This report is largely based on the themes in the Libraries’ Strategic Plan 2012/18. **Collaboration** is a thread throughout the Libraries’ strategic and implementation plans. DRSS formed strategic partnerships, joint ventures, and collaborations to exchange ideas, share discoveries, and produce scholarship. We assisted researchers in producing and sharing new knowledge products. For example, we worked with

- The Graduate School to develop a daily ingest system, receiving 835 ETDs in year one
- Prof. Frimpong to host and administer the Fish Traits database, moving it towards a central repository for a continually expanding set of traits and species of North American fish, [http://www.lib.vt.edu/find/databases/F/fishtraits-database.html](http://www.lib.vt.edu/find/databases/F/fishtraits-database.html)
- University Relations to expand our archive of VT News
- Aerospace and Oceanographic Engineering and VTTI faculty to produce conference proceedings
- IBICT, Instituto Brasileiro de Informação em Ciência e Tecnologia, developed TEDE, an ETD digital library system modeled on Virginia Tech’s ETD-db.

DRSS enhanced the Libraries capacity to carry out its mission.

- Kimberli Weeks converted to Administrative/Professional faculty
- Hired two Repository Collections Specialists: Gilbert Borrego and Anne Lawrence
- Hired Digital Publishing Specialist, Chase Dooley
- Hired Java/Fedora programmer for VTechWorks2, Yinlin Chen
- Hired Ruby/Hydra programmer for VTechWorks2, Tingting Jiang
- Hired and trained student assistants for VTechWorks: Chris McCarty, Amber Lee, Manuel Bonilla Flores, Emily Schwarting, and Ann Genova
- Employed ejournal and project assistants: Sarah Ryan, Pavithra Sekhar, Nicole Kim, and Elliot Garner, Matthew Wilt, and Noha ElSherbiny
- Hired and trained Graduate Assistant, Krunal Doshi, who continued work on VTWISE (VTechWorks Integrated Search Engine)
- Nathan Hall successfully defended his dissertation (“Faculty Attitudes Towards Institutional Repositories”) at the University of North Texas.

These consulting activities are examples of our willingness to collaborate and the Libraries' goal to develop strategic partnerships.

- Copyright issues for University Counsel, ETD authors, faculty, and InnovationSpace referrals
- Paul Quigley (History) - “Mapping the 4th of July in the Era of the Civil War”
- David Radcliffe (English) - Byron visualization
- Quinn Warnick et al. (English) - CATH and digital humanities
- Data management plans that comply with agency mandates to ensure long-term access and preservation

Strategic partnerships resulted in grant activities.

**Grants Awarded**

- Amazon Teaching Grant, $3000 Amazon Web Services credit, PI
- Mellon Foundation/Columbia University Web Archiving Incentive Program, $25,000: Archiving transactions towards uninterruptible web service
- US Geological Survey, Biological Informatics Program, $61,000: Modeling how traits mediate fish vulnerabilities to specific habitat alterations. Co-PI with E. A. Frimpong
Grants Concluded

  - 428 downloads; 30% from 34 countries outside US
  - Already cited in the scholarly literature

  - DRSS student, Matthew Wilt did extraordinary work, creating scripts that analyzed and enhanced metadata in 336,562 Virginian Pilot and Roanoke Times HTML files.
  - DRSS was challenged to add descriptive metadata to PDF files in a web-based structure. Two interactive open source deliverables were created:
    - DirectoryPackager.py - Script parses CSV to locate and extract files from a webserver and packages them into a target directory. Packager also replaces them in their original locations.
    - CSVtoPDF.pl - Program embeds descriptive metadata into PDFs, TIFF, JPEG, etc., given a CSV with the descriptive metadata.

Grants Under Consideration

- USAID, Sustainable Agriculture and Natural Resource Management (SANREM) Innovation Lab: replace the agricultural resource repository. Led by Jennifer Himmelstein (VT).

