



CLEVELAND, OH

May 30 – June 2, 2023

Leveraging “DataOps” in the Small IR Shop

Lane DeNicola

Director of Institutional Research

College of Arts & Sciences, Emory University

<https://github.com/lanedenicola/IRDataOps>

#AIRForum

Laney Graduate School

School of Theology

School of Medicine

Oxford College

Business School

School of Nursing

Emory College

School of Law

School of Public Health

Laney Graduate School

School of Theology

School of Medicine

Oxford College

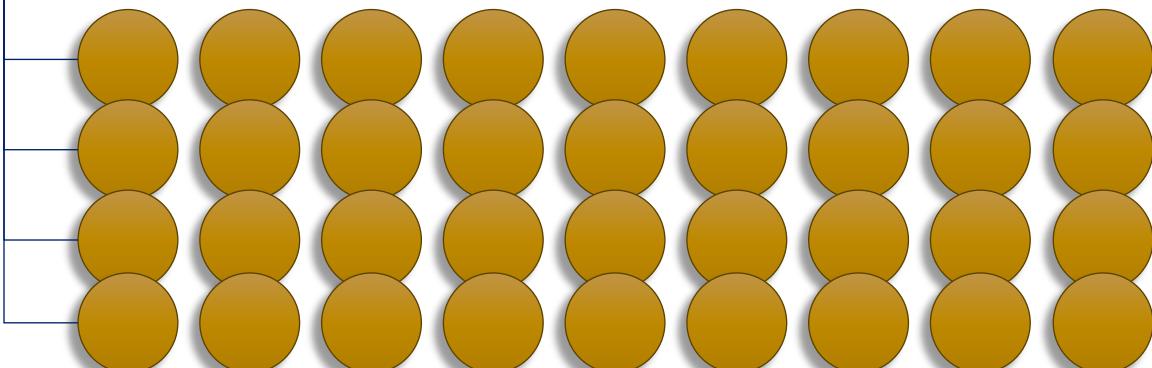
Business School

School of Nursing

Emory College

School of Law

School of Public Health

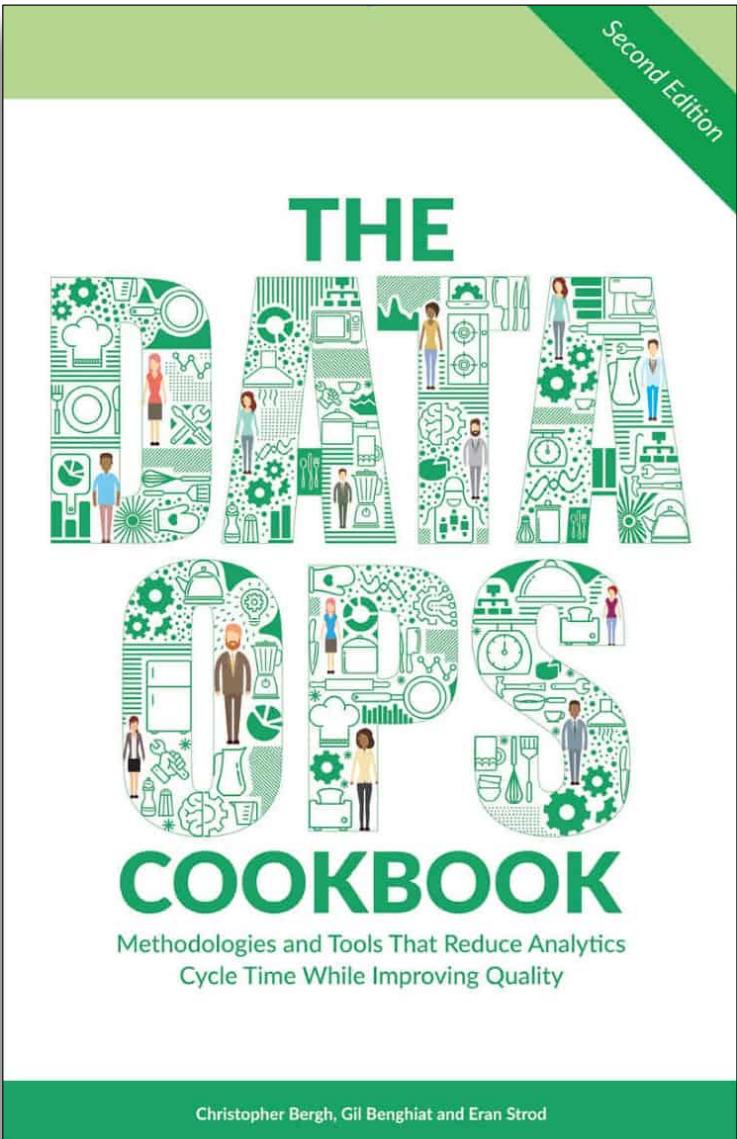


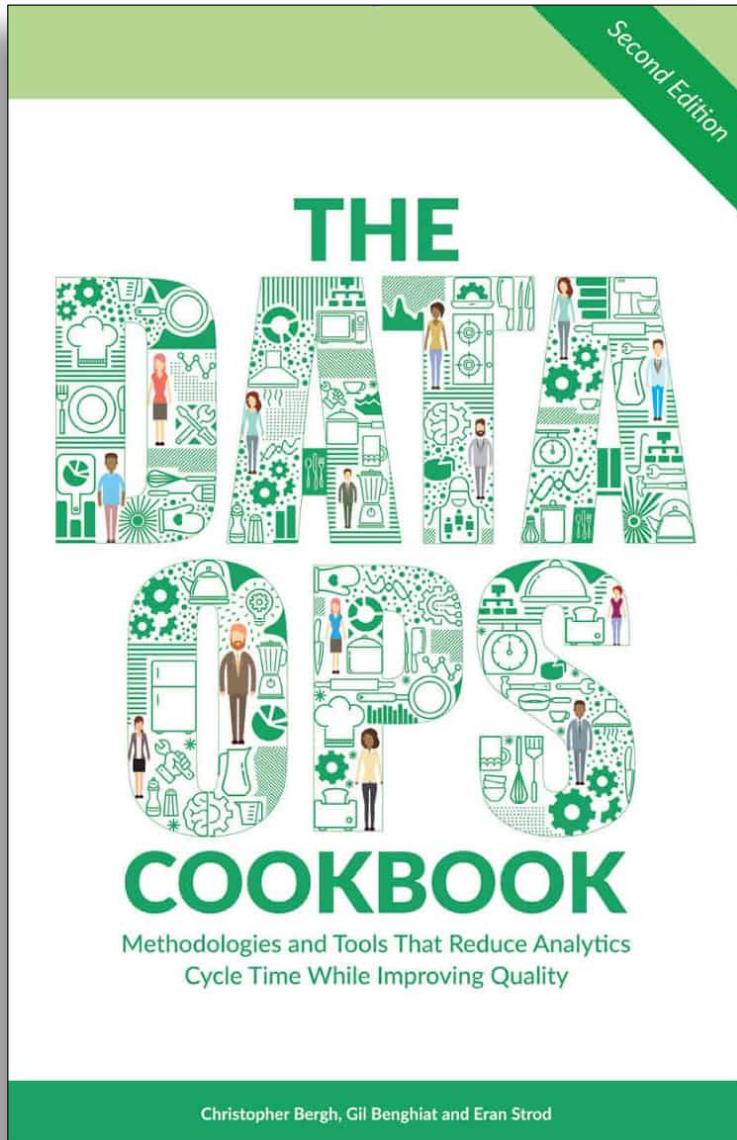


The IT-IR Nexus

“There is tremendous opportunity for IT and IR offices to play a significant role in supporting change and reform within their institutions. However, performing a greater role requires that IT and IR work together to first change and reform the way that they typically do business. Both must understand that one of their first and foremost missions is to support the institution in its greater use of data to inform decision-making.”

—Chester, T. (2018) “The IT-IR Nexus: Three Essentials for Driving Institutional Change Through Data and Analytics” from *The Analytics Revolution in Higher Education: Big Data, Organizational Learning, and Student Success*. Stylus Publishing LLC.





Key benefits

- Reduce time to insight
- Improve analytic quality
- Lower the marginal cost to ask the next business question
- Improve analytic team morale by going beyond hope, heroism and caution
- Promote team efficiency through agile process, reuse and refactoring



Steps in Implementing DataOps

1. Add data and logic tests
2. Use a version control system
3. Branch and merge
4. Use multiple environments
5. Reuse and containerize
6. Parameterize your processing
7. Work without fear or heroism



Steps in Implementing DataOps

1. Add data and logic tests
2. Use a version control system
3. Branch and merge
4. Use multiple environments
5. Reuse and containerize
6. Parameterize your processing
7. Work without fear or heroism



