## Data Management/Curation Working Group, Year End Report (2017)

<table>
<thead>
<tr>
<th>Data Management/Working Group Charge</th>
<th>Data Management/Curation Working Group Charge (2016)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible Executive</td>
<td>Associate Dean of Scholarly Resources &amp; Services, George A. Smathers Libraries</td>
</tr>
<tr>
<td>Contact</td>
<td>Data Management/Curation Working Group Email: datamgmt-l [at] lists [dot] ufl [dot] edu</td>
</tr>
<tr>
<td>Superseded Documents</td>
<td>Data Management/Curation Working Group, Year End Report (2016)²; Data Management/Curation Task Force Charge (2014)³; Data Management/Curation Task Force: Year One Report and Recommendations⁴</td>
</tr>
</tbody>
</table>

| Date:                                | December 22, 2017 |

### 1. Executive Summary

The fourth year of the Data Management/Curation Task Force (DMCTF) now operating as the Data Management/Curation Working Group (DMCWG) focused on building library/researcher collaborations, conducting data management consultations and trainings, and developing socio-technical (people, policies, technologies, communities) synergies across multiple communities of practice at UF. The DMCWG continues to be successful in collaborations, connections, and partnerships with the UF Office of Research Division of Sponsored Programs (DSP), UFIT, UFRC, UFII, and UF/IFAS Nature Coast Biological Station (NCBS) and Wildlife Ecology & Conservation (WEC), UF College of Engineering. (1) Data gathered from 2017 DMCWG training workshops; (2) Survey data results (UF IRB #2016023030), and (3) Information shared during DMCWG and other UF data meetings have identified data governance, data lifecycle management including data science, and data preservation as key training opportunities for 2018.

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<tr>
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<tbody>
<tr>
<td>DMCWG Meetings</td>
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<td>DMCTF/DMCWG Meetings</td>
<td>11</td>
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<td>Training Workshops (3 unit specific)</td>
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<td>4</td>
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<td>Documents (Appendix A, B, C)</td>
<td>3</td>
<td>Documents (Appendix A, D, E)</td>
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<tr>
<td>New Members added in 2017</td>
<td>10</td>
<td>New Members added in 2016</td>
<td>13</td>
</tr>
<tr>
<td>Total Members (12/22/17)</td>
<td>54</td>
<td>Total Members (12/22/16)</td>
<td>44</td>
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Selected Accomplishments of Note
The DMCWG continues developing a culture of data management across multiple disciplines and stakeholders through meetings, outreach, and training workshops. Key accomplishments in 2017 include:

- **Events and Trainings**
  a. Met with the Director of Real Estate for UF Innovation Square on 12/19/18 to discuss hosting an evening reception for the data symposium participants on March 19, 2018.
  b. Organized and planned the 1st Annual Data Symposium with support from the UF College of Engineering, UF/IFAS WEC Weecology Lab, and UF Innovation Square. See: [symposium](#)
  c. Partnered with GreyNet International to host the Data Papers Project Training workshop at UFII on March 20, 2018. See: [data papers training](#)
  d. Conducted **five general data management training workshops** at UFII (See: [trainings](#))
    1. How do you connect data to repositories to journal publication via DOI? – 11/7/17
    2. What is an acceptable data repository? – 10/10/17
    4. Linking Faculty Publication Data via ORCiD/Metadata workshop – 1/30/17
  e. Conducted **four discipline-specific training workshops** at UF College of Medicine, UF Reitz Union, DataONE Webinar, and UF Florida Gym (See: [trainings](#))
    1. UF Department of Linguistics, Graduate Linguistics Society Seminar – 9/7/17
    2. UF College of Medicine, Department of Anesthesiology – 7/7/17
    3. DataONE Webinar – 6/8/17
    4. UF Division of Student Affairs, GatorWell Health Promotions – 6/8/17
  f. Two DMP consultations and assistance resulting in successful grant awards total $1.5 M
    - Invited to Blue-ribbon cutting ceremony for UF/IFAS NCBS wet-lab in Cedar Keys
    - Invited to be a member of a UF USDA grant proposal
  g. IBM Cognos Enterprise Analytics demo presentation by guest speaker, Frances Fiorello (UF IT Manager) – 8/28/17 (See: [notes](#))
  h. Submitted UF Libraries’ 1st National Science Foundation [CRII](#) grant proposal – 8/8/17