DRSS collaborated on presentations and peer-reviewed publications.


Xie, Zhiwu; Van de Sompel, Herbert; Liu, Jinyang; van Reenen, Johann; Jordan, Ramiro. “Archiving Relaxed Consistency Web.” 22nd International Conference on Information and Knowledge Management (CIKM) 2013, San Francisco (Paper ID 561).

Lake, S., Mitchell, C., Gonder, J., Tuttle, J., Hall, Nathan, Goldbeck, K., and Pennington, Scott. “Services for research data and open access: Strategies and toolkits being implemented at Virginia Tech, the University of California, and Duke University.” DLF Forum, Austin, TX, Nov.


Ramirez, Marisa, Joan T. Dalton, Gail McMillan, Max Read, and Nan Seamans. "Do Open Access

Theme: Research and Curation
DRSS curated digital research and scholarship, connecting people with curated information through research technologies and producing new knowledge products. Our research activities were enhanced through professional development such as attending the Advanced Hydra Camp and Hydra Connect, as well as conferences, including Code4Lib, NISO AltMetric, PASIG, JCDL, CIKM, CNI, ANADP II, and PLN. DRSS research activities were shared locally in such environments as NLI (e.g., Introduction to Cloud Computing) and more broadly through presentations such as:


DRSS students and staff reformatted 152 legacy HTML journal articles to be compliant with Federal Accessibility Standards. They also created metadata for 1,170 pages in 12 journals, which facilitates user success through Summon, Google Scholar, LibX, Zotero, etc.

We began the development of VTechWorks2
• Establishing connections with Fedora and Hydra communities, and with APTrust and DPN
• Advancing prototypes for queuing big data (Hydra) and connecting Fedora 4 with Amazon S3-like cloud storage and Amazon Glacier, and creating a prototype repository for the Signature Engineering Building sensor data.

DRSS offered training programs on e-research and digital curation to assist faculty and students in understanding e-research issues and how digital curation processes add value to digital research and scholarship, meet funding agency requirements, and increase access to information.

• “Introduction to Cloud Computing Part 1 and 2” NLI
• “Data Management: Deep Dive” NLI
• BMVS-5714, Nov. 6, “ETDs for Vet Med Graduate Students” with Janice Austin (Grad School)
• Open Access Week, Oct. 21-25 NLI
  o ETDs and Open Access: Understanding the Digital Landscape of Open Access in the Graduate School Arena, with Dean Karen DePauw and Jordan Hill.
  o Introduction to Open Access and Copyright, with Philip Young.
  o Snagging Funds to Publish Your Articles: VT’s Open Access Subvention Fund.
  o CDRS Publishing Services.

Theme: Teaching, Learning, and Literacies
Virginia Tech students gained work experience with digital libraries in a variety of ways.

• Student employees added metadata to new journal articles and developed widely usable HTML versions that improve access to web discovery tools such as Summon and Google.
• Student employee created scripts that enhanced the metadata in 336,562 HTML files (NEH).
• CS 4624 students gained hands-on programming experience with real deliverables by tackling encoding errors created during the migration from ETD-db to VTechWorks, projects addressing DSpace embargo issues and importing BTD metadata from Addison, and making video recordings accessible through automated transcripts.
• Open Repositories (Helsinki) audience learned about our work with students when Collin Brittle and Keith Gilbertson presented “Integrating Student Learning into the Repository Ecosystem.”

The DRSS preservation strategy is based on 10 years experience in the MetaArchive Cooperative. We preserved 339 GB of unique Virginia Tech resources in its secure dark archive.

**Theme: Collections Access**

Open Access Subvention Fund (OASF)

The Libraries is contributing to the transformation of traditional scholarly publishing through the establishment of the OASF. Following the successful two-year pilot project, the Open Access Subvention Fund became a formally budgeted item as of FY 2015. The Provost agreed to contribute $20,000 and the Libraries’ Dean will contribute $30,000. See Appendix A for the OASF Pilot Project Report. This new library service and resource was also reported in ASERL’s “Putting Money Where Our Mouths Are: Libraries Funding Open Access Publishing”.

