ACRL Final Report: Digital Rights Management and Licensed Scholarly Digital Resources

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Introduction

This report summarizes the results of an ACRL Samuel Lazerow Fellowship funded research project to investigate the extent to which publishers and vendors are making use of technological protection measures ("TPM" also known as DRM) to control access to and use of licensed full-text scholarly materials or data sets. The study also began to explore the impact of access and use restrictions on learning, scholarship and library management. Study results include the following:

1. Identification of a small number of licensed resources containing "hard" access and use restrictions from a review of 75 licensed scholarly resources from the fields of history/art history, health sciences and engineering.
2. Identification and description of four more common, but less strict, "soft" access and use descriptions: *TPM by obfuscation, TPM by omission, TPM by polyglot, TPM by frustration*
3. Development of themes describing access and use restriction interaction with learning, scholarship and library management from twelve interviews with librarians from the above academic fields.
4. Development of appropriate methodologies to identify and investigate TPM in large numbers of dynamic, vendor controlled licensed resources.
5. Receipt of a longer term grant from the Institute of Museum and Library Services for expansion of the research to include resources in additional fields

Study Methodology

Data collection was conducted at one Carnegie I research institution and involved three stages: resource sampling, resource assessment and interviews. Resources were defined as *licensed branded, network accessible publishing platforms including Web accessible resources and networked CD-ROMs* from three disciplines: history (including art history), health sciences and engineering/computer science. The resources for each discipline area were identified by their inclusion in subject guides on library web sites and confirmed during interviews.

A combination of purposeful and random sampling was used to select resources for access and use rights restriction assessment. Initial interviews with librarians identified resources that might contain access or use restrictions (purposeful sampling). In addition, an additional random sample of ten percent of resources was drawn from each discipline area. The combined purposeful and random samples included 24 resources in history/art history, 27 in health, and 24 in engineering. Ideally these resources were all licensed full text or databases of data; however, some free or non-full text resources were included due to misidentification. See appendix A for the titles of the resources sampled for each discipline area.

The access and use rights restriction assessment was performed using a scenario-based protocol dictating how the resource was accessed, how much of the resource was accessed, and how each resource was used. [1] Actual access and use rights were assessed by comparing them with the following presumed access rights and use rights:

- Presumed Access Rights: Access available from a university registered IP address outside the library, or logged in through an authentication or proxy system. No required login ID or passwords at the resource level.
- Presumed Use Rights: Viewing, printing, copy and paste, email, save copy to local disk, view local copy, print local copy, e-mail local copy.

Twelve interviews with subject area librarians, in both one-on-one and group formats, explored concerns about the interaction between access and use restrictions and learning, scholarship and library operations.

[1] Resource use comported with CONTU guidelines for fair use of materials for e-reserves.

Results

Observed access restrictions

Access restrictions, as originally defined, were observed in a small number of resources across all three disciplines:

- Networked CD-ROM resources required patrons to use library computers.[2]
- Restricted IP ranges. The health science library IP range was included in several expensive resources licensed by the university hospital.[3] These resources were not available through other campus IP ranges or via wireless proxy.
- A library password was required to access certain parts of two resources in engineering,[4] and one resource in health sciences required establishment of an additional individual user account.[5]
- A software plug-in (beyond Adobe Acrobat) was required to access and use a few chemistry related resources.[6]

Interviews revealed that resources also suffered from access restrictions not observable through our assessment protocol. Less visible access restrictions identified by librarians included:

- Concurrent user limits,
- Publisher decisions not to include certain content, (e.g., art history publishers who included color photos in print versions of materials did not include those in the electronic version, thereby limiting access to the color images),
- Non-advertisement of resources by librarians in order to limit use of resources with concurrent user restrictions to a target population,
- Lack of a subscription due to prohibitively high prices.

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[2] Examples include: Society for Automotive Engineers Handbook, Encylopedia Judaica/Islam

[3] Examples include: Up to Date

[4] Chemical Marketing Reporter, Automotive Environmental and Safety Engineering (AESE) salaries database

[5] Proteome Bioknowledge Library

[6] e.g., Beilstein/Gmelin, SciFinder Scholar

Observed use restrictions

Our results distinguish between "hard" and "soft" TPM. Hard TPM include configurations of software or hardware that disallow or strictly limit uses such as printing, saving, copy/pasting or emailing -- even through use of the browser or computer operating system functions. Soft TPM include configurations of hardware or software that make these uses more difficult - but not impossible – to achieve.

As far as our methods reveal, we found that hard TPM are the exception rather than the rule for licensed scholarly resources; however we found several examples of hard TPM outside our sample (see next section). On the other hand, soft TPM are very prevalent and may prove a significant barrier to some user populations and uses. We observed the following forms of soft TPM:

- *TPM by obfuscation*: In these cases, badly designed interfaces act as a barrier to use by concealing otherwise possible use functionalities.
- *TPM by omission*: Here, use functionalities (save, email) are not embedded in the resource interface; rather, they are only possible with the use of browser and computer operating system functions.
- *TPM by polyglot*: The hybrid format nature of many HTML e-resources complicates some browser/operating system use functions (such as saving and emailing) because of the large number of different files associated with a particular target document.
- *TPM by frustration*: Many e-books break up content into small chunks making printing and saving frustrating - but not impossible. In some cases however, chunking of content may be highly desirable.

