

Appendix F: XML Investigation

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Introduction

The scope of the DLF ERMI is wide-ranging, from a very large list of relevant data elements to workflow diagrams, functional requirements, and an abstract entity-relationship view of an ideal system. To round out the suite of deliverables the ERMI Steering Group felt it important to explore the use of XML as a wrapper for ERMI data elements. Within the library world, Roy Tennant may be the most vocal proponent of XML. In his editorial, "MARC Must Die," Tennant asserts that libraries risk technology fossilization unless they adopt XML as a replacement for the MARC standard (Tennant 2002a). In a follow-up piece, "MARC Exit Strategies," Tennant offers three strategies for moving from MARC to XML: (1) entombment—build a new parallel system alongside MARC systems; (2) encapsulation—move MARC records into an XML structure such as MODS; or (3) migration—move everything into a new XML structure (Tennant 2002b). Tennant is not a lone voice in advocating the use of XML. The "Death of MARC" made the top of the ALA Library Information Technology Association's Top Trends in 2003. Work is underway in pushing this vision forward. For example, *XML in Libraries*, edited by Tennant, describes 13 innovative XML-based library projects. Kyle Banerjee's "How Does XML Help Libraries?" is another article advocating a transition to XML (Banerjee 2002). The point here is that XML is making significant inroads in libraries. Libraries are clearly in the midst of a transition from an environment with one primary exchange standard for bibliographic metadata (MARC) to one where specific application metadata (some bibliographic, some for administration) are exchanged according to a variety of standards, all packaged in XML. In the near future we will see ERM systems deployed across libraries. When that day comes, there will be a need for libraries to exchange XML data between other libraries, vendors, and from one software migration to the next.

Method

The steering group formed an XML subgroup in fall 2003 and followed two threads: (1) a prototype schema, and (2) possible use cases. To start, Robin Wendler created a partially completed ERMI XML schema module that would use or refer to extant XML schemas and/or semantics such as DC, MODS, VCard, etc, available from <http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/fallforum2003/ermitest-rkw2.xsd>.

The use cases the subgroup imagined in the first round of our discussions included:

- Link resolver data exchange between vendor and library. Possible elements: title, title level coverage, and user group license terms;
- Publisher e-resource title list. Possible elements include title, package name, title level coverage, discounts, and ISSN; and
- Possible exchange of data between the library ERM system and other campus systems such as course Web sites.

In January 2004, the steering group discussed the scope of the ongoing XML exploration and decided that it was too ambitious given the short amount of time available. Instead, the XML sub-group focused on creating a proof-of-concept schema that would be restricted to licensing-only data elements. Issues such as exchange of title level descriptive metadata within an XML container, while important, are better addressed in a separate, more specific initiative, such as the NISO/EDItEUR Joint Working Party for the Exchange of Serials Subscription Information (JWP).

Angela Riggio and Sharon Farb designed two relatively simple use cases, which both put the emphasis on exchanging license data. The *quick fix* use case (table 1) is a small list of elements which might be exchanged between librarians that need to communicate some essential details about a particular e-resource package. The second license-agreement use case (table 2) is a larger and more comprehensive list of elements, but the purpose is the same: to provide a vehicle for the exchange of metadata between libraries or consortia. Once we had restricted our attention to the two narrow use cases, we turned to developments in the dynamic and very complex fields of Digital Rights Management (DRM) and Rights Expression Languages (RELs), since it seemed that requirements for the expressions of license terms and digital rights might be similar. We reasoned that if existing rights expression languages could be used for license term expression, we could avoid reinventing the wheel.

Digital Rights Management and Rights Expression Languages

Karen Coyle's "The Technology of Rights: Digital Rights Management" provides us with an insightful and readable overview of DRM. Coyle begins the discussion by drawing a distinction between "thin copyright" and "thick copyright." The goal of thin copyright is to make works widely available to the public. The goal of thick copyright owners is to maximize profit. The core motivation behind DRM is the fact that making copies of digital works is trivial. Copyright, even thick copyright cannot technically prevent these copies from being made. DRM technology is based on the notion that digital works can and need to be protected by linking the rights to a work to a particular identification key. The first generation of DRM systems match the rights to use a work to a particular machine, such as an eBook reader. Second generation systems theoretically match the rights to a work to a particular person. Mike Godwin defines digital rights management as "technologies that prevent you from using copyrighted digital work beyond the degree to which the copyright owner wishes to allow you to use it" (Godwin 2003). (Microsoft's next generation operating system is expected to include DRM.)

The rules governing DRM technology are represented in a REL, "a different kind of language; it is a formal language like mathematics or like programming code; it is language that can be executed as an algorithm," (Coyle 2003). RELs work best with attributes that can be counted, i.e., time, units, or value exchange. In addition, Coyle notes that "where copyright law is an expression of 'everything that is not forbidden is permitted,' DRM takes the approach of 'everything that is not permitted is forbidden'." As a consequence, DRM and fair use as practiced in libraries may be incompatible.

Coyle has written a more recent report, "Rights Expression Languages: A Report for the Library of Congress," that according to Sally H. McCallum of the Library of Congress Network Development and MARC Standards Office was "commissioned to clarify the similarities and differences of various emerging RELs in order to assist users in making choices and to encourage cooperation among developers of the languages where feasible." It surveys the XML RELs from Creative Commons (CC), METSRights (METSRL), Open Digital Rights Language (ODRL) and MPEG-21 Part 5 (MPEG-21/5). According to Coyle, each REL surveyed is designed for a specific purpose, and as a consequence, there will never be a universal REL. She offers the following insight on the relationship between RELs and fair use:

Rights expression languages that are intended to be machine-actionable are expressly not intended to implement copyright law. Although some early researchers hoped to use RELs to express (and enforce) legal concepts like "fair use," that has not been the case in actual implementations. The copyright law, although carefully worded, simply cannot be expressed in the kind of algorithmic language that is required by computer programs to automate functionality like printing or copying. This is especially true of the key concept of "fair use." Fair use is a deliberately vague exception to the monopoly rights of the copyright holder. It says essentially that—although the copyright holder has the exclusive right to make copies of the work—members of the public can also make copies if their use is "fair." There is no a priori test for whether a use is fair; each such exercise of the public's right must be carefully scrutinized taking into account a number of factors. Even after such scrutiny, not everyone will agree on what is fair. Electronic systems need an unambiguous and quantitative definition that they can act on, and the copyright law does not provide that (Coyle 2004, p. 11).

As Coyle observes above, from a technical standpoint, fair use is difficult if not impossible to truly represent within a REL. More broadly, Lawrence Lessig argues in *Free Culture* that the electronic environment has in fact severely limited the available nonregulated uses of intellectual property. This is in part a consequence of a change in copyright law that eliminated the requirement that a work include a © symbol; that is, everything is now assumed to be copyrighted unless explicitly stated otherwise. Uses that were once unregulated are now regulated. Furthermore, within the electronic environment a copy is made each time a file is transferred; copy-and-paste may, in certain instances, be interpreted as a crime in this regulated system. In Lessig's view the reality of fair use today is that one must have a lawyer on retainer in order to make use of it; the scales are tipped overwhelming in favor of the copyright owner (Lessig 2004, pp. 116 – 173). We are quickly moving towards a fair use free world where copyright owners can simply assert control upfront within a DRM.

These considerations led the group to carefully consider whether or not to pursue the use of an existing REL, and if so, which one. Two of the better-established RELs described by Coyle, currently vie for recognition as the standard for media products such as movies in DVD format. The first of these is now referred to as MPEG-21/5, and grew out of the XrML language developed by a company named ContentGuard. ContentGuard is jointly

controlled by Microsoft and Time Warner (Time Warner, 2004). The second is called the Open Digital Rights Language, or ODRL. These initiatives are intended both to enable a rights holder to describe what a user may do with a particular resource *and* to confer substantial control of user behavior on the implementing party. The XML group learned of the existence of extensive patent claims related to MPEG-21/5, and its strong preference for open standards led it to focus its work on use of ODRL.