Version control



Version control

AutoSave OFF

CF_SurveyDraft080620 (Freeman, Carla)[58] - Read-Only — Saved to my Mac

Home Insert Draw Design Layout References Mailings Review View Developer DocuSign Sciwheel Tell me Comments Viewing Share

Editor Read Aloud Check Accessibility Translate Language New Comment Show Comments Tracking Reviewing Next Previous

Track Changes All Markup Duplicate

Read Only To save a copy of this document, click Duplicate.

What role do you anticipate students will play in organizing these activities?

B. What activities/modes of engagement will you and your faculty plan for majors/minors living in the ATL area and taking courses remotely?

	Completed	In process	Planned	Not expected for fall 2020
Social online activities - movie streaming/twitter nights, zoom pizza gatherings, etc	◊	◊	◊	◊
Major-focused events, professional development - presentations by alumni or others who majored in the field; trivia or other field-related games	◊	◊	◊	◊
Some face-to-face, small group, socially distanced in person engagement	◊	◊	◊	◊

DeNicola, Lane
Deleted: In-person classes? Occasional small-group or individual meeting with faculty? Mentoring by junior and senior majors? Online social or community fostering activities (movie streaming/twitter, etc)? Remote program community building activities – meet the faculty (at home meet current students, meet recent graduates)?

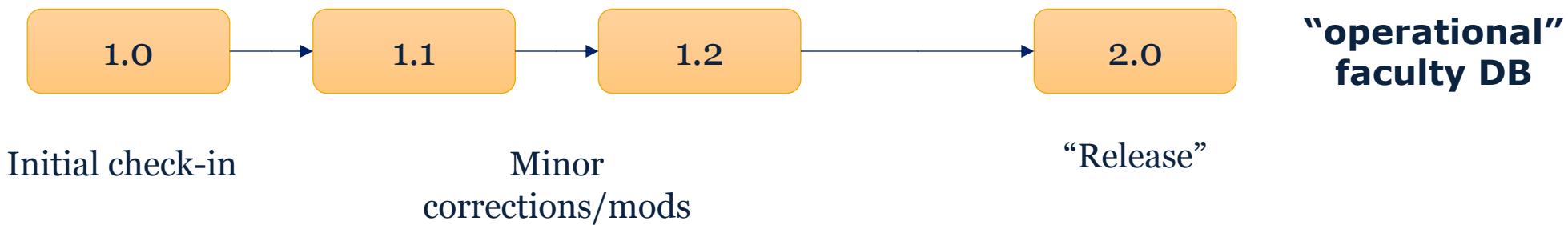
Resignation & Retirement

Name

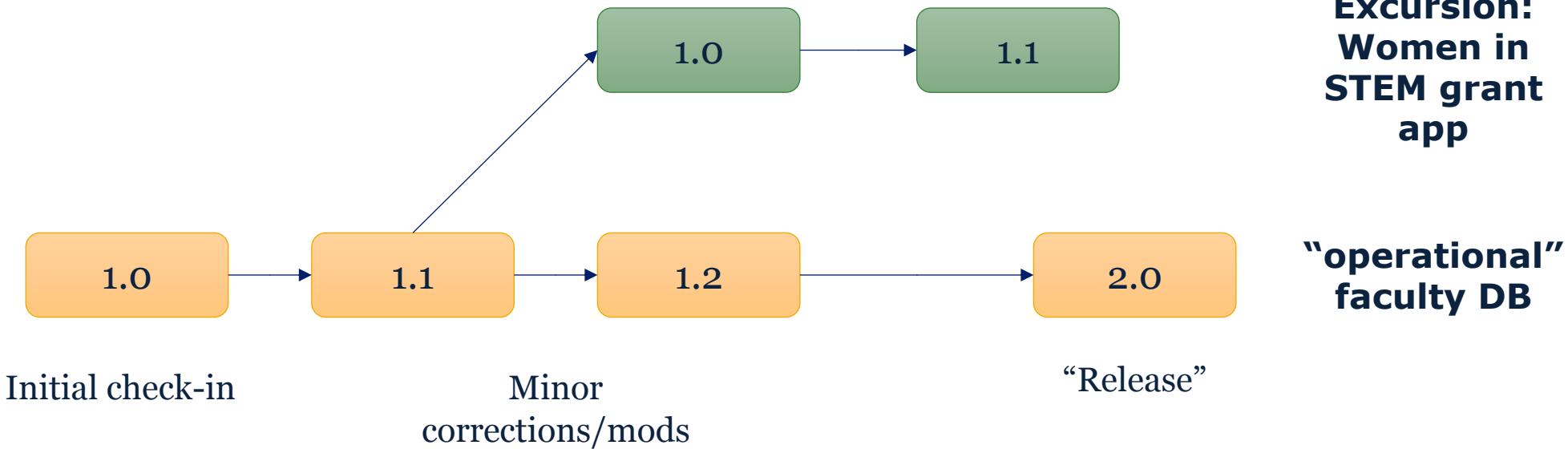
- A8C7D61A.tmp
- Access to Faculty Research Accounts after Retirement-Final-June2021rev1.pdf
- Access to Faculty Research Accounts after Retirement-Policy _v6.21.pdf
- Emeritus
 - Expected Faculty Departures_05_23_2023.xlsx
 - Expected Faculty Departures.xlsx
 - Expected Retirement After August 2023 as of Oct 25 2022.xlsx
 - Faculty Retirement Numbers Oct 25 2022.pdf
- Letters (now filed in faculty files)
- Lists by Year (use current expected fac departure spdsht instead)
- Retired Faculty
 - Terminated TT Faculty 11012008-10312018 ECAS.xlsx
- Voluntary Faculty Retirement Incentive Program

