Distinctiveness, challenges and opportunities: The Research Lifecycle at the University of Central Florida

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Distinctiveness, Challenges and Opportunities: The Research Lifecycle at the University of Central Florida

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Introduction

- The Research Lifecycle at the University of Central Florida illustrates the campus-wide support and services available to UCF researchers.

- It was created by the UCF Libraries Research Lifecycle Committee.

- The Research Lifecycle addresses research in general and grant funded research in particular, and research data management is its important component.

- It was started from the data management requirements discussion.
Challenges and Opportunities for Research Data Management

- **Research data**: Rapidly expanding volume, complexity of data, data scattered in different places...

- **Researchers’ needs and fear**
  - Common data management vs. Discipline research data management needs
    - Some of common data management needs can best be served by improving access to basic level tools (Anderson et. al, 2007)
    - How to address the discipline research data management needs?

- **Principal investigators’ fear**: privacy, loss of ownership, fear of misuse, personal investment, reliable access, the adherence to the funders’ mandate, metadata to increase exposure; preservation development (Stuart Macdonald & Luis Martinez-Uribe, 2010)

- Data sharing activities are mainly driven by needs and benefits perceived as most important by practitioners rather than research data management policy (RIN Disciplinary Case Studies, 2009)
Challenges and Opportunities for Research Data Management (Cont.)

- Collaborative Research Data Management
  - **Major players:** researchers, computing center, libraries, faculty center for teaching and learning, grant office...

- **Multidisciplinary skills for data management:** information management, computing, economics, institutional governance, social dynamics (supplied by such actors such as departmental heads, librarians and computing staff, principle investigators, records managers, archivists, and research office staff) (Stuart Macdonald & Luis Martinez-Uribe, 2010)

- **Research data repository:** Generic vs. domain repository; Institutional vs. public data repository. Which one to choose?
Challenges and Opportunities for Research Data Management (Cont.)

- **Research Data Services**
  - What types of services to offer
    - Data storage, data computation, data analysis, data citation, metadata services, copyright services?
  - Short term storage and computation vs. long term storage and preservation
    - Who should be responsible for short term and long term data storage, curation and preservation? The university computing center? What is the library’s role in this aspect?
Challenges and Opportunities for Research Data Management (Cont.)

- **Metadata and Data Storage**
  - **Metadata Standards:** Are researchers less interested in data interoperability and metadata standards? Is it not preferable to consider a metadata standard at the project experimental stage? (Metadata standards: DC, DDI, DIF, CSDGM...; OAI-PMH)
  - **System Constraints:** Certain digital repository only supports certain metadata schema (DSpace, Fedora, Islandora, CONTENTdm...)
  - **Online storage sustainability** (Amazon, Google, Dataverse...)
  - **Metadata librarian:** Challenges in domain knowledge

- **Library’s role in Research Data Management**
  - Affected by the institution’s mission and the library’s strategic plan
  - Individual librarians’ readiness
  - Budget

UCF’s Research Lifecycle cannot answer all of these questions, but we are getting started to address unified support for research and research data management.
Origin and Development

- 2010, Office of Research & Commercialization (ORC) contacted library for help with NSF requirement for data management plans (DMP).

- 2011
  - Hosted Data Management Forum with ORC;
  - Presented literature reviews to NSF applicants;
  - Met with Vice-Provost for Information Technologies & Resources to discuss scholarly communication and data management issues and solicited faculty feedback.

- 2012
  - Created mental model of the Research Lifecycle;
  - Discussed the Research Lifecycle with ORC, Institute for Simulation & Training (IS&T) and Faculty Center for Teaching and Learning (FCTL);
2012 (Cont.)

- Presented the Research Lifecycle to the Provost and Vice-Provost for Information Technologies & Resources;
- Shared the Research Lifecycle with the Faculty Senate Library Advisory Council and College of Medicine librarians;
- Presented the Research Lifecycle at ORC Grants Day and the FCTL Winter Institute.

2013

- Presented the Research Lifecycle at a Nursing Research Roundtable;
- Invited to present the Research Lifecycle at the Provost’s Council and plan to discuss its implications with Faculty Senate and other UCF programs.
Where Did We Get Inspirations

OpenWetWare’s Research Cycle
Where Did We Get Inspirations (Cont.)

UKDRN Research Cycle
A Digital Curation Lifecycle Model

Digital Curation Centre (DCC) Lifecycle Model
ICPSR’s Data [and Data Management] Lifecycle Model

See Appendix 1 for more research lifecycle and research data models.
How is UCF’s Research Lifecycle different?

- A complex model built at the institutional level;
- Includes research support services and connects researchers to these service points;
- Promotes infrastructure building;
- Facilitates strategic planning and a campus-wide solution to researcher needs;
- A typical research model + A suite of services for funded research;
- Encourages partnerships.
Evolution of the Lifecycle (Cont.)

