Submittal to the OpenURL Maintenance Agency

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Summary

This submittal to the OpenURL Maintenance Agency is a registration request for a new OpenURL KEV Metadata Format. The proposed metadata format allows for the description of a "canonical citation," which is a citation to a work, or a passage within a work, that is independent of any specific, published edition or translation of the work. Examples of canonical citations are "Homer, *Iliad*, 1:125-130," or "Romans 5:19." Canonical citation OpenURLs will support linking capability between a cited passage and various potential services related to that passage, such as multiple electronically accessible versions and/or translations.

Submission Contact Information

This proposed metadata format is submitted by Cornell University Library. The contact for this submittal is:

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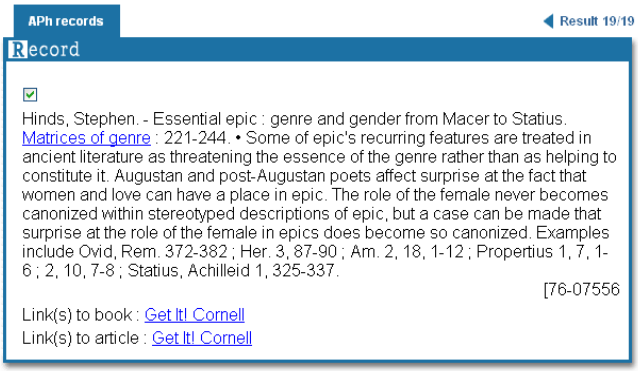
Background and Overview of Request

In 2008, Eric Rebillard, Professor of Classics and History at Cornell, engaged the Cornell University Library (CUL) in discussions about OpenURL. Prof. Rebillard is the General Editor of *L'Année philologique*, an abstracting and indexing service specializing in scholarship about Classical literature, and he was interested in improving the success rate of OpenURLs generated by *L'Année*. In ensuing discussions, he asked whether an OpenURL could be used to link from citations within *L'Année* records to online full-text versions of the cited works. This seemed feasible, and in late 2008 Prof. Rebillard was awarded a planning grant from The Andrew W. Mellon Foundation to explore with CUL the possibilities and challenges of using OpenURL to provide system independent linking between citations of Classical literature and an increasing array of available online resources in Classics.

The problem this linking would address can best be illustrated with a record from *L'Année* (Figure 1).

Figure 1: Record within *L'Année philologique*



This typical record from the *L'Année* database contains citations to specific passages within five works of Classical literature. We have called these types of citations "canonical," because they do not reference a particular edition, but instead use established conventions for citing a work and passages within it. These conventions are typically not formally codified but become established through long use within individual communities. The use of canonical citations is common practice in many different disciplines, and scholars within these disciplines immediately understand them. In this case, for example, Classicists know that "Am. 2.18.1-12" is a citation to Ovid's *Amores*, and they know how to look up this passage in any print copy of the *Amores*. They may also know that an electronic version of the Latin work is accessible online within the Perseus Digital Library, as well as in an English translation, and they may know how to navigate directly to these.

With an increasing number of Classical texts available online, however, not having immediate linking capability between citations and texts is a limitation. One remedy to this problem is for services such as *L'Année* to build bilateral links between individual citations and one version of the electronic resources to which they refer. For example, the citation "Am. 2.18.1-12" in Figure 1 could link directly to Book 2, Elegia 18, line 1 of the Latin text of the *Amores* in the Perseus Digital Library.

While this provides some linking functionality, it has several disadvantages. It would not be cost-efficient for the community as a whole to implement, every service needing to learn and implement the linking heuristics of potentially many online text resources. Direct links would be inherently unstable and costly to maintain. Such links would not easily allow for a one-to-many relationship, between the citation and an array of possible options, such as different editions of the original language, different translations of the original, and other potentially relevant resources. And it does not allow for "appropriate copy" linking, so that a user is only referred to resources to which he or she has access.