Page 4 of 5 1069 words English (United States) Accessibility: Good to go Focus 151%

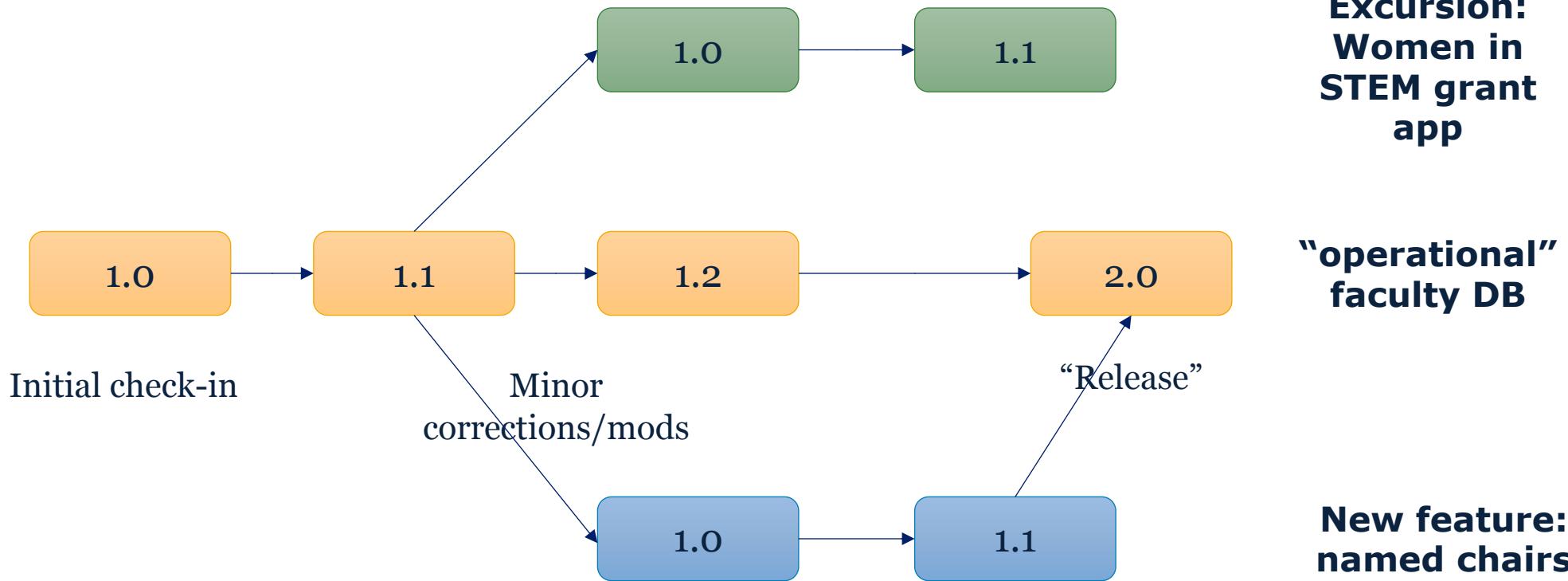
Version control



Version control

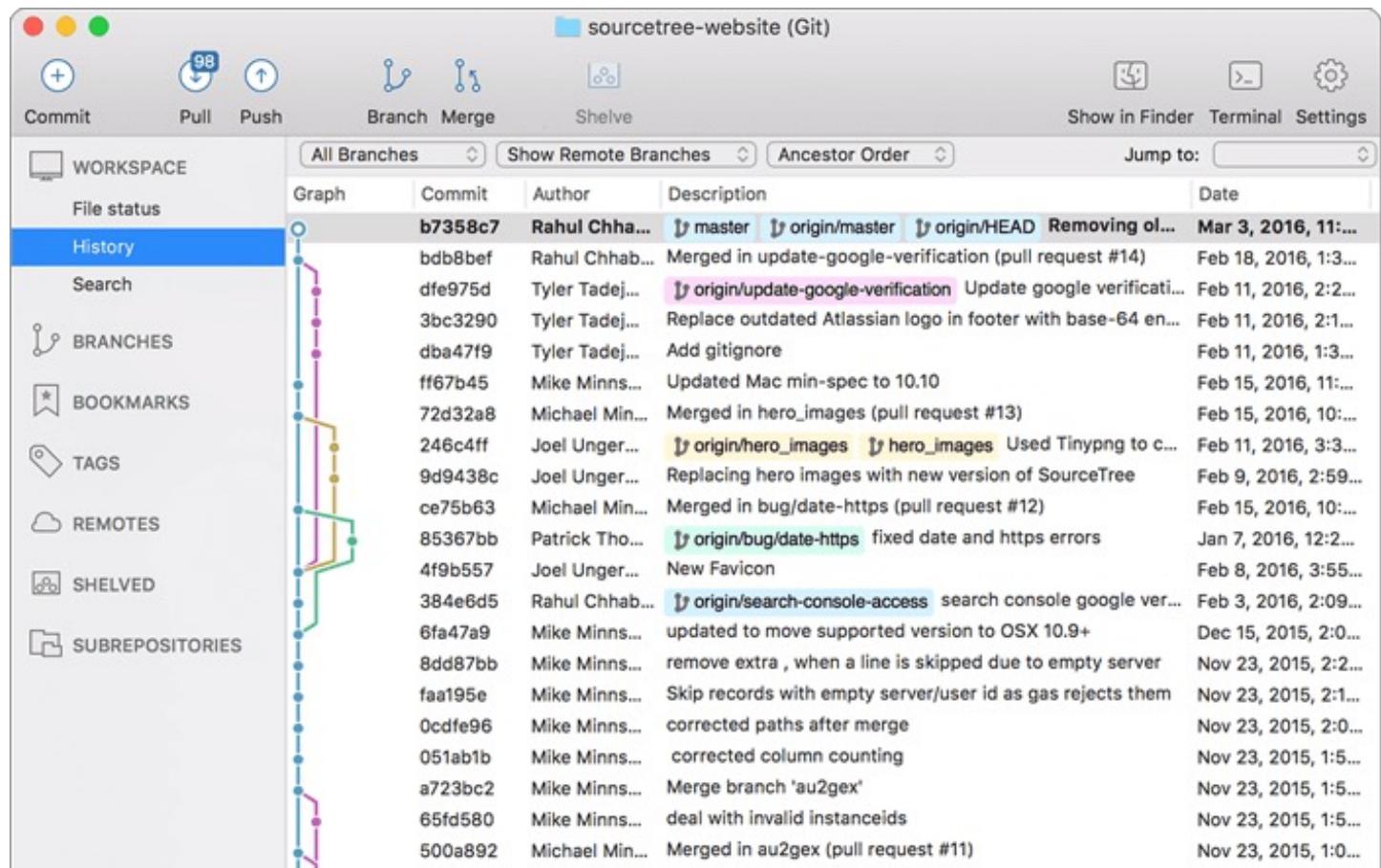


Version control



 Version control

<https://git-scm.com/book>



The screenshot shows the SourceTree application interface for a Git repository named "sourcetree-website". The main window displays a detailed commit history table and a visual commit graph on the left.

Commit History Table:

Commit	Author	Description	Date
b7358c7	Rahul Chhab...	Up master Up origin/master Up origin/HEAD Removing ol...	Mar 3, 2016, 11:...
bdb8bef	Rahul Chhab...	Merged in update-google-verification (pull request #14)	Feb 18, 2016, 1:3...
dfe975d	Tyler Tadej...	Up origin/update-google-verification Update google verificati...	Feb 11, 2016, 2:2...
3bc3290	Tyler Tadej...	Replace outdated Atlassian logo in footer with base-64 en...	Feb 11, 2016, 2:1...
dba47f9	Tyler Tadej...	Add gitignore	Feb 11, 2016, 1:3...
ff67b45	Mike Minns...	Updated Mac min-spec to 10.10	Feb 15, 2016, 11:...
72d32a8	Michael Min...	Merged in hero_images (pull request #13)	Feb 15, 2016, 10:...
246c4ff	Joel Unger...	Up origin/hero_images Up hero_images Used Tinypng to c...	Feb 11, 2016, 3:3...