<table>
<thead>
<tr>
<th>DM Instruction/Training Workshop</th>
<th>Format</th>
<th>Participants (est.)</th>
<th>Discipline</th>
<th>Type</th>
<th>Semester</th>
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<tr>
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<td>F2F</td>
<td>3</td>
<td>Multiple</td>
<td>General</td>
<td>Fa17</td>
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<td>Multiple</td>
<td>General</td>
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<tr>
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<td>F2F</td>
<td>12</td>
<td>Multiple</td>
<td>General</td>
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<tr>
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<td>F2F</td>
<td>20</td>
<td>Multiple</td>
<td>General</td>
<td>Sp17</td>
</tr>
<tr>
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<td>F2F</td>
<td>10</td>
<td>Linguistics</td>
<td>Specific</td>
<td>Fa17</td>
</tr>
<tr>
<td>e2</td>
<td>F2F</td>
<td>17</td>
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<td>Specific</td>
<td>Su17</td>
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<td>Specific</td>
<td>Su17</td>
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<td>e4</td>
<td>F2F</td>
<td>20</td>
<td>Student Affairs</td>
<td>Specific</td>
<td>Su17</td>
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- **University-wide Data Survey Distribution** (UF IRB #201602303)
  - Launched data survey from 1/3/17 to 4/31/17
  - Survey data results support the need for relevant and specific RDM support/training
  - Presented select results at the GL19 Conference at the NRC in Roma (See: [program](#))
  - See Appendix A for select survey data results
• **Building Collaboration and Awareness**
  - Continued collaborations with the UF Office of Research, UFIR, IFAS
  - Developed four sponsors for 1st Data Symposium 2018 (See: sponsors)
  - Coordinated collaboration between UFIT Enterprise Systems (Business Relationship Manager), UF Research Operations & Services (Director), UF Research Computing (Director), UF Scientist (Biology & FLMNH), and UF Libraries (Data Management Librarian) to develop responses to request for sensitive data management at the request of a UF/IFAS WEC faculty (See: Appendix B)
  - Worked with the Carpentries @ UF to develop training workshops and future support
  - Developed collaboration with UFIT Enterprise System (Business Relationship) for awareness of the UFIT Data Governance Group and discussions regarding master data management (MDM) at UF.
  - Developed collaboration with UF Innovation Square to assist with the facilitation of UF faculty, students, and staff engagement, interaction, and collaborative partnerships
  - Continued participation in the UF Research Computing Advisory Committee and UF Health IT Research subcommittee
  - Contacted the UF/IFAS WEC Fort Lauderdale Research and Education Center for future collaboration on data management curriculum development
  - Invited UF/IFAS Tropical Research and Education Center to participate in data symposium
  - Invited UF Data Science & Informatics to participate in data symposium
  - Invited UF/IFAS Nature Coast Biological Station to participate in data symposium

• **Establishing International Collaboration and Awareness**
  - Negotiated UF Libraries’ Associate Membership with GreyNet International
  - Continued collaboration with Chief Data Officer at University of New South Wales (UNSW)
  - Awarded UFIC Global Fellows grant to collaborate and study in the UK with PERICLES project partners: University of Edinburgh and University of Liverpool (See: PERICLES)

**Key Findings and Recommendations**

As a result of data management training workshops and data management planning consultations, the DMCWG, acting on comments, feedback, and recommendations was able to develop the necessary collaborations and connections across multiple stakeholders needed to address the Key Findings and Recommendations in the Data Management/Curation Working Group Year End Report (2016). For continued work to support UF’s data needs, the DMCWG findings and recommendations include:

1. **Formalizing outreach, program, and training for data management across all disciplines**
   a. Developing and engaging in conversations with high-level stakeholders
   b. Developing partnerships with UFIT DataGovernances, Research Computing Advisory Committee (RCAC), Faculty Senate Research & Scholarship Council (SCORS), Information Security Advisory Committee (ISAC), and other data-related committees/groups
   c. Developing adaptable, pedagogical, and relevant training modules, videos, & workshops