Since OpenURL was designed to confront just these sorts of limitations in linking between and among scholarly references, it seemed like an appropriate potential solution for creating reliable

and cost-effective canonical citation linking. What is currently missing in the OpenURL Framework to allow this is a metadata format for adequately describing these sorts of citations. Current OpenURL metadata formats that are potentially applicable to this problem were designed for describing secondary scholarly literature. They generalize the semantics of references to physical forms of a work—a particular *manifestation* or *item*, to use the FRBR entity terms.[1] Canonical citations, however, such as "Ovid, Rem.," are references at the FRBR *work* level. The FRBR *work* is an abstract entity, "a distinct intellectual or artistic creation" distinguishable from any material representation of it. A description of the *work* will therefore be independent of any particular version, edition, or translation, which has significant implications on metadata modeling. Further, current OpenURL metadata formats cannot capture a description of a passage within a work, such as "Book 2, Elegia 18, lines 1-12." For these reasons, a new metadata format is needed to carry a description of a canonical citation within an OpenURL Context Object.

Description of the Proposed KEV Metadata Format

The proposed metadata format for representing canonical citations using a key encoded value (KEV) format is presented in Appendix A. It is also available at http://cwkb.org/docs/matrix.

A canonical citation has two parts. It holds a reference to the work itself and typically also a reference to a passage, or component, within the work.

As noted above, a FRBR *work* is distinct from any material representation of it, and it thus has a very limited set of descriptive metadata elements. Works will always have a title and often an author. The proposed metadata format has three elements, or properties, to describe the title and five for the author. In definition and usage, the elements *title*, *aulast*, *aufirst*, and *au* are very similar to the same elements found in the OpenURL journal and book metadata formats. In addition, the canonical citation metadata format allows for the capture of an "authoritative" form of the work title and author name (*titleauthority*, *auauthority*), and a URL that identifies the source of those authoritative forms (*titlescheme*, *auscheme*). Allowing for authoritative forms is one attempt to address the challenge of identifying a work based on author and title strings.

But even using authoritative forms, in certain domains such as Classical and Medieval literature there will be many identical titles (e.g., "Sermons") and many identical authors (e.g., "[Anonymous]"). In order to allow for more precise identification of a work, we include a work-level identifier within the canonical citation metadata format. The type and syntax of this identifier is not defined, as its structure and use would be determined within specific communities. The newly defined International Standard Text Code (ISTC) could be a strong candidate for providing the type of identification required by this work identifier.[2]

[1] Final Report / IFLA Study Group on the Functional Requirements for Bibliographic Records. München: K.G. Saur, 1998. (UBCIM Publications, New Series; v. 19). Also available as http://www.ifla.org/VII/s13/frbr/frbr.htm or http://www.ifla.org/VII/s13/frbr/frbr.pdf.

[2] ISO 21047:2009(E).

To reference particular components within a work, we decided not to attempt to enumerate all possible component structures (section, paragraph, canto, stanza, epigram, line, etc.). A more abstract approach was taken. Component citations all have a hierarchical structure to them, typically indicating a nested arrangement of components from top down (Act 5, Scene 3, line 12). If one ignores what the components are called in any particular work, the structure can be easily captured using generic terms for each level of the hierarchy (level1=5, level2=3, level3=12). This approach seemed the least difficult to implement across a range of heterogeneous material and less likely to require specialized knowledge to apply.

To allow citations to a continuous passage, in addition to a specific line, the metadata format includes start and end indicators for each hierarchical level needed. For example, a citation to the passage at Act 5, Scene 3, lines 12-24, could be encoded as:

```
slevel1=5 & elevel1=5 & slevel2=3 & elevel2=3 &
      slevel3=12 & elevel3=24
```

End indicators can be omitted if they are equivalent to the start indicator of the same level. In other words, an equivalent though less verbose expression of the above is:

```
slevel1=5 & slevel2=3 & slevel3=12 & elevel3=24
```

A continuous passage may extend across an arbitrary number of hierarchical components. For example, the citation:

```
slevel1=2 & elevel1=3 & slevel2=4 & elevel2=2 &
      slevel3=1 & elevel3=24
```

indicates a passage beginning at Act 2, Scene 4, line 1 (assuming drama) and running through Act 3, Scene 2, line 24. In order to indicate a set of discontinuous passages using the proposed approach, multiple, separate citations would be required.