9d9438c	Joel Unger...	Replacing hero images with new version of SourceTree	Feb 9, 2016, 2:59...
ce75b63	Michael Min...	Merged in bug/date-https (pull request #12)	Feb 15, 2016, 10:...
85367bb	Patrick Tho...	Up origin/bug/date-https fixed date and https errors	Jan 7, 2016, 12:2...
4f9b557	Joel Unger...	New Favicon	Feb 8, 2016, 3:55...
384e6d5	Rahul Chhab...	Up origin/search-console-access search console google ver...	Feb 3, 2016, 2:09...
6fa47a9	Mike Minns...	updated to move supported version to OSX 10.9+	Dec 15, 2015, 2:0...
8dd87bb	Mike Minns...	remove extra , when a line is skipped due to empty server	Nov 23, 2015, 2:2...
faa195e	Mike Minns...	Skip records with empty server/user id as gas rejects them	Nov 23, 2015, 2:1...
0cdfe96	Mike Minns...	corrected paths after merge	Nov 23, 2015, 2:0...
051ab1b	Mike Minns...	corrected column counting	Nov 23, 2015, 1:5...
a723bc2	Mike Minns...	Merge branch 'au2gex'	Nov 23, 2015, 1:5...
65fd580	Mike Minns...	deal with invalid instanceids	Nov 23, 2015, 1:5...
500a892	Michael Min...	Merged in au2gex (pull request #11)	Nov 23, 2015, 1:0...

Visual Commit Graph: A vertical timeline of commits, where each commit is represented by a colored dot connected by lines to show the flow of changes between branches.