Open Access is a founding tenet of DRSS, which was built upon the goal of making the Libraries’ unique digital collections locally and globally accessible. This year we focused on enabling open access to locally produced scholarship through VTechWorks. (See also NEH grant above re NewsOnline.)

**Collections: 38,469 items in VTechWorks. Added 3,433 publications, including**

- Nearly 1,400 per-reviewed journal articles, matching the number of peer-reviewed articles in many peer institution repositories, which are much older
- 130 GB from Barbara Lockee’s AECT [Association for Educational Communications and Technology] History Makers project
- 150 GB associated with one 2012 VT ETD, “War and Agriculture: Three Decades of Agricultural Land Use and Land Cover Change in Iraq,” VTechWorks’ largest work.
- 525 Graduate-School-approved ETDs (along with 310 embargoed ETDs stored elsewhere)
- 20,604 ETDs from the legacy ETD-db system into VTechWorks (excluding embargoed works)
- Digitized 432 BTDs (bound theses and dissertations)
- Migrated 51 peer-reviewed papers from our first conference proceedings produced with OCS
- Added 72 videos from Events Capture service

**Usage (only available for nine months, July–March, due to system failures)**

- 635,611 items accessed
- 2,207,456 items downloaded
- 217,644 queries

**Administration**

- Improved public interface: advanced search, drop-down navigation of communities and collections, restructured communities and collections
- Created citations in Wikipedia (e.g., [http://en.wikipedia.org/wiki/Biofuel](http://en.wikipedia.org/wiki/Biofuel))
- Assessed copyright status using SHERPA/RoMEO and Google Script to automate look up
- Drafted policies for VT community and inaugurated workflow efficiencies including SAF Batch Importer and metadata templates for article, chapter, newsletters, and reports

**Collections: EJournals. Added: 691 articles in 38 issues**

- 4,784,594 hits requesting 2,732,420 pages
- 18,078 distinct files requested
- 1,092,698 unique visitors
DRSS is in the fledgling stages of transforming traditional publishing workflow and enabling authors to engage in new open publishing environments. This year we facilitated online conference proceedings processing for three conferences:

- Marine Energy Technology Symposium (METS)
  - 51 papers processed through OCS archived in VTechWorks
- International Symposium on Naturalistic Driving Research
- Pavement Evaluation

**Collections: Images**

- Adopted MDID3 and migrated over 32,000 images from Art/Architecture collection, including 8,160 from VT Athletics Collection
- ImageBase
  - Added 2,318 legacy images, including 617 historic Giles County, VA (right: http://spec.lib.vt.edu/imagebase/localhistory/full/LHHISTDIST0136.jpg)
  - Added descriptive metadata to over 8,000 University Relations images

**Collections: Employee of the Month**

- Archived 23 employee profiles

DRSS staff were invited to share our models of open collections access.

McMillan, Gail. “ETDs and the Publishing Landscape.” University of California at Santa Barbara, May 5, 2014. UCSB GradPost: Don’t fear the Open Access ETD


DRSS staff promoted the value of open collections access and other areas of research through peer-reviewed publications and presentations (not already mentioned).


Appendix A: OASF Pilot Project Report

Summary of the Two-year (FY13-FY14) Open Access Subvention Fund Pilot Project
Gail McMillan, July 2, 2014

Virginia Tech began subsidizing article processing fees for authors publishing scholarly peer reviewed articles in open access and hybrid journals in August 2012, following the approval of "The Proposal for a Virginia Tech Open Access Publishing Fund." During the pilot, 67 requests for funds were made, totaling $100,564 in publisher fees. In response to these requests the VT OASF awarded $58,700 to 117 VT authors, 26 of whom were funded more than once. The OASF supported the publication of 55 open access articles in 38 journals by 22 publishers.

