Symposium: Toward an Open Science Enterprise

The Open Science stack: Infrastructure, scientific objects, and policy

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National Academies - Board on Research Data and Information
September 18, 2017

Perspective of Libraries & their Universities

- Rhetoric vs. Reality in Research Universities:
  - OA Policy (absolutely needed, but…)
  - Actual practices and the challenges researchers face
  - Incentivizing Open Science for researchers, institutions

- Some of the Needs:
  - Research / Cyberinfrastructure
  - Services (and consulting and education)

OS as end result &
OS as research process

- Goal of Open: **better science through transparency**
  - Verify research by comprehending all aspects of the research process, so that it can be reproduced and found accurate
  - Ultimately, this is how the veracity of research is tested and verified

OS as end result & OS as research process

- However a current policy-practice problem exists:
  - Questionable if current policies result in deposit of objects that are reusable by researchers
    - Some researchers talk about depositing a file - any file - to meet the requirement
    - They know reproducing research from this data file is unlikely
    - Not so concerned about the file's usability, but rather the mechanics of meeting agency policy

What do policies need to address?

- We need policies that help facilitate the creation, use, deposit, and reuse of scientific objects. What are these objects?

- We may need:
  - Research data sets
  - Articles, papers, proceedings, reports
  - Software tools used and maybe code (homegrown and commercial)

What do policies need to address?

- Software documentation
  - Architecture, code, algorithms, interfaces, APIs, etc.
- Project documentation
  - Records, lab notebooks, annotations, presentations, etc.
  - Document project's environmental conditions, experiment dates/times, technical environment details, research steps taken, etc.

Policy, Practice and Incentives

Facilitators – We Need:

- New and useful **Tools and Infrastructures**
- Tested, positive **Incentives** that work
  - Not always "sticks," but attractors to Open – we need to identify these
  - Change certain research / publishing practices
- Targeted and widespread **Education**
  - Some Faculty's perception of OA (open = free = bad scholarship)
  - There is OA Confusion: OA publishing (gold) vs. OA repositories (green)
- **Funding** designated for APCs and other business models to meet costs

Policy, Practice and Incentives

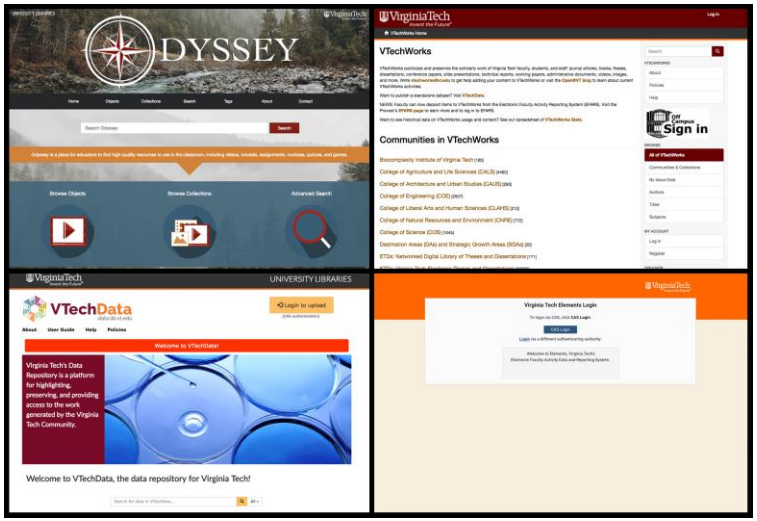
Facilitators – We Need:

- Publishers and service providers who **leverage OA**
  - Publishers like PLOS, publishing services like Ubiquity Press
  - Need the FASTR legislation to become law (paywalls definitely a big problem)
- Libraries that exercise some **flexibility about OA**
  - There are various types of OA to consider (CC licenses) / We are in transitional times
- Institutions to review their **tenure processes**
  - They reinforce the status quo
  - Is anyone doing this?

Univs Prepare for Open Science

Virginia Tech as Case Study:

•Supports OA to research products through the provision of an OA support ecosystem that includes:



•The "local foundation:"

- VTechWorks (scholarship repository)
- VTechData (research data repository)
- Odyssey (learning object repository)
- eFARS (research information management system)

VirginiaTech

OS and Publishing Services

VT Publishing:

•OA Subvention Fund (articles)

•Open Educational Resources Grant Program

•Publish:
- Journals
- Conference proceedings
- Research data
- Various digital projects

•Ubiquity Press as partner
- Infrastructure + services

OS and Research Data

VT Libraries' Data Services:

- Data management planning
- Finding and citing data
- Analyzing and processing data
- Publishing, curation, and enhancing research impact
- VTechData (data repository)

Some Tools and Services

- CollabVT (web-based faculty profiles, draws on eFARS [VIVO])
- ORCID (researcher ID)
- Overleaf Pro
  - Collaborative authoring tool; supports LaTeX and deposit in repositories
- Explorer for Institutions
  - Access to altmetrics
- Open Science Framework
  - Project management support for researchers across research lifecycle
- Research guides on open topics

Data Training & Education

Education/training:

- University's Networked Learning Initiative (faculty)
- Data Mgmt Bootcamp (grads)
- 1 credit hour grad course
- Advanced research skills seminars (undergrads)
- "Just-in-Time" support
- Data & Decisions Destination Area:
  - Developing a "Data Curriculum" for undergraduate students

Conclusion / Thank You

- Major investments at the institutional level:
  - policy,
  - infrastructure,
  - services

Federal + institutional policies:

•Need to reach a compatibility

•Policy focus on producing desired outcomes

Need Govt + Univ partnerships to develop/manage:

- Cyberinfrastructure (new)
- Compatible policies
- Positive Incentives for OS

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