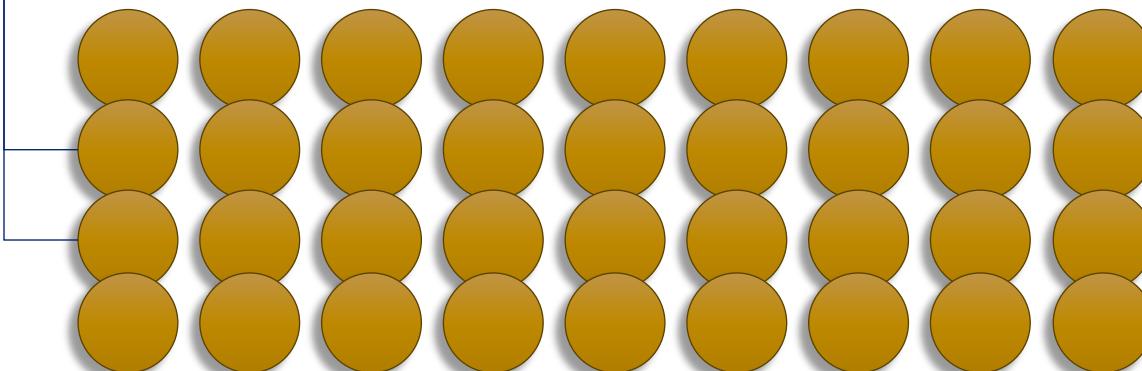


Parameterized processing



Parameterized processing

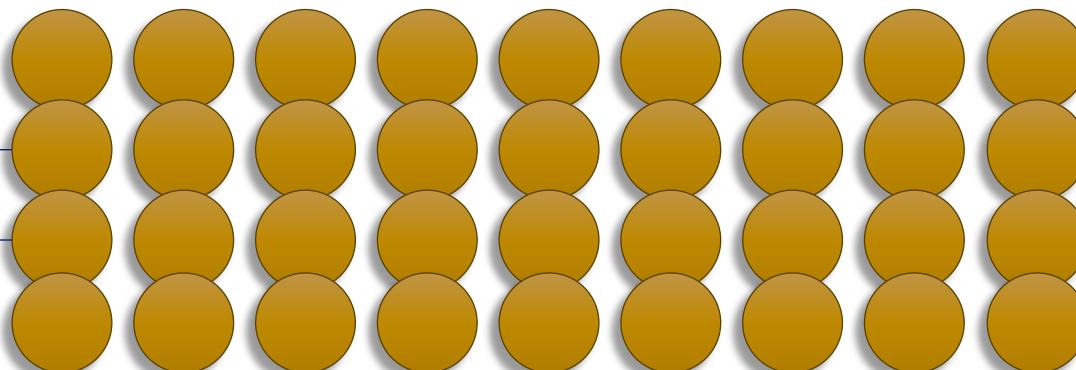
Emory College

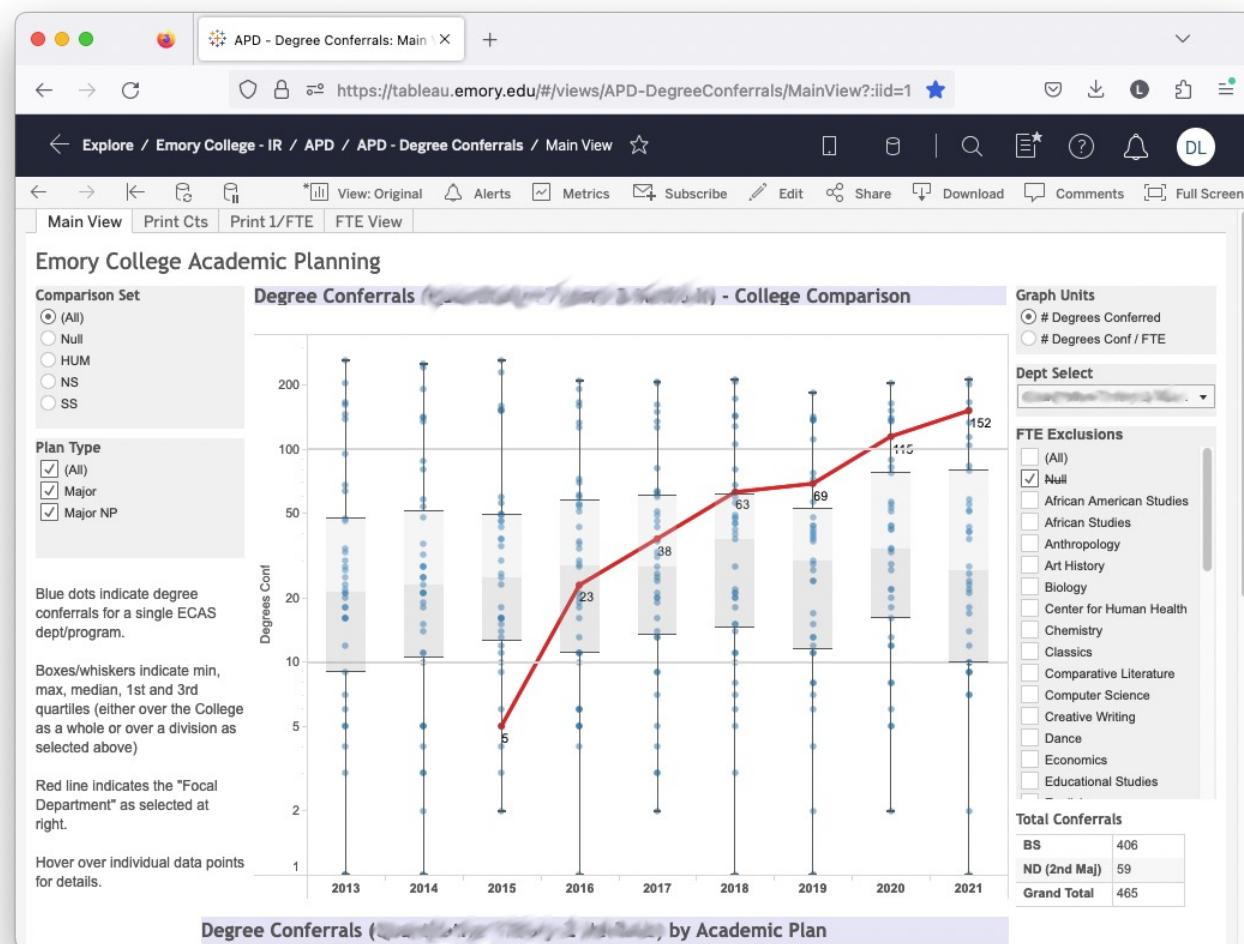


Parameterized processing

- Trend reports on enrollment and degree conferrals
- Summary reports on senior/exit surveys
- Course evaluation results

Emory College



 Parameterized processing - dashboards



Parameterized processing – batch processing



Parameterized processing – batch processing

Senior Survey Instrument
(College-wide)

Dept-Specific Instruments

Mathematics

Music

Political Science



Parameterized processing – batch processing

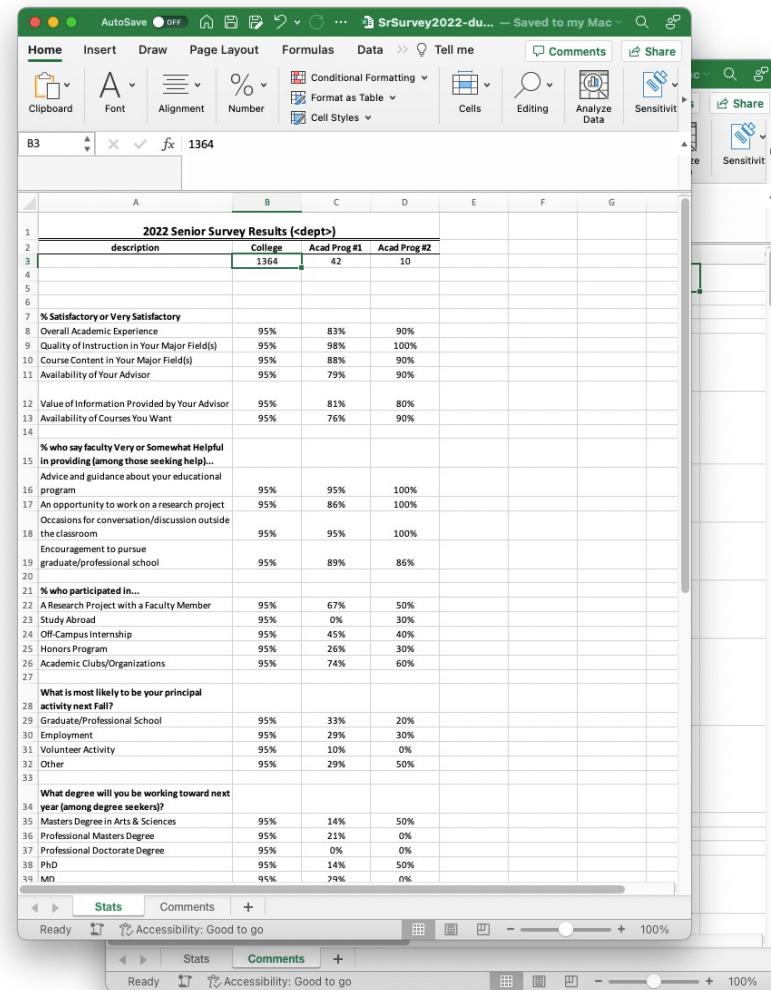
Senior Survey Instrument
(College-wide)