Funding
The Provost, the Vice President for Research, and the Dean of Libraries each committed $8,000 per year for the two-year pilot project. During the second year, the Dean continually upped his ante to the Fund repeatedly, ultimately to $18,000, so that all the eligible requests could be funded, ultimately to $18,000.

The Process
The first of the 67 requests for article processing subsidies began arriving on Aug. 30, 2013. A team led by Julie Speer (Leslie O'Brien, Ladd Brown, Scott Pennington, and Gail McMillan) jointly reviewed early requests before Gail McMillan became the contact person in March 2013. Philip Young replaced Scott Pennington in June 2014. The team reviewed requests based on the policies described in the OASF request form. Requests were processed within 10 days. Authors receiving OASF support were asked to acknowledge the fund in their published articles and to deposit their articles in VTechWorks.

Award Highlights

VT Authors Funded by Classification

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<th>Count</th>
</tr>
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<tbody>
<tr>
<td>GS</td>
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</tr>
<tr>
<td>Assoc Prof</td>
<td>31</td>
</tr>
<tr>
<td>Prof</td>
<td>22</td>
</tr>
<tr>
<td>Asst Prof</td>
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<tr>
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<tr>
<td>Post doc</td>
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</tr>
<tr>
<td>Instructor</td>
<td>3</td>
</tr>
<tr>
<td>Undergrad</td>
<td>2</td>
</tr>
</tbody>
</table>

Other = Institute Director, Lab Specialist (3), Project Associate, Research Associate (3), Research Assistant, Research Engineer, Research Scientist, Research Specialist, Research Technician
Articles Funded (55) by College

<table>
<thead>
<tr>
<th>College</th>
<th>Articles Funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>COE</td>
<td>11</td>
</tr>
<tr>
<td>COS</td>
<td>11</td>
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<tr>
<td>CALS</td>
<td>6</td>
</tr>
<tr>
<td>CNRE</td>
<td>6</td>
</tr>
<tr>
<td>CLAHS</td>
<td>3</td>
</tr>
<tr>
<td>VET MED</td>
<td>3</td>
</tr>
<tr>
<td>VTTI</td>
<td>2</td>
</tr>
<tr>
<td>CAUS</td>
<td>1</td>
</tr>
<tr>
<td>OIRED</td>
<td>1</td>
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<tr>
<td>VTCRI</td>
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</table>

Inter-college Articles Funded

<table>
<thead>
<tr>
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<th>Articles Funded</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>CALS + COE</td>
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<tr>
<td>CALS + COS</td>
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</tr>
<tr>
<td>CALS + ICTAS</td>
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</tr>
<tr>
<td>COE + ICTAS</td>
<td>1</td>
</tr>
<tr>
<td>COE + VBI + COS</td>
<td>1</td>
</tr>
<tr>
<td>VET MED + CALS</td>
<td>4</td>
</tr>
</tbody>
</table>

Results of the VT OASF Pilot Project

Following the successful pilot project, Virginia Tech’s Open Access Subvention Fund will become a formally budgeted item as of FY 2015. The Provost agreed to contribute $20,000 and the Dean will contribute $30,000, adding the OASF to the Libraries’ annual budget.
Outreach and Recognition


- Librarians included the OASF in their discussions and presentations to various university administrators and faculty, including OA Week 2014 and at NLI June 2014.
- Liz McVoy recorded testimonials by Daniel Homai (MS&E/CoE) and Gonzalo Ferreira (Dairy Science/CALS) in March 2014, which are available at [http://youtu.be/KBxPN3Af-iE](http://youtu.be/KBxPN3Af-iE) (3.5 min.) and [http://youtu.be/bPdJEkCRMYA](http://youtu.be/bPdJEkCRMYA) (2 min.)
- For the first time OASF authors were recognized at the Libraries’ annual Authors’ Day Recognition event on Feb. 10th [which had previously recognized only authors of monographs].