Hard DRM Cases

We found no examples of hard TPM in our sample, but interviews pointed to cases where vendor TPM use had been announced or considered. For example, the Society for Automotive Engineers (SAE) digital library had announced their intention to use TPM, but the TPM was not currently implemented at our case site because of the current license terms. ARTstor digital art library had implemented TPM, but it was not licensed by our case site. Interviews also pointed to instances where the vendor has withdrawn a TPM after customer protests. According to

librarians, the Referex Engineering Village and the Knovel Engineering & Scientific Online References both experimented with TPM, but removed them after customer complaints.

Librarian Perceptions of TPM Effects on Teaching, Learning, Scholarship & Library Management

Interviews with librarians highlighted how the effects of access and use restrictions would vary by user group because of variation in their specific information needs and behaviors. For example, a history librarian explained how restrictions on total page views in a search results section enforced by some historical resources interfered with research that examines use of keywords over a large corpus of documents. In another example, an art librarian explained how lack of high quality or color images in licensed art resources forced students begin their research earlier so they would have time to ILL obtain appropriate paper copies in order to make color copies for papers or presentations.

Other TPM would likely interfere with student learning and scholarship across different subject areas because the restrictions conflict with common student work patterns and pedagogical practices. For example, TPM models that restrict document downloads to one IP address (i.e., the SAE Digital Library model) would likely interfere with students moving between multiple machines working in a team to sharing and synthesizing information. In terms of library management, librarians feared that TPM requiring additional plug-ins would create new browser/operating system compatibility problems and require more workstation maintenance and more complex trouble shooting with remote patrons. Further, the librarians feared that the vendors would implement new TPM restrictions without adequately notifying library customers so that libraries would have no time to prepare for user complaints and increased user support requirements.

In general, the librarians believed that more TPM implementations are coming. Further, they believed that publishers (both society and for profit) are developing TPM based on corporate user assumptions (i.e., one computer with a static IP used by a full time employee) that do not hold true in a complex university user environment (i.e., mobile users moving between computers and IP addresses, complex roles such as affiliate faculty or students on internships).

Methodological Lessons Learned

Several methodological 'lessons learned' are worth noting. First, licensed resource TPM research is greatly complicated by the fact that licensed resources are moving targets - whether or not a given title has a TPM may change overnight. A second complication is that many resources vary in terms of the homogeneity of publication types they carry, and use of TPM may vary by publication type within a resource. For example, some resources may contain only one type of publication (e.g., historical e-texts); but many others contain a mix of publication types (including data sets). Further, TPM use likely varies by title for those resources that contain titles from multiple publishers (e.g. NetLibrary). This complicates assessment as one must know which titles are likely to contain TPM. Another complication is that because resources with hard TPM are unattractive, librarians may choose not to license them. This suggests that sampling from pools of currently licensed resources is not necessarily the best way to identify resources protected by TPM. Future research will rely more on interviews and review of key professional lists & blogs for discussion of TPM in order to identify resources and titles with access and use restrictions.

Appendix A: Resources Included in Study

Engineering
ACM Digital Library
Advances in Biochemical Engineering/Biotechnology
American Chemical Society Publications and Journals
American Institute of Physics (AIP) Online Journal Publishing Services
American Meteorological Society
Applied Science Full Text
ASCE Digital Library /Scitation
Business Source Elite
CRC Handbook of Chemistry and Physics
Electrochemical Society (ECS) Publications
ENGnetBase Engineering Handbooks Online
GeoRef
IEEE Explorer
Ingenta Connect
Institute of Physics Electronic Journals Collection (IOP)
Kirk-Othmer Encyclopedia of Chemical Technology
KNOVEL
Lecture Notes in Computer Sciences
Materials Research Society (MRS) Proceedings Library
Royal Society of Chemistry Online Journals
SAE Digital Library
Safari Tech Books Online
Science Direct
Society for Automotive Engineers Handbook

Health Sciences
American College of Physicians Journal Club (ACP)
Annual Reviews
Beilstein Crossfire Organic and Gmelin Inorganic/Organometallic Chemistry Database
Books 24/7
Books at Ovid Products
Business and Industry
CINAHL
CINAHL Plus
Clinical Reference Systems
Cochrane Reviews
DARE Database of Abstracts of Reviews of Effects
Education Full Text
Elsevier/Harcourt Health Journals (Science Direct)
Entrez (NCBI) an integrated, text-based search and retrieval system used at NCBI for the major databases, including PubMed, Nucleotide and Protein Sequences, Protein Structures, Complete Genomes, Taxonomy, and others.
Health and Psychosocial Instruments
Health and Wellness Resource Center
Inforretriever/InfoPOEMS (Family Medicine)
Karger Journals
LEA Online
MD Consult
Micromedex (Pharmacy)
Proteome Bioknowledge Library (database of data, information, know-how e.g. Worm database)
Random Resources (n=9)
Sage Journals
SciFinder Scholar
SpringerLink

Stat! Ref
Up to Date

History/Art History
Access UN
Art Full Text
Bibliography of the History of Art
British and Irish Womens Letters and Diaries
Early Encounters in North America
Early English Books Online (EEBO)
Eighteenth Century Collections Online (ECCO)
Encyclopedia Islam
Encyclopedia Judaica
Gerristen Collection
JSTOR
Making of America at Michigan
NetLibrary
North American Immigrant Letters, Diaries and Oral Histories
North American Women's Letters and Diaries Colonial to 1950
Oxford Dictionary of National Biography
Oxford English Dictionary
Proquest Digital Dissertations
Proquest Research Library
Social Sciences Full Text
Times (London) Digital Archives
Ulrichs
Waterloo Dictionary of English Newspapers & Periodicals (1800-1900)
Web of Knowledge