Dept-Specific Instruments

Mathematics

Music

Political Science



2022 Senior Survey Results (dept)				
	description	College	Acad Prog #1	Acad Prog #2
1	% Satisfactory or Very Satisfactory			
2	Overall Academic Experience	95%	83%	90%
3	Quality of Instruction in Your Major Field(s)	95%	98%	100%
4	Course Content in Your Major Field(s)	95%	88%	90%
5	Availability of Your Advisor	95%	79%	90%
6	Value of Information Provided by Your Advisor	95%	81%	80%
7	Availability of Courses You Want	95%	76%	90%
8	% who say faculty Very or Somewhat Helpful in providing (among those seeking help)...			
9	Advice and guidance about your educational program	95%	95%	100%
10	An opportunity to work on a research project	95%	86%	100%
11	Encouragement to pursue graduate/professional school	95%	95%	100%
12	What is most likely to be your principal activity next Fall?			
13	Graduate/Professional School	95%	33%	20%
14	Employment	95%	29%	30%
15	Volunteer Activity	95%	10%	0%
16	Other	95%	29%	50%
17	% who participated in...			
18	A Research Project with a Faculty Member	95%	67%	50%
19	Study Abroad	95%	0%	30%
20	Off-Campus Internship	95%	45%	40%
21	Honors Program	95%	26%	30%
22	Academic Clubs/Organizations	95%	74%	60%
23	What degree will you be working toward next year (among degree seekers)?			
24	Masters Degree in Arts & Sciences	95%	14%	50%
25	Professional Masters Degree	95%	21%	0%
26	Professional Doctorate Degree	95%	0%	0%
27	PhD	95%	14%	50%
28	MD	95%	29%	0%

Parameterized processing – batch processing

```

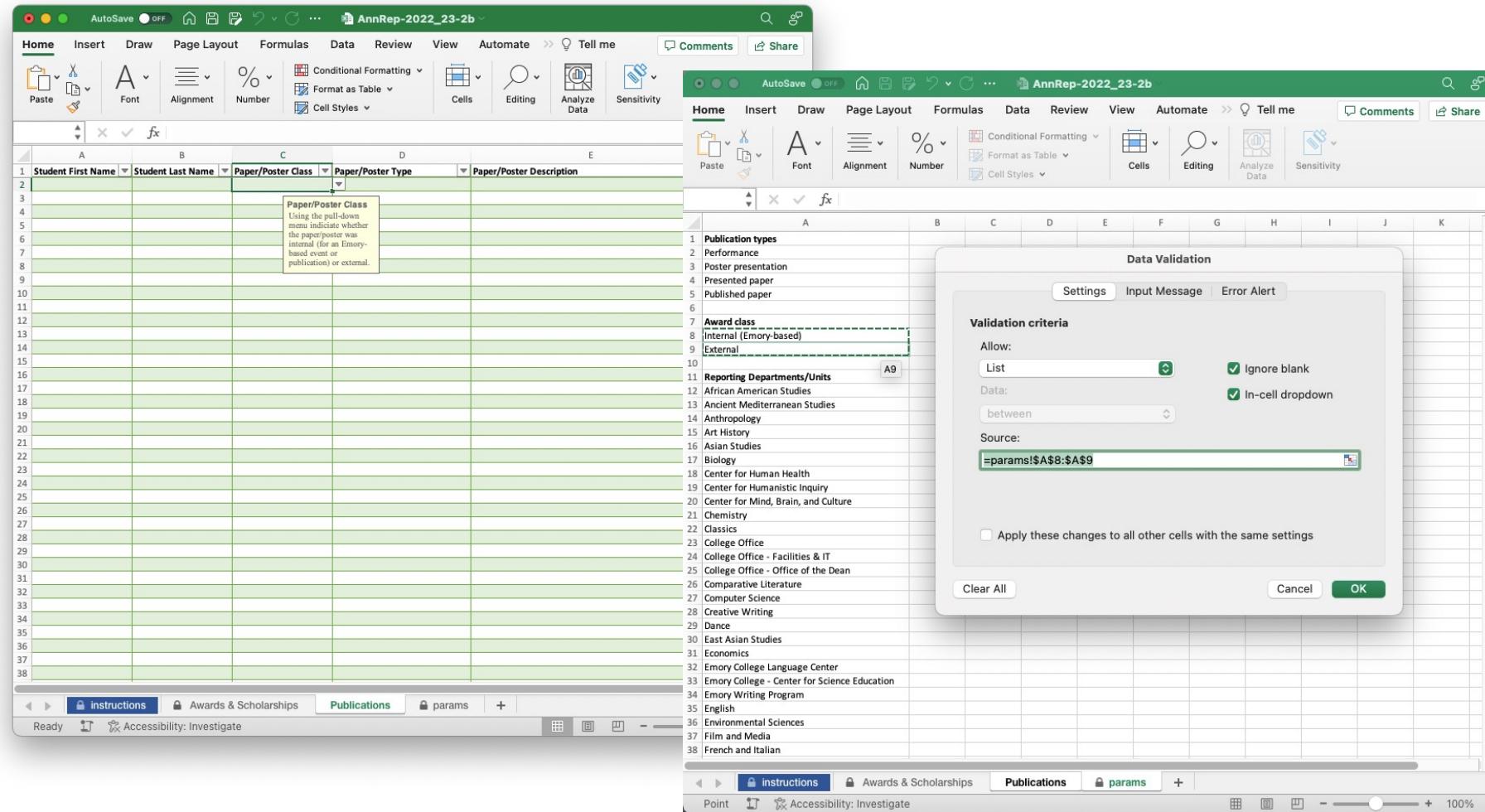
# =====#
# Supplemental report spec (Music)
# =====#
our $report_spec_MUSIC = { quant => [ { type      => 'heading',
                                             description => 'Achieved departmental learning goals extremely or very well' },
                                           { type      => 'unified',
                                             report_var => 'Music_AnalyticalSkills',
                                             report_values => [1,2],
                                             description => 'Analytical Skills' },
                                           { type      => 'unified',
                                             report_var => 'Music_CriticalThinkingSkills',
                                             report_values => [1,2],
                                             description => 'Critical Thinking Skills' },
                                           { type      => 'unified',
                                             report_var => 'Music_PerformanceSkills',
                                             report_values => [1,2],
                                             description => 'Creative and Performative Skills' },
                                           { type      => 'unified',
                                             report_var => 'Music_ContentKnowledge',
                                             report_values => [1,2],
                                             description => 'Knowledge of Content and Context' } ],
                                         qual => [ { type      => 'unified',
                                                       report_var => 'Music_HelpfulAspects_Text',
                                                       description => 'Most helpful' },
                                                       { type      => 'unified',
                                                       report_var => 'Music_Suggestions_Text',
                                                       description => 'Suggestions' } ] };
# =====#
# Supplemental report spec (CS)
# =====#
our $report_spec_CS = { quant => [ { type      => 'heading',
                                             description => 'CS Exit Survey' },
                                           { type      => 'unified',
                                             report_var => 'ComputerScience_Electives',
                                             report_values => [1],
                                             description => 'Had enough electives to choose from' },
                                           { type      => 'unified',
                                             report_var => 'ComputerScience_CareerOutcomes',
                                             report_values => [1],
                                             description => 'Content prep\ld me for interviews/grad school apps' },
                                           { type      => 'unified',
                                             report_var => 'ComputerScience_Balance',
                                             report_values => [1],
                                             description => 'DEPRECATED: Appropriate balance of theory and practice' },
                                           { type      => 'unified',
                                             report_var => 'ComputerScience_Projects',
                                             report_values => [1],
                                             description => 'DEPRECATED: Larger projects should be integrated into course curriculum' },
                                           { type      => 'unified',
                                             report_var => 'ComputerScience_Club',
                                             report_values => [1],
                                             description => 'DEPRECATED: Would have participated in a student computer-science club' },
                                           { type      => 'unified',
                                             report_var => 'ComputerScience_Community',
```