Findings

OPEN DIGITAL RIGHTS LANGUAGE (ODRL)

What happens when ERMI data elements are placed within the ODRL framework? The following is a high-level description:

The Open Digital Rights Language (ODRL) Initiative is an international effort of Supporters aimed at developing an open standard for the DRM sector and promoting the language at standards bodies.

The ODRL specification supports an extensible language and vocabulary (data dictionary) for the expression of terms and conditions over any content including permissions, constraints, requirements, conditions, and offers and agreements with rights holders.

ODRL is intended to provide flexible and interoperable mechanisms to support transparent and innovative use of digital resources in publishing, distributing and consuming of digital media across all sectors including publishers, education, entertainment, mobile, and software. ODRL also supports protected digital content and honors the rights, conditions and fees specified for digital contents (ODRL).

Our approach was to first mark up our use cases in ODRL Version 1.1 XML and then to create an ODRL schema supplement to validate them (figure 5). (The products of our ODRL experiment are figure 2, figure 4, and figure 5.) ODRL is a rich pre-defined data model. As a result, everything must fit into the model. Therefore, the first step in putting the ERMI elements into ODRL is to map the ERMI elements in the use case to the existing ODRL data dictionary. If the semantic content is the same, then the expectation is to use the existing element within the ODRL data dictionary thus enhancing the potential for interoperability. We offer the following observations on the results of this exercise:

1. The learning curve for using ODRL is steep. It is possible that accurate creation of our ODRL versions of the ERMI XML use cases and the associated ODRL XML schema might not have been completed without the generous assistance of Renato Iannella and Susanne Guth of the ODRL Initiative. If ODRL were to be used widely for exchanging metadata between different ERM systems, this cost would be internalized by the libraries and vendors.

2. The ERMI/ODRL schema we have created can only validate the form of the XML document, not the syntax or semantics of the values in the XML. For example, in figure 2, `<ermi:assumed-permission>` is actually a type of ODRL "permissionElement", as referenced in our supplement to the ODRL schema, figure 5. As such, it is not possible to define our new `<ermi:assumed-permission>` element in such a way to make only particular values valid. Any string would be valid. Iannella informed us after reading an earlier draft of this report that it is possible to validate more closely (Iannella 2004). He said, "You can support this by defining `<ermi:assumed-permission>` as a *restriction* of `permissionType` and then defining all the subelements that you want to limit to. (This is a strong feature of XML Schema.)"

3. ODRL does not allow the communication of negative values. For example, figure 1 is a very simple XML markup of some licensing elements. One of these elements is called `<perpetualaccessright>undetermined</perpetualaccessright>`. The value in this element, "undetermined," represents the idea that we don't always interpret everything in a license when it is signed, but if we were exchanging data between two libraries we would want to know that the answer to this question is essentially, "we don't know." ODRL does not permit this kind of communication. As you can see in figure 2, this element has been commented out. There was discussion about the lack of a "not" operator at the ODRL International Workshop held in Vienna in April, 2004. It appears that work will be underway to make that possible in ODRL Version 2.0 (ODRL Workshop 2004).

4. ODRL can only express customer rights and duties but not those pertaining to the rights holder. ODRL is moving to address this shortcoming. Guth presented a paper at the recent ODRL Workshop describing the need for ODRL to express rights and duties for both parties (Guth and Strembeck 2004).

It is worth observing that our frustration trying to work with negative, or interpreted, values in ODRL can be placed in the broader context of twenty-first century international property rights, as described by Christopher May. He writes, "one of the key elements of the 'problem' of DRM is therefore the solidification of aspects of copyright law which have hitherto been amenable to a certain amount of indeterminacy, which is to say there have been areas of legal grayness" (May 2003). With an REL like ODRL or XrML, there can be only black and white. ODRL appears to picture the contracts which define the relationships as a series of checkboxes rather than a complex legal document written in somewhat creative English, suggesting a very different view of information than that of

ERMI. Our experience trying to fit ERMI elements into ODRL makes it clear that more would be given up than gained by using it for our purpose. ODRL was designed for use cases very different than ours.

ERMI CREATIVE COMMONS CC RDF

Our experience attempting to work with ODRL raised a number of issues which led us to look for an REL that might better fit our needs. (The products of our CC RDF experiment are figure 6, figure 7, and figure 8.) The CC RDF license description approach attracted us. We were intrigued by the philosophy behind the Creative Commons, which is close to the traditional fair use ethic among librarians. Though the CC RDF is a REL, it is not intended to serve as a language to be embedded into a control structure that would lock down the content. On the contrary, “unlike Digital Rights Management (DRM) technology, which tries to restrict use of digital works, Creative Commons is providing ways to encourage permitted sharing and reuse of works” (CC Why). In contrast to ODRL, CC RDF is less rich, but also less constraining. With the Creative Commons approach, information is not lost. However, it is not clear what is gained. Certainly one of the purposes of an XML schema must be to validate the structure and data types within a particular XML document. Our CC RDF schema cannot really validate the syntax of an XML document. This is no fault of CC RDF: it was designed as a structure for content owners to place—with some qualifications—their content into the public domain. Our experience trying to adapt the CC RDF schema to our needs does not preclude the possibility of using the technology of RDF, but substantial work would be required and the benefits seem unclear. *Note* that in a related context, a recent RoMEO project study on rights metadata for open archiving recommends Creative Commons over ODRL (RoMEO Study 6).

ERMI NATIVE SCHEMAS

The third approach is a scaled down variation of where we started in the fall of 2003; we would use our own ERMI namespace exclusively and design two simple XML schemas, one for each use case. (The products of our ERMI *native* schema experiment are figure 9, figure 10, figure 11, and figure 12.) Following our experiments with ODRL and Creative Commons we learned that the costs of using an existing REL are higher than they may appear on the surface. Our native schema simply takes the existing ERMI data elements and treats them as their own namespace. No effort is made to try to map the elements to another namespace. As a consequence, ERMI native schemas offer the most rigid syntax for validation, and also happen to be the most compact.

Conclusion

The momentum to build ERM systems for libraries is building, and we will soon reach a point where there is a specific need for exchanging data between these systems. What the ERMI Steering Group envisioned and expressed in our two use cases is simply the exchange of metadata between two library entities.

Based on our investigation, we believe that placing ERMI metadata within an XML container would best be achieved without using a formal REL. Instead, using our own specific native schemas offers the best cost-benefit ratio. We have no desire to control the associated content—unlike, for example, in the case of a recording studio that is trying to lock down the latest Britney Spears release. Since we do not need to lock down the content, why bring along all the baggage that a commercially-oriented REL requires for those other purposes?

Nevertheless, it will probably be worthwhile to continue to monitor related initiatives. For example, more can be learned and gained from studying ODRL. Based on the positive experience we had working with Iannella, it is clear that he and others involved in ODRL development are interested in having their REL evolve to better accommodate the needs of all parties. There may also be some parallels between the need for an ERMI XML specification and the approach take by Publishing Requirements for Industry Standard Metadata (PRISM). According to Coyle, PRISM is “a good example of a REL that was developed for a specific situation where a more general rights language was not necessary” (Coyle 2004, p. 13). As Rick Silterra puts it, “We’re looking for exchangeability, but not necessarily actionability.”

William Moen says that a “standard represents an agreement by a community to do things in a specified way to address a common problem.” In fact, he goes on to say, “developing standards can be viewed as a community-centric endeavor. It is first and foremost a social process” (Moen 2003, pp. 4, 5). Librarians should think very carefully about what they are trying to accomplish in the new ERM context, and take note of the caution delivered at the W3C Workshop on DRM for the Web in 2001, “There is some anxiety that the current balance may be off and that actual privileges (like those of Libraries) are not supported in such a system” (W3C DRM Workshop 2001). Until balance is achieved, we recommend that librarians and vendors pick out particular elements from the ERMI data dictionary and build a custom schema for validation. Other namespaces, such as Dublin Core, could be mixed in where appropriate. These application profiles could be posted to a Web site or registry and used as is or modified where needed (Heery 2000).