Using the Canonical Citation Metadata Format in an OpenURL Framework Application

This submittal to the OpenURL Maintenance Agency is for the inclusion of the Canonical Citation Metadata Format in the OpenURL Framework Registry. However, in order to make this new metadata format available for use in an OpenURL Framework Application, the Canonical Citation Metadata Format must be included in a defined and registered Community Profile.

Several options to satisfy this requirement have been explored with the OpenURL Maintenance Agency. After considering the alternatives, it has been decided that the best solution is to create a new Community Profile. This new profile is based on the existing KEV “San Antonio Level 1 Community Profile 2004” (sap1-2004). To allow the broadest application possible, we have retained within the new profile several metadata formats (book, journal, dissertation) for potential use in the ReferringEntity entity. We have removed only the metadata format for patents. In all other respects this new profile is identical to sap1-2004.

The new profile is called the "Canonical Citation Community Profile" (info:ofi/pro:canonical_cit) , and it will also be available in the OpenURL Framework Registry for trial review. It is included as Appendix B of this submittal.

Implementation Example

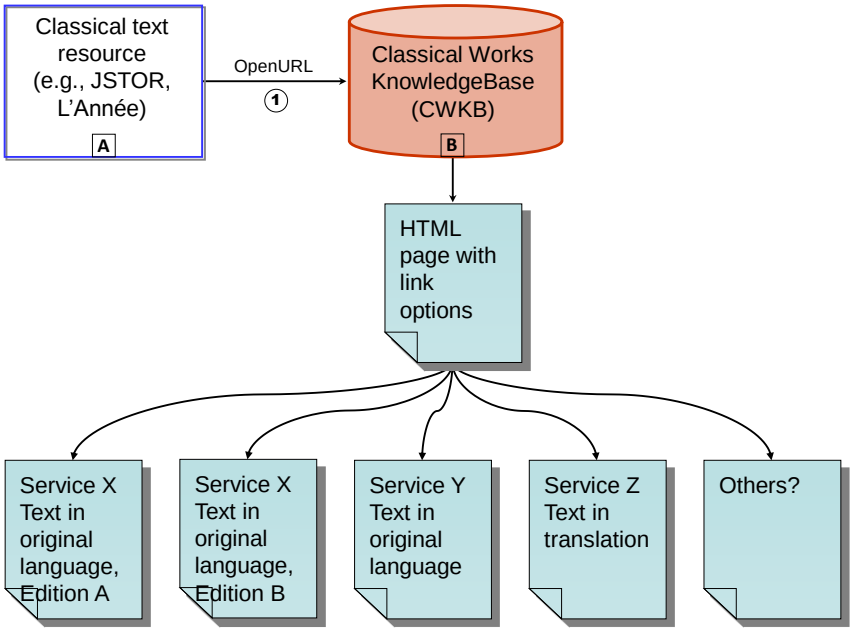
The proposed OpenURL Metadata Format for canonical citations could be implemented in a variety of ways depending on individual project needs and goals. As an example of its use, this section contains a description of one particular OpenURL implementation using this metadata format. While this example is focused on Classics, its approach and techniques could be replicated in other communities. If successful, then, this approach could be used as a model for how to implement canonical citation linking, but other domains may of course choose different implementation paths.

The problem this approach addresses is the need for specialized knowledge to identify canonical works and to build links into online versions of those works. In current OpenURL implementations, link resolvers typically have access to more uniform, predictable, and thus reliable data elements than author and title strings, data such as ISSN or DOI identifiers. While a comprehensive and widely-accepted work identifier system could provide reliable matching, that system is some years off. Further, the intricacies of linking into various systems of full-text providers will not easily be assembled and maintained. We therefore imagine that canonical citation linking will be most successfully implemented in the near term by individual, discipline-specific communities that can create their own specialized knowledge bases. Such knowledge bases will assemble detailed data about work titles and authors, as well as online resources relevant to the domain, and they may act as intermediate link resolvers. These services may also create and/or manage a domain-specific work identifier system.