U:---- config.pl 40% L255 Git-master (CPerl)

	description	College	Acad Prog #1	Acad Prog #2
1				
2	2022 Senior Survey Results (dept)			
3	description	College	Acad Prog #1	Acad Prog #2
4				
5				
6				
7	% Satisfactory or Very Satisfactory			
8	Overall Academic Experience	95%	83%	90%
9	Quality of Instruction in Your Major Field(s)	95%	98%	100%
10	Course Content in Your Major Field(s)	95%	88%	90%
11	Availability of Your Advisor	95%	79%	90%
12	Value of Information Provided by Your Advisor	95%	81%	80%
13	Availability of Courses You Want	95%	76%	90%
14				
15	% who say faculty Very or Somewhat Helpful in providing (among those seeking help)...			
16	Advice and guidance about your educational program	95%	95%	100%
17	An opportunity to work on a research project	95%	86%	100%
18	Occurrences for conversation/discussion outside the classroom	95%	95%	100%
19	Encouragement to pursue graduate/professional school	95%	89%	86%
20				
21	% who participated in...			
22	A Research Project with a Faculty Member	95%	67%	50%
23	Study Abroad	95%	0%	30%
24	Off-Campus Internship	95%	45%	40%
25	Honors Program	95%	26%	30%
26	Academic Clubs/Organizations	95%	74%	60%
27				
28	What is most likely to be your principal activity next Fall?			
29	Graduate/Professional School	95%	33%	20%
30	Employment	95%	29%	30%
31	Volunteer Activity	95%	10%	0%
32	Other	95%	29%	50%
33				
34	What degree will you be working toward next year (among degree seekers)?			
35	Masters Degree in Arts & Sciences	95%	14%	50%
36	Professional Masters Degree	95%	21%	0%
37	Professional Doctorate Degree	95%	0%	0%
38	PhD	95%	14%	50%
39	MD	95%	29%	0%



Automated validation

 Automated validation

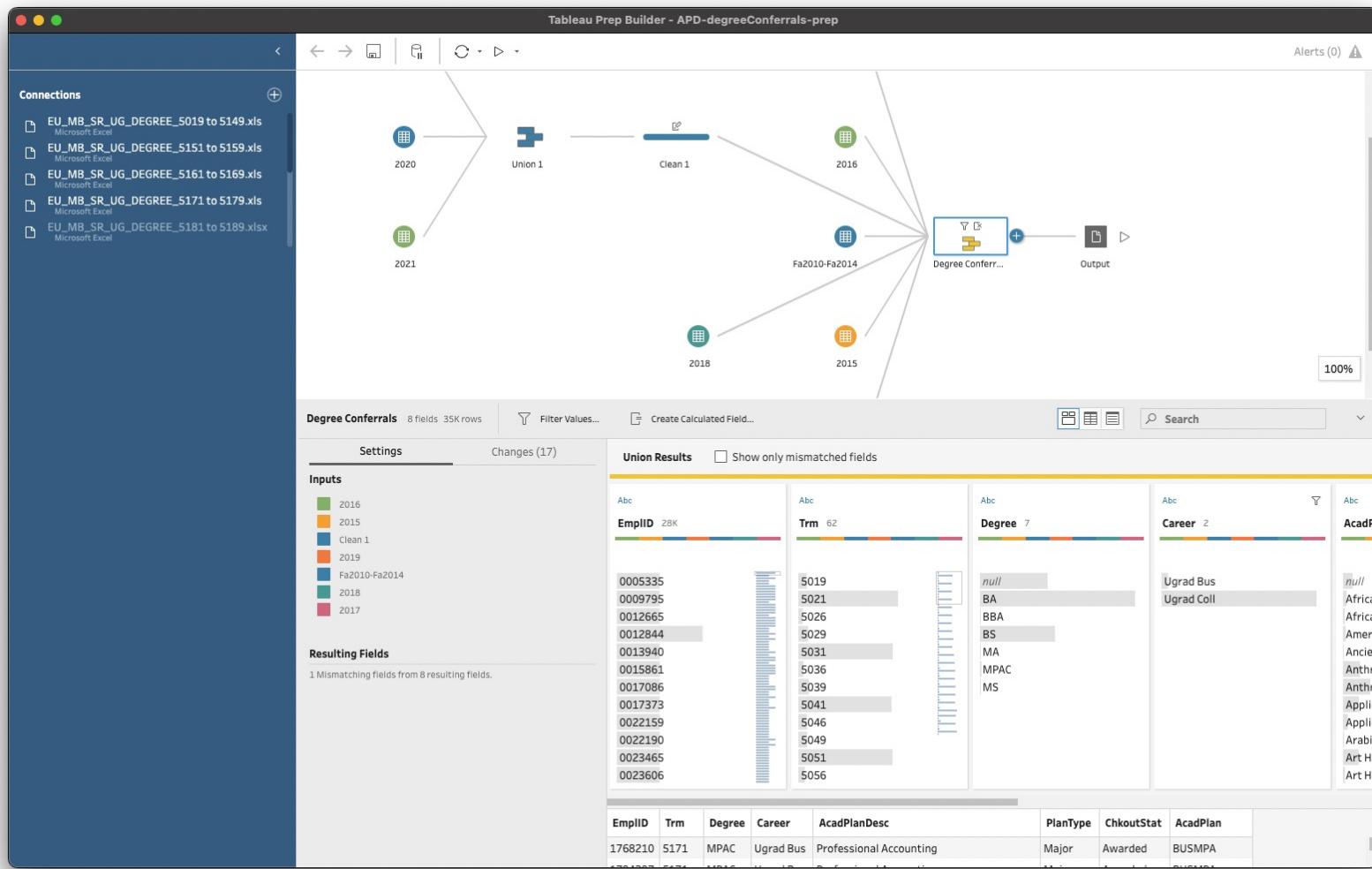
The screenshot shows two side-by-side Microsoft Excel windows demonstrating the use of Data Validation for dropdown lists.