Acknowledgements

We would like to acknowledge the valuable role that Nancy Hoebelheinrich (Stanford) played in the early planning for this investigation. The ODRL exercise could not have been completed without the assistance of Susan Guth and Renato Iannella (ODRL). Tim Jewell pitched in with clear-headed editorial advice. Sarah Chandler proofread several final drafts.

Table 1. ERMI Use Case: Quick Fix Description

“Quick-fix” Scenario: Give Me the Essence of This Agreement

Stat!Ref			
Element Group/Element Name	Definition	Identifier	Element Value
Prevailing Digitally Copy	The right of the licensee and authorized users to download and digitally copy a reasonable portion of the licensed materials	digitallycopy	Permitted
Prevailing Print Copy	The right of the licensee and authorized users to print a reasonable portion of the licensed materials	pcopy	Permitted
Prevailing Scholarly Sharing	The right of authorized users and/or the licensee to transmit hard copy or electronic copy of reasonable amounts of licensed materials to a third party for personal, scholarly, educational, scientific or professional use	scholarlysharing	Permitted
Prevailing Interlibrary Loan Print or Fax	The right to use the licensed materials for interlibrary loan by way of print copies or facsimile transmission	illporfax	Permitted
Prevailing Interlibrary Loan Electronic	The right to use the licensed materials for interlibrary loan by way of electronic copies	illelectronic	Silent, undertermined

Prevailing Interlibrary Loan Secure Electronic Transmission	The right to use the license materials for interlibrary loan by way of secure electronic transmission	illsecuretransmission	Silent, undertermined
Prevailing Interlibrary Loan Record Keeping Required	The requirement to keep records of interlibrary loan activity and provide reports to the licensor at periodic intervals or upon request	illrecordkeeping	No
Prevailing Electronic / Cached Copy for Library Reserve	The right to make electronic copies of the licensed materials and store them on a secure network	ecopylibreserve	Permitted
Prevailing Perpetual Access Right	The right to permanently access the licensed materials paid for during the period of the license agreement	perpetualaccessright	Undetermined

Figure 1. ERMI Use Case: Quick Fix XML

```

<?xml version="1.0" encoding="UTF-8"?>
<ERMI>
  <ERMIQuickFix>
    <eresourcetitle>Sample Aggregator</eresourcetitle>
    <digitallycopy>permitted</digitallycopy>
    <pcopy>permitted</pcopy>
    <scholarlysharing>permitted</scholarlysharing>
    <illporfax>permitted</illporfax>
    <illelectronic>Silent, undertermined</illelectronic>
    <illsecuretransmission>Silent, undertermined</illsecuretransmission>
    <illrecordkeeping>no</illrecordkeeping>
    <ecopylibreserve>permitted</ecopylibreserve>
    <perpetualaccessright>undetermined</perpetualaccessright>
  </ERMIQuickFix>
</ERMI>

```

Figure 2. ODRL Use Case: Quick Fix

```
<?xml version="1.0" ?>
<o-ex:rights xmlns:o-ex="http://odrl.net/1.1/ODRL-EX"
  xmlns:o-dd="http://odrl.net/1.1/ODRL-DD"
  xmlns:ermi="http://www.library.cornell.edu/cts/elicestudy/dlfermi/xml/schema/0.1/"
  xmlns:onix="http://www.editeur.org/onix/ReferenceNames"
  xmlns:ebx="http://ebxwg.org/voucher/0.8/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  >
  <o-ex:agreement>
    <o-ex:asset>
      <!--Title information etc. -->
      <dc:title>Sample Aggregator</dc:title>
    </o-ex:asset>
    <o-ex:permission>
      <o-dd:print>
        <!--expressing "reasonable portion permitted"? (pcopy)-->
        <o-ex:constraint>
          <o-dd:unit o-ex:type="onix:NumberOfPages">
            <o-ex:constraint>
              <o-dd:count>5<!--entered by librarian--></o-dd:count>
            </o-ex:constraint>
          </o-dd:unit>
        </o-ex:constraint>
      </o-dd:print>
      <ermi:scholarlysharing/>
      <ermi:illporfax/>
      <!--<illrecordkeeping>no</illrecordkeeping-->
      <o-dd:backup><!--a network backup-->
        <o-ex:constraint>
          <o-dd:network>
            <o-ex:context>
              <o-dd:uid>137.224.204.XXXX</o-dd:uid>
            </o-ex:context>
          </o-dd:network>
        </o-ex:constraint>
      </o-dd:backup>
      <o-dd:excerpt>
        <o-ex:constraint>
          <o-dd:unit o-ex:type="onix:Chapter">
            <o-ex:constraint>
              <o-dd:range>
                <o-dd:max>2</o-dd:max>
              </o-dd:range>
            </o-ex:constraint>
          </o-dd:unit>
        </o-ex:constraint>
      </o-dd:excerpt>
    </o-ex:permission>
  <ermi:assumed-permission>
```

```

<!--<perpetualaccessright>undetermined</perpetualaccessright>-->
<ermi:perpetualaccessright />
  <!--<illelectronic>Silent, undertermined</illelectronic>
  <illsecuretransmission>Silent, undertermined</illsecuretransmission>-->
<ermi:illelectronic />
<ermi:illsecuretransmission />
</ermi:assumed-permission>
</o-ex:agreement>
</o-ex:rights>

```

Table 2. ERMI Use Case: License Agreement Description

Library 1 wants to know the terms agreed to by Library 2 in a license agreement for a particular resource

After discussion following creation of the XML ODRL for the first case, the ERMI permission values were adjusted to make them less ambiguous.

- permitted (explicit)
- permitted (interpreted)
- prohibited (explicit)
- prohibited (interpreted)
- silent (un-interpreted)
- not applicable

License Agreement: Stat!Ref

Stat!Ref			
Element Group/Element Name	Definition	Identifier	Element Value
<i>E-Resource Entity Title Group:</i>			
E-Resource Title	The word or group of words that name an e-resource	eresourcetitle	Stat!Ref
<i>License Entity Identifier Group:</i>			
License Name	The locally-assigned name of the license agreement	licensename	Stat!Ref License Agreement
<i>License Entity Review Group:</i>			

License Reviewer	An individual reviewing the license for the local institution or consortium	licensereviewer	Barbara Schader
<i>Terms Defined Entity Authorized User Group:</i>			
Authorized User Definition	The language in the contract that defines the group of users allowed to use the e-resource(s)	authorizeduserdefinition	Persons affiliated with the University of California. Full and part time employees (including faculty, staff, and independent contractors) and students of company and the institution of which it is a part, regardless of the physical location of such persons.
<i>Terms Defined Entity Terms of Use Group:</i>			
Fair Use Clause	A clause that affirms statutory fair use rights under federal copyright law (17 USC Section 107), or that the agreement does not restrict or abrogate the rights of the licensee or its user community under copyright law	fairuseclauseindicator	absent
All Rights Reserved Clause Indicator	A clause stating that all intellectual property rights not explicitly granted to the	allrightsreservedindicator	absent

	licensee are retained by the licensor		
Anti-Database Protection Clause Indicator	A clause that provides fair use protections within the context of assertions of database protection or additional proprietary rights related to database content not currently covered by U.S. copyright law	antidbprotectionindicator	absent
Interlibrary Loan Print or Fax	The right to use the licensed materials for interlibrary loan by way of print copies or facsimile transmission	illprintorfax	permitted (explicit)
Interlibrary Loan Secure Electronic Transmission	The right to use the license materials for interlibrary loan by way of secure electronic transmission	illsecuretransaction	silent (uninterpreted)
Interlibrary Loan Electronic	The right to use the licensed materials for interlibrary loan by way of electronic copies	illelectronic	silent (uninterpreted)
Interlibrary Loan Record Keeping Required	The requirement to keep records of interlibrary loan activity and provide reports to the licensor at periodic intervals or upon request	illrecordkeepingreq	no