2. **Develop collaborations and programs to enhance curriculum, policy, and strategic developments**

3. **Develop proposals that build capacity, infrastructure, and resources within/across communities**
   a. Conduct Research, Development, and Evaluation Required for UF’s Data Needs

**Key Recommendation 1: Formalize the Program for Data Management/Curation and Informatics**

The Data Management Librarian, Informatics Librarian, and the Assessment Librarian will need to align, collaborate, and coordinate data management, informatics training, and assessment efforts throughout the Libraries and the Informatics Institute with Research Computing for integration of services:
The DMCWG will continue to engage in the high-level, socio-technical discussions and interactions with multiple campus stakeholders to develop a culture of data management and further the University-wide Research Data Management conversations and developments at UF.

- The DMCWG will need to collaborate and work with the Carpentries, RCAC, SCORS, and UFIT Data Governance in establishing data management guidelines and policy developments.

- The 2018 version control survey will contribute to the development of a future grant proposal.

The DMCWG will continue to identify and connect with existing experts on campus and serve as a hub/broker to connect with others in the Libraries and across campus. The DMCWG is working to further develop this hub structure as detailed in the Key Recommendation 2.

**Key Recommendation 2: Develop Collaborations and Programs to Enhance a Data Management Culture**

The DMCWG will continue to focus efforts on specific work by the group, the group’s members, and work done in collaboration with various campus and library groups:

- Collaborating on data-related activities: connecting with DSP, UFIT, UFII, and funded projects
- Identifying and engaging data-related collaborations: Carpentries, RCAC, iDigBio, UF/IFAS NCBS
- Providing an excellent hub framework and configuration for supporting new groups for data

In addition to the DMCWG, data related groups, and core non-libraries collaborators such as Research Computing, UFII, and DSP, all Liaison Librarians play a critical role as primary contacts for data inquires and also serve as leaders in consultative capacities for project teams within and outside of the libraries. The DMCWG needs to develop a culture of data management from Liaisons to external groups to units. For external group collaboration, the DMCWG will continue to adopt best fit and leverage expertise within the Libraries for data lifecycle management, including attribution and copyright management, from the data scientists and computational team members to the social sciences/humanities for all data projects.

**Key Recommendation 3: Conduct Research, Development, and Evaluation Required for UF’s Data Needs**

The University of Florida is trying to make researchers more competitive in getting their proposal funded with support to create solid data management plans with the UF Libraries and UFIT Research Computing taking the lead. Research data can be defined as “the recorded factual material commonly accepted in the scientific community as necessary to validate research findings.” (OMB Circular 110). Research data can be categorized as (1) observational, (2) experimental, (3) simulation, and (4) derived or compiled.

“It will be difficult to improve your institutional infrastructure without an overall understanding of the data you currently hold and how researchers at your institution are managing their data.” – CARDIO v.2 (Collaborative Assessment of Research Data Infrastructure and Objectives) - [http://www.dcc.ac.uk/resources/tools/cardio](http://www.dcc.ac.uk/resources/tools/cardio)

The DMCWG will develop an effective program evaluation and professional development assessment for 2018. The DMCWG will continue to explore the following questions by Rossi, Lipsey, & Freeman (2004, p. 3) for program evaluation and CESSDA SaW Archive Development Canvas model for new services.

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7 The University of Nottingham. (nd). Research Data Management: Classification of research data. [http://www.nottingham.ac.uk/fabs/rgs/research-data-management/what-is-research-data.aspx](http://www.nottingham.ac.uk/fabs/rgs/research-data-management/what-is-research-data.aspx)

What are the nature and scope of the problem? Where is it located, whom does it affect, how many are affected, and how does the problem affect them?

What is it about the problem or its effect that justifies new, expanded, or modified data management programs?

What feasible interventions are likely to significantly ameliorate the problem?

What are the appropriate target populations for intervention?

Is a particular intervention reaching its target population?

Is the intervention being implemented well? Are the intended services being provided?

Is the intervention effective in attaining the desired goals or benefits?

Is the program cost reasonable in relation to its effectiveness and benefits?

