1500 | 498 |  |
| + | CME |  | 1200 | 300 |  |
| + | Other |  | 800 | 121 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Presentation Summary | | |  |
| Department of Medicine | | |  |
| Date Range Selected: | | |  |
| 2012-Jan | 2015-Dec | Faculty Name | # of presentations |
|  |  |  |  |
| + | Invited Lectures |  |  |
|  | + | Dr. Guido Filler | 14 |
|  | + | Dr. S. Strange | 7 |
|  | + |  | 8 |
| + | Abstracts Presented |  | 22 |
| + | Next presentation type |  | 44 |
| + | Other |  | 66 |

## Appendix C - Visualizations

### At a minimum

Using the same data, users should also be able to graph subject area by faculty name. These should include bar graphs, pie charts and other typical graphing. Users should be able to change which type of graph is displayed.

For a Faculty (member) Name, graph of publications by type by date range

For a faculty name, graph of funded research (grants/trials) by date range (including $)

For a Faculty name, graph of presentation types by date range

For a Faculty name, graph of teaching by program level by date range, or by Type of Course/Activity and program level by date range

### Stretch goal

In publication data, there is a field called Author(s). This could be used to produce collaboration visualization. Node authorship collaboration visualization using the Author(s) data in the Publications subject area.

Node grant collaboration visualization using the Primary Investigator and Co-Investigator name fields in the Grants and Clinical Trials Subject area.

Keywords: node visualization

## Appendix D – Input Data

This section has the .csv data – 4 subject areas. This is sample data from Acuity STAR, there will be error records present in this data.

Teaching\_sample.csv

Publications\_sample.csv

Presentations\_sample.csv

GrantsClinicalFunding\_sample.csv