Electronic / Cached Copy for Library Reserve	The right to make electronic copies of the licensed materials and store them on a secure network	ecopylibreserve	permitted (explicit)
Print Course Pack	The right to use licensed materials in collections or compilations of materials assembled in a print format by faculty members for use by students in a class for purposes of instruction	pcoursepack	permitted (explicit)
Electronic Course Pack	The right to use licensed materials in collections or compilations of materials assembled in an electronic format by faculty members for use by students in a class for purposes of instruction	ecoursepack	prohibited (explicit)
Walk-In User Term Note**	Information which qualifies the status or permitted actions of walk-in users	walkinusertermnote	permitted (explicit)
<i>Terms Defined Perpetual Rights Group:</i>			
Perpetual Access Right	The right to permanently access the licensed materials paid for during the period of the license agreement	perpetualaccess	permitted (interpreted)

Perpetual Access Note	Other information related to perpetual access	perpetualaccessnote	<no value>
Archiving Right	The right to permanently retain an electronic copy of the licensed materials	archivingright	prohibited (interpreted)
Archiving Note	Information related to archiving rights, product and format	archivingnote	<no value>
Completeness of Content	The presence of a provision in the contract stating that the licensed electronic materials shall include all content found in the print equivalent	completenessofcontent	yes
<i>Terms Defined Entity Mutual Obligations Group:</i>			
Confidentiality of User Information	A clause that requires the privacy of terms of the license agreement	confidentialityofagreement	yes
Clickwrap Modification Clause	A clause indicating that the negotiated agreement supersedes any click-through, click-wrap, other user agreement, or terms of use residing on the provider's server that might	clickwrapmodification	yes

	otherwise function as a contract of adhesion		
Confidentiality of Agreement	A clause that requires the privacy of terms of the license agreement	confidentialityofagreement	no
Confidentiality of Agreement Note	Specific details of what aspects of the license are private		Here is a note about confidentiality.
Content Warranty	A clause that guarantees a remedy to the licensee if the quantity or quality of material contained within the resource is materially diminished	contentwarranty	Licensed materials are provided on an “as is” basis.
<i>Administration Information Entity Usage Statistics Group:</i>			
Usage Statistics Availability	The availability of usage statistics for the resource	usagstatsavail	no
Usage Statistics Delivery Method	The manner in which statistics are made available	usagstatsdelivery	unavailable
Usage Statistics Format	The format(s) in which statistics are made available	usagstatsformat	unavailable
Usage Statistics Frequency	The frequency with which statistics are made available	usagstatsfrequency	Quarterly

Figure 3. ERM Use Case: License Agreement XML

```
<?xml version="1.0" encoding="UTF-8"?>
<ERMI>
  <ERMSharedLicense>
    <eresourcetitle>Stat!Ref</eresourcetitle>
    <licensename>Stat!Ref License Agreement</licensename>
    <licensereviewer>Barbara Schader</licensereviewer>
    <authorizeduserdefinition>Persons affiliated with the University of California.
Full and part time employees (including faculty, staff, and independent contractors) and students
of company and the institution of which it is a part, regardless of the physical location of such
persons.
    </authorizeduserdefinition>
    <fairuseclauseindicator>absent</fairuseclauseindicator>
    <allrightsreservedindicator>absent</allrightsreservedindicator>
    <antidbprotectionindicator>absent</antidbprotectionindicator>
    <illprintorfax>permitted (explicit)</illprintorfax>
    <illrecordkeepingreq>no</illrecordkeepingreq>
    <ecopylibreserve>permitted (explicit)</ecopylibreserve>
    <pcoursepack>permitted (explicit)</pcoursepack>
    <coursepack>prohibited (explicit)</coursepack>
    <walkinusertermnote>permitted (explicit)</walkinusertermnote>
    <perpetualaccessnote>no value</perpetualaccessnote>
    <archivingnote>no value</archivingnote>
    <completenessofcontent>yes</completenessofcontent>
    <confidentialityofagreement>yes</confidentialityofagreement>
    <clickwrapmodification>yes</clickwrapmodification>
    <confidentialityofagreement>no</confidentialityofagreement>
    <confidentialityofagreementnote>Here is a note about confidentiality.
  </confidentialityofagreementnote>
    <contentwarranty>Licensed materials are provided on an "as is" basis.
  </contentwarranty>
    <usagstatsavail>no</usagstatsavail>
    <usagstatsdelivery>unavailable</usagstatsdelivery>
    <usagstatsformat>unavailable </usagstatsformat>
    <usagstatsfrequency>Quarterly</usagstatsfrequency>
    <perpetualaccess>permitted (interpreted)</perpetualaccess>
    <illsecuretransaction>silent(uninterpreted)</illsecuretransaction>
    <illelectronic>silent (uninterpreted)</illelectronic>
    <archivingright>prohibited (interpreted)</archivingright>
  </ERMSharedLicense>
</ERMI>
```

Figure 4. ODRL Use Case: License Agreement

```
<?xml version="1.0" ?>
<o-ex:rights xmlns:o-ex="http://odrl.net/1.1/ODRL-EX"
  xmlns:o-dd="http://odrl.net/1.1/ODRL-DD"

  xmlns:ermi="http://www.library.cornell.edu/cts/elicensestudy/dlfermi/xml/schema/0.1/"
  xmlns:onix="http://www.editeur.org/onix/ReferenceNames"
  xmlns:ebx="http://ebxwg.org/voucher/0.8/"
  xmlns:dc="http://purl.org/dc/elements/1.1/">

  <o-ex:agreement>
    <o-ex:asset>
      <!-- Title information etc. -->
      <dc:title>Stat!Ref</dc:title>
    </o-ex:asset>
    <o-ex:context><!-- moved out of o-ex:asset per Renato -->
      <dc:relation>Stat!Ref License Agreement</dc:relation>
      <ermi:licensereviewer>Barbara Schader</ermi:licensereviewer>
    </o-ex:context>
    <o-ex:permission>
      <!-- Following constraint meant equivalent to authorizeduserdefinition
element in original -->
      <o-ex:constraint>
        <o-dd:group>
          <o-ex:context>
            <o-dd:remark>
              Persons affiliated with the University of California. Full
and part time employees (including faculty, staff, and independent contractors) and students of
company and the institution of which it is a part, regardless of the physical location of such
persons.
            </o-dd:remark>
          </o-ex:context>
        </o-dd:group>
      </o-ex:constraint>
      <!--<fairuseclauseindicator>absent</fairuseclauseindicator>-->
      <!--<allrightsreservedindicator>absent</allrightsreservedindicator>-->
      <!--<antidbprotectionindicator>absent</antidbprotectionindicator>-->
      <ermi:illprintorfax />
      <ermi:illrecordkeepingreq />
      <ermi:ecopylibreserve />
      <ermi:pcoursepack />
      <!--<ecoursepack>prohibited (explicit)</ecoursepack>-->
      <ermi:walkinusertermnote />
      <!--<perpetualaccessnote>no value</perpetualaccessnote>-->
      <!--<archivingnote>no value</archivingnote>-->
      <ermi:completenessofcontent />
      <ermi:contentwarranty>
    </o-ex:context>
```