In April 2010, Prof. Rebillard received a second grant from the Mellon Foundation to create the Classical Works Knowledge Base (CWKB). This knowledge base will assemble and maintain specialized data about Classical works and about online resources that can provide services related to these works. It will understand the linking heuristics used by online text resources within Classics and will be able to create for any given canonical citation one or many URLs that can take users to specific texts within these resources, and ideally to specific passages. What follows is a brief description of how the CWKB will facilitate canonical citation linking. More detailed information on this approach is available at http://cwkb.org.

Figure 2 presents a simple service request to the CWKB using OpenURL.

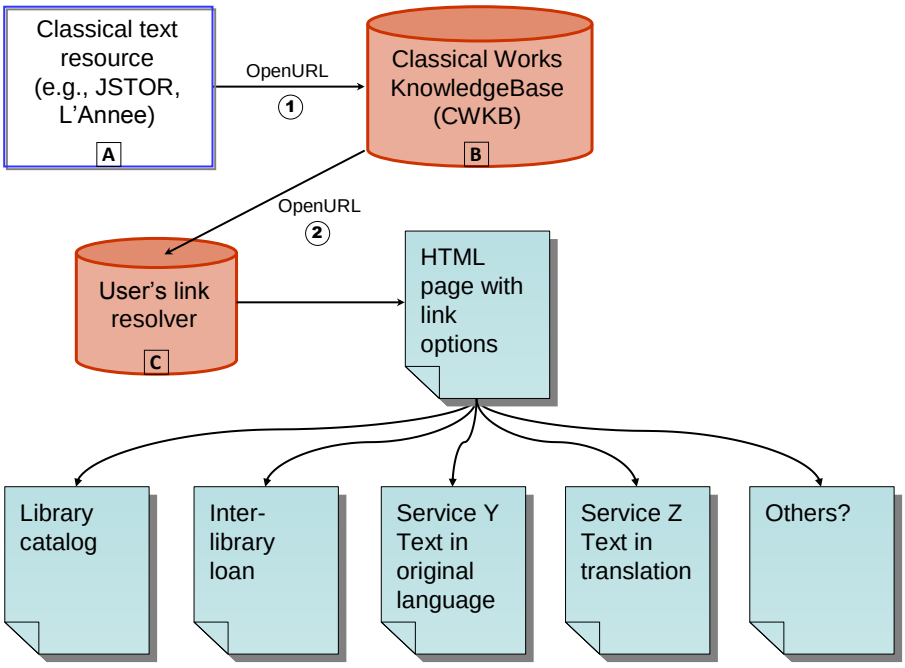
Figure 2: Simple CWKB Resolution



In this simple exchange, a user clicks on a link in a resource containing canonical citations [A]. That resource sends an OpenURL (1) to the community knowledge base [B] using the canonical citation metadata format. The knowledge base could then provide an open-ended array of context sensitive services based on these citations. We can immediately suppose that many users would wish to link to the full-text of this passage in the original language, or to a translation of it in some other language, but other possible actions exist and more will likely emerge.

It is likely, however, that some users will not have access to all these services. This simple model does not address the "appropriate copy" problem, nor does it allow for localized web presentation, page layout, or resource discovery. A solution to this is presented in Figure 3. This model for canonical citation resolution relies on both the community knowledge base and a user's local link resolver, effectively "chaining" resolvers together so that they can work in tandem to provide enriched services.