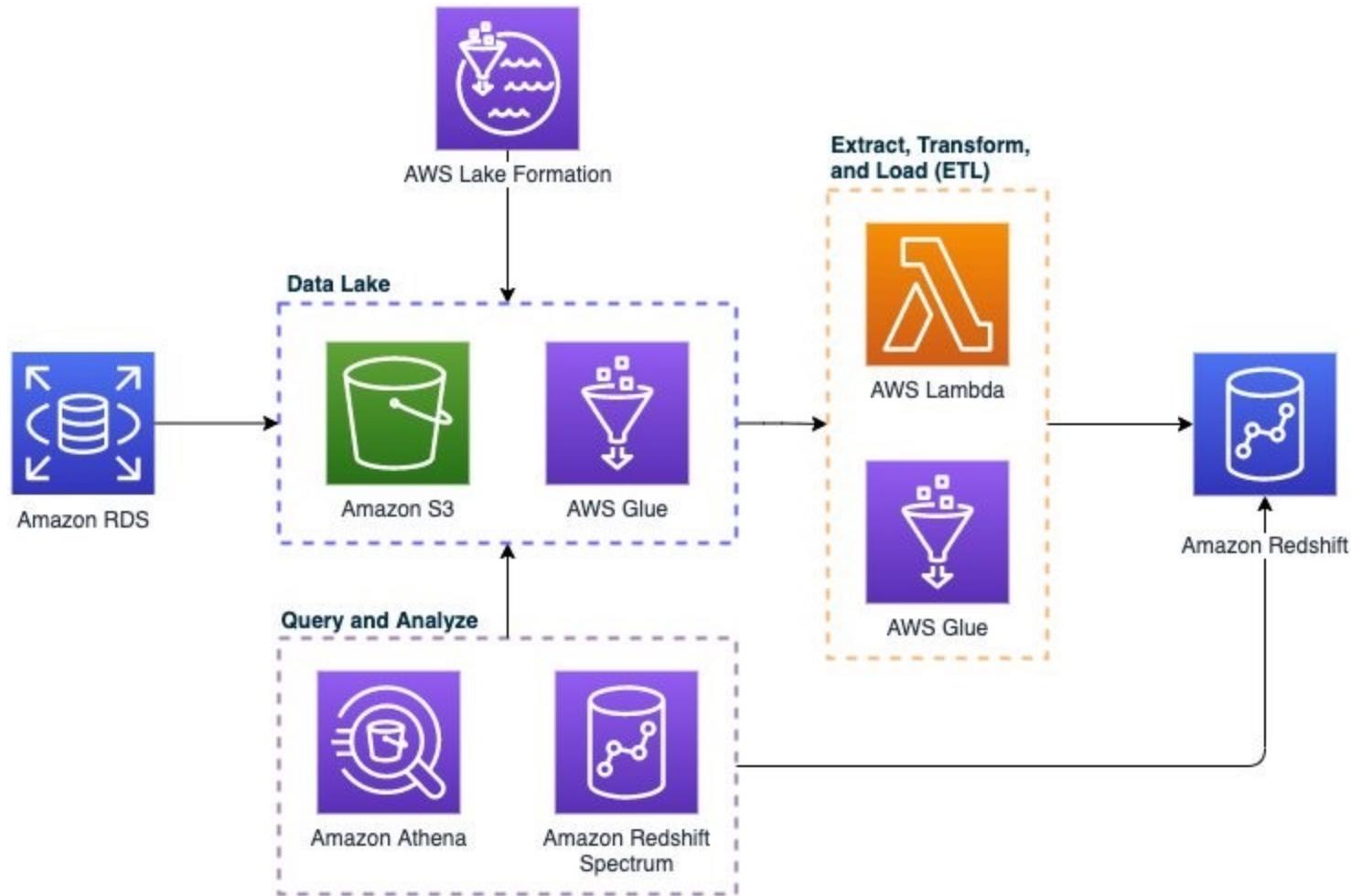
Left Window: A spreadsheet titled "AnnRep-2022_23-2b". The first row contains headers: "Student First Name", "Student Last Name", "Paper/Poster Class", "Paper/Poster Type", and "Paper/Poster Description". The "Paper/Poster Class" column (C) has a dropdown menu open, showing the validation rule: "Using the pull-down menu indicate whether the paper/poster was internal (for an Emory-based event or publication) or external".

Right Window: The same spreadsheet with a "Data Validation" dialog box open over it. The dialog shows the following settings:

- Validation criteria:** "Allow:" dropdown set to "List".
- Data:** "between" dropdown.
- Source:** Formula input field containing the formula `=params!A8:A9`.
- Checkmarks:** "Ignore blank" and "In-cell dropdown" are checked.
- Buttons:** "OK" (green), "Cancel", and "Clear All".

The background of the right window shows a list of department names from the "Reporting Departments/Units" column of the spreadsheet.

 Automated validation

 Automated validation

Conclusions

- Working in a “small IR shop” does not mean your “data team” is small.
- Version control is as much about distinguishing activities conceptually as it is about ensuring the latest/most accurate updates.
- A modularized, pipeline approach can keep the small shop nimble and adaptable within a complex hierarchical organization.
- Working, productive analytics must be valued over accurate, complete documentation.

Questions?

EMORY UNIVERSITY

<https://github.com/lanedenicola/IRDataOps>

#AIRForum