<o-dd:remark>Licensed materials are provided on an "as is" basis.</o-dd:remark>
</o-ex:context>
</ermi:contentwarranty>
<!--<usagestatsavail>no</usagestatsavail>-->
<!--<usagestatsdelivery>unavailable</usagestatsdelivery>-->
<!--<usagestatsformat>unavailable </usagestatsformat>-->
<!--<usagestatsfrequency>Quarterly</usagestatsfrequency>-->
<!--NEED to determine how to represent "Quarterly", but doesn't make sense when stats not
available.-->
</o-ex:permission>
<ermi:assumed-permission>
<!--<perpetualaccessright>permitted (interpreted)</perpetualaccessright>-->
<ermi:perpetualaccessright />
<!--UNCERTAIN how to handle silent (uninterpreted)-->
<!--<illsecuretransaction>silent (uninterpreted)</illsecuretransaction>-->
<!--<illelectronic>silent (uninterpreted)</illelectronic>-->
<!--<archivingright>prohibited (interpreted)</archivingright>-->
</ermi:assumed-permission>
<o-ex:condition>
<o-ex:constraint>
<ermi:clickwrapmodification />
<!--<confidentialityofagreement>no</confidentialityofagreement>-->
<ermi:confidentialityofagreementnote>
<o-ex:context>
<o-dd:remark>Here is a note about confidentiality.</o-dd:remark>
</o-ex:context>
</ermi:confidentialityofagreementnote>
</o-ex:constraint>
<o-ex:condition>
</o-ex:agreement>
</o-ex:rights>

Figure 5. Supplement to ODRL Schema for Both Use Cases

```
<xsd:schema
targetNamespace="http://www.library.cornell.edu/cts/elicenestudy/dlfermi/xml/schema/0.1/" xmlns:o-ex="http://odrl.net/1.1/ODRL-EX">

<xsd:element name="assumed-permission" type="o-ex:permission"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="scholarlysharing" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<!-- NOT USED: Equivalent to illprintorfax <xsd:element
name="illporfax" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />-->

<xsd:element name="illelectronic" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="illsecuretransmission" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="illrecordkeeping" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="fairuseclauseindicator" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="allrightsreservedindicator"
type="o-ex:permissionType" substitutionGroup="o-ex:permissionElement" />

<xsd:element name="antidbprotectionindicator" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="illprintorfax" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="illsecuretransaction" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="illelectronic" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="illrecordkeeping" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="ecopylibreserve" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="pcoursepack" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />
```

```
<xsd:element name="ecoursepack" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="walkinusertermnote" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="perpetualaccessright" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="perpetualaccessnote" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="archivingright" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="archivingnote" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="completenessofcontent" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="confidentialityofuserinformation"
type="o-ex:conditionType" substitutionGroup="o-ex:conditionElement" />

<xsd:element name="clickwrapmodification" type="o-ex:conditionType"
substitutionGroup="o-ex:conditionElement" />

<xsd:element name="confidentialtyofagreement" type="o-ex:conditionType"
substitutionGroup="o-ex:conditionElement" />

<xsd:element name="confidentialtyofagreementnote"
type="o-ex:permissionType" substitutionGroup="o-ex:permissionElement" />

<xsd:element name="contentwarranty" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="usagstatsavail" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="usagstatsdelivery" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="usagstatsformat" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />

<xsd:element name="usagstatsfrequency" type="o-ex:permissionType"
substitutionGroup="o-ex:permissionElement" />
</xsd:schema>
```

Figure 6. ERMI Creative Commons RDF: Quick Fix

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF xmlns="http://web.resource.org/cc/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:ermi="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables
    /xmlschema/rdf/">
<Work rdf:about="http://example.org/SampleAggregator">
  <dc:title>Sample Aggregator</dc:title>
  <dc:description>A lovely database of lovely data.</dc:description>
  <dc:creator><Agent>
    <dc:title>Sample Aggregator</dc:title>
  </Agent></dc:creator>
  <dc:rights><Agent>
    <dc:title>A Database </dc:title>
  </Agent></dc:rights>
  <dc:date>2222</dc:date>
  <license rdf:resource="http://library.cornell.edu/licenses#License1" />
</Work>

<License rdf:about="http://library.cornell.edu/licenses#License1">
  <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/dig
itallycopy" />
  <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/pcop
py" />
  <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/sch
olarlysharing" />
  <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illp
orfax" />
  <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/eco
pylibreserve" />
  <requiresNot
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illr
ecordkeeping" />
  <dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ille
lectronic" />
  <dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ills
ecuretransmission" />
  <dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/per
petualaccessright" />
</License>
</rdf:RDF>
```

Figure 7. ERMI Creative Commons RDF: License Agreement

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF xmlns="http://web.resource.org/cc/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:ermi="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables
    /xmlschema/rdf/">

  <Work rdf:about="http://example.org/Somebody">
    <dc:title>Stat!Ref</dc:title>
    <dc:description>Just some data.</dc:description>
    <dc:creator><Agent>
      <dc:title>Whoever created the databse</dc:title>
    </Agent></dc:creator>
    <dc:rights><Agent>
      <dc:title>Whoever owns the rights to this database </dc:title>
    </Agent></dc:rights>
    <dc:date>1776</dc:date>
    <license rdf:resource="http://library.cornell.edu/licenses#License2" />
  </Work>

  <License rdf:about="http://library.cornell.edu/licenses#License2">
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/dig
itallycopy" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/pco
py" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/sch
olarlysharing" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/illp
orfax" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/eco
pylibreserve" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/pco
ursepack" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/wal
kinuserpermitted" />
    <explicitlyPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/clic
kwrapmodification" />

    <interpretedPermits
rdf:resource="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/per
petualaccess" />
```


<explicitlyProhibits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/eco
ursepack" />

<explicitlyProhibits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usa
gestatsavail" />

<interpretedProhibits
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/arc
hivingright" />

<requires
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/co
mpletenessofcontent" />

<requires
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/con
fidentialityofagreement" />

<requiresNot
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illr
ecordkeeping" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/fair
useclauseindicator" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/allr
ightsreservedindicator" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ant
idbprotection" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/per
petualaccess" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ills
ecuretransaction" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ille
lectronic" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usa
gestatsdelivery" />

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usa
gestatsformat" />

<!-- We are set up to permit,require, or prohibit actions. This is not set up to
actually give values to things, like "quarterly, or 1 dollar per copy. -->

<dontKnow
rdf:resource="http://www.library.cornell.edu/cts/elicenestudy/dlfdeliverables/xmlschema/rdf/usa
gestatsdelivery" />

</License>
</rdf:RDF>

Figure 8. ERMI Creative Commons RDF Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- Creative commons based schema with additions for ERMI.
      should cover use cases 1 and 2 -->

<rdf:RDF xmlns="http://web.resource.org/cc/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

  xmlns:ermi="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/">

<!-- Creative Commons permissions. -->

  <rdfs:Class rdf:about="http://web.resource.org/cc/Work">
    <dc:title>work</dc:title>
    <dc:description>a potentially copyrightable work</dc:description>
    <rdfs:seeAlso rdf:resource="http://www.w3.org/2000/10/swap/pim/doc#Work"/>
  </rdfs:Class>
  <rdfs:Class rdf:about="http://web.resource.org/cc/Agent">
    <dc:title>agent</dc:title>
    <dc:description>something (e.g. a person, corporation or computer) capable of creating
things</dc:description>
  </rdfs:Class>
  <rdfs:Class rdf:about="http://web.resource.org/cc/License">
    <dc:title>license</dc:title>
    <dc:description>a set of requests/permissions to users of a Work, e.g. a copyright license,
the public domain, information for distributors</dc:description>
  </rdfs:Class>
  <rdfs:Class rdf:about="http://web.resource.org/cc/Permission">
    <dc:title>permission</dc:title>
    <dc:description>an action that may or may not be allowed or desired</dc:description>
  </rdfs:Class>
  <rdfs:Class rdf:about="http://web.resource.org/cc/Requirement">
    <dc:title>requirement</dc:title>
    <dc:description>an action that may or may not be requested of you</dc:description>
  </rdfs:Class>
  <rdfs:Class rdf:about="http://web.resource.org/cc/Prohibition">
    <dc:title>prohibition</dc:title>
    <dc:description>something you may be asked not to do</dc:description>
  </rdfs:Class>