Research Lifecycle at UCF

Planning Cycle
- Ideas
- Impact Measures & Prestige
- Global Scholarly Community

21st Century Digital Scholarship Cycle
- Disseminate
- Preserve

Project Cycle
- Experiment/Project
- Data/Output
- Peer Review

Publication Cycle
- Draft Work
- Publication/Presentation
- Comments & Revisions
Evolution of the Lifecycle (Cont.)

Research Lifecycle at UCF

Impact Measures & Prestige → Ideas → Global Scholarly Community → Disseminate → 21st Century Digital Scholarship Cycle

Planning Cycle: Research Planning → Background Research → Conclusions → Draft Work → Peer Review → Data/Output

Project Cycle: Experiment/Project → Conclusions → Publication/ Presentation → Comments & Revisions → Preserv
Evolution of the Lifecycle (Cont.)

Research Lifecycle at UCF

University of Central Florida Libraries

Planning Cycle

- Grants Search
- Proposal Development
- Research Planning

Grant Planning

- Background Research
- Final Reports
- Communication

Disseminate

- Draft Work
- Peer Review

Publication/Preservation Cycle

- Publication
- Data/Output
- Funding

Experiment/Project Cycle

- Conclusions
- Compliance

Conclusions

Project Cycle

- Data/Output
- Funding

21st Century Digital Scholarship Cycle

- Impact Measures & Prestige
- Global Scholarly Community

Ideas
Evolution of the Lifecycle (Cont.)

Research Lifecycle at UCF

- Impact Measures & Prestige
- Ideas
- Global Scholarly Community
- 21st Century Digital Scholarship Cycle

Planning Cycle
- Grants Search
- Proposal Development
- Background Research

Grant Planning
- Research Planning

Experiment/Project
- Funding
- Compliance

Conclusions
- Grant Management

Data/Output
- Experiment/Project

Project Cycle
- Draft Work
- Peer Review

Publication Cycle
- Comments
- Revisions
- Final Reports

Preserve
- Communication

Design inspiration provided by OpenWetWare
Subcycles

- **Four subcycles**
  - Planning cycle
  - Project cycle
  - Publication cycle
  - 21st century digital scholarship cycle

- **General research process** (outer circle)
- **Funded research process** (inner circle)

**Services embedded in the circles**
- Different campus units represented by different colored dots
- Missing and potential services represented with gray dots

- **Besides traditional digital scholarship and research support, this lifecycle puts emphasis on research data management.**
Unified Support and Collaboration

- The Research Lifecycle illustrates unified research support provided institution-wide by different units.
- The partners are included in the Research Lifecycle and the conversations are continuing.

Library
Office of Research and Commercialization (ORC)
Faculty Center for Teaching and Learning (FCTL)
Institute for Simulation & Training (IS&T)
Research services are included in the Lifecycle; newly created services need to be further defined and research data management services and policies need to be established…

Library Provided Services

- Planning Cycle:
  - Literature Review
  - Citation Management Tools
  - Data Management Plans

- Project Cycle:
  - Data Set Metadata

- 21st Century Digital Scholarship Cycle:
  - Metadata Services
  - Open Access Hosting
  - Discovery Support

For further development and consideration:
- Data citation (doi; DataCite, EZID services)
- Data management tools (e.g. DMPTool customization, DataUp…)
- Data Curation Profile for research data interview;
- Metadata support in the project and digital scholarship cycles;
- Promote data repositories (ICPSR, Geodata.gov, Dryad... databib.org)

(Got inspirations from CDL and Purdue. Starr et al, 2012; Purdue, Witt, 2008, 2009.)
Services (Cont.)

- Planning Cycle:
  - Ethics & Compliance

- Funded Research Cycle: Grant Planning
  - Funding Options
  - Identify Collaborators
  - Proposal Guidance
  - Proposal Development Writing

- Funded Research Cycle: Grant Management
  - Contract Manager
  - Internal Reports
  - Cost Share
  - External Reports

- Funded Research Cycle: Grant Conclusion
  - Budget Reporting
  - Technology Transfer

Office of Research and Commercialization
Services (Cont.)

- **Publication Cycle:**
  - Writing Workshops

- **Project Cycle:**
  - Research Data

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Faculty Center for Teaching and Learning

Institute for Simulation & Training
The Research Lifecycle includes some missing services. Which unit will be responsible for these services or whether they’ll be collaborative research support and research data management will need further conversation and definition.