Figure 3: CWKB Resolution with User's Link Resolver



As in Figure 2, a user working in a resource that has canonical citations [A] will click on a single citation, and an OpenURL (1) is sent to the community knowledge base [B]. Because the user's library has registered its link resolver with [A], the OpenURL will now include the user's link resolver (in the Resolver entity). Here is an example of a possible OpenURL (1) sent from *L'Année philologique* (simplified and formatted for readability):

```
    ctx_ver = Z39.88-2004
&   rft_val_fmt = info:ofi/fmt:kev:mtx:canonical_cit
    &   rft.workid = http://cwkb.org/workid/phi:0959.001
    &   rft.au = Ovid
    &   rft.title = Am.
    &   rft.slevel1 = 2
    &   rft.slevel2 = 18
    &   rft.slevel3 = 1
    &   rft.elevel1 = 2
    &   rft.elevel2 = 18
    &   rft.elevel3 = 12
&   res_id = http://resolver.library.cornell.edu/net/openurl/
&   rfr_id = http://www.annee-philologique.com/aph/
```

Since it has received a resolver address (res_id), the knowledge base knows that it is not to display options to the user directly, as in Figure 2, but to send an OpenURL on to the user's link resolver [C]. In creating this new OpenURL (2), the CWKB will do two things. First, it will normalize author and title forms to CWKB authorized forms, which will be those widely used and recognized within the Classics community. Second, it will supply a list of resources that provide services pertaining to the citation, such as resources that provide the text in the original

language, resources that provide translations, and perhaps others. Each resource will be identified by a service code, and a URL directly to the target citation will be included. This information will be presented in a list of ServiceType identifiers employing a CWKB HTTP URI. An example of OpenURL (2) follows (simplified and formatted for readability):

```
   ctx_ver = Z39.88-2004
&  rft_val_fmt = info:ofi/fmt:kev:mtx:canonical_cit
   &  rft.auauthority = Ouidius, Publius Naso
   &  rft.auscheme = http://cwkb.org/scheme
   &  rft.titleauthority = Amores
   &  rft.titlescheme = http://cwkb.org/scheme
   &  rft.slevel1 = 2
   &  rft.slevel2 = 18
   &  rft.slevel3 = 1
   &  rft.elevel1 = 2
   &  rft.elevel2 = 18
   &  rft.elevel3 = 12
&  svc_id = http://cwkb.org/service/
      perseus_lat/
      url:http://www.perseus.tufts.edu/hopper/text.jsp?doc=
         Perseus:text:1999.02.0068:text=Am.:book=2:poem=18
&  svc_id = http://cwkb.org/service/
      perseus_eng/
      url:http://www.perseus.tufts.edu/hopper/text.jsp?doc=
         Perseus:text:1999.02.0069:text=Am.:book=2:poem=18
&  rfr_id = http://cwkb.org/sid
```

This OpenURL (2) is sent to the user's link resolver [C], which then makes its own set of decisions regarding what options to present. Certain options may be dictated by local practice, such as providing catalog searches or inter-library loan options. Since the OpenURL now has authoritative forms of the author's name and the title of the work, the success of these and other options should be enhanced. The user's link resolver will also analyze the list of services provided by the CWKB and present to the user those that are appropriate—in other words, those that it knows the user can access. These can be presented to the user as discrete links, one per resource, which will resolve directly to the target resource.

We expect the requirements on local link resolvers (such as [C]) to be minimal. These resolvers will need to recognize incoming canonical citation OpenURLs and parse CWKB ServiceType identifiers. At that point, their decision making and processing is similar to current activities. They will assess their community's access rights to various services and display only the options appropriate for their users, along with, perhaps, some standard local options. The current project will include the preparation of information necessary for local link resolvers to receive and process OpenURLs from the CWKB and thereby participate fully in canonical citation linking in Classics.

It should also be noted that the models exemplified in Figures 1 and 2 are not mutually exclusive. The CWKB can point users directly to online resources when these users do not have local link resolvers, in this way providing a level of service to all users. The CWKB may also provide other community services, such as managing domain specific work identifiers, work lookup routines, or name disambiguation services.

We believe this approach has promise in providing system independent linking between citations to Classical literature and a range of potential services pertaining to those citations.