  <License rdf:about="http://web.resource.org/cc/PublicDomain">
    <dc:title>public domain</dc:title>
    <dc:description>no copyright; everything is permitted without restriction</dc:description>
  </License>

  <Permission rdf:about="http://web.resource.org/cc/Reproduction">
    <dc:title>reproduction</dc:title>
    <dc:description>making multiple copies</dc:description>
```

```

</Permission>
<Permission rdf:about="http://web.resource.org/cc/Distribution">
  <dc:title>distribution</dc:title>
  <dc:description>distribution, public display, and publicly performance</dc:description>
</Permission>
<Permission rdf:about="http://web.resource.org/cc/DerivativeWorks">
  <dc:title>derivative works</dc:title>
  <dc:description>creation and distribution of derivative works</dc:description>
</Permission>

<Requirement rdf:about="http://web.resource.org/cc/Notice">
  <dc:title>copyright notices</dc:title>
  <dc:description>copyright and license notices be kept intact</dc:description>
</Requirement>
<Requirement rdf:about="http://web.resource.org/cc/Attribution">
  <dc:title>attribution</dc:title>
  <dc:description>credit be given to copyright holder and/or author</dc:description>
</Requirement>
<Requirement rdf:about="http://web.resource.org/cc/ShareAlike">
  <dc:title>share alike</dc:title>
  <dc:description>derivative works be licensed under the same terms as the original
work</dc:description>
</Requirement>
<Requirement rdf:about="http://web.resource.org/cc/SourceCode">
  <dc:title>source code</dc:title>
  <dc:description>source code (the preferred form for making modifications) must be
provided for all derivative works</dc:description>
</Requirement>

<Prohibition rdf:about="http://web.resource.org/cc/CommercialUse">
  <dc:title>commercial use</dc:title>
  <dc:description>exercising rights for commercial purposes</dc:description>
</Prohibition>

<rdf:Property rdf:about="http://web.resource.org/cc/license">
  <dc:title>has license</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/Work"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:seeAlso rdf:resource="http://www.w3.org/2000/10/swap/pim/doc#ipr"/>
  <rdfs:subPropertyOf rdf:resource="http://purl.org/dc/elements/1.1/rights"/>
</rdf:Property>
<rdf:Property rdf:about="http://web.resource.org/cc/permits">
  <dc:title>permits</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Permission"/>
</rdf:Property>
<rdf:Property rdf:about="http://web.resource.org/cc/requires">
  <dc:title>requires</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Requirement"/>
</rdf:Property>

```

```
<rdf:Property rdf:about="http://web.resource.org/cc/prohibits">
  <dc:title>prohibits</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Prohibition"/>
</rdf:Property>
```

```
<Prohibition rdf:about="http://web.resource.org/cc/CommercialUse">
  <dc:title>commercial use</dc:title>
  <dc:description>exercising rights for commercial purposes</dc:description>
</Prohibition>
```

```
<!-- New properties for ERMI exploration. In the ERMI name space. -->
```

```
<rdf:Property
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/explicitlyProhibits">
  <dc:title>prohibited (explicit)</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Prohibition"/>
</rdf:Property>
```

```
<rdf:Property
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/interpretedProhibits">
  <dc:title>prohibited (interpreted)</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Prohibition"/>
</rdf:Property>
```

```
<rdf:Property
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/explicitlyPermits">
  <dc:title>permitted (explicit)</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Permission"/>
</rdf:Property>
```

```
<rdf:Property rdf:about="http://www.ermi.org/erm/interpretedPermits">
  <dc:title>permitted (interpreted)</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Permission"/>
</rdf:Property>
```

```
<rdf:Property rdf:about="http://www.ermi.org/erm/dontKnow">
  <dc:title>silent (uninterpreted)</dc:title>
  <rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
  <rdfs:range rdf:resource="http://web.resource.org/cc/Permission"/>
</rdf:Property>
```

```
<rdf:Property rdf:about="http://www.ermi.org/erm/requiresNot">
  <dc:title>not required</dc:title>
```

```
<rdfs:domain rdf:resource="http://web.resource.org/cc/License"/>
<rdfs:range rdf:resource="http://web.resource.org/cc/Requirement"/>
</rdf:Property>
```

<!-- All the permissions and prohibitions. If these are shared by various institutions, they should

be in the ermi namespace, or if institution specific, in the institution namespace.

-->

```
<Permission
```

```
  rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/scholarlysharing">
```

```
    <dc:title>scholarlysharing</dc:title>
```

```
    <dc:description>The right of authorized users
```

```
and/or the licensee to transmit hard copy or electronic copy of reasonable amounts of licensed materials to a third party for
```

```
personal, scholarly, educational, scientific or professional use</dc:description>
```

```
  </Permission>
```

```
<Permission
```

```
  rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/digitallycopy">
```

```
    <dc:title>digitallycopy</dc:title>
```

```
    <dc:description>The right of the licensee and authorized users to download and digitally copy a reasonable portion of the licensed materials</dc:description>
```

```
  </Permission>
```

```
<Permission
```

```
  rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/illelectronic">
```

```
    <dc:title>illelectronic</dc:title>
```

```
    <dc:description>The right to use the licensed materials for interlibrary loan by way of electronic copies</dc:description>
```

```
  </Permission>
```

```
<Permission
```

```
  rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/illsecuretransmission">
```

```
    <dc:title>illsecuretransmission</dc:title>
```

```
    <dc:description>The right to use the license materials for interlibrary loan by way of secure electronic transmission</dc:description>
```

```
  </Permission>
```

```
<Permission
```

```
  rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/illrecordkeeping">
```

```
    <dc:title>illrecordkeeping</dc:title>
```

```
    <dc:description>The requirement to keep records of interlibrary loan activity and provide reports to the licensor at periodic intervals or upon request</dc:description>
```

```
  </Permission>
```

```
<Permission
```

```
  rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/fairuseclauseindicator">
```

```
    <dc:title>fairuseclauseindicator</dc:title>
```

```
    <dc:description>A clause that affirms statutory fair use rights under federal copyright law (17 USC Section 107), or that the agreement does not restrict or
```

abrogate the rights of the licensee or its user community under copyright law</dc:description>
 </Permission>
 <Permission
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/allrightsreservedindicator">
 <dc:title>allrightsreservedindicator</dc:title>
 <dc:description>A clause stating that all intellectual property rights not explicitly granted to the licensee are retained by the licensor </dc:description>
 </Permission>
 <Permission
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/antidbprotectionindicator">
 <dc:title>antidbprotectionindicator</dc:title>
 <dc:description> A clause that provides fair use protections within the context of assertions of database protection or additional proprietary rights related to database content not currently covered by U.S. copyright law </dc:description>
 </Permission>
 <Permission
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illprintorfax">
 <dc:title>illprintorfax</dc:title>
 <dc:description>The right to use the licensed materials for interlibrary loan by way of print copies or facsimile transmission </dc:description>
 </Permission>
 <Permission
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ecopylibreserve">
 <dc:title>ecopylibreserve</dc:title>
 <dc:description> The right to make electronic copies of the licensed materials and store them on a secure network</dc:description>
 </Permission>
 <Permission
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/pcoursepack">
 <dc:title>pcoursepack</dc:title>
 <dc:description> The right to use licensed materials in collections or compilations of materials assembled in a print format by faculty members for use by students in a class for purposes of instruction</dc:description>
 </Permission>
 <Permission
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ecoursepack">
 <dc:title>ecoursepack</dc:title>
 <dc:description> The right to use licensed materials in collections or compilations of materials assembled in an electronic format by faculty members for use by students in a class for purposes of instruction</dc:description>
 </Permission>