2. Priority Next Steps and Recommendations

The DMCWG has identified next steps for collaborations and recommendations, contingent on stakeholders support, administrative prioritization, capacities, infrastructure, and resources.

- Various UF data-related groups must continue to collaborate, communicate, and integrate collective efforts in the development of synergies at UF that effectively contribute to the effectiveness, efficiency, and meaningfulness of data management and research data metrics.

- Various UF data-related groups must continue to work with senior campus stakeholders in addressing Hyper-competition, Compliance, Research Quality and Impact, Planning and Decision Support, Value of the Research University and Fragility of Research Administration at UF.

- Assist faculty and researchers with funding support for capacity, infrastructure, and resources.

3. Recommendations for Year Five

1. Collaborate/partner with other UF data groups to revise Data Management Guidelines

   - Contribute/participate in GitHub @ UF assessment (See Appendix C)
   - Develop an Emerging Technology Fee grant proposal (See: UF Tech Fee proposals)
   - Explore NSF CAREER (17-537), Cyberlearning (17-598), and/or CyberTraining (18-516)

2. Organize ORCID API development, integration, and implementation across multiple UF units

   - Develop ORCID integration with SobekCM (IR@UF) and other publishing systems

3. Develop outreach, tools, and training workshops in collaboration with other units

   - Develop a version control assessment study in support of university-wide solution
   - Design a data management curriculum
   - Develop a data management guidelines for doctoral students (See: Univ. of Bath)
   - Evaluate data repositories solutions (e.g. CKAN, invenio)
   - Develop training for Library Liaisons for faculty interface/outreach
   - Develop a Strategic Opportunity Program grant
   - Develop a Sloan Community and/or Training grant (See: D&CR)

4. Continue to develop collaboration and partnership with Innovation Square/Hub and non-profits

4. Appendices

   A. Select survey data results (UF IRB #201602303)
   B. PLOS Data Guidelines Governing Board – UF Responses (sensitive data management)
   C. Version Control Assessment Survey (draft)

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Appendix A

Select data survey results (UF IRB #201602303)

Data Storage and Management

Researchers were asked questions to determine data storage and management practices, including data storage locations and issues and barriers regarding data storage and management. When asked to identify the owners of their data, the researchers were given seven possible choices and could choose more than one owner, if it applied. As shown in Figure Q18, of the 309 responses by the 120 researchers who answered this question, 31.1% identified the Principal Investigator (PI) as the owner of the data, while 22.3% identified an institution/organization, and 17.5% identified a research collaborator.

Figure Q18. Owners of data.

When asked to identify the parties involved in the management and storage of the data, the researchers were given seven possible choices and could choose more than one owner, if it applied. As shown in Figure Q17, of the 321 responses by the 116 researchers who answered this question, 25.2% identified graduate students as the managers of the data, almost an equal number, 24.6% identified the PI, while 17.4% said research assistants are the managers of the data.
The survey asked the researchers to identify the location of where their data is stored. As shown in Figure Q12, of the 378 responses by the 121 researchers who answered this question, the largest percentage, 24.9% stored their data on a local computer. The second most popular data storage location was tied between an external hard drive/CDs/DVDs and the college or departmental computer network both at 16.1%. The network is backed up daily by the Information Technology (IT) Department but it is unknown how often, if ever, local computer hard drives are backed up.

Figure Q12. Data storage location.

Keeping track of research data can be challenging. Researchers were asked how they kept track of where their data is stored and the results are presented in Table Q13. Of the 168 responses to this question, 29.2% used a spreadsheet and 21.4% used an electronic logbook. Paper logbooks were used by 16.7% of the respondents.
Table Q13. Method of keep track of where the data is stored.