Potential Technical Reviewers

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Appendix A

Matrix defining the KEV Format to represent a canonical citation

dc:title	KEV Canonical Citation Format (draft)
dc:creator	Cornell University Library
dc:description	This Matrix represents the Canonical Citation Format as a string of ampersand-delimited Key/Encoded Value pairs
dc:identifier	http://cwkb.org/docs/matrix
dc:identifier	info:ofi/fmt:kev:mtx:canonical_cit (proposed)
dcterms:created	2010-09-22
dcterms:modified	

A representation of a Key/Encoded-Value pair is generated by concatenating the contents of the first four columns of a row that begins with an ampersand in the Matrix below. The ordering of KEV pairs is not important. Rows which have '#' in the first column are comments and **should not** be included in the representation.

The following data types are provided for the values of the Keys, which must be URL-encoded:

<data>	Character string
<id>	Character string for an Identifier (Z39.88-2004, Part 1, Section 7)
<fmt-id>	Character string for a Format Identifier (Z39.88-2004, Part 1, Sections 12 and 13)
<m-key>	Character string for a Metadata Key (Z39.88-2004, Part 2, Section 7.1)
<url>	Character string for a URL
<date>	Character string representing a date to the complete date level of the W3CDTF profile of ISO 8601, of the form: [YYYY-MM-DD | YYYY-MM | YYYY]
<time>	Character string representing a date and time to the seconds level of the W3CDTF profile of ISO 8601, of the form: [YYYY-MM-DDThh:mm:ssTZD | YYYY-MM-DD]

Abbreviations in column headings:

- Delim - Delimiter
- Min - minimum occurrence
- Max - maximum occurrence ('*' = unbounded)

The Matrix

Delim	Key	Equals	Value	Min	Max	Description
&	**workid**	**=**	**<data>**	0	*	An identifier for the work. Best practice is to use an HTTP URI identifier.
&	**aulast**	**=**	**<data>**	0	1	First author's family name. Use when available or appropriate (modern names with distinguishable given and family names). William Shakespeare is recorded as "aulast=Shakespeare".
&	**aufirst**	**=**	**<data>**	0	1	First author's given name or names or initials. Use when available or appropriate (modern names with distinguishable given and family names). William Shakespeare is recorded as "aufirst=William".
&	**au**	**=**	**<data>**	0	1	First author's full name. Use for pre-modern names or when unable to distinguish given and family names. For example, "au=Ovid".
&	**auauthority**	**=**	**<data>**	0	1	An authoritative form of the first author's name. For example, "auauthority=Shakespeare, William, 1564-1616". If used, auscheme should be provided.
&	**auscheme**	**=**	**<url>**	0	1	An HTTP URI that identifies the source of the authoritative form of the author's name. For example, "auscheme=http://authorities.loc.gov/".
&	**title**	**=**	**<data>**	0	1	The title of the work.
&	**titleauthority**	**=**	**<data>**	0	1	An authoritative form of the title of the work. If used, titlescheme should be provided.
&	**titlescheme**	**=**	**<url>**	0	1	An HTTP URI that identifies the source of the authoritative form of the title of the work.
&	**slevel1**	**=**	**<data>**	0	1	The start of the first or highest hierarchical level in the canonical citation. Homer *Iliad* 1.125-2.35 is recorded as "slevel1=1".
&	**slevel2**	**=**	**<data>**	0	1	The start of the second highest hierarchical level in the canonical citation. Homer *Iliad* 1.125-2.35 is

						recorded as "slevel2=125".
&	**slevel3**	**=**	**<date>**	0	1	The start of the third highest hierarchical level in the canonical citation.
&	**slevel4**	**=**	**<data>**	0	1	The start of the fourth highest hierarchical level in the canonical citation.
&	**slevel5**	**=**	**<data>**	0	1	The start of the fifth highest hierarchical level in the canonical citation.
&	**elevel1**	**=**	**<data>**	0	1	The end of the first or highest hierarchical level in the canonical citation. If omitted, equivalent to slevel1. Homer *Iliad* 1.125-2.35 is recorded as "elevel1=2".
&	**elevel2**	**=**	**<data>**	0	1	The end of the second highest hierarchical level in the canonical citation. If omitted, equivalent to slevel2. Homer *Iliad* 1.125-2.35 is recorded as "elevel2=35".
&	**elevel3**	**=**	**<data>**	0	1	The end of the third highest hierarchical level in the canonical citation. If omitted, equivalent to slevel3.
&	**elevel4**	**=**	**<data>**	0	1	The end of the fourth highest hierarchical level in the canonical citation. If omitted, equivalent to slevel4.
&	**elevel5**	**=**	**<data>**	0	1	The end of the fifth highest hierarchical level in the canonical citation. If omitted, equivalent to slevel5.