```

    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/walki
nusertermnote">
        <dc:title>walkinusertermnote</dc:title>
        <dc:description> </dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/perpet
ualaccessright">
        <dc:title>perpetualaccessright</dc:title>
        <dc:description>The right to permanently access the licensed materials paid
for during the period of the license agreement</dc:description>
    </Permission>

    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/archiv
ingright">
        <dc:title>archivingright</dc:title>
        <dc:description>The right to permanently retain an electronic copy of the
licensed materials </dc:description>
    </Permission>

    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/compl
etenessofcontent">
        <dc:title>completenessofcontent</dc:title>
        <dc:description> The presence of a provision in the contract stating that the
licensed electronic materials shall include all content found in the print
equivalent</dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/confid
entialityofuserinformation">
        <dc:title>confidentialityofuserinformation</dc:title>
        <dc:description> </dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/click
wrapmodification">
        <dc:title>clickwrapmodification</dc:title>
        <dc:description> A clause indicating that the negotiated agreement supersedes
any click-through, click-wrap, other user agreement, or terms of use residing on the provider's
server that might otherwise function as a contract of adhesion</dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/confid
entialityofagreement" >
        <dc:title>confidentialityofagreement</dc:title>
        <dc:description>A clause that requires the privacy of terms of the license
agreement </dc:description>
    </Permission>

```



```

    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/conte
ntwarranty">
    <dc:title>contentwarranty</dc:title>
    <dc:description> A clause that guarantees a remedy to the licensee if the
quantity or
quality of material contained within the resource is materially diminished</dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usage
statsavail">
    <dc:title>usagstatsavail</dc:title>
    <dc:description>The availability of usage statistics for the
resource</dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usage
statsdelivery">
    <dc:title>usagstatsavail</dc:title>
    <dc:description>The manner in which statistics are made available
</dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usage
statsformat">
    <dc:title>usagstatsformat</dc:title>
    <dc:description>The format(s) in which statistics are made available
</dc:description>
    </Permission>
    <Permission
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/usage
statsfrequency">
    <dc:title>usagstatsfrequency</dc:title>
    <dc:description> The frequency with which statistics are made
available</dc:description>
    </Permission>

    <Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/schola
rlysharing">
    <dc:title>scholarlysharing</dc:title>
    <dc:description>The right of authorized users
and/or the licensee to transmit hard copy or electronic copy of reasonable amounts of licensed
materials to a third party for
personal, scholarly, educational, scientific or professional use</dc:description>
    </Prohibition>
    <Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illelec
tronic">
    <dc:title>illelectronic</dc:title>

```

<dc:description>The right to use the licensed materials for interlibrary loan by way of electronic copies</dc:description>
 </Prohibition>
 <Prohibition
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illsecuretransmission">
 <dc:title>illsecuretransmission</dc:title>
 <dc:description>The right to use the license materials for interlibrary loan by way of secure electronic transmission</dc:description>
 </Prohibition>
 <Prohibition
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illrecordkeeping">
 <dc:title>illrecordkeeping</dc:title>
 <dc:description>The requirement to keep records of interlibrary loan activity and provide reports to the licensor at periodic intervals or upon request</dc:description>
 </Prohibition>
 <Prohibition
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/fairuseclauseindicator">
 <dc:title>fairuseclauseindicator</dc:title>
 <dc:description>A clause that affirms statutory fair use rights under federal copyright law (17 USC Section 107), or that the agreement does not restrict or abrogate the rights of the licensee or its user community under copyright law</dc:description>
 </Prohibition>
 <Prohibition
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/allrightsreservedindicator">
 <dc:title>allrightsreservedindicator</dc:title>
 <dc:description>A clause stating that all intellectual property rights not explicitly granted to the licensee are retained by the licensor </dc:description>
 </Prohibition>
 <Prohibition
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/antidbprotectionindicator">
 <dc:title>antidbprotectionindicator</dc:title>
 <dc:description> A clause that provides fair use protections within the context of assertions of database protection or additional proprietary rights related to database content not currently covered by U.S. copyright law </dc:description>
 </Prohibition>
 <Prohibition
 rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/illprintorfax">
 <dc:title>illprintorfax</dc:title>
 <dc:description>The right to use the licensed materials for interlibrary loan by way of print copies or facsimile transmission </dc:description>
 </Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ecopy
libreserve">

<dc:title>ecopylibreserve</dc:title>

<dc:description> The right to make electronic copies of the licensed
materials and store them on a secure network</dc:description>

</Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/pcour
sepack">

<dc:title>pcoursepack</dc:title>

<dc:description> The right to use licensed materials in collections or
compilations of materials assembled in a print format by faculty members for use by students in a
class for purposes of instruction</dc:description>

</Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/ecours
epack">

<dc:title>ecoursepack</dc:title>

<dc:description> The right to use licensed materials in collections or
compilations of materials assembled in an electronic format by faculty members for use by
students in a class for purposes of instruction</dc:description>

</Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/walki
nusertermnote">

<dc:title>walkinusertermnote</dc:title>

<dc:description> </dc:description>

</Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/perpet
ualaccessright">

<dc:title>perpetualaccessright</dc:title>

<dc:description>The right to permanently access the licensed materials paid
for during the period of the license agreement</dc:description>

</Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/archiv
ingright">

<dc:title>archivingright</dc:title>

<dc:description>The right to permanently retain an electronic copy of the
licensed materials </dc:description>

</Prohibition>

<Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicencestudy/dlfdeliverables/xmlschema/rdf/compl
etenessofcontent">

<dc:title>completenessofcontent</dc:title>

<dc:description> The presence of a provision in the contract stating that the licensed electronic materials shall include all content found in the print equivalent</dc:description>

</Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/confidentialityofuserinformation">

 <dc:title>confidentialityofuserinformation</dc:title>

 <dc:description> </dc:description>

 </Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/clickwrapmodification">

 <dc:title>clickwrapmodification</dc:title>

 <dc:description> A clause indicating that the negotiated agreement supersedes any click-through, click-wrap, other user agreement, or terms of use residing on the provider's server that might otherwise function as a contract of adhesion</dc:description>

 </Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/confidentialtyofagreement" >

 <dc:title>confidentialtyofagreement</dc:title>

 <dc:description>A clause that requires the privacy of terms of the license agreement </dc:description>

 </Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/contentwarranty">

 <dc:title>contentwarranty</dc:title>

 <dc:description> A clause that guarantees a remedy to the licensee if the quantity or quality of material contained within the resource is materially diminished</dc:description>

 </Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/usagestatsavail">

 <dc:title>usagestatsavail</dc:title>

 <dc:description>The availability of usage statistics for the resource</dc:description>

 </Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/usagestatsdelivery">

 <dc:title>usagestatsavail</dc:title>

 <dc:description>The manner in which statistics are made available

 </dc:description>

 </Prohibition>

<Prohibition

 rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/usagestatsformat">

```

        <dc:title>usagestatsformat</dc:title>
        <dc:description>The format(s) in which statistics are made available
</dc:description>
    </Prohibition>
    <Prohibition
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/usage
statsfrequency">
        <dc:title>usagestatsfrequency</dc:title>
        <dc:description> The frequency with which statistics are made
available</dc:description>
    </Prohibition>

```

<!-- Statistics keeping that might be imposed upon the database provider, OR upon the licensee, will need some different way of encoding upon whom a requirement is imposed. At the moment, the requirements embed within themselves the agent imposing the requirement, and the agent upon whom the requirement is imposed.

This is a problem in general with the requirements, prohibitions, and permission, but they all seem to have implicit statements of who is involved in what role with this action. -->

```

    <Requirement
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/compl
etenessofcontent">
        <dc:title>completenessofcontent</dc:title>
        <dc:description> The presence of a provision in the contract stating that the
licensed electronic materials shall include all content found in the print
equivalent.</dc:description>
    </Requirement>

```