<table>
<thead>
<tr>
<th>Data Storage Location</th>
<th>Number of Participants</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a spreadsheet</td>
<td>49</td>
<td>29.2%</td>
</tr>
<tr>
<td>In an electronic logbook</td>
<td>36</td>
<td>21.4%</td>
</tr>
<tr>
<td>In a paper logbook</td>
<td>28</td>
<td>16.7%</td>
</tr>
<tr>
<td>In a local database</td>
<td>28</td>
<td>16.7%</td>
</tr>
<tr>
<td>In a remote database</td>
<td>9</td>
<td>5.4%</td>
</tr>
<tr>
<td>Other</td>
<td>18</td>
<td>10.7%</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td></td>
</tr>
</tbody>
</table>

When asked to identify barriers regarding management and storage of data, the researchers were given six possible choices and could choose more than one response, if it applied. Of the 258 responses by the 108 researchers that answered this question, 78 researchers chose more than one answer. As shown in Figure Q15, the largest barrier was budget/funding at 24.0% followed closely by data management expertise/experience at 23.3%, storage/technology at 22.1%, and infrastructure/resources at 20.2%.

Figure Q15. Data management and storage barriers.

Researchers were asked what types of data management issues they experienced. The researchers were given eight possible choices and could choose more than one issue, if it applied. As shown in Table Q16, of the 295 responses by the 109 researchers that answered this question, one-quarter of the researchers (25.4%) said locating where the data files are stored was their biggest issue. Other issues included finding earlier versions of files at 20.7% and finding or accessing data from former colleagues at 19.3%. A common data management issue expressed by researchers is version control.
Table Q16. Data management issues.

<table>
<thead>
<tr>
<th>Data Management Issue</th>
<th>No. of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locating where data files are stored (e.g. on external hard drives, USB flash drives,</td>
<td>75</td>
<td>25.4%</td>
</tr>
<tr>
<td>CDs/DVDs, networked storage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding files which may be either colleagues’ or your earlier versions (e.g. problems</td>
<td>61</td>
<td>20.7%</td>
</tr>
<tr>
<td>with file names, file/folder structure)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding or accessing research data from former colleagues (e.g. former PhD students</td>
<td>57</td>
<td>19.3%</td>
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<tr>
<td>or research staff)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-standard file formats which are difficult to work with in current UF systems</td>
<td>35</td>
<td>11.9%</td>
</tr>
<tr>
<td>Security and protection of files</td>
<td>27</td>
<td>9.2%</td>
</tr>
<tr>
<td>Problems establishing ownership of data</td>
<td>14</td>
<td>4.7%</td>
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<tr>
<td>Legal issues arising from international transfer of data</td>
<td>8</td>
<td>2.7%</td>
</tr>
<tr>
<td>Other</td>
<td>18</td>
<td>6.1%</td>
</tr>
<tr>
<td>Total</td>
<td>295</td>
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</table>

Data Management and Sharing

Researchers were asked questions regarding data management and sharing practices, including the amounts of data stored, the length of time the data is stored, and data access and sharing concerns. Researchers were asked to estimate the amount of electronic research data they currently hold or maintain. As shown in Figure Q19, of the 121 responses, 24.8% said they hold or maintain between 1 and 50 gigabytes and 21.5% said between 1 and 50 terabytes of data.

Figure Q19. Amount of electronic research data held or maintained.

Note: The full survey responses results are currently being developed for a peer-reviewed article for publication in 2018. These results were shown as a sample of the data collected in support of data management education, support, and data skills training needed across multiple disciplines at UF.
Appendix B

PLOS Data Guidelines Governing Board – UF Responses (sensitive data management)

An informal task force group was developed with input from UF Office of Research and UF Research Computing. Below are a few questions to initiate contribution to the development of a data management guidelines and recommendations document to assist researchers in data management @ UF. The following questions were initiated by a UF/IFAS faculty as part of PLOS Data Guidelines Board.

1. **Are there institutional repositories or servers available to hold sensitive data, or data that cannot be made public?**

   UF Research Shield (also called ResShield) was developed in order to protect sensitive research data created, used, or stored by the university’s research departments. ResShield serves as a secure storage and processing center that can support university projects requiring a secure, Federal Information Security Modernization Act (FISMA) compliant environment. UF ResearchVault (also called ResVault) is a secure computing environment where scientists and collaborators can conduct research on restricted and confidential data. ResVault and ResShield are two such systems managed by UF.