Appendix B

Canonical Citation Community Profile

```
<?xml version="1.0" encoding="UTF-8" ?>
<profile xmlns="info:ofi/pro-2004" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:schemaLocation="info:ofi/pro-2004
http://www.openurl.info/registry/docs/xsd/info:ofi/fmt:xml:xsd:pro-2004">
  <registry-identifier>info:ofi/pro:canonical_cit</registry-identifier>
  <name>Canonical Citation Community Profile</name>
  <context-object-format>
       <context-object minOccurs="1" maxOccurs="1">
            <referent minOccurs="1" maxOccurs="1">
                 <identifier minOccurs="0" maxOccurs="unbounded"/>
                 <by-value-metadata minOccurs="0" maxOccurs="1"/>
                 <by-reference-metadata minOccurs="0" maxOccurs="1"/>
                 <private-data minOccurs="0" maxOccurs="1"/>
            </referent>
            <referring-entity minOccurs="0" maxOccurs="1">
                 <identifier minOccurs="0" maxOccurs="unbounded"/>
                 <by-value-metadata minOccurs="0" maxOccurs="1"/>
                 <by-reference-metadata minOccurs="0" maxOccurs="1"/>
                 <private-data minOccurs="0" maxOccurs="1"/>
            </referring-entity>
            <requester minOccurs="0" maxOccurs="1">
                 <identifier minOccurs="0" maxOccurs="unbounded"/>
                 <by-value-metadata minOccurs="0" maxOccurs="1"/>
                 <by-reference-metadata minOccurs="0" maxOccurs="1"/>
                 <private-data minOccurs="0" maxOccurs="1"/>
            </requester>
            <service-type minOccurs="0" maxOccurs="1">
                 <identifier minOccurs="0" maxOccurs="unbounded"/>
                 <by-value-metadata minOccurs="0" maxOccurs="1"/>
                 <by-reference-metadata minOccurs="0" maxOccurs="1"/>
                 <private-data minOccurs="0" maxOccurs="1"/>
            </service-type>
            <resolver minOccurs="0" maxOccurs="1">
                 <identifier minOccurs="0" maxOccurs="unbounded"/>
                 <by-value-metadata minOccurs="0" maxOccurs="1"/>
                 <by-reference-metadata minOccurs="0" maxOccurs="1"/>
                 <private-data minOccurs="0" maxOccurs="1"/>
            </resolver>
            <referrer minOccurs="0" maxOccurs="1">
                 <identifier minOccurs="0" maxOccurs="unbounded"/>
                 <by-value-metadata minOccurs="0" maxOccurs="1"/>
                 <by-reference-metadata minOccurs="0" maxOccurs="1"/>
                 <private-data minOccurs="0" maxOccurs="1"/>
            </referrer>
       </context-object>
  </context-object-format>
  <format>
       <registry-identifier>info:ofi/fmt:kev:mtx:ctx</registry-identifier>
       <name>Key/Encoded-Value ContextObject Format</name>
  </format>
  <serialization>
       <registry-identifier>info:ofi/fmt:kev</registry-identifier>
       <name>Key/Encoded-Value Physical Representation</name>
  </serialization>
  <constraint-language>
       <registry-identifier>info:ofi/fmt:kev:mtx</registry-identifier>
       <name>NISO Z39.88-2004 Matrix Constraint Language</name>
```

```
</constraint-language>
<character-encodings>
     <character-encoding type="default">
          <registry-identifier>info:ofi/enc:UTF-8</registry-identifier>
          <name>UTF-8 encoded Unicode</name>
     </character-encoding>
     <character-encoding>
          <registry-identifier>info:ofi/enc:ISO-8859-1</registry-identifier>
          <name>ISO Latin 1</name>
     </character-encoding>
</character-encodings>
<metadata-formats>
     <metadata-format>
          <registry-identifier>info:ofi/fmt:kev:mtx:canonical_cit
               </registry-identifier>
          <name>KEV Canonical Citation Format</name>
     </metadata-format>
     <metadata-format>
          <registry-identifier>info:ofi/fmt:kev:mtx:book</registry-identifier>
          <name>KEV Metadata Format for Books</name>
     </metadata-format>
     <metadata-format>
