The Other Side of the Library Coin:
Georgia Tech’s Experience in Broadcasting Scholarly Information

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The Future of Libraries

- What will academic libraries look like in the future?
  - What information will they hold?
  - What services will they provide?
  - What infrastructures will there be?

- Your Campus’ Intellectual Output:
  Libraries are helping to produce, collect, organize, and disseminate it

- Product of Education and Research:
  Diverse and voluminous
  Must be well-managed for the long run

- Research, Learning, Communication:
  Study / analyze contemporary academic processes

- Repositories are proliferating:
  Over 1100 IRs in OpenDOAR in 6 yrs!
Intellectual output includes diverse items such as:

Older forms:
- Annual reports
- Conference papers and proceedings
- Instructional and workshop materials
- Lecture series and symposia materials
- Pre-prints/post-prints
- Research reports
- Technical reports, working papers, white papers
- Web pages

Newer forms:
- Computer programs
- Digital data and data sets (informatics-based, research databases, etc.)
- Digital audio/video
- Learning/complex objects (digitally captured courses, multimedia simulations/visualizations, captured notes of faculty/students, etc.)
- Simulations/visualizations/virtual models
- Wikis, Blogs, etc.
Broadcasting?

What do I mean by “Broadcasting”?

• Think of… Producer / Production company
  ▪ i.e. Radio / Television / Film / Media outlets

• The Act of Producing and Distributing…

• “The digital production and management of information is central to the redefinition of university libraries.”

• “Library content is now defined by access, and the library’s role is one of collaborator in the production and dissemination of knowledge.”

(Emory Libraries Strategic Plan, 2008-12)
library 1.0

acquire

lend find

store

Courtesy: Robert McDonald / SDSC
Repositories:

- for capture of the university intellectual output in support of its teaching and research missions

- **SMARTech (DSpace, est. Aug. 2004)**
  - 18,000 objects
  - 34 communities/85 sub-communities/265 collections
  - 1,407,041 items viewed (July ‘06 – June’07)
  - 1,698,792 items downloaded
  - 261,464 searches

- **SMARTech is the:**
  - 5th largest of 56 DSpace repositories in the United States
  - Top 10% of any repository platform in the world
Four Types of Intellectual Output

- The four major categories of output being reviewed are:
  1. **Faculty and researchers’ scholarly communications**
     - (i.e., pre-/post-prints, journal articles, conference papers, research reports, technical papers, etc.)
  2. **Student intellectual output**
  3. **Learning objects and other multimedia-based works**
  4. **Digital research data sets**

- These resources pose new challenges, also present new opportunities
- Libraries extending capabilities to manage these resources for future
  - becoming integral to academic knowledge dissemination processes
Faculty and Researchers’ Scholarly Communications

- Formal, i.e.
  - Journal publications, research papers, technical reports, working papers, conference papers, lectures, records, personal papers

- Informal, i.e.
  - Listservs, threaded discussion lists, chat, virtual community sites / collaboration spaces, blogs, wikis, e-mail, etc.

- Conversational / transactional elements of research process more important as libraries capture disciplinary debate and development

- Study informal modes, design solutions for capturing and providing additional access to these resources

*IR can be a central tool in the challenge of organizing and accessing both formal and informal scholarly communications. Increasingly, will be created, transmitted, and maintained in myriad digital forms*
Student Intellectual Output

Undergrad Research Programs

- Growth of UG research programs, scholarships, awards, international research
- GT: Submit output to SMARTech (via ETD-db software for ETDs)

- GT Examples:
  - Summer Undergraduate Research Experience
  - Undergraduate Research Scholars Program
  - President’s Undergraduate Research Award

GT Library East Commons
Student creative activity, exhibits, presentations, performances, research / digital renderings: SMARTech
Multimedia and Repositories

Outgrowth of student multimedia projects, faculty’s instructional materials, digitally-captured courses

GT Examples:

- LWC Multimedia Center / Student output increasingly multimedia, professors ask for it

- Migration: WebCT CE to Sakai – leverage expanding benefits of new virtual Collaboration and Learning Environment
  - Integration of library technologies, content, services

- ECE Digital Media Lab, Educational Tech., Distance Learning, Library:
  - Infrastructure-building
Schol Comm Svcs: EPAGE@Tech

- **New Library Services:**
  - Support creation, use of digital resources in new/different ways

- **Publishing**
  - Electronic Books
  - Journals
  - Conference Proceedings

- **Capturing**
  - Instructional Materials
  - Multimedia

- **Hosting**
  - Conferences
  - Symposia
  - Lecture Series

*Cultivating active partnerships with faculty is how libraries will continue to transform into high-value hubs of information services*
The Tower: GT's Journal of Undergraduate Research
- OIT: production server
- Library: pdf, image, text
WREK student radio campus interviews

Mp3 to WAV, provide both
Journal Publishing

ITID

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The Future is Now!