- Planning Cycle:
  - Collaboration Tools

- Project Cycle:
  - Analysis Support

- Publication Cycle:
  - Where to Publish
  - Author Rights

- 21st Century Digital Scholarship Cycle:
  - Data Curation
  - Data Sharing

(* These two services belong to the Research Data Management Infrastructure.)
The Research Lifecycle is used as a basis to build a framework for the faculty research process and gain both support and funding for new infrastructure and services.

- Partially supported.
- Currently providing Research Data Computational Services.
- Not yet in place - data hosting and data long term preservation.
Infrastructure

• Not yet supported.
• Institutional repository to store, share and preserve university research output.

• Not yet supported.
• Includes data curation and data sharing.
Library-Faculty Collaboration on Research Data Management

- The Research Lifecycle provides a map for services to faculty, and promotion of these services and outreach to faculty is very much needed;

- For research data management, we need to expand traditional literature research and citation services to include data literature research, data citation services, and enhance data management plan support;

- Data literacy and data management education is needed for librarians in order to provide quality services to faculty;

- Opportunities need to be sought out for by librarians to get involved in faculty projects and promote library-faculty collaboration.
Continuing Efforts

- The UCF Library continues to promote the Research Lifecycle and develop scholarly services. Various library working groups have been created and recently repurposed to sustain this effort.

- Website:
  - Web pages ([http://library.ucf.edu/scholarlycommunication](http://library.ucf.edu/scholarlycommunication))
  - Research guides, e.g.
    - Research data management guide ([http://guides.ucf.edu/data](http://guides.ucf.edu/data))
    - Metadata guide ([http://guides.ucf.edu/metadata](http://guides.ucf.edu/metadata))
  - Toolkit (e.g. handouts, bookmarks, graph posters)
  - Open Access Champions
  - Faculty work highlights
Continuing Efforts (Cont.)

- **Internal Training** (webinars, workshops...)

- **External Workshops & Outreach:**
  - External training
  - Faculty & Librarian collaboration

- **Open Access Week Exhibits & Programming**

- **Institutional Infrastructure:**
  - Continue to look for campus-wide solutions for data hosting, curation & preservation
Final Thoughts

- The research lifecycle at UCF is created to provide the campus-wide support to researchers in response to the rising needs and requirements for research and research data management;

- The research lifecycle helps to alleviate researchers’ burden and meet their needs for research and research data management through a variety of research services, and it assists in building collaborative research support and research Data management in an institution;

- New services need to be further defined and potential services need to continue to be explored;

- Internal education is important for librarians in order to provide quality external services to faculty;

- Outreach to faculty and engage faculty to participate in the discussion and use the services in the Research Lifecycle;

- Collaboration and partnerships need to be further discussed, infrastructures need to continue to be built and policies need to be made to benefit researchers and nurture partnerships.
Appendix 1: Research Lifecycle and Research Data Models

- Cameron Neylon’s Research Lifecycle (http://en.wikipedia.org/wiki/File:Research_cycle.png)
- Capella University: The Scholarly Research Cycle (http://www.capella.edu/interactivemedia/informationLiteracy/images/indexRoadmap.gif)
- National Service-Learning Clearinghouse: The Research Cycle (http://www.servicelearning.org/service-learning-research-primer/research-cycle)
- OpenWetWare: The Research Lifecycle (http://openwetware.org/wiki/OpenWetWare:Headquarters/Research_Pathway)
- Digital Curation Centre (DCC) Lifecycle Model (http://www.dcc.ac.uk/resources/curation-lifecycle-model)
- DataONE: Data Life Cycle Management (http://www.dataone.org/best-practices)
- University of Virginia Library Research Life Cycle (http://dmconsult.library.virginia.edu/)
- University of Oxford Research Data Management (http://www.admin.ox.ac.uk/rdm/)
- UK Data Archive Research Data Lifecycle (http://data-archive.ac.uk/create-manage/life-cycle)
- University of Bath: Research 360 Institutional Research Lifecycle (http://blogs.bath.ac.uk/research360/about/)
- The University of Western Australia: Research Data and the Research Lifecycle (http://guides.is.uwa.edu.au/content.php?pid=319161&sid=2616069)
Bibliography and Resources

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- Inter-university Consortium for Political and Social Research (ICPSR). [http://www.icpsr.umich.edu/icpsrweb/landing.jsp](http://www.icpsr.umich.edu/icpsrweb/landing.jsp)
Teams

- Research Lifecycle Committee members included: Lee Dotson (chair), Penny Beile, Selma Jaskowski, Athena Hoeppner, Andy Todd, Sandra Varry, Mary Page, Rich Gause, Corinne Bishop, Therese Triumph, Bobby Ciullo, and Cindy Dancel. Content is made available under a Creative Commons BY-SA.

Thank you! Questions?

The Starry Night (Vincent van Gogh)