Conducting a Science Data Services Needs Assessment

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**Project Description**
The needs assessment was an initiative by the University of Oregon Libraries to lay the foundation for a data services program. The intent of the project was to create relationships with partners outside the library, develop a team within the library for data support, and gather information on the data assets and needs of our researchers.

More specifically, the goals of the project were to:
- define the information services needs of science research faculty;
- inform the Libraries and other stakeholders of gaps in the current service structures;
- identify research groups or faculty whose datasets would be good subjects for a pilot data curation project.

**Methods**
1. Review of other similar projects, and question-set development.
   The Data Audit Framework (DAF) methodology (University of Glasgow/DCC/JISC) was judged to be the most comprehensive set of questions with a field-tested methodology. The set of questions used in our assessment was based largely on the DAF, with input from Campus Information Services, and the Electronic Records Archivist who had recently worked with social scientists on a related project. The question set was further refined based on the interview questions employed in the Data Curation Profiles project by Purdue University Libraries and the University of Illinois, Urbana-Champaign.

2. Outreach
   One of the recommendations of the DAF was to create a business case to formalize the “justification for undertaking the data audit, based on the expected costs, risks, benefits and savings” (DAF Methodology). Familiarity with these topics in the local context was helpful for outreach to deans, chairs, and others. Establishing common definitions for the topics and issues at hand improved the entire process of outreach and the interviews themselves.

   Presentations to new research faculty, and at a meeting of the chairs of research centers and institutes facilitated participation. Library subject specialists’ knowledge of their respective science departments also aided outreach and the selection of interested faculty who were good candidates for the assessment.

3. Interviews
   A web-based survey tool was briefly considered for collecting information from faculty. However, initial interviews established that more complete and accurate information about data management approaches and related issues would be best gathered through an interview process. All information was recorded via a set of forms created with Drupal and accessed via login for each participant. This allowed faculty to log in and review and add/refine records about their data assets. The data was exported from Drupal into a .csv file for analysis and reporting via pivot tables and graphs in an Excel spreadsheet.

   **Participating departments and institutes/centers:**
   Biology
   Chemistry
   Computer & Information Science
   Geological Sciences
   Human Physiology
   Materials science/nanotechnology
   Museum of Natural and Cultural History
   Physics

   **Data sets**
   As expected, a wide range of data sets, file formats, and domain-specific issues were represented in the assessment.

   Examples:
   Biomechanics data
   C. elegans embryonic development videos
   Diel activity patterns
   DNA sequence data
   EMG, EEG, Motion Capture
   Environmental/organismal data
   Filemaker Pro databases
   Fossil collection database
   Geophysical and seismological data
   Glioma histology
   LiDAR and related GIS data
   Life history data
   Motion analysis data
   NMR Spectra
   Satellite-derived solar radiation data
   Scanning electron microscope data
   Stickleback crossing database
   Ultrasound avi files
   Windaq heart rate data

   **Results**
   Significant benefits have been realized from the assessment:
   - increased awareness of data management issues among research faculty and stakeholders in the campus organization
   - requests for training for graduate students and lab personnel
   - increased communication between research faculty and the Libraries about data management issues and data curation

   Gaps/top issues are graphed below, and can be summarized as:

   1. Infrastructure (storage, backup, network speed)
   2. Need for data management tools and services in the research setting (annotation/metadata, (re-)discovery, version control). Faculty were most interested in solutions to address their needs for data management at the beginning of the data life cycle.
   3. Faculty expressed some interest/needs related to publishing data sets (i.e., repositories), but this was far down the list of expressed needs in the interviews.

   Improved communication about these issues, and the prospect of increased scrutiny and data management plan requirements from granting agencies, have raised the level of awareness and interest in these topics among faculty.

   ![Priority Issues Selected by Participants](image-url)