```

    <Requirement
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/confid
entialityofagreement">
        <dc:title>confidentialityofagreement</dc:title>
        <dc:description> The presence of a provision in the contract stating that the
terms of this agreement are confidential. This is a mutual requirement. </dc:description>
    </Requirement>

```

<!-- If there are different kinds of warranty's maybe they would have to be sub classes, -->

```

    <Requirement
rdf:about="http://www.library.cornell.edu/cts/elicensestudy/dlfdeliverables/xmlschema/rdf/conte
ntwarranty">
        <dc:title>contentwarranty</dc:title>
        <dc:description>Materials are provided on an as-is basis.</dc:description>
    </Requirement>

```

<!-- Utility Terms -->

```

<rdf:Property rdf:about="http://web.resource.org/cc/derivativeWork">
    <dc:title>has a derivative work</dc:title>
    <rdfs:domain rdf:resource="http://web.resource.org/cc/Work" />
    <rdfs:range rdf:resource="http://web.resource.org/cc/Work" />
    <rdfs:seeAlso rdf:resource="http://purl.org/dc/elements/1.1/source" />
</rdf:Property>

```

</rdf:RDF>

Figure 9. ERMI Native XML for Quick Fix Use Case

```
<?xml version="1.0" encoding="UTF-8"?>
<ERMI xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="qf.xsd">
  <ERMIQuickFix>
    <eresourcetitle>Sample Aggregator</eresourcetitle>
    <digitallycopy>no</digitallycopy>
    <pcopy>permitted</pcopy>
    <scholarlysharing>permitted</scholarlysharing>
    <illporfax>permitted</illporfax>
    <illelectronic>undetermined</illelectronic>
    <illsecuretransmission>undetermined</illsecuretransmission>
    <illrecordkeeping>no</illrecordkeeping>
    <ecopylibreserve>permitted</ecopylibreserve>
    <perpetualaccessright>undetermined</perpetualaccessright>
  </ERMIQuickFix>
</ERMI>
```

Figure 10. ERMI Native Schema for Quick Fix Use Case

```
<?xml version="1.0" encoding="UTF-8"?>
<!--W3C Schema generated by XMLSPY v5 rel. 4 U (http://www.xmlspy.com)-->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
  <xs:simpleType name="perms">
    <xs:annotation>
      <xs:documentation>The only values associated with a permission.</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
      <xs:enumeration value="permitted">
        <xs:annotation>
          <xs:documentation>Permitted</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="prohibited">
        <xs:annotation>
          <xs:documentation>Prohibited</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="no">
        <xs:annotation>
          <xs:documentation>Prohibited</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="undetermined">
        <xs:annotation>
          <xs:documentation>We don't know.</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

```

    </xs:restriction>
  </xs:simpleType>
  <xs:element name="ERMI">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="ERMIQuickFix"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="ERMIQuickFix">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="eresourcetitle"/>
        <xs:element ref="digitallycopy"/>
        <xs:element ref="pcopy"/>
        <xs:element ref="scholarlysharing"/>
        <xs:element ref="illporfax"/>
        <xs:element ref="illelectronic"/>
        <xs:element ref="illsecuretransmission"/>
        <xs:element ref="illrecordkeeping"/>
        <xs:element ref="ecopylibreserve"/>
        <xs:element ref="perpetualaccessright"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="digitallycopy" type="perms"/>
  <xs:element name="ecopylibreserve" type="perms"/>
  <xs:element name="eresourcetitle" type="xs:string"/>
  <xs:element name="illelectronic" type="perms"/>
  <xs:element name="illporfax" type="perms"/>
  <xs:element name="illrecordkeeping" type="perms"/>
  <xs:element name="illsecuretransmission" type="perms"/>
  <xs:element name="pcopy" type="perms"/>
  <xs:element name="perpetualaccessright" type="perms"/>
  <xs:element name="scholarlysharing" type="perms"/>
</xs:schema>

```


Figure 11. ERMI Use Case: License Agreement XML

```
<?xml version="1.0" encoding="UTF-8"?>
<ERMI xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\datax\dlfermi\xmlschema\native\license.xsd">
  <ERMSharedLicense>
    <eresourcetitle>Stat!Ref</eresourcetitle>
    <licensename>Stat!Ref License Agreement</licensename>
    <allrightsreservedindicator>unknown</allrightsreservedindicator>
    <antidbprotectionindicator>unknown</antidbprotectionindicator>
    <archivingnote>unknown</archivingnote>
    <archivingright>prohibited (interpreted)</archivingright>
    <authorizeduserdefinition>Persons affiliated with the University of California. Full and
part time employees (including faculty, staff, and independent contractors) and students of
company and the institution of which it is a part, regardless of the physical location of such
persons.</authorizeduserdefinition>
    <clickwrapmodification>permitted (explicit)</clickwrapmodification>
    <completenessofcontent>permitted (explicit)</completenessofcontent>
    <confidentialityofagreement>permitted (explicit)</confidentialityofagreement>
    <confidentialityofagreementnote>Here is a note about confidentiality.
</confidentialityofagreementnote>
    <contentwarranty>Licensed materials are provided on an "as is" basis. </contentwarranty>
    <ecopylibreserve>permitted (explicit)</ecopylibreserve>
    <ecoursepack>prohibited (explicit)</ecoursepack>
    <fairuseclauseindicator>unknown</fairuseclauseindicator>
    <illelectronic>silent (uninterpreted)</illelectronic>
    <illprintorfax>permitted (explicit)</illprintorfax>
    <illrecordkeepingreq>prohibited (explicit)</illrecordkeepingreq>
    <illsecuretransaction>silent (uninterpreted)</illsecuretransaction>
    <licensereviewer>Barbara Schader</licensereviewer>
    <pcoursepack>permitted (explicit)</pcoursepack>
    <perpetualaccess>permitted (interpreted)</perpetualaccess>
    <perpetualaccessnote>unknown</perpetualaccessnote>
    <usagestatsavail>prohibited (explicit)</usagestatsavail>
    <usagestatsdelivery>unknown</usagestatsdelivery>
    <usagestatsformat>unknown </usagestatsformat>
    <usagestatsfrequency>Quarterly</usagestatsfrequency>
    <walkinusertermnote>permitted (explicit)</walkinusertermnote>
  </ERMSharedLicense>
</ERMI>
```

Figure 12. ERMI Native Schema for License Agreement Use Case

```
<?xml version="1.0" encoding="UTF-8"?>
<!--W3C Schema generated by XMLSPY v5 rel. 4 U (http://www.xmlspy.com)-->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
  <xs:simpleType name="perms">
    <xs:annotation>
      <xs:documentation>The only values associated with a permission.</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
      <xs:enumeration value="permitted (explicit)">
        <xs:annotation>
          <xs:documentation>permitted (explicit)</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="permitted (interpreted)">
        <xs:annotation>
          <xs:documentation>permitted (interpreted)</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="prohibited (explicit)">
        <xs:annotation>
          <xs:documentation>prohibited (explicit)</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="prohibited (interpreted)">
        <xs:annotation>
          <xs:documentation>prohibited (interpreted)</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="silent (uninterpreted)">
        <xs:annotation>
          <xs:documentation>silent (uninterpreted)</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="not applicable">
        <xs:annotation>
          <xs:documentation>not applicable</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="unknown">
        <xs:annotation>
          <xs:documentation>unknown</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="ERMI">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="ERMSHaredLicense" maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

```

    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="ERMSharedLicense">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="eresourcetitle"/>
      <xs:element ref="licensename"/>
      <xs:element ref="allrightsreservedindicator"/>
      <xs:element ref="antidbprotectionindicator"/>
      <xs:element ref="archivingnote"/>
      <xs:element ref="archivingright"/>
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      <xs:element ref="licensereviewer"/>
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<xs:element name="usagstatsformat"/>
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```

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