- Building new cyberinfrastructure to undergird new broadcasting services:
  - Research Data Management (curation)
  - Digital Preservation
  - Federated Repositories
Digital Research Data Sets

- New class of digital-born output: digital data sets generated from modern research processes

- **Major Disciplines:**
  - Sciences and engineering fields
  - Social sciences
  - Medical disciplines

- **Examples:**
  - Geospatial data
  - Social science / economic statistical, observational data
  - Biological / Medical data
  - Astronomical data
  - Nuclear physics data
  - Genomic and protein data
Digital Research Data Sets

Library Perspective:
1) a primary source that must be made available to support and advance research

2) an extension of scholarly publications, e.g., raw, digital data accompanying journal articles and technical papers

Challenges to Libraries:
- Lack of clear policies
- Incentives that promote digital data curation as integral part of research projects (i.e. NIH, NSF)
- Data curation tools, interoperable technologies
  - tools for data / metadata extraction, database emulation, data provenance tracking
- Scholar/Librarian/IT Partnerships
- A need for changes: organizational culture, technical infrastructure
Cyberinfrastructure for Intellectual / Research Content

*Complexity and diversity of digital intellectual content - librarians, archivists, scholars, and researchers - need a common cyberinfrastructure to manage and foster its utilization*

- “Cyberinfrastructure emphasizes not only technology, but policy and people to form a well integrated whole, fostering scholars’ and researchers’ participation in communities that advance Cyberinfrastructure” (2003)

- GT has worked on two key cyberinfrastructure components:
  1) Repositories
     - SMARTech (DSpace)
     - DataSpace (MIT & Co.)
  2) Digital Preservation Networks

To Stand the Test of Time
Long-term Stewardship of Digital Data Sets in Science and Engineering

A Report to the National Science Foundation from the ARL Workshop on New Collaborative Relationships: The Role of Academic Libraries in the Digital Data Universe
September 24-27, 2006
Arlington, VA

Report of the American Council of Learned Societies Commission on Cyberinfrastructure for the Humanities and Social Sciences
Infrastructure: Digital Preservation

- **MetaArchive Preservation Network**
  http://metaarchive.org

- Decentralized Approach (question “one copy, one institution” approach)

- Built on LOCKSS (supports “distributed digital replication” approach).

- Closed Archive (No direct public access. High accessibility = high costs)

- Automated format emulation tools

- Low Cost (Planned minimal expense, low barriers to adoption for mid-size insts.)

- Flexible, adaptable multi-inst. model

- LC / NDIIPP partnership (1 of 8 initial)
GALILEO Knowledge Repository: A Federated Repositories Initiative

- 3 independent repositories at 3 USG research univs.
  - Plus, 5 new hosted repositories for USG schools

- Shared standards promote use and interoperability
  - Metadata, Nomenclature, and Harvesting
  - Search and Discovery
  - Rights management

- GKR Services
  - Searchable repository of harvested metadata
  - IR hosting service (DSpace): USG schools (GT)
  - Locally managed content
  - IR-related services:
    - Copyright research, Digitization,
    - Content submission, Preservation
**Figure 1:** Metadata is harvested from repositories using OAI-PMH, then a user searches across the metadata

**Figure 2:** Once a user receives results, viewing an item will take them to the repository where the object resides

**IMLS proposal:** $830,000 - 2008-2010
IMPACT: GKR

- Increase USG visibility, prestige through global exposure to its digital scholarship and research
- Promote information sharing and discovery of research among the 35 USG institutions from a single web site
- Improve access to learning for the citizens of Georgia at large
- Create outlet for new forms of instructional media and scholarship, including open access scholarship
- Provide stewardship for the least permanent (i.e. non-published) elements of the USG’s intellectual works
- Demonstrate the effectiveness of USG institutions and their faculty for assessment and accreditation purposes through enhanced access to their scholarly works
- Advance scholarly communication in U.S. by expanding use of IRs to more colls and univs, and explore open access for univ. press content
Concluding Thoughts...

- Libraries should be information and knowledge management centers
  - This includes production and dissemination

- In addition to our books and journals, there’s a whole world of other information resources out there! Be alert. Find out what information is being created

- Libraries should be more about “process,” not just “product.” Information has a Lifecycle. Libraries can add value in each phase.
Thank you!

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