          <registry-identifier>info:ofi/fmt:kev:mtx:journal</registry-identifier>
          <name>KEV Metadata Format for Journals</name>
     </metadata-format>
     <metadata-format>
          <registry-identifier>info:ofi/fmt:kev:mtx:dissertation
               </registry-identifier>
          <name>KEV Metadata Format for Dissertations</name>
     </metadata-format>
     <metadata-format>
          <registry-identifier>info:ofi/fmt:kev:mtx:sch_svc</registry-identifier>
          <name>KEV Metadata Format for ServiceTypes for the Scholarly
               Community</name>
     </metadata-format>
</metadata-formats>
<namespaces>
     <namespace>
          <registry-identifier>info:ofi/nam:http:</registry-identifier>
          <name>Namespace for "http" URI Scheme</name>
     </namespace>
     <namespace>
          <registry-identifier>info:ofi/nam:https:</registry-identifier>
          <name>Namespace for "https" URI Scheme</name>
     </namespace>
     <namespace>
          <registry-identifier>info:ofi/nam:mailto:</registry-identifier>
          <name>Namespace for "mailto" URI Scheme</name>
     </namespace>
     <namespace>
          <registry-identifier>info:ofi/nam:ldap:</registry-identifier>
          <name>Namespace for "ldap" URI Scheme</name>
     </namespace>
     <namespace>
          <registry-identifier>info:ofi/nam:ftp:</registry-identifier>
          <name>Namespace for "ftp" URI Scheme</name>
     </namespace>
     <namespace>
          <registry-identifier>info:ofi/nam:urn:ISSN:</registry-identifier>
          <name>Namespace for "ISSN" URN Namespace</name>
     </namespace>
     <namespace>
          <registry-identifier>info:ofi/nam:urn:ISBN:</registry-identifier>
```

```
            <name>Namespace for "ISBN" URN Namespace</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:urn:NBN:</registry-identifier>
            <name>Namespace for National Bibliographic Number URN </name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:hdl:</registry-identifier>
            <name>Namespace for CNRI handles</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:doi:</registry-identifier>
            <name>Namespace for Digital Object Identifiers</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:bibcode:</registry-identifier>
            <name>Namespace for Astrophysics Bibcodes</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:pmid:</registry-identifier>
            <name>Namespace for PubMed Identifiers</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:oai:</registry-identifier>
            <name>Namespace for OAI Identifiers</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:sici:</registry-identifier>
            <name>Namespace for SICI codes</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:oclcnum:</registry-identifier>
            <name>Namespace for identifiers assigned by OCLC to records in
                the WorldCat database</name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:sid:</registry-identifier>
            <name>Namespace for identifiers that follow the info:sid scheme.
                Mainly used for the Referrer Entity </name>
        </namespace>
        <namespace>
            <registry-identifier>info:ofi/nam:info:lccn:</registry-identifier>
            <name>Namespace of Library of Congress Control Numbers</name>
        </namespace>
    </namespaces>
    <transports>
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                </registry-identifier>
            <name>By-Value OpenURL over HTTP</name>
        </transport>
        <transport>
            <registry-identifier>info:ofi/tsp:http:openurl-by-ref
                </registry-identifier>
            <name>By-Reference OpenURL over HTTP</name>
        </transport>
        <transport>
            <registry-identifier>info:ofi/tsp:http:openurl-inline
                </registry-identifier>
            <name>Inline OpenURL over HTTP</name>
        </transport>
    </transports>
</profile>
```