   UFHealthIT/ShandsIT operates a storage system that holds PHI data for the hospital and for certain research groups. ResVault and ResShield are formally compliant with National Institute of Standards and Technology (NIST) and other standards. They are available to all UF faculty, but the storage is not free. ResVault and ResShield, however, are not just repositories of data, they are complete environments in which the data can be processed and analyzed as well as stored. This allows them to meet the requirement that the data cannot leave the repository except by special permission after declassification as sensitive or restricted.

   Managing restricted data is very different from managing open data. Open data can be managed efficiently by a single organizations like libraries. Restricted data needs to be classified and then the process changes for each classification. Some of the most frequent data types are

   a. **Patient Health Information (PHI)** - Governed by Health Insurance Portability and Accountability Act (HIPAA) law. UF Health has a large set of this type of data and a set of data brokers to manage the data. The Institutional Review Board (IRB) approves data requests and the data brokers then provide the approved data records and fields to the requestors.

   b. A data use agreement (DUA) may impose extra requirements beyond HIPAA. This is the case with data from the Commission for Medicare/Medicaid Services (CMS).

   c. **Student data** is regulated by the Family Education and Privacy Rights Act (FERPA) law. At UF the registrar is the custodian of the majority of that data. The Privacy Office will review and approve requests for such that falls outside the normal pre-approved business processes.

   d. UF has a contract with the company Instructure to provide Canvas as a Learning Management System (LMS). That system contains student grades, which falls under FERPA. As long as instructors keep the grades inside the system, all is well. Once they take grades outside, e.g. on their laptop computer or phone, then the potential for a breach of confidentiality exists.

   e. Export controlled data and objects are covered by International Traffic in Arms Regulation (ITAR) and Export Administration Regulations (EAR). Export controlled data needs to be classified as Controlled Unclassified Information (CUI) and then managed according to the standards set by NIST SP 800-171. The Office of Research works with
the researchers to set up a Technical Control Program (RCP) to ensure that all requirements are satisfied.

f. Intellectual property data is protected by the data owner. The Office of Technology Licensing can offer advice on how to best protect intellectual property rights.

2. **Is your IRB setup to hold sensitive data or consider requests for data?**

   The UF Institutional Review Board (UF IRB) does not hold any data, it is a clearinghouse to review requests and the provide permission. They approve whether a request for data from a data broker should be granted. Then the data broker hands the approved data items to the requester. However, the UF IRB may receive adverse event reports that contain sensitive data (e.g. PHI) that reside in UF myIRB behind the UF Health Science Center (HSC) firewall.

   They ensure that the requestor only gets access to the data that is needed to fulfill the research objectives and that no extraneous data is provided. The data approved by IRB is in most cases de-identified so that personal information is not revealed.

3. **Is there a data access committee available to hold data at your institution and consider requests for data?**

   Because of the complexity of laws and data use agreements, there is not a single committee. There are multiple such committees for different types and streams of data: FERPA, HIPAA, and CUI, as shown in the above examples. It is part of the data classification that each restricted data set requires different requirements and thus different expertise to provide governance and oversee access.

4. **If there is a dispute over data availability (for instance if a reader requests data and is denied access), is there a body that can consider those disagreements?**

   UF does have multiple IRBs and a restricted data management working group that will consider such issues. Access to data is limited to approved users that could potentially be revised by the data owners (e.g. funding agency, institution, PI).
Appendix C

Version Control Assessment Survey (draft)

Github Enterprise 2018

Q1 What is your primary department, unit, or team name?

Q2 What types of version control are in use in your department, unit, or team?

- Git (1)
- Subversion (2)
- Other (3)
- None (4)

Q3 What is the total number of users using version control in your department, unit, or team?

Q4 What are the total repositories in each version control system in your department, unit, or team?

<table>
<thead>
<tr>
<th>System</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Github Cloud (1)</td>
<td></td>
</tr>
<tr>
<td>Bitbucket Cloud (2)</td>
<td></td>
</tr>
<tr>
<td>Other Cloud (3)</td>
<td></td>
</tr>
<tr>
<td>Local (4)</td>
<td></td>
</tr>
</tbody>
</table>

Q5 What are the total estimated annual recurring cost in maintenance, fees, etc. for version control in your department, unit, or team?

Q6 How will a version control solution such as GitHub Enterprise impact collaboration, productivity, and workflow?